Dear Colleague:

The Singapore Physiotherapy Association (SPA) is pleased to present Guide to Physiotherapist Practice. The Guide has been copied and modified from the Guide to Physical Therapist Practice of the American Physical Therapy Association (APTA) and with APTA’s permission. It includes the “Description of Patient/Client Management” and the “Preferred Practice Patterns.” The Guide is an evolving document that will be revised periodically based on research evidence, changes in examination and intervention strategies, and your feedback. Through surveys and forums at national meetings, SPA will be asking for your feedback on the Guide—specifically, on its usefulness to clinicians, educators, and students across all settings.

This is an opportunity to give us your impressions! Once you have had a chance to review the Guide, please be so kind as to take a few minutes to complete the brief questionnaire and return it to SPA. We are very interested in your input.

On the following scale, where 1 is Strongly Disagree and 4 is Strongly Agree, please indicate your agreement with the following statements.

1. The terminology and conceptual framework used in the Guide is understandable to me.
   Strongly Disagree    Disagree    Agree    Strongly Agree
   1                    2          3        4

2. The Guide is organized so that I can efficiently locate information I need.
   Strongly Disagree    Disagree    Agree    Strongly Agree
   1                    2          3        4

3. The structure of the practice patterns made sense to me.
   Strongly Disagree    Disagree    Agree    Strongly Agree
   1                    2          3        4

4. What do you like best about the Guide?
   ____________________________________________

5. What areas need improvement?
   ____________________________________________

Type of setting in which you practice:
   □ Academic Institution
   □ Extended Care Facility/Nursing Home
   □ Home Health Agency
   □ Hospital
   □ Industrial/Corporate
   □ Private Physical Therapy Office
   □ Rehab Center (inpatient/outpatient)
   □ Rehab Center (outpatient only)
   □ School System
   □ Other ________________________________

Optional:
Name: ______________________________________
Telephone or e-mail address: ________________________

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Foreword

Since its inception, the Singapore Physiotherapy Association has always been the guardian to facilitate, encourage and promote high standards of clinical care by Physiotherapists in Singapore. To this end, the Association has propagated a number of courses, congresses, journals and clinical reviews to ensure that we are benchmarked with the best in the world. In the early 1990s, a group of clinicians came together to produce the Association’s first book on recommended clinical standards for Singapore Physiotherapists. This took us more than a year to produce, even with the help of more than 10 clinicians!

It is indeed an admirable effort that Philippe and his committee have undertaken, to review and rewrite this clinical standard. Even with the use of the American Physical Therapy Association (APTA)’s standards as a guide and base, this task was no mean feat. Much work was still required to ensure that the standards were applicable in the Singapore context.

Suffice to say that this monumental task is completed and we are grateful to the dedicated and diligent team of expert clinicians, Ms Alice Lim, Dr Wong Wai Pong, Mr Sandeep Kumar and Ms Susan Niam, and the leader of the pack, Mr Philippe Steiner, who have made this significant contribution to the profession in Singapore. I am also profusely grateful and appreciative of the APTA for their generosity and support for our Association. They have granted us the permission to use and modify their standards for our own use, without which this task would be extremely exhausting.

Thank you APTA and the SPA clinical standards committee for this contribution to the profession! Well done.

Celia Tan, PhD
President
Singapore Physiotherapy Association
How to use the Guide:

The SPA and APTA recommends that users read “Part One: A Description of Patient/Client Management” first. Part One describes the elements of patient/client management and explains the tests and measures and interventions found in “Part Two: Preferred Practice Patterns.” Part Two provides information about common management strategies for specific patient/client diagnostic groups. To reflect physical therapist practice, each pattern is intended both to standalone and to be used in conjunction with other patterns. An individual patient/client may belong to one or more of the groups or patterns. Unless otherwise noted, every attempt was made to order lists alphabetically.

Experienced physiotherapists can compare their own practice with that described in the patterns to challenge long-held assumptions, refine approaches to patient/client management, or evaluate the appropriateness of new interventions. Newly graduated physiotherapists or physiotherapists who are encountering a particular type of patient for the first time can use the patterns as a guide for developing comprehensive plans of care.

The patterns are not specific protocols for treatments, nor are they to be construed or applied as clinical guidelines. The patterns describe the boundaries within which physiotherapists may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

The Guide answers these questions:

- What types of tests and measures do physical therapists use as part of the examination for specific patient/client diagnostic groups?
- What types of interventions do physiotherapists provide, and what are the anticipated goals of those interventions?
- What are the expected outcomes of patient/client management provided by physiotherapists?

All health care professions are accountable to the various publics that they serve. The SPA and APTA has developed Guide to Physiotherapist Practice (“the Guide”) to help physiotherapists analyze their patient/client management and describe the scope of their practice. The Guide is necessary not only to daily practice but to preparation of students. We hope it will be used as a primary resource when we will have a commission on Accreditation in Physiotherapy Education during its evaluation and revision of criteria for physical therapist professional education programs.

Specifically, the Guide is designed to help physiotherapists to

1. enhance quality of care,
2. improve patient/client satisfaction,
3. promote appropriate utilization of health care services,
4. increase efficiency and reduce unwarranted variation in the provision of services, and
5. promote cost reduction through prevention and wellness initiatives.

The Guide also provides a framework for physiotherapist clinicians and researchers as they refine outcomes data collection and analysis and develop questions for clinical research. Groups other than physiotherapists are important users of the Guide. Health care policymakers and administrators can use the Guide in making informed decisions about health care service delivery. Third-party payers and managed care providers can use the Guide in making informed decisions about reasonableness of care and appropriate reimbursement. Health care and other professionals can use the Guide to coordinate care with physiotherapist colleagues more efficiently.

As the Guide is disseminated throughout the profession and to other groups, the process of revision and refinement will begin. We thank our colleagues who helped us make the Guide a reality.
Preface

All Health care professions are accountable to the various public that they serve. The Singapore Physiotherapy Association has organized the Guide to Physiotherapist Practice from the American Physical Therapy Association Guide with its kind agreement.

The Guide has been reviewed and tailored to the Singapore environment and its specific needs. The Guide is designed to enhance quality of care, improve patient satisfaction, promote appropriate utilization of health care services, increase efficiency and promote cost reduction and wellness initiatives.

The major group of users will be the physiotherapists themselves. The health care policymaker and administrators will be using the Guide to make informed decisions about physiotherapy care service delivery. Third party payers and managed care providers will find the Guide useful in managing their decisions about reasonableness of care and appropriate reimbursement.

The Guide will be reviewed periodically and adapted to the new circumstances and new knowledge on diseases and their treatments. We hope that our colleagues and the various instances and the institutions will find the Guide useful and practical. We thank the colleagues who helped us to make the Guide and reality and APTA to have allowed us to use their Guide as basis.

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Table of Contents

First Part

Introduction

9  Chapter 1: What Types of Tests and Measures Do Physical Therapists Use?  12
  Introduction  12
  Aerobic Capacity and Endurance  13
  Anthropometric Characteristics  14
  Arousal, Attention, and Cognition  15
  Assistive and Adaptive  16
  Community and Work (Job/School/Play) Integration or Reintegration (Including Instrumental Activities of Daily Living)  17
  Cranial Nerve  18
  Ergonomics and Body Mechanics  19
  Gait, Locomotion, and Balance  20
  Integumentary Integrity  22
  Joint Integrity and Mobility  23
  Motor Function (Motor Control and Motor Learning)  24
  Muscle Performance (Including Strength, Power, and Endurance)  26
  Neuromotor Development and Sensory Integration  27
  Orthotic, Protective, and Supportive Devices  28
  Pain  29
  Posture  29
  Prosthetic Requirements  30
  Range of Motion (Including Muscle Length)  32
  Reflex Integrity  32
  Self-Care and Home Management (Including Activities of Daily Living and Instrumental Activities of Daily Living)  33
  Sensory Integrity (Including Proprioception and Kinesthesia)  34
  Ventilation, Respiration (Gas Exchange), and Circulation  35

Chapter 2: What Types of Interventions Do Physical Therapists Provide?  37
  Introduction  37
  Coordination, Communication, and Documentation  39
  Patient/Client-Related Instruction  41
  Direct Interventions  43
    Therapeutic Exercise (Including Aerobic Conditioning)  44
    Functional Training in Self-Care and Home Management (Including Activities of Daily Living and Instrumental Activities of Daily Living)  47
    Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including Instrumental Activities of Daily Living, Work Hardening, and Work Conditioning)  49
    Manual Therapy Techniques (Including Mobilization and Manipulation)  51
    Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)  52
    Airway Clearance Techniques  54
    Wound Management  55
    Electrotherapeutic Modalities  56
    Physical Agents and Mechanical Modalities  57

Part Two

Chapter 3: Cardiopulmonary  58
  Pattern A: Primary Prevention/Risk Factor Reduction for Cardiopulmonary Disorders  59
  Pattern B: Impaired Aerobic Capacity and Endurance Secondary to Deconditioning Associated With Systemic Disorders  67
  Pattern C: Impaired Ventilation, Respiration (Gas Exchange), and Aerobic Capacity Associated With Airway Clearance Dysfunction  80
Pattern D: Impaired Aerobic Capacity and Endurance Associated With Cardiovascular Pump Dysfunction 91
Pattern E: Impaired Aerobic Capacity and Endurance Associated With Cardiovascular Pump Failure 103
Pattern F: Impaired Ventilation, Respiration (Gas Exchange), and Aerobic Capacity and Endurance Associated With Ventilatory Pump Dysfunction 115
Pattern G: Impaired Ventilation With Mechanical Ventilation Secondary to Ventilatory Pump Dysfunction 127
Pattern H: Impaired Ventilation and Respiration (Gas Exchange) With Potential for Respiratory Failure 140
Pattern I: Impaired Ventilation and Respiration (Gas Exchange) With Mechanical Ventilation Secondary to Respiratory Failure 151
Pattern J: Impaired Ventilation, Respiration (Gas Exchange), and Aerobic Capacity and Endurance Secondary to Respiratory Failure in the Neonate 162

Chapter 4: Neuromuscular 173
Pattern A: Impaired Motor Function and Sensory Integrity Associated With Congenital or Acquired Disorders of the Central Nervous System in Infancy, Childhood, and Adolescence 174
Pattern B: Impaired Motor Function and Sensory Integrity Associated With Acquired Nonprogressive Disorders of the Central Nervous System in Adulthood 191
Pattern C: Impaired Motor Function and Sensory Integrity Associated With Progressive Disorders of the Central Nervous System in Adulthood 207
Pattern D: Impaired Motor Function and Sensory Integrity Associated With Peripheral Nerve Injury 221
Pattern E: Impaired Motor Function and Sensory Integrity Associated With Acute or Chronic Polyneuropathies 236
Pattern F: Impaired Motor Function and Sensory Integrity Associated With Nonprogressive Disorders of the Spinal Cord 251
Pattern G: Impaired Arousal, Range of Motion, Sensory Integrity, and Motor Control Associated With Coma, Near Coma, or Vegetative State 265

Chapter 5: Musculoskeletal 276
Pattern A: Primary Prevention/Risk Factor Reduction for Skeletal Demineralization 277
Pattern B: Impaired Posture 288
Pattern C: Impaired Muscle Performance 302
Pattern D: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Capsular Restriction 317
Pattern E: Impaired Joint Mobility, Muscle Performance, and Range of Motion Associated With Ligament or Other Connective Tissue Disorders 330
Pattern F: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Localized Inflammation 344
Pattern G: Impaired Joint Mobility, Motor Function, Muscle Performance, Range of Motion, or Reflex Integrity Secondary to Spinal Disorders 359
Pattern H: Impaired Joint Mobility, Muscle Performance, and Range of Motion Associated With Fracture 374
Pattern I: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Joint Arthroplasty 389
Pattern J: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Bony or Soft Tissue Surgical Procedures 404
Pattern K: Impaired Gait, Locomotion, and Balance and Impaired Motor Function Secondary To Lower-Extremity Amputation 420

Chapter 6: Integumentary 435
Pattern A: Primary Prevention/Risk Factor Reduction for Integumentary Disorders 436
Pattern B: Impaired Integumentary Integrity Secondary to Superficial Skin Involvement 445
Pattern C: Impaired Integumentary Integrity Secondary to Partial-Thickness Skin Involvement And Scar Formation 457
Pattern D: Impaired Integumentary Integrity Secondary to Full-Thickness Skin Involvement and Scar Formation 470
Pattern E: Impaired Integumentary Integrity Secondary to Skin Involvement Extending Into Fascia, Muscle, or Bone and Scar Formation 483
Pattern F: Impaired Anthropometric Dimensions Secondary to Lymphatic System Disorders 497
Introduction

Physiotherapy is a dynamic profession with an established theoretical base and widespread clinical applications in the preservation, development, and restoration of optimal physical function. Every day, physiotherapists in Singapore help people

- Alleviate pain
- Prevent the onset and progression of impairment, functional limitation, disability, or changes in physical function and health status resulting from injury, disease, or other causes
- Restore, maintain, and promote overall fitness and optimal quality of life as related to movement and health

As essential participants in the health care delivery system, physiotherapists assume leadership roles in rehabilitation services, prevention and health maintenance programs, and professional and community organizations. They also play important roles in developing health care policy and appropriate standards for the various elements of physiotherapist practice to ensure availability, accessibility, and excellence in the delivery of physical therapy services. The positive impact of physical therapists’ rehabilitation, prevention, and health promotion services on health-related quality of life is well accepted. As clinicians, physiotherapists engage in an examination process that includes taking the history, conducting a systems review, and administering tests and measures to identify potential and existing problems. To establish diagnoses and prognoses, physiotherapists perform evaluations that synthesize the examination data. Physiotherapists provide interventions (the interactions and procedures used in treating and instructing patients/clients), conduct reexaminations, modify interventions as necessary to achieve anticipated goals and expected outcomes, and develop and implement discharge plans. Physiotherapists are the only professionals and physiotherapist assistants—under the direction and supervision of the physiotherapist—are the only Para-professionals who provide physiotherapy interventions. The Singapore Physiotherapy Association (SPA), the national organization representing the profession of physiotherapy, believes it is critically important for those outside the profession to understand the role of physiotherapists in the health care delivery system and the unique services that physiotherapists provide. SPA is committed to informing consumers, other health care professionals, government, and third-party payers about the benefits of physiotherapy—and, more specifically, about the relationship between post-intervention health status and the services provided by physiotherapists. SPA actively supports outcomes research and strongly endorses all efforts to develop appropriate systems to measure the results of the patient/client management that is provided by physiotherapists.

Purposes of the Guide

A Guide to Physical Therapist Practice (“the Guide”) is a reference not only for physiotherapist practitioners, educators, and students, but for health care policymakers, administrators, managed care providers, third-party payers, and other professionals. The Guide serves two purposes:

1. To describe generally accepted physiotherapist practice and to standardize terminology
2. To delineate preferred practice patterns that will help physiotherapists
   (a) enhance quality of care,
   (b) improve patient/client satisfaction,
   (c) promote appropriate utilization of health care services,
   (d) increase efficiency and reduce unwarranted variation in the provision of services, and
   (e) promote cost reduction through prevention and wellness initiatives.

The Guide does not provide specific protocols for treatments, nor is it intended to serve as clinical guidelines, which are defined by the Institute of Medicine as “systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances.

Clinical guidelines usually are based on a comprehensive search of peer-reviewed literature. The Guide represents expert consensus and contains preferred practice patterns describing common sets of management strategies used by physiotherapists for selected patient/client diagnostic groups. As such, the Guide is a first step toward the development of clinical guidelines, in that it classifies patients/clients and identifies the range of current options for care. The Guide is not
intended to set forth the standard of care for which a physiotherapist may be legally responsible in any specific case. Based on expert opinion, the preferred practice patterns contained in the Guide describe the boundaries within which the physiotherapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, including individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status. Physiotherapists are the only professionals and physiotherapist assistants—under the direction and supervision of the physiotherapist—are the only para-professionals who provide physiotherapy interventions. SPA therefore recommends that government agencies and other third-party payers require physiotherapy to be provided only by (1) physiotherapists or (2) physiotherapist assistants under the direction and supervision of a physiotherapist. Examination, evaluation, diagnosis, and prognosis are physiotherapy—and should be represented and reimbursed as physiotherapy—only when they are performed by a physiotherapist. Intervention is physiotherapy—and should be represented and reimbursed as physiotherapy—only when performed by a physiotherapist or under the direction and supervision of a physiotherapist.

Contents of the Guide
Tests and measures that physical therapists frequently use, clinical indications that may prompt the use of the tests and measures, and types of data that may be generated. Interventions that physical therapists frequently provide, with clinical indications and expected benefits
Preferred Practice Patterns contains preferred practice patterns for selected patient/client diagnostic groups. The patterns are grouped under four categories of conditions: cardiopulmonary, neuromuscular, musculoskeletal, and integumentary. An individual may belong to one or more diagnostic groups or patterns. Each practice pattern describes the following:

- Patient/client diagnostic group
- Examination (history, systems review, and tests and measures)
- Evaluation
- Diagnosis and prognosis (including expected range of visits)
- Interventions, based on anticipated goals
- Reexamination
- Outcomes (which relate to remediation of functional limitation and disability, primary or secondary prevention, and optimization of patient/client satisfaction)
- Criteria for discharge
- Primary prevention strategies, when applicable

Concepts on Which the Guide Is Based
The Guide is based on two main concepts:

1. the process of disablement as a framework for understanding and organizing practice and for optimizing function and
2. the integration of prevention and wellness strategies into physical therapist intervention.

The Process of Disablement
The Guide is based on a framework that rejects the medical model of disease (which emphasizes “treating the diagnosis”) and that focuses instead on the process of disablement—that is, on the impact of conditions on function. For the purposes of the Guide, function refers to those activities identified by an individual as essential to support physical, social, and psychological well-being and to create a personal sense of meaningful living. In the context of this framework, physical therapists provide services to patients/clients with impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes. Impairment is defined as loss or abnormality of physiological, psychological, or anatomical structure or function.
Functional limitation is defined as restriction of the ability to perform—at the level of the whole person—a physical action, activity, or task in an efficient, typically expected, or competent manner. Disability is defined as the inability to engage in age-specific, gender related, or sex-specific roles in a particular social context and physical environment.

The disablement framework used in the Guide represents a continuum of care; however, it also acknowledges the disparity that physiotherapists often observe among severity of impairment, extent of functional limitation, and degree of disability. That is, the presence of an impairment does not necessarily mean that a functional activity or task will be performed in an atypical manner. Similarly, functional limitations do not necessarily prevent performance of specific role functions, such as those of worker, student, or spouse. Impairments, functional limitations, and disabilities do not follow each other in lockstep. Through examination, evaluation, and diagnosis, the physiotherapist determines the interrelationships among impairments, functional limitations, and disabilities for a specific patient/client in a given diagnostic group.

**Prevention and Wellness Strategies**

Progression to pathology—or from pathology or impairment to disability—does not have to be inevitable. The physiotherapist can prevent impairment, functional limitation, or disability by identifying disablement risk factors and by buffering the disablement process. The patient/client management described in the Guide includes three types of prevention:

- **Primary prevention** - Preventing disease in a susceptible or potentially susceptible population through specific measures such as general health promotion efforts
- **Secondary prevention** - Decreasing duration of illness, severity of disease, and sequelae through early diagnosis and prompt intervention
- **Tertiary prevention** - Limiting the degree of disability and promoting rehabilitation and restoration of function in patients with chronic and irreversible diseases

**References**

CHAPTER 1
What Types of Tests and Measures Do Physical Therapists Use?

Introduction
Depending on the data generated during the history and systems review, the physical therapist may use one or more tests and measures, in whole or in part, to help identify impairments, functional limitations, and disabilities and establish the diagnosis and the prognosis. Physical therapists may perform more than one test or measure at a time.

The physical therapist individualizes the selection of tests and measures, rather than basing selection solely on diagnosis. When examining a patient/client with impairment, functional limitation, or disability resulting from brain injury, for example, the physical therapist may decide to perform part or all of several tests and measures, based on the pattern of involvement.

This chapter contains 23 groupings of specific tests and measures that the physical therapist may decide to use during the examination. Tests and measures are listed in alphabetical order. Each pattern in Part Two contains a list of specific related tests and measures. Note: Physical therapists also may decide to use other tests and measures that are not described in the Guide.

Each grouping of tests and measures includes the following:
- **General purposes of the tests and measures.** All tests and measures produce information used to identify the possible or actual causes of difficulties during performance of essential everyday activities, work tasks, and leisure pursuits. Selection of specific tests and measures depends on the findings of the history and systems review. The examination findings may indicate, for instance, that tests should be performed while the patient/client performs specific activities. In all cases, the purpose of tests and measures is to ensure the gathering of information that leads to an evaluation, a diagnosis, a prognosis, and the selection of appropriate interventions.
- Clinical indications, such as impairment, functional limitations, disabilities, or special requirements that may prompt the physical therapist to conduct the tests and measures. All tests and measures are appropriate in the presence of:
  - Impairment, functional limitation, disability, developmental delay, injury, or suspected or identified pathology that prevents or alters performance of daily activities, including self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities
  - Requirements of employment that specify minimum capacity for performance
  - Identified need to initiate or change a prevention or wellness program
  - Specific tests and measures (methods and techniques)
  - Types of data that may be generated from the tests and measures

Other information that may be required for the examination includes: findings of other professionals; results of diagnostic imaging, clinical laboratory, and electro-physiologic studies; federal, state, and local work surveillance and safety reports and announcements; and observations of family, significant others, caregivers, and other interested persons.

Physical therapists are the only professionals and physical therapist assistants—under the direction and supervision of the physical therapist—are the only paraprofessionals who provide physical therapy interventions. AFTA and SPA therefore recommend that state government agencies and other third-party payers require physical therapy to be provided only by (1) physical therapists or (2) physical therapist assistants under the direction and supervision of a physical therapist.

Examination, evaluation, diagnosis, and prognosis are physical therapy—and should be represented and reimbursed as physical therapy—only when they are performed by a physical therapist. Intervention is physical therapy—and should be represented and reimbursed as physical therapy—only when performed by a physical therapist or under the direction and supervision of a physical therapist.
Aerobic Capacity and Endurance
Aerobic capacity and endurance are measures of the ability to perform work or participate in activity over time using the body’s oxygen uptake and delivery and energy release mechanisms. During activity, the physical therapist uses tests ranging from simple determinations of blood pressure, heart rate, and respiratory rate to complex calculations of oxygen consumption and carbon dioxide production to determine the appropriateness of the response to increased oxygen demand. Monitoring responses at rest and during and after activity may indicate the degree and severity of impairment, identify cardiopulmonary deficits that result in functional limitation, and indicate the need to use or recommend other tests and measures and specific interventions.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/ school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - dizziness
  - dyspnea at rest or on exertion
  - edema or lymphedema
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (including strength, power, and especially endurance)
  - impaired range of motion (ROM) (including muscle length)
  - impaired ventilation, respiration (gas exchange), and circulation

Specific Tests and Measures
Tests and measures may include:
- Assessment of autonomic responses to positional changes
- Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of performance during established exercise protocols (eg, treadmill, ergometer, 6-minute walk test, 3-minute step test)
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoracoabdominal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Auscultation of major vessels for bruits
- Interpretation of blood gas analysis or oxygen consumption (VO₂) studies
- Monitoring via telemetry during activity
- Palpation of pulses
- Claudication time tests
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
- Performance or analysis of an electrocardiogram
Data Generated
Data generated may include:
- Activities that aggravate or relieve symptoms
- Anaerobic threshold
- Arrhythmias at rest and during activity
- Autonomic responses to positional changes
- Thoracoabdominal movement and breathing patterns with activity
- Inspiratory and expiratory muscle force before and after activity (including comparison of actual to predicted)
- Maximum oxygen consumption (VO$_2$) (including comparison of actual to predicted)
- Oxygen consumption (VO$_2$) for particular activity (including comparison of actual to predicted)
- Oxygen saturation (SaO$_2$) at rest and during and after activity
- Peripheral vascular integrity
- Physical exertion scale grading and degree of dyspnea or angina with activity
- Standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Symptoms that limit activity
- Ventilatory volumes and flow at rest and during and after activity (including comparison of actual to predicted)

Anthropometric Characteristics
Anthropometric characteristics describe human body measurements such as height, weight, girth, and body fat composition. The physical therapist uses these tests and measures to test for muscle atrophy, gauge the extent of edema, and establish a baseline to allow patients/clients to be compared to national norms on such variables as weight and body fat composition. Results of these tests and measures may indicate the need to use or recommend other tests and measures.

Clinical Indications
Tests and measures are appropriate in the presence of:
Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities:
- edema, lymphedema, or effusion
- impaired aerobic capacity and endurance
- impaired gait, locomotion, and balance
- impaired muscle performance (strength, power, endurance)
- impaired sensory integrity
- impaired ventilation, respiration (gas exchange) and circulation
- pain

Specific Tests and Measures
Tests and measures may include:
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of body fat composition, using calipers, underwater weighing tanks, or electrical impedance
- Measurement of height, weight, length, and girth
- Observation and palpation of trunk and extremities at rest and during and after activity
Data Generated
Data generated may include:
- Activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Body ht composition
- Girths of extremities and chest and lengths of extremities in inches or centimeters
- Height in feet and inches or centimeters
- Integrity of lymphatic system
- Volume displacement in liters
- Weight in pounds or kilograms

Arousal, Attention, and Cognition
Arousal is the stimulation to action or to physiologic readiness for activity. Attention is selective awareness of a part or aspect of the environment or selective responsiveness to one class of stimuli. Cognition is the act or process of knowing, including both awareness and judgment. The physical therapist uses specific tests and measures to assess responsiveness; orientation to time, person, place and situation; and ability to follow directions. These tests and measures guide the physical therapist in the selection of interventions by indicating whether the patient/client has the cognitive ability to participate in the plan of care.

Clinical Indications
Tests and measures are appropriate in the presence of:
Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/ school/play) integration or reintegration, and leisure tasks, movements, or activities:
- Impaired reflex integrity
- Impaired neuromotor development and sensory integration
- Impaired aerobic capacity and endurance
- Impaired gait, locomotion, and balance
- Impaired joint integrity and mobility
- Impaired motor function (motor control and motor learning)
- Impaired muscle performance (strength, power, endurance)
- Impaired posture
- Impaired sensory integrity
- Impaired ventilation, respiration (gas exchange), and circulation
- Pain

Specific Tests and Measures
Tests and measures may include:
- Assessment of arousal, attention, and cognition, using standardized instruments
- Assessment of factors that influence motivation level
- Assessment of level of consciousness
- Assessment of level of recall (eg, short-term and long-term memory)
- Assessment of orientation to time, person, place, and situation
- Screening for cognition (eg, to determine ability to process commands, to measure safety awareness)

Data Generated
Data generated may include:
- Level of arousal, attention, or cognition deficits
- Scores on standardized instruments for measuring level of arousal, attention, or cognition
- Variation over time of arousal, attention, or cognition deficits
- Screening for gross expressive (eg, verbalization) deficits
Assistive and Adaptive Devices
Assistive and adaptive devices include a variety of implements or equipment used to aid patients/clients in performing tasks or movements. Assistive devices include crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, and static and dynamic splints. Adaptive devices include raised toilet seats, seating systems, and environmental controls. The physical therapist uses specific tests and measures to determine whether a patient/client might benefit from such a device or, when such a device already is in use, to determine how well the patient/client performs with it.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - Edema or lymphedema
  - Impaired aerobic capacity and endurance
  - Impaired gait, locomotion, and balance
  - Impaired joint integrity and mobility
  - Impaired motor function (motor control and motor learning)
  - Impaired muscle performance (strength, power, endurance)
  - Impaired sensory integrity
  - Impaired ventilation, respiration (gas exchange), and circulation
  - Pain

Specific Tests and Measures
Tests and measures may include:
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of patient/client or caregiver ability to use and care for device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of a device
- Assessment of alignment and fit of the device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Computer-assisted analysis of motion, initially without and then with device
- Review of reports provided by the patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
- Videotape analysis of the patient/client using device

Data Generated
Data generated may include:
- Ability to use the device and to understand its appropriate use and care
- Alignment of anatomical parts with the device
- Deviations and malfunctions that can be corrected or alleviated using a device
- Level of adherence to use of the device
- Patient/client expressions of comfort, cosmesis, and effectiveness using the device
- Practicality and ease of use of device
- Safety and effectiveness of the device in providing protection, promoting stability, or improving performance of tasks and activities
Community and Work (Job/School/Play) Integration or Reintegration (Including Instrumental Activities of Daily Living)

Community and work (job/school/play) integration or reintegration is the process of assuming roles in the community or at work. The physical therapist uses the following tests and measures to (1) make an informed judgment as to whether a patient/client is currently prepared to assume community or work roles, including all instrumental activities of daily living (IADL), or (2) determine when and how such integration or reintegration might occur. The physical therapist also uses these tests and measures to determine whether an individual is a candidate for a work hardening or work conditioning program. The physical therapist considers patient/client safety, perceptions, and expectations while performing the test and measures.

Clinical Indications

Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities:
  - impaired aerobic capacity and endurance
  - impaired arousal, attention, and cognition
  - impaired gait, locomotion, and balance
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired posture
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange), and circulation
  - pain

Specific Tests and Measures

Tests and measures may include:
- Analysis of adaptive skills
- Analysis of community, work (job/ school/play), and leisure activities
- Analysis of community, work (job/ school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of environment and work (job/school/play) tasks
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/ school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- LADL scales or indexes
- Observation of response to non-routine occurrences
- Questionnaires completed by and interviews conducted with the patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by the patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (e.g., rehabilitation counselor, social worker, employer)
Data Generated
Data generated may include:
- Adaptive skills
- Aerobic capacity or endurance
- Appropriateness of assistive and adaptive devices
- Appropriateness of orthotic, protective, supportive, or prosthetic devices or equipment
- Daily activity level
- Effort in specific movement tasks
- Functional capacity for community and work (job/school/play) tasks
- Gross and fine motor function
- Attention and cognition deficits
- Physical, functional, behavioral, and vocational status
- Muscle strength, power, and endurance
- Numerical scores on standardized rating scales
- Performance of community and work (job/school/play) activities and level of dependence on human and mechanical assistance
- Prosthetic requirements
- Spatial and temporal requirements for performing specific tasks related to community and work (job/school/play) activities
- Standard vital signs (blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Strength, flexibility, and endurance

Cranial Nerve Integrity
Cranial nerve integrity involves somatic, visceral, and afferent and efferent components. The physical therapist uses cranial nerve integrity tests and measures to localize a dysfunction in the brain stem and to identify cranial nerves that merit an in-depth examination. The physical therapist uses a number of these tests to assess sensory and motor functions, such as taste, smell, and facial expression.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/ school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired neuromotor development and sensory integration
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired reflex integrity
  - impaired sensory integrity
  - pain

Specific Tests and Measures
Tests and measures may include:
- Assessment of dermatomes innervated by the cranial nerve
- Assessment of gag reflex
- Assessment of muscles innervated by the cranial nerves
- Assessment of response to the following stimuli:
  - auditory
  - gustatory
  - olfactory
  - visual
  - vestibular
- Assessment of swallowing
Data Generated
Data generated may include:
- Constriction and dilation of pupils
- Equilibrium responses
- Eye movements
- Functional loss in muscles innervated by the cranial nerves
- Gag reflex integrity
- Gross auditory acuity
- Pain, touch, temperature localization
- Swallowing characteristics
- Taste loss
- Visual deficits

Ergonomics and Body Mechanics
Ergonomics refers to the relationships among the worker, the work that is done, the tasks and activities inherent in that work, and the environment in which the work is performed. Ergonomics uses scientific and engineering principles to improve the safety, efficiency and quality of movement involved in work. Body mechanics refers to the interrelationships of the muscles and joints as they maintain or adjust posture in response to environmental forces. The physical therapist uses the ergonomics and body mechanics tests and measures to examine the work environment on behalf of patients/clients and to determine the potential for trauma or repetitive stress injuries from inappropriate workplace design. These tests and measures may be conducted after a work injury or as a preventive measure, particularly when a patient/client is returning to the work environment after an extended absence.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations experienced during attempts to perform self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - abnormal body alignment and movement patterns
  - impaired aerobic capacity and endurance
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired posture
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange), and circulation
  - pain

Specific Tests and Measures
Ergonomics tests and measures may include:
- Analysis of the performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of dexterity and coordination
- Assessment of safety in community and work (job/school/play) environments
- Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
- Assessment of work (job/school/play) performance through batteries of tests
- Computer-assisted motion analysis of patient/client at work
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Ergonomic analysis of the work and its inherent tasks or activities, including:
  - analysis of repetition/work/rest cycling during task or activity
  - assessment of tools, devices, or equipment used
- assessment of vibration
- assessment of workstation
- computer-assisted motion analysis of performance of selected movements or activities
- identification of essential functions of task or activity
- identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress
- Functional capacity evaluation, including:
  - endurance required to perform aerobic endurance activities
  - joint range of motion (ROM) used to perform task or activity
  - postures required to perform task or activity
  - strength required in the work postures necessary to perform the task or activity
- Videotape analysis of the patient/client at work

**Body mechanics tests and measures may include:**
- Computer-assisted motion analysis of performance of selected movements or activities
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Measurement of height, weight, length, and girth
- Observation of performance of selected movements or activities
- Videotape analysis of performance of selected movements or activities

**Data Generated**
Data generated may include:
- Aerobic capacity or endurance
- Body alignment, timing, and sequencing of component movements during specific job tasks or activities
- Chest and extremity girth
- Difficulty or pain expressed during the performance of specific job tasks or activities
- Effort in specific movement tasks
- Gross and fine motor function
- Height in feet and inches or meters and centimeters
- Physical, functional, behavioral and vocational status
- Potential and actual ergonomic stressors
- Safety records and accident reports
- Strength, flexibility, and endurance
- Temporal and spatial characteristics of movements during job tasks or activities
- Weight in pounds or kilograms
- Work (job/school/play) performance

**Gait, Locomotion, and Balance**
Gait is the manner in which a person walks, characterized by rhythm, cadence, step, stride, and speed. Locomotion is the ability to move from one place to another. Balance is the ability to maintain the body in equilibrium with gravity both statically (eg, while stationary) and dynamically (eg, while walking). The physical therapist uses gait, locomotion, and balance tests and measures to investigate disturbances in gait, locomotion, and balance because they frequently lead to decreased mobility, a decline in functional independence, and an increased risk of falls. Gait, locomotion, and balance problems often involve difficulty in integrating sensory, motor, and neural processes. The physical therapist also uses these tests and measures to determine whether the patient/client is a candidate for assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment.
Clinical Indications
Tests and measures are appropriate in the presence of:

- Expectation or indication of one or more of the following impairments or functional limitations experienced during attempts to perform self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - dizziness
  - impaired aerobic capacity and endurance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired posture
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange), and circulation
  - pain

Specific Tests and Measures
Tests and measures may include:

- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight-bearing scales, and force plates
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
- Analysis of wheelchair management and mobility
- Assessment of autonomic responses to positional changes
- Assessment of safety
- Gait, locomotion, and balance assessment instruments
- Gait, locomotion, and balance profiles.
- Identification and quantification of gait characteristics
- Identification and quantification of static and dynamic balance characteristics

Data Generated
Data generated may include:

- Charts and videotapes that reflect gait, locomotion, and balance changes over time
- Energy expenditure requirements
- Gait cycle, gait deviations, and the safety and quality of gait and balance over time in different environments and on a variety of surfaces
- Number ratings from standardized gait-testing instruments
- Activities that aggravate or diminish difficulties with gait, locomotion, or balance
- Ability to negotiate varied surfaces and elevations
- Patient/client perception of gait, locomotion, and balance problems
- Physiologic responses during gait, locomotion, and balance activities
- Qualitative and quantitative descriptions of gait, locomotion, and balance
- Safety and quality of gait and the gait cycle over time using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Safety and quality of locomotion in different environments and over different terrains
- Safety awareness
- Weight-bearing status
Integumentary Integrity

Integumentary integrity is the health of the skin, including its ability to serve as a barrier to environmental threats (e.g., bacteria, parasites). The physical therapist uses integumentary integrity tests and measures to assess the effects of a wide variety of problems that result in skin and subcutaneous changes, including pressure and vascular, venous, arterial, diabetic, and necroanthropic ulcers; burns and other traumas; and a number of diseases (e.g., soft tissue disorders). These tests and measures also are used to obtain more information about circulation through inspection of the skin or the nail beds.

Clinical Indications

Tests and measures are appropriate in the presence of:

- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired bowel and bladder function
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange) and circulation
  - pain

Specific Tests and Measures

Tests and measures for skin associated with integumentary disruption may include:

- Assessment for presence of blistering
- Assessment for presence of hair growth
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of continuity of skin color (e.g., redness in lightly pigmented skin, violaceous coloration in darkly pigmented skin)
- Assessment of nail beds
- Assessment of sensation (e.g., pain, temperature, tactile)
- Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (e.g., using thermistors)
- Assessment of tissue mobility, turgor, and texture

Tests and measures for the wound may include:

- Assessment for presence of dermatitis (e.g., rash, fungus)
- Assessment for presence of hair or nail growth
- Assessment for signs of infection
- Assessment of activities, positioning, and postures that aggravate the wound or scar or that may produce additional trauma
- Assessment of bleeding
- Assessment of burn
- Assessment of ecchymosis
- Assessment of exposed anatomical structures
- Assessment of pigment (color)
- Assessment of sensation (e.g., pain, temperature, tactile)
- Assessment of scar tissue (cicatrix), including banding, pliability, sensation, and texture
- Assessment of wound contraction, drainage, location, odour, shape, size, and depth (e.g., linear, tracing, photography), tunnelling, and undermining
- Assessment of wound tissue, including epithelium, granulation, mobility, necrosis, slough, texture, and turgor
Data Generated
Data generated may include:
- Activities and postures that aggravate the wound or that may produce pain or additional trauma
- Extremity characteristics in terms of colour and temperature (in degrees or words)
- Grid photograph of wound
- Girths in inches or centimetres or volume displacement in millilitres
- Minimal erythematous dose reactions in seconds
- Skin condition
- Skin temperature in degrees
- Soft tissue and scar tissue (mobility and cicatrix) condition
- Wound characteristics (eg, inflamed, macerated, necrotic)
- Wound dimensions in square or cubic inches or centimeters
- Wound drainage characteristics (eg, serous, serosanguineous, pus, slough)

Joint Integrity and Mobility
Joint integrity is the conformance of a joint to expected anatomic and biomechanical norms. Joint mobility involves the capacity of a joint to be moved passively in certain ways that take into account the structure and shape of the joint surface in addition to characteristics of the tissue surrounding the joint. The assessment of joint mobility involves the performance of accessory joint movements by the physical therapist because these movements are not under the voluntary control of the patient. The physical therapist uses the joint integrity and mobility tests and measures to determine whether there is excessive or limited motion of the joint. Excessive joint motion necessitates a program of protection, whereas limited joint motion calls for interventions to increase mobility and enhance functional capability.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/ school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - edema, lymphedema, or effusion impaired aerobic capacity and endurance
  - impaired gait, locomotion, and balance
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired posture
  - pain
  - soft tissue swelling, inflammation, or restriction

Specific Tests and Measures
Tests and measures may include:
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of joint hypermobility and hypomobility
- Assessment of pain and soreness
- Assessment of response to manual provocation tests
- Assessment of soft tissue swelling, inflammation, or restriction
- Assessment of sprain

Data Generated
Data generated may include:
- Clinical signs or pain in response to a specific movement or provocation
- Joint mobility classification and grade
- Joint movement (quality and quantity)
- Sprain classification and grade
Motor Function (Motor Control and Motor Learning)

Motor function is the ability to learn or demonstrate the skilful and efficient assumption, maintenance, modification, and control of voluntary postures and movement patterns. The physical therapist uses motor function tests and measures in the diagnosis of underlying impairments and their contributions to functional limitation and disability. Deficits in motor function reflect the type, location, and extent of the impairment, which may be the result of pathology or other disorders. Weakness, paralysis, dysfunctional movement patterns, abnormal timing, poor coordination, clumsiness, involuntary movements, or dysfunctional postures may be manifestations of impaired motor function.

Clinical Indications

Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job! school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired aerobic capacity and endurance
  - impaired arousal, attention, and cognition
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired muscle performance (strength, power, endurance)
  - impaired neuromotor development and sensory integration
  - impaired posture
  - impaired reflex integrity
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange), and circulation
  - pain
  - soft tissue swelling, inflammation, or restriction

Specific Tests and Measures

Tests and measures may include:
- Analysis of gait, locomotion, and balance
- Analysis of head, trunk, and limb movement
- Analysis of myoelectric activities and neurophysiological integrity using electrophysiologic tests (eg, diagnostic and kinesiologic electromyography [EMG], motor nerve conduction)
- Analysis of posture during sitting, standing, and locomotor activities appropriate for age (eg, walking, hopping, skipping, running, jumping)
- Analysis of stereotypic movements
- Assessment of autonomic responses to positional changes
- Assessment of dexterity, coordination, and agility
- Assessment of postural, equilibrium, and righting reactions
- Assessment of sensorimotor integration
- Motor assessment scales
- Physical performance scales

Data Generated

- Data generated may include:
- Abnormal movement patterns (eg, synergies, athetotic movements)
- Amplitude, duration, waveform, and frequency of normal or abnormal electrical potentials in muscles
- Conduction velocity along peripheral motor nerves
- Coordination of maturation with stages of development
- Deviations from standardized age and sex norms for motor function (motor control and motor learning)
- Muscle activity characteristics during movement
- Physiologic responses during activities
- Skill and efficiency of motor function, including the ability to initiate, control, and terminate movement
• Timing, accuracy, sequencing, and number of repetitions of specific movement patterns and postures
Muscle Performance (Including Strength, Power, and Endurance)

*Muscle performance* is the capacity of a muscle to do work (force x distance). *Muscle strength* is the (measurable) force exerted by a muscle or a group of muscles to overcome a resistance in one maximal effort. *Muscle power* is work produced per unit of time or the product of strength and speed. *Muscle endurance* is the ability to contract the muscle repeatedly over a period of time. The performance of an individual muscle depends on its characteristics of length, tension, and velocity. Integrated muscle performance over time is mediated by neurologic stimulation, fuel storage, and fuel delivery in addition to balance, timing, and sequencing of contraction. The physical therapist uses muscle performance tests and measures to determine the ability to produce movements that are prerequisite to functional activity.

**Clinical Indications**

Tests and measures are appropriate in the presence of:

- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job! school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired aerobic capacity and endurance
  - impaired bowel and bladder function
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired posture
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange), and circulation
  - pain

**Specific Tests and Measures**

Tests and measures may include:

- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance, using manual muscle tests or dynamometry
- Assessment of muscle tone
- Assessment of pain and soreness
- Assessment of pelvic-floor musculature
- Electrophysiologic tests (eg, electromyography [EMG], nerve conduction velocity)

**Data Generated**

Data generated may include:

- Amplitude, duration, waveform, and frequency of EMG signals
- Changes in muscle performance over time
- Consistency of effort and performance
- Force, velocity, torque, work, and power of muscle performance
- Muscle contraction characteristics (eg, maximal, painful, smooth, coordinated, cogwheel)
- Numbers, percentages, or letter grades from standardized grading systems for manual and functional muscle testing
- Pain, soreness, or other symptoms produced by provocation of muscle contractions
- Strength of the pelvic-floor musculature
Neuromotor Development and Sensory Integration

Neuromotor development is the acquisition and evolution of movement skills throughout the life span. Sensory Integration is the ability to integrate information from the environment to produce movement. The physical therapist uses neuromotor development and sensory integration tests and measures to assess motor capabilities in infants, children, and adults. The tests and measures may be used to assess mobility, achievement of motor milestones and healthy responses, postural control, and voluntary and involuntary movement. The physical therapist also uses these tests and measures to test balance, righting and equilibrium reactions, eye-hand coordination, and other motor capabilities.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job! school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired aerobic capacity and endurance
  - impaired gait, locomotion, and balance
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired posture
  - impaired reflex integrity
  - impaired sensory integrity
  - pain

Specific Tests and Measures
Tests and measures may include:
- Analysis of age-appropriate and sex-appropriate development
- Assessment of arousal, attention, and cognition
- Analysis of gait and posture
- Analysis of involuntary movement
- Analysis of reflex movement patterns
- Analysis of sensory integration tests
- Analysis of voluntary movement
- Assessment of behavioral response
- Assessment of dexterity, coordination, and agility
- Assessment of postural, equilibrium, and righting reactions
- Assessment of gross and fine motor skills

Data Generated
Data generated may include:
- Movement patterns, postures, and sequences
- Movement asymmetries
- Postural alignment
- Primitive reflexes
- Gross and fine motor developmental level
- Information organization and processing quality
- Assessment of motor function (motor control and motor learning)
- Assessment of oromotor function, phonation, and speech production
Orthotic, Protective, and Supportive Devices
Orthotic, protective, and supportive devices are used to support weak or ineffective joints or muscles and may serve to enhance performance. Orthotic devices include splints, braces, shoe inserts, and casts. Protective devices include braces, protective taping, cushions, and helmets. Supportive devices include supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, and oxygen. The physical therapist uses specific tests and measures to determine the need for orthotic, protective, and supportive devices in patients/clients not currently using them and to evaluate the appropriateness and fit of those devices already in use. The physical therapist correlates patient/client problems with available devices to make a choice that best serves the individual. For example, the physical therapist may have to choose between an orthosis that provides maximum control of motion and one that allows considerable movement.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/ school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired aerobic capacity and endurance
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired posture
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange), and circulation
  - pain

Specific Tests and Measures
Tests and measures may include:
- Analysis of ability to care for device independently
- Analysis of appropriate components of the device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears the device
- Analysis of movement while patient! client wears the device, using computer-assisted graphic imaging and videotape
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of the device
- Analysis of practicality and ease of use of the device
- Assessment of alignment and fit of the device and inspection of related changes in skin condition
- Assessment of patient/client or care-giver ability to put on and remove the device and to understand its use and care
- Assessment of patient/client use of the device
- Assessment of safety during use of the device
- Review of reports provided by the patient/client, family, significant others, caregivers, or other professionals concerning use of or need for the device

Data Generated
Data generated may include:
- Ability to put on, use, and remove the device and to understand its use and care
- Alignment of anatomical parts with the device
- Adherence to use of the device
- Deviations and dysfunctions that can be corrected or alleviated by the device
- Effectiveness of the device in providing protection, promoting stability, or improving performance of tasks and activities
- Energy expenditure requirements during use of the device
- Patient/client expressions of comfort, cosmesis, and effectiveness using the device
- Practicality and ease of use of the device
Pain
Pain is a disturbed sensation that causes suffering or distress. The physical therapist uses pain tests and measures to determine the intensity, quality, and temporal and physical characteristics of any pain that is important to the patient. The physical therapist may determine a cause or a mechanism for the pain through these tests and measures. The tests and measures also may be used to determine whether referral to another health care professional is appropriate.

Clinical Indications
Tests and measures are appropriate in the presence of:

- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job! school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired aerobic capacity and endurance
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired posture
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange), and circulation

Specific Tests and Measures
Tests and measures may include:

- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of muscle soreness
- Assessment of pain and soreness with joint movement
- Assessment of pain perception (eg, phantom pain)
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Data Generated
Data generated may include:

- Activities that aggravate or relieve pain
- Behavior or pain reactions observed during particular movement tasks
- Muscle soreness classification and grade
- Numerical ratings from standardized rating instruments
- Pain patterns over time
- Pain reactions to cumulative stress or trauma
- Response to pain
- Response to noxious stimuli
- Response during specific movement tasks and to provocation tests
- Sensory and temporal qualities of pain
- Somatic distribution of pain

Posture
Posture is the alignment and positioning of the body in relation to gravity, center of mass, and base of support. The physical therapist uses posture tests and measures to assess structural abnormalities in addition to the ability to right the body against gravity. “Good posture” is a state of musculoskeletal balance that protects the supporting structures of the body against injury or progressive deformity. Findings from these tests and measures may lead the physical therapist to perform additional tests and measures (eg, joint integrity and mobility, respiration, ventilation [gas exchange], and circulation).
Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - abnormal bony alignment
  - impaired aerobic capacity and endurance
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired sensory integrity
  - pain
- Pregnancy

Specific Tests and Measures
Tests and measures may include:
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Data Generated
Data generated may include:
- Alignment and symmetry of body landmarks within segmental planes, while at rest or in motion
- Postural alignment during standing, sitting, lying, or movement
- Postural deviations within lines or grid marks

Prosthetic Requirements
A prosthesis is an artificial device used to replace a missing part of the body. Physical therapists use specific tests and measures for patients/clients who might benefit from a prosthesis or for patients wearing a prosthesis. The physical therapist selects a prosthesis that will allow optimal freedom of movement and functional capability with minimal discomfort and inconvenience.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired gait, locomotion, and balance
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange), and circulation
  - pain
- Loss of limb or body part

Specific Tests and Measures
Tests and measures may include:
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of movement while the patient/client wears device, using computer-assisted graphic imaging and videotape
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of the practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
Assessment of patient/client or care-giver ability to put on and remove device and to understand its use and care
Assessment of patient/client use of device
Assessment of residual limb or adjacent segment for range of motion, strength, skin integrity, and edema
Assessment of safety during use of device
Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Data Generated
Data generated may include:
- Ability to put on, use, and remove the device and to understand its use and care
- Alignment of anatomical parts with the device
- Adherence to use of the device
- Deviations and dysfunctions that can be corrected or alleviated using the device
- Effectiveness of the device in providing protection, promoting stability, or improving performance of tasks and activities and enhancing function at home, at work (job/school/play), and in community
- Energy expenditure requirements during use of the device
- Patient/client expressions of comfort, cosmesis, and effectiveness using the device
- Practicality and ease of use of the device
- Range of motion (ROM), strength, skin integrity, and edema in residual limb or adjacent segment
Range of Motion (Including Muscle Length)
Range of motion (ROM) is the space, distance, or angle through which movement occurs at a joint or a series of joints. Muscle length is measured at various joint angles through the range. Muscle length, in conjunction with joint integrity and soft tissue extensibility, determines flexibility. The physical therapist uses ROM tests and measures to determine the arthro-kinematics and biomechanics of a joint, including flexibility and movement characteristics. Adequate ROM is valuable for injury prevention because it allows the tissues to adjust to impose stresses. Loss of ROM is associated in most cases with loss of function.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/ school/ play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired gait, locomotion, and balance
  - impaired joint integrity and mobility
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired posture
  - impaired sensory integrity
  - impaired ventilation, respiration (gas exchange), and circulation
  - pain

Specific Tests and Measures
Tests and measures may include:
- Analysis of functional ROM
- Analysis of multisegmental movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inchometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Data Generated
Data generated may include:
- Deviations from planes in degrees or inches or centimeters
- Excursion distances in inches or centimeters
- Pain or tenderness in muscles, joints, and soft tissue during movements or activities that require elongation of muscle
- Passive tension during multisegmental movement that requires elongation of muscle
- Joint ROM in degrees

Reflex Integrity
A reflex is a stereotypic, involuntary reaction to any of a variety of sensory stimuli. The physical therapist uses reflex integrity tests and measures to determine the excitability of the nervous system and the integrity of the neuromuscular system.

Clinical Indications
Tests and measures are appropriate in the presence of:
- Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/ school/ play) integration or reintegration, and leisure tasks, movements, or activities:
  - impaired arousal
  - impaired gait, locomotion, and balance
  - impaired motor function (motor control and motor learning)
  - impaired muscle performance (strength, power, endurance)
  - impaired neuromotor development and sensory integration
  - impaired posture
  - impaired sensory integrity
• pain

Specific Tests and Measures
Tests and measures may include:
• Assessment of developmentally appropriate reflexes over time
• Assessment of normal reflexes (eg, stretch reflex)

Data Generated
Data generated may include:
• Normal or pathologic reflexes
• Variation in reflex activity over time or with positioning
• Assessment of pathologic reflexes (eg, Babinski’s reflex)
• Electrophysiological tests (eg, H-reflex)

Self-Care and Home Management (Including Activities of Daily Living and Instrumental Activities of Daily Living)
Self-care includes activities of daily living (ADL), such as bed mobility, transfers, gait, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting. Home management includes more complex instrumental activities of daily living (IADL), such as maintaining a home, shopping, cooking, performing heavy household chores, managing money, driving a car or using public transportation, structured play (for infants and children), and negotiating school environments. The physical therapist uses the following tests and measures to determine the level of performance of the tasks necessary for independent living. The results of these tests and measures may lead the physical therapist to determine that the patient/client needs assistive and adaptive, orthotic, protective, supportive, or prosthetic devices or equipment; body mechanics training; organized functional training programs; or therapeutic exercise programs. The physical therapist considers patient/client safety, perceptions, and expectations while performing the tests and measures.

Clinical Indications
Tests and measures are appropriate in the presence of:
• Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care or home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities:
  • impaired aerobic capacity and endurance
  • impaired arousal, attention, and cognition
  • impaired body mechanics
  • impaired bowel and bladder function
  • impaired gait, locomotion, and balance
  • impaired joint integrity and mobility
  • impaired motor function (motor control and motor learning)
  • impaired muscle performance (strength, power, endurance)
  • impaired neuromotor development and sensory integration
  • impaired posture
  • impaired sensory integrity
  • impaired ventilation, respiration (gas exchange), and circulation
  • pain

Specific Tests and Measures
Tests and measures may include:
• ADL or IADL scales or indexes
• Analysis of adaptive skills
• Analysis of environment and tasks
• Analysis of self-care and home management activities
• Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Analysis of self-care performed in unfamiliar environments
• Assessment of ability to transfer
• Assessment of autonomic responses to positional changes
• Assessment of functional capacity
• Assessment of physiologic responses during self-care and home management activities
• Assessment of safety in self-care and home management activities
• Observation of response to non-routine occurrences
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by the patient/client, family, significant others, caregivers, or other professionals

Data Generated
Data generated may include:
• Ability to transfer
• Adaptive skills
• Aerobic capacity or endurance
• Appropriateness of assistive and adaptive devices
• Appropriateness of orthotic, protective, supportive, or prosthetic devices and equipment
• Daily activity level
• Effort in specific movement tasks
• Functional capacity for self-care and home management tasks
• Gross and fine motor function
• Attention and cognition deficits
• Movement patterns during performance of self care and home management activities
• Muscle strength, power, and endurance
• Numerical scores on standardized rating scales
• Performance of self-care and home management activities and level of dependence on human and mechanical assistance
• Spatial and temporal requirements for performing specific tasks related to self-care and home management activities
• Standard vital signs (blood pressure, heart rate, respiratory rate) at rest and during and after activity
• Strength, flexibility, and endurance

Sensory Integrity (Including Proprioception and Kinesthesia)
Sensory integrity includes peripheral sensory processing (e.g., sensitivity to touch) and cortical sensory processing (e.g., two-point and sharp/dull discrimination). Proprioception includes position sense and the awareness of the joints at rest. Kinesthesia is the awareness of movement. The physical therapist uses sensory integrity tests and measures to determine the integrity of the sensory, perceptual, or somatosensory processes. Sensory, perceptual, or somatosensory abnormalities are frequent indicators of pathology.

Clinical Indications
Tests and measures are appropriate in the presence of:
• Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, or activities:
  • edema, lymphedema, or effusion
  • impaired arousal, attention, and cognition
  • impaired gait, locomotion, and balance
  • impaired joint integrity and mobility
  • impaired motor function (motor control and motor learning)
  • impaired muscle performance (strength, power, endurance)
  • impaired neuromotor development and sensory integration
  • impaired reflex integrity
  • impaired posture
  • impaired sensory integrity
• impaired ventilation, respiration (gas exchange), and circulation
• pain

Specific Tests and Measures
Tests and measures may include:
• Assessment of combined (cortical) sensations (eg, stereognosis, tactile localization, two-point discrimination, vibration, texture recognition)
• Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
• Assessment of gross receptive (eg, vision, hearing) abilities
• Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)
• Electrophysiologic tests (eg, sensory nerve conduction)

Data Generated
Data generated may include:
• Accuracy of cortical perceptions cog, tactile recognition of objects, recognition of symbols drawn on the skin, ability to localize touch sensations)
• Conduction times and velocities along peripheral or central musculoskeletal sensory pathways
• Joint position sense
• Perception of movement in the extremities
• Skin breakdown or injury that may cause decreased sensation
• Superficial sensory capacities

Ventilation, Respiration (Gas Exchange), and Circulation
Ventilation is the movement of a volume of gas into and out of the lungs. Respiration refers primarily to the exchange of oxygen and carbon dioxide across a membrane into and out of the lungs and at the cellular level. Circulation is the passage of blood through the heart, blood vessels, organs, and tissues; it also describes the oxygen delivery system. The physical therapist uses ventilation, respiration, and circulation tests and measures to determine whether the patient has an adequate ventilatory pump and oxygen uptake and delivery system to perform activities of daily living (ADL), ambulation, and aerobic exercise.

Clinical Indications
Tests and measures are appropriate in the presence of:
• Expectation or indication of one or more of the following impairments or functional limitations during attempts to perform self-care, home management, community and work (job! school/play) integration or reintegration, and leisure tasks, movements, or activities:
  • abnormal breathing patterns or abnormal blood gases
  • abnormalities of heart rate, blood pressure, respiratory rate or pattern of breathing, or heart muscle function
  • dizziness
  • dyspnea at rest or on exertion
  • edema or lymphedema
  • impaired aerobic capacity and endurance
  • airway clearance dysfunction
  • impaired joint integrity and mobility
  • impaired muscle performance (strength, power, endurance)
  • impaired posture
  • impaired ventilation, respiration (gas exchange), and circulation
  • pain
Specific Tests and Measures
Tests and measures may include:
- Analysis of thoracoabdominal movements and breathing patterns at rest and during activity and exercise
- Assessment and classification of edema through volume and girth measurements
- Assessment of ability to clear airway
- Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
- Assessment of autonomic responses to positional changes
- Assessment of capillary refill time
- Assessment of chest wall mobility, expansion, and excursion
- Assessment of cough and sputum
- Assessment of perceived exertion and dyspnea
- Assessment of phonation
- Assessment of standard vital signs (e.g., blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of ventilatory muscle strength, power, and endurance
- Assessment of cyanosis
- Auscultation and mediastinal percussion of the lungs
- Auscultation of major vessels for bruits
- Auscultation of the heart
- Interpretation of blood gas analysis or oxygen consumption ($V_{O_2}$) studies
- Palpation of chest wall (e.g., tactile fremitus, pain, diaphragmatic motion)
- Palpation of pulses
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics

Data Generated
Data generated may include:
- Activities that aggravate or relieve symptoms
- Adequacy of airway protection mechanisms
- Chest wall mobility and expansion
- Cough, sputum, and phonation characteristics
- Edema (girth, volume displacement)
- Inspiratory and expiratory muscle force before and after activity (including comparison of actual to predicted)
- Normal and abnormal heart and lung sounds
- Oxygen saturation ($S_aO_2$) at rest and during and after activity
- Peripheral vascular integrity
- Pulse characteristics
- Rate of perceived exertion and dyspnea at rest and during activity
- Symptoms that limit activity
- Thoracoabdominal movements and breathing patterns at rest and during activity
- Ventilatory muscle performance (strength, power, and endurance) and ventilatory pump mechanics
- Ventilatory volumes and flow at rest and during and after activity (including comparison of actual with predicted)
- Vital signs (e.g., blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Work of breathing and ventilatory reserve capacity
Chapter 2

What Types of Interventions Do Physical Therapists Provide?

Introduction
Policy decisions about the use of physical therapy personnel and resources to manage patients/clients with impairments, functional limitations, and disabilities should be based on knowledge of the elements of the patient/client management that is provided by physical therapists. Failing to intervene appropriately to prevent illness—and failing to habilitate or rehabilitate patients/clients with impairments, functional limitations, and disabilities—lead to greater costs at both the personal level and the societal level. The Guide provides administrators and policymakers with the information they need to make decisions about the cost-effectiveness of physical therapist intervention.

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client—and, when appropriate, with other individuals involved in care—using various methods and techniques to produce changes in the condition that are consistent with the evaluation, diagnosis, and prognosis. Decisions are contingent on the timely monitoring of response to intervention and the progress made toward anticipated goals and expected outcomes.

Patient/client management provided by physical therapists includes ongoing examination, evaluation, and modification of the plan of care when necessary. The physical therapist selects interventions based on the complexity of the clinical problems. The plan of care includes discharge planning that begins early and that is based on anticipated goals and expected outcomes as determined by periodic reexamination. As soon as clinically appropriate, the patient/client is informed of the prognosis and begins, with the assistance of the physical therapist, long-range planning for managing any residual impairment, functional limitation, or disability. Through appropriate education and instruction, the patient/client is encouraged to develop health habits that will maintain or improve function, prevent recurrence of problems, and promote wellness.

Physical therapist intervention encourages functional independence, emphasizes patient/client-related instruction, and promotes proactive, wellness-oriented lifestyles. Physical therapists actively facilitate the participation of the patient/client, family; significant others, and caregivers in the plan of care.

Physical therapist intervention has three components:

1. coordination, communication, and documentation,
2. patient/client-related instruction, and
3. direct interventions

Coordination, communication, and documentation and patient/client-related instruction are a part of all patient/client management. Direct interventions vary because they are selected, applied, or modified according to data and anticipated goals for a particular patient/client in a specific diagnostic group.

Physical therapists are the only professionals and physical therapist assistants—under the direction and supervision of the physical therapist—are the only paraprofessionals who provide physical therapy interventions. APTA and SPA therefore recommend that federal and state government agencies and other third-party payers require physical therapy to be provided only by (1) physical therapists or (2) physical therapist assistants under the direction and supervision of a physical therapist. Examination, evaluation, diagnosis, and prognosis are physical therapy—and should be represented and reimbursed as physical therapy—only when they are performed by a physical therapist. Intervention is physical therapy—and should be represented and reimbursed as physical therapy—only when performed by a physical therapist or under the direction and supervision of a physical therapist.
Physical Therapist Intervention

- Coordination Communication Documentation
- Patient / Client Related Instruction
- Direct Intervention

- Therapeutic Exercise, Including aerobic conditioning
- Manual therapy techniques, including mobilization and manipulation
- Wound management

- Functional training in self-care and home management, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Prescription application and as appropriate, fabrication of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Electrotherapy modalities

- Functional training in community and work (job/school/play) integration or reintegration, including IADL, work hardening and work conditioning
- Airway clearance techniques
- Physical agents and mechanical modalities
Coordination, Communication, and Documentation

Coordination, communication, and documentation are processes that ensure (1) appropriate, coordinated, comprehensive, and cost-effective services between admission and discharge and (2) cost-effective and efficient integration or reintegration into home, community, or work (job/school/play) environments. These processes involve collaborating and coordinating with agencies; coordinating and monitoring the delivery of available resources; coordinating data on transition; coordinating the patient/client management provided by the physical therapist; ensuring and facilitating access to health care services and resources and to appropriate community resources; facilitating the development of the discharge plan; facilitating timely delivery of available services; identifying current resources; providing information regarding the availability of advocacy services; obtaining informed consent; protecting patient/client rights through procedural safeguards and services.; providing information, consultation, and technical assistance; and providing oversight for outcomes data collection and analysis.

Clinical Indications
Coordination, communication, and documentation are essential to all patient/client management.

They are used to identify or quantify:
- Comorbidities that may affect the plan of care, prognosis, or outcome
- Discharge destinations
- Impairment, functional limitation, or disability that will be the focus of the plan of care
- Interventions used, including frequency and duration
- Other interventions (eg, medications) that may affect outcomes
- Progress toward anticipated goals, using appropriate tests and measures
- Rehabilitation potential

Documentation is required at the onset of and throughout each episode of care. Clinical documentation indicates, in order of sequence:
- Modes of interventions selected and the parameters of application
- Direct effects of each intervention in terms of impairment status (eg, change in level of pain, sensation, reflexes, strength, endurance, range and quality of joint movement)
- Changes in functional limitation and disability, especially as they relate to meaningful, practical, and sustained change in the life of the patient/client. If pain reduction is a goal, for example, the outcome should be documented in terms of how the level of pain reduction relates to a change in functional performance.
- Changes since previous intervention and any alteration in technique or intervention

Documentation should follow SPA and Guidelines for Physical Therapy Documentation.

Anticipated Goals
All benefits of coordination, communication, and documentation are measured in terms of remediation or prevention of impairment, functional limitation, or disability. Specific goals may include:
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family; significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family; significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.
Specific Interventions
Coordination, communication, and documentation services may include:

- Case management
- Communication (direct or indirect)
- Coordination of care with the patient/client, family; significant others, caregivers, other professionals, and other interested persons (e.g., rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources
Patient/Client-Related Instruction

Patient/client-related Instruction is the process of imparting information and developing skills to promote independence and to allow care to continue after discharge. Instruction should focus not only on the patient but on the family; significant others, and caregivers regarding the current condition, plan of care, and transition to roles at home, at work, or in the community, with the goal of ensuring (1) short-term and long-term adherence to the interventions and (2) primary and secondary prevention of future disability. The development of an instruction program should be consistent with the goals of the plan of care and may include information about the cause of the impairment, functional limitation, or disability; the prognosis; and the purposes and benefits and risks of the intervention. All instruction should take into consideration the influences of patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Clinical Indications
A patient/client-related instruction program should be developed for all patients for whom physical therapy is indicated. A thorough examination must be performed to determine whether the cognitive status, physical status, and resource status of the patient/client would allow independent performance of a home program or whether family; significant other, or care-giver assistance is required. When family, significant others, or caregivers—including home health aides—are required to assist the patient/client with intervention procedures, they must be given instruction.

Anticipated Goals
All benefits of patient/client-related instruction programs are measured in terms of remediation or prevention of impairment, functional limitation, or disability. Specific goals may include:
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family; significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.

Interventions
Activities to be included in the development of a patient/client-related instruction program may include:
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family; significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family; significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family; significant others, and caregivers is improved.
- Self-management of symptoms is increased.
• Utilization and cost of health care services are decreased.
Direct Interventions
The physical therapist selects, applies, or modifies one or more direct interventions based on anticipated goals that are discussed with the patient/client and that relate to specific impairments, functional limitations, and disabilities. Three of the direct interventions—therapeutic exercise, functional training in self-care and home management, and functional training in community and work (job/school/play) integration or reintegration—form the core elements of most physical therapy plans of care. Plans of care frequently may include the use of other interventions to augment therapeutic exercise and functional training. The use of any intervention is physical therapy—and should be represented and reimbursed as physical therapy—only when performed by a physical therapist or under the direction and supervision of a physical therapist.

The physical therapist’s selection of any direct intervention should be supported by the following:

- Examination findings (including those of the history, systems review, and tests and measures), evaluation, and a diagnosis that supports physical therapist intervention
- Prognosis that is associated with improved or maintained health status through the remediation of impairment, functional limitation, or disability
- A plan of care designed to improve function through the use of interventions of appropriate intensity, frequency, and duration to achieve specific anticipated goals efficiently with available resources

Physical therapists select interventions based on the data gathered during the examination process and based on anticipated goals and expected outcomes. Factors that influence the complexity of both the evaluation process and the intervention may include the following: chronicity or severity of current condition; level of current impairment and probability of prolonged impairment, functional limitation, or disability; living environment; multisite or multisystem involvement; overall physical function and health status; potential discharge destinations; preexisting systemic conditions or diseases; social supports; and stability of the condition.

Through routine monitoring and reexamination, the physical therapist determines the need for any alteration in an intervention or in the plan of care. The interventions used, including their frequency and duration, are consistent with patient/client needs and physiologic and cognitive status, anticipated goals, and resource constraints. The independent performance of the procedure or technique by the patient/client (or significant other, family or caregiver) is encouraged following instruction in safe and effective application.

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge is that the anticipated goals and expected outcomes have been achieved. (Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during the episode of care.) Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy.

In the following pages, each type of direct Intervention is described. Included are general criteria for appropriate use of the intervention; possible methods, procedures, or techniques; and anticipated goals.
Therapeutic Exercise (Including Aerobic Conditioning)

Therapeutic exercise includes a broad group of activities intended to improve strength, range of motion (ROM) (including muscle length), endurance, breathing, balance, coordination, posture, motor function (motor control and motor learning), motor development, or confidence when any of a variety of problems constrains the ability to perform a functional activity. The physical therapist targets problems with performance of a movement or task and specifically directs therapeutic exercise to alleviate impairment, functional limitation, or disability.

Therapeutic exercise includes activities to improve physical function and health status (or reduce or prevent disability) resulting from impairments by identifying specific performance goals that will allow patients/clients to achieve a higher functional level in the home, school, workplace, or community. Also included: activities that allow well clients to improve or maintain their health or performance status (for work, recreational, or sports purposes) and prevent or minimize future potential health problems. Therapeutic exercise also is a part of fitness and wellness programs designed to promote overall well-being or, in general, to prevent complications related to inactivity or overuse. This intervention may be used during pregnancy and the postpartum period to improve function and reduce stress. It also may be used (with proper guidance) in patients with hematologic and oncologic disorders to combat fatigue and systemic breakdowns. Therapeutic exercise may prevent further complications and decrease utilization of health care resources before, during, and after surgery or hospitalization.

Therapeutic exercise is performed actively, passively, or against resistance. When the patient/client cannot participate actively due to wellness or other problems, passive exercise may be necessary. Resistance may be provided manually by gravity, or through use of a weighted apparatus or of mechanical or electromechanical devices. Aquatic physical therapy uses the physical and hydrodynamic properties of water to facilitate performance.

Clinical Indications
Before applying therapeutic exercise, a thorough examination is performed to identify those patients/clients for whom therapeutic exercise would be contraindicated or for whom therapeutic exercise must be applied with caution. Candidates for therapeutic exercise include patients/clients who:

- Are at risk of post-surgical complications
- Are at risk of developing or have developed impairment, functional limitation, or disability as a result of defects in the following body systems:
  - cardiovascular
  - endocrine/metabolic
  - genitourinary
  - integumentary
  - lymphatic
  - musculoskeletal
  - neuromuscular
  - pulmonary
- Engage in recreational, organized amateur, or professional athletics
- Are prepartum or postpartum
- Are restricted from performing necessary self-care, home management, community and work (job/school /play) integration or reintegration, and leisure tasks, movements, or activities
Anticipated Goals
All benefits of therapeutic exercise are measured in terms of remediation or prevention of impairment, functional limitation, or disability. Specific goals related to therapeutic exercise may include:
- Ability to perform physical tasks related to self-care, home management, community and work (job/ school/ play) integration or reintegration, or leisure activities is increased.
- Aerobic capacity is increased.
- Airway clearance is improved.
- Atelectasis is decreased.
- Balance is improved.
- Endurance is increased.
- Energy expenditure is decreased.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Joint and soft tissue swelling, inflammation, or restriction is reduced.
- Joint integrity and mobility are improved.
- Level of supervision required for task performance is decreased.
- Motor function (motor control and motor learning) is improved.
- Muscle performance is increased.
- Need for assistive, adaptive, orthotic, protective, or supportive equipment and devices is decreased.
- Nutrient delivery to tissue is increased.
- Osteogenic effects of exercise are maximized.
- Pain is decreased.
- Performance of and independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) are increased.
- Physical function and health status are improved.
- Physiologic response to increased oxygen demand is improved.
- Postural control is improved.
- Preoperative and postoperative complications are reduced.
- Quality and quantity of movement between and across body segments are improved.
- Risk factors are reduced.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairment is reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Sensory awareness is increased.
- Strength, power, and endurance are increased.
- Stress is decreased. Symptoms associated with increased oxygen demand are decreased.
- Tissue perfusion and oxygenation are enhanced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.
- Work of breathing is decreased.

Specific Direct Interventions
Therapeutic exercise may include:
- Aerobic endurance activities using ergometers, treadmills, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Balance and coordination training
- Body mechanics and ergonomics training
- Breathing exercises and ventilatory muscle training
- Breathing strategies (eg, paced breathing, pursed-lip breathing)
- Conditioning and reconditioning (including ambulation activities with manual resuscitator bag or portable ventilator
- Developmental activities training
- Gait, locomotion, and balance training
- Motor function (motor control and motor learning) training or retraining
- Neuromuscular education or reeducation
• Neuromuscular relaxation, inhibition, and facilitation
• Perceptual training
• Posture awareness training
• Sensory training or retraining
• Strengthening:
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Stretching
• Structured play or leisure activities
Functional Training in Self-Care and Home Management (Including Activities of Daily Living and Instrumental Activities of Daily Living)

Functional training in self-care and home management includes a broad group of performance activities designed to (1) enhance neuro-musculo-skeletal, cardiovascular, and pulmonary capacities and (2) integrate or return the patient/client to self-care or home management as quickly and efficiently as possible. Functional training is used to improve the physical function and health status of patients/clients with physical disability, impaired sensorimotor function, pain, injury, or disease. Functional training also is used for well clients. It frequently is based on activities associated with growth and development.

The physical therapist targets problems with performing a movement or task and specifically directs the functional training to alleviate impairment, functional limitation, and disability. The physical therapist may select from a number of options, including training in the following: activities of daily living (ADL); instrumental activities of daily living (IADL); body mechanics; therapeutic exercise; and use of therapeutic assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment. Organized functional training programs such as back schools also may be selected.

Clinical Indications
Before applying functional training, a thorough examination is performed to identify those patients/clients for whom functional training in self-care and home management would be contraindicated or for whom functional training in self-care and home management must be applied with caution.

Candidates for functional training in self-care and home management include patients/clients who:
- Are at risk of developing or have developed impairment, functional limitation, or disability as a result of defects in the following body systems:
  - cardiovascular
  - endocrine/metabolic
  - genitourinary
  - integumentary
  - lymphatic
  - musculoskeletal
  - neuromuscular
  - pulmonary
- Are at risk of developing or have developed impairment, functional limitation, or disability as a result of surgical complications
- Are restricted from performing necessary self-care, home management, community or work (job/school/play) integration or reintegration, or leisure tasks, movements, or activities

Anticipated Goals
All benefits of functional training in self-care and home management are measured in terms of remediation or prevention of impairment, functional limitation, and disability. Specific goals related to functional training in self-care and home management may include:
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
- Intensity of care is decreased.
- Performance of and independence in ADL and IADL are increased.
- Level of supervision required for task performance is decreased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of self-care and home management tasks and activities.
- Sense of well-being is improved.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
**Specific Direct Interventions**
Functional training activities may include:
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, toileting)
- Assistive and adaptive device or equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Injury prevention or reduction training
- Organized functional training programs (eg, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training
- Prosthetic device or equipment training
- Self-care or home management task adaptation
Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including Instrumental Activities of Daily Living, Work Hardening, and Work Conditioning)

Functional training in community and work (Job/school/play) integration or reintegration includes a broad group of activities designed to integrate or to return the patient/client to community, work (job/school/play), or leisure activities as quickly and efficiently as possible. It involves improving physiologic capacities to facilitate the fulfillment of community- and work-related roles. Functional training is used to improve the physical function and health status of patients/clients with physical disability, impaired sensorimotor function, pain, injury, or disease; it also is used for well individuals. It frequently is based on activities associated with growth and development.

The physical therapist targets the problems in performance of movements, community activities, work tasks, or leisure activities and specifically directs the functional training to enable return to the community, work, or leisure environment. A variety of approaches may be taken, depending on patient/client needs; for example, the physical therapist may provide training in instrumental activities of daily living (IADL) to a patient/client who needs to live more independently, and body mechanics and posture awareness training to a patient/client who is deficient in those areas.

Work hardening and work conditioning are specialized functional training programs designed to reduce the impairment, functional limitation, or disability associated with work-related injuries.

Clinical Indications

Before applying functional training in community and work (job/school/play) integration or reintegration, a thorough examination is performed to identify those patients/clients for whom functional training would be contraindicated or for whom functional training must be applied with caution.

Candidates for functional training in community and work (job/school/play) integration or reintegration include patients/clients who:

- Are at risk of developing or have developed impairment, functional limitation, or disability as a result of defects in the following body systems:
  - cardiovascular
  - endocrine/metabolic
  - genitourinary
  - integumentary
  - lymphatic
  - musculoskeletal
  - neuromuscular
  - pulmonary
- Are at risk of developing or have developed impairment, functional limitation, or disability as a result of surgical complications
- Are engaged in recreational, organized amateur, or professional athletics
- Are restricted from performing necessary self-care, home management, community or work (job/school/play) integration or reintegration, or leisure tasks, movements, or activities
- Have a known work-related injury, impairment, functional limitation, or disability

Anticipated Goals

All benefits of functional training in community and work (job/school/play) integration or reintegration and leisure activities are measured in terms of remediation or prevention of impairment, functional limitation, and disability. Specific goals related to functional training in community and work (job/school/play) integration or reintegration and leisure activities may include:

- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities are increased.
- Costs of work-related injury or disability are reduced.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of community, work (job/school/play), and leisure tasks and activities.
- Tolerance to positions and activities is increased.
- Sense of well-being is improved.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
Functional training activities in community and work integration or reintegration may include:
• Assistive and adaptive device or equipment training
• Environmental, community, work (job/school/play), or leisure task adaptation
• Ergonomic stressor reduction training
• Injury prevention or reduction training
• IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, structured play for infants and children, negotiating school environments)
• Job coaching
• Job simulation
• Leisure and play activity training
• Organized functional training programs (eg, back schools, simulated environments and tasks)
• Orthotic, protective, or supportive device or equipment training
• Prosthetic device or equipment training
Manual Therapy Techniques (Including Mobilization and Manipulation)

Manual Therapy techniques consist of a broad group of skilled hand movements, including but not limited to mobilization and manipulation, used by the physical therapist to mobilize or manipulate soft tissues and joints for the purpose of modulating pain; increasing joint range of motion (ROM); reducing or eliminating soft tissue swelling, inflammation, or restriction; inducing relaxation; improving contractile and non-contractile tissue extensibility; and improving pulmonary function. These interventions involve a variety of techniques, such as the application of graded forces.

Physical therapists use manual therapy techniques to improve physical function and health status (or reduce or prevent disability) resulting from impairments by identifying specific performance goals that allow patients/clients to achieve a higher functional level in self-care, home management, community and work (job/school/play) integration or reintegration, or leisure tasks and activities.

Clinical Indications
Before applying manual therapy techniques, a thorough examination is performed to identify those patients/clients for whom manual therapy would be contraindicated or for whom manual therapy must be applied with caution. Candidates for manual therapy include patients/clients with:
- Limited ROM
- Muscle spasm
- Pain
- Scar tissue or contracted tissue
- Soft tissue swelling, inflammation, or restriction

Anticipated Goals
All benefits of manual therapy techniques are measured in terms of a remediation or prevention of impairment, functional limitation, and disability. Specific goals related to manual therapy techniques may include:
- Ability to perform movement tasks is increased.
- Edema, lymphedema, or effusion is decreased.
- Integumentary integrity is improved.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.
- Muscle spasm is reduced.
- Pain is decreased.
- Quality and quantity of movement between and across body segments are improved.
- Risk of secondary impairment is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Ventilation, respiration (gas exchange), and circulation are increased.

Specific Direct Interventions
Manual therapy techniques may include:
- Connective tissue massage
- Joint mobilization and manipulation
- Manual lymphatic drainage
- Manual traction
- Passive ROM
- Soft tissue mobilization and manipulation
- Therapeutic massage
Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Prescription, application, and, as appropriate, fabrication of assistive, adaptive, orthotic, protective, supportive, and prosthetic devices and equipment include the use of a broad group of therapeutic appliances, implements, devices, and equipment to enhance performance of tasks or movements, support weak or ineffective joints or muscles, protect body parts from injury, and adapt the environment to facilitate activities of daily living (ADL) and instrumental activities of daily living (IADL). These devices and equipment often are used in conjunction with therapeutic exercise, functional training, work conditioning and work hardening, and other interventions and should be selected in the context of patient/client needs and social and cultural environments.

The physical therapist targets the problems in performance of movements or tasks and selects (or lubricates) the most appropriate device or equipment, then fits it and trains the patient/client in its use and application. The goal is for the patient/client to function at a higher level and to decrease functional limitation.

Clinical Indications
Before prescribing, applying, or, as appropriate, fabricating any device or equipment, a thorough examination is performed to identify those patients/clients for whom these devices and equipment would be contraindicated or for whom these therapeutic devices and equipment must be applied with caution.

Candidates for these therapeutic devices and equipment include patients/clients who:
- Are at risk of developing impairment, functional limitation, or disability as a result of defects in the following body systems:
  - cardiovascular
  - endocrine/metabolic
  - genitourinary
  - integumentary
  - lymphatic
  - musculoskeletal
  - neuromuscular
  - pulmonary
- Are engaged in recreational, organized amateur, or professional athletics
- Are restricted from performing necessary self-care, home management, community and work (job/school/play) integration or reintegration, and leisure tasks, movements, and activities

Anticipated Goals
All benefits of these therapeutic devices and equipment are measured in terms of remediation or prevention of impairment, functional limitation, and disability. Specific goals related to the prescription, application, and, as appropriate, fabrication of assistive, adaptive, orthotic, protective, supportive and prosthetic devices and equipment may include:
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Independence in bed mobility, transfers, and gait is maximized.
- Edema or effusion is reduced.
- Intensity of care is decreased.
- Joint integrity and mobility are improved.
- Joint stability is increased.
- Level of supervision required for task performance is decreased.
- Loading on a body part is decreased.
- Motor function (motor control and motor learning) is increased.
- Optimal joint alignment is achieved.
- Functional status is maintained while awaiting recovery.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Pressure areas (eg, pressure over bony prominence) are prevented.
- Prosthetic fit is achieved.
Protection of body parts is increased.
Risk of secondary impairments is reduced.

Specific Direct Interventions
The selection of these therapeutic devices and equipment may include the prescription, application, and, as appropriate, lubrication of:
- Adaptive devices (eg, raised toilet seats, seating systems, hospital beds, environmental controls)
- Assistive devices (eg, crutches, canes, walkers, wheelchairs, power devices, long handled reachers, static and dynamic splints)
- Orthotic devices (eg, splints, braces, shoe inserts, casts)
- Prosthetic devices (eg, artificial limbs)
- Protective devices (eg, braces, protective taping, cushions, helmets)
- Supportive devices (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Stresses precipitating injury are decreased.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.
Airway Clearance Techniques

Airway clearance techniques include a broad group of activities used to manage or prevent consequences of acute and chronic lung diseases and impairment, including those associated with surgery. Airway clearance techniques may be used with therapeutic exercise, manual therapy techniques, or mechanical modalities to improve airway protection, ventilation, and respiration.

The physical therapist performs airway clearance techniques to improve physical function and health status (or reduce or prevent disability) resulting from impairments, functional limitations, and disabilities by identifying specific performance goals that allow the patient/client to achieve a higher functional level in home management, community and work (job/school/play) integration or reinteg ration, and leisure movements, tasks, and activities.

Clinical Indications
Before applying airway clearance techniques, a thorough examination is performed to identify those patients/clients for whom these techniques would be contraindicated or for whom these techniques must be applied with caution.

Candidates for airway clearance techniques include patients/clients who:
- Are at risk for postsurgical complications
- Are restricted from performing necessary self-care, home management; community and work (job/school/play) integration and reintegration and leisure tasks, movements, and activities
- Have altered breathing patterns
- Have impaired airway clearance
- Have impaired gas exchange
- Have impaired ventilatory pump
- Are at risk of developing impairment, functional limitation, or disability as a result of defects in the following body systems:
  - cardiovascular
  - endocrine/metabolic
  - musculo-skeletal
  - neuromuscular
  - pulmonary

Anticipated Goals
All benefits of airway clearance techniques are measured in terms of a remediation or prevention of impairment, functional limitation, and disability. Specific goals related to airway clearance techniques may include:
- Airway clearance is improved.
- Cough is improved.
- Exercise tolerance is improved.
- Independence in self-care for airway clearance techniques is increased.
- Need for an assistive device (mechanical ventilation) is decreased.
- Physical function and health status are improved.
- Risk of secondary complications is reduced.
- Risk of recurrence of condition is reduced.
- Utilization and cost of health care services are decreased.
- Ventilation, respiration (gas exchange), and circulation are improved.
- Work of breathing is decreased.

Specific Direct Interventions Airway clearance techniques may include:
- Active cycle of breathing or forced expiratory techniques
- Assistive cough techniques
- Assistive devices for airway clearance (eg, flutter valve)
- Autogenic drainage
- Breathing strategies (eg, paced breathing, pursed-lip breathing)
- Chest percussion, vibration, and shaking
- Pulmonary postural drainage and positioning
- Suctioning
- Techniques to maximize ventilation (eg, maximum inspiratory hold, staircase breathing, manual hyperinflation)
**Wound Management**
Wound management includes procedures used to achieve a clean wound bed, promote a moist wound environment, facilitate autolytic debridement, absorb excessive exudate from a wound complex, and enhance perfusion and oxygen and nutrient delivery to tissues in addition to management of the resulting scar. As a component of wound management, debridement is a therapeutic procedure involving removal of nonviable tissue from a wound bed, most often by the use of instruments, autolysis, therapeutic modalities, or enzymes.

The desired effects of wound management may be achieved in a variety of ways. The physical therapist may use physical agents, electrotherapeutic and mechanical modalities, dressings, topical agents, debridement, and oxygen therapy as part of a plan of care to alter the function of tissues and organ systems required for repair. Wound management interventions are used directly by the physical therapist, based on patient/client needs and the direct physiological effects that are required.

**Clinical Indications**
Before applying wound management techniques, a thorough examination is performed to identify those patients/clients for whom these interventions would be contraindicated or for whom the interventions must be applied with caution.

**Candidates for wound management include patients/clients with:**
- Exuding wounds or re-epithelialization or connective tissue repair or both
- Full- or partial-thickness skin involvement
- Nonviable tissue
- Signs of inflammation

**Anticipated Goals**
All benefits of wound management are measured in terms of remediation or prevention of impairments, functional limitations, and disability. Specific goals related to wound management may include:
- Complications are reduced.
- Debridement of nonviable tissue is achieved.
- Physical function and health status are improved.
- Risk factors for infection are reduced.
- Risk of secondary impairments is reduced.
- Tissue perfusion and oxygenation are enhanced.
- Utilization and cost of health care services are decreased.
- Wound and soft tissue healing is enhanced.
- Wound size is reduced.

**Specific Direct Interventions**
Methods of wound management may include:
- Assistive and adaptive devices
- Debridement—nonselective
  - enzymatic debridement
  - wet dressings
  - wet-to-dry dressings
  - wet-to-moist dressings
- Debridement—selective
  - enzymatic debridement
  - sharp debridement
  - debridement with other agents (eg, autolysis)
- Dressings (eg, wound coverings, hydrogels, vacuum-assisted closure)
- Electrotherapeutic modalities
- Orthotic, protective, and supportive devices
- Oxygen therapy (eg, topical, supplemental)
- Physical agents and mechanical modalities
- Topical agents (eg, ointments, moisturizers, creams, cleansers, sealants)
Electrotherapeutic Modalities
Electrotherapeutic modalities, which include a broad group of agents involving electricity, are used by physical therapists to augment other active or functionally oriented procedures in the plan of care. Specifically, these modalities are used to help patients/clients modulate or decrease pain; reduce or eliminate soft tissue swelling, inflammation, or restriction; maintain strength after injury or surgery; decrease unwanted muscular activity; assist muscle contraction in gait or other functional training; or increase the rate of healing of open wounds and soft tissue.

Clinical Indications
Before applying electrotherapeutic modalities, a thorough examination is performed to identify those patients/clients for whom these interventions would be contraindicated or for whom these interventions must be applied with caution.

Candidates for application of electrotherapeutic modalities include patients/clients with:
- Impaired integumentary integrity
- Impaired motor function (motor control and motor learning)
- Impaired muscle performance/Muscle spasm
- Pain
- Soft tissue swelling, inflammation, or restriction

Anticipated Goals
All benefits of electrotherapeutic procedures are measured in terms of remediation or prevention of impairment, functional limitation, and disability. Specific goals related to electrotherapeutic modalities may include:
- Ability to perform physical tasks is increased.
- Complications are reduced.
- Joint integrity and mobility are improved.
- Muscle performance is increased.
- Neuromuscular function is increased.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Tissue perfusion and oxygenation are improved.
- Utilization and cost of health care services are decreased.
- Wound and soft tissue healing is enhanced.

Specific Direct Interventions
Electrotherapeutic modalities may include:
- Biofeedback
- Electrical muscle stimulation
- Functional electrical stimulation (FES)
- Iontophoresis
- Neuromuscular electrical stimulation (NMES)
- Transcutaneous electrical nerve stimulation (TENS)
Physical Agents and Mechanical Modalities

Physical agents and mechanical modalities are used by physical therapists in conjunction with or in preparation for other interventions, such as therapeutic exercise and functional training. Physical agents—which involve thermal, acoustic, or radiant energy—are used by physical therapists in increasing connective tissue extensibility; modulating pain; reducing or eliminating soft tissue swelling, inflammation, or restriction caused by musculo-skeletal injury or circulatory dysfunction; increasing the healing rate of open wounds and soft tissue; remodeling scar tissue; or treating skin conditions. Mechanical modalities include a broad group of procedures used by physical therapists in modulating pain; stabilizing an area that requires temporary support; increasing range of motion (ROM); or applying distraction, approximation, or compression.

Clinical Indications

Before using either physical agents or mechanical modalities, a thorough examination is performed to identify those patients/clients for whom these interventions would be contraindicated or for whom the interventions must be applied with caution. Candidates for physical agents or mechanical modalities include patients/clients with:

- Edema, lymphedema, or effusion
- Impaired integumentary integrity
- Impaired joint integrity and mobility
- Need for assisted weight bearing or upright activity support
- Impaired sensory integrity
- Pain
- Pulmonary secretion retention
- Soft tissue swelling, inflammation, or restriction

Anticipated Goals

All benefits of physical agents and mechanical modalities are measured in terms of remediation or prevention of impairment, functional limitation, and disability. Specific goals related to the use of physical agents and mechanical modalities may include:

- Ability to perform movement tasks is increased.
- Complications of soft tissue and circulatory disorders are decreased.
- Debridement of nonviable tissue is achieved.
- Independence in airway clearance is achieved.
- Edema, lymphedema, or effusion is reduced.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.
- Neural compression is decreased. Pain is decreased.
- Risk of secondary impairment is decreased.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Stresses precipitating injury are decreased.
- Tissue perfusion and oxygenation are improved.
- Utilization and cost of health care services are decreased.
- Tolerance to positions and activities is increased.

Specific Direct Interventions

Physical agents may include:

- Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
- Cryotherapy (eg, cold packs, ice massage, vapocoolant spray)
- Deep thermal modalities (eg, pulsed short-wave diathermy, ultrasound, phonophoresis)
- Hydrotherapy (eg, aquatic therapy, whirlpool tanks, contrast baths, pulsatile lavage)
- Phototherapy (eg, ultraviolet)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluidotherapy)

Mechanical modalities may include:

- Compression therapies (eg, vasopneumatic compression devices, compression bandaging, compression garments, taping, and total contact casting)
- Continuous passive motion (CPM)
- Mechanical percussors
- Tilt table or standing table
- Traction (sustained, intermittent, or positional)
CHAPTER 3

Preferred Practice Patterns: Cardiopulmonary

The following patterns describe the elements of patient/client management provided by physical therapists—examination (history, systems review, and tests and measures), evaluation, diagnosis, prognosis, and intervention (with anticipated goals)—in addition to reexamination, outcomes, and criteria for discharge.

| Pattern A: | Primary Prevention/Risk Factor Reduction for Cardiopulmonary Disorders | 59 |
| Pattern B: | Impaired Aerobic Capacity and Endurance Secondary to Deconditioning Associated With Systemic Disorders | 67 |
| Pattern C: | Impaired Ventilation, Respiration (Gas Exchange), and Aerobic Capacity Associated With Airway Clearance Dysfunction | 80 |
| Pattern D: | Impaired Aerobic Capacity and Endurance Associated With Cardiovascular Pump Dysfunction | 91 |
| Pattern E: | Impaired Aerobic Capacity and Endurance Associated With Cardiovascular Pump Failure | 103 |
| Pattern F: | Impaired Ventilation, Respiration (Gas Exchange), And Aerobic Capacity and Endurance Associated With Ventilatory Pump Dysfunction | 104 |
| Pattern G: | Impaired Ventilation With Mechanical Ventilation Secondary to Ventilatory Pump Dysfunction | 127 |
| Pattern H: | Impaired Ventilation and Respiration (Gas Exchange) With Potential for Respiratory Failure | 140 |
| Pattern I: | Impaired Ventilation and Respiration (Gas Exchange) With Mechanical Ventilation Secondary to Respiratory Failure | 151 |
| Pattern J: | Impaired Ventilation, Respiration (Gas Exchange), and Aerobic Capacity and Endurance Secondary to Respiratory Failure in the Neonate | 162 |
Primary Prevention / Risk Factor Reduction for Cardiopulmonary Disorders

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA emphasizes that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group

Patients/clients with decreased maximum aerobic capacity who are at risk for developing cardiac disease, pulmonary disease, or both, based on well-accepted risk factor profiles that have been published in the literature.

**INCLUDES** patients/clients who may have several of the following:
- Diabetes
- Family history of heart disease
- Hypercholesterolemia or hyperlipidemia
- Hypertension
- Obesity
- Significant smoking history

**EXCLUDES** patients/clients with:
- Known diagnosis of heart disease
- Known diagnosis of pulmonary disease

Examination  60  
Evaluation, Diagnosis, and Prognosis  63  
Intervention  64  
Outcomes  66  
Criteria for Discharge  66
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, sub-acute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration
Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work/job/school/play, and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculo-skeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of perceived exertion, dyspnea or angina during activity, using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, 6-minute walk test, 3-minute step test)
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Auscultation of the heart
- Auscultation of the lungs
- Auscultation of major vessels for bruits
- Claudication time tests
- Interpretation of blood gas analysis or oxygen consumption (VO2) studies
- Palpation of pulses
- Performance or analysis of an electrocardiogram
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Anthropometric Characteristics
- Measurement of body fat composition, using calipers, underwater weighing tanks, or electrical impedance
- Measurement of height, weight, length, and girth

Community and Work (Job/School/Play) Integration or Reintegration (Including IADI)
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of environment and work (job/school/play) tasks
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- Observation of response to non-routine occurrences
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics

Ergonomics:
- Assessment of safety in work (job/school/play) environments
- Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
- Assessment of work (job/school/play) performance through batteries of tests
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance, using manual muscle testing or dynamometry

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging

Ventilation, Respiration (Gas Exchange), and Circulation
- Analysis of thoraco-abdominal movements and breathing patterns at rest, during activity, and during exercise
- Assessment of ability to clear airway
- Assessment of capillary refill time
- Assessment of chest wall mobility, expansion, and excursion
- Assessment of cough and sputum
- Assessment of perceived exertion and dyspnea
- Assessment of phonation
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of ventilatory muscle strength, power, and endurance
- Assessment of cyanosis
- Auscultation of the heart
- Auscultation and mediate percussion of the lungs
- Interpretation of blood gas analysis or oxygen consumption (VO₂) studies
- Palpation of pulses
- Tests and measures of pulmonary function and ventilatory mechanics
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and Outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Patient/client will demonstrate independence in an aerobic exercise program and be able to identify personal risk factors for cardiopulmonary disease and the methods he or she will use to reduce risk.

Expected Range of Number of Visits Per Episode of Core
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 1 to 6 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Modify Frequency of Visits
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (e.g., family home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with client, family significant others, care-givers, and other professionals.
- Decision making is enhanced regarding the health of client and use of health care resources by patient/client, family significant others, and caregivers.

**Specific Interventions**
- Communication (direct or indirect)
- Coordination of care with client, family significant others, care-givers, other health care professionals, and other interested persons (e.g., Social Workers, employer)
- Discharge planning
- Documentation of all elements of client management
- Education plans
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Client knowledge of personal and environmental factors associated with the condition is increased.
- Decision making is enhanced regarding health of client and use of health care resources by client.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by client in the appropriate environment
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**

Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Aerobic capacity is increased.
- Physical function and health status are improved.
- Physiologic response to increased oxygen demand is improved.
- Strength, power, and endurance are increased.
- Symptoms associated with increased oxygen demand are decreased.
Specific Direct Interventions
- Aerobic endurance activities using ergometers, treadmills, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Body mechanics and ergonomics training
- Breathing exercises
- Conditioning and reconditioning
- Posture awareness training
- Strengthening:
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADI)

Anticipated Goals
- Performance of and independence in ADL and IADL are increased.

Specific Direct Interventions
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI, Work Hardening, and Work Conditioning)

Anticipated Goals
- Ability to perform physical tasks related to community and work (job/school play) integration and reintegration and leisure tasks, movements, or activities, is increased.
- Risk of recurrence of condition is reduced.

Specific Direct Interventions
- Ergonomic stressor reduction training
- Injury prevention or reduction training
Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional limitation / Disability
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Health-related quality of life is enhanced.
- Optimal role function (eg, worker, student, spouse, grandparent) is maintained.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of prevention strategies is demonstrated.

Client Satisfaction
- Access, availability, and services provided are acceptable to client.
- Administrative management of practice is acceptable to client.
- Clinical proficiency of physical therapist is acceptable to client.
- Coordination and conformity of care are acceptable to client.
- Interpersonal skills of physical therapist are acceptable to client, family, and significant others.

Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (I) the patient/client, caregiver, or legal guardian declines to continue intervention; (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Aerobic Capacity and Endurance Secondary to Deconditioning Associated With Systemic Disorders

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

**Patient/Client Diagnostic Group**

Patients/clients with impaired aerobic capacity associated with systemic disorders that impair mobility or interfere with systemic response to increased oxygen demand. Patients/clients may have any one or a combination of the following:
- Decreased ability to perform endurance conditioning
- Decreased independence in activities of daily living (ADL) or instrumental activities of daily living (IADL)
- Immediate prior history of bed rest for more than 48 hours
- Increased symptoms with increased activity
- History of inactivity secondary to systemic impairment

**INCLUDES patients/clients with:**
- Acquired immune deficiency syndrome (AIDS)
- Cancer
- Cardiopulmonary disorders
- Chronic system failure
- Multi-system impairments
- Musculo-skeletal disorders
- Neuromuscular disorders

**EXCLUDES patients/clients with:**
- Acute cardiovascular pump failure
- Acute respiratory failure
- Airway clearance impairment
- Mechanical ventilation

Examination 68
Evaluation, Diagnosis, and Prognosis 74
Intervention 75
Reexamination 78
Outcomes 78
Criteria for Discharge 79
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physiotherapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
• Prior medications

**Past Medical/Surgical History**
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genito-urinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

**Family History**
- Familial health risks

**Health Status (Self-Report, Family Report, Caregiver Report)**
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

**Social Habits (Past and Current)**
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

**Systems Review**
The systems review may include:

**Physiologic and anatomic status**
- Cardiopulmonary
- Integumentary
- Musculo-skeletal Neuromuscular

**Communication, affect, cognition, language, and learning style**
Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of performance during established exercise protocols (e.g., using treadmill, ergometer, minute walk test, 3-minute step test)
- Assessment of perceived exertion, dyspnea, or angina during activity, using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of standard vital signs (e.g., blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Auscultation of major vessels for bruits
- Claudication time tests
- Interpretation of blood gas analysis or oxygen consumption (VO₂) studies
- Monitoring via telemetry during activity
- Palpation of pulses
- Performance or analysis of an electrocardiogram
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics

Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of body fat composition, using calipers, underwater weighing tanks, or electrical impedance
- Measurement of height, weight, length, and girth
- Observation and palpation of trunk and extremities at rest and during activity

Arousal, Attention, and Cognition
- Assessment of orientation to time, person, place, and situation
- Screening for level of cognition (e.g., to determine ability to process commands, to measure safety awareness)

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of patient/client and caregiver ability to care for device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of environment and work (job/school/play) tasks
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- IADL scales or indexes
- Observation of responses to non-routine occurrences
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate.
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, or other health care professionals, or other interested persons (eg, Social Workers, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
- Analysis of physical space using photography or videotape
- Assessment of current and potential barriers
- Measurement of physical space
- Physical inspection of environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics
Ergonomics:
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of safety in work (job/school/play) environments
- Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
- Assessment of work (job/school/play) performance through batteries of tests
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Ergonomic analysis of the work and its inherent tasks or activities, including:
  - analysis of repetition/work/rest cycling during task or activity
  - assessment of tools, devices, or equipment used
  - assessment of vibration
  - assessment of workstation
  - computer-assisted motion analysis of performance of selected movements or activities
  - identification of essential functions of task or activity
  - identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress
- Videotape analysis of patient/client at work (job/school/play)

Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Gait, locomotion, and balance profiles

Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of soft tissue swelling, inflammation, or restriction

Motor Function (Motor Control and Motor Learning)
- Analysis of gait, locomotion, and balance
- Motor assessment scales
- Physical performance scales
Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength
- Analysis of muscle strength, power, and endurance, using manual muscle testing or dynamometry
- Assessment of muscle tone
- Assessment of pain and soreness

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation
- Assessment of muscle soreness
- Assessment of pain perception (eg, phantom pain)
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, and visual analog scales

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture girds, plumb lines, still photography, videotape, or visual analysis

Prosthetic Requirements
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Range of Motion (ROM) (Including Muscle Length)
- Assessment of muscle, joint, or soft tissue characteristics
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
Self-Care and Home Management (Including ADL and IADL)
- ADL scales or indexes
- Analysis of adaptive skills
- Analysis of environment and tasks
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of self-care in unfamiliar environments
- Assessment of ability to transfer
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Ventilation, Respiration (Gas Exchange), and Circulation
- Analysis of thoraco-abdominal movements and breathing patterns at rest, during activity, and during exercise
- Assessment of ability to clear airway
- Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
- Assessment of capillary refill time
- Assessment of perceived exertion and dyspnea
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of chest wall mobility, expansion, and excursion
- Assessment and classification of edema using volume and girth measurements
- Assessment of ventilatory muscle strength, power, and endurance
- Assessment of cyanosis
- Auscultation of the heart
- Auscultation and mediate percussion of the lungs
- Interpretation of blood gas analysis or oxygen consumption (VOI) studies
- Palpation of pulses
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the Clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients / clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Within 6 weeks, patient/client will demonstrate improved functional capacity and increased ability to perform activities of daily living (ADL) and instrumental activities of daily living (IADL) without exacerbation of signs and symptoms, or patient/client will demonstrate an increase in muscle strength and endurance and an increase in exercise tolerance.

Expected Range of Number of Visits Per Episode of Care, 5 to 26
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 5 to 26 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities
- Level of patient/client adherence to intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socio-economic stressors
- Support provided by family unit
Intervention
Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related Instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation
Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other; and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.
- Resources are maximally utilized.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction
Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family, significant others and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary Impairments is reduced.
• Safety of patient/client, family significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by patient/client or caregiver in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Aerobic capacity is increased.
- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities are increased.
- Physiologic response to increased oxygen demand is improved.
- Strength, power, and endurance are increased.
- Symptoms associated with increased oxygen demand are decreased.

**Specific Direct Interventions**
- Aerobic endurance activities using treadmill, ergometer; steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Body mechanics and ergonomics training
- Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Developmental activities training
- Posture awareness training
- Strengthening
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

**Functional Training in Self-Care and Home Management (Including ADL and IADI)**

**Anticipated Goals**
- Ability to recognize and initiate treatment of a recurrence is improved through increased self-management of symptoms.
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Performance of and independence in ADL and LADL are increased.

**Specific Direct Interventions**
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device training

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI, Work Hardening, and Work Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities is increased.
Specific Direct Interventions

- IADL training (eg maintaining a home, shopping, cooking, home chores heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals

- Ability to perform physical tasks is increased.
- Performance of and independence inADL and IADL are increased.
- Physical function and health status are improved.
- Risk of secondary impairments is reduced.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions

- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Prosthetic devices or equipment (eg, artificial limbs)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, corsets, neck collars, serial casts, elastic wraps, oxygen)
Reexamination
The physiotherapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with deconditioning associated with systemic disorders is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Level of patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge is the anticipated goals and the expected outcomes being achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Ventilation, Respiration (Gas Exchange), and Aerobic Capacity Associated with Airway Clearance Dysfunction

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with impaired airway clearance, respiration (gas exchange), or ventilation accompanied by impaired aerobic capacity and impaired function. Patients/clients may have any one or a combination of the following:
- Change in baseline breath sounds
- Change in baseline chest radiograph
- Dyspnea
- Impaired respiratory function
- Impaired gas exchange
- Impaired performance in activities of daily living (ADL) or instrumental activities of daily living (IADL)
- Increased work of breathing
- Pulmonary infection, including frequent or recurring infections

INCLUDES patients/clients with:
- Acute lung disorders
- Acute or chronic oxygen dependency
- Bone marrow/cell transplants
- Cardio-thoracic surgery
- Chronic obstructive pulmonary disease (COPD)
- Solid-organ transplants (eg, heart, lung, kidney)
- Tracheotomy or micro-tracheotomy

EXCLUDES patients/clients with:
- Age of fewer than 4 months
- Mechanical ventilation
- Multi-system failure
- Respiratory failure

Examination 81
Evaluation, Diagnosis, and Prognosis 85
Intervention 86
Reexamination 89
Outcomes 89
Criteria for Discharge 90
Examination
Through the examination (history, systems review and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration
Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:
Physiologic and anatomic status
- Cardio-pulmonary
- Integumentary
- Musculo-skeletal Neuromuscular
Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of perceived exertion, dyspnea, or angina during activity, using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, 6-minute walk test, 3-minute step test)
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Interpretation of blood gas analysis or oxygen consumption (V\textsubscript{O}\textsubscript{2}) studies
- Monitoring via telemetry during activity
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymph-edema, or effusion
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
- Assessment of level of consciousness
- Assessment of orientation to time, person, place, and situation

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of patient/client and caregiver ability to care for device.
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, family, caregivers, or other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- IADL scales or indexes
- Observation of responses to non routine occurrences
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social workers, employer)

Cranial Nerve Integrity
- Assessment of gag reflex
- Assessment of swallowing

Environmental, Home, and Work (Job/School/Play) Barriers
- Analysis of physical space using photography or videotape
- Assessment of current and potential barriers
- Measurement of physical space
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Integumentary Integrity
For skin associated with integumentary disruption:
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of sensation (eg, pain, temperature, tactile)
- Assessment of nail beds

For wound:
- Assessment of activities, positioning, and postures that aggravate the wound or scar or that may produce additional trauma
- Assessment of ecchymosis
Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance, using manual muscle testing or dynamometry
- Assessment of pain and soreness

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Self-Care and Home Management (Including ADL and IADI)
- ADL or IADL scales or indexes
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of self-care in unfamiliar environments
- Assessment of functional capacity

Ventilation, Respiration (Gas Exchange), and Circulation
- Analysis of thoraco-abdominal movements and breathing patterns at rest, during activity, and during exercise
- Assessment and classification of edema using volume and girth measurements
- Assessment of ability to clear airway
- Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
- Assessment of capillary refill time
- Assessment of chest wall mobility, expansion, and excursion
- Assessment of cough and sputum
- Assessment of perceived exertion and dyspnea
- Assessment of phonation
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of ventilatory muscle strength, power, and endurance
- Assessment of cyanosis
- Auscultation of the heart
- Auscultation and mediate percussion of the lungs
- Interpretation of blood gas analysis or oxygen consumption (VO₂) studies
- Palpation of chest wall (eg, tactile fremitus, pain, diaphragmatic motion)
- Palpation of pulses
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
- Assessment of physiologic responses during self-care and home management activities
- Review of daily activities log
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Within 6 weeks, one of the following will occur:
• Patient/client will have an absence of secretions or will be able to clear secretions independently.
• Chest radiograph will return to baseline.
• Caregiver will be able to manage the secretions.

Expected Range of Number of Visits Per Episode of Care, 5 to 30
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goal and outcomes within 5 to 30 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
• Ability to transfer instruction to motor learning
• Accessibility of resources
• Availability of resources
• Caregiver (eg, family, home health aide) consistency or expertise
• Chronicity or severity of condition
• Co-morbidities
• Level of patient/client adherence to the intervention program
• Preexisting systemic conditions or diseases
• Psychosocial and socio-economic stressors
• Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation Anticipated Goals**
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family; significant others, caregivers, or other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family; significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family; significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family; significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, Workers' Compensation claims manager, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction Anticipated Goals**
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family; significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family; significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family; significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family; significant others, and caregivers is Improved.
- Self-management of symptoms is improved.
Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by patient/client or caregiver in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Aerobic capacity is increased.
- Airway clearance is improved.
- Atelectasis is decreased.
- Energy expenditure is decreased.
- Physical function and health status are improved.
- Physiologic response to increased oxygen demand is improved.
- Quality and quantity of movement between and across body segments are improved.
- Risk of recurrence of condition is reduced.
- Strength, power, and endurance are increased.
- Tissue perfusion and oxygenation are improved.
- Work of breathing is decreased.

**Specific Direct Interventions**
- Aerobic endurance activities using ergometers, treadmills, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Balance and coordination training
- Body mechanics and ergonomics training
- Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Developmental activities training
- Neuromuscular relaxation, inhibition, and facilitation
- Posture awareness training
- Strengthening:
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

**Functional Training in Self-Care and Home Management (Including ADL and IADL)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Safety is improved during performance of self-care and home management tasks and activities.

**Specific Direct Interventions**
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device training
Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI, Work Hardening, and Work Conditioning)

Anticipated Goals
- Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities, is increased.
- Costs of work-related injury or disability are reduced.
- Safety is improved during performance of community and work (job/school/play) tasks and activities.

Specific Direct Interventions
- Assistive and adaptive device and equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Injury prevention or reduction training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Orthotic, protective, or supportive device and equipment training

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Joint integrity and mobility are improved.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Risk of secondary impairments is reduced.
- Safety is improved.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, corsets, neck collars, serial casts, elastic wraps, oxygen)
- Airway Clearance Techniques

Anticipated Goals
- Airway clearance is improved.
- Cough is improved.
- Exercise tolerance is improved.
- Physical function and health status are improved.
- Risk of recurrence of condition is reduced.
- Ventilation, respiration (gas exchange), and circulation are improved.
- Work of breathing is decreased.

Specific Direct Interventions
- Assistive cough techniques
- Autogenic drainage
- Breathing strategies (eg, training in paced breathing, pursed-lip breathing)
- Chest percussion, vibration, and shaking
- Forced expiratory techniques
- Pulmonary postural drainage and positioning
- Suctioning
- Techniques to maximize ventilation (eg, maximum inspiratory hold, staircase breathing, manual hyperinflation)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with airway clearance dysfunction is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Level of patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Aerobic Capacity and Endurance Associated with Cardiovascular Pump Dysfunction

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients who have impaired aerobic capacity associated with cardiovascular pump dysfunction and who may have one or a combination of the following:
- Abnormal heart rate response to increased oxygen demand
- Decreased ejection fraction (30%-50%)
- Exercise-induced myocardial ischemia (1-2 mm ST segment, depression)
- Functional capacity of less than or equal to 5 to 6 metabolic equivalent units (METs)
- Hypertensive blood pressure response to increased oxygen demand
- Nonmalignant arrhythmias
- Symptomatic response to increased oxygen demand

INCLUDES patients/clients with:
- Angioplasty or atherectomy
- Cardio-myopathy
- Coronary artery bypass grafting
- Coronary artery disease
- Hypertensive heart disease
- Uncomplicated myocardial infarction
- Valvular heart disease

EXCLUDES patients/clients with:
- Age of fewer than 4 months
- Airway clearance impairment
- Heart failure
- Mechanical ventilation

Examination 92  Evaluation, Diagnosis, and Prognosis 97  Interventions 98  Reexamination 101  Outcomes 101  Criteria for Discharge 102
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
• Age
• Primary language
• Race/ethnicity
• Sex

Social History
• Cultural beliefs and behaviors
• Family and caregiver resources
• Social interactions, social activities, and support systems

Occupation/Employment
• Current and prior community and work (job/school) activities

Growth and Development
• Hand and foot dominance
• Developmental history

Living Environment
• Living environment and community characteristics
• Projected discharge destinations

History of Current Condition
• Concerns that led patient/client to seek the services of a physical therapist
• Concerns or needs of patient/client who requires the services of a physical therapist
• Current therapeutic interventions
• Mechanisms of injury or disease, including date of onset and course of events
• Onset and pattern of symptoms
• Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
• Patient/client, family significant other, and caregiver perceptions of patient's/clients emotional response to the current clinical situation

Functional Status and Activity Level
• Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
• Sleep patterns and positions

Medications
• Medications for current condition for which patient/client is seeking the services of a physical therapist
• Medications for other conditions

Other Tests and Measures
• Laboratory and diagnostic tests
• Review of available records
• Review of nutrition and hydration
Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:
- Physiologic and anatomic status
  - Cardiopulmonary
  - Integumentary
  - Musculo-skeletal
  - Neuromuscular
- Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of perceived exertion, dyspnea, or angina during activity, using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, 6-minute walk test, 3-minute step test)
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Auscultation of major vessels for bruits
- Claudication time tests
- Interpretation of blood gas analysis or oxygen consumption (VO2) studies
- Monitoring via telemetry during activity
- Palpation of pulses
- Performance or analysis of an electrocardiogram
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of body fat composition using calipers, underwater weighing tanks, or electrical impedance
- Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
- Assessment of level of consciousness
- Assessment of orientation to time, person, place, and situation
- Screening for level of cognition (e.g., to determine ability to process commands, to measure safety awareness)

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of patient/client and caregiver ability to care for device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of environment and tasks
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- IADL scales or indexes
- Observation of responses to non-routine occurrences
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (e.g., rehabilitation counselor, social worker, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
- Analysis of physical space using photography or videotape
- Assessment of current and potential barriers
- Measurement of physical space
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
Ergonomics and Body Mechanics

Ergonomics:
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of safety in work (job/school/play) environments
- Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
- Assessment of work (job/school/play) performance through batteries of tests
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Ergonomic analysis of the work and its inherent tasks or activities, including:
  - analysis of repetition/work/rest cycling during task or activity
  - assessment of tools, devices, or equipment used
  - assessment of vibration
  - assessment of workstation
  - computer-assisted motion analysis of performance of selected movements or activities
  - identification of essential functions of task or activity
  - identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress
- Videotape analysis of patient/client at work (job/school/play)

Body Mechanics:
- Observation of performance of selected movements or activities

Gait, Locomotion, and Balance
- Analysis of arthro-kinematic, biomechanical, kinematic and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Gait, locomotion, and balance profiles

Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of pain and soreness
- Assessment of soft tissue swelling, inflammation, or restriction

Motor Function (Motor Control and Motor Learning)
- Analysis of gait, locomotion, and balance
- Motor assessment scales
- Physical performance scales

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Assessment of muscle tone
- Assessment of pain and soreness

Neuro-motor Development and Sensory Integration
- Analysis of reflex movement patterns
- Assessment of behavioral response
- Assessment of oro-motor function, phonation, and speech production

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other
professionals concerning use of or need for device.

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of muscle soreness
- Assessment of pain perception (eg, phantom pain)
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, and visual analog scales

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
- Assessment of normal reflexes (eg, stretch reflex) Assessment of pathologic reflexes (eg, Babinski’s reflex)

Self-Care and Home Management (Including ADL and IADL)
- ADL scales or indexes
- Analysis of adaptive skills
- Analysis of environment and tasks
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Assessment of ability to transfer
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Ventilation, Respiration (Gas Exchange), and Circulation
- Analysis of thoraco-abdominal movements and breathing patterns at rest, during activity, and during exercise
- Assessment and classification of edema through volume and girth measurements
- Assessment of ability to clear airway
- Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
- Assessment of capillary refill time
- Assessment of cough and sputum
- Assessment of perceived exertion and dyspnea
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of chest wall mobility, expansion, and excursion
- Assessment of ventilatory muscle strength, power, and endurance
- Assessment of cyanosis
- Auscultation of the heart
- Auscultation of major vessels for bruits
- Auscultation and mediate percussion of the lungs
- Interpretation of blood gas analysis or oxygen consumption ($V_O_2$) studies
- Palpation of chest wall (eg, tactile fremitus, pain, diaphragmatic motion)
- Palpation of pulses
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Within 12 weeks, patient/client will have a functional capacity of greater than or equal to 6 metabolic equivalent units (METS), will recognize signs and symptoms of cardiovascular compromise, will be independent and safe with an aerobic exercise program, and will be able to identify his or her own risk factors for heart disease and the interventions required to modify those risk factors.

Expected Range of Number of Visits Per Episode of Care, 3 to 30
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 3 to 30 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
Intervention
Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation
Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (e.g., rehabilitation counselor, Worker’s Compensation claims manager, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction
Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregiver in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Aerobic capacity is increased.
• Ability to perform physical tasks related to self-care, home management, community and work or school/play integration or reintegration, and leisure activities is increased.
• Physical function and health status are improved.
• Physiologic response to increased oxygen demand is improved.
• Strength, power, and endurance are increased.
• Symptoms associated with increased oxygen demand are decreased.

Specific Direct Interventions
• Aerobic endurance activities using ergometers, treadmills, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Body mechanics and ergonomics training
• Breathing exercises and ventilatory muscle training
• Conditioning and reconditioning
• Developmental activities training
• Gait, locomotion, and balance training
• Posture awareness training
• Strengthening:
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADI)
Anticipated Goals
• Ability to perform physical tasks related to self-care and home management (including ADL and IADI) is increased.
• Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
• Safety is improved during self-care and home management tasks and activities.

Specific Direct Interventions
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• Assistive and adaptive device and equipment training
• Injury prevention or reduction training
• IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
• Orthotic, protective, or supportive devices and equipment training
Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)

**Anticipated Goals**
- Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities are increased.
- Costs of work-related injury or disability are reduced.
- Risk of recurrence is reduced.
- Safety is improved during performance of community and work (job/school/play) tasks and activities.
- Utilization and cost of health care services are decreased.

**Specific Direct Interventions**
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction
- Injury prevention or reduction training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Job simulation
- Assistive and adaptive device or equipment training
- Orthotic, protective, or supportive device or equipment training

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.

**Specific Direct Interventions**
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Prostheses (eg, artificial limbs)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, corsets, neck collars, serial casts, elastic wraps, oxygen)

Airway Clearance Techniques

**Anticipated Goals**
- Airway clearance is improved.
- Exercise tolerance is improved.
- Risk of secondary complications is reduced.
- Ventilation, respiration (gas exchange), and circulation are improved.

**Specific Direct Interventions**
- Assistive cough techniques
- Techniques to maximize ventilation (eg, maximum inspiratory hold, staircase breathing, manual hyperinflation)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient's/client's expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with cardiovascular pump dysfunction is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Level of patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Aerobic Capacity and Endurance Associated With Cardiovascular Pump Failure

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients who have impaired aerobic capacity associated with cardiovascular pump failure and who may have any one or a combination of the following:
- Abnormal heart rate response to increased oxygen demand
- Complex ventricular arrhythmias
- Ejection fraction of less than 30%
- Flat or falling blood pressure response to increased oxygen demand
- Functional capacity of less than or equal to 4 or 5 metabolic equivalent units (METs)
- Severe exercise-induced myocardial ischemia (>2 mm ST segment, depression)
- Symptomatic response to increased oxygen demand

INCLUDES patients/clients with:
- Atrio-ventricular block
- Cardiogenic shock
- Cardio-myopathy
- Complicated myocardial infarction

EXCLUDES patients/clients with:
- Age of fewer than 4 months
- Mechanical ventilation
- Membrane oxygenator
- Intra-aortic balloon pump support
- Left ventricular assist device
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
• Age
• Primary language
• Race/ethnicity
• Sex

Social History
• Cultural beliefs and behaviors
• Family and caregiver resources
• Social interactions, social activities, and support systems

Occupation/Employment
• Current and prior community and work (job/school) activities

Growth and Development
• Hand and foot dominance
• Developmental history

Living Environment
• Living environment and community characteristics
• Projected discharge destinations

History of Current Condition
• Concerns that led patient/client to seek the services of a physical therapist
• Concerns or needs of patient/client who requires the services of a physical therapist
• Current therapeutic interventions
• Mechanisms of injury or disease, including date of onset and course of events
• Onset and pattern of symptoms
• Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
• Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
• Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
• Sleep patterns and positions

Medications
• Medications for current condition for which patient/client is seeking the services of a physical therapist
• Medications for other conditions

Other Tests and Measures
• Laboratory and diagnostic tests
• Review of available records
• Review of nutrition and hydration

Past History of Current Condition
• Prior therapeutic interventions
• Prior medications
Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Communication, affect, cognition, language, and learning style
- Integumentary
- Musculo-skeletal
- Neuromuscular

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, &minute walk test, 3-minute step test)
- Assessment of perceived exertion, dyspnea, or angina during activity, using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Auscultation of major vessels for bruits
- Claudication time tests
- Interpretation of blood gas analysis or oxygen consumption (V\textsubscript{O}2) studies
- Monitoring via telemetry during activity
- Palpation of pulses
- Performance or analysis of an electrocardiogram
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of body fat composition, using calipers, underwater weighing tanks, or electrical impedance
- Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
- Assessment of level of consciousness
- Assessment of orientation to time, person, place, and situation
- Screening for level of cognition (e.g., to determine ability to process commands, to measure safety awareness)

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of patient/client and caregiver ability to care for device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADI)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of environment and tasks
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- IADL scales or indexes
- Observation of responses to non-routine occurrences
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (e.g., Social Workers, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
- Assessment of current and potential barriers
- Measurement of physical space
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics
Ergonomics:
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of safety in work (job/school/play) environments

Body Mechanics:
- Observation of performance of selected movements or activities
Gait, Locomotion, and Balance
- Analysis of arthro-kinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
- Analysis of wheelchair management and mobility
- Gait, locomotion, and balance profiles

Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of soft tissue swelling, inflammation, or restriction
- Assessment of pain and soreness

Motor Function (Motor Control and Motor Learning)
- Motor assessment scales
- Physical performance scales
- Analysis of gait, locomotion, and balance

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of muscle soreness
- Assessment of pain perception (eg, phantom pain)
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, and visual analog scales

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
- Assessment of normal reflexes (eg, stretch reflex)
- Assessment of pathological reflexes (eg, Babinski’s reflex)
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Assessment of muscle tone
- Assessment of pain and soreness
Neuromotor Development and Sensory Integration
• Analysis of gait and posture
• Analysis of reflex movement patterns
• Assessment of behavioral response
• Assessment of oro-motor function, phonation, and speech production

Self-Care and Home Management (Including ADI and IADI)
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• ADL scales and indexes
• Analysis of adaptive skills
• Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
• Analysis of environment and tasks
• Assessment of ability to transfer
• Assessment of autonomic responses to positional changes
• Assessment of functional capacity
• Assessment of physiologic responses during self-care and home management activities
• Review of daily activities logs
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Ventilation, Respiration (Gas Exchange), and Circulation
• Analysis of thoraco-abdominal movements and breathing patterns at rest, during activity, and during exercise
• Assessment of ability to clear airway
• Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
• Assessment of capillary refill time
• Assessment classification of edema through volume and girth measurements
• Assessment of cough and sputum
• Assessment of perceived exertion and dyspnea
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
• Assessment of chest wall mobility, expansion, and excursion
• Assessment of ventilatory muscle strength, power, and endurance
• Assessment of cyanosis
• Auscultation of the heart
• Auscultation of major vessels for bruits
• Auscultation and mediate percussion of the lungs
• Interpretation of blood gas analysis or oxygen consumption (VO2I) studies
• Palpation of chest wall (eg, tactile fremitus, pain, and diaphragmatic motion)
• Palpation of pulses
• Pulse oximetry
• Tests and measures of pulmonary function and ventilatory mechanics
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Within 12 weeks, patient/client will have increased functional capacity; will be independent and safe with an aerobic exercise program; will be able to identify signs and symptoms of cardiac compromise and his or her own risk factors for heart disease and the interventions that modify those risks; and will demonstrate improved participation in activities of daily living (ADL) and instrumental activities of daily living (IADL) without exacerbation of signs and symptoms.

Expected Range of Number of Visits Per Episode of Care 14 to 44
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 14 to 44 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
Intervention

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation

Anticipated Goals

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant others; and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals, and other interested persons (e.g., Social Workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction

Anticipated Goals

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family significant others, and caregivers is improved.
- Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

**Specific Interventions**
- Demonstration by patient/client or caregiver in the appropriate environment
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities are increased.
- Joint integrity and mobility are improved.
- Performance of and independence in ADL and IADL are increased.
- Physiologic response to increased oxygen demand is improved.
- Safety is improved.
- Self-management of symptoms is improved.
- Strength, power, and endurance are increased.
- Symptoms associated with increased oxygen demand are decreased.

**Specific Direct Interventions**
- Aerobic endurance activities
- Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Gait, locomotion, and balance training
- Posture awareness training
- Strengthening:
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

**Functional Training in Self-Care and Home Management (Including ADL and IADI)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Utilization and cost of health care services are decreased.

**Specific Direct Interventions**
- ADL training (e.g., bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- IADL training (e.g., maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device and equipment training
- Prosthetic device or equipment training
Functional Training in Community and Work (Job/School/Play) Integration or Reintegration
(Including IADL, Work Hardening, and Work Conditioning)

Anticipated Goals
- Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities are increased.
- Safety is improved during performance of community and work (job/school/play) tasks and activities.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions
- Assistive and adaptive device or equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction
- Injury prevention or reduction training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Job simulation
- Orthotic, protective, and supportive device or equipment training
- Prosthetic device or equipment training

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment
(Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Ability to perform physical tasks is increased.
- Intensity of care is decreased.
- Joint integrity and mobility are improved.
- Level of supervision required for task performance is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Risk of secondary impairments is reduced.
- Safety is improved.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, corsets, neck collars, serial casts, elastic wraps, oxygen)
Reexamination

The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes

Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/clients’ expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with cardiovascular pump failure is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Level of patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achievable in consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Ventilation, Respiration (Gas Exchange), and Aerobic Capacity and Endurance Associated With Ventilatory Pump Dysfunction

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession's code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with impaired respiration (gas exchange), ventilation, respiratory muscle performance (strength, power, endurance), and airway clearance accompanied by impaired aerobic capacity and functional limitation. Patients/clients may have any one or a combination of the following:
- Abnormal respiratory rate and pattern
- Change in baseline breath sounds
- Decreased strength or endurance of ventilatory muscles
- Decreased vital capacity or tidal volume
- Dyspnea
- Frequent or recurring pulmonary infection
- Impaired cough
- Impaired gas exchange
- Impaired performance of activities of daily living (ADL) or instrumental activities of daily living (IADL)
- Impaired posture
- Impaired secretion clearance

INCLUDES patients/clients with:
- Acute or chronic oxygen dependency
- Chronic obstructive pulmonary disease (COPD)
- Diaphragmatic disorders
- Intermittent negative pressure or assistive ventilatory support
- Musculo-skeletal disorders affecting ventilation
- Neuromuscular disorders affecting ventilation
- Status pre-lung transplant
- Restrictive lung disease
- Tracheotomy/micro-tracheotomy

EXCLUDES patients/clients with:
- Acute respiratory failure
- Age of fewer than 4 months
- Mechanical ventilator dependency, 24 hours per day
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration
Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardio-pulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculo-skeletal Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, 6-minute walk test, 3-minute step test)
- Assessment of perceived exertion, dyspnea, or angina during activity, using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Interpretation of blood gas analysis or oxygen consumption (VO2) studies
- Monitoring via telemetry during activity
- Palpation of pulses
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
- Assessment of level of consciousness
- Assessment of orientation to time, person, place, and situation

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADI)
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- Observation of responses to non-routine occurrences
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (e.g., Social Worker, employer)

Cranial Nerve Integrity
- Assessment of gag reflex
- Assessment of swallowing

Environmental, Home, and Work (Job/School/Play) Barriers
- Assessment of current and potential barriers
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Integumentary Integrity
For skin associated with integumentary disruption:
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of continuity of skin color (e.g., redness in lightly pigmented skin, violaceous coloration in darkly pigmented skin)
- Assessment of nail beds

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Assessment of muscle tone
- Assessment of pain and soreness

Neuromotor Development and Sensory Integration
- Analysis of gait and posture
- Assessment of behavioral response
• Assessment of motor function (motor control and motor learning)
• Assessment of oromotor function, phonation, and speech production

Orthotic, Protective, and Supportive Devices
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
• Analysis of pain behavior and reaction during specific movements and provocation tests
• Assessment of muscle soreness
• Assessment of pain perception (eg, phantom pain)
• Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, and visual analog scales

Posture
• Analysis of resting posture in any position
• Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography videotape, or visual analysis

Self-Care and Home Management (Including ADL and IADL)
• ADL scales and indexes
• Analysis of adaptive skills
• Analysis of environment and tasks
• Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
• Assessment of ability to transfer
• Assessment of autonomic responses to positional changes
• Assessment of functional capacity
• Assessment of physiologic responses during self-care and home management activities
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Ventilation, Respiration (Gas Exchange), and Circulation
• Analysis of thoraco-abdominal movements and breathing patterns at rest, during activity, and during exercise
• Assessment of ability to clear airway
• Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
• Assessment of capillary refill time
• Assessment of cough and sputum
• Assessment of perceived exertion and dyspnea
• Assessment of phonation
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
• Assessment of chest wall mobility, expansion, and excursion
• Assessment of ventilatory muscle strength, power, and endurance
• Assessment of cyanosis
• Auscultation of the heart
• Auscultation of major vessels for bruits
• Auscultation and mediate percussion of the lungs
• Interpretation of blood gas analysis or oxygen consumption (V0₂) studies
• Palpation of chest wall (eg, tactile fremitus, pain, diaphragmatic motion)
• Pulse oximetry
• Tests and measures of pulmonary function and ventilatory mechanics
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Within 10 weeks, patient/client will have maximized ventilatory muscle strength, endurance, and aerobic capacity, as demonstrated by maximal ventilatory independence, absence of secretions, and maximal independence in activities of daily living (ADL) and instrumental activities of daily living (IADL).

Expected Range of Number of Visits Per Episode of Care, 10 to 65
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 10 to 65 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
Intervention

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation

Anticipated Goals

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family; significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family; significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family; significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (eg, Social Workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction

Anticipated Goals

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family; significant others and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family significant others, and caregivers is improved.
- Self-management of symptoms is improved.
Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by patient/client or caregiver in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Airway clearance is improved.
- Atelectasis is decreased.
- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities are increased.
- Endurance is increased.
- Joint integrity and mobility are improved.
- Need for ventilatory assistance is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Physiologic response to oxygen demand is improved.
- Strength, power, and endurance of the ventilatory muscles are increased.
- Symptoms associated with increased oxygen demand are decreased.
- Work of breathing is decreased.

**Specific Direct Interventions**
- Aerobic endurance activities using ergometers, treadmills, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Balance and coordination training
- Body mechanics and ergonomics training
- Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Developmental activities training
- Neuromuscular relaxation, inhibition, and facilitation
- Posture awareness training
- Strengthening:
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

**Functional Training in Self-Care and Home Management (Including ADL and IADI)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of self-care and home management tasks and activities.
- Tolerance to positions and activities is increased.
Specific Direct Interventions
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI, Work Hardening, and Work Conditioning)
Anticipated Goals
- Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities is increased.
- Costs of work-related injury or disability are reduced.
- Safety is improved during performance of community and work (job/school/play) tasks and activities.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Assistive and adaptive device and equipment training
- Environmental, community, work (job/school/play), and leisure task adaptation
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device and equipment training

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)
Anticipated Goals
- Ability to perform physical tasks is increased.
- Joint integrity and mobility are improved.
- Performance and independence in ADL and LADL are increased.
- Physical function and health status are improved.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, corsets, neck collars, serial casts, elastic wraps, oxygen)

Airway Clearance Techniques
Anticipated Goals
- Airway clearance is improved.
- Cough is improved.
- Risk of recurrence of condition is prevented.
- Risk of secondary complications is reduced.
- Ventilation, respiration (gas exchange), and circulation are improved.
- Work of breathing is decreased.

Specific Direct Interventions
- Active cycle of breathing/forced expiratory technique
- Assistive cough techniques
- Assistive devices for airway clearance (eg, flutter valve)
- Autogenic drainage
- Breathing strategies (eg, training in paced breathing, pursed-lip breathing)
- Chest percussion, vibration, and shaking
- Forced expiratory techniques
- Pulmonary postural drainage and positioning
- Suctioning
• Techniques to maximize ventilation (e.g., maximum inspiratory hold, staircase breathing, manual hyperinflation)

Physical Agents and Mechanical Modalities
Anticipated Goals
• Independence in airway clearance is increased.

Specific Direct Interventions
Mechanical modalities:
• Mechanical percussors
• Tilt table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (e.g., worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with ventilatory pump dysfunction is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Level of patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Ventilation With Mechanical Ventilation Secondary to Ventilatory Pump Dysfunction

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group,
Patients/clients who are ventilator dependent with impaired ventilatory pump and decreased aerobic capacity and who may have associated impaired airway clearance.

Patients/clients may have any one or a combination of the following:
- Abnormal or adventitious breath sounds
- Abnormal physiologic response to increased oxygen demand
- Decreased strength or endurance of respiratory muscles
- Airway clearance dysfunction secondary to artificial airway
- Impaired performance of activities of daily living (ADL) or instrumental activities of daily living (IADL)

INCLUDES patients/clients with (when not on mechanical ventilator):
- Abnormal respiratory rate and tidal volume at rest
- Dyspnea
- Dyssynchronous or paradoxical breathing
- Neuromuscular disorders
- Progressive decrease in arterial oxygen pressure and increase in arterial carbon dioxide pressure
- Ventilatory pump failure or chronic obstructive pulmonary disease (COPD)

INCLUDES patients/clients with:
- Mechanical ventilator dependency, 24 hours per day

EXCLUDES patients/clients with:
- Acute respiratory failure
- Adult respiratory distress syndrome
- Age of fewer than 4 months
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors. For clinical indications and types of data generated by the tests and measures, refer to Part One, Chapter 2.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant others, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration
Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculo-skeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of perceived exertion, dyspnea, or angina during activity, using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Interpretation of blood gas analysis or oxygen consumption (VO₂) studies
- Monitoring via telemetry during activity
- Performance or analysis of an electrocardiogram
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Anthropometric Characteristics
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
- Assessment of level of consciousness
- Assessment of orientation to time, person, place, and situation
- Screening for level of cognition (e.g., to determine ability to process commands, to measure safety awareness)

Assistive and Adaptive Devices
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration / Reintegration (Including IADL)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of environment and work (job/school/play) tasks
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during community, work, and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- Observation of responses to non-routine occurrences
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (e.g., Social Workers, employer)

Cranial Nerve Integrity
- Assessment of gag reflex
- Assessment of muscles innervated by the cranial nerves
- Assessment of swallowing

Environmental, Home, and Work (Job/School/Play) Barriers
- Analysis of physical space using photography or videotape
- Assessment of current and potential barriers
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics

Ergonomics:
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of dexterity and coordination
- Assessment of safety in work (job/school/play) environments
- Assessment of work (job/school/play) performance through batteries of tests
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities

Body Mechanics:
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Observation of performance of selected movements or activities
Gait, Locomotion, and Balance
- Analysis of arthro-kinematic, biomechanical, kinematic and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Assessment of autonomic responses to positional changes
- Assessment of safety
- Gait, locomotion, and balance profiles
- Identification and quantification of gait characteristics
- Identification and quantification of static and dynamic balance characteristics

Integumentary Integrity
For skin associated with integumentary disruption:
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of continuity of skin color (e.g., redness in lightly pigmented skin, violaceous coloration in darkly pigmented skin)
- Assessment of nail beds
- Assessment of sensation (e.g., pain, temperature, tactile)
- Assessment of tissue mobility, turgor, and texture

Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movements

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance by manual testing or dynamometry
- Assessment of muscle tone
- Assessment of pain and soreness

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of pain perception (e.g., phantom pain)
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, and visual analog scales

Posture
- Analysis of resting posture in any position

Range of Motion (ROM) (Including Muscle Length)
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics
Reflex Integrity
- Assessment of normal reflexes (e.g., stretch reflex)
- Assessment of pathological reflexes (e.g., Babinski reflex)
- Assessment of postural, postural, equilibrium, and righting reactions

Self-Care and Home Management (Including ADL and IADL)
- ADL scales or indexes
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of self-care in unfamiliar environments
- Assessment of ability to transfer
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals

Ventilation, Respiration (Gas Exchange), and Circulation
- Analysis of thoraco-abdominal movements and breathing patterns at rest, during activity, and during exercise
- Assessment of ability to clear airway
- Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
- Assessment of capillary refill time
- Assessment of cough and sputum
- Assessment of perceived exertion and dyspnea
- Assessment of standard vital signs (e.g., blood pressure, heart rate, and respiratory rate) at rest and during and after activity
- Assessment of chest wall mobility, expansion, and excursion
- Assessment of ventilatory muscle strength, power, and endurance
- Assessment of cyanosis
- Auscultation of the heart
- Auscultation and mediate percussion of the lungs
- Interpretation of blood gas analysis or oxygen consumption (VO2) studies
- Palpation of pulses
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Within 3 weeks, patient/client with acute reversible ventilatory pump failure will be weaned from mechanical ventilation and will demonstrate improved ventilatory muscle performance. Patient/client with show an absence of secretions or be able to independently clear secretions and will demonstrate independence in activities of daily living (ADL) and instrumental activities of daily living (IADL).

Within 8 weeks, patient/client with prolonged ventilatory pump failure will be weaned from the mechanical ventilator and will demonstrate improved ventilatory muscle performance. Patient/client will show an absence of secretions or be able to clear independently or with caregiver assistance and will demonstrate independence in ADL and IADL.

Patient/client with severe or chronic ventilatory pump failure will remain on mechanical ventilation and within 8 weeks will be able to perform ADL and IADL with caregiver assistance. Patient/client will show an absence of secretions or be able to clear secretions with caregiver assistance.

Expected Range of Number of Visits Per Episode of Care, 5 to 20, 20 to 40, 10 to 60
These ranges represent the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within these ranges during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
• Ability to transfer instruction to motor learning
• Accessibility of resources
• Age
• Availability of resources
• Caregiver (eg, family home health aide) consistency or expertise
• Chronicity or severity of condition
• Co-morbidities
• Level of patient/client adherence to the intervention program
• Preexisting systemic conditions or diseases
• Psychosocial and socioeconomic stressors
• Support provided by family unit
Intervention
Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.
Coordination, Communication, and Documentation

Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (e.g., rehabilitation counselor, Worker’s Compensation claims manager, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction

Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family significant others, and caregivers is improved.
Self-management of symptoms is improved.
Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities are increased.
- Atelectasis is decreased.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.
- Need for assistive equipment or device (mechanical ventilator) is decreased.
- Self-management of symptoms is improved.
- Strength, power, and endurance of ventilatory muscles are increased.
- Symptoms associated with increased oxygen demand are increased.
- Tissue perfusion and oxygenation are increased.
- Tolerance for positions is increased.
- Work of breathing is decreased.

**Specific Direct Interventions**
- Aerobic endurance activities using ergometers, treadmills, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Balance and coordination training
- Body mechanics and ergonomics training
- Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Motor function (motor control and motor learning) training or retraining
- Neuro-muscular reeducation
- Neuro-muscular relaxation, inhibition, and facilitation
- Posture awareness training
- Sensory training or retraining
- Strengthening
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching
Functional Training in Self-Care and Home Management (Including ADL and IADL)

Anticipated Goals
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Performance of and independence in ADL and IADL are increased.
- Safety is improved during performance of self-care and home management tasks and activities.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- ADL training (e.g., bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- IADL training (e.g., maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device and equipment training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)

Anticipated Goals
- Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities is increased.
- Costs of work-related injury or disability are reduced.
- Safety is improved during performance of community and work (job/school/play) tasks and activities.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- ADL training (e.g., bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- IADL training (e.g., maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Injury prevention or reduction training
- Job simulation
- Orthotic, protective, or supportive device and equipment training

Manual Therapy Techniques (Including Mobilization and Manipulation)

Anticipated Goals
- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Muscle spasm is reduced.
- Risk of secondary impairments is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Joint mobilization and manipulation
- Passive range of motion
- Soft tissue mobilization and manipulation

Prescription, Application and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Ability to perform physical tasks is increased.
- Motor function (motor control and motor learning) is improved.
- Performance of and independence in ADL and IADL are increased.
- Safety is improved.
- Tolerance to positions and activities is increased.
Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long
  handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, heimets)
- Supportive devices or equipment (eg, supportive taping, corsets, neck collars, serial casts, elastic
  wraps, oxygen)

Airway Clearance Techniques
Anticipated Goals
- Airway clearance is improved.
- Cough is improved.
- Physical function and health status are improved.
- Secondary complications are decreased.
- Ventilation, respiration (gas exchange), and circulation are improved.
- Work of breathing is decreased.

Specific Direct Interventions
- Assistive cough techniques
- Autogenic drainage
- Chest percussion, vibration, and shaking
- Breathing strategies (eg, paced breathing, pursed-lip breathing)
- Forced expiratory techniques
- Pulmonary postural drainage and positioning
- Suctioning
- Techniques to maximize ventilation (eg, maximal inspiratory hold, staircase breathing, manual
  hyperinflation)

Electrotherapeutic Modalities
Anticipated Goals
- Ability to perform physical tasks is increased.
- Muscle performance is increased.

Specific Direct Interventions
- Biofeedback
- Electrical muscle stimulation
- Functional electrical stimulation (FES)

Physical Agents and Mechanical Modalities
Anticipated Goals
- Independence in airway clearance is increased.

Specific Direct Interventions

Mechanical modalities:
- Mechanical percussors
- Tilt table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient/’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with ventilatory pump dysfunction is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Ventilation and Respiration (Gas Exchange) with Potential for Respiratory Failure

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA emphasizes that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with acute respiratory distress and impaired ventilatory pump and gas exchange, with potential for respiratory failure;

Patients/clients may have one or a combination of the following:
- Abnormal or adventitious breath sounds
- Central signs of cyanosis
- Dyspnea
- Dyssynchronous or paradoxical breathing pattern at rest
- Lethargy or confusion
- Oxygen saturation levels of less than 92% at rest
- Respiratory rate of greater than 32 at rest
- Use of accessory muscles at rest

INCLUDES patients/clients with:
- Acute or chronic neuromuscular dysfunction or trauma
- Acute pulmonary disease
- Asthma
- Chronic obstructive pulmonary disease (COPD)
- Cystic fibrosis
- Pneumonia
- Thoracic trauma

EXCLUDES patients/clients with:
- Age of fewer than 4 months
- Mechanical ventilation
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration
Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculo-skeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style
Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of perceived exertion, dyspnea, or angina during activity, using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdonunal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Auscultation of major vessels for bruits
- Monitoring via telemetry during activity
- Performance or analysis of an electrocardiogram
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics

Anthropometric Characteristics
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
- Assessment of level of consciousness
- Assessment of orientation to time, person, place, and situation

Cranial Nerve Integrity
- Assessment of gag reflex
- Assessment of swallowing

Ergonomics and Body Mechanics
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of safety in work (job/school/play) environments

Gait, Locomotion, and Balance
- Analysis of wheelchair management and mobility
- Assessment of autonomic responses to positional changes
- Assessment of safety

Integumentary Integrity
For skin associated with integumentary disruption:
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of continuity of skin color (eg, redness in lightly pigmented skin, violescent coloration in darkly pigmented skin)
- Assessment of nail beds

Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of pain and soreness

Motor Function (Motor Control and Motor Learning)
- Analysis of head, trunk, and limb movement
- Analysis of posture during sitting, standing, and locomotor activities appropriate for age (eg, walking, hopping, skipping)
- Assessment of autonomic responses to positional changes
Muscle Performance (Including Strength, Power, and Endurance)
• Analysis of functional muscle strength, power, and endurance
• Assessment of pain and soreness

Orthotic, Protective, and Supportive Devices
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
• Analysis of pain behavior and reaction during specific movements and provocation tests
• Assessment of muscle soreness
• Assessment of pain perception (eg, phantom pain)
• Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, and visual analog scales

Posture
• Analysis of resting posture in any position

Reflex Integrity
• Assessment of normal reflexes (eg, stretch reflex)
• Assessment of pathological reflexes (eg, Babinski’s reflex)

Self-Care and Home Management (Including ADI and IADL)
• Analysis of adaptive skills
• Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
• Assessment of ability to transfer

Ventilation, Respiration (Gas Exchange), and Circulation
• Analysis of thoraco-abdominal movements and breathing patterns at rest, during activity, and during exercise
• Assessment of ability to protect the airway
• Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
• Assessment of capillary refill time
• Assessment of cough and sputum
• Assessment of perceived exertion and dyspnea
• Assessment of phonation
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
• Assessment of chest wall mobility, expansion, and excursion
• Assessment of ventilatory muscle strength, power, and endurance
• Assessment of cyanosis
• Auscultation of the heart
• Auscultation of major vessels for bruits
• Auscultation and mediate percussion of the lungs
• Interpretation of blood gas analysis or oxygen consumption (VO\text{2}) studies
• Palpation of chest wall (eg, tactile fremitus, pain, diaphragmatic motion)
• Pulse oximetry
• Tests and measures of pulmonary function and ventilatory mechanics
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Within 72 hours, patient/client will have adequate gas exchange, with ventilatory parameters indicating ability to ventilate independently, or patient/client will be placed on mechanical ventilation.

Expected Range of Number Visits Per Episode of Care, 1 to 9
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 1 to 9 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
Intervention

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation Anticipated Goals

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction Anticipated Goals

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family, significant others, and caregivers is improved.
- Self-management of symptoms is improved.
Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**
**Anticipated Goals**
- Atelectasis is decreased.
- Motor function (motor control and motor learning) is improved.
- Muscle performance is increased.
- Need for assistive device (mechanical ventilation) is decreased.
- Quality and quantity of movement between and across body segments are improved.

**Specific Direct Interventions**
- Breathing exercises and ventilatory muscle training
- Neuromuscular relaxation, inhibition, and facilitation
- Posture awareness training
- Strengthening active active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

**Functional Training in Self-Care and Home Management (Including ADL and IADI)**
**Anticipated Goals**
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of condition is reduced.

**Specific Direct Interventions**
- ADL training (eg, bed mobility and transfer training gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device training

**Manual Therapy Techniques (Including Mobilization and Manipulation)**
**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Quality and quantity of movement between and across body segments are improved.

**Specific Direct Interventions**
- Joint mobilization and manipulation
- Soft tissue mobilization and manipulation
- Therapeutic massage
Prescription, Application and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Ability to perform physical tasks is increased.
- Intensity of care is decreased.
- Joint integrity and mobility are improved.
- Level of supervision required for task performance is decreased.
- Motor function (motor control and motor learning) is improved with decreased dyspnea.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Risk of secondary impairments is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, corsets, neck collars, serial casts, elastic wraps, oxygen)

Airway Clearance Techniques

Anticipated Goals
- Airway clearance is improved.
- Cough is improved.
- Need for assistive device (mechanical ventilation) is decreased.
- Ventilation, respiration (gas exchange), and circulation is improved.
- Work of breathing is decreased.

Specific Direct Interventions
- Assistive cough techniques
- Autogenic drainage
- Breathing strategies (eg, paced breathing, pursed-lip breathing)
- Chest percussion, vibration, and shaking
- Forced expiratory techniques
- Pulmonary postural drainage and positioning
- Suctioning
- Techniques to maximize ventilation (eg, maximal inspiratory hold, staircase breathing, manual hyperinflation)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient's/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

**Functional Limitation/Disability**
- Health-related quality of life is improved.
- Optimal return to role function (e.g., worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with potential for respiratory failure is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

**Patient/Client Satisfaction**
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

**Secondary Prevention**
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

**Other secondary prevention outcomes include:**
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Ventilation and Respiration (Gas Exchange) With Mechanical Ventilation Secondary to Respiratory Failure

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients who are ventilator dependent with severely impaired gas exchange and impaired ventilatory pump associated with airway clearance impairment.

Patients/clients may have any one or a combination of the following:
- Abnormal or adventitious breath sounds
- Abnormal chest radiograph
- Airway clearance dysfunction
- Impaired respiration (gas exchange)

INCLUDES patients/clients with (when not on ventilator):
- Abnormal respiratory rate at rest
- Dys-synchronous or paradoxical breathing
- Inability to maintain arterial oxygen pressure (PaO₂) when receiving supplemental oxygen
- Progressive rise in arterial carbon dioxide pressure (PaCO₂)
- Severe dyspnea

INCLUDES patients/clients with:
- Acute respiratory failure
- Adult respiratory distress syndrome
- Cardio-thoracic surgery
- Immediate post-transplant (heart or lung or both)
- Multisystem failure
- Multisystem trauma
- Sepsis
- Severe pneumonia
- Thoracic trauma
- Transplant rejection, infection, or failure

EXCLUDES patients/clients with:
- Age of fewer than 4 months
- Cardiovascular pump failure

Examination 152
Evaluation, Diagnosis, and Prognosis 156
Intervention 157
Reexamination 160
Outcomes 160
Criteria for Discharge 161
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration
Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play] and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculo-skeletal Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of perceived exertion, dyspnca, or angina during activity, using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Monitoring via telemetry during activity
- Interpretation of blood gas analysis or oxygen consumption (V0_2) studies
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics

Anthropometric Characteristics
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth
Arousal, Attention, and Cognition

- Assessment of level of consciousness
- Assessment of orientation to time, person, place, and situation
- Screening for gross expressive (e.g., verbalization) deficits
- Screening for level of cognition (e.g., to determine ability to process commands, to measure safety awareness)

Assistive and Adaptive Devices

- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, significant others, family, caregivers, or other professionals concerning use of or need for device

Integumentary Integrity

For skin associated with integumentary disruption:

- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of continuity of skin color (e.g., redness in lightly pigmented skin, violaceous coloration in darkly pigmented skin)
- Assessment of nail beds
- Assessment of sensation (e.g., palm, temperature, tactile)
- Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (e.g., using thermistors)
- Assessment of tissue mobility turgor and texture

Joint Integrity and Mobility

- Analysis of the nature and quality of movement of the joint or body part during performance of specific movements
- Assessment of soft tissue swelling, inflammation, or restriction
- Assessment of pain and soreness

Motor Function (Motor Control and Motor Learning)

- Analysis of gait, locomotion, and balance
- Analysis of head, trunk, and limb movement
- Analysis of posture during sitting, standing, and locomotor activities appropriate for age (e.g., walking, hopping, skipping)
- Assessment of autonomic responses to positional changes

Muscle Performance (Including Strength, Power, and Endurance)

- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance by manual muscle testing or dynamometry
- Assessment of muscle tone
- Assessment of pain and soreness

Orthotic, Protective, and Supportive Devices

- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of muscle soreness
- Assessment of pain perception (eg, phantom pain)
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, and visual analog scales

Posture
- Analysis of resting posture in any position

Range of Motion (ROM) (Including Muscle Length)
- Analysis of multilevel movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
- Assessment of normal reflexes (eg, stretch reflex)
- Assessment of pathological reflexes (eg, Babinski's reflex)

Self-Care and Home Management (Including ADL and IADL)
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of self-care in unfamiliar environments
- Assessment of ability to transfer
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Ventilation, Respiration (Gas Exchange), and Circulation
- Analysis of thoraco-abdominal movements and breathing patterns at rest, during activity, and during exercise
- Assessment of ability to clear airway
- Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
- Assessment of capillary refill time
- Assessment of chest wall mobility, expansion, and excursion
- Assessment of cough and sputum
- Assessment of perceived exertion and dyspnea
- Assessment of phonation
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of ventilatory muscle strength, power, and endurance
- Assessment of cyanosis
- Auscultation of the heart
- Auscultation and mediate percussion of the lungs
- Palpation of chest wail (eg, tactile, fremitus pain, diaphragmatic motion)
- Palpation of pulses
- Interpretation of blood gas analysis or oxygen consumption (V0₂) studies
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics

Sensory Integrity (Including Proprioception and Kinesthesia)
- Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
- Assessment of gross receptive (eg, vision, hearing) abilities
- Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)
Evaluation, Diagnosis, and Prognosis

The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis

Within 72 hours, patient/client with acute reversible respiratory failure will be weaned from mechanical ventilation and will show an absence of secretions or be able to clear secretions independently, or caregiver will be able to manage the secretions and the chest radiograph will show significant improvement. Patient/client will demonstrate independence in activities of daily living (ADL) and instrumental activities of daily living (IADL).

Within 3 weeks, patient/client with prolonged respiratory failure will be weaned from mechanical ventilation and will show an absence of secretions or be able to clear secretions independently or with caregiver assistance. The chest radiograph will be clear, return to baseline, or show clearance of the acute process. Patient/client will demonstrate independence in ADL or IADL.

Patient/client with severe or chronic respiratory failure will remain mechanically ventilated indefinitely and within 4 to 6 weeks will demonstrate ability to clear secretions independently or with caregiver assistance. Patient/client will show improved participation in ADL and IADL.

Expected Range of Number of Visits Per Episode of Care, 3 to 9, 10 to 25, 10 to 45

These ranges represent the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within these ranges during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode

- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
Intervention
Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation
Anticipated Goals
- Accountability for services is increased
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family; significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction
Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family; significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family significant others, and caregivers is improved.
• Self management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Demonstration by patient/client or caregivers in the appropriate environment
• Use of audiovisual aids for both teaching and home reference
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Atelaclasis is decreased.
• Endurance is increased.
• Energy expenditure is decreased.
• Motor function (motor control and motor learning) is improved.
• Muscle performance is increased.
• Need for assistive device (mechanical ventilation) is decreased.
• Physiologic response to increased oxygen demand is improved.
• Tissue perfusion and oxygenation are increased.
• Work of breathing is decreased.

Specific Direct Interventions
• Aerobic endurance activities
• Breathing exercises and ventilatory muscle training
• Conditioning and reconditioning
• Neuromuscular relaxation, inhibition, and facilitation
• Strengthening
  • active
  • active assistive
  • resistive
• Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADI)
Anticipated Goals
• Intensity of care is decreased.
• Performance of and independence in ADL and IADL are increased.
• Level of supervision required for task performance is decreased.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• Assistive and adaptive device and equipment training
• Orthotic, protective, or supportive device training

Manual Therapy Techniques (Including Mobilization and Manipulation)
Anticipated Goals
• Joint integrity and mobility are improved.
• Pain is decreased.
• Risk of secondary impairments is reduced.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
• Connective tissue massage
• Passive range of motion
• Soft tissue mobilization and manipulation
• Therapeutic massage
Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Deformities are prevented.
- Loading on a body part is decreased.
- Protection of body parts is increased.
- Safety is improved.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handed reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Prosthetic devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, corsets, neck collars, serial casts, elastic wraps, oxygen)

Airway Clearance Techniques

Anticipated Goals
- Airway clearance is improved.
- Ventilation, respiration (.gas exchange), and circulation are improved.
- Work of breathing is decreased.

Specific Direct Interventions
- Assistive cough techniques
- Breathing strategies (eg, paced breathing, pursed-lip breathing)
- Chest percussion, vibration, and shaking
- Pulmonary postural drainage and positioning
- Suctioning
- Techniques to maximize ventilation (eg, maximal inspiratory hold, staircase breathing, manual hyperinflation)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient's/client's expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with respiratory failure is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Ventilation, Respiration (Gas Exchange), and Aerobic Capacity and Endurance Secondary to Respiratory Failure in the Neonate

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients who are neonates or in early infancy (e.g., up to 4 months of age) who have impaired gas exchange and ventilatory pump related to prematurity, postmaturity, congenital heart, lung, or diaphragm abnormalities, infection, complications of medical management, or impairments secondary to other systemic dysfunctions.

These patients often require mechanical ventilation and may have any one or a combination of the following, on or off the ventilator:
- Apnea and bradycardia
- Cyanosis
- Impaired airway clearance
- Impaired cough
- Impaired respiration (gas exchange)
- Increased work of breathing
- Paradoxical and abnormal breathing pattern
- Physiologic intolerance of routine care

INCLUDES patients with:
- Abdominal/thoracic surgery
- Bronchopulmonary dysplasia
- Congenital anomalies
- Hyaline membrane disease
- Intermittent or continuous ventilatory support
- Meconium aspiration syndrome
- Neurovascular disorders
- Pneumonia

EXCLUDES patients with:
- Age of more than 4 months

Examination 163  Evaluation, Diagnosis, and Prognosis 167  Intervention 168  Reexamination 171  Outcomes 171  Criteria for Discharge 172
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family; significant other, and caregiver perceptions of patient’s/clients emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications
Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play] and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
- Assessment of ability to control body temperature
- Assessment of autonomic responses to positional changes
- Assessment of signs of infant respiratory distress (eg, sternal and intercostal retractions, nasal flaring, paradoxical breathing pattern, expiratory grunting, cyanosis, pallor, apnea, bradycardia, head bobbing) at rest, during activity (eg, routine care, evaluation, and treatment), and during recovery
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Auscultation of the heart
- Auscultation of the lungs
- Interpretation of blood gas analysis or oxygen consumption \( (V_O_2) \) studies
- Monitoring via telemetry during activity
- Performance or analysis of an electrocardiogram
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics

Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth
Arousal, Attention, and Cognition
- Assessment of arousal, attention, and cognition using standardized instruments
- Assessment of level of consciousness

Cranial Nerve Integrity
- Assessment of gag reflex
- Assessment of response to the following stimuli:
  - auditory
  - gustatory
  - olfactory
  - vestibular
  - visual
- Assessment of swallowing

Environmental, Home, and Work (Job/School/Play) Barriers
- Assessment of current and potential barriers
- Physical inspection of the environment

Integumentary Integrity
For skin associated with integumentary disruption:
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of continuity of skin color (eg, redness in lightly pigmented skin, violaceous coloration in darkly pigmented skin)
- Assessment of sensation (eg, pain, temperature, tactile)
- Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (eg, using thermistors)
- Assessment of nail beds
- Assessment of tissue mobility, turgor, and texture

For wound:
- Assessment for presence of blistering
- Assessment of ecchymosis

Motor Function (Motor Control and Motor Learning)
- Motor assessment scales
- Analysis of head, trunk, and limb movement
- Assessment of autonomic responses to positional changes

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Assessment of muscle tone
- Assessment of pain and soreness

Neuromotor Development and Sensory Integration
- Analysis of age-appropriate and sex-appropriate development
- Analysis of reflex movement patterns
- Assessment of behavioral response
- Assessment of motor function (motor control and motor learning)
- Assessment of oromotor function, phonation, and speech production
Orthotic, Protective, and Supportive Devices

- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain

- Analysis of pain behavior and reaction during specific movements and provocation tests

Posture

- Analysis of resting posture in any position

Reflex Integrity

- Assessment of developmentally appropriate reflexes over time
- Assessment of normal reflexes (eg, stretch reflex)
- Assessment of pathological reflexes (eg, Babinski’s reflex)
- Assessment of postural, postural, equilibrium, and righting reactions

Ventilation, Respiration (Gas Exchange), and Circulation

- Analysis of thoraco-abdominal movements and breathing patterns at rest and during activity, either on or off mechanical ventilation
- Assessment of ability to clear airway
- Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
- Assessment of capillary refill time
- Assessment of cardiopulmonary response to performance of ADL (eg, feeding)
- Assessment of cough and sputum
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of chest wall mobility, expansion, and excursion
- Assessment of ventilatory muscle strength, power, and endurance
- Assessment of cyanosis
- Auscultation of the heart
- Auscultation and mediate percussion of the lungs
- Interpretation of blood gas analysis or oxygen consumption (VO2) studies
- Palpation of chest wall (eg, tactile, fremitus, pain, diaphragmatic motion)
- Pulse oximetry
- Tests and measures of pulmonary function and ventilatory mechanics
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Within 6 to 12 months, patient will achieve developmental milestones appropriate to adjusted age (based on prematurity). Within 6 months, patient will be weaned from the ventilator (if applicable) and from supplemental oxygen. Caregiver will be able to manage the secretions.

Expected Range of Number of Visits Per Episode of Care, 16 to 84
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients in this diagnostic group will achieve the goals and outcomes within 16 to 84 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors of the family
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by family significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Family significant other and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with family, significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client- Related Instruction**

**Anticipated Goals**

- Ability to perform physical tasks is increased.
- Awareness and use of community resources by family significant others, and caregivers are improved.
- Decision making is enhanced regarding health of patient/client and the use of health care resources by family significant others, and caregivers.
- Disability associated with acute or chronic messes is reduced.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Family and caregiver knowledge of personal and environmental factors associated with the condition is increased.
- Physical function and health status are improved.
- Progress is enhanced through the participation of family significant others, and caregivers.
- Risk of recurrence is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family significant others, and caregivers is improved.
- Utilization and cost of health care services are decreased.
Specific Interventions
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
- Aerobic capacity is increased.
- Atelectasis is decreased.
- Endurance is increased.
- Physical function is improved.
- Physiologic response to increased oxygen demand is improved.
- Quality and quantity of movement between and across body segments are improved.
- Strength and endurance are increased.
- Tissue perfusion and oxygenation are increased.

Specific Direct Interventions
- Balance and coordination training
- Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Developmental activities training
- Motor function (motor control and motor learning) training or retraining
- Neuromuscular education
- Neuromuscular relaxation, inhibition, and facilitation
- Posture awareness training
- Sensory training
- Strengthening
  - active
  - active assistive
- Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADI)
Anticipated Goals
- Risk of secondary impairments is reduced.
- Safety is improved during performance of self-care and home management tasks and activities.

Specific Direct Interventions
- ADL training (eg, bed mobility and transfer training, bathing) for care-giver
- Assistive and adaptive device and equipment training for caregiver
- Body mechanics training for caregiver
- Orthotic, protective, or supportive device or equipment training for caregiver

Manual Therapy Techniques (Including Mobilization and Manipulation)
Anticipated Goals
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Connective tissue massage
- Joint mobilization and manipulation
- Passive range of motion
- Soft tissue mobilization and manipulation
Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment
(Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
• Deformities are prevented.
• Protection of body parts is increased.
• Safety is improved.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
• Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
• Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
• Supportive devices or equipment (eg, supportive taping, corsets, neck collars, serial casts, elastic wraps, oxygen)

Airway Clearance Techniques
Anticipated Goals
• Airway clearance is improved.
• Cough is improved.
• Risk of secondary complications is reduced.
• Ventilation, respiration (gas exchange), and circulation are improved.

Specific Direct Interventions
• Chest percussion, vibration, and shaking
• Pulmonary postural drainage and positioning
• Suctioning
• Techniques to maximize ventilation (eg, maximal inspiratory hold, staircase breathing, manual hyperinflation)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/clients expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Developmental delays associated with functional limitations and disability are reduced.
- Risk of disability associated with respiratory failure is reduced.
- Safety of patient/client and caregivers is increased.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to family, significant others, and caregivers.
- Administrative management of practice is acceptable to family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to family significant others, and caregivers.
- Coordination and conformity of care are acceptable to family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.
Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Family and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status; community adaptation; leisure activities; living environment; pathology or impairment that may affect function; or home or work (job/school/play) settings.
- Professional recommendations are integrated into home and community environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
CHAPTER 4

Preferred Practice Patterns:
Neuromuscular

The following patterns describe the elements of patient/client management provided by physical therapists—examination (history, systems review, and tests and measures), evaluation, diagnosis, prognosis, and intervention (with anticipated goals)—in addition to re-examination, outcomes, and criteria for discharge. Pattern D, "Impaired Motor and Sensory Function Associated With Peripheral Nerve Injury," also includes primary prevention/risk factor reduction strategies.

Pattern A: Impaired Motor Function and Sensory Integrity
Associated With Congenital or Acquired Disorders of the Central Nervous System in Infancy, Childhood, and Adolescence

Pattern B: Impaired Motor Function and Sensory Integrity
Associated With Acquired Non-progressive Disorders of the Central Nervous System in Adulthood

Pattern C: Impaired Motor Function and Sensory Integrity Associated With Progressive Disorders of the Central Nervous System in Adulthood

Pattern D: Impaired Motor Function and Sensory Integrity
Associated With Peripheral Nerve Injury

Pattern E: Impaired Motor Function and Sensory Integrity
Associated With Acute or Chronic Poly-neuropathies

Pattern F: Impaired Motor Function and Sensory Integrity
Associated With Non-progressive Disorders of the Spinal Cord

Pattern G: Impaired Arousal, Range of Motion, Sensory Integrity; and Motor Control Associated With Coma, Near Coma, or Vegetative State
Impaired Motor Function and Sensory Integrity Associated With Congenital or Acquired Disorders of the Central Nervous System in Infancy, Childhood, and Adolescence

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs, the profession’s code of ethics and standards of practice and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations associated with impaired motor function associated with congenital or acquired disorders of the central nervous system in infancy, childhood, and adolescence.

Patients/clients may have any one or a combination of the following:
- Impaired affect
- Impaired arousal and attention
- Impaired balance
- Impaired cognition
- Impaired expressive or receptive communication
- Impaired motor function (motor control and motor learning)
- Impaired oro-motor function
- Impaired respiratory function
- Impaired sensory integrity
- Skeletal deficits

INCLUDES patients/clients with:
- Anoxia or hypoxia
- Birth trauma
- Brain anomalies
- Cerebral palsy
- Genetic syndromes that affect the central nervous system
- Hydrocephalus
- Infectious disease that affect the central nervous system (eg, meningitis, encephalitis)
- Intracranial neurosurgical procedures
- Meningocele
- Myclocele
- Mylocystoceles
- Myelodysplasia
- Myelomeningocele
- Neoplasm (non progressive)
- Prematurity
- Tethered cord
- Traumatic brain injury

EXCLUDES patients/clients with:
- Amputation
- Coma
- Medical instability
- Multi-system trauma
- Neoplasm (progressive)
- Spinal cord injury secondary to trauma
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination</td>
<td>176</td>
</tr>
<tr>
<td>Evaluation, Diagnosis, and Prognosis</td>
<td>182</td>
</tr>
<tr>
<td>Intervention</td>
<td>184</td>
</tr>
<tr>
<td>Reexamination</td>
<td>189</td>
</tr>
<tr>
<td>Outcomes</td>
<td>189</td>
</tr>
<tr>
<td>Criteria for Discharge</td>
<td>190</td>
</tr>
</tbody>
</table>
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
Concerns that led patient/client to seek the services of a physical therapist concerns or needs of patient/client who requires the services of a physical therapist current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardio-pulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardio-pulmonary
- Integumentary
- Musculo-skeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style
Tests and Measures
Test and measures for this pattern may include:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of performance during established exercise protocols (e.g., treadmills, ergometers, 6-minute walk test, 3-minute step test)
- Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of standard vital signs (e.g., blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Tests and measures of pulmonary function and ventilatory mechanics

Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
- Assessment of arousal, attention, and cognition using standardized instruments
- Assessment of factors that influence motivation level
- Assessment of level of consciousness
- Assessment of level of recall (e.g., short-term and long-term memory)
- Assessment of orientation to time, person, and place
- Screening for gross expressive (e.g., verbalization)

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of patient/client or caregiver ability to care for device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Computer-assisted analysis of motion, initially without and then with device
- Review of reports provided by patient/client, significant others, family, caregivers, or other professionals concerning use of or need for device
- Videotape analysis of patient/client using device Community and Work (Job/School/Play)
- Integration or Reintegration (Including IADL)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of environment, work (job/school/play), and leisure activities
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- IADL scales or indexes
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals (eg, educators, rehabilitation counselor, social worker, employer)

Cranial Nerve Integrity
• Assessment of gag reflex
• Assessment of response to the following stimuli:
  • auditory
  • gnstatory
  • olfactory
  • vestibular
  • visual
• Assessment of swallowing

Environmental, Home, and Work (Job/School/Play) Barriers
• Analysis of physical space using photography or videotape
• Assessment of current and potential barriers
• Measurement of physical space
• Physical inspection of the environment
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics
Ergonomics:
• Assessment of dexterity and coordination
• Assessment of safety in community and work (job/school/play) environments
• Determination of dynamic capabilities and limitations during specific work (job/school/play) activities

Body mechanics:
• Measurement of height, weight, length, and girth
• Observation of performance of selected movements or activities
• Videotape analysis of performance of selected movements or activities

Gait, Locomotion, and Balance
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight-bearing scales, and force plates
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
• Analysis of wheelchair management and mobility
• Assessment of safety
• Gait, locomotion, and balance assessment instruments
• Gait, locomotion, and balance profiles

Integumentary Integrity
For skin associated with integumentary disruption:
• Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
• Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
Joint Integrity and Mobility
Assessment of soft tissue swelling, inflammation, or restriction
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of joint hypermobility and hypomobility

Motor Function (Motor Control and Motor Learning)
- Analysis of head, trunk, and limb movement
- Analysis of posture during sitting, standing, and locomotor activities appropriate for age (eg, walking, hopping, skipping, running, jumping)
- Analysis of stereotypic movements
- Assessment of dexterity, coordination, and agility
- Assessment of postural, equilibrium, and righting reactions
- Motor assessment scales
- Physical performance scales

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Assessment of pelvic-floor musculature
- Assessment of muscle tone
- Electro-physiologic tests (eg, electromyography [EMG], nerve conduction velocity)

Neuromotor Development and Sensory Integration
- Analysis of age- and sex-appropriate development
- Analysis of gait and posture
- Analysis of involuntary movement
- Analysis of reflex movement patterns
- Analysis of sensory integration tests
- Analysis of voluntary movement
- Assessment of behavioral response
- Assessment of dexterity, agility, and coordination
- Assessment of postural, equilibrium, and righting reactions
- Assessment of gross and fine motor skills
- Assessment of motor function

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of movement while patient/client uses device, using computer-assisted graphic imaging or videotape
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
- Analysis of multisegmental movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
- Assessment of developmentally appropriate reflexes over time
- Assessment of normal reflexes (eg, deep tendon reflex)
- Assessment of pathological reflexes (eg, Babinski's reflex)

Self-Care and Home Management (Including ADL and IADI)
- ADL and IADL scales or indexes
- Analysis of self-care and home management activities
- Analysis of self-care in unfamiliar environments
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals (including educators)

Sensory Integrity (Including Proprioception and Kinesthesia)
- Assessment of combined (cortical) sensations (eg, stereognosis, tactile localization, two points discrimination, vibration, texture recognition)
- Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
- Assessment of gross receptive (eg, vision, hearing) deficits
- Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)

Ventilation, Respiration (Gas Exchange), and Circulation
- Assessment of chest wall mobility, expansion, and excursion
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Palpation of pulses
Evaluation, Diagnosis, and Prognosis

The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis

Patient/client will function with maximal independence in home, school, work, and community environments, within the context of the disability.

Depending on motor, perceptual, and cognitive deficits, patient/client will be completely independent or may need varying levels of assistance (eg, family, caregiver, equipment) or supervision to fulfill his or her various roles.

Expected Range of Number of Visits Per Episode of Care, 6 to 90

This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 6 to 90 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode

- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities
- Development of complications or secondary impairments
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socio-economic stressors
- Support provided by family unit

These patients/clients may require multiple episodes of care over the lifetime to ensure safety and effective adaptation following changes in physical status, care-givers, environment, or task demands. Factors that may lead to these additional episodes of care include:

- Cognitive maturation
- Cumulative trauma
- Deconditioning
- Functional loss
- Increases in postural deficits
- Need for orthotic or adaptive equipment modification
- Periods of rapid growth
- Surgical intervention
- Transition in lifestyle
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals, and other interested persons (e.g., rehabilitation counselor, social workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
Performance levels in employment, recreational, or leisure activities are improved.
Physical function and health status are improved.
Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
Risk of recurrence of condition is reduced.
Risk of secondary impairments is reduced.
Safety of patient/client, family, significant others, and caregivers is improved.
Self-management of symptoms is improved.
Utilization and cost of health care services are decreased.

Specific Interventions
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
- Ability to perform physical tasks related to self-care, home management, community and work
- (job/school/play) integration or reintegration, and leisure activities is increased.
- Aerobic capacity is increased.
- Endurance is increased.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Motor function (motor control and motor learning) is improved.
- Need for assistive and adaptive devices is decreased.
- Physical function and health status are improved.
- Postural control is improved.
- Quality and quantity of movement between and across body segments are improved.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Strength, power, and endurance are increased.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

Specific Direct Interventions
- Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Balance and coordination training
- Body mechanics and ergonomics training
- Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Developmental activities training
- Gait, locomotion, and balance training
• Motor function (motor control and motor learning) training or retraining
• Neuromuscular education or reeducation
• Neuromuscular relaxation, inhibition, and facilitation
• Perceptual training
• Posture awareness training
• Strengthening:
  • active
  • active assistive
  • resistive
• Stretching
• Structured play or leisure activities

**Functional Training in Self-Care and Home Management (Including ADL and IADI)**

**Anticipated Goals**

- Ability to perform physical tasks related to self-care and home management (including ADL and IADI) is increased.
- Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
- Intensity of care is decreased.
- Performance of and independence in ADL and IADI are increased.
- Level of supervision required for task performance is decreased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of self-care and home management tasks and activities.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

**Specific Direct Interventions**

- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Organized functional training programs (eg, simulated environment and tasks)
- Orthotic, protective, or supportive device or equipment training

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI and Work Conditioning)**

**Anticipated Goals**

- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities is increased.
- Performance of and independence in IADI are increased.
- Safety is improved during performance of community, work (job/school/play), and leisure tasks and activities
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**

- Assistive and adaptive device and equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Injury prevention or reduction training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Organized functional training programs (simulated instruments and tasks)
- Orthotic, protective, or supportive device or equipment training
Manual Therapy Techniques (Including Mobilization and Manipulation)

Anticipated Goals
- Ability to perform movement tasks is increased.
- Motor function (motor control and motor learning) is improved.
- Muscle spasm is reduced.
- Pain is decreased.
- Quality and quantity of movement between and across body segments is improved.
- Risk of secondary impairments is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Connective tissue massage
- Joint mobilization
- Manual traction
- Passive range of motion
- Soft tissue mobilization
- Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Independence in bed mobility, transfers, and gait is maximized.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Motor function (motor control and motor learning) is improved.
- Physical function and health status are improved.
- Joint integrity and mobility are improved.
- Safety is improved.
- Risk of secondary impairments is reduced.
- Sense of well-being is improved.
- Tolerance to positions and activities is improved.
- Weight-bearing status is improved.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compressive garments, corsets, slings, neck collars, serial casting, elastic wraps, oxygen)

Electrotherapeutic Modalities

Anticipated Goals
- Joint integrity and mobility are improved.
- Muscle performance is increased.
- Neuromuscular function is increased.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
Specific Direct Interventions
- Biofeedback
- Neuromuscular electrical stimulation (NMES)

Physical Agents and Mechanical Modalities
Anticipated Goals
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Mechanical modalities:
- Tilt table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient's/client's expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Ability of caregivers to assist patient/client in functional activities and use of community resources is increased.
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with congenital or acquired disorders of the central nervous system is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.
Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.

Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Motor Function and Sensory Integrity Associated with Acquired Non-progressive Disorders of the Central Nervous System in Adulthood

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socio-economic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations associated with impaired motor and sensory function associated with acquired non-progressive disorders of the central nervous system in adulthood.

Patients/clients may have any one or a combination of the following:
- Impaired affect
- Impaired arousal and attention
- Impaired balance
- Impaired cognition
- Impaired expressive or receptive communication
- Impaired motor function (motor control and motor learning)
- Impaired oromotor control
- Impaired respiratory function
- Impaired sensory integrity

INCLUDES patients/clients with:
- Aneurysm
- Anoxia or hypoxia
- Central vestibular disorders
- Cerebro-vascular accident (stroke)
- Infectious disease that affects the central nervous system
- Intracranial neurosurgical procedures
- Neoplasm (non-progressive)
- Nonmalignant brain neoplasm
- Seizures
- Traumatic brain injury

EXCLUDES patients/clients with:
- Amputation
- Coma
- Immature central nervous system
- Malignant brain neoplasm
- Medical instability
- Multi-system trauma
- Neoplasm (progressive)
Examination 193
Evaluation, Diagnosis, and Prognosis 199
Intervention 200
Reexamination 205
Outcomes 205
Criteria of Discharge 206
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
Prior therapeutic interventions
Prior medications

Past Medical/Surgical History
Cardio-pulmonary
Endocrine/metabolic
Gastrointestinal
Genitourinary
Integumentary
Musculo-skeletal
Neuromuscular
Pregnancy, delivery, and postpartum
Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
- The systems review may include:
  - Physiologic and anatomic status
  - Cardio-pulmonary
  - Integumentary
  - Musculoskeletal Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Test and measures for this pattern may include:

Aerobic Capacity and Endurance
- Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, 6-minute walk test, 3-minute step test)
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth
- Observation and palpation of trunk, extremity, or body part at rest and during and after activity

Arousal, Attention, and Cognition
- Assessment of arousal, attention, and cognition
- Assessment of factors that influence motivation
- Assessment of level of consciousness
- Assessment of level of recall (e.g., short-term and long-term memory)
- Assessment of orientation to time, person, place, and situation
- Screening for gross expressive (e.g., verbalization) deficits

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remEDIATE impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Computer-assisted analysis of motion, initially without and then with device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
- Videotape analysis of patient/client using device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of environment, work (job/school/play), and leisure activities
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- IADL scales or indexes
- Observation of responses to non-routine occurrences
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review reports provided by patient/client, family, significant others, caregivers, or other professionals, (e.g., rehabilitation counselor, social workers, employer)

Cranial Nerve Integrity
- Assessment of gag reflex
- Assessment of response to the following stimuli:
  - auditory
  - gustatory
  - olfactory
  - vestibular
  - visual
- Assessment of swallowing
Environmental, Home, and Work (Job/School/Play) Barriers
- Analysis of physical space using photography or videotape
- Assessment of current and potential barriers
- Measurement of physical space
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics

Ergonomics:
- Assessment of safety in community and work (job/school/play) environments
- Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities

Body Mechanics:
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Observation of performance of selected movements or activities
- Videotape analysis of performance of selected movements or activities

Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight bearing scales, and force plates
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
- Analysis of wheelchair management and mobility
- Assessment of safety
- Gait, locomotion, and balance assessment instruments
- Gait, locomotion, and balance profiles
- Identification and quantification of static and dynamic balance characteristics

Integumentary Integrity

For skin associated with integumentary disruption:
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin

Joint Integrity and Mobility
- Assessment of soft tissue swelling, inflammation, or restriction
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of joint hypermobility and hypomobility
Motor Function (Motor Control and Motor Learning)
- Analysis of gait, locomotion, and balance
- Analysis of head, trunk, and limb movement
- Analysis of myoelectric activity and neurophysiological integrity using electrophysiologic tests (e.g., diagnostic and kinesiologic electromyography [EMGI, motor nerve conduction])
- Analysis of posture during sitting, standing, and locomotor activities appropriate for age (e.g., walking, hopping, skipping, running, jumping)
- Analysis of stereotypic movements
- Assessment of autonomic responses to positional changes
- Assessment of dexterity, coordination, and agility
- Assessment of postural, equilibrium, and righting reactions
- Assessment of sensorimotor integration
- Motor assessment scales
- Physical performance scales

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Assessment of muscle tone
- Electrophysiologic tests (e.g., electromyography [EMGI and nerve conduction velocity INCV])

Neuromotor Development and Sensory Integration
- Analysis of involuntary movement
- Analysis of reflex movement patterns
- Analysis of voluntary movement
- Assessment of behavioral response
- Assessment of dexterity, agility, and coordination
- Assessment of postural, equilibrium, and righting reactions
- Assessment of gross and fine motor skills
- Assessment of motor function
- Assessment of oromotor function, phonation, and speech production

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of movement while patient/client uses device, using computer-assisted graphic imaging or videotape
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of pain and soreness with joint movement
Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM
- Analysis of multisegmental movement
- Assessment of muscle, joint, or soft tissue characteristics
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging

Reflex Integrity
- Assessment of normal reflexes (eg, stretch reflex)
- Assessment of pathological reflexes (eg, Babinski’s reflex)
- Electrophysiologic tests (eg, H-reflex)

Sensory Integrity
- Assessment of combined (cortical) sensations (eg, stereognosis, tactile localization, two points discrimination, vibration, texture recognition)
- Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
- Assessment of gross receptive (eg, vision, hearing) abilities
- Assessment of superficial sensations (eg, sharp or dull discrimination, temperature, light touch, pressure)
- Electrophysiologic tests (eg, sensory nerve conduction)

Self-Care and Home-Management (Including ADI and IADL)
- ADL or IADL scales or indexes
- Analysis of self-care and home management activities
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, or supportive devices and equipment
- Analysis of self-care performed in unfamiliar environments
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Patient/client will be integrated or reintegrated into age-appropriate home and community environments with maximal independence, within the context of the disability.

Depending on residual motor, perceptual, and cognitive deficits, patient/client will be completely independent and demonstrate a return to premorbid level of function or may need varying levels of assistance (family, caregiver, equipment) or supervision to fulfill his or her various roles.

Expected Range of Number of Visits Per Episode of Core, 10 to 60
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 10 to 60 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Decline in functional independence
- Development of complications or secondary impairments
- Exacerbation of illness
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals and other interested persons (eg, rehabilitation counselor, social workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are acquired.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family; significant others, and caregivers.
- Disability associated with acute or chronic Illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
• Performance levels in employment, recreational, or leisure activities are improved.
• Physical function and health slams are improved.
• Progress is enhanced through the participation of patient/client, family significant others, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments Is reduced.
• Safety of patient/client, family significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to self care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
• Aerobic capacity is increased.
• Endurance is increased.
• Gait, locomotion, and balance are improved.
• Intensity of care is decreased.
• Joint integrity and mobility are improved.
• Level of supervision required for task performance is decreased.
• Motor function (motor control and motor learning) is improved.
• Performance of and independence In ADL and IADL are increased.
• Physical function and health status are improved.
• Postural control is improved.
• Quality and quantity of movement between and across body segments are improved.
• Risk factors are reduced.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments Is reduced.
• Safety is improved.
• Self-management of symptoms is improved.
• Sense of well-being is improved.
• Strength, power, and endurance are increased.
• Stress is decreased.
• Tissue perfusion and oxygenation are enhanced.
• Tolerance to positions and activities is increased.
Specific Direct Interventions
- Aerobic endurance activities, using cycles, treadmills, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Balance and coordination training
- Body mechanics and ergonomics training
- Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Developmental activities training
- Gait, locomotion, and balance training
- Motor function (motor control and motor learning) training or retraining
- Neuromuscular education or reeducation
- Neuromuscular relaxation, inhibition, and facilitation
- Perceptual training
- Posture awareness training
- Sensory training or retraining
- Strengthening
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

Functional Training in Self-Care and Home Management (Including ADI and IADI)
Anticipated Goals
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
- Intensity of care is decreased.
- Performance of and independence in ADL and LADL increased.
- Level of supervision required for task performance is decreased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of self-care and home training management tasks and activities.
- Tolerance to positions and activities is increased
- Utilization and cost of health care services are decreased.

Specific Direct Interventions
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental Activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation)
- Organized functional training programs (eg, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment
Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL and Work Conditioning)

Anticipated Goals

- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities is increased.
- Costs of work-related injury or disability are reduced.
- Performance of and independence in IADL are increased.
- Safety is improved during performance of community work (job/school/play), and leisure tasks and activities.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions

- Assistive and adaptive device and equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Injury prevention or reduction training IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation)
- Job coaching
- Organized functional training programs (eg, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

Manual Therapy Techniques (Including Mobilization and Manipulation)

Anticipated Goals

- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.

Specific Direct Interventions

- Passive range of motion

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals

- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Joint integrity and mobility are improved.
- Joint stability is increased.
- Level of supervision required for task performance is decreased.
- Loading on a body part is decreased.
- Motor function (motor control and motor learning) is improved.
- Optimal joint alignment is achieved.
- Performance of and independence in ADL and IADL are increased.
- Pain is decreased.
- Protection of body parts is increased.
- Safety is improved.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.
Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, canes, crutches, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, heimets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial/casts elastic wraps, oxygen)

Electrotherapeutic Modalities

Anticipated Goals
- Ability to perform physical tasks is increased.
- Edema, lymphedema, or effusion is reduced.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.

Specific Direct Interventions
- Biofeedback
- Electrical muscle stimulation
- Functional electrical stimulation (FES)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Ability of caregivers to assist patient/client in activities of daily living (ADL) and instrument activities of daily living (IADL) and solve new problems is improved.
- Ability to solve problems enhances independence in task performance in varied environments.
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with acquired non-progressive disorders of the central nervous system is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including ADL—and work (job/school/play) and leisure activities, including IADL—are performed safely, efficiently and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.
Other secondary prevention outcomes include:

- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.

Criteria for Discharge

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode of care. Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Motor Function and Sensory Integrity Associated With Progressive Disorders of the Central Nervous System in Adulthood

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations associated with impaired motor and sensory function associated with progressive disorders of the central nervous system in adulthood.

Patients/clients may have any one or a combination of the following:
- Exacerbation or remission of symptoms with treatment (eg, with radiation, chemotherapy)
- Impaired affect
- Impaired autonomic function
- Impaired cognition
- Impaired endurance
- Impaired expressive or receptive communication
- Impaired motor function
- Impaired sensory integrity
- Progressive loss of function

INCLUDES patients/clients with:
- Acquired immunodeficiency syndrome (AIDS)
- Alcoholic ataxia
- Alzheimer’s disease
- Amyotrophic lateral sclerosis
- Basal ganglia disease
- Cerebellar ataxia
- Cerebellar disease
- Huntington’s disease
- Idiopathic progressive cortical disease
- Intracranial neurosurgical procedures
- Multiple sclerosis
- Parkinson’s disease
- Parkinsonian symptoms
- Primary lateral palsy
- Progressive muscular atrophy
- Seizures

EXCLUDES patients/clients with:
- Amputation
- Coma
- Medical instability
- Multisystem trauma
- Neoplasm (progressive)
- Poliomyelitis
- Progressive non-demyelinating motor neuron diseases
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination</td>
<td>209</td>
</tr>
<tr>
<td>Evaluation, Diagnosis, and Prognosis</td>
<td>214</td>
</tr>
<tr>
<td>Intervention</td>
<td>215</td>
</tr>
<tr>
<td>Reexamination</td>
<td>219</td>
</tr>
<tr>
<td>Outcomes</td>
<td>219</td>
</tr>
<tr>
<td>Criteria for discharge</td>
<td>220</td>
</tr>
</tbody>
</table>
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
• Review of nutrition and hydration

Past History of Current Condition
• Prior therapeutic interventions
• Prior medications

Past Medical/Surgical History
• Cardiopulmonary
• Endocrine/metabolic
• Gastrointestinal
• Genitourinary
• Integumentary
• Musculoskeletal
• Neuromuscular
• Pregnancy, delivery, and postpartum
• Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
• Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
• General health perception
• Physical function (eg, mobility, sleep patterns, energy, fatigue)
• Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
• Role function (eg, worker, student, spouse, grandparent)
• Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
• Behavioral health risks (eg, smoking, drug abuse)
• Level of physical fitness (self-care, home management, community, work [job/school/play] and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
• Cardiopulmonary
• Integumentary
• Musculoskeletal Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Test and measures for this pattern may include:

Aerobic Capacity and Endurance
• Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal scales, or visual analog scales
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
• Assessment of thoraco-abdominal movements and breathing patterns with activity

Arousal, Attention, and Cognition
• Assessment of arousal, attention, and cognition using standardized instruments
• Assessment of factors that influence motivation level
• Screening for gross expressive (eg, verbalization) deficits
Assistive and Adaptive Devices
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADI)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of environment and work (job/school/play) tasks
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- IADL scales or indexes
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social workers, employer)

Cranial Nerve Integrity
- Assessment of gag reflex
- Assessment of muscles innervated by the cranial nerves
- Assessment of response to the following stimuli:
  - auditory
  - gustatory
  - olfactory
  - vestibular
  - visual
- Assessment of swallowing

Environmental, Home, and Work (Jab/School/Play) Barriers
- Analysis of physical space using photography or videotape
- Assessment of current and potential barriers
- Measurement of physical space
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics
Ergonomics:
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of dexterity and coordination
- Assessment of safety in community and work (job/school/play) environments

Body mechanics:
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
• Observation of performance of selected movements or activities
• Videotape analysis of performance of selected movements or activities

Gait, Locomotion, and Balance
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight-bearing scales, and force plates
• Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
• Analysis of wheelchair management and mobility
• Assessment of safety
• Gait, locomotion, and balance assessment instruments
• Identification and quantification of gait characteristics
• Identification and quantification of static and dynamic balance characteristics

Motor Function (Motor Learning and Motor Control)
• Analysis of head, trunk, and limb movement
• Analysis of posture during sitting, standing, and locomotor activities appropriate for age (eg, walking, hopping, skipping, running, jumping)
• Analysis of stereotypic movements
• Assessment of dexterity, coordination, and agility
• Assessment of postural, equilibrium, and righting reactions
• Assessment of sensorimotor integration
• Motor assessment scales
• Physical performance scales

Muscle Performance (Including Strength, Power, and Endurance)
• Analysis of functional muscle strength, power, and endurance
• Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
• Assessment of pain and soreness
• Electro-physiologic tests (eg, electromyography [EMG], nerve conduction velocity [NCV])

Neuromotor Development and Sensory Integration
• Analysis of involuntary movements
• Analysis of reflex movement patterns
• Analysis of voluntary movement
• Assessment of gross and fine motor skills
• Assessment of oromotor function, phonation, and speech production
• Assessment of postural reactions

Orthotic, Protective, and Supportive Devices
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Analysis of movement while patient/client uses device, using computer-assisted graphic imaging and videotape
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals
Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of pain questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM
- Analysis of multisegmental movement
- Assessment of muscle, joint, or soft tissue characteristics
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging

Reflex Integrity
- Assessment of normal reflexes (eg, stretch reflex)
- Assessment of pathological reflexes (eg, Babinski’s reflex)

Self-Care and Home Management (Including ADL and IADI)
- ADL or IADL scales or indexes
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Analysis of self-care performed in unfamiliar environments
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Sensory Integrity (Including Proprioception and Kinesthesia)
- Assessment of combined (cortical) sensations (eg, stereognosis, tactile localization, two-point discrimination, vibration, texture recognition)
- Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
- Assessment of gross receptive (eg, vision, hearing) abilities
- Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)
- Electro-physiologic tests (eg, sensory nerve conduction)
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Patient/client will be integrated or reintegrated into age-appropriate home, community, and work environments, within the context of the disability. Depending on the progression of motor, perceptual, and cognitive deficits, patient/client will need varying levels of assistance (family, caregiver, equipment) or supervision to fulfill his or her various roles.

Expected Range of Number of Visits Per Episode of Care 6 to 50
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 6 to 50 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Development of complications or secondary impairments
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
Intervention

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation

Anticipated Goals

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals, and other interested persons (e.g., rehabilitation counselor, social workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction

Anticipated Goals

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
Performance levels in employment, recreational, or leisure activities are improved.
Physical function and health status are improved.
Progress is enhanced through the participation of patient/client, family significant others, and caregivers.
Risk of recurrence of condition is reduced.
Risk of secondary impairments is reduced.
Safety of patient/client, family significant others, and caregivers is improved.
Self-management of symptoms is improved.
Utilization and cost of health care services are decreased.

Specific Interventions
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
- Aerobic capacity is increased.
- Endurance is increased.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Postural control is improved.
- Preoperative and postoperative complications are reduced.
- Risk factors are reduced.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Strength, power, and endurance are increased.
- Stress is decreased.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Balance and coordination training
- Body mechanics and ergonomics training
- Breathing exercises and ventilatory muscle training
- Breathing strategies (eg, paced breathing, pursed-lip breathing)
- Conditioning and reconditioning
• Gait, locomotion, and balance training
• Motor function (motor control and motor learning) training or retraining
• Neuromuscular education or reeducation
• Neuromuscular relaxation, inhibition, and facilitation
• Posture awareness training
• Sensory training or retraining
• Strengthening
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotic, and mechanical or electromechanical devices
• Stretching

Functional Training in Self-Care and Home Management (Including ADI and IADL)
Anticipated Goals
• Ability to perform physical tasks related to self-care and home management (including ADIs and IADLs) is increased.
• Intensity of care is decreased.
• Performance of and independence in ADL and IADL are increased
• Level of supervision required for task performance is decreased.
• Risk of recurrence of condition is reduced.
• Safety is improved during performance of self-care and home management tasks and activities.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• Assistive and adaptive device and equipment training
• IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
• Organized functional training programs (eg, back schools, simulated environments and tasks)
• Orthotic, protective, or supportive device or equipment training

Functional Training in Community and Work (Job/School/Play) Integration! Reintegration (Including IADI and Work Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities is increased.
• Risk of recurrence of condition is reduced.
• Safety is improved during performance of community~ work (Job/school/play), and leisure tasks and activities

Specific Direct Interventions
• Assistive and adaptive device and equipment training
• Environmental, community, work (job/school/play), or leisure task adaptation
• Injury prevention or reduction training
• IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
• Organized functional training programs (eg, back schools, simulated environments and tasks)
• Orthotic, protective, or supportive device or equipment training
Manual Therapy Techniques (Including Mobilization and Manipulation)

Anticipated Goals
- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Tolerance to positions and activities is increased.
- Ventilation, respiration (gas exchange), and circulation are improved.

Specific Direct Interventions
- Connective tissue massage
- Joint mobilization and manipulation
- Manual traction
- Passive range of motion
- Soft tissue mobilization and manipulation
- Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Joint stability is increased.
- Level of supervision required for task performance is decreased.
- Loading on a body part is decreased.
- Motor function (motor control and motor learning) is improved.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Protection of body parts is increased.
- Joint integrity and mobility are improved.
- Safety is improved.
- Risk of secondary impairments is reduced.
- Sense of well being is improved.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls, and other devices)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability Patient/Client Satisfaction
Secondary Prevention
- Awareness and use of community resources are increased.
- Awareness of and response of family and caregivers is increased to modify or add assistive and supportive devices necessary to maintain independence.
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with progressive disorders of the central nervous system is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Motor Function and Sensory Integrity Associated With Peripheral Nerve Injury

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients who have functional limitations due to impaired motor and sensory function associated with peripheral nerve injury.

Patients/clients may have one or more of the following:
- Mobility deficits
- Motor changes
- Pain
- Reflex changes
- Sensory abnormalities

INCLUDES patients/clients with:
- Compression and entrapment neuropathies (eg, Erb’s palsy, acute traumatic or pregnancy-induced carpal tunnel syndrome, cubital tunnel syndrome, radial tunnel syndrome, tarsal tunnel syndrome)
- Peripheral vestibular disorders (eg, labyrinthitis, paroxysmal positional vertigo)
- Traumatic and surgical nerve lesions (including macrotrauma and microtrauma) and surgical repairs (including neuropraxia, axonotmesis, neurotmesis)

EXCLUDES patients/clients with:
- Demyelinating disease
- Radiculopathies, reflex sympathetic dystrophy syndrome. Bell’s palsy, Homer’s syndrome

Examination 222
Evaluation, Diagnosis, and Prognosis 227
Intervention 228
Reexamination 233
Outcomes 233
Criteria for Discharge 235
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Test and measures for this pattern may include:

Anthropometric Characteristics
- Measurement of height, weight, length, and girth

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of safety during use of device
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals
• Videotape analysis of patient/client using device

**Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)**
• Analysis of adaptive skills
• Analysis of community, work (job/school/play), and leisure activities
• Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Assessment of functional capacity
• Assessment of physiologic responses during community, work (job/school/play), and leisure activities
• Assessment of safety in community and work (job/school/play) environments
• IADL scales or indexes
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by patient/client, family significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social workers, employer)

**Environmental, Home, and Work (Job/School/Play) Barriers**
• Assessment of current and potential barriers
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate

**Ergonomics and Body Mechanics**

**Ergonomics:**
• Analysis of performance of selected tasks or activities
• Analysis of preferred postures during performance of tasks and activities
• Assessment of dexterity and coordination
• Assessment of safety in community and work (job/school/play) environments
• Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
• Assessment of work (job/school/play) through batteries of tests
• Computer-assisted motion analysis of patient/client at work
• Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
• Ergonomic analysis of the work and its inherent tasks or activities, including:
  • analysis of repetition/work/rest cycling during task or activity
  • assessment of tools, devices, or equipment used
  • assessment of vibration
  • assessment of workstation
  • computer-assisted motion analysis of performance of selected movements or activities
  • identification of essential functions of task or activity
  • identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress

**Body mechanics:**
• Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
• Observation of performance of selected movements or activities
• Videotape analysis of performance of selected movements or activities

Gait, Locomotion, and Balance
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight-bearing seals, and force plates
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
• Assessment of safety
• Gait, locomotion, and balance assessment instruments
• Gait, locomotion, and balance profiles
• Identification and quantification of static and dynamic balance characteristics
• Identification of gait characteristics

Integumentary Integrity
For skin associated with integumentary disruption:
• Assessment of nail beds
• Assessment of sensation (eg, pain, temperature, tactile)
• Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (eg, using thermistors)

Joint Integrity and Mobility
• Assessment of joint hypermobility and hypomobility
• Assessment of the nature and quality of movement of the joint or body part during performance of specific movement tasks

Motor Function (Motor Control and Motor Learning)
• Analysis of head, trunk, and limb movement
• Analysis of posture during sitting, standing, and locomotor activities appropriate for age (eg, walking, hopping, skipping, running, jumping)
• Assessment of dexterity, coordination, and agility
• Assessment of motor control and motor learning
• Electrophysiologic tests (eg, diagnostic and kinesiologic electromyography IEMG], motor nerve conduction)
• Motor assessment scales

Muscle Performance (Including Strength, Power, and Endurance)
• Analysis of functional muscle strength, power, and endurance
• Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry

Orthotic, Protective, and Supportive Devices
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of movement while patient/client wears device, using computer-assisted graphic imaging and videotape
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other
professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM
- Analysis of multisegmental movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
- Assessment of normal reflexes (eg, deep tendon reflex)
- Electrophysiologic tests (eg, H-reflex)

Self-Care and Home Management (Including ADL and IADL)
- ADL or IADL scales or indexes
- Analysis of individual performing self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Sensory Integrity (Including Proprioception and Kinesthesia)
- Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
- Assessment of superficial sensations (eg, sharp or dull discrimination, temperature, light touch, pressure)
- Electrophysiologic tests (eg, sensory nerve conduction)
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 4 to 8 months, patient/client will return to premorbid or highest level of function.

Expected Range of Number of Visits Per Episode of Care, 12 to 56
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 12 to 56 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to obtain job reclassification or redesign
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Lesion differential diagnosis: neuropraxis, axonotmesis, or neurotmesis
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Quality of surgical intervention Support provided by family unit
Intervention

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation

Anticipated Goals

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction

Anticipated Goals

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
• Performance levels in employment, recreational, or leisure activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
• Aerobic capacity is increased.
• Endurance is increased.
• Gait, locomotion, and balance are improved.
• Motor function (motor control and motor learning) is improved.
• Performance of and independence in ADL and (ADL are increased.
• Physical function and health status are improved.
• Risk factors are reduced.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Self-management of symptoms is improved.
• Strength, power, and endurance are increased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Aerobic endurance activities using treadmills, ergometers, steppers, puileys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Aquatic exercises
• Balance and coordination training
• Body mechanics and ergonomics training
• Breathing exercises and ventilatory muscle training
• Conditioning and reconditioning
• Developmental activities
• Gait, locomotion, and balance training
• Motor function (motor control and motor learning) training or retraining
• Neuromuscular education or reeducation
• Neuromuscular relaxation, inhibition, and fiscilitation
• Posture awareness training
• Strengthening
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADI)
Anticipated Goals
• Ability to perform physical tasks related to self-care and home management (including ADL and IADI) is increased.
• Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
• Performance of and independence in ADL and TADL are increased.
• Risk of recurrence of condition is reduced.
• Safety is improved during performance of self-care and home management tasks and activities.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• Organized functional training programs

Functional Training in Community and Work (Job/School/Play) Reintegration (Including IADI, Work Hardening, and Work Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities is increased.
• Costs of work-related injury or disability are reduced.
• Performance of and independence in IADI are increased.
• Safety is improved during performance of community work (job/school/play), and leisure tasks and activities
• Risk of recurrence of condition is reduced.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• Assistive, adaptive, supportive, or protective device training
• Environmental, community, work (job/school/play), or leisure task adaptation
• Ergonomic stressor reduction training
• Injury prevention or reduction training
• IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
• Job coaching
• Job simulation
• Orthotic device training

Manual Therapy Techniques (Including Mobilization and Manipulation)
Anticipated Goals
• Ability to perform movement tasks is increased.
• Motor function (motor control and motor learning) is improved.
• Muscle spasms are reduced.
• Pain is decreased.
• Risk of secondary impairments is reduced.
• Ventilation, respiration (gas exchange), and circulation are improved.
Specific Direct Interventions
• Passive range of motion
• Soft tissue mobilization or manipulation
• Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic) Anticipated Goals
• Ability to perform physical tasks is increased.
• Deformities are prevented.
• Gait, locomotion, and balance are improved.
• Intensity of care is decreased.
• Edema, lymphedema, or effusion is reduced.
• Joint stability is increased.
• Level of supervision required for task performance is decreased.
• Loading on a body part is decreased.
• Motor function (motor control and motor learning) is improved.
• Optimal joint alignment is achieved.
• Pain is decreased.
• Performance of and independence in ADL and IADL are increased.
• Physical function and health status are improved.
• Protection of body parts is increased.
• Joint integrity and mobility are improved.
• Safety is improved.
• Risk of secondary impairments is reduced.
• Sense of well-being is improved.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls, and other devices)
• Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
• Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
• Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
• Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

Electrotherapeutic Modalities Anticipated Goals
• Ability to perform physical tasks is increased.
• Complications are reduced.
• Edema, lymphedema, or effusion is reduced.
• Joint integrity and mobility are improved.
• Motor function (motor control and motor learning) is improved.
• Muscle performance is increased.
• Pain is decreased.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
Specific Direct Interventions
- Biofeedback
- Electrical muscle stimulation
- Functional electrical stimulation (FES)
- Neuromuscular electrical stimulation (NMES)
- Transcutaneous electrical nerve stimulation (TENS)

Physical Agents and Mechanical Modalities
Anticipated Goals
- Ability to perform movement tasks is increased.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
Physical agents:
- Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
- Cryotherapy (eg, cold packs, ice massage)
- Deep thermal modalities (eg, ultrasound, phonophoresis)
- Hydrotherapy (eg, whirlpool tanks, contrast baths)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluidotherapy)
Reexamination

The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes

Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (e.g., worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with peripheral nerve injury is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Primary Prevention/Risk Factor Reduction Strategies

Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology—or from pathology or impairment to disability—is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disablement risk factors (eg, biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Abnormal peripheral vascular conditions
- Age
- Altered sensibility
- Anthropometric characteristics (eg, excessive weight, leg-length discrepancy, body type)
- Attitude
- Habitual sub-optimal body mechanics (eg, lifting, reaching)
- Lifestyle:
  - fitness level or cardiopulmonary and musculo-skeletal deconditioning
  - muscle tightness or inflexibility (eg, pectoralis major, hamstring, and gastrocnemius-soleus muscles; spinal facets; gleno-humeral joint)
  - physical activity level
  - physical work demands
  - psychosocial and socioeconomic stressors
  - substance abuse (eg, smoking, alcohol, drugs)
- Muscle weakness or imbalance (eg, trunk and hip, quadriceps femoris, hamstring, rotator cuff and wrist muscles, finger flexors and extensors)
- Design, equipment, or other barriers preventing optimal body mechanics or posture
- Previous history of injury or surgery affecting extremities, spine, posture, or body mechanics (eg, recurrent lateral ankle sprains, persistent shoulder instability)
- Systemic condition predisposing patient/client to contractile or non-contractile deficiency (eg, endocrine disorders, rheumatic diseases)
- Underlying spinal dysfunction (eg, postural dysfunction) in home, community, or work (job/school/play) environments

Primary Preventive Interventions
- Community program evaluation and development (eg, senior exercise programs, childbirth education or pregnancy exercise programs, youth activity programs)
- Consultation (eg, work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification, including individual or group activities that highlight (1) the relationship between risk factors (eg, substance abuse, physical activity and fitness level, stressors) and peripheral nerve lesions and (2) prevention strategies
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (eg, athletic pre-participation, pre-employment)
- Workplace, home, and community ergonomic analysis and modification
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Motor Function and Sensory Integrity Associated With Acute or Chronic Polyneuropathies

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations due to impaired motor and sensory function associated with acute or chronic polyneuropathies.

Patients/clients may have one or a combination of the following:
- Autonomic nervous system dysfunction
- Impaired sensory integrity
- Impaired motor function (motor control and motor learning)
- Skin and bone abnormalities

INCLUDES patients/clients with:
- Amputation
- Axonal polyneuropathies (diabetic, renal, and alcoholic)
- Guillain-Barré syndrome
- Leprosy

EXCLUDES patients/clients with:
- Central nervous system lesions
- Coma
- Compression or traumatic neuropathies
- Mixed central nervous system and peripheral lesions
- Multisystem trauma
- Poliomyelitis

Examination 237
Evaluation, Diagnosis, and Prognosis 243
Intervention 244
Reexamination 249
Outcomes 249
Criteria for Discharge 250
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient's/client's emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculoskeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (e.g., mobility, sleep patterns, energy, fatigue)
- Psychological function (e.g., memory, reasoning ability, anxiety, depression, morale)
- Role function (e.g., worker, student, spouse, grandparent)
- Social function (e.g., social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (e.g., smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:
Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Test and measures for this pattern may include:

Aerobic Capacity and Endurance
- Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, angina scales, or visual analog scales
- Assessment of performance during established exercise protocols (e.g., using treadmill, ergometer, 6-minute walk test, 3-minute step test)
- Assessment of standard vital signs (e.g., blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoraco-abdominal movements and breathing patterns with activity
- Claudication time tests
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of body fat composition, using calipers, underwater weighing tanks, or electrical impedance
- Measurement of height, weight, length, and girth
- Observation and palpation of trunk, extremity, or body part at rest and during and after activity

Arousal, Attention, and Cognition
- Screening for level of cognition (eg, to determine ability to process commands, to measure safety awareness)
- Screening for gross expressive (eg, verbalization) deficits

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Computer-assisted analysis of motion, initially without and then with device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
- Videotape analysis of patient/client using device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of environment, work (job/school/play), and leisure activities
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- Observation of responses to nonroutine occurrences
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social workers, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
- Assessment of current and potential bafflers
- Measurement of physical space
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
Ergonomics and Body Mechanics

Ergonomics:
- Assessment of dexterity and coordination
- Assessment of safety in community and work (job/school/play) environments
- Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
- Assessment of work (job/school/play) performance through batteries of tests
- Computer-assisted motion analysis of patient/client at work
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Ergonomic analysis of the work and its inherent tasks or activities, including:
  - analysis of repetition/work/rest cycling during task or activity
  - assessment of tools, devices, or equipment used
  - assessment of vibration
  - computer-assisted motion analysis of performance of selected movements or activities
  - identification of essential functions of task or activity
  - identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress
- Functional capacity evaluation, including:
  - endurance required to perform aerobic endurance activities
  - joint range of motion (ROM) used to perform task or activity
  - postures required to perform task or activity
  - strength required in the work postures necessary to perform task or activity
- Videotape analysis of patient/client at work

Body mechanics:
- Observation of performance of selected movements or activities
- Videotape analysis of performance of selected movements or activities

Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight-bearing scales, and force plates
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
- Gait, locomotion, and balance assessment instruments
- Gait, locomotion, and balance profiles
- Identification and quantification of static and dynamic balance characteristics

Integumentary Integrity

For skin associated with integumentary disruption:
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin

For wound:
- Assessment for presence of blistering
- Assessment for signs of infection
- Assessment of activities, positioning, and postures that aggravate the wound or scar or that may produce additional trauma
Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of joint hypermobility and hypomobility
- Measurement of soft tissue restrictions

Motor Function (Motor Control and Motor Learning)
- Analysis of gait, locomotion, and balance
- Analysis of head, trunk, and limb movement
- Analysis of myoelectric activity and neurophysiological integrity using electrophysiologic tests (eg, diagnostic and kinesiologic electromyography [EMG], motor nerve conduction)
- Analysis of posture during sitting, standing, and locomotor activities appropriate for age (eg, walking, hopping, skipping, running, jumping)
- Assessment of postural, equilibrium, and righting reactions
- Physical performance scales

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Electrophysiologic tests (eg, electromyography [EMG], nerve conduction velocity [NCV])

Neuromotor Development and Sensory Integration
- Assessment of dexterity, agility, and coordination
- Assessment of gross and fine motor skills

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of movement while patient/client wears device, using computer-assisted graphic imaging or videotape
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM
- Analysis of multisegmental movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
- Assessment of normal reflexes (eg, deep tendon reflex)
Self-Care and Home Management (Including ADL and IADL)
- ADL or IADL scales or indexes
- Analysis of self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Sensory Integrity (Including Proprioception and Kinesthesia)
- Assessment of combined (cortical) sensations (eg, stereognosis, tactile localization, two-point discrimination, vibration, texture recognition)
- Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
- Assessment of gross receptive (eg, vision, hearing) abilities
- Assessment of superficial sensations (eg, sharp or dull discrimination, temperature, light touch, pressure)
- Electrophysiologic tests (eg, sensory nerve conduction)

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Patient/client will be integrated into age-appropriate home, community, and work environments, within the context of the disability.

Expected Range of Number of Visits Per Episode of Care, 6 to 24
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 6 to 24 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Accessibility of resources
- Acute events related to the neuropathy (eg, infected ulcer)
- Age
- Availability of resources
- Caregiver (eg, family home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Development of complications or secondary impairments (eg, progression of articular changes, muscle weakness, or sensory loss)
- Development or progression of wound
- Level of patient/client adherence to the intervention program
- Mental competence of patient/client
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Surgical intervention
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**

- Accountability for services is increased
- Available resources are maximally utilized.
- Care is coordinated with patient/client, Family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, Family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, Family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant others and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, Family significant others, and caregivers is improved.
- Self-management of symptoms is improved.
- Utilization and cost of health care services are decreased.

**Specific Interventions**

- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**

Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**

- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
- Aerobic capacity is increased.
- Endurance is increased.
- Energy expenditure is decreased.
- Gait, locomotion, and balance are improved.
- Motor function (motor control and motor learning) is improved.
- Need for assistive and adaptive devices is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Risk of recurrence of injury or condition is decreased.
- Risk factors are reduced.
- Safety is improved.
- Strength, power, and endurance are increased.
- Tolerance to positions and activities is increased.
- Weight-bearing status is improved.

**Specific Direct Interventions**

- Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Balance and coordination training
- Body mechanics and ergonomics training
- Breathing strategies (e.g., paced breathing, pursed-lip breathing)
- Conditioning and reconditioning
- Gait, locomotion, and balance training
- Motor function (motor control and motor learning) training or retraining
- Neuromuscular education or reeducation
- Posture awareness training
- Strengthening
  - active
- active assistive
- resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

**Functional Training in Self-Core and Home Management (Including ADL and IADI) Anticipated Goals**
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Intensity of care is decreased.
- Performance of and independence in ADL and IADL are increased.
- Level of supervision required for task performance is decreased.
- Safety when performing self-care and home management tasks and activities is improved.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Organized functional training programs (eg, back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI and Work Conditioning) Anticipated Goals**
- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities is increased.
- Costs of work-related injury or disability are reduced.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of community, work (job/school/play), and leisure tasks and activities
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- Assistive and adaptive device or equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- Injury prevention or reduction training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Job coaching
- Job simulation
- Leisure and play activity
- Organized functional training programs (eg, back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training
- Prosthetic device or equipment training
Manual Therapy Techniques (Including Mobilization and Manipulation)

Anticipated Goals
- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Quality and quantity of movement between and across body segments are improved.
- Tolerance to positions and activities is increased.
- Ventilation, respiration (gas exchange), and circulation are improved.

Specific Direct Interventions
- Connective tissue massage
- Manual traction
- Passive range of motion
- Soft tissue mobilization and manipulation
- Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Ability to perform physical tasks is increased
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Joint comfort, alignment, and function are improved.
- Joint integrity and mobility are improved.
- Joint stability is increased.
- Level of supervision required for task performance is decreased.
- Loading on a body part is decreased.
- Motor function (motor control and motor learning) is improved.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Protection of body parts is increased.
- Safety is improved.
- Risk of secondary impairments is reduced.
- Stresses precipitating or perpetuating injury are minimized.
- Weight-bearing status is improved.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handed reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Prosthetic devices or equipment (eg, artificial limbs)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)
Electrotherapeutic Modalities
Anticipated Goals
• Ability to perform physical tasks is increased.
• Joint integrity and mobility are improved.
• Muscle performance is increased.
• Wound and soft tissue healing is enhanced.

Specific Direct Interventions
• Biofeedback
• Electrical muscle stimulation

Physical Agents and Mechanical Modalities
Anticipated Goals
• Ability to perform movement tasks is increased.
• Motor function (motor control and motor learning) is improved.
• Joint integrity and mobility are improved.
• Pain is decreased.
• Risk of secondary impairments is reduced.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
Physical agents:
• Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
• Cryotherapy (eg, cold packs, ice massage)

Mechanical modalities:
• Compression therapies (eg, vasopneumatic compression devices, compression bandaging, compression garments, taping, total contact casting)
• Tilt table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patients/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk and cost of hospitalization are reduced.
- Risk of disability associated with acute or chronic polyneuropathies is reduced.
- Safety of patient/client and caregivers is increased.
- Safety, independence, and efficiency of functional mobility (eg, gait, wheelchair, transfers) are maximized.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.
Other secondary prevention outcomes include:

- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.

Criteria for Discharge

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
**Impaired Motor Function and Sensory Integrity Associated With Non-progressive Disorders of the Spinal Cord**

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession's code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

**Patient/Client Diagnostic Group**
Patients/clients with functional limitations due to impaired motor function and sensation associated with nonprogressive disorders of the spinal cord at any age.

Patients/clients may have any one or a combination of the following:
- Impaired balance
- Impaired endurance
- Impaired motor function (motor control and motor learning)
- Impaired respiratory function
- Impaired sensory integrity

**INCLUDES patients/clients with:**
- Benign spinal neoplasm
- Complete and incomplete lesions
- Infectious diseases affecting the spinal cord
- Spinal compression secondary to osteomyelitis, spondylosis, herniated intervertebral disk, or degenerative joint disease
- Spinal cord injury secondary to trauma
- Spinal fusion and spinal neurological procedures

**EXCLUDES patients/clients with:**
- Amputation
- Coma
- Guillain-Barre syndrome
- Malignant neoplasm
- Meningocele
- Medical instability
- Multiple sclerosis, amyotrophic lateral sclerosis
- Multiple system trauma
- Myelocele
- Myelomeningocele
- Nerve root compression due to lumbar radiculopathy
- Orthopedic or spinal instability with unstabilized spine
- Progressive spinal cord injury or disease
- Tethered cord

**Examination**

**Evaluation, Diagnosis, and Prognosis**

**Intervention**

**Reexamination**

**Outcomes**

**Criteria for Discharge**
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Post History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculoskeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (eg, self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:
Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Test and measures for this pattern may include:

Aerobic Capacity and Endurance
- Assessment of autonomic responses to positional changes
- Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Assessment of thoracoabdominal movements and breathing patterns with activity
- Pulse oximetry
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Assessment of height, weight, length, and girth
- Observation and palpation of trunk, extremity, or body part at rest and during and after activity

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
- Videotape analysis of patient/client using device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADI)
- Analysis of adaptive skills
- Analysis of environment, work (job/school/play), and leisure activities
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- IADL scales or indexes
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social workers, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
- Analysis of physical space using photography or videotape
- Assessment of current and potential barriers
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics
Ergonomics:
- Assessment of safety in community and work (job/school/play) environments
- Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
- Computer-assisted motion analysis of patient/client at work (job/school/play)
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Ergonomic analysis of the work and its inherent tasks or activities, including:
  - analysis of repetition/work/rest cycling during task or activity
  - assessment of tools, devices, or equipment used
  - assessment of vibration
  - computer-assisted motion analysis of performance of selected movements or activities
  - identification of essential functions of task or activity
- identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress
- Functional capacity evaluation, including:
  - endurance required to perform aerobic endurance activities
  - joint range of motion (ROM) used to perform task or activity
  - postures required to perform task or activity
  - strength required in the work postures necessary to perform task or activity
- Videotape analysis of patient/client at work

**Body mechanics:**
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Observation of performance of selected movements or activities
- Videotape analysis of performance of selected movements or activities

**Gait, Locomotion, and Balance**
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight-bearing scales, and force plates
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
- Analysis of wheelchair management and mobility
- Assessment of safety
- Gait, locomotion, and balance profiles

**Integumentary Integrity**
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin

**Joint Integrity and Mobility**
- Assessment of soft tissue swelling, inflammation, or restriction
- Assessment of joint hypermobility and hypomobility

**Motor Function (Motor Control and Motor Learning)**
- Analysis of head, trunk, and limb movement
- Analysis of posture during sitting, standing, and locomotor activities appropriate for age
- Assessment of dexterity, coordination, and agility
- Assessment of postural, equilibrium, and righting reactions
- Motor assessment scales
- Physical performance scales

**Muscle Performance (Including Strength, Power, and Endurance)**
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using mmual muscle testing or dynamometry
- Assessment of muscle tone
- Assessment of pelvic-floor musculature
- Electrophysiologic tests (eg, electromyography [EMG] and nerve conduction velocity [NCV])

**Orthotic, Protective, and Supportive Devices**
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of movement while patient/client wears device, using computer-assisted graphic imaging or videotape
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
• Assessment of pain using questionnaires, graphics, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
• Analysis of resting posture in any position
• Analysis of static and dynamic postures using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
• Analysis of functional ROM
• Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
• Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
• Assessment of pathological reflexes (eg, Babinski's reflex)

Self-Care and Home Management (Including ADL and IADL)
• ADL or IADL scales or indexes
• Analysis of self-care and home management activities
• Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, or supportive devices and equipment
• Assessment of physiologic responses during self-care and home management activities
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Sensory Integrity (Including Proprioception and Kinesthesia)
• Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
• Assessment of superficial sensations (eg, sharp or dull discrimination, temperature, light touch, pressure)
• Electrophysiologic tests (eg, sensory nerve conduction)

Ventilation, Respiration (Gas Exchange), and Circulation
• Assessment of chest wall mobility, expansion, and excursion
• Auscultation of the heart
• Auscultation and mediate percussion of the lungs
• Palpation of chest wall (eg, tactile fremitus, pain, diaphragmatic motion)
• Palpation of pulses
Evaluation, Diagnosis, and Prognosis

The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis

Patient/client will be integrated or reintegrated into age-appropriate home and community environments with maximal independence, within the context of the disability. Depending on residual motor deficits, patient/client will become completely independent or will need varying levels of assistance (eg, family caregiver, equipment) to fulfill his or her various roles.

Expected Range of Number of Visits Per Episode of Care, 4 to 150

This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 4 to 150 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode

- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities
- Development of complications or secondary impairments
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (e.g., rehabilitation counselor, social workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition.
is increased.

- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family, significant others, and caregivers is improved.
- Self-management of symptoms is improved.
- Utilization and cost of health care services are decreased.

**Specific Interventions**

- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**

Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**

- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
- Aerobic capacity is increased.
- Atelectasis is decreased.
- Endurance is increased.
- Energy expenditure is decreased
- Intensity of cam is decreased.
- Level of supervision required for task performance is decreased.
- Motor function (motor control and motor learning) is improved.
- Muscle performance is increased.
- Osteogenic effects of exercise are maximized.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Joint integrity and mobility are improved.
- Quality and quantity of movement between and across body segments are improved.
- Risk factors are reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Strength, power, and endurance are increased.
- Stress is decreased.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.
Specific Direct Interventions
- Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Balance and coordination training
- Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Gait, locomotion, and balance training
- Motor function (motor control and motor learning) training or retraining
- Neuromuscular education or reeducation
- Posture awareness training
- Sensory training or retraining
- Strengthening
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADL)
Anticipated Goals
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of self-care and home management tasks and activities.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Organized functional training programs (eg, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL and Work Conditioning)
Anticipated Goals
- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities is increased.
- Costs of work-related injury or disability are reduced.
- Safety is improved during performance of community, work (job/school/play), and leisure tasks and activities
- Risk of recurrence is decreased.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
Specific Direct Interventions
- Assistive and adaptive device and equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- Injury prevention or reduction training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Job coaching
- Job simulation
- Leisure activity training
- Organized functional training programs (eg, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training
- Posture awareness training

Manual Therapy Techniques (Including Mobilization and Manipulation)
Anticipated Goals
- Ability to perform movement tasks is increased.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Passive range of motion

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)
Anticipated Goals
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Independence in bed mobility, transfers, and gait is maximized.
- Joint stability is increased.
- Motor function (motor control and motor learning) is improved.
- Optimal joint alignment is achieved.
- Physical function and health status are improved.
- Safety is improved.
- Pressure areas (eg, pressure over bony prominence) are prevented.
- Tolerance to positions and activities is increased.
- Weight-bearing status is improved.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, casts, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)
Airway Clearance
Anticipated Goals
- Airway clearance is improved.
- Cough is improved.
- Disability associated with illness or injury is decreased.
- Gas exchange is improved.
- Independence in self-care for airway clearance techniques is increased.
- Need for assistive device (mechanical ventilation) is decreased.
- Physical function and health status are improved.
- Risk of recurrence of condition is reduced.
- Risk of secondary complications is reduced.
- Utilization and cost of health care services are decreased.
- Ventilation, respiration (gas exchange), and circulation are improved.
- Work of breathing is decreased.

Specific Direct Interventions
- Active cycle of breathing or forced expiratory technique
- Assistive cough techniques
- Assistive devices for airway clearance (eg, flutter valve)
- Autogenic drainage
- Breathing strategies (eg, paced breathing, pursed-lip breathing)
- Chest percussion, vibration, and shaking
- Pulmonary postural drainage and positioning
- Suctioning
- Techniques to maximize ventilation (eg, maximum inspiratory hold, staircase breathing, manual hyperinflation)

Electrotherapeutic Modalities
Anticipated Goals
- Ability to perform physical tasks is increased.
- Complications are reduced.
- Pain is decreased.
- Risk of secondary impairments is reduced.

Specific Direct Interventions
- Biofeedback
- Electrical muscle stimulation
- Functional electrical stimulation (FES)
- Transcutaneous electrical nerve stimulation (TENS)

Physical Agents and Mechanical Modalities
Anticipated Goals
- Tolerance to positions and activities is increased.

Specific Direct Interventions
Mechanical modalities:
- Tilt table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patients/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Ability to participate in home, work (job/school/play), or leisure activities is increased.
- Health-related quality of life is improved.
- Opportunities for completion of psychosocial development are optimized.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk and cost of hospitalization are reduced.
- Risk of disability associated with nonprogressive disorders of the spinal cord is reduced.
- Safety of patient/client and caregivers is increased.
- Safety, independence, and efficiency of functional mobility (eg, gait, wheelchair, transfers) are maximized.
- Self-care and home management activities, including activities of daily living (ADL) and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL) are performed by patient/client and caregivers safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Sexual roles and function are resumed.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.
Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.

Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Arousal, Range of Motion, Sensory Integrity, and Motor Control Associated With Coma, Near Coma, or Vegetative State

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients with impaired arousal, range of motion (ROM), sensation and motor control associated with coma, near coma, or persistent vegetative state at any age.

Patients may have one or a combination of the following:
- Autonomic nervous system dysfunction
- Impaired sensory integrity
- Impaired motor function (motor control and motor learning)
- Skin and bone abnormalities

INCLUDES patients with:
- Anoxia
- Cerebrovascular accident (stroke)
- Infectious or inflammatory disease
- Traumatic brain injury
- Neoplasm

EXCLUDES patients with:
- Amputation
- Medical instability
- Multisystem trauma
- Pneumonia

Examination 266
Evaluation, Diagnosis, and Prognosis 270
Intervention 271
Reexamination 274
Outcomes 274
Criteria for Discharge 275
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
• Age
• Primary language
• Race/ethnicity
• Sex

Social History
• Cultural beliefs and behaviors
• Family and caregiver resources
• Social interactions, social activities, and support systems

Occupation/Employment
• Current and prior community and work (job/school) activities

Growth and Development
• Hand and foot dominance
• Developmental history

Living Environment
• Living environment and community characteristics
• Projected discharge destinations

History of Current Condition
• Concerns that led patient/client to seek the services of a physical therapist
• Concerns or needs of patient/client who requires the services of a physical therapist
• Current therapeutic interventions
• Mechanisms of injury or disease, including date of onset and course of events
• Onset and pattern of symptoms
• Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
• Patient/client, family, significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
• Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
• Medications for current condition for which patient/client is seeking the services of a physical therapist
• Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculoskeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style
Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

**Anthropometric Characteristics**
- Assessment of postures that aggravate or relieve edema, lymphedema, or effusion

**Arousal, Attention, and Cognition**
- Assessment of arousal, attention, and cognition using standardized instruments
- Assessment of level of consciousness

**Assistive and Adaptive Devices**
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of significant other, family, or caregiver ability to use and care for device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Review of reports provided by family significant others, care-givers, or other professionals concerning use of or need for device

**Cranial Nerve Integrity**
- Assessment of gag reflex
- Assessment of response to the following stimuli:
  - auditory
  - gustatory
  - olfactory
  - vestibular
  - visual
- Assessment of swallowing

**Environmental, Home, and Work (Job/School/Play) Barriers**
- Assessment of current and potential barriers
- Measurement of physical space using photography or videotape
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

**Muscle Performance (Including Strength, Power, and Endurance)**
- Assessment of muscle tone

**Neuromotor Development and Sensory Integration**
- Analysis of reflex movement patterns

**Orthotic, Protective, and Supportive Devices**
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of family or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by family significant others, caregivers, or other professionals concerning use of or need for device
Pain
• Assessment of pain and soreness with movement

Posture
• Observation of resting posture assumed in any position

Range of Motion (ROM) (Including Muscle Length)
• Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
• Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
• Assessment of normal reflexes (eg, stretch reflex)
• Assessment of pathological reflexes (eg, Babinski’s reflex)

Sensory Integrity (Including Proprioception and Kinesthesia)
• Assessment of gross receptive (eg, vision, hearing) abilities
• Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)

Ventilation, Respiration (Gas Exchange), and Circulation
• Assessment to determine presence of cyanosis
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest
• Auscultation of the heart
• Auscultation and mediate percussion of the lungs
• Management of airway secretions
• Palpation of chest wall (eg, tactile fremitus, pam, diaphragmatic motion)
• Palpation of pulses
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Patient who continues in coma, near coma, or persistent vegetative state will have minimization of secondary impairments.

Expected Range of Number of Visits Per Episode of Care, 5 to 20
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients in this diagnostic group will achieve the goals and outcomes within 5 to 20 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Co-morbidities
- Development of complications or secondary impairments
- Preexisting systemic conditions or diseases
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by family significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with family, significant others, caregivers, other health care professionals, and other interested persons
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**

- Awareness and use of community resources by family, significant others, and caregivers are improved.
- Decision making is enhanced regarding health of patient/client and use of health care resources by family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Intensity of cam is decreased.
- Family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Physical function and health status are improved.
- Progress is enhanced through the participation of family significant others, and caregivers.
- Safety of patient/client, family, significant others, and caregivers is improved.
- Risk of secondary impairments is reduced.
- Utilization and cost of health care services are decreased.
Specific Interventions
- Computer-assisted instruction
- Demonstration by family or caregivers in the appropriate environment
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
- Joint integrity and mobility are improved.
  - Risk of secondary impairments is reduced.
  - Tolerance to positions is increased.

Specific Direct Interventions
- Neuromuscular relaxation, inhibition, and facilitation
- Stretching
- Sensory training or retraining

Functional Training in Self-Care and Home Management (Including ADI and IADL)
Anticipated Goals
- Risk of secondary impairments is reduced.
- Safety is improved during performance of self-care and home management tasks and activities.

Specific Direct Interventions
- ADL training (e.g., bed mobility and transfer training, bathing) for caregiver
- Assistive and adaptive device and equipment training for caregiver
- Body mechanics training for caregiver
- Orthotic, protective, or supportive device or equipment training for caregiver

Manual Therapy Techniques (Including Mobilization and Manipulation)
Anticipated Goals
- Joint mobility and integrity are improved.
  - Risk of secondary impairments is reduced.

Specific Direct Interventions
- Passive range of motion

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment
(Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)
Anticipated Goals
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Safety is improved.

Specific Direct Interventions
- Adaptive devices or equipment (e.g., hospital beds, seating systems)
- Assistive devices or equipment (e.g., wheelchairs)
- Orthotic devices or equipment (e.g., braces, splints)
- Protective devices or equipment (e.g., braces, helmets, cushions, protective taping)
- Supportive devices or equipment (e.g., supportive taping, compression garments, corsets, neck collars, slings, supportive taping, elastic wraps, oxygen)
Airway Clearance Techniques

Anticipated Goals
- Airway clearance is improved.
- Risk of secondary complications is reduced.

Specific Direct Interventions
- Assistive devices for airway clearance (e.g., flutter valve)
- Chest percussion, vibration, and shalndng
- Pulmonary postural drainage and positioning
- Suctioning
- Techniques to maximize ventilation (e.g., maximum inspiratory hold, staircase breathing, manual hyperinflation)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient's/client's expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

**Functional Limitation/Disability Patient/Client Satisfaction**

**Secondary Prevention**

- Activities of daily living (ADL) are performed safely, efficiently and at a maximal level of independence by care-givers.
- Appropriate placement according to level of function is determined.
- Disability associated with coma, near coma, or vegetative state is reduced.
- Health-related quality of life is improved.
- Potential for return to role function is maintained.
- Safety of patient/client and caregivers is increased.
- Family, significant other, and caregiver understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Family, significant other, and caregiver understanding of strategies to prevent further functional limitation and disability is demonstrated.
- Access, availability, and services provided are acceptable to family significant others, and caregivers.
- Administrative management of practice is acceptable to family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to family significant others, and caregivers.
- Coordination and conformity of care are acceptable to family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to family, significant others, and caregivers.
- Risk of impairment or of impairment progression is reduced.

**Other secondary prevention outcomes include:**

- Need for additional physical therapist intervention is decreased.
- Family, significant other, and caregiver adherence to the intervention program is maximized.
- Family significant others, and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: medical status, caregiver status, living environment, pathology or impairment that may affect function, or resources.
- Professional recommendations are integrated into home and community environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
CHAPTER 5
Preferred Practice Patterns:
Musculoskeletal

The following patterns describe the elements of patient/client management provided by physical therapists-examination (history, systems review, and tests and measures), evaluation, diagnosis, prognosis, and intervention (with anticipated goals)-in addition to reexamination, outcomes, and criteria for discharge. Each pattern also describes primary prevention/risk factor reduction strategies for the specific patient/client diagnostic group.

Pattern A: Primary Prevention/Risk Factor Reduction for Skeletal Demineralization  277

Pattern B: Impaired Posture  288

Pattern C: Impaired Muscle Performance  302

Pattern D: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Capsular Restriction  317

Pattern E: Impaired Joint Mobility, Muscle Performance, and Range of Motion Associated With Ligament or Other Connective Tissue Disorders  330

Pattern F: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Localized Inflammation  344

Pattern G: Impaired Joint Mobility, Motor Function, Muscle Performance, Range of Motion, or Reflex Integrity Secondary to Spinal Disorders  355

Pattern H: Impaired Joint Mobility, Muscle Performance, and Range of Motion Associated With Fracture  374

Pattern I: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Joint Arthroplasty  389

Pattern J: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Bony or Soft Tissue Surgical Procedures  404

Pattern K: Impaired Gait, Locomotion, and Balance and Impaired Motor Function Secondary to Lower-Extremity Amputation  420
Primary Prevention, Risk Factor Reduction for Skeletal Demineralization

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients at risk of bone demineralization, with or without clinical signs of osteological involvement.

INCLUDES patients/clients with:
Activity-induced hormonal changes
Certain medications (eg, steroids)
Joint immobilization
Known high risk (eg, based on sex, ethnicity, age, lifestyle, menstrual or hormonal changes related to hysterectomy or menopause)
Nutritional deficiency
Prolonged non-weight-bearing state

EXCLUDES patients/clients with:
Acute fractures
Neoplasms of the bone
Osteogenesis imperfecta
Paget’s disease

Examination (History, Systems review, Tests and Measures) 278
Evaluation, Diagnosis, and Prognosis 282
Intervention 283
Outcomes 285
Criteria for Discharge 286
Primary Prevention/Risk factor Reduction strategies 287
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and Instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications
- Past Medical/Surgical History
  - Cardiopulmonary
  - Endocrine/metabolic
  - Gastrointestinal
  - Genitourinary
  - Integumentary
  - Musculo-skeletal
  - Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks
- Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
- The systems review may include:
  - Physiologic and anatomic status
  - Cardiopulmonary
  - Integumentary
  - Musculoskeletal
  - Neuromuscular

Communication, affect, cognition, language, and learning style
Tests and Measures
Tests and measures for this pattern may include, in alphabetical orders

Aerobic Capacity and Endurance
- Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, 6-minute walk test, 3-minute step test)
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity

Anthropometric Characteristics
- Measurement of body fat composition, using calipers, underwater weighing tanks, or electrical impedance
- Measurement of height, weight, length, and girth
- Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of environment and work (job/school/play) tasks
- Review of daily activities logs
- Review of reports provided by patient/client, family significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social worker, employer)

Ergonomics and Body Mechanics
Functional capacity evaluation, including:
- postures required to perform task or activity
- strength required in the work postures necessary to perform the work (job/school/play) task or activity

Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Motor Function (Motor Control and Motor Learning)
- Analysis of posture during sitting, standing, and locomotor
- activities appropriate for age (eg, walking, hopping, skipping, running, jumping)
- Assessment of dexterity, coordination, and agility

Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of soft tissue swelling, inflammation, or restriction
- Assessment of joint hypermobility and hypomobility
- Assessment of pain and soreness

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Orthotic, Protective, and Supplicative Devices
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis
Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM

Self-Care and Home Management (Including ADL and IADL)
- Analysis of self-care and home management activities
- Review of daily activities logs
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Through lifestyle modification, patient/client at risk of low bone density will maintain bone mineral density above fracture threshold.

Through lifestyle modification, patient/client with identified low bone density will reverse the demineralization process and achieve bone mineral density above fracture threshold.

Expected Range of Number of Visits Per Episode of Care, 3 to 18
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 3 to 18 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Modify Frequency of Visits
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (e.g., family home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
Intervention

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, collaboration and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation

Anticipated Goals

- Accountability for services is increased
- Available resources are maximally utilized
- Care is coordinated with client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of client and use of health care resources by client, family, significant others and caregivers.

Specific Interventions

- Communication (direct or indirect)
- Coordination of care with client, family significant others, care-givers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of client management
- Education plans
- Referrals to other professionals or resources

Client-Related Instruction

Anticipated goals

- Ability to perform physical task is increased
- Awareness and use of community resources are improved
- Behaviors that foster healthy habits, wellness, and prevention are required
- Decision making is enhanced regarding health of client and use of health care resources by client.
- Performance levels in employment, recreational or leisure activities are improved.
- Physical function and health status are improved
- Utilization and cost of health care services are decreased.

Specific Interventions

- Computer-assisted instruction
- Demonstration by client in the appropriate environment
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction
Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
- Aerobic capacity is increased.
- Endurance is increased.
- Osteogenic effects of exercise are maximized
- Postural control is improved.
- Sense of well-being is improved.
- Strength, power, and endurance are increased.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions
- Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Balance and coordination training
- Body mechanics and ergonomics training
- Breathing exercises
- Conditioning
- Motor function (motor control and motor learning) training
- Posture awareness training
- Strengthening:
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

Functional Training in Self-Care and Home Management (Including Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL))
Anticipated Goals
- Performance and Independence in ADL and IADL are increased.

Specific Direct Interventions
- ADL training (e.g., bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, toileting)
- IADL training (e.g., shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)
Anticipated goals
- Performance of and in independence in IADL are increased.

Specific Direct Interventions
- IADL training (e.g., shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment
(Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Deformities are prevented.
- Optimal joint alignment is achieved.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, compression, garment, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, elastic wraps, oxygen)

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient's/client's expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Consequences of falls are reduced.
- Health-related quality of life is enhanced.
- Optimal role function (eg, worker, student, spouse, grandparent) is maintained.
- Self-care and home management activities, including activities of daily living (ADL)-and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)-are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of prevention strategies is demonstrated.

Client Satisfaction
- Access, availability, and services provided are acceptable to client.
- Administrative management of practice is acceptable to client.
- Clinical proficiency of physical therapist is acceptable to client.
- Coordination and conformity of care are acceptable to client.
- Interpersonal skills of physical therapist are acceptable to client, family, and significant others.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Primary Prevention! Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology—or from pathology or impairment to disability—is not inevitable. Physical therapist intervention can prevent Impairment, functional limitation, or disability by identifying disablement risk factors (eg, biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Age
- Anthropometric characteristics (eg, excessive weight, leg-length discrepancy, body type)
- Attitude
- Design, equipment, or other barriers preventing optimal body mechanics or posture in home, community, or work (job/school/play) environments
- Endocrine or hormonal status
- Habital suboptimal body mechanics
- Lifestyle:
  - fitness level or cardiopulmonary and musculo-skeletal deconditioning
  - nutritional status (eg, calcium and vitamin D intake)
  - physical activity level
  - physical work (job/school/play) demands
  - psychosocial and socioeconomic stressors
  - substance abuse (eg, smoking, alcohol, drugs)
  - Medication history
  - Muscle tightness or inflexibility (eg, hamstring muscles, hip flexors)
  - Muscle weakness or imbalance (eg, trunk and hip muscles)
  - Previous history of injury or surgery affecting spine, posture, or body mechanics
  - Systemic condition predisposing patient/client to spinal pain with radiculopathy
  - Underlying spinal dysfunction (eg, postural dysfunction) in home, community, and work (job/school/play) tasks and activities

Primary Prevention/Risk Factor Reduction Strategies
- Community program evaluation and development
- Consultation (eg, work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification, including individual or group activities that highlight (1) the relationship between risk factors (eg, substance abuse, physical activity and fitness level, stressors, diet) and demineralization and (2) strategies to prevent demineralization
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (eg, scoliosis, athletic pre-participation, pre-employment)
- Workplace, home, and community ergonomic analysis and modification
Impaired Posture

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasizes that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitation secondary to impaired posture with one or more of the following:
- Associated muscle weakness or imbalance
- Associated pain
- Structural or functional deviation from normal posture
- Suboptimal joint mobility

INCLUDES patients/clients with:
- Appendicular postural deficits
- Cumulative effects of poor habitual posture in addition to poor work-related posture
- Pregnancy-related postural changes
- Scoliosis or other excessive spinal curvature

EXCLUDES patients/clients with:
Neuromuscular disorders or disease (eg, spina bifida)
Radicular signs
Spinal stabilization (fusion or rodding), less than 1 year postsurgery

Examination (History, Systems review, Tests and Measures) 289

Evaluation, Diagnosis, and Prognosis 294

Intervention 295

Reexamination 300

Outcomes 300

Criteria for Discharge 301

Primary Prevention/Risk factor Reduction Strategies 301
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family; significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early; intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek ‘: the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family; significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family; significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculoskeletal
- Neuromuscular
- Pregnancy, delivery; and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy; fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style
Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

**Anthropometric Characteristics**
- Measurement of height, weight, length, and girth

**Assistive and Adaptive Devices**
- Analysis of the potential to remediate Impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Review of reports provided by patient/client, family; significant others, caregivers, or other professionals concerning use of or need for device

**Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)**
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of environment and work (job/school/play) tasks
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- IADL scales or indexes
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social worker, employer)

**Environmental, Home, and Work (Job/School/Play) Barriers**
- Assessment of current and potential barriers
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

**Ergonomics and Body Mechanics**

Ergonomics:
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of dexterity and coordination
- Assessment of safety in community and work (job/school/play) environments
- Assessment of work (job/school/play) performance through batteries of tests
- Computer-assisted motion analysis of patient/client at work
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Ergonomic analysis of the work and its inherent tasks or activities, including:
  - analysis of repetition/work/rest cycling during task or activity
  - assessment of tools, devices, or equipment used
  - assessment of vibration
  - assessment of workstation
  - computer-assisted motion analysis during performance of selected movements or activities
  - identification of essential functions of task or activity
  - identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress
- Functional capacity evaluation, including:
  - endurance required to perform aerobic endurance activities
  - joint range of motion (ROM) used to perform task or activity
  - postures required to perform task or activity
  - strength required in the work postures necessary to perform task or activity
- Videotape analysis of patient/client at work
- Body mechanics:
  - Computer-assisted motion analysis of the performance of selected movements or activities
  - Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Observation of performance of selected movements or activities
- Videotape analysis of performance of selected movements or activities

Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, or supportive devices
- Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
- Assessment of safety
- Identification and quantification of gait characteristics
- Identification and quantification of static and dynamic balance characteristics

Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of joint hypermobility and hypomobility
- Assessment of pain and soreness
- Assessment of response to manual provocation tests
- Assessment of soft tissue swelling, inflammation, or restriction

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Assessment of pain and soreness

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate Impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family; significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of muscle soreness
- Assessment of pain and soreness with joint movement
• Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
• Analysis of resting posture in any position
• Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
• Analysis of functional ROM
• Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
• Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
• Assessment of normal reflexes (eg, stretch reflex)

Self-Care and Home Management (Including ADL and IADL)
• Analysis of self-care and home management activities
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of reports provided by patient/client, family; significant others, caregivers, or other professionals

Sensory Integrity (Including Proprioception and Kinesthesia)
• Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of Improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the Improvement levels that may be reached at various intervals during the course of physical therapy; During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged Impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Within 12 months, patient/client will demonstrate the ability to maintain preferred posture during various activities (activities of daily living [ADL]; instrumental activities of daily living [IADL]; and Community, work, and leisure activities).

Expected Range of Number of Visits Per Episode of Care, 6 to 20
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 6 to 20 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family; home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of Impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication; coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct Interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, Workers’ Compensation claims manager, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated goals**

- Ability to perform physical task is increased
- Awareness and use of community resources are improved
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family, significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities are increased.
• Aerobic capacity is increased.
• Endurance is increased.
• Gait, locomotion, and balance are improved.
• Intensity of care is decreased.
• Joint and soft tissue swelling, inflammation, or restriction is reduced.
• Joint integrity and mobility are improved.
• Level of supervision required for task performance is decreased.
• Motor function (motor control and motor learning) is improved.
• Pain is decreased.
• Performance of and independence in ADL and IADL are increased.
• Physical function and health status are improved.
• Postural control is improved.
• Quality and quantity of movement between and across body segments are improved.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Self-management of symptoms is improved.
• Sense of well-being is improved.
• Strength, power, and endurance are increased.
• Stress is decreased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Aquatic exercises
• Balance and coordination training
• Body mechanics and ergonomics training
• Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Motor function (motor control and motor learning) training or retraining
- Neuromuscular education or reeducation
- Posture awareness training
- Strengthening:
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

**Functional Training in Self-Care and Home Management (Including ADL and IADL)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of condition is reduced.
- Safety is improved when performing self-care and home management tasks and activities.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

**Specific Direct Interventions**
- ADL training (eg, bed mobility and transfrr training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities are increased.
- Costs of work-related injury or disability are reduced.
- Safety is improved during performance of community and work (job/school/play) tasks and activities.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- Injury prevention or reduction training
- Job coaching
- Job simulation
- Organized functional training programs (eg, back schools, simulated environments and tasks)

**Manual Therapy Techniques (Including Mobilization and Manipulation)**

**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.
- Muscle spasm is reduced.
- Pain is decreased.
- Quality and quantity of movement between and across body segments are improved.
- Risk of secondary impairments is reduced.
- Tolerance to positions and activities is increased.
Specific Direct Interventions
- Connective tissue massage
- Joint mobilization and manipulation
- Manual traction
- Passive range of motion
- Soft tissue mobilization and manipulation
- Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic) Anticipated Goals
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Edema, lymphedema, or effusion is reduced.
- Gait, locomotion, and balance are improved.
- Joint stability is increased.
- Loading on a body part is decreased.
- Motor function (motor control and motor learning) is improved.
- Optimal joint alignment is achieved.
- Physical function and health status are improved.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garment, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

Electrotherapeutic Modalities Anticipated Goals
- Ability to perform physical tasks is increased.
- Muscle performance is increased.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.

Specific Direct Interventions
- Biofeedback
- Electrical muscle stimulation
- Transcutaneous electrical nerve stimulation (TENS)

Physical Agents and Mechanical Modalities Anticipated Goals
- Ability to perform movement tasks is increased.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
Specific Direct Interventions

Physical agents:
- Cryotherapy (eg, cold pack, ice massage)
- Deep thermal modalities (eg, ultrasound, phonophoresis)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluidotherapy)

Mechanical modalities:
- Traction (sustained, intermittent, or positional)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which for some patient/client diagnostic groups may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with postural dysfunction is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)-and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)-are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of Impairment progression is reduced.
- Other secondary prevention outcomes include:
  - Need for additional physical therapist intervention is decreased.
  - Patient/client adherence to the intervention program is maximized.
  - Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
  - Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
  - Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes are been achieved In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology or from pathology or Impairment to disability is not inevitable. Physical therapist intervention can prevent Impairment, functional limitation, or disability by identifying disablement risk factors (eg, biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Age
- Age-related somatosensory changes
- Attitude
- Habitual suboptimal body mechanics
- Habitual suboptimal posture
- Inflexibility
- Lifestyle:
  - fitness level or cardiopulmonary and musculo-skeletal deconditioning
  - physical activity level and demand substance abuse (eg, smoking, alcohol, drugs)
  - Muscle tightness or inflexibility (eg, hamstring muscles, hip flexors)
  - Muscle weakness or Imbalance (eg, trunk and hip muscles)
  - Physical demands of work (job/school/play)
  - Sub-optimal peri-articular extensibility

Primary Prevention/Risk Factor Reduction Strategies
- Community program evaluation and development (eg, retirement centers, senior centers, assisted-living centers)
- Consultation (eg, work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification, including individual or group activities that highlight (1) the relationship between risk factors (eg, substance abuse, physical activity and fitness level, stressors, diet) and posture and (2) strategies to prevent impaired posture
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (eg, school scoliosis screening program, programs identifying those with postural dyscontrol tendencies)
- Workplace, home, and community ergonomic analysis and modification
Impaired Muscle Performance
This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasizes that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations secondary to impaired muscle performance.

INCLUDES patients/clients with:
- Cardiovascular insufficiency
- Disuse atrophy secondary to prolonged bed rest, congestive heart failure, chronic obstructive pulmonary disease (COPD), pneumonia
- Dysfunction of the pelvic-floor musculature
- Muscle weakness due to immobilization or lack of activity
- Renal disease
- Vascular insufficiency

EXCLUDES patients/clients with:
- Amputation
- Primary capsular restriction
- Primary joint arthroplasty
- Primary localized inflammation
- Recent bony and surgical soft tissue procedures
- Recent fracture

Examination (History, Systems Review, Tests and Measures) 303
Evaluation, Diagnosis and Prognosis 308
Intervention 309
Reexamination 314
Outcomes 314
Criteria for Discharge 315
Primary Prevention/Risk Factor Reduction Strategies 315
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and wosic (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
• Review of available records
• Review of nutrition and hydration

**Past History of Current Condition**
• Prior therapeutic interventions
• Prior medications

**Past Medical/Surgical History**
• Cardiopulmonary
• Endocrine/metabolic
• Gastrointestinal
• Genitourinary
• Integumentary
• Musculoskeletal
• Neuromuscular
• Pregnancy, delivery, and postpartum
• Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

**Family History**
• Familial health risks

**Health Status (Self-Report, Family Report, Caregiver Report)**
• General health perception
• Physical function (eg, mobility, sleep patterns, energy, fatigue)
• Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
• Role function (eg, worker, student, spouse, grandparent)
• Social function (eg, social interaction, social activity, social support)

**Social Habits (Past and Current)**
• Behavioral health risks (eg, smoking, drug abuse)
• Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

**Systems Review**
The systems review may include:

**Physiologic and anatomic status**
• Cardiopulmonary
• Integumentary
• Musculoskeletal
• Neuromuscular

**Communication, affect, cognition, language, and learning style**

**Tests and Measures**
Tests and measures for this pattern may include, in alphabetical order:

**Aerobic Capacity and Endurance**
• Assessment of autonomic responses to positional changes
• Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
• Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, 6-minute walk test, 3-minute step test)
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth
- Observation and palpation of trunk, extremity, or body part at rest and during and after activity

Assistive and Adaptive Devices
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, and other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (e.g., rehabilitation counselor, social worker, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
- Assessment of current and potential barriers
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics
Ergonomics:
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of dexterity and coordination
- Assessment of safety in community and work (job/school/play) environments
- Assessment of work (job/school/play) through batteries of tests
- Assessment of workstation
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities

Body mechanics:
- Observation of performance of selected movements or activities

Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Assessment of autonomic responses to positional changes
- Assessment of safety
Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during the performance of specific movement tasks
- Assessment of joint hypermobility and hypomobility
- Assessment of pain and soreness

Muscle Performance (Including Strength, Power and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Assessment of pain and soreness
- Assessment of pelvic-floor musculature
- Electrophysiologic tests (e.g., electromyography [EMG], nerve conduction velocity [NCV])

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of muscle soreness
- Assessment of pain and soreness with joint movement
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
- Analysis of resting posture in any position
Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM
- Analysis of multisegmental movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging

Self-Care and Home Management (Including ADL and IADL)
- Analysis of adaptive skills
- Analysis of environment and work (job/school/play) tasks
- Analysis of self-care and home management activities
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, and supportive devices and equipment
- Assessment of ability to transfer
- Assessment of autonomic responses to positional changes
- Assessment of functional capacity
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

**Sensory Integrity (Including Proprioception and Kinesthesia)**
• Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
• Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)

**Ventilation, Respiration (Gas Exchange), and Circulation**
• Analysis of thoraco-abdominal movements and breathing patterns at rest and during activity or exercise
• Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
• Assessment of chest wall mobility, expansion, and excursion
• Assessment of perceived exertion and dyspnea
• Assessment of phonation
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
• Assessment of ventilatory muscle strength, power, and endurance
• Palpation of chest wall (eg, tactile fremitus, pain, diaphragmatic motion)
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 2 to 10 months, patient/client will demonstrate a return to premorbid or highest level of function.

Expected Range of Number of Visits Per Episode of Care, 6 to 30
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 6 & 30 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
• Ability to transfer instruction to motor learning
• Accessibility of resources
• Age
• Availability of resources
• Caregiver (eg, family home health aide) consistency or expertise
• Chronicity or severity of condition
• Comorbidities
• Level of patient/client adherence to the intervention program
• Preexisting systemic conditions or diseases
• Psychosocial and socioeconomic stressors
• Support provided by family unit
Intervention

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation

Anticipated Goals

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client; family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client; family, significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant other, caregivers, other health care professionals, and other interested persons (e.g., rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction

Anticipated Goals

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional Independence in activities of daily living (ADL) and Instrumental activities of daily living (MDL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client; family, significant other and caregiver knowledge and awareness of the
- Diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
• Performance levels in employment; recreational, or leisure activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of patient/client, family, significant other, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family, significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)

Anticipated Goals
• Ability to perform physical tasks related to self-care, home management, community and work (Job/school/play), integration or reintegration, and leisure activities is increased.
• Aerobic capacity is increased.
• Endurance is increased.
• Gait, locomotion and balance are improved.
• Intensity of care is decreased.
• Joint Integrity and mobility are improved.
• Level of supervision required for task performance is decreased.
• Motor function (motor control and motor learning) is improved
• Pain is decreased.
• Performance of and independence in ADL and MDL are increased.
• Physical function and health status are improved.
• Postural control is improved.
• Quality and quantity of movement between and across body segments are improved.
• Risk factors are reduced.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Self-management of symptoms is improved.
• Sense of well-being is improved.
• Strength, power, and endurance are increased.
• Stress is decreased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-beating status is improved.
• Specific Direct Interventions
• Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Aquatic exercises
• Balance and coordination training
• Body mechanics and ergonomics training
• Breathing exercises and ventilatory muscle training
- Conditioning and reconditioning
- Gait, locomotion, and balance training
- Motor function (motor control and motor learning) training or retraining
- Neuromuscular education or reeducation
- Posture awareness training
- Strengthening
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

**Functional Training in Self-Care and Home-Management (Including ADL and IADL)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care and home management (Including ADL and IADL) is increased.
- Ability to recognize recurrence is increased and intervention is sought in a timely manner
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of self-care and home management tasks and activities.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

**Specific Direct Interventions**
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Organized functional training programs (eg, back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities are increased.
- Costs to work related Injury or disability are reduced.
- Safety is improved during performance of community and work tasks and activities.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

**Specific Direct Interventions**
- Assistive and adaptive device and equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Injury prevention or reduction training
- Job coaching
- Job simulation
- Leisure and play activity training
• Organized functional training programs (eg, back schools, simulated environments and tasks)
• Orthotic, protective, or supportive device or equipment training

**Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Joint integrity and mobility are improved.
- Joint stability is increased.
- Level of supervision required for task performance is decreased
- Loading on a body part is decreased
- Motor function (motor control and motor learning) is improved.
- Optimal joint alignment is achieved.
- Overall Independence is increased.
- Physical function and health status are improved.
- Protection of body parts is increased.
- Safety is improved.
- Risk of secondary Impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

**Specific Direct Interventions**
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, canes, crutches, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, helmets, cushions, protective taping)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

**Electrotherapeutic Modalities**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Complications are reduced.
- Edema, lymphedema, or effusion is reduced.
- Motor function (motor control and motor learning) is improved.
- Muscle performance is increased.
- Pain is decreased.
- Joint Integrity and mobility are improved.
- Risk of secondary Impairments is reduced.
- Soft tissue swelling, Inflammation, and restriction are reduced.
- Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
- Biofeedback
- Electrical muscle stimulation
- Functional electrical stimulation (FES)
- Neuromuscular electrical stimulation (NMES)
- Transcutaneous electrical nerve stimulation (TENS)
Physical Agents and Mechanical Modalities

Anticipated Goals
- Ability to perform movement tasks is increased.
- Complications from soft tissue and circulatory disorders are decreased.
- Edema, effusion, or lymphedema is reduced.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Joint Integrity and mobility are improved.
- Risk of secondary Impairments is reduced.
- Soft tissue swelling, inflammation, and restriction are reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions

Physical agents:
- Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
- Cryotherapy (eg, cold packs, ice massage)
- Deep thermal modalities (eg, ultrasound, phonophoresis)
- Hydrotherapy (eg, aquatic therapy, whirlpool tanks, contrast baths, pulsatile lavage)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluidotherapy)

Mechanical modalities:
- Compression therapies (eg, vasopneumatic compression devices, compression bandaging, compression garments, taping, total contact casting),
- Tilting table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which— for some patient/client diagnostic groups— may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
• Health-related quality of life is improved.
• Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
• Risk of disability associated with muscle performance dysfunction is reduced.
• Safety of patient/client and caregivers is increased.
• Self-care and home management activities, including activities of daily living (ADL)-and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
• Understanding of personal and environmental factors that promote optimal health status is demonstrated.
• Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
• Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
• Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
• Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
• Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
• Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and caregivers.

Secondary Prevention
• Risk of functional decline is reduced.
• Risk of impairment or of impairment progression is reduced.
• Other secondary prevention outcomes include:
• Need for additional physical therapist intervention is decreased.
• Patient/client adherence to the intervention program is maximized.
• Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
• Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
• Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology or from pathology or impairment to disability is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disablement risk factors (e.g., biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Age
- Anthropometric characteristics (e.g., excessive weight, leg length discrepancy, body type)
- Attitude
- Design, equipment, or other barriers preventing optimal body mechanics or posture in home, community, or work (job/school/play) environments
- Habitual suboptimal posture or body mechanics (e.g., scapular retraction, forward-head position, hyperextension of the knees)
- Lifestyle:
  - fitness level or cardiopulmonary and musculo-skeletal
  - deconditioning
  - physical activity level
  - physical work demands
  - psychosocial and socioeconomic stressors
  - substance abuse (e.g., smoking, alcohol, drugs)
- Musculotendinous tightness or inflexibility (e.g., Achilles tendon, hamstring muscles, pectoral muscles)
- Musculo-tendinous weakness or imbalance (e.g., quadriceps femoris, hamstring, rhomboid, lower trapezius, pectoral muscles)
- Previous history of injury or surgery affecting posture or body mechanics (e.g., shoulder injury resulting in forearm compensation, foot pain resulting in knee or hip compensation)

Primary Prevention/Risk Factor Reduction Strategies
- Community program evaluation and development (e.g., senior exercise programs, childbirth education or pregnancy exercise program, youth activity programs)
- Consultation (e.g., work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification, including individual or group activities that highlight (1) the relationship between risk factors (e.g., substance abuse, physical activity and fitness level, stressors, diet) and inflammatory conditions and (2) strategies to prevent these conditions
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (e.g., athletic pre-participation, pre-employment)
- Workplace, home, and community ergonomic analysis and modification
Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Capsular Restriction

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations as a primary result of capsular restriction following prolonged joint immobilization.

Patients/clients may have one or both of the following:
- Decreased range of motion
- Pain

INCLUDES patients/clients with:
- External supports or protective devices
- Protective muscle guarding

EXCLUDES patients/clients with:
- Impaired reflex integrity or lack of voluntary movement
- Immobility as a primary result of prolonged bed rest
- Joint hemarthrosis, active sepsis, or deep vein thrombosis
- Traumatic wounds or burns not associated with prolonged immobilization

Examination (History, Systems Review, tests and measures) 318
Evaluation, Diagnosis, and Prognosis 322
Intervention 323
Reexamination 328
Outcomes 328
Criteria of Discharge 329
Primary Prevention/Risk Factor Reduction Strategies 329
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient's/ client's emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

**Past History of Current Condition**
- Prior therapeutic interventions
- Prior medications
- Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculoskeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

**Family History**
- Familial health risks

**Health Status (Self-Report, Family Report, Caregiver Report)**
- General health perception
- Physical function (e.g., mobility, sleep patterns, energy, fatigue)
- Psychological function (e.g., memory, reasoning ability, anxiety, depression, morale)
- Role function (e.g., worker, student, spouse, grandparent)
- Social function (e.g., social interaction, social activity, social support)
- Social Habits (Past and Current)
- Behavioral health risks (e.g., smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work (job/school/play), and leisure activities)

**Systems Review**
The systems review may include:

**Physiologic and anatomic status**
- Cardiopulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

**Communication, affect, cognition, language, and learning style**

**Tests and Measures**
Tests and measures for this pattern may include, in alphabetical order:

**Assistive and Adaptive Devices**
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, significant others, family caregivers, or other professionals concerning use of or need for device
- Videotape analysis of patient/client using device
Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of adaptive skills
- Analysis of environment and work (job/school/play) tasks
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social worker, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
- Assessment of current and potential barriers
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics
Ergonomics:
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
- Assessment of safety
- Identification and quantification of gait characteristics

Joint Integrity and Mobility
- Assessment of soft tissue swelling, inflammation, or restriction
- Assessment of joint hypermobility and hypomobility

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Electrophysiologic tests (eg, electromyography [EMG])

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
• Assessment of muscle soreness
• Assessment of pain and soreness with joint movement
• Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
• Analysis of resting posture in any position
• Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
• Analysis of functional ROM
• Analysis of multisegmental movement
• Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
• Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
• Assessment of normal reflexes (eg, stretch reflex)

Self-Care and Home Management (Including ADL and IADL)
• Analysis of self-care and home management activities
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Sensory Integrity (Including Proprioception and Kinesthesia)
• Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)

Ventilation, Respiration (Gas Exchange), and Circulation
• Palpation of pulses
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 4 months, patient/client will demonstrate a return to premorbid or highest level of function.

Expected Range of Number of Visits Per Episode of Care, 6 to 36
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 6 to 36 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Delayed healing
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
Intervention
Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation
Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client,
- family, significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant other, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction
Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the
• condition is increased.
• Performance levels in employment, recreational, or leisure activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family, significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities are increased.
• Aerobic capacity is increased.
• Endurance is increased.
• Gait, locomotion, and balance are improved.
• Intensity of care is decreased.
• Joint and soft tissue swelling, inflammation, or restriction is reduced.
• Joint integrity and mobility are improved.
• Level of supervision required for task performance is decreased.
• Motor function (motor control and motor learning) is improved.
• Pain is decreased.
• Performance of and independence in ADL and IADL are increased.
• Physical function and health status are improved.
• Postural control is improved.
• Quality and quantity of movement between and across body segments are improved.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Self-management of symptoms is improved.
• Sense of well-being is improved.
• Strength, power, and endurance are increased.
• Stress is decreased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Aquatic exercises
• Balance and coordination training
• Body mechanics and ergonomics training
• Breathing exercises and ventilatory muscle training
• Conditioning and reconditioning
• Gait, locomotion, and balance training
• Motor function (motor control and motor learning) training or retraining
• Neuromuscular education or reeducation
• Posture awareness training
• Strengthening:
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADI) Anticipated Goals
• Ability to perform physical tasks related to self-care and home management (including ADL and IADI) is increased.
• Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
• Performance of and independence in ADL and IADI are increased.
• Risk of recurrence of condition is reduced.
• Safety is improved during performance of self-care and home management tasks and activities.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning) Anticipated Goals
• Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities, is increased.
• Costs of work-related injury or disability are reduced.
• Safety is improved during performance of community, work (job/school/play), or leisure tasks and activities.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
• Environmental, community, work (job/school/play), or leisure task adaptation
• Ergonomic stressor reduction training
• IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
• Injury prevention or reduction training
• Job coaching
• Job simulation
• Organized functional training programs (eg, back schools, simulated environments and tasks)

Manual Therapy Techniques (Including Mobilization and Manipulation) Anticipated Goals
• Ability to perform movement tasks is increased.
• Joint integrity and mobility are improved.
• Muscle spasm is reduced.
• Motor function (motor control and motor learning) is improved.
• Pain is decreased.
• Quality and quantity of movement between and across body segments is improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
• Connective tissue massage
• Joint mobilization and manipulation
• Manual traction
• Passive range of motion
• Soft tissue mobilization and manipulation
• Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic) Anticipated Goals
• Ability to perform physical tasks is increased.
• Deformities are prevented.
• Gait, locomotion, and balance are improved.
• Edema, lymphedema, or effusion is reduced.
• Joint integrity and mobility are improved.
• Joint stability is increased.
• Loading on a body part is decreased.
• Motor function (motor control and motor learning) is improved.
• Optimal joint alignment is achieved.
• Physical function and health status are improved.
• Protection of body parts is increased.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Stresses precipitating injury are decreased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
• Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
• Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
• Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
• Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, plastic wraps)

Electrotherapeutic Modalities Anticipated Goals
• Ability to perform physical tasks is increased.
• Complications are reduced.
• Edema, lymphedema, or effusion is reduced.
• Motor function (motor control and motor learning) is improved.
• Muscle performance is increased.
• Pain is decreased.
• Joint integrity and mobility are improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
Specific Direct Interventions
- Biofeedback
- Electrical muscle stimulation
- Iontophoresis
- Neuromuscular electrical stimulation (NMES)
- Transcutaneous electrical nerve stimulation (TENS)

Physical Agents and Mechanical Modalities
Anticipated Goals
- Ability to perform movement tasks is increased.
- Complications resulting from soft tissue and circulatory disorders are decreased.
- Edema, lymphedema, or effusion is reduced.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, and restriction is reduced.
- Tolerance to positions and activities is increased

Specific Direct Interventions
Physical agents:
- Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
- Cryotherapy (eg, cold pack, ice massage)
- Deep thermal modalities (eg, ultrasound, phonophoresis)
- Hydrotherapy (eg, whirlpool tanks, contrast baths, pulsatile lavage)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluidotherapy)

Mechanical modalities:
- Compression therapies (eg, vasopneumatic compression devices, compression bandaging, compressive garments, taping, total contact casting)
- Continuous passive motion (CPM)
- Traction (sustained, intermittent, or positional)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with capsular restriction is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)-and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes are achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology or from pathology or impairment to disability is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disabling risk factors (e.g., biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Age
- Attitude
- Cognitive status (e.g., sufficient to understand risk reduction processes)
- Heredity
- Lifestyle:
  - general physical condition
  - physical activity level
  - substance abuse (e.g., smoking, alcohol, drugs)
- Overly conservative medical management
- Pain tolerance
- Vascular integrity, including faster or slower metabolic or healing rates

Primary Prevention/Risk Factor Reduction Strategies
- Community program evaluation and development (e.g., senior exercise programs, childbirth education or pregnancy exercise program, youth activity programs)
- Consultation (e.g., work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification, including individual or group activities that highlight (1) the relationship between risk factors (e.g., substance abuse, physical activity and fitness level, stressors, diet) and capsular restriction and (2) strategies to prevent related impairments.
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (e.g., athletic pre-participation, pre-employment)
- Workplace, home, and community ergonomic analysis and modification
Impaired Joint Mobility, Muscle Performance, and Range of Motion Associated With Ligament or Other Connective Tissue Disorders

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession's code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitation due to ligamentous sprain or musculo-tendinous strain.

Patients/clients may have any one or a combination of the following:
- Joint subluxation or dislocation
- Muscle guarding or weakness
- Swelling (edema) or effusion

INCLUDES patients/clients with:
- Ligamentous, cartilaginous, capsular, or fascial sprain
- Muscle and tendon strain

EXCLUDES patients with:
- Fractures
- Neurological dysfunction (upper motor neuron or lower motor neuron lesions)
- Open wounds and recent associated surgical procedures
- Radiculopathy, with or without spinal pain

Examination (History, Systems Review, Tests and Measures) 331
Evaluation, Diagnosis, and Prognosis 335
Intervention 336
Reexamination 341
Outcomes 341
Criteria for Discharge 342
Primary Prevention/Risk Factor Reduction Strategies 342
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeuti interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
• Review of available records
• Review of nutrition and hydration

Past History of Current Condition
• Prior therapeutic interventions
• Prior medications

Post Medical/Surgical History
• Cardiopulmonary
• Endocrine/metabolic
• Gastrointestinal
• Genitourinary
• Integumentary
• Musculoskeletal
• Neuromuscular
• Pregnancy, delivery, and postpartum
• Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
• Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
• General health perception
• Physical function (eg, mobility, sleep patterns, energy, fatigue)
• Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
• Role function (eg, worker, student, spouse, grandparent)
• Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
• Behavioral health risks (eg, smoking, drug abuse)
• Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
• Cardiopulmonary
• Integumentary
• Musculoskeletal
• Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Anthropometric Characteristics
• Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion

Assistive and Adaptive Devices
• Analysis of alignment and fit of device and inspection of related changes in skin condition
• Analysis of appropriate components of device
• Analysis of patient/client and caregiver ability to care for device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family significant others, caregivers, and other professionals concerning use of or need for device
• Videotape analysis of patient/client using device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
• Analysis of environment and work (job/school/play) tasks
• Assessment of functional capacity
• Assessment of physiologic responses during community, work (job/school/play), and leisure activities
• Assessment of safety in community and work (job/school/play) environments
• IADL scales or indexes
• Observation of response to non-routine occurrences
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by patient/client, family significant others, caregivers, other health care professionals, or other interested persons (e.g., rehabilitation counselor, social worker, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
• Assessment of current and potential barriers

Ergonomics and Body Mechanics
Ergonomics:
• Analysis of performance of selected tasks or activities
• Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
• Assessment of work (job/school/play) performance through batteries of tests
• Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
• Ergonomic analysis of the work and its inherent tasks or activities, including:
  • analysis of repetition/work/rest cycling during task or activity
  • assessment of tools, devices, or equipment used
  • assessment of vibration
  • assessment of workstation
  • computer-assisted motion analysis of performance of selected movements or activities
  • identification of essential functions of task or activity
  • identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress

Functional capacity evaluation, including:
• endurance required to perform aerobic endurance activities
• joint range of motion (ROM) used to perform task or activity
• postures required to perform task or activity
• strength required in the work postures necessary to perform task or activity
• Observation of performance of selected movements or activities
• Videotape analysis of patient/client at work

Gait, Locomotion, and Balance
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
• Assessment of safety
• Identification and quantification of gait characteristics
• Identification and quantification of static and dynamic balance characteristics
Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during the performance of specific movement tasks
- Assessment of joint hypermobility and hypomobility
- Assessment of pain and soreness
- Assessment of response to manual provocation tests
- Assessment of soft tissue swelling, inflammation, or restriction

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Electrophysiologic tests (eg, electromyography [EMG])

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of activities and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of muscle soreness
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM
- Analysis of multisegmental movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Self-Care and Home Management (Including ADL and IADL)
- Analysis of self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 2 weeks to 4 months, patient/client will demonstrate a return to premorbid or highest level of function.

Expected Range of Number of Visits Per Episode of Care, 3 to 21
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 3 to 21 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (e.g., rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
• Performance levels in employment, recreational, or leisure activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family, significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audio visual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities are increased.
• Aerobic capacity is increased.
• Endurance is increased.
• Gait, locomotion, and balance are improved.
• Intensity of care is decreased.
• Joint and soft tissue swelling, inflammation, or restriction is reduced.
• Level of supervision required for task performance is decreased.
• Motor function (motor control and motor learning) is improved.
• Pain is decreased.
• Performance of and independence in ADL and IADL are increased.
• Physical function and health status are improved.
• Postural control is improved.
• Joint integrity and mobility are improved.
• Quality and quantity of movement between and across body segments are improved.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Self-management of symptoms is improved.
• Sense of well-being is improved.
• Strength, power, and endurance are increased.
• Stress is decreased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Aerobic endurance activities using treadmills, ergometers, step-pets, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Aquatic exercises
• Balance and coordination training
• Body mechanics and ergonomics training
• Conditioning and reconditioning
- Gait, locomotion, and balance training
- Motor function (motor control and motor learning) training or retraining
- Neuromuscular education or reeducation
- Posture awareness training
- Strengthening:
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance, robotics, and mechanical or electromechanical devices
- Stretching

**Functional Training in Self-Care and Home Management (Including ADL and IADL)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of self-care and home management tasks and activities.
- Utilization and cost of health care services are decreased.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, and supportive device training

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities are increased.
- Cost of work-related injury or disability is reduced.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of community, work (job/school/play), and leisure tasks and activities.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- Assistive and adaptive device or equipment training
- Environmental, community work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Job coaching
- Job simulation
- Organized functional training programs (eg, back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

**Manual Therapy Techniques (Including Mobilization and Manipulation)**

**Anticipated Goals**
- Ability to perform movement task is increased.
• Motor function (motor control and motor learning) is improved.
• Muscle spasm is reduced.
• Pain is decreased.
• Joint integrity and mobility are improved.
• Quality and quantity of movement between and across body segments are improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Tolerance to positions and activities is increased.

**Specific Direct Interventions**
• Connective tissue massage
• Joint mobilization and manipulation
• Manual traction
• Passive range of motion
• Soft tissue mobilization and manipulation
• Therapeutic massage

**Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)**

**Anticipated Goals**
• Ability to perform physical tasks is increased.
• Deformities are prevented.
• Gait, locomotion, and balance are improved.
• Edema, lymphedema, or effusion is reduced.
• Joint stability is increased.
• Loading on a body part is decreased.
• Motor function (motor control and motor learning) is improved.
• Optimal joint alignment is achieved.
• Physical function and health status are improved.
• Protection of body parts is increased.
• Joint integrity and mobility are improved.
• Safety is improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Stresses precipitating injury are decreased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

**Specific Direct Interventions**
• Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
• Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handed reachers, static and dynamic splints)
• Orthotic devices or equipment (eg, splints, braces, shoe inserts, cushions, casts)
• Protective devices or equipment (eg, braces, helmets, protective taping)
• Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps)

**Electrotherapeutic Modalities**

**Anticipated Goals**
• Ability to perform physical tasks is increased.
• Ventilation, respiration (gas exchange), and circulation are improved.
• Complications are reduced.
• Edema, lymphedema, or effusion is reduced.
• Motor function (motor control and motor learning) is improved.
• Muscle performance is increased.
• Pain is decreased.
• Joint integrity and mobility are improved.
Risk of secondary impairments is reduced.
Soft tissue swelling, inflammation, or restriction is reduced.
Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
- Biofeedback
- Electrical muscle stimulation
- Iontophoresis
- Neuromuscular electrical stimulation (NMES)
- Transcutaneous electrical nerve stimulation (TENS)

**Physical Agents and Mechanical Modalities**

**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Complications resulting from soft tissue and circulatory disorders are decreased.
- Edema, lymphedema, or effusion is reduced.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**

**Physical agents:**
- Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
- Cryotherapy (eg, cold packs, ice massage)
- Deep thermal modalities (eg, ultrasound, phonophoresis)
- Hydrotherapy (eg, aquatic therapy, whirlpool tanks, contrast baths, pulsatile lavage)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluidotherapy)

**Mechanical modalities:**
- Compression therapies (eg, vasopneumatic compression devices, compression bandaging, compressive garments, taping, total contact casting)
- Continuous passive motion (CPM)
- Traction (sustained, intermittent, or positional)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient's/client's expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with ligament or other connective tissue disorders is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL) and leisure activities, including instrumental activities of daily living (IADL) are performed safely, efficiently and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achievable. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of the physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology-or from pathology or impairment to disability-is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disablement risk factors (eg, biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Age
- Anthropometric characteristics (eg, excessive weight, leg-length discrepancy body type)
- Attitude
- Design, equipment, or other barriers preventing optimal body mechanics or posture underlying spinal dysfunction (eg, postural dysfunction) in home, community, or work (job/school/play) environments.
- Habitual suboptimal body mechanics
- Lifestyle:
  - fitness level or cardiopulmonary and musculoskeletal deconditioning
  - physical activity level
  - physical work demands
  - psychosocial and socioeconomic stressors
  - substance abuse (eg, smoking, alcohol, drugs)
  - Muscle tightness or inflexibility (eg, hamstring muscles, hip flexors)
  - Muscle weakness or imbalance (eg, trunk and hip muscles)
  - Previous history of injury or surgery affecting spine, posture, or body mechanics
  - Systemic condition predisposing patient/client to spinal pain with radiculopathy

Primary Prevention/Risk Factor Reduction Strategies
- Community program evaluation and development (eg, senior exercise programs, childbirth education or pregnancy exercise programs, youth activity programs)
- Consultation (eg, work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification through individual or group activities that highlight (1) the relationship between risk factors (eg, smoking, substance abuse, physical activity and fitness level, stressors, diet) and sprain and strain and (2) strategies to prevent or reduce these conditions
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (e.g., scoliosis, athletic pre-participation, pre-employment)
- Workplace, home, and community ergonomic analysis and modification
Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Localized Inflammation

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitation and impairment secondary to protective tissue response of the synovial joint and the periarticular connective tissue.

Patients/clients may or may not have additional contributing factors (e.g., workstation and tool design, work rates, physical fitness level, pregnancy, habitual posture) with one or more of the following:
- Edema
- Inflammation of periarticular connective tissue
- Muscle weakness or strain
- Neurovascular changes
- Pain
- Sensory changes

INCLUDES patients/clients with:
- Bursitis
- Capsulitis
- Epicondylitis
- Fasciitis
- Osteoarthritis
- Synovitis
- Tendinitis

EXCLUDES patients with:
- Associated post-surgical procedures
- Deep vein thrombosis (DVT)
- Dislocations
- Fractures
- Hemarthrosis
- Open wounds
- Sepsis
- Systemic disease processes

Examination (History, System Review, Tests and Measures) 345
Evaluation, Diagnosis, and Prognosis 350
Intervention 351
Reexamination 356
Outcomes 356
Criteria for Discharge 357
Primary Prevention/Risk Factor Reduction Strategies 357
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors

History
- Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
• Review of available records
• Review of nutrition and hydration

Past History of Current Condition
• Prior therapeutic interventions
• Prior medications

Past Medical/Surgical History
• Cardiopulmonary
• Endocrine/metabolic
• Gastrointestinal
• Genitourinary
• Integumentary
• Musculoskeletal
• Neuromuscular
• Pregnancy, delivery, and postpartum
• Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
• Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
• General health perception
• Physical function (eg, mobility, sleep patterns, energy, fatigue)
• Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
• Role function (eg, worker, student, spouse, grandparent)
• Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
• Behavioral health risks (eg, smoking, drug abuse)
• Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
• Cardiopulmonary
• Integumentary
• Musculoskeletal
• Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order.

Aerobic Capacity and Endurance
• Assessment of autonomic responses to positional changes
• Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
• Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, 6-minute walk test, 3-minute step test)
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)

Assistive and Adaptive Devices
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, and other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of environment and work (job/school/play) tasks
- Assessment of functional capacity
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (e.g., rehabilitation counselor, social worker, employer)

Ergonomics and Body Mechanics

Ergonomics:
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of dexterity and coordination
- Assessment of safety in community and work (job/school/play) environments
- Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
- Assessment of work (job/school/play) performance through batteries of tests
- Computer-assisted motion analysis of patient/client at work (job/school/play)
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Ergonomic analysis of the work and its inherent tasks or activities, including:
  - analysis of repetition/work/rest cycling during task or activity
  - assessment of tools, devices, or equipment used
  - assessment of vibration
  - assessment of workstation
  - computer-assisted motion analysis of patient/client during performance of selected movements or activities
  - identification of essential functions of task or activity
  - identification of sources of actual or potential trauma, cumulative trauma, and repetitive stress
- Functional capacity evaluation, including:
  - endurance required to perform aerobic endurance activities
  - joint range of motion (ROM) used to perform task or activity
  - postures required to perform task or activity
  - strength required in the work postures necessary to perform task or activity
- Videotape analysis of patient/client at work

Body mechanics:
• Determination of dynamic capabilities and limitations during specific work activities
• Observation of performance of selected movements or activities

Gait, Locomotion, and Balance
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
• Assessment of safety
• Identification and quantification of gait characteristics
• Identification and quantification of static and dynamic balance characteristics

Integumentary Integrity
For skin associated with integumentary disruption:
• Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (eg, using thermistors)

Joint Integrity and Mobility
• Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
• Assessment of joint hypermobility and hypomobility
• Assessment of pain and soreness
• Assessment of response to manual provocation tests
• Assessment of soft tissue swelling, inflammation, or restriction.

Muscle Performance (Including Strength, Power, and Endurance)
• Analysis of functional muscle strength, power, and endurance
• Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
• Assessment of pain and soreness

Orthotic, Protective, and Supportive Devices
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
• Analysis of pain behavior and reaction during specific movements and provocation tests
• Assessment of muscle soreness
• Assessment of pain and soreness with joint movement
• Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
• Analysis of resting posture in any position
• Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, video tape, or visual analysis
Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM
- Analysis of multisegmental movement
- Analysis of ROM using a goniometer, tape measure, flexible ruler, inclinometer, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, and soft tissue characteristics

Reflex Integrity
Assessment of normal reflexes (eg, stretch reflex)

Self-Care and Home Management (Including ADL and IADL)
- ADL or IADL scales or indexes

Sensory Integrity (Including Proprioception and Kinesthesia)
- Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)
- Electro-physiologic tests (eg, sensory nerve conduction)
Evaluation, Diagnosis, and Prognosis

The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis

Over the course of 8 to 16 weeks, patient/client will demonstrate a return to premorbid or highest level of function.

Expected Range of Number of Visits Per Episode of Care, 6 to 24

This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 6 to 24 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode

- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Associated medical interventions (eg, injections, medications, tests)
- Availability of resources
- Caregiver (eg, family home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Level of patient/client adherence to the intervention program
- Ongoing aggravating risk Factors (eg, repetitive motion)
- Preexisting systemic conditions or diseases
- Premorbid condition
- Psychosocial and socioeconomic stressors
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, Family; significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources
- Patient/Client-Related Instruction
- Specific Interventions
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Patient/Client-Related Instruction**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
Disability associated with acute or chronic illnesses is reduced.
Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
Intensity of care is decreased.
Level of supervision required for task performance is decreased.
Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
Patient/client knowledge of personal and environmental factors associated with the condition is increased.
Performance levels in employment, recreational, or leisure activities are improved.
Physical function and health status are improved.
Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
Risk of recurrence of condition is reduced.
Risk of secondary impairments is reduced.
Safety of patient/client, family, significant others, and caregivers is improved.
Self-management of symptoms is improved.
Utilization and cost of health care services are decreased.

Specific Interventions
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)

Anticipated Goals
- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
- Aerobic capacity is increased.
- Endurance is increased.
- Gait, locomotion, and balance are improved.
- Joint and soft tissue swelling, inflammation, or restriction is reduced.
- Motor function (motor control and motor learning) is improved.
- Muscle performance is increased.
- Need for assistive, adaptive, orthotic, protective, or supportive devices is decreased.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Postural control is improved.
- Joint integrity and mobility are improved.
- Quality and quantity of movement between and across body segments are improved.
- Risk factors are reduced.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Strength, power, and endurance are increased.
- Stress is decreased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Aquatic exercises
• Balance and coordination training
• Body mechanics and ergonomics training
• Conditioning and reconditioning
• Motor function (motor control and motor learning) training or retraining
• Neuromuscular education or reeducation
• Posture awareness training
• Strengthening:
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADL)
Anticipated Goals
• Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
• Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
• Performance of and independence in ADL and IADL are increased.
• Risk of recurrence of condition is reduced.
• Safety is improved during performance of self-care and home management tasks and activities.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
• Assistive and adaptive device or equipment training
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
• Orthotic, protective, or supportive device or equipment training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure, tasks, movements, or activities is increased.
• Costs of work-related injury or disability are reduced.
• Intensity of care is decreased.
• Performance of and independence in IADL is increased.
• Level of supervision required for task performance is decreased.
• Safety is improved during performance of community, work (job/school/play), and leisure, tasks and activities.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• Assistive and adaptive device and equipment training Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- Injury prevention or reduction training
- Job coaching
- Job simulation
- Leisure and play activity training
- Organized functional training programs (eg, back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

**Manual Therapy Techniques (Including Mobilization and Manipulation)**

**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.
- Muscle spasm is reduced.
- Pain is decreased.
- Quality and quantity of movement between and across body segments are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Ventilation, respiration (gas exchange), and circulation are improved.

**Specific Direct Interventions**
- Connective tissue massage
- Joint mobilization or manipulation
- Manual traction
- Passive range of motion
- Soft tissue mobilization and manipulation
- Therapeutic massage

**Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Joint stability is increased.
- Level of supervision required for task performance is decreased.
- Loading on a body part is decreased.
- Motor function (motor control and motor learning) is increased.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Protection of body parts is increased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Stresses precipitating injury are decreased.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

**Specific Direct Interventions**
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
• Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handed reachers, static and dynamic splints)
• Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
• Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
• Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

Electrotherapeutic Modalities
Anticipated Goals
• Ability to perform physical tasks is increased.
• Complications are reduced.
• Edema, lymphedema, or effusion is reduced.
• Motor function (motor control and motor learning) is improved.
• Muscle performance is increased.
• Pain is decreased.
• Joint integrity and mobility are improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.

Specific Direct Interventions
• Electrical muscle stimulation
• Functional electrical stimulation (FES)
• Iontophoresis
• Neuromuscular electrical stimulation (NMBS)
• Transcutaneous electrical nerve stimulation (TENS)

Physical Agents and Mechanical Modalities
Anticipated Goals
• Ability to perform movement tasks is increased.
• Complications of soft tissue and circulatory disorders are decreased.
• Edema, lymphedema, or effusion is reduced.
• Motor function (motor control and motor learning) is improved.
• Neural compression is decreased.
• Pain is decreased.
• Joint integrity and mobility are improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
• Physical agents:
  • Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
  • Cryotherapy (eg, cold packs, ice massage)
  • Deep thermal modalities (eg, ultrasound, phonophoresis)
  • Hydrotherapy (eg, whirlpool tanks, contrast baths)
  • Superficial thermotherapy (eg, heat, paraffin baths, hot packs, fluidotherapy)
• Mechanical modalities:
  • Compression therapies (eg, vasopneumatic compression devices, compression bandaging, compressive garments, taping, total contact casting)
  • Continuous passive motion (CPM)
  • Traction (sustained, intermittent, or positional)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which for some patient/client diagnostic groups may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with localized inflammation is reduced.
- Safety of patient/client and caregivers is increased.
- Self care and home management activities, including activities of daily living (ADL)- and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)-are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family; significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family; significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family; significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.
- Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology or from pathology or impairment to disability is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disablement risk factors (e.g., biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Age
- Anthropometric characteristics (e.g., excessive weight, leg-length discrepancy, body type)
- Attitude
- Design, equipment, or other barriers preventing optimal body mechanics or posture in home, community, or work (job/school/play) environments
- Habitual suboptimal posture or body mechanics (e.g., scapular retraction, forward-head position, hyperextension of the knees)
- Lifestyle:
  - fitness level or cardiopulmonary and musculo-skeletal deconditioning
  - physical activity level
  - physical work demands
  - psychosocial and socioeconomic stressors
  - substance abuse (e.g., smoking, alcohol, drugs)
  - Musculo-tendinous tightness or inflexibility (e.g., Achilles tendon, hamstring muscles, pectoral muscles)
  - Musculo-tendinous weakness or imbalance (e.g., quadriceps femoris, hamstring, rhomboid, lower trapezius, pectoral muscles)
  - Previous history of injury or surgery affecting posture or body mechanics (e.g., shoulder injury resulting in forearm compensation, foot pain resulting in knee or hip compensation)

Primary Prevention/Risk Factor Reduction Strategies
- Community program evaluation and development (e.g., senior exercise programs, childbirth education or pregnancy exercise programs, youth activity programs)
- Consultation (e.g., work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification through individual or group activities that (1) highlight the relationship between risk factors (e.g., smoking, substance abuse, physical activity and fitness level, stressors) and inflammatory conditions and (2) strategies to prevent or reduce these conditions.
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (e.g., scoliosis, athletic pre-participation, pre-employment)
- Workplace, home, and community ergonomic analysis and modification
Impaired Joint Mobility, Motor Function, Muscle Performance, Range of Motion, or Reflex Integrity Secondary to Spinal Disorders

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations secondary to spinal Impairment with or without radiculopathy

Patients/clients may have any one or a combination of the following:
- Altered sensation
- Deep tendon reflex changes
- Muscle weakness
- Positive neural tension tests
- Associated surgical procedures

INCLUDES patients/clients with:
- Cervical, thoracic, or lumbar disk herniation
- Disk disease
- Nerve root compression
- Spinal stenosis
- Stable spondylolisthesis

EXCLUDES patients/clients with:
- Failed surgical procedures
- Fractures or unstable spondylolisthesis
- Neoplasm
- Neuromuscular disease
- Referred pain with systemic condition
- Sepsis
- Systemic condition (eg, ankylosing spondylitis, Scheurmann’s disease, juvenile rheumatoid arthritis, Reiter’s disease)
- Traumatic spinal cord injury

Examination 360
Evaluation, Diagnosis, and Prognosis 365
Intervention 366
Reexamination 371
Outcomes 371
Criteria for Discharge 372
Primary Prevention/Risk Factor Reduction Strategies 372
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, 1limi~ significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient's/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
• Review of available records
• Review of nutrition and hydration

Past History of Current Condition
• Prior therapeutic interventions
• Prior medications

Past Medical/Surgical History
• Cardiopulmonary
• Endocrine/metabolic
• Gastrointestinal
• Genitourinary
• Integumentary
• Musculoskeletal
• Neuromuscular
• Pregnancy, delivery, and postpartum
• Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
• Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
• General health perception
• Physical function (eg, mobility sleep patterns, energy, fatigue)
• Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
• Role function (eg, worker, student, spouse, grandparent)
• Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
• Behavioral health risks (eg, smoking, drug abuse)
• Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
• Cardiopulmonary
• Integumentary
• Musculoskeletal
• Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Aerobic Capacity and Endurance
• Assessment of autonomic responses to positional changes
• Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
• Assessment of performance during established exercise protocols (eg, using treadmill, ergometer, 6-minute walk test, 3-minute step test)
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
Assistive and Adaptive Devices
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Review of reports provided by patient/client, family significant others, caregivers, and other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- LADL scales or indexes
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social worker, employer)

Ergonomics and Body Mechanics
Ergonomics:
- Analysis of performance of selected tasks or activities
- Analysis of preferred postures during performance of tasks and activities
- Assessment of dexterity and coordination
- Assessment of safety in community and work (job/school/play) environments
- Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
- Assessment of work (job/school/play) performance through batteries of tests
- Computer-assisted motion analysis of patient/client at work (job/school/play)
- Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
- Endurance required to perform aerobic endurance activities
- Ergonomic analysis of the work and its inherent tasks or activities, including:
  - analysis of repetition/work/rest cycling during task or activity
  - assessment of joint range of motion (ROM) used to perform task or activity
  - assessment of postures required to perform task or activity
  - assessment of strength required in the work postures necessary to perform task or activity
  - assessment of tools, devices, or equipment used
  - assessment of vibration
  - assessment of workstation
  - computer-assisted motion analysis during performance of selected movements or activities
  - identification of essential functions of task or activity
  - identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress
- Functional capacity evaluation, including assessment of:
  - endurance required to perform aerobic endurance activities
  - joint ROM used to perform task or activity
  - postures required to perform task or activity
  - strength required in the work postures necessary to perform task or activity
- Videotape analysis of patient/client at work
Body mechanics:
- Observation of performance of selected movements or activities
- Videotape analysis of performance of selected movements or activities

Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Gait, locomotion, and balance assessment instruments
- Gait, locomotion, and balance profiles
- Identification and quantification of gait characteristics
- Identification and quantification of static and dynamic balance characteristics

Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of joint hypermobility and hypomobility
- Assessment of pain and soreness
- Assessment of response to manual provocation tests
- Assessment of soft tissue swelling, inflammation, or restriction
- Assessment of sprain

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
- Assessment of muscle tone
- Assessment of pain and soreness
- Assessment of pelvic-floor musculature
- Electrophysiologic tests (eg, electromyography [EMG], nerve conduction velocity [NCV])

Neuromotor Development and Sensory Integration
- Assessment of dexterity, agility, and coordination

Orthotic, Protective, and Supportive Devices
- Analysis of ability to care for device independently
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of muscle soreness
- Assessment of pain and soreness with joint movement
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales
Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM
- Analysis of multisegmental movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
- Assessment of normal reflexes (eg, stretch reflex)
- Assessment of pathological reflexes (eg, Babinski’s reflex)

Self-Care and Home Management (Including ADL and IADL)
- ADL or IADL scales or indexes
- Analysis of environment
- Analysis of self-care and home management activities
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, or supportive devices and equipment
- Assessment of functional capacity
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals

Sensory Integrity (Including Proprioception and Kinesthesia)
- Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
- Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)
- Electrophysiologic tests (eg, sensory nerve conduction)
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 1 to 6 months, patient/client will demonstrate a return to premorbid or highest level of function and integration or reintegration into home, community, work, or leisure activities safely and efficiently.

Expected Range of Number of Visits Per Episode of Care, 8 to 24
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 8 to 24 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to obtain job reclassification or redesign, including job or home
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Previous history of spine injury or surgery
- Psychosocial and socioeconomic stressors
- Support provided by family unit
Intervention

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation

Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction

Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family, significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities are increased.
• Energy expenditure is decreased.
• Motor function (motor control and motor learning) is improved.
• Muscle performance is increased.
• Postoperative complications are reduced.
• Weight-bearing status is improved.

Specific Direct Interventions
• Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Aquatic exercises
• Balance and coordination training
• Body mechanics and ergonomics training
• Conditioning and reconditioning
• Gait, locomotion, and balance training
• Neuromuscular education or reeducation
• Posture awareness training
• Strengthening
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADL)
Anticipated Goals
• Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
• Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
• Performance of and independence in ADL and IADL are increased.
• Risk of recurrence of condition is reduced.
• Safety is improved during performance of self-care and home management tasks and activities.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• Assistive and adaptive device or equipment training
• IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
• Organized functional training programs (eg, back schools, stimulated environments and tasks)
• Orthotic, protective, or supportive device or equipment training
Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)

Anticipated Goals
- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities are increased.
- Costs of work-related injury or disability are reduced.
- Safety is improved during performance of community, work (job/school/play), and leisure tasks and activities.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions
- Assistive and adaptive device or equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- Injury prevention or reduction training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Job coaching
- Job simulation
- Leisure and play activity training
- Organized functional training programs (eg, back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

Manual Therapy Techniques (Including Mobilization and Manipulation)

Anticipated Goals
- Ability to perform movement tasks is increased.
- Motor function (motor control and motor learning) is improved
- Muscle spasm is reduced.
- Pain is decreased.
- Quality and quantity of movement between and across body segments are improved.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Ventilation, respiration (gas exchange), and circulation are improved.

Specific Direct Interventions
- Connective tissue massage
- Joint mobilization and manipulation
- Manual traction
- Passive range of motion
- Soft tissue mobilization or manipulation
- Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals
- Ability to perform physical tasks is increased.
- Gait, locomotion, and balance are improved.
- Joint stability is increased.
- Loading on a body part is decreased.
- Motor function (motor control and motor learning) is improved.
- Performance of and independence in ADL and IADL are increased.
- Pain is decreased.
- Physical function and health status are improved.
- Protection of body parts is increased.
- Joint integrity and mobility are improved.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Stresses precipitating injury are decreased.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

**Specific Direct Interventions**
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handed reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps)

**Electrotherapeutic Modalities**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Complications are reduced.
- Edema, lymphedema, or effusion is reduced.
- Motor function (motor control and motor learning) is improved.
- Muscle performance is increased.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
- Biofeedback
- Electrical muscle stimulation
- Functional electrical stimulation (FES)
- Iontophoresis
- Neuromuscular electrical stimulation (NMES)
- Transcutaneous electrical nerve stimulation (TENS)

**Physical Agents and Mechanical Modalities**

**Anticipated Goals**
- Ability to perform movement tasks is increased
- Edema, lymphedema, or effusion is reduced
- Joint integrity and mobility is improved.
- Neural compression is decreased.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased

**Specific Direct Interventions**
- Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
- Cryotherapy (eg, cold packs, ice massage)
- Deep thermal modalities (eg, ultrasound, phonophoresas)
- Hydrotherapy (eg, whirlpool tanks, contrast baths, pulsatile lavage)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluidotherapy)

Mechanical modalities:
- Traction (sustained, intermittent, or positional)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with spinal disorders is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)- and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)- are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family; significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family; significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family; significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of Impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy; When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology or from pathology to disability is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disablement risk factors (eg, biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Age
- Anthropometric characteristics (eg, excessive weight, leg-length discrepancy, body type)
- Attitude
- Design, equipment, or other barriers preventing optimal body mechanics or posture underlying spinal dysfunction (eg, postural dysfunction) in community, home, or work (job/school/play) environments
- Habitual suboptimal body mechanics
- Systemic condition predisposing patient/client to spinal pain with radiculopathy
- Lifestyle:
  - fitness level or cardiopulmonary and musculoskeletal deconditioning
  - physical activity level
  - physical work demands
  - psychosocial and socioeconomic stressors
  - substance abuse (eg, smoking, alcohol, drugs)
- Muscle tightness or inflexibility (eg, hamstring muscles, hip flexors)
- Muscle weakness or imbalance (eg, trunk and hip muscles)
- Previous history of injury or surgery affecting spine, posture, or body mechanics

Primary Prevention/Risk Factor Reduction Strategies
- Community program evaluation and development (eg, senior exercise programs, childbirth education or pregnancy exercise programs, youth activity programs)
- Consultation (eg, work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification through individual or group activities that highlight (1) the relationship between risk factors (eg, smoking, substance abuse, physical activity and fitness level, stressors) and spinal pain and (2) strategies to prevent or reduce pain
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (eg, scoliosis, athletic pre-participation, pre-employment)
- Workplace, home, and community ergonomic analysis and modification
Impaired Joint Mobility, Muscle Performance, and Range of Motion Associated With Fracture

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations and impairments secondary to fracture.

INCLUDES patients with:
- Activity-induced hormonal changes
- Certain medications (eg, steroids)
- Known high risk (eg, based on sex, ethnicity, age, lifestyle, menstrual or hormonal changes related to hysterectomy or menopause)
- Nutritional deficiency
- Traumatic injuries

EXCLUDES patients with:
- Neoplasms of the bone
- Osteogenesis imperfecta
- Paget’s disease

Examination 375
Evaluation, Diagnosis, and Prognosis 380
Intervention 381
Reexamination 386
Outcomes 386
Criteria of Discharge 387
Primary Prevention/Risk Factor Reduction Strategies 387
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family; significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

**General Demographics**
- Age
- Primary language
- Race/ethnicity
- Sex

**Social History**
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

**Occupation/Employment**
- Current and prior community and work (job/school) activities

**Growth and Development**
- Hand and foot dominance
- Developmental history

**Living Environment**
- Living environment and community characteristics
- Projected discharge destinations

**History of Current Condition**
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family; significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

**Functional Status and Activity Level**
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

**Medications**
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

**Other Tests and Measures**
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

**Past History of Current Condition**
- Prior therapeutic interventions
- Prior medications

**Past Medical/Surgical History**
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculoskeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

**Family History**
- Familial health risks

**Health Status (Self-Report, Family Report, Caregiver Report)**
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

**Social Habits (Past and Current)**
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

**Systems Review**
The systems review may include:

**Physiologic and anatomic status**
- Cardiopulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

**Communication, affect, cognition, language, and learning style**

**Tests and Measures**
Tests and measures for this pattern may include, in alphabetical order:

**Aerobic Capacity and Endurance**
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity

**Anthropometric Characteristics**
- Measurement of height, weight, length, and girth

**Assistive and Adaptive Devices**
- Analysis of alignment and fit of device and inspection of related changes in skin condition
- Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
• Analysis of patient/client or caregiver ability to care for device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, and other professionals concerning use of or need for device

**Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)**
• Analysis of adaptive skills
• Analysis of environment, work (job/school/play), and leisure activities
• Assessment of functional capacity
• Assessment of physiologic responses during community, work (job/school/play), and leisure activities
• IADL scales or indexes
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs

**Review of reports provided by patient/client, family; significant others, caregivers, other health care professionals, or other interested persons (e.g., rehabilitation counselor, social workers, employer)**

**Ergonomics and Body Mechanics**

**Ergonomics:**
• Analysis of performance of selected tasks or activities
• Analysis of preferred postures during performance of tasks and activities
• Assessment of dexterity and coordination
• Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
• Assessment of work (job/school/play) performance through batteries of tests
• Computer-assisted motion analysis of patient/client at work
• Determination of dynamic capabilities and limitations during specific work (job/school/play) activities

**Ergonomic analysis of the work and its inherent tasks or activities, including:**
• analysis of repetition/work/rest cycling during task or activity
• assessment of tools, devices, or equipment used
• assessment of vibration
• computer-assisted motion analysis of performance of selected movements or activities
• identification of essential functions of task or activity
• identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress

**Functional capacity evaluation, including:**
• endurance required to perform aerobic endurance activities
• joint range of motion (ROM) used to perform task or activity
• postures required to perform task or activity
• strength required in the work postures necessary to perform task or activity
• Videotape analysis of patient/client at work
• Environmental, Home, and Work (Job/School/Play)
• Barriers
• Assessment of current and potential barriers
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight-bearing scales, and force plates
- Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
- Analysis of wheelchair management and mobility
- Assessment of safety
- Gait, locomotion, and balance assessment instruments
- Gait, locomotion, and balance profiles
- Identification and quantification of gait characteristics
- Identification and quantification of static and dynamic balance characteristics

Joint Integrity and Mobility
- Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
- Assessment of joint hypermobility and hypomobility
- Assessment of pain and soreness
- Assessment of soft tissue swelling, inflammation, or restriction

Motor Function (Motor Control and Motor Learning)
- Analysis of gait, locomotion, and balance
- Analysis of head, trunk, and limb movement
- Analysis of posture during sitting, standing, and locomotor activities appropriate for age (eg, walking, hopping, skipping, running, jumping)
- Assessment of autonomic responses to positional changes
- Assessment of dexterity, coordination, and agility
- Physical performance scales

Muscle Performance (Including Strength, Power, and Endurance)
- Analysis of functional muscle strength, power, and endurance
- Assessment of pain and soreness

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family; significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of muscle soreness
- Assessment of pain and soreness with joint movement
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography; videotape, or visual analysis

**Range of Motion (ROM) (Including Muscle Length)**
- Analysis of functional ROM
- Analysis of multisegmental movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging

**Self-Care and Home Management (Including ADL and IADL)**
- ADL or IADL scales or indexes
- Analysis of environment
- Analysis of self-care and home management activities
- Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
- Assessment of ability to transfer
- Assessment of autonomic responses to positional changes
- Assessment of physiologic responses during self-care and home management activities
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of reports provided by patient/client, family; significant others, caregivers, or other professionals

**Sensory Integrity (Including Proprioception and Kinesthesia)**
- Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
- Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy; During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Post-fracture, patient/client will minimize rate of bone loss or will increase bone mineral density and will achieve highest level of function.

Expected Range of Number of Visits Per Episode of Care, 6 to 18
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 6 to 18 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family; home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation Anticipated Goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family, significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, Social Workers, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction Anticipated Goals**

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family, significant others, and caregivers is improved.
- Self-management of symptoms is improved.
- Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
- Aerobic capacity is increased.
- Endurance is increased.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Joint and soft tissue swelling, inflammation, or restriction is reduced.
- Joint integrity and mobility are improved.
- Level of supervision required for task performance is decreased.
- Motor function (motor control and motor learning) is improved.
- Need for assistive, adaptive, orthotic, protective, or supportive devices or equipment is decreased.
- Osteogenic effects of exercise are maximized.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Postural control is improved.
- Preoperative and postoperative complications are reduced.
- Quality and quantity of movement between and across body segments are improved.
- Risk factors are reduced.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Strength, power, and endurance are increased.
- Stress is decreased.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.
Specific Direct Interventions
- Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Balance and coordination training
- Body mechanics and ergonomics training
- Conditioning and reconditioning
- Gait, locomotion, and balance training
- Posture awareness training
- Strengthening:
  - active
  - active assistive
  - resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADI)
Anticipated Goals
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
- Intensity of care is decreased.
- Performance of and independence in ADL and IADL are increased.
- Level of supervision required for task performance is decreased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of self-care and home management tasks and activities.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device or equipment training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)
Anticipated Goals
- Ability to perform physical tasks related to community and work (Job/school/play) integration or reintegration and leisure tasks, movements, or activities is increased.
- Costs of work-related injury or disability are reduced.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Performance of and independence in IADL are increased.
- Prosthetic devices are used appropriately.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of community work (Job/school/play), and leisure tasks and activities.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions
- Assistive and adaptive device and equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Injury prevention or reduction training
- Job coaching
- Job simulation
- Leisure and play activity training
- Organized functional training programs (eg, back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

**Manual Therapy Techniques (Including Mobilization and Manipulation)**

**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Motor function (motor control and motor learning) is improved.
- Muscle spasm is reduced.
- Pain is decreased.
- Quality and quantity of movement between and across body segments are improved.
- Risk of secondary Impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Ventilation, respiration (gas exchange), and circulation are improved.

**Specific Direct Interventions**
- Connective tissue massage
- Soft tissue mobilization and manipulation
- Therapeutic massage

**Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are unproved.
- Intensity of care is decreased.
- Joint stability is increased.
- Edema, lymphedema, or effusion is reduced.
- Level of supervision required for task performance is decreased.
- Loading on a body part is decreased.
- Motor function (motor control and motor learning) is improved.
- Optimal joint alignment is increased.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Protection of body parts is increased.
- Joint Integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

**Specific Direct Interventions**
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Prosthetic devices or equipment (eg, artificial limbs)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

**Electrotherapeutic Modalities**

**Anticipated Goals**
- Ability to perform physical tasks
- Complications are reduced.
- Edema, lymphedema, or effusion is reduced.
- Motor function (motor control and motor learning) is improved.
- Muscle performance is increased
- Pain is decreased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
- Electrical muscle stimulation
- Neuromuscular electrical stimulation (NMES)
- Transcutaneous electrical nerve stimulation (TENS)

**Physical Agents and Mechanical Modalities**

**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Complications of soft tissue and circulatory disorders are decreased.
- Edema, lymphedema, or effusion is reduced.
- Motor function (motor control and motor learning) is improved.
- Muscle spasm is decreased.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**

**Physical agents:**
- Cryotherapy (eg, cold packs, ice massage)
- Deep thermal modalities (eg, ultrasound, phonophoresis)
- Hydrotherapy (eg, aquatic therapy, whirlpool tanks, contrast baths, pulsatile lavage)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluido-therapy)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with fracture is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL) and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL) are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.
- Other secondary prevention outcomes include:
  - Need for additional physical therapist intervention is decreased.
  - Patient/client adherence to the intervention program is maximized.
  - Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
  - Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
  - Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes are achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy; When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology or from pathology or impairment to disability is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disablement risk factors (eg, biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Age
-Anthropometric characteristics (eg, excessive weight, leg-length discrepancy, body type)
-Attitude
-Design, equipment, or other barriers preventing optimal body mechanics or posture underlying spinal dysfunction (eg, postural dysfunction) in home, community, or work (job/school/play) environments
-Endocrine or hormonal status
-Habitable suboptimal body mechanics
-Lifestyle:
  -fitness level or cardiopulmonary and musculo-skeletal deconditioning
  -nutritional status (calcium and vitamin D intake)
  -physical activity level
  -physical work demands
  -psychosocial and socioeconomic stressors
  -substance abuse (eg, smoking, alcohol, drugs)
  -Medication history
-Muscle tightness or inflexibility (eg, hamstring muscles, hip flexors)
-Muscle weakness or imbalance (eg, trunk and hip muscles)
-Systemic condition predisposing patient/client to spinal pain with radiculopathy

Primary Prevention/Risk Factor Reduction Strategies
-Community program evaluation and development (eg, senior exercise programs, childbirth education or pregnancy exercise programs, youth activity programs)
-Consultation (eg, work-site analysis, injury prevention, environmental and ergonomic assessment)
-Lifestyle education and modification through individual or group activities that highlight (1) the relationship between risk factors (eg, smoking, substance abuse, physical activity and fitness level, stressors) and fracture and (2) strategies to prevent or reduce fracture
• Risk factor reduction through individual and group therapeutic exercise and symptom management
• Screening programs (eg, scoliosis, athletic pre-participation, pre-employment)
• Workplace, home, and community ergonomic analysis and modification
Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with Joint Arthroplasty

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations secondary to joint arthroplasty with total or partial resurfacing of the joint.

INCLUDES patients/clients with:
- Ankylosing spondylitis
- Juvenile rheumatoid arthritis
- Neoplasms of the bone
- Osteoarthritis
- Paget's disease
- Rheumatoid arthritis
- Small joint (eg, interphalangeal) and large joint arthroplasties (eg, hip)
- Steroid-induced avascular necrosis
- Temporomandibular joint (TMJ) syndrome
- Trauma

EXCLUDES patients/clients with:
Failed surgical procedures
Unrelated postoperative complications during recovery or rehabilitation (eg, fall with fracture, proximal or distal to prosthesis)

| Examination | 390 |
| Evaluation, Diagnosis, and Prognosis | 394 |
| Intervention | 395 |
| Reexamination | 401 |
| Outcomes | 401 |
| Criteria for Discharge | 402 |
| Primary Prevention/Risk Factor Reduction Strategies | 402 |
Examination
Through the examination (history, systems review and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History and Systems Review
Data generated from the history may include:
- General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destination(s)

History of Current Condition
- Concerns that led the individual to seek the services of a physical therapist
- Concerns or needs of the individual requiring the services of a physical therapist
- Current therapeutic interventions
- Onset and pattern of symptoms
- Mechanism(s) of injury or disease, including date of onset and course of events
- Patient/client, family, significant other, and caregiver perceptions of the patient’s/client’s emotional response to the current clinical situation
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention

Functional Status and Activity Level
- Current and prior functional status in self-care and home management, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration
Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardio-pulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, lktigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work/job/school/play), and leisure activities

Systems Review
The systems review may include:
- Physiologic and anatomic status
  - Cardio-pulmonary
  - Integumentary
  - Musculo-skeletal
  - Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order

Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)

Assistive and Adaptive Devices
- Analysis of patient/client or caregiver ability to care for device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
• IADL scales or indexes
• Analysis of community, work (job/school/play), and leisure activities
• Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Assessment of autonomic responses to positional changes
• Assessment of physiologic responses during community, work (job/school/play), and leisure activities
• Assessment of safety in community and work (job/school/play) environments
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, Social Worker, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
• Assessment of current and potential barriers
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics
Ergonomics:
• Analysis of preferred postures during performance of tasks and activities

Body mechanics:
• Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
• Measurement of height, weight, length, and girth
• Observation of performance of selected movements or activities

Gait, Locomotion, and Balance
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
• Assessment of safety
• Gait, locomotion, and balance profiles
• Identification and quantification of static and dynamic balance characteristics

Joint Integrity and Mobility
• Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
• Assessment of pain and soreness
• Assessment of soft tissue swelling, inflammation, or restriction

Muscle Performance (Including Strength, Power, and Endurance)
• Analysis of functional muscle strength, power, and endurance
• Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
• Assessment of pain and soreness

Orthotic, Protective, and Supportive Devices
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Pain
• Analysis of pain behavior and reaction during specific movements and provocation tests
• Assessment of muscle soreness
• Assessment of pain and soreness with joint movement
• Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
• Analysis of resting posture in any position
• Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography, videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
• Analysis of functional ROM
• Analysis of multisegmental movement
• Analysis of ROM using goniometers, rape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
• Assessment of muscle, joint, or soft tissue characteristics

Self-Care and Home Management (Including ADL and IADL)
• ADL or IADL scales or indexes
• Analysis of self-care and home management activities
• Analysis of self-care and home management activities that are performed using assistive, using assistive, adaptive, orthotic, protective, or supportive devices and equipment
• Assessment of ability to transfer
• Assessment of autonomic responses to positional changes
• Assessment of physiologic responses during self-care and home management activities
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by patient/client, family significant others, caregivers, or other professionals

Ventilation (Gas Exchange), Respiration, and Circulation
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
Evaluation, Diagnosis, and Prognosis

The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis

Within 6 months, patient/client who has no surgical or postsurgical complications will demonstrate improvement in impairment, functional limitation, and disability as compared with premorbid status.

Expected Range of Number of Visits Per Episode of Care, 12 to 60

This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 12 to 60 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode

- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family home health aides) expertise and consistency
- Chronic dislocation
- Chronicity or severity of condition
- Comorbidities (eg, sepsis, hemarthroses, or surgical or postoperative complications)
- Degree of system involvement (eg, rheumatoid arthritis, Parkinson’s disease)
- Level of patient/client adherence to the intervention program
- Multiple arthroplasties within the same period
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Revision arthroplasty
- Support provided by family unit
- Type of surgical technique used (cement or cementless)
- Weight-bearing status
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family; significant others~ caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/dent and use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family; significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family; significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social Worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
Performance levels in employment, recreational, or leisure activities are improved.
Physical function and health status are improved.
Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
Risk of recurrence of condition is reduced.
Risk of secondary impairments is reduced.
Safety of patient/client, family, significant others, and caregivers is improved.
Self-management of symptoms is improved.
Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
- Aerobic capacity is increased.
- Endurance is increased.
- Intensity of care is decreased.
- Gait, locomotion, and balance are improved.
- Joint and soft tissue swelling, inflammation, or restriction is reduced.
- Joint integrity and mobility are improved.
- Level of supervision required for task performance is decreased.
- Motor function (motor control and motor learning) is improved.
- Muscle performance is increased.
- Osteogenic effects of exercise are maximized.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved
- Postural control is improved.
- Preoperative and postoperative complications are reduced.
- Risk factors are reduced.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Strength, power, and endurance are increased.
- Stress is decreased.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved
- Specific Direct Interventions
- Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
• Balance and coordination training
• Body mechanics and ergonomics training
• Conditioning and reconditioning
• Gait, locomotion, and balance training
• Motor function (motor control and motor learning) training or retraining
• Neuromuscular relaxation, inhibition, and facilitation
• Posture awareness training
• Strengthening:
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Stretching

**Patient/Client-Related Instruction**
• Actual practice by the patient/client or caregiver in the appropriate environment
• Computer-assisted instruction
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction
• Behaviors that foster healthy habits, wellness, and prevention are acquired.
• Capacity to execute physical tasks is increased.
• Decision making is enhanced regarding the health of the patient/client and use of health care resources by the patient/client, family, significant others, and caregivers.
• Disability associated with acute or chronic illnesses is reduced.
• Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
• Level of supervision or care is decreased.
• Performance levels in employment, recreational, and sports activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of the patient/client, family significant others, or caregivers in the extension of care.
• Safety for the patient/client and caregivers is improved.
• Secondary impairments and risk of recurrence are reduced.
• Self-management of symptoms is increased.
• Service utilization and costs are decreased.
• Patient/client, family; significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and expected outcomes are increased.
• Patient/client knowledge of personal and environmental factors associated with the condition is increased.

**Functional Training in Self-Care and Home Management (Including ADL and IADL)**

**Anticipated Goals**
• Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
• Intensity of care is decreased.
• Performance of and independence in ADL and IADL are decreased.
• Level of supervision required for task performance is decreased.
• Risk of recurrence of condition is reduced.
• Safety is improved during performance of self-care and home management tasks and activities.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
Specific Direct Interventions

- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- Self-care or home management task adaptation
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Leisure and play activity training
- Organized functional training programs (eg, back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)

Anticipated Goals

- Ability to perform physical tasks related to community, work (job/school/play), and leisure activities is increased.
- Costs of work-related injury or disability are reduced.
- Intensity of care is decreased.
- Performance of and independence in ADL and IADL are increased.
- Level of supervision required for task performance is decreased.
- Risk of recurrence of condition is reduced.
- Safety is improved during performance of community, work, (job/school/play), and leisure tasks and activities
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

Specific Direct Interventions

- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- Environmental, community, work (job/school/play), or leisure task adaptation
- Ergonomic stressor reduction training
- Injury prevention or reduction training
- IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Job coaching
- Job simulation
- Leisure and play activity training
- Organized functional training programs (eg, back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training

Manual Therapy Techniques (Including Mobilization and Manipulation)

Anticipated Goals

- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Motor function (motor control and motor learning) is improved.
- Muscle spasm is reduced.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Scar mobility is increased.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Ventilation, respiration (gas exchange), and circulation are improved.

Specific Direct Interventions

- Connective tissue massage
• Passive range of motion
• Therapeutic massage

**Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)**

**Anticipated Goals**

- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Edema, lymphedema, or effusion is reduced.
- Joint stability is increased.
- Level of supervision required; risk performance is decreased.
- Loading on body part is increased.
- Motor function (motor control and motor learning) is improved.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Performance of and independence in A.DL and IADL are increased.
- Physical function and health status are improved.
- Protection of body parts is increased.
- Joint integrity and mobility are improved.
- Risk of recurrence of conduction is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

**Specific Direct Interventions**

- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps)

**Electrotherapeutic Modalities**

**Anticipated Goals**

- Ability to perform physical tasks is increased.
- Complications are reduced.
- Edema, lymphedema, or effusion is reduced.
- Motor function (motor control and motor learning) is improved.
- Muscle performance is increased.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.

**Specific Direct Interventions**

- Biofeedback
- Electrical muscle stimulation
- Functional electrical stimulation (FES)
- Neuromuscular electrical stimulation (NMES)
- Transcutaneous electrical nerve stimulation (TENS)
Physical Agents and Mechanical Modalities
Anticipated Goals

- Ability to perform movement tasks is increased.
- Complications resulting from soft tissue and circulatory disorders are decreased.
- Edema, lymphedema, or effusion is reduced.
- Motor function (motor control and motor learning) is improved.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased

Specific Direct Interventions
Physical agents:
- Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
- Cryotherapy (eg, cold packs, ice massage)
- Hydrotherapy (eg, aquatic therapy whirlpool tanks, contrast baths, pulsatile lavage)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluido-therapy)

Mechanical modalities may include:
- Continuous passive motion (CPM)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which-for some patient/client diagnostic groups-may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with joint arthroplasty is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL) and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL) are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family; significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family; significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family; significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family; significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.
- Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the lifespan to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction

Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology or from pathology or impairment to disability is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disabling risk factors (eg, biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability

- Age
- Anthropometric characteristics (eg, excessive weight, leg-length discrepancy, genu valgum, femoral or tibial torsion, foot deformities)
- Attitude
- Design, equipment, or other barriers preventing optimal body mechanics or posture in home, community, work (job/school/play), or leisure activity environments
- Habitual sub-optimum body mechanics in work and leisure activities and activities of daily living (ADL)
- Heredity
- Systemic diseases (eg, rheumatoid arthritis)
- Lifestyle:
  - overuse or improper movement patterns that stress joints
  - physical activity level (lack of regular exercise)
  - physical work demands
  - substance abuse (eg, smoking, alcohol, drugs)
  - Muscle tightness or inflexibility
  - Muscle weakness or imbalance
  - Previous history of joint trauma or surgery

Primary Prevention/Risk Factor Reduction Strategies

- Community program evaluation and development (eg, senior exercise programs, childbirth education or pregnancy exercise programs, youth activity programs)
- Consultation (eg, work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification through individual or group activities that highlight the relationship between risk factors (eg, smoking, substance abuse, physical activity and fitness level, stressors) and joint arthroplasty or arthritis
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (e.g., youth sports, elderly foot clinics, senior centers)
- Workplace, home, and community ergonomic analysis and modification
Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Bony or Soft Tissue Surgical Procedures

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession's code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations following bony or soft tissue surgical procedures

INCLUDES patients/clients with:
- Abrasion arthroplasty, open reduction internal fixation (ORIF), fusions, osteotomies, laminectomies, and tibial tuberosity procedures
- External fixators, rod procedures, bony debridement, and multiple fractures
- Fascial release procedures, debridement, decompression, meniscal repair or removal, labral repair, removal of synovium, or soft tissue realignment
- Hardware removal, bone graft, and bone-lengthening procedures
- Hip fracture with ORIF stabilization
- Muscle or tendon or ligament repair or reconstruction, capsular reconstruction, stabilization, or reeling

EXCLUDES patients/clients with:
- Amputation
- Amputation, associated peripheral nerve lesions, and closed head trauma
- Breast reconstructive procedures
- Failed surgical procedures
- Joint resurfacing and abrasion; muscle tendon transfers
- Nonunion of fractures
- Obstetric and gynecological surgical procedures
- Vascular or neurologic sequelae, nerve compression, muscle-lengthening procedures, hemarthrosis, deep vein thrombosis, or sepsis
- Total joint arthroplasties, closed reduction, neoplasms, and primary soft tissue procedures

Examination 405
Evaluation, Diagnosis, and Prognosis 410
Intervention 411
Reexamination 417
Outcomes 417
Criteria for Discharge 418
Primary Prevention/Risk Factor Reduction Strategies 418
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family; significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family; significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family; significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
• Review of available records
• Review of nutrition and hydration

Past History of Current Condition
• Prior therapeutic interventions
• Prior medications

Past Medical/Surgical History
• Cardiopulmonary
• Endocrine/metabolic
• Gastrointestinal
• Genitourinary
• Integumentary
• Musculo-skeletal
• Neuromuscular
• Pregnancy, delivery, and postpartum
• Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
• Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
• General health perception
• Physical function (eg, mobility, sleep patterns, energy, fatigue)
• Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
• Role function (eg, worker, student, spouse, grandparent)
• Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
• Behavioral health risks (eg, smoking, drug abuse)
• Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
• Cardiopulmonary
• Integumentary
• Musculo-skeletal
• Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Anthropometric Characteristics
• Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
• Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
• Measurement of height, weight, length, and girth
• Observation and palpation of trunk, extremity, or body part at rest and during and after activity

Assistive and Adaptive Devices
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
• Analysis of patient/client or caregiver ability to care for device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of safety during use of device
• Review of reports provided by patient/client, family; significant others, caregivers, or other professionals concerning use of or need for device
• Videotape analysis of patient/client using device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
• Analysis of community, work (job/school/play), and leisure activities
• Analysis of environment, work (job/school/play), and leisure activities
• Assessment of physiologic responses during community, work (job/school/play), and leisure activities
• Assessment of safety in community and work (job/school/play) environment
• IADL scales or indexes
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by patient/client, family; significant others, caregivers, other health care professionals, or other interested persons (eg, rehabilitation counselor, social worker, employer)

Ergonomics and Body Mechanics

Ergonomics:
• Analysis of performance of selected tasks or activities
• Analysis of preferred postures during performance of tasks and activities
• Assessment of dexterity and coordination
• Assessment of safety in community and work (job/school/play) environments
• Assessment of work hardening or work conditioning needs, including identification of needs related to physical, functional, behavioral, and vocational status
• Assessment of work (job/school/play) performance through batteries of tests
• Computer-assisted motion analysis of patient/client at work
• Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
• Ergonomic analysis of the work and its inherent tasks or activities, including:
  • analysis of repetition/work/rest cycling during task or activity
  • assessment of tools, devices, or equipment used
  • assessment of vibration
  • assessment of workstation
  • computer-assisted motion analysis of performance of selected movements or activities
  • identification of essential functions of task or activity
  • identification of sources of actual and potential trauma, cumulative trauma, or repetitive stress
  • Functional capacity evaluation, including:
    • endurance required to perform aerobic endurance activities
    • joint range of motion (ROM) used to perform task or activity
    • postures required to perform task or activity
    • strength required in the work postures necessary to perform task or activity
    • Videotape analysis of patient/client at work

Body mechanics:
• Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
• Measurement of height, weight, length, and girth
• Observation of performance of selected movements or activities
• Videotape analysis of patient/client performing selected movements or activities
• Environmental, Home, and Work (Job/School/Play) Barriers
• Assessment of current and potential barriers
• Measurement of physical space
• Physical inspection of the environment
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate

**Gait, Locomotion, and Balance**
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight-bearing scales, and force plates
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
• Assessment of safety
• Gait, locomotion, and balance profiles
• Identification and quantification of gait characteristics
• Identification and quantification of static and dynamic balance characteristics

**Joint Integrity and Mobility**
• Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
• Assessment of joint hypermobility and hypomobility
• Assessment of pain and soreness
• Assessment of response to manual provocation tests
• Assessment of soft tissue swelling, inflammation, or restriction

**Motor Function (Motor Control and Motor Learning)**
• Assessment of motor control and motor learning

**Muscle Performance (Including Strength, Power, and Endurance)**
• Analysis of functional muscle strength, power, and endurance
• Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
• Assessment of muscle tone
• Electrophysiologic tests (eg, electromyography [EMG], nerve conduction velocity [NCV])

**Orthotic, Protective, and Supportive Devices**
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Analysis of movement while patient/client wears device, using computer-assisted graphic imaging or videotape
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family; significant others, caregivers, or other professionals concerning use of or need for device

Pain
• Analysis of pain behavior and reaction during specific movements and provocation tests
• Assessment of muscle soreness
• Assessment of pain and soreness with joint movement
• Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
• Analysis of resting posture in any position
• Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography; videotape, or visual analysis

Range of Motion (ROM) (Including Muscle Length)
• Analysis of functional ROM
• Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
• Assessment of muscle, joint, or soft tissue characteristics

Reflex Integrity
• Assessment of normal reflexes (eg, stretch reflex)
• Assessment of pathological reflexes (eg, Babinaki’s reflex)

Self-Care and Home Management (Including ADL and IADL)
• ADL or IADL scales or indexes
• Analysis of self-care and home management activities
• Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
• Assessment of ability to transfer
• Assessment of functional capacity
• Assessment of physiologic responses during self-care and home management activities
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by patient/client, family; significant others, caregivers, or other professionals

Sensory Integrity (Including Proprioception and Kinesthesia)
• Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
• Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)

Ventilation, Respiration (Gas Exchange), and Circulation
• Assessment of perceived exertion and dyspnea
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
• Palpation of pulses
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy; During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; pre-existing systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 1 to 12 months, patient/client will demonstrate a return to pre-morbid or highest level of function.

Expected Range of Number of Visits Per Episode of Care, 6 to 87
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 6 to 87 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family; home health aide) consistency or expertise
- Chronicity or severity of condition
- Comorbidities
- Delayed healing
- Level of patient/client adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychosocial and socioeconomic stressors
- Nonunion of fractures and bone-lengthening procedures
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family; significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family; significant other~ and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family; significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources
- Patient/Client-Related Instruction

**Patient/Client-Related Instruction**

Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and Instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family; significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
• Performance levels in employment, recreational, or leisure activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of patient/client, family; significant others, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family; significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
• Aerobic capacity is increased.
• Endurance is increased.
• Energy expenditure is decreased.
• Gait, locomotion, and balance are improved.
• Intensity of care is decreased.
• Joint and soft tissue swelling, inflammation, or restriction is reduced.
• Level of supervision required for task performance is decreased.
• Motor function (motor control and motor learning) is improved.
• Need for assistive, adaptive, orthotic, protective, or supportive devices or equipment is decreased.
• Pain is decreased.
• Performance of and independence in ADL and IADL are increased.
• Physical function and health status are improved.
• Postural control is improved.
• Preoperative and postoperative complications are reduced.
• Joint integrity and mobility are improved.
• Risk factors are reduced.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Self-management of symptoms is improved.
• Strength, power, and endurance are increased.
• Stress is decreased.
• Tolerance to positions and activities is increased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Aquatic exercises
• Balance and coordination training
• Body mechanics and ergonomics training
• Breathing exercises and ventilatory muscle training
• Conditioning and reconditioning
• Motor function (motor control and motor learning) training or retraining
• Neuromuscular education or reeducation
• Posture awareness training
• Strengthening:
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Stretching

**Patient/Client-Related Instruction**
• Actual practice by the patient/client or caregiver in the appropriate environment
• Computer-assisted instruction
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction
• Behaviors that foster healthy habits, wellness, and prevention are acquired.
• Capacity to execute physical tasks is increased.
• Decision making is enhanced regarding the health of the patient/client and use of health care resources by the patient/client, family, significant others, and caregivers.
• Disability associated with acute or chronic illnesses is reduced.
• Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
• Level of supervision or care is decreased.
• Performance levels in employment, recreational, and sports activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of the patient/client, family, significant others, or caregivers in the extension of care.
• Safety for the patient/client and caregivers is improved.
• Secondary impairments and risk of recurrence are reduced.
• Self-management of symptoms is increased.
• Service utilization and costs are decreased.
• Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and expected outcomes are increased.
• Patient/client knowledge of personal and environmental factors associated with the condition is increased.

**Functional Training in Self-Care and Home Management (Including ADL and IADL) Anticipated Goals**
• Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
• Intensity of care is decreased.
• Level of supervision required for task performance is decreased.
• Risk of recurrence of condition is reduced.
• Safety is improved during performance of self-care and home management tasks and activities.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

**Specific Direct Interventions**
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• Assistive and adaptive device or equipment training
• IADL training (e.g., shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
• Orthotic, protective, and supportive device or equipment training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning) Anticipated Goals
• Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities are increased.
• Costs of work-related injury or disability are reduced.
• Safety is improved during performance of community work (job/school/play), and leisure tasks and activities
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• Assistive and adaptive device and equipment training
• Environmental, community, work (job/school/play), or leisure task adaptation
• Ergonomic stressor reduction training
• Injury prevention or reduction training
• IADL training (e.g., shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
• Job coaching
• Job simulation
• Organized functional training programs (e.g., back schools, simulated environments and tasks)
• Orthotic, protective, or supportive device or equipment training

Manual Therapy Techniques (Including Mobilization and Manipulation) Anticipated Goals
• Ability to perform movement tasks is increased.
• Joint integrity and mobility are improved.
• Motor function (motor control and motor learning) is improved.
• Muscle spasm is reduced.
• Pain is decreased.
• Quality and quantity of movement between and across body segments are improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
• Connective tissue massage
• Joint mobilization and manipulation
• Manual traction
• Passive range of motion
• Soft tissue mobilization and manipulation
• Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic) Anticipated Goals
• Ability to perform physical tasks is increased.
• Deformities are prevented.
• Edema, lymphedema, or effusion is reduced.
• Joint stability is increased.
• Loading on a body part is decreased.
• Motor function (motor control and motor learning) is improved.
• Optimal joint alignment is achieved.
• Pain is decreased.
• Performance of and independence in ADL and IADL are increased.
• Physical function and health status are improved.
• Protection of body parts is increased.
• Joint integrity and mobility are improved.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Stress precipitating injury is decreased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
• Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
• Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
• Prosthetic devices or equipment (eg, braces, protective taping, cushions, helmets)
• Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

Electrotherapeutic Modalities
Anticipated Goals
• Ability to perform physical tasks is increased.
• Complications are reduced.
• Edema, lymphedema, or effusion is reduced.
• Motor function (motor control and motor learning) is improved.
• Muscle performance is increased.
• Pain is decreased.
• Joint integrity and mobility are improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Wound and soft tissue healing is enhanced.

Specific Direct Interventions
• Biofeedback
• Electrical muscle stimulation
• Functional electrical stimulation (FES)
• Iontophoresis
• Neuromuscular electrical stimulation (NMF.S)
• Transcutaneous electrical nerve stimulation (TENS)

Physical Agents and Mechanical Modalities
Anticipated Goals
• Ability to perform movement tasks is increased.
• Complications resulting from soft tissue and circulatory disorders are decreased.
• Edema, lymphedema, or effusion is reduced.
• Joint integrity and mobility are improved.
• Motor function (motor control and motor learning) is improved.
• Pain is decreased.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Tolerance to positions and activities is increased.
• Wound and soft tissue healing is enhanced.
Specific Direct Interventions
Physical agents include:
- Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
- Cryotherapy (eg, cold packs, ice massage)
- Deep thermal modalities (eg, ultrasound, phonophoresis)
- Hydrotherapy (eg, whirlpool tanks, contrast baths)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluidotherapy)

Mechanical modalities include:
- Compression therapies (eg, vaso-pneumatic compression devices, compression bandaging, compression documents, taping, total contact casting)
- Continuous passive motion (CPM)
- Tilt table or standing table
- Traction (sustained, intermittent, or positional)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (e.g., worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with bony or soft tissue surgical procedures is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL) and leisure activities, including instrumental activities of daily living (LADL) are performed safely, efficiently and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology or from pathology or impairment to disability is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disablement risk factors (eg, biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
Primary Prevention/Risk Factor Reduction Strategies
- Age
- Anthropometric characteristics
- Attitude
- Design, equipment, or other barriers preventing optimal body mechanics or posture in home, community, or work (job/school/play) environments
- Habitual sub-optimum body mechanics in work (job/school/play) and leisure activities and activities of daily living (ADL)
- Heredity
- Systemic diseases (eg, rheumatoid arthritis)
- Lifestyle:
  - physical activity level (lack of regular exercise)
  - physical work demands
  - psychosocial and socioeconomic stressors
  - substance abuse (eg, smoking, alcohol, drugs)
- Muscle tightness
- Muscle weakness
- Previous history of injury
- Community program evaluation and development (eg, senior exercise programs, youth activity programs)
- Consultation (eg, work-site analysis, injury prevention, environmental and ergonomic assessment)
- Lifestyle education and modification through individual or group activities that highlight (1) the relationship between risk factors (eg, smoking, substance abuse, physical activity and fitness level, stressors) and bone trauma and (2) strategies to prevent or reduce trauma or the consequences of trauma
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs and sites (eg, scoliosis, athletic pre-participation, pre-employment)
• Workplace, home, and community ergonomic analysis and modification
Impaired Gait, Locomotion, and Balance and Impaired Motor Function Secondary to Lower-Extremity Amputation

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with functional limitations due to acute or long standing lower extremity amputation.

Patients/clients may have any one or a combination of the following:
- Gait deviations or other mobility problems associated with recent amputation or effects of aging
- Ill-fitting prosthesis or identified prosthetic needs

INCLUDES patients/clients with:
- Bilateral amputation
- Congenital amputation (prosthetic needs only)
- Joint contracture proximal to amputation
- Need for post-surgical edema management
- Residual limb revision
- Wound care needs associated with surgical site

EXCLUDES patients/clients with:
- Congenital amputation and a need for developmental therapy
- Ipsilateral hemiparesis

Examination 421
Evaluation, Diagnosis, and Prognosis 427
Intervention 428
Reexamination 433
Outcomes 433
Criteria for Discharge 434
Primary Prevention/Risk Factor Reduction Strategies 434
Examination

Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early; intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History

Data generated from the history may include:

**General Demographics**
- Age
- Primary language
- Race/ethnicity
- Sex

**Social History**
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

**Occupation/Employment**
- Current and prior community and work (job/school) activities

**Growth and Development**
- Hand and foot dominance
- Developmental history

**Living Environment**
- Living environment and community characteristics
- Projected discharge destinations

**History of Current Condition**
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family; significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family; significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

**Functional Status and Activity Level**
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)

**Medications**
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

**Other Tests and Measures**
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

**Past History of Current Condition**
- Prior therapeutic interventions
- Prior medications

**Past Medical/Surgical History**
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculoskeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

**Family History**
- Familial health risks

**Health Status (Self-Report, Family Report, Caregiver Report)**
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

**Social Habits (Past and Current)**
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

**Systems Review**
The systems review may include:

**Physiologic and anatomic status**
- Cardiopulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

**Communication, affect, cognition, language, and learning style**

**Tests and Measures**
Tests and measures for this pattern may include, in alphabetical order.

**Aerobic Capacity and Endurance**
- Assessment of perceived exertion, dyspnea, or angina during activity using rating-of-perceived-exertion (RPE) scales, dyspnea scales, anginal pain scales, or visual analog scales
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Observation of chest movements and breathing patterns with activity
- Palpation of pulses
- Claudication time tests
Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy; in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth
- Observation and palpation of trunk, extremity, or body part at rest and during and after activity

Arousal, Attention, and Cognition
- Assessment of factors that influence motivation level
- Screening for level of cognition (e.g., to determine ability to process commands, to measure safety awareness)

Assistive and Adaptive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of patient/client or caregiver ability to care for device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
- Videotape analysis of patient/client using device

Community and Work (Job/School/Play) Integration or Reintegration (Including IADL)
- IADL scales or indexes
- Analysis of adaptive skills
- Analysis of community, work (job/school/play), and leisure activities
- Analysis of community, work (job/school/play), and leisure activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Analysis of environment, work (job/school/play), and leisure activities
- Assessment of functional capacity
- Assessment of physiologic responses during community, work (job/school/play), and leisure activities
- Assessment of safety in community and work (job/school/play) environments
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate
- Review of daily activities logs
- Review of reports provided by patient/client, family, significant others, caregivers, other health care professionals, or other interested persons (e.g., rehabilitation counselor, social worker, employer)

Environmental, Home, and Work (Job/School/Play) Barriers
- Analysis of physical space using photography or videotape
- Assessment of current and potential barriers
- Measurement of physical space
- Physical inspection of the environment
- Questionnaires completed by and interviews conducted with patient/client and others as appropriate

Ergonomics and Body Mechanics
Ergonomics:
- Ergonomic analysis of the work and its inherent tasks or activities, including:
  - analysis of repetition/work/rest cycling during task or activity
• assessment of tools, devices, or equipment used
• assessment of vibration
• computer-assisted motion analysis of performance of selected movements or activities
• determination of dynamic capabilities and limitations during specific work (job/school/play) activities
• identification of essential functions of the job task or activity
• identification of sources of actual or potential trauma, cumulative trauma, or repetitive stress
• Functional capacity evaluation, including:
  • endurance required to perform aerobic endurance activities
  • joint range of motion (ROM) used to perform task or activity
  • postures required to perform task or activity
  • strength required in the work postures necessary to perform task or activity
• Videotape analysis of patient/client at work

Body mechanics:
• Determination of dynamic capabilities and limitations during specific work (job/school/play) activities
• Observation of performance of selected movements or activities
• Videotape analysis of performance of selected movements or activities

Gait, Locomotion, and Balance
• Gait, locomotion, and balance assessment instruments
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance, using electromyography (EMG), videotape, computer-assisted graphics, weight-bearing scales, and force plates
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Analysis of gait, locomotion, and balance on various terrains, in different physical environments, or in water
• Analysis of wheelchair management and mobility
• Assessment of safety
• Gait, locomotion, and balance profiles
• Identification and quantification of gait characteristics
• Identification and quantification of static and dynamic balance characteristics

Integumentary Integrity
For wound:
• Assessment of scar tissue (cicatrix), including banding, pliability, sensation, and texture

Joint Integrity and Mobility
• Analysis of the nature and quality of movement of the joint or body part during performance of specific movement tasks
• Assessment of joint hypermobility and hypomobility
• Assessment of response to manual provocation tests
• Assessment of soft tissue swelling, inflammation, or restriction

Motor Function (Motor Control and Motor Learning)
• Assessment of dexterity, coordination, and agility

Muscle Performance (Including Strength, Power, and endurance)
• Analysis of functional muscle strength, power, and endurance
• Analysis of muscle strength, power, and endurance using manual muscle testing or dynamometry
• Assessment of pain and soreness
• Assessment of muscle tone
Neuromotor Development and Sensory Integration
- Assessment of dexterity, agility, and coordination

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family; significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Analysis of pain behavior and reaction during specific movements and provocation tests
- Assessment of muscle soreness
- Assessment of pain and soreness with joint movements
- Assessment of pain perception (eg, phantom pain)
- Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, or visual analog scales

Posture
- Analysis of resting posture in any position
- Analysis of static and dynamic postures, using computer-assisted imaging, posture grids, plumb lines, still photography; videotape, or visual analysis

Prosthetic Requirements
- Analysis of appropriate components of a prosthetic device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of movement while patient/client wears device, using computer-assisted graphic imaging and videotape
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of the practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of residual limb or adjacent segment for range of motion (ROM), strength, skin integrity, and edema
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Review of reports provided by patient/client, family; significant others, caregivers, or other professionals

Range of Motion (ROM) (Including Muscle Length)
- Analysis of functional ROM
- Analysis of multi-segmental movement
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Self-Care and Home Management (Including ADL and IADL)
- ADL or IADL scales or indexes
- Analysis of environment
• Analysis of self-care and home management activities that are performed using assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment
• Analysis of self-care in unfamiliar environments
• Assessment of ability to transfer
• Assessment of autonomic responses to positional changes
• Assessment of functional capacity
• Assessment of physiologic responses during self-care and home management activities
• Questionnaires completed by and interviews conducted with patient/client and others as appropriate
• Review of daily activities logs
• Review of reports provided by patient/client, family; significant others, caregivers, or other professionals concerning use of or need for device

Sensory Integrity (Including Proprioception and Kinesthesia)
• Assessment of deep (proprioceptive) sensations (eg, movement sense or kinesthesia, position sense)
• Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)

Ventilation, Respiration (Gas Exchange), and Circulation
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
• Palpation of pulses
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy; During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multisite or multisystem involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 6 months, patient/client will demonstrate a return to pre-morbid or highest level of function in activities of daily living (ADL) and instrumental activities of daily living (ADL) and in community, work, and leisure activities.

Expected Range of Number of Visits Per Episode of Care, 15 to 45
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 15 to 45 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Ability to transfer instruction to motor learning
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family; home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities (eg, contra-lateral hemiplegia, deconditioning)
- Condition of contra-lateral leg
- Patient/client motivation and adherence to the intervention program
- Preexisting systemic conditions or diseases
- Psychological factors
- Psychosocial and socioeconomic stressors
- Support provided by family unit
- Wound healing complications (eg, infection drainage)
Intervention
Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairments) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation

Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family; significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and use of health care resources by patient/client, family; significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family; significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family; significant others, caregivers, other health care professionals, and other interested persons (e.g., rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction

Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence and activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family, significant others, and caregivers is improved.
- Self-management of symptoms is improved.
- Utilization and cost of health care services are decreased.

Specific Interventions
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
- Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities are increased.
- Aerobic capacity is increased.
- Endurance is increased.
- Energy expenditure is decreased.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Joint and soft tissue swelling, inflammation, or restriction is reduced.
- Level of supervision required for task performance is decreased.
- Motor function (motor control and motor learning) is improved.
- Need for assistive devices is decreased.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Postural control is improved.
- Preoperative and postoperative complications are reduced.
- Quality and quantity of movement between and across body segments are improved.
- Risk factors are reduced.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Strength, power, and endurance are increased.
- Tolerance of positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

Specific Direct Interventions
- Aerobic endurance activities using treadmills, ergometers, steppers, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
- Aquatic exercises
- Balance and coordination training
• Body mechanics and ergonomics training
• Conditioning and reconditioning
• Gait, locomotion, and balance training
• Motor function (motor control and motor learning) training or retraining
• Neuromuscular education or reeducation
• Posture awareness training
• Strengthening:
  • active
  • active assistive
  • resistive, using manual resistance, pulleys, weights, hydraulics, elastic resistance bands, robotics, and mechanical or electromechanical devices
• Stretching

Functional Training in Self-Care and Home Management (Including ADL and IADL)
Anticipated Goals
• Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
• Ability to recognize a recurrence is increased, and intervention is sought in a timely manner.
• Intensity of care is decreased.
• Performance of and independence in ADL and IADL are increased.
• Level of supervision required for task performance is decreased.
• Risk of recurrence of condition is reduced.
• Safety is improved during performance of self-care and home management tasks and activities.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• Assistive and adaptive device or equipment training
• Body mechanics training
• IADL training (eg, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
• Organized functional training programs (eg, simulated environments and tasks)
• Orthotic, protective, or supportive device or equipment training
• Prosthetic device or equipment training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)
Anticipated Goals
• Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure tasks, movements, or activities is increased.
• Costs of work-related injury or disability are reduced.
• Performance of and independence in IADL is increased.
• Safety is improved during performance of community, work (job/school/play), and leisure tasks and activities.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.

Specific Direct Interventions
• Assistive and adaptive device and equipment training
• Environmental, community, work (job/school/play), or leisure task adaptation
• Ergonomic stressor reduction training
• Injury prevention or reduction training
- IADL training (e.g., shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children, negotiating school environments)
- Job coaching
- Job simulation
- Leisure and play activity training
- Organized functional training programs (e.g., back schools, simulated environments and tasks)
- Orthotic, protective, or supportive device or equipment training
- Prosthetic device or equipment training

**Manual Therapy Techniques (Including Mobilization and Manipulation)**

**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Motor function (motor control and motor learning) is improved.
- Muscle spasm is reduced.
- Pain is decreased.
- Joint integrity and mobility are improved.
- Quality and quantity of movement between and across body segments are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Ventilation, respiration (gas exchange), and circulation are improved.

**Specific Direct Interventions**
- Connective tissue massage
- Manual lymphatic drainage
- Passive range of motion
- Soft tissue mobilization and manipulation (e.g., myofascial release)
- Therapeutic massage

**Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)**

**Anticipated Goals**
- Ability to perform physical tasks is increased
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Intensity of care is decreased.
- Edema, lymphedema, or effusion is reduced.
- Joint integrity and mobility are improved.
- Level of supervision required for task performance is decreased.
- Loading on a body part is decreased.
- Motor function (motor control and motor learning) is improved.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Physical function and health status are improved.
- Prosthetic fit is achieved.
- Protection of body parts is increased.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

**Specific Direct Interventions**
• Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
• Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handed reachers, static and dynamic splints)
• Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
• Prosthetic devices or equipment (eg, artificial limbs)
• Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

**Electrotherapeutic Modalities**
**Anticipated Goals**
• Ability to perform physical tasks is increased
• Complications are reduced.
• Edema, lymphedema, or effusion is reduced.
• Joint integrity and mobility are improved.
• Motor function (motor control and motor learning) is improved.
• Muscle performance is increased.
• Pain is decreased.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
• Neuromuscular electrical stimulation (NMES)
• Transcutaneous electrical nerve stimulation (TENS)

**Physical Agents and Mechanical Modalities**
**Anticipated Goals**
• Ability to perform movement tasks is increased.
• Complications resulting from soft tissue and circulatory disorders are decreased.
• Debridement of nonviable tissue is achieved.
• Edema, lymphedema, or effusion is reduced.
• Motor function (motor control and motor learning) is improved.
• Pain is decreased.
• Joint integrity and mobility are improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Tolerance to positions and activities is increased.

**Specific Direct Interventions**
**Mechanical modalities:**
• Compression therapies (eg, vasopneumatic compression devices, compression bandaging, compressive garments, taping)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which for some patient/client diagnostic groups may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
Health-related quality of life is improved.
Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
Risk of disability associated with lower-extremity amputation is reduced.
Safety of patient/client and caregivers is increased.
Self-care and home management activities, including activities of daily living (ADL)-and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)-are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
Understanding of personal and environmental factors that promote optimal health status is demonstrated.
Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
Risk of functional decline is reduced.
Risk of impairment or of impairment progression is reduced.
Other secondary prevention outcomes include:
Need for additional physical therapist intervention is decreased.
Patient/client adherence to the intervention program is maximized.
Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: care-giver status, community adaptation, leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.

Primary Prevention/Risk Factor Reduction Strategies
Primary prevention is the prevention of disease in a susceptible or a potentially susceptible population through specific strategies such as screening programs or through general health promotion. Progression to pathology or from pathology or impairment to disability is not inevitable. Physical therapist intervention can prevent impairment, functional limitation, or disability by identifying disablement risk factors (e.g., biological characteristics, demographic background, lifestyle factors) and by buffering the disablement process with adaptive or supportive equipment, an exercise program, education, or environmental modifications.

Identified Risk Factors for Disability
- Age
- Attitude
- Decreased skin integrity
- Decreased vascular integrity
- Diabetes
- Environmental hazards in home, community, and work (job/school/play)
- Heredity
- Lifestyle:
  - fitness level or cardio-pulmonary and musculo-skeletal deconditioning
  - physical activity level
  - substance abuse (e.g., smoking, alcohol, drugs)
- Quality of skin care
- Previous history of limb amputation

Primary Prevention/Risk Factor Reduction Strategies
- Community program evaluation and development (e.g., senior exercise program, YMCA or YWCA programs)
- Consultation (e.g., senior centers)
- Lifestyle education and modification through individual or group activities that highlight (1) the relationship between risk factors (e.g., smoking, substance abuse, physical activity and fitness level, stressors) and amputation and (2) strategies to prevent amputation
- Risk factor reduction through individual and group therapeutic exercise and symptom management
- Screening programs (e.g., elderly foot care clinics, senior centers, skilled nursing facility screening programs)
- Workplace, home, and community ergonomic analysis and modification
CHAPTER 5

Preferred Practice Patterns: Integumentary
The following patterns describe the elements of patient/client management provided by physical therapists—examination (history, systems review, and tests and measures), evaluation, diagnosis, prognosis, and intervention (with anticipated goals)—in addition to reexamination, outcomes, and criteria for discharge.

Pattern A: Primary Prevention/Risk Factor Reduction for Integumentary Disorders 436

Pattern B: Impaired Integumentary Integrity Secondary to Superficial Skin Involvement 445

Pattern C: Impaired Integumentary Integrity Secondary to Partial-Thickness Skin Involvement and Scar Formation 457

Pattern D: Impaired Integumentary Integrity Secondary to Full-Thickness Skin Involvement and Scar Formation 470

Pattern E: Impaired Integumentary Integrity Secondary to Skin Involvement Extending Into Fascia, Muscle, or Bone and Scar Formation 483

Pattern F: Impaired Anthropometric Dimensions Secondary to Lymphatic System Disorders 497
Primary Prevention/Risk Factor Reduction for Integumentary Disorders

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with a potential risk for disruption in the integument. Patients/clients may have any one or a combination of the following:

- Edema
- Inflammation
- Integument repaired by primary intention
- Ischemia
- Low or moderate risk assessment score (eg, for pressure, insensitivity)
- Pain
- Prior scar

INCLUDES patients/clients at any stage with:

- Amputation
- Central nervous system disorder
- Congestive heart failure
- Diabetes
- Obesity
- Spinal cord involvement
- Surgery
- Vascular disease

EXCLUDES patients/clients with:

- Break in skin integrity
- Flaps
- Grafts

Examination 437
Evaluation, Diagnosis, and Prognosis 440
Intervention 441
Outcomes 444
Criteria for Discharge 444
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/client’s emotional response to the current clinical situation

Functional Status and Activity Level
Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications
- Past Medical/Surgical History
- Cardio-pulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work (job/school/play) and leisure activities.

Systems Review
The systems review may include:
- Physiologic and anatomic status
- Cardio-pulmonary
- Integumentary
- Musculo-skeletal Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Integumentary Integrity
- For skin associated with integumentary disruption:
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of continuity of skin color (eg, redness in lightly pigmented skin, violaceous coloration in darkly pigmented skin)
- Assessment of nail beds
- Assessment of sensation (eg, pain, temperature, itch, tactile)
- Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (eg, using thermistors)
• Assessment of tissue mobility, turgor, and texture
  For wound:
  • Assessment for presence of dermatitis (eg, rash, fungus)
  • Assessment for presence of hair growth

Pain
• Analysis of pain behavior and reaction during specific move-meats and provocation tests
• Assessment of pain perception (eg, phantom pain)
• Assessment of pain using questionnaires, graphs, behavioral scales, symptom magnification scales or indexes, and visual analog scales

Ventilation, Respiration (Gas Exchange), and Circulation
• Assessment of capillary refill time
• Palpation of pulses
• Assessment of ecchymosis
• Assessment of scar tissue (cicatrix), including banding, pliability, sensation, and texture

Orthotic, Protective, and Supportive Devices
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 1 to 3 weeks, patient/client or caregiver will be independent in skin inspection. Patient/client will demonstrate knowledge of disease-preventing behavior and will demonstrate knowledge of risk factors of integumentary disruption and methods to modify those risk factors.

Expected Range of Number of Visits Per Episode of Care, 1 to 6
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 1 to 6 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Modify Frequency of Visits
- Accessibility of resources
- Age
- Allergic reaction (eg, to medication, tape, latex)
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities (eg, chronic obstructive pulmonary disease, renal disease, cerebro-vascular accident)
- Immuno-suppression (eg, human immunodeficiency virus/acquired immunodeficiency syndrome [HIV/AIDS], cancer)
- Level of patient/client adherence to the intervention program
- Need for ventilatory support
- Nutritional status
- Preexisting systemic conditions or diseases (eg, diabetes, peripheral vascular disease, peripheral neuropathy)
- Presence of infection
- Support provided by family unit
Intervention

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation

Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with client, family significant others, care-givers, and other professionals.
- Decision making is enhanced regarding the health of client and use of health care resources by patient/client, family significant others, and caregivers.

Specific Interventions
- Communication (direct or indirect)
- Coordination of care with client, family, significant others, care-givers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of client management

Education plans
- Referrals to other professionals or resources

Patient/Client-Related Instruction

Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of client and use of health care resources by client.
- Client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Utilization and cost of health care services are decreased.

Specific Interventions
- Computer-assisted instruction
- Demonstration by client in the appropriate environment
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction
Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Joint integrity and mobility are improved.
- Nutrient delivery to tissue is increased.
- Physiologic response to increased oxygen demand is improved.
- Risk factors are reduced.
- Risk of recurrence is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Sensory awareness is increased.
- Utilization and cost of health care services are decreased.

**Specific Direct Interventions**
- Breathing exercises
- Posture awareness training

**Functional Training in Self-Care and Home Management (Including ADL and IADI)**

**Anticipated Goals**
- Ability to recognize and initiate treatment of a recurrence is improved through increased self-management of symptoms.
- Ability to perform physical tasks related to self-care and home management (including ADL and IADI) is increased.
- Performance of and independence in ADL and LADI are increased.

**Specific Direct Interventions**
- ADL training (e.g., bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device and equipment training
- IADI training (e.g., maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device training

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI, Work Hardening, and Work Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to community and work (job/school/play) integration or reintegration and leisure, tasks, movements, or activities is increased.

**Specific Direct Interventions**
- IADI training (e.g., maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)

**Manual Therapy Techniques (Including Mobilization and Manipulation)**

**Anticipated Goals**
- Integumentary integrity is improved.
- Pain is decreased.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- Manual lymphatic drainage
- Therapeutic massage
Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive Orthotic, Protective, Supportive, and Prosthetic)

Anticipated Goals

- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Joint stability is increased.
- Loading on a body part is decreased.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Protection of body parts is increased.
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Stresses precipitating injury are decreased.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

Specific Direct Interventions

- Assistive devices or equipment (e.g., crutches, canes, walkers, wheelchairs, power devices, long-handle reachers, static and dynamic splints)
- Orthotic devices or equipment (e.g., splints, braces, shoe inserts, casts)
- Protective devices or equipment (e.g., braces, protective taping, cushions, helmets)
- Supportive devices or equipment (e.g., supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)
Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Self-care and home management activities, including activities of daily living (ADL) and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL) are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Optimal role function (e.g., worker, student, spouse, grandparent) is maintained.
- Health-related quality of life is enhanced.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of prevention strategies is demonstrated.

Client Satisfaction
- Access, availability, and services provided are acceptable to client.
- Administrative management of practice is acceptable to client.
- Clinical proficiency of physical therapist is acceptable to client.
- Coordination and conformity of care are acceptable to client.
- Interpersonal skills of physical therapist are acceptable to client, family, and significant others.

Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Integumentary Integrity Secondary to Superficial Skin Involvement

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group

Patients/clients with superficial skin involvement. Patients/clients may have any one or a combination of the following:
- Burns (first degree)
- Contusion
- Dermopathy
- Neuropathic ulcers (grade 0)
- Pressure ulcers (stage I)
- Vascular disease (eg, venous, arterial, diabetic)

INCLUDES patients/clients with:
- Cellulitis
- Dermatitis

EXCLUDES patients/clients with:
- Frostbite

Examination 446
Evaluation, Diagnosis, and Prognosis 450
Intervention 451
Reexamination 455
Outcomes 455
Criteria for Discharge 456
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
Medications for current condition for which patient/client is seeking the services of a physical therapist
Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculo-skeletal Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
- Assessment of arousal, attention, and cognition
- Assessment of level of recall (eg, short- and long-term memory)
Assistive and Adaptive Devices
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of safety during use of device
• Assessment of patient/client and caregiver ability to care for device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Gait, Locomotion, and Balance
• Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
• Assessment of safety

Integumentary Integrity
For skin associated with integumentary disruption:
• Assessment for presence of hair growth
• Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
• Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
• Assessment of continuity of skin color (eg, redness in lightly pigmented skin, violaceous coloration in darkly pigmented skin)
• Assessment of nail beds
• Assessment of sensation (eg, pain, temperature, tactile)
• Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (eg, using thermistors)
• Assessment of tissue mobility, turgor, and texture

For wound:
• Assessment for presence of blistering
• Assessment for presence of dermatitis (eg, rash, fungus)
• Assessment for presence of hair growth
• Assessment for signs of infection
• Assessment of activities, devices, positioning, and postures that aggravate the wound or scar or that may produce additional trauma
• Assessment of burn
• Assessment of ecchymosis
• Assessment of pigment (color)
• Assessment of sensation (eg, pain, temperature, tactile)
• Assessment of shape and size of skin involvement

Orthotic, Protective, and Supportive Devices
• Analysis of appropriate components of device
• Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
• Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device
Pain
- Assessment of pain and soreness

Range of Motion (ROM) (Including Muscle Length)
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging

Sensory Integrity
- Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)

Ventilation, Respiration (Gas Exchange), and Circulation
- Assessment of capillary refill time
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate)
- Palpation of pulses
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 2 weeks, patient/client will show resolution of skin involvement.

Expected Range of Number of Visits Per Episode of Care, 1 to 6
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 1 to 6 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Accessibility of resources
- Age
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities (eg, chronic obstructive pulmonary disease, renal disease, cerebro-vascular accident)
- Immuno-suppression (eg, human immunodeficiency virus/acquired immunodeficiency syndrome [HIV/ALDS], cancer)
- Level of patient/client adherence to the intervention program
- Nutritional status
- Preexisting systemic conditions or diseases (eg, diabetes, peripheral vascular disease, peripheral neuropathy)
- Presence of infection
- Support provided by family unit
- Total body surface area (TBSA) of burn
Intervention
Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation
Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, Workers’ Compensation claims manager, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction
Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/client, family significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family significant others, and caregivers is improved.
- Self-management of symptoms is improved.
- Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
- Direct interventions for this pattern may include, in order of preferred usage:

**Anticipated Goals**

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Aerobic capacity is increased.
- Gait, locomotion, and balance are improved.
- Pain is decreased.
- Postural control is improved.
- Risk factors are reduced.
- Risk of recurrence is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Utilization and cost of health care services are decreased.
- Tolerance to positions and activities is increased.
- Weight-bearing status is improved.

**Specific Direct Interventions**
- Breathing exercises
- Gait, locomotion, and balance training
- Posture awareness training

**Functional Training in Self-Care and Home Management (Including ADL and IADL)**

**Anticipated Goals**
- Ability to recognize and initiate treatment of a recurrence is improved through increased self-management of symptoms.
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of condition is reduced.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device or equipment training

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI, Work Hardening, and Work Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities is increased.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of conditions is reduced.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- Assistive and adaptive device or equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Injury prevention or reduction training
- Orthotic, protective, or supportive device or equipment training

**Manual Therapy Techniques (Including Mobilization and Manipulation)**

**Anticipated Goals**
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- Manual lymphatic drainage
- Therapeutic massage

**Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)**

**Anticipated Goals**
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Joint stability is increased.
- Loading on a body part is decreased.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Protection of body parts is increased.
- Pressure areas (eg, pressure over bony prominence) are prevented.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.

**Specific Direct Interventions**
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handed reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, braces, shoe inserts, casts, splints, casts)
- Protective devices or equipment (e.g., braces, protective taping, cushions, helmets)
- Supportive devices or equipment (e.g., supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

**Wound Management**

**Anticipated Goals**
- Complications are reduced.
- Risk factors for infection are reduced.
- Risk of secondary impairments is reduced.
- Tissue perfusion and oxygenation are enhanced.
- Wound and soft tissue healing is enhanced.
- Wound size is reduced.

**Specific Direct Interventions**
- Dressings (e.g., wound coverings)
- Orthotic, protective, and supportive devices
- Topical agents (e.g., ointments, moisturizers, creams, cleansers, sealants)

**Electrotherapeutic Modalities**

**Anticipated Goals**
- Complications are reduced.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
- Electrical muscle stimulation
- Transcutaneous electrical nerve stimulation (TENS)

**Physical Agents and Mechanical Modalities**

**Anticipated Goals**
Compliacations of soft tissue and circulatory disorders are decreased.
Pain is decreased.
Risk of secondary impairments is decreased.
Soft tissue swelling, inflammation, or restriction is reduced.
Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- Athermal modalities (e.g., pulsed ultrasound, pulsed electromagnetic fields)
- Hydrotherapy (e.g., aquatic therapy, whirlpool tanks, contrast baths, pulsatile lavage)
- Phototherapy (e.g., ultraviolet)
- Superficial thermal modalities (e.g., heat, paraffin baths, hot packs, fluidotherapy)

**Mechanical modalities:**
- Compression therapies (e.g., vaso-pneumatic compression devices, compression bandaging, compression garments, taping, and total contact casting)
- Tilt table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which, for some patient/client diagnostic groups, may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with superficial skin involvement is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL) and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL) are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goal and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Integumentary Integrity Secondary to Partial-Thickness Skin Involvement and Scar Formation

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession's code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic slams.

Patient/Client Diagnostic Group
- Patients/clients with partial-thickness skin involvement. Patients/clients may have any one or a combination of the following:
  - Burns (second degree)
  - Dermatologic disorders
  - Hematoma
  - Neuropathic ulcers (grade 1)
  - Pressure ulcers (stage II)
  - Prior scar
  - Surgical wounds
  - Traumatic injury
  - Vascular ulcers (eg, venous, arterial, diabetic)

INCLUDES patients/clients at any stage with:
- Epidermolysis bullosa
- Immature scar
- Neoplasms (including Kaposi’s sarcoma)
- Pemphigus vulgaris
- Status post-spinal cord injury
- Toxic epidermal necrolyzing syndrome (Stevens-Johnson syndrome)

EXCLUDES patients/clients with:
- A total body surface area (TBSA) involvement of more than 25% in adults and more than 20% in children who are medically unstable
- Acute amputation
- Frostbite
- Injury secondary to trauma (eg, multiple fractures, amputations, electricity-related injuries)

Examination
Evaluation, Prognosis, and Diagnosis
Intervention
Reexamination
Outcomes
Criteria for Discharge
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions

Other Tests and Measures
- Laboratory and diagnostic tests
• Review of available records
• Review of nutrition and hydration

Past History of Current Condition
• Prior therapeutic interventions
• Prior medications
• Past Medical/Surgical History
• Cardio-pulmonary
• Endocrine/metabolic
• Gastrointestinal
• Genitourinary
• Integumentary
• Musculo-skeletal
• Neuromuscular
• Pregnancy, delivery, and postpartum
• Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
• Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
• General health perception
• Physical function (eg, mobility, sleep patterns, energy, fatigue)
• Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
• Role function (eg, worker, student, spouse, grandparent)
• Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
• Behavioral health risks (eg, smoking, drug abuse)
• Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
• Cardiopulmonary
• Integumentary
• Musculo-skeletal
• Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Anthropometric Characteristics
• Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
• Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
• Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
• Assessment of arousal, attention, and cognition
• Assessment of level of recall (eg, short-term and long-term memory)
Assistive and Adaptive Devices
- Assessment of patient/client and caregiver ability to care for device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Gait, Locomotion, and Balance
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Assessment of safety

Integumentary Integrity
For skin associated with integumentary disruption:
- Assessment for presence of hair growth
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of continuity of skin color (eg, redness in lightly pigmented skin, violecent coloration in darkly pigmented skin)
- Assessment of nail beds
- Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (eg, using thermistors)
- Assessment of tissue mobility, turgor, and texture
- Assessment of sensation (eg, pain, temperature, tactile)
- Assessment of wound contraction, drainage location, odor, shape, size, and depth (eg, linear, tracing, photography)
- Assessment of wound tissue, including epithelium, granulation, necrosis, slough, texture, and turgor
- Assessment of ecchymosis

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
- Review of reports provided by patient/client, family significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Assessment of pain and soreness

Range of Motion (ROM) (Including Muscle Length)
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging

Sensory Integrity (Including Proprioception and Kinesthesia)
- Assessment of superficial sensations (eg, sharp or dull discrimination, temperature, light touch, pressure)
Ventilation, Respiration (Gas Exchange), and Circulation
- Assessment of capillary refill time
- Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
- Palpation of pulses

For wound:
- Assessment for presence of blistering
- Assessment for presence of dermatitis (eg, rash, fungus)
- Assessment for presence of hair growth
- Assessment for signs of infection
- Assessment of burn
- Assessment of activities, positioning, and postures that aggravate the wound or scar or that may produce additional trauma
- Assessment of bleeding
- Assessment of pigment (color)
- Assessment of scar tissue (cicatrix), including banding, pliability, sensation, and texture
- Assessment of scar tissue mobility, turgor, and texture
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 4 weeks, patient/client will achieve wound closure.

Expected Range of Number of Visits Per Episode of Care, 4 to 40
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 4 to 40 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Accessibility of resources
- Age
- Allergic reaction (eg, to medication, tape, latex)
- Availability of resources
- Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities (eg, chronic obstructive pulmonary disease, renal disease, cerebro-vascular accident)
- Immuno-suppression (eg, human immunodeficiency virus/acquired immunodeficiency syndrome [HIV/AIDS, cancer])
- Level of patient/client adherence to the intervention program
- Need for ventilatory support
- Nutritional status
- Preexisting systemic conditions or diseases (eg, diabetes, peripheral vascular disease, peripheral neuropathy)
- Presence of infection
- Support provided by family unit
- Total body surface area (TBSA) of burn
Intervention
Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions maybe selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation
Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family, significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client-Related Instruction
Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family, significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
• Performance levels in employment, recreational, or leisure activities are improved.
• Physical function and health status are improved.
• Progress is enhanced through the participation of patient/client, family significant other and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family, significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Aerobic capacity is increased.
• Gait, locomotion, and balance are improved.
• Joint and soft tissue swelling, inflammation, or restriction is reduced.
• Joint integrity and mobility are improved.
• Pain is decreased.
• Postural control is improved.
• Risk factors are reduced.
• Risk of recurrence is reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Self-management of symptoms is improved.
• Sense of well-being is improved.
• Strength, power, and endurance are increased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Breathing exercises
• Gait, locomotion, and balance training
• Posture awareness training
• Strengthening

Functional Training in Self-Care and Home Management (Including ADL and IADL)
Anticipated Goals
• Ability to recognize and initiate treatment of a recurrence is improved through increased self-management of symptoms.
• Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
• Performance of and independence in ADL and IADL are increased.
• Risk of recurrence of condition is reduced.
• Tolerance to positions and activities is increased.
Specific Direct Interventions
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device or equipment training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI, Work Hardening, and Work Conditioning)
- Anticipated Goals
  Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities is increased
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of conditions is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Assistive and adaptive device or equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Injury prevention or reduction training
- Orthotic, protective, or supportive device or equipment training

Manual Therapy Techniques (Including Mobilization and Manipulation)
Anticipated Goals
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Manual lymphatic drainage
- Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)
Anticipated Goals
- Deformities are prevented.
- Gait, locomotion and balance are improved.
- Joint stability is increased.
- Lending on a body part is decreased.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Pressure areas (eg, pressure over bony prominences) are prevented
- Protection of body parts is increased.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.
Specific Direct Interventions
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

Wound Management
Anticipated Goals
- Complications are reduced.
- Debridement of nonviable tissue is achieved.
- Physical function and health status are improved.
- Risk factors for infection are reduced.
- Risk of secondary impairments is reduced.
- Tissue perfusion and oxygenation are enhanced.
- Wound size is reduced.
- Wound and soft tissue healing is enhanced.

Specific Direct Interventions
- Debridement "non selective"
- enzymatic debridement
- wet dressings
- wet-to-dry dressings
- wet-to-moist dressings
- Debridement "selective"
- debridement with other agents (eg, autolysis)
- enzymatic debridement
- sharp debridement
- Dressings (eg, wound coverings, hydrogels, vacuum-assisted closure)
- Electrotherapeutic modalities (see Electrotherapeutic Modalities)
- Orthotic, protective, and supportive devices
- Oxygen therapy (eg, topical, supplemental)
- Physical agents and mechanical modalities (see Physical Agents and Mechanical Modalities)
- Topical agents (eg, ointments, moisturizers, creams, cleansers, sealants)

Electrotherapeutic Modalities
Anticipated Goals
- Complications are reduced.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Wound and soft tissue healing is enhanced.

Specific Direct Interventions
- Electrical muscle stimulation
- Trans-cutaneous electrical nerve stimulation (TENS)

Physical Agents and Mechanical Modalities
Anticipated Goals
- Complications of soft tissue and circulatory disorders are decreased.
- Debridement of nonviable tissue is achieved.
- Pain is decreased.
- Risk of secondary impairments is decreased.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
Specific Direct Interventions

Physical agents:

- Athermal modalities (eg, pulsed ultrasound, pulsed electromagnetic fields)
- Deep thermal modalities (eg, ultrasound, pulsed shortwave diathermy)
- Hydrotherapy (eg, whirlpool tanks, pulsatile lavage)
- Phototherapy (eg, ultraviolet)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluido-therapy)

Mechanical modalities:

- Compression therapies (eg, vaso-pneumatic compression devices, compression bandaging, compression garments, taping, and total contact casting)
- Tilt table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which, for some patient/client diagnostic groups, may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

**Functional Limitation/Disability**
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with partial-thickness skin involvement and scar tissue is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

**Patient/Client Satisfaction**
- Access, availability and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

**Secondary Prevention**
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

**Other secondary prevention outcomes include:**
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work lob/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Integumentary Integrity Secondary to Full-Thickness Skin Involvement and Scar Formation

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with full-thickness involvement.
- Patients/clients may have any one or a combination of the following:
  - Burns
  - Dermatologic disorders
  - Hematoma
  - Lymphostatic ulcers
  - Necrotizing fasciitis
  - Neuropathic ulcers (grade 2)
  - Pressure ulcer (stage 3) Prior scar
  - Vascular ulcers (eg, venous, arterial, diabetic)

INCLUDES patients/clients at any stage with:
- Abscess
- Frostbite
- Immature, hypertrophic, or keloid scar
- Neoplasm
- Surgical wound
- Toxic epidermal necrolysis (Stevens Johnson syndrome)

EXCLUDES patients/clients with:
- Amputations
- Crushing injury
- Electricity-related injury
- Lymphedema
- Traumatic wound

Examination 471
Evaluation, Diagnosis, and Prognosis 475
Intervention 476
Reexamination 481
Outcomes 481
Criteria for Discharge 482
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family, significant other, and caregiver perceptions of patient’s/ client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardiopulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks
- Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy, fatigue)
- Psychological function (eg, memory, reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:

Physiologic and anatomic status
- Cardiopulmonary
- Integumentary
- Musculoskeletal Neuromuscular
- Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth

Arousal, Attention, and Cognition
- Assessment of arousal, attention, and cognition
- Assessment of level of recall (eg, short-term and long-term memory)
Assistive and Adaptive Devices
- Analysis of patient/client and caregiver ability to care for device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Gait, Locomotion, and Balance
- Analysis of arthro-kinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Assessment of safety

Integumentary Integrity
For skin associated with integumentary disruption:
- Assessment for presence of hair growth
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of activities, positioning, and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of continuity of skin color (eg, redness in lightly pigmented skin, violaceous coloration in daddy pigmented skin)
- Assessment of sensation (eg, pain, temperature, tactile)
- Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (eg, using thermistors)
- Assessment of tissue mobility, turgor, and texture

For wound:
- Assessment for presence of blistering
- Assessment for signs of infection
- Assessment of activities, positioning, and postures that aggravate the scar or that may produce additional trauma
- Assessment of burn
- Assessment of bleeding
- Assessment of ecchymosis
- Assessment for presence of hair growth
- Assessment of pigment (color)
- Assessment of scar mobility, turgor, and texture
- Assessment of scar tissue (cicatrix), including banding, pliability, sensation, and texture
- Assessment of sensation (eg, pain, temperature, tactile)
- Assessment of wound contraction, drainage, location, odor, shape, size, depth (eg, linear, tracing, photography), tunneling, and undermining
- Assessment of wound tissue, including epithelium, granulation, necrosis, slough, and texture

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
- Analysis of practicality and ease of use of device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
- Assessment of patient/client use of device
- Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
• Assessment of pain and soreness

Range of Motion (ROM) (Including Muscle Length)
• Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging

Sensory Integrity (Including Proprioception and Kinesthesia)
• Assessment of superficial sensations (e.g., sharp/dull discrimination, temperature, light touch, pressure)

Ventilation, Respiration (Gas Exchange), and Circulation
• Assessment of capillary refill time
• Assessment of standard vital signs (e.g., blood pressure, heart rate, respiratory rate)
• Palpation of pulses
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
- Wound
  - Over the course of 4 to 12 weeks, one of the following will occur:
    - Wound will be clean and stable.
    - Wound will be prepared for closure.
    - Wound will be closed.
- Scar
  - Over the course of 6 to 12 months, scar will be mature.

Expected Range of Number of Visits Per Episode of Care, 12 to 60
This range represents the lower and upper limits of the number of physical therapist visits required to achieve anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 12 to 60 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Accessibility of resources
- Age
- Allergic reaction (eg, to medication, tape, latex)
- Availability of resources Caregiver (eg, family, home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities (eg, chronic obstructive pulmonary disease, renal disease, cerebro-vascular accident)
- Immuno-suppression (eg, human immunodeficiency virus/acquired immunodeficiency syndrome [HIV/AIDS], cancer)
- Level of patient/client adherence to the intervention program
- Need for ventilatory support
- Nutritional status
- Preexisting systemic conditions or diseases (eg, diabetes, peripheral vascular disease, peripheral neuropathy)
- Presence of infection
Support provided by family unit
Total body surface area (TBSA) of burn

**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family, significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes is increased.
- Placement needs are determined.

**Specific Interventions**

- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**

- Ability to perform physical tasks
- Awareness and use of community resources are improved
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
- Progress is enhanced through the participation of patient/Client, family, significant others, and caregivers.
- Risk of recurrence of condition is reduced.
- Risk of secondary impairments is reduced.
- Safety of patient/client, family significant others, and caregivers is improved.
- Self-management of symptoms is improved.
- Utilization and cost of health care services are decreased.

**Specific Interventions**
- Computer-assisted instruction
- Demonstration by patient/client or caregivers in the appropriate environment
- Periodic reexamination and reassessment of the home program
- Use of audiovisual aids for both teaching and home reference
- Use of demonstration and modeling for teaching
- Verbal instruction
- Written or pictorial instruction

**Direct Interventions**
Direct interventions for this pattern may include, in order of preferred usage:

**Therapeutic Exercise (Including Aerobic Conditioning)**

**Anticipated Goals**
- Aerobic capacity is increased.
- Gait, locomotion, and balance are improved.
- Joint integrity and mobility are improved.
- Pain is decreased.
- Postural control is improved.
- Risk factors are reduced.
- Risk of recurrence is reduced.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Self-management of symptoms is improved.
- Sense of well-being is improved.
- Utilization and cost of health care services are decreased.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Strength is increased.
- Tolerance to positions and activities is increased.
- Weight-bearing status is improved.

**Specific Direct Interventions**
- Breathing exercises
- Gait, locomotion, and balance training
- Posture awareness training
- Strengthening

**Functional Training in Self-Care and Home Management (Including ADL and IADI)**

**Anticipated Goals**
- Ability to recognize and initiate treatment of a recurrence is improved through increased self-management of symptoms.
- Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of condition is reduced.
• Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- ADL training (e.g., bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- IADL training (e.g., maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device or equipment training

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADL, Work Hardening, and Work Conditioning)**

**Anticipated Goals**
- Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities is increased.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of conditions is reduced.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- Assistive and adaptive device or equipment training
- IADL training (e.g., maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Injury prevention or reduction training
- Orthotic, protective, or supportive device or equipment training

**Manual Therapy Techniques (Including Mobilization and Manipulation)**

**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Pain is decreased.
- Quality and quantity of movement between and across body segments are improved.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**
- Connective tissue massage
- Manual lymphatic drainage
- Soft tissue mobilization and manipulation
- Therapeutic massage

**Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Joint integrity and mobility are improved.
- Joint stability is increased.
- Loading on a body part is decreased.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Pressure areas (e.g., pressure over bony prominences) are prevented.
• Protection of body parts is increased.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Sense of well-being is improved.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

**Specific Direct Interventions**
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps, oxygen)

**Wound Management**

**Anticipated Goals**
- Complications are reduced.
- Debridement of nonviable tissue is achieved.
- Physical function and health status are improved.
- Risk Factors for infection are reduced.
- Risk of secondary impairments is reduced.
- Tissue perfusion and oxygenation are enhanced.
- Wound size is reduced.
- Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
- Debridement “non selective”
  • enzymatic debridement
  • wet dressings
  • wet-to-dry dressings
  • wet-to-moist dressings
- Debridement “selective”
  • debridement with other agents (eg, autolysis)
  • enzymatic debridement
  • sharp debridement
- Dressings (eg, wound coverings, hydrogels, vacuum-assisted closure)
- Electrotherapeutic modalities (see Electrotherapeutic Modalities)
- Orthotic, protective, and supportive devices
- Oxygen therapy (eg, topical, supplemental)
- Physical agents and mechanical modalities (see Physical Agents and Mechanical Modalities)
- Topical agents (eg, ointments, moisturizers, creams, cleansers, sealants)

**Electrotherapeutic Modalities**

**Anticipated Goals**
- Complications are reduced.
- Edema, lymphedema, or effusion is decreased.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Wound and soft tissue healing is enhanced.
Specific Direct Interventions
- Electrical muscle stimulation
- Transcutaneous electrical nerve stimulation (TENS)

Physical Agents and Mechanical Modalities
Anticipated Goals
- Complications of soft tissue and circulatory disorders are decreased.
- Debridement of nonviable tissue is achieved.
- Joint integrity and mobility are improved.
- Plain is decreased.
- Risk of secondary impairments is decreased.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
Physical agents:
- Athermal modalities (eg, pulsed ultrasound, pulsed radio frequency energy)
- Deep thermal modalities (eg, ultrasound, pulsed shortwave diathermy)
- Hydrotherapy (eg, whirlpool tanks, pulsatile lavage)
- Phototheraphy (eg, ultraviolet)
- Superfical thermal modalities (eg, heat, paraffin baths, hot packs, fluido-therapy)

Mechanical modalities:
- Continuous passive motion (CPM)
- Compression therapies (eg, all compression devices, compression bandaging, compression garments, taping, and total contact casting)
- Tilt table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which, for some patient/client diagnostic groups, may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patient’s/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with full-thickness skin involvement and scar formation is reduced.
- Safety of patient/client and caregivers is increased.
- Self care and home management activities, including activities of daily living (ADL), and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL), are performed safely efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family significant others, and care-givers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Integumentary Integrity Secondary to Skin Involvement Extending Into Fascia, Muscle, or Bone and Scar Formation

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession's code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with subcutaneous tissue involvement that may extend into underlying tissue; Patients/clients may have any one or a combination of the following:
- Abscess
- Hematoma
- Necrotizing fascitis
- Neuropathic ulcers (grades 3,4,5)
- Pressure ulcers (stage 4)
- Surgical wounds
- Vascular ulcers (eg, venous, diabetic)

INCLUDES patients/clients with:
- Acute amputation
- Burn
- Chronic surgical wound
- Electrical burns
- Frostbite
- Kaposi's sarcoma
- Lymphostatic ulcer
- Neoplasm
- Subcutaneous arterial ulcer
- Surgical wound

EXCLUDES patients/clients with:
- Lymphedema

Examination 484
Evaluation, Diagnosis, and Prognosis 488
Intervention 490
Reexamination 495
Outcomes 495
Criteria for Discharge 496
Examination
Through the examination (history systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family; significant other, and caregiver perceptions of patients/client’s emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardio-pulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks
- Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (eg, mobility, sleep patterns, energy fatigue)
- Psychological function (eg, memory reasoning ability, anxiety, depression, morale)
- Role function (eg, worker, student, spouse, grandparent)
- Social function (eg, social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (eg, smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities)

Systems Review
The systems review may include:
- Physiologic and anatomic status
- Cardio-pulmonary
- Integumentary
- Musculoskeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical orders

Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (eg, during pregnancy, in determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth
- Observation and palpation of trunk and extremities at rest and during activity

Arousal, Attention, and Cognition
- Assessment of arousal, attention, and cognition using standardized instruments
- Assessment of level of recall (eg, short-term and long-term memory)
Assistive and Adaptive Devices
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of patient/client or caregiver ability to care for device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Gait, Locomotion, and Balance
- Analysis of arthro-kinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Assessment of safety

Integumentary Integrity
For skin associated with integumentary disruption:
- Assessment for presence of dermatitis (e.g. rash, fungus)
- Assessment for presence of hair growth
- Assessment of activities and postures that aggravate or relieve pain or other disturbed sensations
- Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
- Assessment of continuity of skin color (e.g., redness in lightly pigmented skin, violaceous coloration in darkly pigmented skin)
- Assessment of sensation (e.g., pain, temperature, tactile)
- Integumentary integrity

For wound:
- Assessment for presence of blistering
- Assessment for presence of hair and nail growth
- Assessment for signs of infection
- Assessment of activities, positioning, and postures that aggravate the wound or scar or that may produce additional trauma
- Assessment of bleeding
- Assessment of ecchymosis
- Assessment of exposed anatomical structures
- Assessment of pigment (color)
- Assessment of sear mobility, turgor, and texture
- Assessment of scar tissue (cicatrix), including banding, pliability, sensation, and texture
- Assessment of sensation (e.g., pain, protective, temperature, tactile)
- Assessment of wound contraction, drainage, location, odor, shape, size, depth (e.g., linear, tracing, photography), tunneling, and undermining
- Assessment of wound tissue, including epithelium, granulation, mobility, necrosis, slough, texture, and turgor

Joint Integrity and Mobility
- Assessment of soft tissue swelling, inflammation, or restriction

Orthotic, Protective, and Supportive Devices
- Analysis of appropriate components of device
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
- Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
• Analysis of practicality and ease of use of device
• Assessment of alignment and fit of device and inspection of related changes in skin condition
• Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
• Assessment of patient/client use of device
• Assessment of safety during use of device
• Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
• Assessment of pain and soreness

Range of Motion (ROM) (Including Muscle Length)
• Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging

Sensory Integrity (Including Proprioception and Kinesthesia)
• Assessment of superficial sensations (eg, sharp/dull discrimination, temperature, light touch, pressure)

Ventilation, Respiration (Gas Exchange), and Circulation
• Assessment of capillary refill time
• Assessment of chest wall mobility, expansion, and excursion
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate)
• Palpation of pulses
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
• Wound
  • Over the course of 4 to 16 weeks, one of the following will occur:
  • Wound will be clean and stable.
  • Wound will be prepared for closure.
  • Wound will be closed.
• Scar
  • Over the course of 4 to 16 weeks, immature scar will be evident.

Expected Range of Number of Visits Per Episode of Care, 12 to 112
These ranges represents the lower and upper limits of the number of physical therapist visits required to achieve the anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within 12 to 112 visits during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
• Accessibility of resources
• Age
• Availability of resources
• Caregiver (eg, family; home health aide) consistency or expertise
• Chronicity or severity of condition
• Co-morbidities (eg, chronic obstructive pulmonary disease, renal disease, cerebro-vascular accident)
• Immuno-suppression (eg, human immunodeficiency virus/acquired immunodeficiency syndrome [HIV/AIDS], cancer)
• Intrusion beyond tissue-protective surface (eg, facial plane, peritenon, periosteum)
• Level of patient/client adherence to the intervention program
• Need for ventilatory support
• Nutritional status
• Preexisting systemic conditions or diseases (eg, diabetes, peripheral vascular disease, peripheral neuropathy)
• Presence of infection
• Support provided by family unit
• Total body surface area (TBSA) of burn
Intervention
Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

Coordination, Communication, and Documentation
Anticipated Goals
- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family; significant others, and caregivers.
- Other health care interventions (eg, medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver understanding of expectations and goals and outcomes Is Increased.
- Placement needs are determined.

Specific Interventions
- Case management
- Communication (direct or indirect)
- Coordination of care with patient/client, family, significant others, caregivers, other health care professionals, and other interested persons (eg, rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

Patient/Client- Related Instruction
Anticipated Goals
- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers.
- Disability associated with acute or chronic illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
• Physical function and health status are improved
• Progress is enhanced through the participation of patient/client, family, significant other, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Aerobic capacity is increased.
• Gait, locomotion, and balance are improved.
• Joint integrity and mobility are improved.
• Pain is decreased.
• Postural control is improved.
• Preoperative and postoperative complications are reduced.
• Risk factors are reduced.
• Risk of recurrence is reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Self-management of symptoms is improved.
• Sense of well-being is improved.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Strength, power, and endurance are increased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight bearing status is improved.

Specific Direct Interventions
• Breathing exercises
• Strengthening
• Gait, locomotion, and balance training
• Posture awareness training

Functional Training in Self-Care and Home Management (Including ADI and IADI)
Anticipated Goals
• Ability to recognize and initiate treatment of a recurrence is improved through increased self-management of symptoms.
• Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
• Performance of and independence in ADL and IADL are increased.
• Risk of recurrence of condition is reduced.
• Tolerance to positions and activities is increased.

Specific Direct Interventions
• ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
• Assistive and adaptive device or equipment training
• IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
• Orthotic, protective, or supportive device or equipment training

**Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI, Work Hardening, and Work Conditioning)**

**Anticipated Goals**
• Ability to perform physical tasks related to community and work (job/school/play) integration and reintegration and leisure tasks, movements, or activities, is increased.
• Risk of recurrence of condition is reduced.
• Tolerance to positions and activities is increased.

**Specific Direct Interventions**
• Assistive and adaptive device or equipment training
• IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
• Injury prevention or reduction training
• Orthotic, protective, or supportive device or equipment training

**Manual Therapy Techniques (Including Mobilization and Manipulation)**

**Anticipated Goals**
• Ability to perform movement tasks is increased.
• Joint integrity and mobility are improved.
• Pain is decreased.
• Quality and quantity of movement between and across body segments are improved.
• Risk of secondary impairments is reduced.
• Soft tissue swelling, inflammation, or restriction is reduced.
• Tolerance to positions and activities is increased.

**Specific Direct Interventions**
• Connective tissue massage
• Soft tissue mobilization and manipulation
• Therapeutic massage

**Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive, and Prosthetic)**

**Anticipated Goals**
• Ability to perform physical tasks is increased.
• Deformities are prevented.
• Gait, locomotion, and balance are improved.
• Joint integrity and mobility are improved.
• Joint stability is increased.
• Loading on a body part is decreased.
• Optimal joint alignment is achieved.
• Pain is decreased.
• Performance of and independence in ADL and MDL are increased.
• Pressure areas (eg, pressure over bony prominence) are prevented.
• Prosthetic fit is achieved.
• Protection of body parts is increased.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Sense of well-being is improved.
• Utilization and cost of health care services are decreased.
• Soft tissue swelling, inflammation, or restriction is reduced.
Tolerance to positions and activities is increased.
Weight-bearing status is improved.

**Specific Direct Interventions**
- Adaptive devices or equipment (eg, raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (eg, crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (eg, splints, braces, shoe inserts, casts)
- Prosthetic devices or equipment (eg, artificial limbs)
- Protective devices or equipment (eg, braces, protective taping, cushions, helmets)
- Supportive devices or equipment (eg, supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wraps)

**Wound Management**

**Anticipated Goals**
- Complications are reduced.
- Debridement of nonviable tissue is achieved.
- Physical function and health status are improved.
- Risk factors for infection are reduced.
- Risk of secondary impairments is reduced.
- Tissue perfusion and oxygenation are enhanced.
- Wound size is reduced.
- Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
- Debridement “non selective”
  - enzymatic debridement
  - wet dressings
  - wet-to-dry dressings
  - wet-to-moist dressings
- Debridement “selective”
  - debridement with other agents (eg, autolysis)
  - enzymatic debridement
  - sharp debridement
- Dressings (eg, wound coverings, hydrogels, vacuum-assisted closure)
- Electrotherapeutic modalities (see Electro-therapeutic Modalities)
- Orthotic, protective, and supportive devices
- Oxygen therapy (eg, topical, supplemental)
- Physical agents and mechanical modalities (see Physical Agents and Mechanical Modalities)
- Topical agents (eg, ointments, moisturizers, creams, cleansers, sealants)

**Electrotherapeutic Modalities**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Complications are reduced.
- Edema, lymphedema, or effusion is decreased.
- Joint integrity and mobility are improved.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
- Electrical muscle stimulation
- Transeutaneous electrical nerve stimulation (TENS)
Physical Agents and Mechanical Modalities

Anticipated Goals
- Complications of soft tissue and circulatory disorders are decreased.
- Debridement of nonviable tissue is achieved.
- Joint integrity and mobility are improved.
- Pain is decreased.
- Risk of secondary impairments is decreased.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions

Physical agents:
- Athermal modalities (eg, pulsed ultrasound, pulsed radio frequency stimulation)
- Deep thermal modalities (eg, ultrasound, pulsed shortwave diathermy)
- Hydrotherapy (eg, whirlpool tanks, pulsatile lavage)
- Phototherapy (eg, ultraviolet)
- Superficial thermal modalities (eg, heat, paraffin baths, hot packs, fluido-therapy)

Mechanical modalities:
- Compression therapies (eg, all compression devices, compression bandaging, compression garments, taping, and total contact casting)
- Continuous passive motion (CPM)
- Tilt table or standing table
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which—for some patient/client diagnostic groups—may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patients/clients expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with skin involvement extending into fascia, muscle, or bone is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family, significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.
- Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge
Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides (hr appropriate follow-up or referral. Discharge docs not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment, or task demands.
Impaired Anthropometric Dimensions Secondary to Lymphatic System Disorders

This preferred practice pattern describes the generally accepted elements of the patient/client management that physical therapists provide for the patient/client diagnostic group specified below. APTA and SPA emphasize that preferred practice patterns are the boundaries within which a physical therapist may select any of a number of clinical paths, based on consideration of a wide variety of factors, such as individual patient/client needs; the profession’s code of ethics and standards of practice; and patient/client age, culture, gender roles, race, sex, sexual orientation, and socioeconomic status.

Patient/Client Diagnostic Group
Patients/clients with lymphatic system involvement. Patients/clients may have any one or a combination of the following:
- Acquired immune deficiency syndrome (AIDS)
- Lymphedema
- Status post cancer
- Status post infection Status post trauma
- Vascular/lymphatic malfunction

INCLUDES patients/clients with:
- Amputation with lymphedema
- Filariasis (elephantiasis)
- Multiple abdominal surgeries
- Post-radiation status
- Status post lymph node dissection in the groin or abdomen
- Status post-axillary lymph node dissection
- Reconstructive surgery

EXCLUDES patients/clients with:
- Acute traumatic edema
- Acute surgical edema
- Congestive heart failure
- Deep vein thrombosis (DVT)
- Dependent edema
- Lymphangiosarcoma
- Lymphangitis

Examination  498
Evaluation, Diagnosis, and Prognosis  502
Intervention  504
Reexamination  508
Outcomes  508
Criteria for Discharge  509
Examination
Through the examination (history, systems review, and tests and measures), the physical therapist identifies impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes to establish the diagnosis and the prognosis and to determine the intervention. The patient/client, family, significant others, and caregivers participate by reporting activity performance and functional ability. The selection of examination procedures and the depth of the examination vary based on patient/client age; severity of the problem; stage of recovery (acute, subacute, chronic); phase of rehabilitation (early, intermediate, late, return to activity); home, community, or work (job/school/play) situation; and other relevant factors.

History
Data generated from the history may include:

General Demographics
- Age
- Primary language
- Race/ethnicity
- Sex

Social History
- Cultural beliefs and behaviors
- Family and caregiver resources
- Social interactions, social activities, and support systems

Occupation/Employment
- Current and prior community and work (job/school) activities

Growth and Development
- Hand and foot dominance
- Developmental history

Living Environment
- Living environment and community characteristics
- Projected discharge destinations

History of Current Condition
- Concerns that led patient/client to seek the services of a physical therapist
- Concerns or needs of patient/client who requires the services of a physical therapist
- Current therapeutic interventions
- Mechanisms of injury or disease, including date of onset and course of events
- Onset and pattern of symptoms
- Patient/client, family, significant other, and caregiver expectations and goals for the therapeutic intervention
- Patient/client, family significant other, and caregiver perceptions of patient's/ client's emotional response to the current clinical situation

Functional Status and Activity Level
- Current and prior functional status in self-care and home management activities, including activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Sleep patterns and positions

Medications
- Medications for current condition for which patient/client is seeking the services of a physical therapist
- Medications for other conditions
Other Tests and Measures
- Laboratory and diagnostic tests
- Review of available records
- Review of nutrition and hydration

Past History of Current Condition
- Prior therapeutic interventions
- Prior medications

Past Medical/Surgical History
- Cardio-pulmonary
- Endocrine/metabolic
- Gastrointestinal
- Genitourinary
- Integumentary
- Musculo-skeletal
- Neuromuscular
- Pregnancy, delivery, and postpartum
- Prior hospitalizations, surgeries, and preexisting medical and other health-related conditions

Family History
- Familial health risks

Health Status (Self-Report, Family Report, Caregiver Report)
- General health perception
- Physical function (e.g., mobility, sleep patterns, energy, fatigue)
- Psychological function (e.g., memory, reasoning ability, anxiety, depression, morale)
- Role function (e.g., worker, student, spouse, grandparent)
- Social function (e.g., social interaction, social activity, social support)

Social Habits (Past and Current)
- Behavioral health risks (e.g., smoking, drug abuse)
- Level of physical fitness (self-care, home management, community, work [job/school/play], and leisure activities

Systems Review
- The systems review may include:

Physiologic and anatomic status
- Cardio-pulmonary
- Integumentary
- Musculo-skeletal
- Neuromuscular

Communication, affect, cognition, language, and learning style

Tests and Measures
Tests and measures for this pattern may include, in alphabetical order:

Anthropometric Characteristics
- Assessment of activities and postures that aggravate or relieve edema, lymphedema, or effusion
- Assessment of edema through palpation and volume and girth measurements (e.g., during pregnancy, m determining the effects of other medical or health-related conditions, during surgical procedures, after drug therapy)
- Measurement of height, weight, length, and girth
- Observation and palpation of trunk and extremities at rest and during activity
Arousal, Attention, and Cognition
- Assessment of arousal, attention, and cognition using standardized instruments
- Assessment of factors that influence motivation level
- Screening for level of cognition (e.g., to determine ability to process commands, to measure safety awareness)
- Screening for gross expressive (e.g., verbalization) deficits

Assistive and Adaptive Devices
- Analysis of effects and benefits (including energy conservation and expenditure) while patient/client uses device
- Analysis of patient/client and caregiver ability to care for device
- Assessment of alignment and fit of device and inspection of related changes in skin condition
- Assessment of safety during use of device
- Review of reports provided by patient/client, family, significant others, caregivers, or other professionals

Gait, Locomotion, and Balance
- Assessment of safety
- Analysis of arthrokinematic, biomechanical, kinematic, and kinetic characteristics of gait, locomotion, and balance with and without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment

Integumentary Integrity
- For skin associated with integumentary disruption:
  - Assessment of activities, positioning, postures, and assistive and adaptive devices that may result in trauma to associated skin
  - Assessment of continuity of skin color (e.g., redness in lightly pigmented skin, violaceous coloration in dandy pigmented skin, signs of cellulites, or infection)
  - Assessment of skin temperature as compared with that of an adjacent area or an opposite extremity (e.g., using thermistors)
  - Assessment of tissue mobility, turgor, and texture (e.g., dry, flaky, cracked skin)
- Orthotic, Protective, and Supportive Devices
  - Analysis of appropriate components of device
  - Analysis of effects and benefits (including energy conservation and expenditure) while patient/client wears device
  - Analysis of the potential to remediate impairment, functional limitation, or disability through use of device
  - Analysis of practicality and ease of use of device
  - Assessment of alignment and fit of device and inspection of related changes in skin condition
  - Assessment of patient/client or caregiver ability to put on and remove device and to understand its use and care
  - Assessment of patient/client use of device
  - Assessment of safety during use of device
  - Review of reports provided by patient/client, family, significant others, caregivers, or other professionals concerning use of or need for device

Pain
- Assessment of muscle soreness

Range of Motion (ROM) (Including Muscle Length)
- Analysis of ROM using goniometers, tape measures, flexible rulers, inclinometers, photographic or electronic devices, or computer-assisted graphic imaging
- Assessment of muscle, joint, or soft tissue characteristics

Sensory Integrity (Including Proprioception and Kinesthesia)
- Assessment of superficial sensations (e.g., sharp/dull discrimination, temperature, light touch, pressure)
• Assessment of receptive (eg, vision, hearing) abilities

**Ventilation, Respiration (Gas Exchange), and Circulation**
• Assessment of activities that aggravate or relieve edema, pain, dyspnea, or other symptoms
• Assessment of capillary refill time
• Assessment of standard vital signs (eg, blood pressure, heart rate, respiratory rate) at rest and during and after activity
• Palpation of pulses

**For the wound:**
• Assessment for presence of blistering
• Assessment for presence of dermatitis (eg, rash, fungus)
• Assessment of drainage

**Joint Integrity and Mobility**
• Assessment of pain and soreness
Evaluation, Diagnosis, and Prognosis
The physical therapist performs an evaluation (makes clinical judgments) for the purpose of establishing the diagnosis and the prognosis. Factors that influence the complexity of the evaluation include the clinical findings, extent of loss of function, social considerations, and overall physical function and health status. A diagnosis is a label encompassing a cluster of signs and symptoms, syndromes, or categories. It is the result of the diagnostic process, which includes evaluating, organizing, and interpreting examination data. The prognosis is the determination of the optimal level of improvement that might be attained and the amount of time required to reach that level. The prognosis also may include a prediction of the improvement levels that may be reached at various intervals during the course of physical therapy. During the prognostic process, the physical therapist develops the plan of care, which specifies goals and outcomes, specific direct interventions, the frequency of visits and duration of the episode of care required to achieve goals and outcomes, and criteria for discharge.

The frequency of visits and duration of the episode of care may vary from a short episode with a high intensity of intervention to a longer episode with a diminishing intensity of intervention. Frequency and duration may vary greatly among patients/clients based on a variety of factors that the physical therapist considers throughout the evaluation process, such as chronicity and severity of the problem; stability of the condition; preexisting systemic conditions or diseases; probability of prolonged impairment, functional limitation, or disability; multi-site or multi-system involvement; social supports; living environment; potential discharge destinations; patient/client and family expectations; anatomic and physiologic changes related to growth and development; and caregiver consistency or expertise.

Prognosis
Over the course of 1 to 8 weeks:

Accessibility of resources
Patient/client with mild lymphedema (less than 3-cm differential between affected limb and unaffected limb) will show decreased lymphatic congestion, allowing return to highest level of function and quality of life.

Patient/client with moderate lymphedema (3- to 5-cm differential between affected limb and unaffected limb) will show decreased lymphatic congestion, allowing return to highest level of function and quality of life.

Patient/client with severe lymphedema (5-plus-cm differential between affected limb and unaffected limb) will show decreased lymphatic congestion, allowing return to highest level of function and quality of life.

Management of lymphatic involvement may be required over the life span.

Expected Range of Number of Visits Per Episode of Care, 5 to 7, 7 to 14, 14 to 20
These ranges represent the lower and upper limits of the number of physical therapist visits required to achieve the anticipated goals and expected outcomes. It is anticipated that 80% of patients/clients in this diagnostic group will achieve the goals and outcomes within these ranges during a single continuous episode of care. Frequency of visits and duration of the episode of care should be determined by the physical therapist to maximize effectiveness of care and efficiency of service delivery.

Factors That May Require New Episode of Care or That May Modify Frequency of Visits/Duration of Episode
- Age
- Availability of resources
- Caregiver (eg, family home health aide) consistency or expertise
- Chronicity or severity of condition
- Co-morbidities (eg, chronic obstructive pulmonary disease, renal disease, cerebro-vascular accident)
- Hardening, fibrosis of limb tissue
- Immuno-suppression (e.g., human immunodeficiency virus/acquired immunodeficiency syndrome [HIV/AIDS], cancer)
- Level of patient/client adherence to the intervention program
- Lymphatic ulceration
- Multi-limb involvement
- Need for ventilatory support
- Nutritional status
- Preexisting systemic conditions or diseases (e.g., diabetes, peripheral vascular disease, peripheral neuropathy)
- Presence of infection
- Presence of wound
- Support provided by family unit
**Intervention**

Intervention is the purposeful and skilled interaction of the physical therapist with the patient/client to produce changes in the condition that are consistent with the diagnosis and prognosis. In the plan of care, the physical therapist determines the degree to which intervention is likely to achieve anticipated goals (remediation of impairment) and expected outcomes (remediation of functional limitation, secondary or primary prevention of disability, optimization of patient/client satisfaction). In the event that the diagnostic process does not yield an identifiable cluster of signs and symptoms, syndrome, or category (diagnosis), intervention may be guided by the alleviation of symptoms and remediation of deficits. Intervention has three components. Communication, coordination, and documentation and patient/client-related instruction are provided for all patients/clients, whereas a variety of direct interventions may be selected, applied, or modified by the physical therapist on the basis of the examination and evaluation findings, diagnosis, and prognosis for a specific patient/client.

**Coordination, Communication, and Documentation**

**Anticipated Goals**

- Accountability for services is increased.
- Available resources are maximally utilized.
- Care is coordinated with patient/client, family significant others, caregivers, and other professionals.
- Decision making is enhanced regarding the health of patient/client and the use of health care resources by patient/client, family significant others, and caregivers.
- Other health care interventions (e.g., medications) that may affect goals and outcomes are identified.
- Patient/client, family significant other, and caregiver of expectations and goals and outcomes is increased.
- Placement needs are determined.
- Specific Interventions
- Case management Communication (direct or indirect)
- Coordination of care with patient/client, family significant others, caregivers, other health care professionals, and other interested persons (e.g., rehabilitation counselor, social worker, employer)
- Discharge planning
- Documentation of all elements of patient/client management
- Education plans
- Patient care conferences
- Record reviews
- Referrals to other professionals or resources

**Patient/Client-Related Instruction**

**Anticipated Goals**

- Ability to perform physical tasks is increased.
- Awareness and use of community resources are improved
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health of patient/client and use of health care resources by patient/client, family, significant others, and caregivers
- Disability associated with acute or chronic Illnesses is reduced.
- Functional independence in activities of daily living (ADL) and instrumental activities of daily living (IADL) is increased.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Patient/client, family significant other, and caregiver knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.
- Patient/client knowledge of personal and environmental factors associated with the condition is increased.
- Performance levels in employment, recreational, or leisure activities are improved.
- Physical function and health status are improved.
• Progress is enhanced through the participation of patient/client, family, significant others, and caregivers.
• Risk of recurrence of condition is reduced.
• Risk of secondary impairments is reduced.
• Safety of patient/client, family significant others, and caregivers is improved.
• Self-management of symptoms is improved.
• Utilization and cost of health care services are decreased.

Specific Interventions
• Computer-assisted instruction
• Demonstration by patient/client or caregivers in the appropriate environment
• Periodic reexamination and reassessment of the home program
• Use of audiovisual aids for both teaching and home reference
• Use of demonstration and modeling for teaching
• Verbal instruction
• Written or pictorial instruction

Direct Interventions
Direct interventions for this pattern may include, in order of preferred usage:

Therapeutic Exercise (Including Aerobic Conditioning)
Anticipated Goals
• Aerobic capacity is increased-
• Ability to perform physical tasks related to self-care, home management, community and work (job/school/play) integration or reintegration, and leisure activities is increased.
• Endurance is increased.
• Gait, locomotion, and balance are improved.
• Joint integrity and mobility are improved.
• Pain is decreased.
• Postural control is improved.
• Risk of recurrence is reduced.
• Risk factors are reduced.
• Risk of secondary impairments is reduced.
• Safety is improved.
• Self-management of symptoms is improved-
• Sense of well-being is improved.
• Soft tissue swelling, Inflammation, or restriction is reduced.
• Strength is increased.
• Tolerance to positions and activities is increased.
• Utilization and cost of health care services are decreased.
• Weight-bearing status is improved.

Specific Direct Interventions
• Gait, locomotion, and balance training
• Posture awareness training
• Strengthening

Functional Training in Self-Care and Home Management (Including ADL and IADI)
Anticipated Goals
Ability to recognize and initiate treatment of a recurrence is improved through increased self-management of symptoms.
Ability to perform physical tasks related to self-care and home management (including ADL and IADL) is increased.
Performance of and independence in ADL and IADL are increased.
Risk of recurrence of condition is reduced.
Tolerance to positions and activities is increased.
Specific Direct Interventions
- ADL training (eg, bed mobility and transfer training, gait training, locomotion, developmental activity, dressing, grooming, bathing, eating, and toileting)
- Assistive and adaptive device or equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children)
- Orthotic, protective, or supportive device or equipment training

Functional Training in Community and Work (Job/School/Play) Integration or Reintegration (Including IADI, Work Hardening, and Work Conditioning)
Anticipated Goals
- Ability to perform physical tasks related to community and work integration and reintegration and leisure tasks, movements, or activities, is increased.
- Performance of and independence in ADL and IADL are increased.
- Risk of recurrence of conditions is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Assistive and adaptive device or equipment training
- IADL training (eg, maintaining a home, shopping, cooking, home chores, heavy household chores, money management, driving a car or using public transportation, structured play for infants and children) Injury prevention or reduction training Orthotic, protective, or supportive device or equipment training

Manual Therapy Techniques (Including Mobilization and Manipulation)
Anticipated Goals
- Ability to perform movement tasks is increased.
- Joint integrity and mobility are improved.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling inflammation or restriction is reduced.
- Tolerance to positions and activities is increased.

Specific Direct Interventions
- Connective tissue massage
- Manual lymphatic drainage
- Soft tissue mobilization and manipulation
- Therapeutic massage

Prescription, Application, and, as Appropriate, Fabrication of Devices and Equipment (Assistive, Adaptive, Orthotic, Protective, Supportive and Prosthetic)
Anticipated Goals
- Ability to perform physical tasks is increased.
- Deformities are prevented.
- Gait, locomotion, and balance are improved.
- Joint integrity and mobility are improved.
- Loading on a body part is decreased.
- Optimal joint alignment is achieved.
- Pain is decreased.
- Performance of and independence in ADL and IADL are increased.
- Pressure areas (eg, pressure over bony prominence) are prevented.
- Protection of body parts is increased.
- Risk of secondary impairments is reduced.
- Safety is improved.
- Sense of well-being is improved.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.
- Utilization and cost of health care services are decreased.
- Weight-bearing status is improved.

**Specific Direct Interventions**
- Adaptive devices or equipment (e.g., raised toilet seats, seating systems, environmental controls)
- Assistive devices or equipment (e.g., crutches, canes, walkers, wheelchairs, power devices, long-handled reachers, static and dynamic splints)
- Orthotic devices or equipment (e.g., splints, braces, shoe inserts, casts)
- Protective devices or equipment (e.g., braces, cushions, protective taping, helmets)
- Supportive devices or equipment (e.g., supportive taping, compression garments, corsets, slings, neck collars, serial casts, elastic wrap, oxygen)

**Electrotherapeutic Modalities**

**Anticipated Goals**
- Ability to perform physical tasks is increased.
- Complications are reduced.
- Joint integrity and mobility are improved.
- Muscle performance is increased.
- Pain is decreased.
- Risk of secondary impairments is reduced.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Wound and soft tissue healing is enhanced.

**Specific Direct Interventions**
- Electrical muscle stimulation
- Trans-cutaneous electrical nerve stimulation (TENS)

**Physical Agents and Mechanical Modalities**

**Anticipated Goals**
- Ability to perform movement tasks is increased.
- Complications of soft tissue and circulatory disorders are decreased.
- Joint integrity and mobility are improved.
- Pain is decreased.
- Risk of secondary impairments is decreased.
- Soft tissue swelling, inflammation, or restriction is reduced.
- Tolerance to positions and activities is increased.

**Specific Direct Interventions**

**Physical agents:**
- Cryotherapy (e.g., cold packs, ice massage)

**Mechanical modalities:**
- Compression therapies (e.g., vaso-pneumatic compression devices, compression bandaging, compression garments, taping, and total contact casting)
- Continuous passive motion (CPM)
Reexamination
The physical therapist relies on reexamination, the process of performing selected tests and measures after the initial examination, to evaluate progress and to modify or redirect intervention. Reexamination may be indicated more than once during a single episode of care. It also may be performed over the course of a disease or a condition, which, for some patient/client diagnostic groups, may be the life span. Indications for reexamination include new clinical findings or failure to respond to intervention.

Outcomes
Outcomes relate to functional limitation (restriction of the ability to perform, at the level of the whole person, a physical action, activity, or task in an efficient, typically expected, or competent manner), disability (inability to engage in age-specific, gender-specific, or sex-specific roles in a particular social context and physical environment), primary or secondary prevention, and patient/client satisfaction. The physical therapist also identifies the patients/client’s expectations for therapeutic interventions and perceptions about the clinical situation and considers whether they are realistic, given the examination and evaluation findings. Optimal outcomes for patients/clients in this pattern include:

Functional Limitation/Disability
- Health-related quality of life is improved.
- Optimal return to role function (eg, worker, student, spouse, grandparent) is achieved.
- Risk of disability associated with lymphatic system disorders is reduced.
- Safety of patient/client and caregivers is increased.
- Self-care and home management activities, including activities of daily living (ADL)—and work (job/school/play) and leisure activities, including instrumental activities of daily living (IADL)—are performed safely, efficiently, and at a maximal level of independence with or without devices and equipment.
- Understanding of personal and environmental factors that promote optimal health status is demonstrated.
- Understanding of strategies to prevent further functional limitation and disability is demonstrated.

Patient/Client Satisfaction
- Access, availability, and services provided are acceptable to patient/client, family, significant others, and caregivers.
- Administrative management of practice is acceptable to patient/client, family, significant others, and caregivers.
- Clinical proficiency of physical therapist is acceptable to patient/client, family, significant others, and caregivers.
- Coordination and conformity of care are acceptable to patient/client, family significant others, and caregivers.
- Interpersonal skills of physical therapist are acceptable to patient/client, family, significant others, and caregivers.

Secondary Prevention
- Risk of functional decline is reduced.
- Risk of impairment or of impairment progression is reduced.

Other secondary prevention outcomes include:
- Need for additional physical therapist intervention is decreased.
- Patient/client adherence to the intervention program is maximized.
- Patient/client and caregivers are aware of the factors that may indicate need for reexamination or a new episode of care, including changes in the following: caregiver status, community adaptation, leisure or leisure activities, living environment, pathology or impairment that may affect function, or home or work (job/school/play) settings.
- Professional recommendations are integrated into home, community, work (job/school/play), or leisure environments.
- Utilization and cost of health care services are decreased.
Criteria for Discharge

Discharge occurs at the end of an episode of care and is the end of physical therapy services that have been provided during that episode. The primary criterion for discharge: The anticipated goals and the expected outcomes have been achieved. In consultation with appropriate individuals, the physical therapist plans for discharge and provides for appropriate follow-up or referral. Discharge does not occur with transfer, that is, when a patient is moved from one site to another site within the same setting or across settings during a single episode of care; however, there may be facility-specific or payer-specific requirements for documentation regarding the conclusion of physical therapy services as the patient moves between sites or across settings during that episode of care. Discontinuation of physical therapy services occurs when (1) the patient/client, caregiver, or legal guardian declines to continue intervention, (2) the patient/client is unable to continue to progress toward goals because of medical or psychosocial complications or because financial/insurance resources have been expended, or (3) the physical therapist determines that the patient/client will no longer benefit from physical therapy. When discharge occurs prior to achievement of goals and outcomes, patient/client status and the rationale for discontinuation are documented. For patients/clients who require multiple episodes of care, periodic follow-up is needed over the life span to ensure safety and effective adaptation following changes in physical status, caregivers, environment