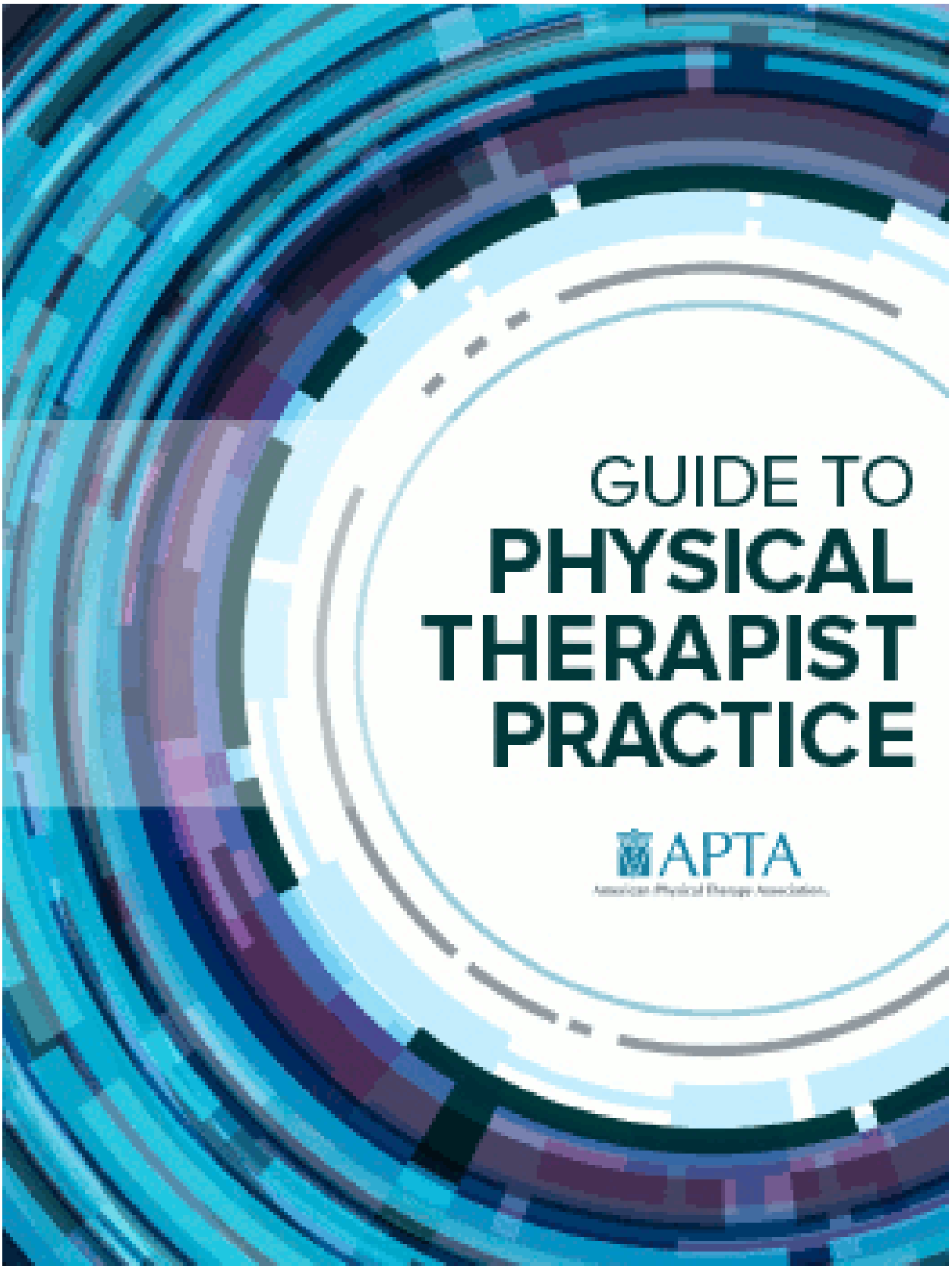
GUIDE TO
PHYSICAL
THERAPIST
PRACTICE
APTA

CAP 1 - Introduction to the *Guide to Physical Therapist Practice*

Purpose

The *Guide to Physical Therapist Practice* (Guide) is the description of physical therapist practice for use by physical therapist and physical therapist assistant educators, students, and clinicians. It serves the following purposes:

- It describes physical therapist practice.
- It briefly outlines the roles of physical therapists and physical therapist assistants across a broad range of settings and practice opportunities.
- It describes the settings in which physical therapists practice.
- It standardizes terminology used in and related to physical therapist practice.
- It briefly reviews the educational preparation of physical therapists and physical therapist assistants.
- It delineates the clinical decision-making process that occurs as part of patient and client management.
- It describes the examination and evaluation process with a focus on tests and measures.
- It explains the selection process for choosing interventions and reviews specific interventions that are part of physical therapist practice.
- It describes how outcome measures are used.

Description of Physical Therapist Practice

Physical therapy is a dynamic profession with an established theoretical and scientific base and widespread clinical applications in the restoration, maintenance, and promotion of optimal physical function. Physical therapists are health care professionals who help individuals maintain, restore, and improve movement, activity, and functioning, thereby enabling optimal performance and enhancing health, well-being, and quality of life. Their services prevent, minimize, or eliminate **impairments of body functions and structures, activity limitations, and participation restrictions**. Physical therapy is provided for individuals of all ages who have or may develop impairments, activity limitations, and participation restrictions related to (1) conditions of the musculoskeletal, neuromuscular, cardiovascular, pulmonary, and/or integumentary systems or (2) the negative effects attributable to unique **personal** and **environmental factors** as they relate to human performance.

Physical therapists play vital roles in today's health care environment and are recognized as essential providers of rehabilitation and habilitation, performance enhancement, and prevention and risk-reduction services. Physical therapists also play important roles both in developing standards for physical therapist practice and in developing health care policy to ensure availability, accessibility, and optimal provision of physical therapy.

As clinicians, physical therapists engage in an examination process that includes taking the history including a review of systems, conducting a systems review, and performing tests and measures to identify potential and existing problems. To establish diagnoses, prognoses, and plans of care, physical therapists perform evaluations, synthesizing the examination data and determining whether the problems to be addressed are within the scope of physical therapist practice or whether a referral to another health care provider is indicated. Based on their judgments about diagnoses and prognoses and based on individual goals, physical therapists provide interventions (the interactions and procedures used in managing and instructing patients or clients), conduct

reexaminations, modify interventions as necessary to achieve goals and outcomes, and develop and implement plans for conclusion of care.

Goals for physical therapy often relate to the capacity of individuals to do what is important to them in their daily activities and roles. Physical therapists design individualized plans of care based on clinical judgment, best available evidence, and an individual's situation and goals. They collaborate with other health care professionals to address individual needs and provide efficient and effective care across the continuum of health care settings. In addition, physical therapists provide consultation to individual clients, other health care practitioners, facilities, and organizations in assessing the need for physical therapy and the type of services needed for an individual.

Roles in Primary Care

Physical therapists have a major role to play in the provision of *primary care*, which has been defined as "the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing within the context of family and community."[1]

The American Physical Therapy Association (APTA) has endorsed the concepts of primary care set forth by the Institute of Medicine's Committee on the Future of Primary Care,[1] including:

- Primary care can encompass myriad needs that go well beyond the capabilities and competencies of individual caregivers and that require the involvement and interaction of varied practitioners.
- Primary care is not limited to the "first contact" or point of entry into the health care system.
- The primary care program is a comprehensive one.

On a daily basis, physical therapists practicing across the continuum of activity—acute, rehabilitative, and chronic care management—help individuals restore health and alleviate pain. They examine, evaluate, and diagnose impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes. Intervention, prevention, and the promotion of health, wellness, and fitness are a vital part of the practice of physical therapists. As clinicians, physical therapists are well positioned to provide services as members of primary care teams.

For acute musculoskeletal and neuromuscular conditions, triage and initial examination are appropriate physical therapist responsibilities. The primary care team may function more efficiently when it includes physical therapists, who can recognize musculoskeletal and neuromuscular disorders, perform examinations and evaluations, establish a diagnosis and prognosis, and intervene without delay. For individuals with low back pain, for example, physical therapists can provide immediate pain reduction through programs for pain modification, strengthening, flexibility, endurance, and postural alignment; instruction in activities of daily living (ADL); and work modification. Physical therapist intervention may result not only in more efficient and effective care, but also in more appropriate use of other members of the primary care team. With physical therapists functioning in a primary care role and delivering early intervention for work-related musculoskeletal injuries, time and productivity loss due to injuries may be dramatically reduced.

For certain chronic conditions, physical therapists should be recognized as the principal providers of care within the collaborative primary care team. Physical therapists are well prepared to coordinate care related to loss of physical function as a result of musculoskeletal, neuromuscular, cardiovascular/pulmonary, or integumentary disorders. Through community-based agencies and school systems, physical therapists coordinate and integrate provision of services to individuals with chronic disorders.

Physical therapists also provide primary care in industrial or workplace settings, in which they manage the occupational health services provided to employees and help prevent injury by designing or redesigning the work

environment. These services focus both on the individual and on the environment to ensure comprehensive and appropriate intervention.

Roles in Secondary and Tertiary Care

Physical therapists play major roles in secondary and tertiary care. Individuals with musculoskeletal, neuromuscular, cardiovascular/pulmonary, or integumentary conditions may be treated initially by other practitioners and then referred to physical therapists for secondary care. Physical therapists provide secondary care in a wide range of settings, including acute care and rehabilitation hospitals, outpatient clinics, home health, and school systems.

Tertiary care is provided by physical therapists in highly specialized, complex, and technology-based settings (eg, heart and lung transplant services, burn units) or in response to the requests of other health care practitioners for consultation and specialized services (eg, for individuals with spinal cord lesions or closed head trauma).

Roles in Prevention and in the Promotion of Health, Wellness, and Fitness

Physical therapists are involved in prevention and in promoting health, wellness, and fitness in a wide range of populations. Their roles range from helping individuals with chronic conditions engage in physical activity programs to advising elite athletes on sports performance enhancement. These initiatives decrease costs by helping individuals: (1) achieve and restore optimal functional capacity; (2) minimize impairments, functional limitations, and disabilities related to congenital and acquired conditions; (3) maintain health (thereby preventing further deterioration or future illness); and (4) create appropriate environmental adaptations to enhance independent function.

Physical therapists:

- Identify risk factors and implement services to reduce risk in individuals and populations (*primary prevention*)
- Prevent or slow the progression of functional decline and disability and enhance activity and participation in chosen life roles and situations in individuals and populations with an identified condition (*secondary prevention*)
- Reduce the degree of disability by restoring—or by preventing the deterioration of—skills and independence in individuals and populations with chronic health conditions to allow optimal activity and participation (*tertiary prevention*)

With the increased impact of chronic diseases around the world, the role of physical therapists in health and wellness is a valuable component of medical care that also has the potential to significantly impact public health. Particularly in populations with identified disease, injury, or illness, physical therapists can decrease the duration, severity, and sequelae of these health conditions. For example, physical therapist interventions for individuals with disability arising from chronic illness may help them maintain maximal function and participation throughout the course of the disease and may help them participate in wellness or prevention activities to maintain or improve their health and functional abilities.

Physical therapists conduct preliminary screenings to determine the need for (1) primary, secondary, or tertiary prevention services; (2) further examination, intervention, or consultation by a physical therapist; or (3) referral to another practitioner. Candidates for screening generally are not individuals currently receiving physical therapist services. Screening is based on a problem-focused, systematic collection and analysis of data.

Examples of the prevention-screening activities in which physical therapists engage include:

- Identification of lifestyle factors (eg, amount of exercise, stress, weight) that may lead to increased risk for serious health problems

- Identification of children who may need an examination for idiopathic scoliosis
- Identification of elderly individuals in a community center or nursing home who are at high risk for falls
- Identification of risk factors for neuromusculoskeletal injuries in the workplace
- Pre-performance testing of individuals who are active in sports

Examples of prevention activities and health, wellness, and fitness promotion activities in which physical therapists engage include:

- Workplace redesign, back schools, strengthening, stretching, endurance exercise programs, and postural training to prevent and manage low back pain
- Ergonomic redesign; strengthening, stretching, and endurance exercise programs; postural training to prevent job-related disabilities, including trauma and repetitive stress injuries
- Exercise programs, including weight bearing and weight training, to increase bone mass and bone density (especially in older adults with osteopenia and osteoporosis)
- Exercise programs, gait training, and balance and coordination activities to reduce the risk of falls—and the risk of fractures from falls—in older adults
- Exercise programs and instruction in ADL (self-care, communication, and mobility skills required for independence in daily living) and instrumental activities of daily living (IADL) (activities that are important components of maintaining independent living, such as shopping and cooking) to decrease utilization of health care services and enhance function in individuals with cardiovascular/pulmonary disorders
- Exercise programs, cardiovascular conditioning, postural training, and instruction in ADL and IADL to prevent disability and dysfunction in women who are pregnant
- Broad-based consumer education and advocacy programs to prevent problems (eg, prevent head injury by promoting the use of helmets, prevent pulmonary disease by encouraging smoking cessation)
- Exercise programs to prevent or reduce the development of sequelae in individuals with lifelong conditions
- Develop programs for healthy lifestyle for individuals to decrease the risk of noncommunicable disease and disability

Other Professional Roles

Consultation

Consultation is the rendering of professional or expert opinion or advice by a physical therapist. The consulting physical therapist applies highly specialized knowledge and skills to identify problems, recommend solutions, or produce a specified outcome or product in a given amount of time. A physical therapist may provide consultation at the request of a patient, another practitioner, or an organization either to recommend physical therapy that is needed or to evaluate the quality of physical therapy being provided to individuals; or the physical therapist may provide consultation at the request of an individual, business, school, government agency, or other organization for services that do not involve interventions for individuals.

Examples of consultation activities in which physical therapists may engage include:

- Advising a referring practitioner about the indications for intervention
- Conducting a program to determine the suitability of employees for specific job assignments
- Developing programs that evaluate the effectiveness of an intervention plan in reducing work-related injuries
- Instructing employers about job preplacement in accordance with provisions of the **Americans With Disabilities Act** (ADA)
- Performing environmental assessments to minimize the risk of falls
- Responding to a request for a second opinion
- Advising employers about the requirements of the ADA
- Developing programs that evaluate the effectiveness of an intervention plan in reducing work-related injuries
- Educating other health care practitioners (eg, in injury prevention)
- Examining school environments and recommending changes to improve accessibility for students with disabilities
- Participating at the local, state, and federal levels in policymaking for physical therapist services
- Providing peer review and utilization review services
- Serving as an expert witness in legal proceedings
- Working with employees, labor unions, and government agencies to develop injury reduction and safety programs

Education

Education is the process of imparting information or skills and instructing by precept, example, and experience so that individuals acquire knowledge, master skills, or develop competence. In addition to instruction of patients and clients as an element of intervention, physical therapists may engage in educational activities such as:

- Planning and conducting academic education, clinical education, and continuing education programs for physical therapists, other providers, and students
- Planning and conducting education programs for local, state, and federal agencies
- Planning and conducting programs for the public to increase awareness of issues in which physical therapists have expertise

Critical Inquiry

Critical inquiry is the process of applying the principles of scientific methods to: read and interpret professional literature; participate in, plan, and conduct research; evaluate outcome data; and assess new concepts and technologies.

Examples of critical inquiry activities in which physical therapists may engage include:

- Analyzing and applying research findings to physical therapist practice and education
- Disseminating the results of research
- Evaluating the efficacy and effectiveness of both new and established interventions and technologies
- Participating in, planning, and conducting clinical, basic, or applied research

Administration

Administration is the skilled process of planning, directing, organizing, and managing human, technical, environmental, and financial resources effectively and efficiently. Administration includes the management by individual physical therapists of resources for patient or client management and for organizational operations.

Examples of administration activities in which physical therapists engage include:

- Ensuring fiscally sound reimbursement for services rendered
- Budgeting for physical therapist services
- Managing staff resources, including the acquisition and development of clinical expertise and leadership abilities
- Monitoring quality of care and clinical productivity
- Negotiating and managing contracts
- Supervising physical therapist assistants, physical therapy aides, and other support personnel

Physical Therapist Direction and Supervision of Personnel

Physical therapy is provided by a physical therapist or under the direction and supervision of a physical therapist in accordance with **APTA policies, positions, guidelines, standards, and ethical principles and standards**. **Physical therapist assistants, under the direction and supervision of the physical therapist, are the only individuals who assist a physical therapist in the provision of selected interventions.** Direction and supervision are essential to the provision of high-quality physical therapy. The degree of direction and supervision necessary for ensuring high-quality physical therapy depends on many factors, including the education, experience, and responsibilities of the parties involved; the organizational structure in which the physical therapy is provided; and applicable state law. In any case, supervision should be readily available to the individual being supervised. Responsibilities should be commensurate with the qualifications—including education, training, experience, and skill level—of the individuals to whom the responsibilities are assigned. When the physical therapist of record directs and supervises other personnel, the physical therapist remains ultimately responsible for the care of the patient or client.

Constructs and Concepts That Inform Physical Therapist Practice

Four major constructs and concepts inform current physical therapist practice:

1. **The *International Classification of Functioning, Disability and Health* (ICF) and the biopsychosocial model**
2. **Evidence-based practice**

3. **Professional values**

4. **Quality assessment**

The *International Classification of Functioning, Disability and Health* (ICF) and the Biopsychosocial Model

The Guide is informed by a number of disablement/enablement models[2] that have emerged during the past 3 decades—from Nagi[3-4] to ICF[6]—that have attempted to better delineate the interrelationships among disease, impairments, functional limitations, disabilities, handicaps, and the "effects of the interaction of the person with the environment."[7]

In 2008, the APTA House of Delegates endorsed the *International Classification of Functioning, Disability and Health*, known more commonly as ICF.[6] This is a classification of health and health-related domains and is the World Health Organization's (WHO) framework for measuring health and disability at both individual and population levels. This framework informs current physical therapist practice and has been incorporated into all relevant sections of this version of the Guide.

The WHO defines *health* as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."[8]

The biopsychosocial model of health[9] (**Figure 1-1**) is a theoretical construct that elaborates on this definition. According to this model, a person's health status is determined by the interplay of the person's status in the biological, psychological, and social domains. For example, 2 people with the same pathology who have different levels of motivation and different levels of socioeconomic resources might have very different outcomes in terms of functional status and level of participation.

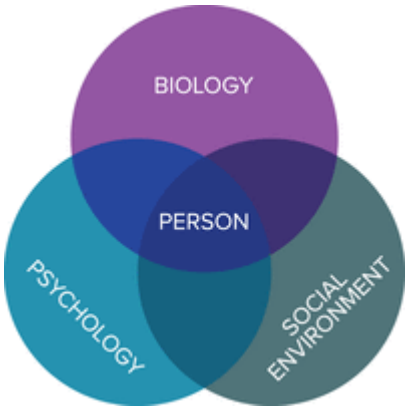

Figure 1-1. The biopsychosocial model.[9]

The WHO expanded the biopsychosocial model, using a classification system designed to describe, from the person's perspective, a continuum of health and health states. The ICF moves beyond the original model to provide a means not only to describe the states of illness and disability, but also to classify the components and magnitude of the level of health. The ICF also provides a methodology for using disablement-enablement models in research and practice.[10] In the ICF, the functioning of an individual in his or her environment is the focus of classification. The *International Classification of Diseases* (ICD),[11] another member of the WHO family of classification systems, complements the ICF.

Because of the focus on the components of health rather than on the consequences of disease—and because functioning is central to the ICF—the **APTA House of Delegates endorsed** the ICF as the language to use in describing physical therapist practice.

A goal of the ICF is to provide a unified, standard language and framework that enables the collection of data for practice and research—language that describes how people function in their daily lives rather than focusing exclusively on their medical or disease-specific diagnosis. The universality of the ICF language and framework permits a shared conceptual understanding of health, bridging disciplines, sectors, cultures, and geographic regions. The *International Classification of Functioning, Disability and Health for Children and Youth* (ICF-CY)[12] is a derived version of the ICF that provides a common and universal language to facilitate the documentation and measurement of health and disability in children and youth and the influence of environments surrounding the child.

The ICF has 2 major parts (**Figure 1-2**). Part 1 is a description of the components of functioning and disability that are associated with a health condition. These components include body functions and body structures and the changes that occur in them, activities that the person carries out, and the participation of the person in life situations. Activities and participation can be further qualified by considering a person's capacity (ie, what could be done in a controlled environment) and performance (ie, what the person actually does in his or her current environment). *Functioning* is used to encompass all body functions and structures, activities, and participation; conversely, *disability* is used to encompass impairments of body functions and structures, activity limitations, and participation restrictions. Functioning and disability exist along a continuum of health.

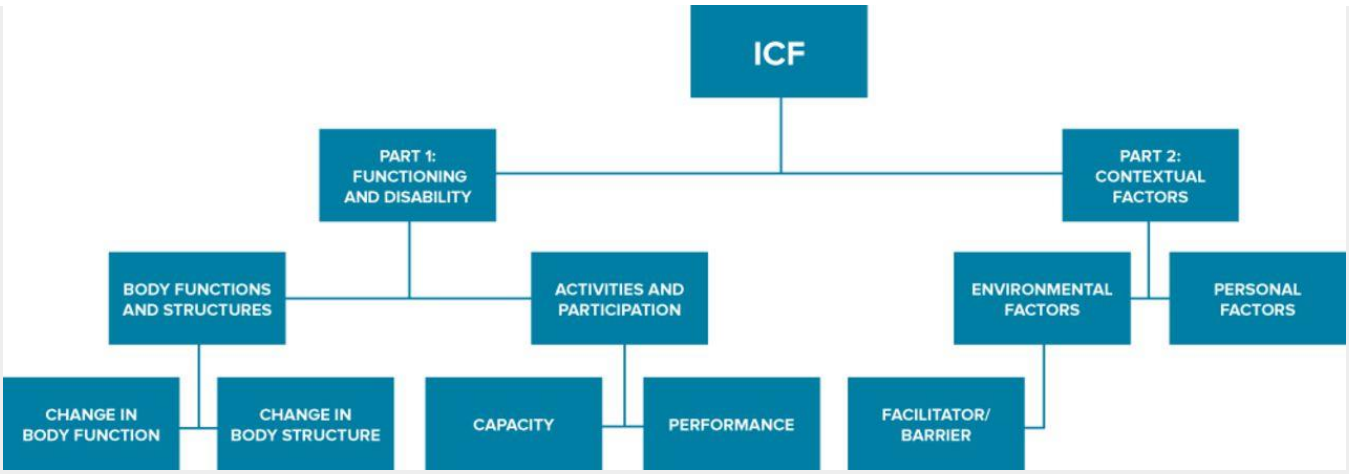

Figure 1-2. Structure of the*International Classification of Functioning, Disability and Health*(ICF) model of functioning and disability.[5] Adapted with permission from: *International Classification of Functioning, Disability and Health* (ICF). Geneva, Switzerland: World Health Organization; 2001.

Part 2 is a description of the contextual factors. Among contextual factors are external environmental factors (eg, social attitudes, architectural characteristics, legal and social structures, and climate and terrain) and internal personal factors (eg, gender, age, coping styles, social background, education, profession, past and current experience, overall behavior pattern, character, and other factors) that influence how disability is experienced by the individual. Personal factors are not yet classified by the ICF but do influence functioning.

The ICF recognizes all of these components as interactive constructs (**Figure 1-3**) and focuses on the complexity of the interactions among body functions and structures, activities, and participation, and environmental and personal factors to fully describe a person's health status. Adverse changes in one aspect of the model do not necessarily result in adverse changes in another. For example, changes in body functions and structures that result in abnormalities (ie, impairments) do not necessarily result in disability.

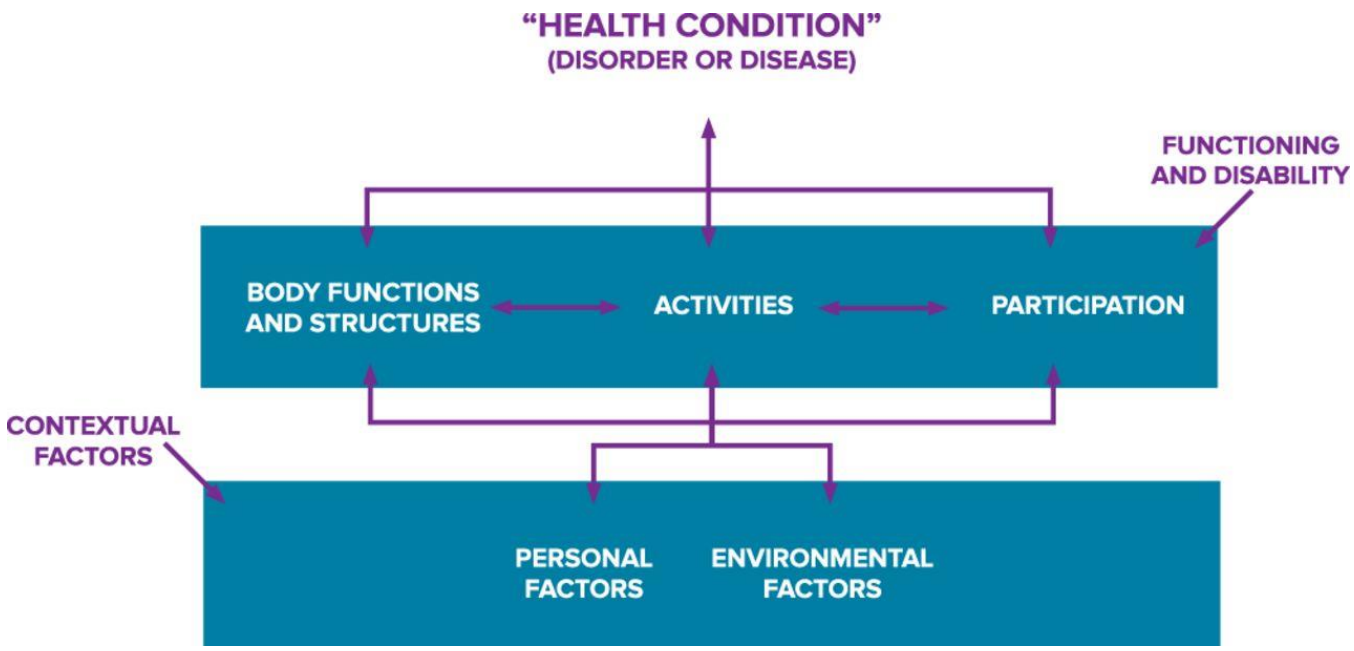

Figure 1-3. Interaction among the components of the *International Classification of Functioning, Disability and Health* (ICF) model of functioning and disability.[5]Adapted with permission from:*International Classification of Functioning, Disability and Health*(ICF). Geneva, Switzerland: World Health Organization; 2001.

Evidence-Based Practice

Physical therapist practice incorporates all components of evidence-based practice (EBP) (**Figure 1-4**), integrating best available research evidence, clinical expertise, and an individual's values and circumstances to make decisions regarding services for patients and clients, regarding practice management, and regarding health policy.[13]

Figure 1-4. Components of evidence-based practice.[13]

Use of best available evidence requires that physical therapists access relevant literature, assess its quality, and determine whether the information can be appropriately applied to the care of an individual or to the care of groups through the development of appropriate policies. Physical therapists use the best available information from the literature, including **clinical practice guidelines**, systematic reviews (eg, **Cochrane Systematic Reviews**), clinical prediction rules, and individual research articles. Access to literature databases is available through PTNow **ArticleSearch**.

In addition to using the best available evidence to guide clinical decisions, the physical therapist respects the values and circumstances of the individual and ensures that the patient or client understands the available options for care, including potential benefits, risks, and costs. Based on this therapeutic relationship, the therapist works collaboratively with the individual to make decisions about the plan of care. When the patient or client is unable to participate personally or independently in this process, the therapist works with relevant family members, significant others, and caregivers to reach collaborative decisions.

When using evidence to guide clinical decisions, the physical therapist makes sound decisions about the quality of the evidence, the applicability of the evidence to the patient or client, the use of other sources of evidence when adequate information is not available, and the physical therapist's own clinical expertise. This decision-making process may be hypothesis driven, as described in the Hypothesis-Oriented Algorithm for Clinicians,[14,15] or it may be based on forward reasoning.[16] Models for and examples of decision making by physical therapists demonstrate an integration of the concepts from the ICF and the patient/client management model with evidence from the literature.[17,18]

Courses on EBP are available at the **APTA Learning Center**. Summaries of best available evidence for management of specific conditions are available at **PTNow**.

Professional Values and Guiding Documents

Physical therapists demonstrate professional values in their interactions with patients, clients, and colleagues. Physical therapist practice is predicated on certain behaviors that are expected of all physical therapists and that are integral to all practice settings. They have been identified as **core values**:[19]

- Accountability
- Altruism
- Compassion/caring
- Excellence
- Integrity
- Professional duty
- Social responsibility

Based on these core values, it is expected that physical therapists work collaboratively with patients, clients, and other health care providers to meet an individual's needs at all stages of life. This requires that physical therapists honor the individual as the focus of all care and respect the contributions made by all other health care practitioners to the success of care for each individual. In addition, it is expected that physical therapists accept full responsibility and accountability for exercising professional judgment within their scope of practice. Physical therapists are responsible for ensuring that their professional judgment and the needs of the individual have primacy over organizational, payment, or other pressures that might arise that conflict with what the therapist judges to be the appropriate action on behalf of an individual.

The ***Code of Ethics for the Physical Therapist***[20] (Code of Ethics) and the accompanying ***Guide for Professional Conduct***[21] are the profession's statements of required behavior for all physical therapists. The Code of Ethics comprises statements of the expected behaviors and performance of individual physical therapists. The Code of Ethics defines the ethical principles that form the foundation of physical therapist practice in patient and client management, consultation, education, research, and administration. The principles are directly related to the core values for professionalism in physical therapy.

The *Guide for Professional Conduct* provides the profession's statements of conditions and performances that are essential for high-quality, professional service to society. The ***Standards of Practice for Physical Therapy***[22] and***Criteria for Standards of Practice for Physical Therapy***[23] and corresponding criteria address elements expected in all physical therapist practice across all settings. These documents identify criteria in the areas of ethical and legal considerations, administration of physical therapist services, patient or client management, education, research, and community responsibility.

Additional APTA policies and procedures relate to the clinical provision of care, supervision of personnel, and administration of service delivery that physical therapists should be aware of and integrate into their practice. Physical therapists also are expected to know and comply with other federal, state, and local regulations that may apply to their practice.

Quality Assessment

Physical therapists measure the quality of their services by assessing structure, process, and outcome, using many different approaches. These quality assessments include, but are not limited to, the review of the care provided to patients or clients (level of the individual), the development of practice policies (level of the group or institution), and the use of evidence-based practice.

Quality assessment is continuous and systematic and includes:

- Assessment of the structure of services provided
- Assessment of processes of care, such as adherence to well-documented practice policies or clinical decision rules
- Measurement of outcomes of care through data collection and analysis

These quality processes may include facility-developed activities, participation in programs provided by voluntary organizations, and participation in payer-sponsored programs.

More information on quality assessment and quality management in physical therapist practice is available on APTA's website under **Quality Management** and **Medicare Pay for Performance**.

Education, Specialization, and Licensure

Physical therapists are professionally educated at the college or university level and are required to be licensed in the state or states in which they practice. As of January 1, 2016, the doctor of physical therapy (DPT) will be the required degree for all entry-level (professional) physical therapist education programs. Physical therapist education programs are accredited by the Commission on Accreditation of Physical Therapy Education (CAPTE), which uses the *Evaluative Criteria for Accreditation of Education Programs for the Preparation of Physical Therapists*[24] to assess the quality of physical therapist education programs.

Physical therapists recognize professional development, continuing competence, and lifelong learning as integral to the provision of current, evidence-based, high-quality patient care. Licensed practitioners with professional baccalaureate, postbaccalaureate certificate, and master's degrees are earning postprofessional DPT degrees. Most physical therapists also have a focus or area of practice that allows them to concentrate their expertise. Programs such as clinical residencies, clinical fellowships, and certified clinical specialization allow physical therapists to expand their expertise within defined areas of practice, or “specialties.”

A *clinical residency program* is designed to substantially advance the resident's expertise in examination, evaluation, diagnosis, prognosis, intervention, and management of patients within a specialty. A *clinical fellowship program* is designed to provide greater depth in a specialty or subspecialty area than that provided in a physical therapy residency program. *Clinical specialization* is the process by which a physical therapist builds on a broad

base of professional education and practice to develop a greater depth of knowledge and skills related to a particular area of practice.

Currently, the American Board of Physical Therapy Specialties (ABPTS) coordinates and oversees the certified clinical specialization process in 8 clinical specialty areas. These specialty areas include cardiovascular and pulmonary physical therapy, clinical electrophysiology, geriatrics, neurology, orthopedics, pediatrics, sports, and women's health. Physical therapists, like other health care providers, are seeking diverse, evidence-based approaches to demonstrating safe and effective contemporary practice.

Physical therapists in the United States are licensed and regulated in all 50 states and the District of Columbia. State licensure is required in each state in which a physical therapist practices and must be renewed on a regular basis, with a majority of states requiring continuing education or other continuing competency requirement for renewal. A physical therapist must practice within the scope of physical therapist practice defined by his or her state licensure law (“physical therapy practice act”), including supervision of physical therapist assistants.

Physical therapist assistants, under the direction and supervision of the physical therapist, play a vital role in providing the public with access to physical therapist services. Physical therapist assistant education culminates in a 2-year associate degree obtained in no more than 5 semesters. The physical therapist assistant curriculum includes general education or foundational content, physical therapy content, and clinical education experiences.

Physical therapist assistants are licensed or certified in all 50 states and the District of Columbia. Graduation from a CAPTE-accredited physical therapist assistant education program or its equivalency and passage of the national examination is required for licensure. Licensure or certification is required in each state in which a physical therapist assistant works and must be renewed on a regular basis, with a majority of states requiring continuing education as a requirement for renewal. The physical therapist assistant's scope of work and supervision requirements are defined by the physical therapy practice act in each state.

Physical therapist assistants seek advanced education through continuing education courses, certification courses (eg, APTA's **Credentialed Clinical Instructor Program**), and other health care related–certifications (eg, certified lymphedema therapist, certified ergonomics specialist, certified strength and conditioning specialist). APTA's Recognition of Advanced Proficiency for the Physical Therapist Assistant[25] is a mechanism to be recognized for advanced skills in specific content areas.

Other documents relevant to the education and qualifications of physical therapists and physical therapist assistants include:

- ***Minimum Required Skills of Physical Therapist Graduates at Entry Level***[26]
- ***Standards of Practice for Physical Therapy***[22]
- ***Code of Ethics for the Physical Therapist***[20]
- ***Guide for Professional Conduct***[21]
- ***Standards of Ethical Conduct for the Physical Therapist Assistant***[27]
- ***Guide for Conduct of the Physical Therapist Assistant***[28]

CAP 2 - Principles of Physical Therapist Patient and Client Management

Introduction

The physical therapist's management of the patient or client is an ongoing and iterative process that begins during the first contact with the individual. The physical therapist initiates the management process by gathering information prior to or at the first meeting with the individual and continues the process throughout the defined episode of care.

At any point in an episode, a physical therapist may engage in 1 or more of the following actions related to involvement of other providers in the management process (**Figure 2-1**).

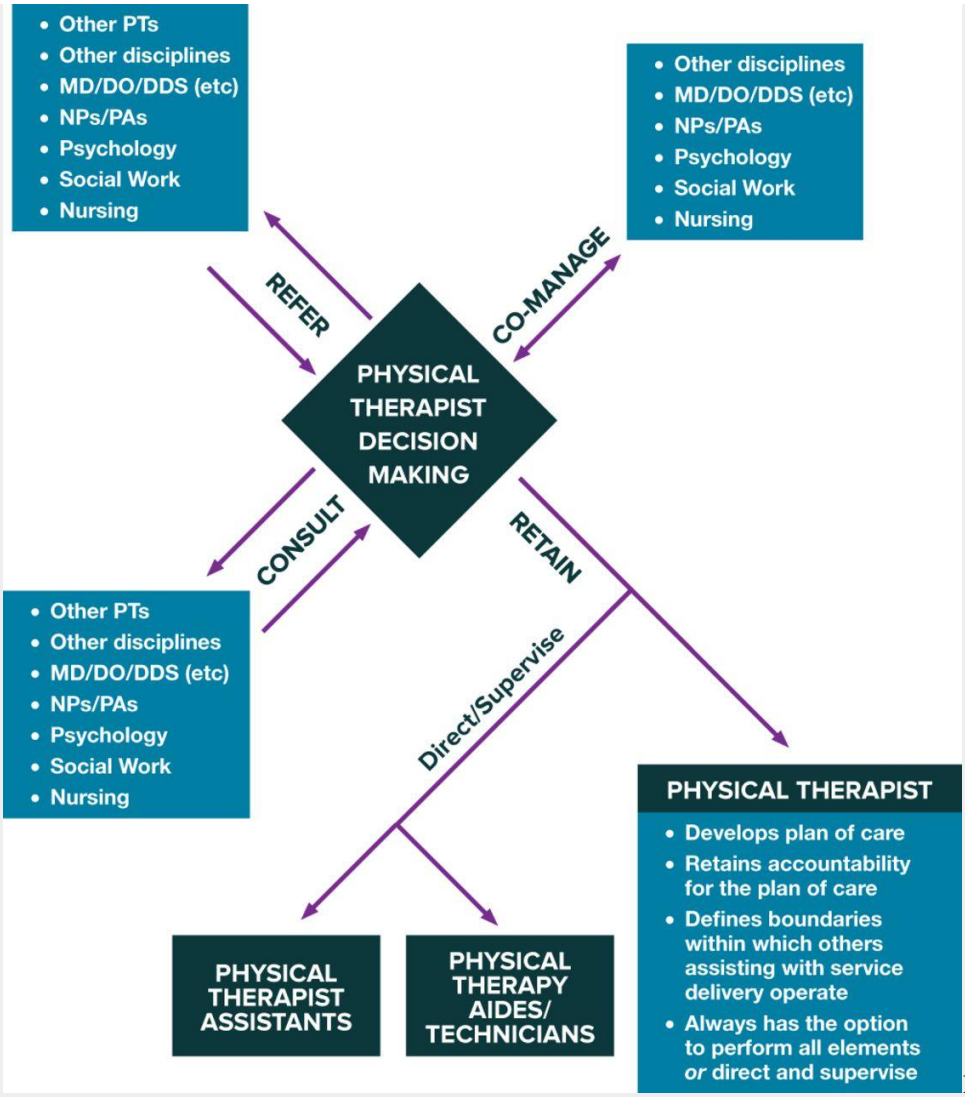

Figure 2-1. Physical therapist decision making related to the involvement of other providers. PT=physical therapist, MD=doctor of medicine, DO=doctor of osteopathy, DDS=doctor of dental surgery, NP=nurse practitioner, PA=physician assistant.

Co-management. The physical therapist shares responsibility for the individual with another professional who is also managing that individual.

Consultation. In some cases the physical therapist renders professional expert opinion or advice by applying highly specialized knowledge and skills to identify problems, recommend solutions, or produce a specified outcome or product in a given amount of time on behalf of an individual. At other times the physical therapist seeks consultative services from another provider to inform the physical therapist plan of care and/or to obtain services for the individual that are beyond the professional or personal scope of practice of the physical therapist. In this case, the physical therapist shares responsibility for the individual with the consultant.

Direction and supervision. The physical therapist remains accountable for the services provided when the physical therapist's plan of care involves the use of other recognized assistive personnel.

Referral. The physical therapist may:

- Refer an individual to another provider and conclude care, or not develop a plan of care
- Refer an individual to another provider and continue the plan of care at the same time
- Receive an individual referred from another provider who chooses not to continue treating the individual
- Receive an individual from another provider who continues to treat the individual (if the physical therapy episode of care is ongoing, the physical therapist shares responsibility for the individual)

Physical therapists also coordinate, communicate, and document services provided throughout the episode of care to ensure optimal management of the individual. Physical therapists are responsible and accountable for ensuring that the provision of services is in accordance with American Physical Therapy Association (APTA)**policies and positions**.

Physical Therapist Patient and Client Management

The Physical Therapist Patient/Client Management Model contains the following elements: **examination**,**evaluation**, **diagnosis**, **prognosis**, **intervention**, and **outcomes** (**Figure 2-2**).

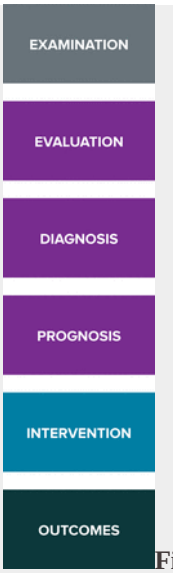

Figure 2-2. Elements of the Patient/Client Management Model.

Patient and client management (**Figure 2-3**) is an ongoing, iterative process that focuses on the evolving needs of each individual.

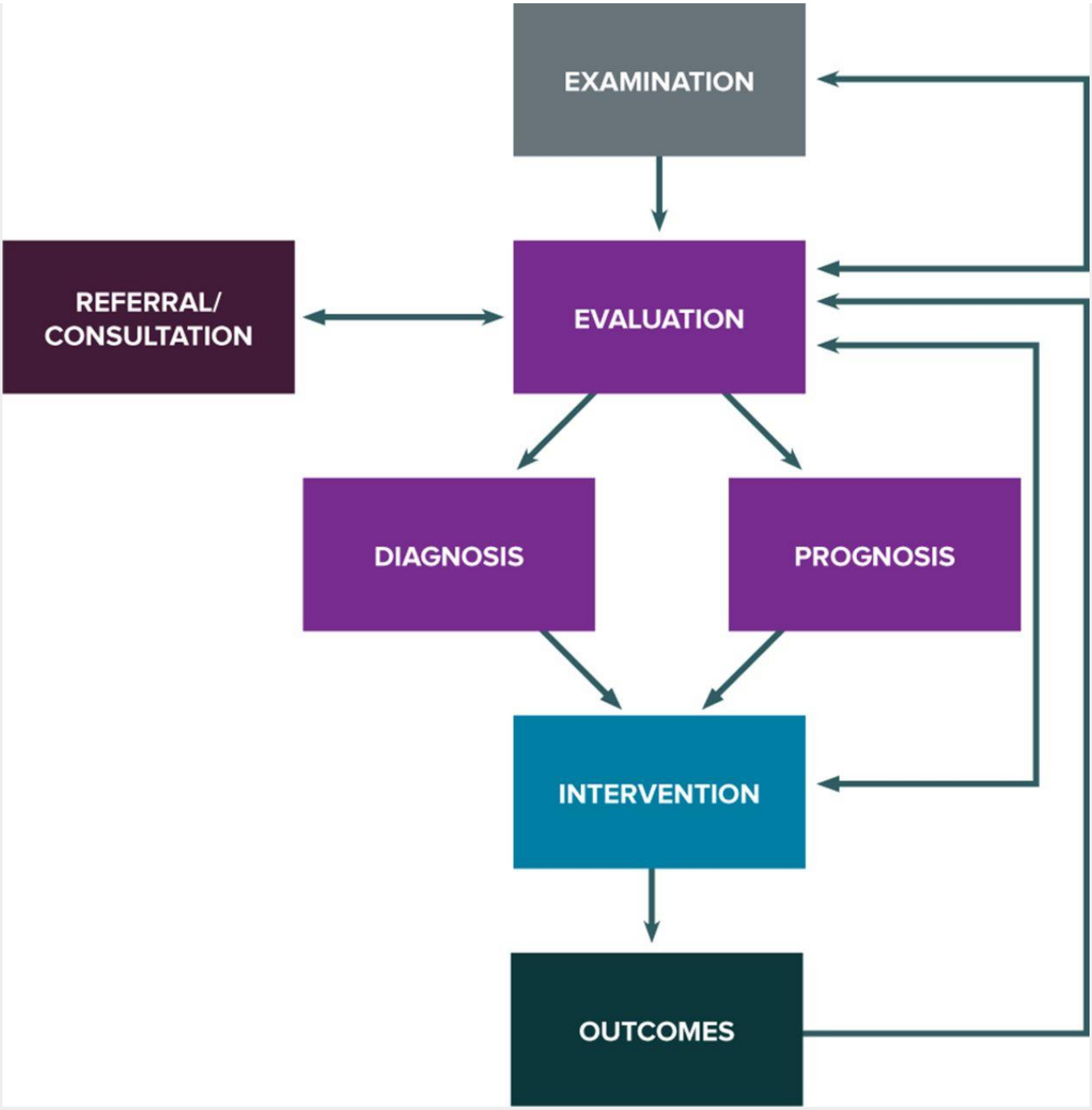

Figure 2-3. The process of physical therapist patient and client management.

Physical therapists apply the process of patient and client management to rehabilitate, habilitate, maintain health or function, prevent functional decline, and, in healthy individuals, enhance performance.

Examination

The physical therapist's examination includes:

- **History** (including symptom investigation and review of systems)
- **Systems review** (a limited examination of the musculoskeletal, neuromuscular, cardiovascular/pulmonary, and integumentary systems)
- **Tests and measures**

Physical therapists conduct a history, perform a systems review, and use tests and measures in order to describe and/or quantify an individual's need for services. The physical therapist has the responsibility to determine if there is sufficient information to:

- Conclude whether the individual would benefit from physical therapy
- Develop the **plan of care**
- Progress the plan of care based on the individual's response to intervention

Physical therapists also must determine whether referral to or consultation with another provider is indicated based on the information gathered during the initial encounter with the individual and during subsequent interactions.

A physical therapist examination *must* be conducted during the initial session with the individual prior to establishing a physical therapist plan of care. Collection of data and information also is performed as part of each visit to determine any changes since the last visit, current status in specific areas, and whether progression toward goals is as expected. Tests and measures also are used to document outcomes of services provided.

Reexamination is 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, disorder, or condition, which for some individuals may be over the life span. Indications for reexamination include new clinical findings or failure to respond to physical therapist intervention.

History

The *history* is a systematic gathering of data—from both the past and the present—related to why the individual is seeking the services of the physical therapist. The data that are obtained include: demographic information, social history, employment and work history, growth and development, living environment, general health status, social and health habits (past and current), family history, medical and surgical history, current conditions or chief complaints, functional status and activity level, medications, and other clinical tests. While taking the history, the physical therapist also identifies health restoration and prevention needs and coexisting health problems that may have implications for intervention.

This history typically is obtained through the gathering of data from the individual, family, significant others, caregivers, and other interested parties (eg, rehabilitation counselor, teacher, workers' compensation case manager, employer); through consultation with other members of the team; and through review of the individual's record. **Figure 2-4** lists the types of data that may be generated from the history.

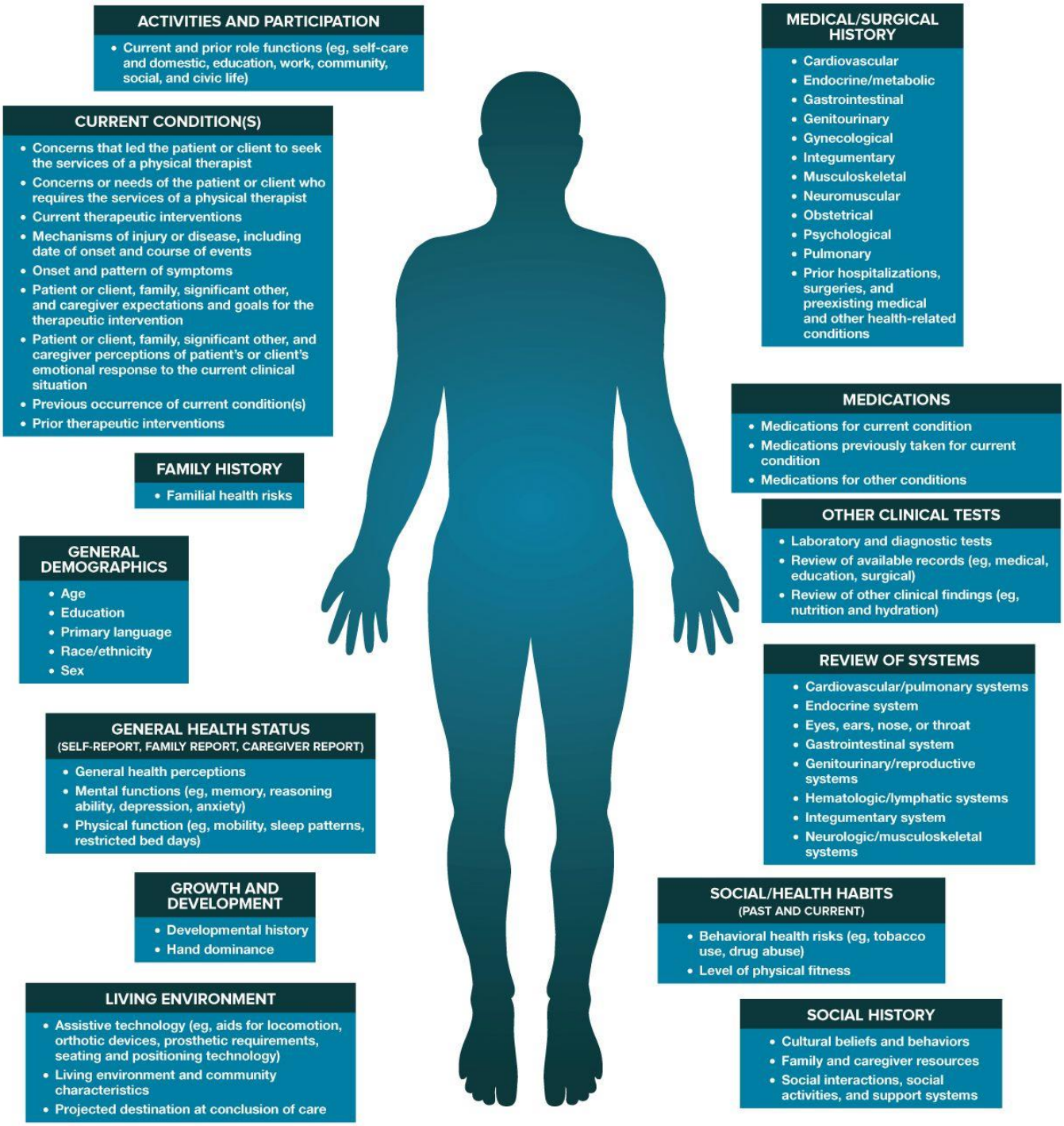

Figure 2-4. Types of data that may be generated from a patient or client history.

Data from the history provide the initial information that the physical therapist uses to hypothesize about the existence and origin of impairments in body functions and structures, activity limitations, and participation restrictions that are commonly related to medical conditions, sociodemographic factors, or personal characteristics. For example, in the case of a 78-year-old woman who has a medical diagnosis of Parkinson disease and who lives alone, the medical diagnosis would suggest the *possibility* of the following impairments in

body functions and structures: loss of motor control, range-of-motion deficits, faulty posture, and decreased endurance for functional activities. Epidemiological research that is available about activity limitations of older women, however, suggests that performance of instrumental activities of daily living (IADL) also may be problematic for that age group. Consequently, in this case, the physical therapist may use the information obtained during the history, as well as the epidemiological information, to create a hypothesis that would require further, in-depth examination during the tests-and-measures portion of the examination.

Review of systems. During the history-gathering phase, physical therapists also seek information about all major body systems to determine whether there are symptoms that suggest the need for referral for additional medical evaluation. This review of systems typically includes reports related to the following:

- Cardiovascular/pulmonary systems
- Endocrine system
- Eyes, ears, nose, or throat
- Gastrointestinal system
- Genitourinary/reproductive systems
- Hematologic/lymphatic systems
- Integumentary system
- Neurologic/musculoskeletal systems

Reports related to the individual's overall physical (eg, unexplained weight change, fatigue/lethargy/malaise) and emotional (eg, anxiety, feelings of hopelessness) well-being also are noted.

Systems Review

After organizing the available history information, the physical therapist begins the hands-on component of the examination. The systems review is a brief or limited examination of (1) the anatomical and physiological status of the cardiovascular/pulmonary, integumentary, musculoskeletal, and neuromuscular systems and (2) the communication ability, affect, cognition, language, and learning style of the individual. The physical therapist especially notes how each of these last 5 components affects the ability to initiate, sustain, and modify purposeful movement for performance of an action, task, or activity that is pertinent to function.

The systems review includes the following:

- For the cardiovascular/pulmonary system: the assessment of heart rate, respiratory rate, blood pressure, and edema
- For the integumentary system: the assessment of pliability (texture), presence of scar formation, skin color, and skin integrity
- For the musculoskeletal system: the assessment of gross symmetry, gross range of motion, gross strength, height, and weight
- For the neuromuscular system: a general assessment of gross coordinated movement (eg, balance, gait, locomotion, transfers, and transitions) and motor function (motor control and motor learning)

- For communication ability, affect, cognition, language, and learning style: the assessment of the ability to make needs known, consciousness, orientation (person, place, and time), expected emotional/behavioral responses, and learning preferences (eg, learning barriers, education needs)

Tests and Measures

Tests and measures are the means of gathering data about the individual. Physical therapists use tests and measures to rule in or rule out causes of impairment in body structures and functions, activity limitations, and participation restrictions.

The tests and measures performed as part of an initial examination should be only those that are necessary to (1) confirm or reject a hypothesis about the factors that contribute to making the individual's current level of function less than optimal and (2) support the physical therapist's clinical judgments about the diagnosis, prognosis, and plan of care.

Before, during, and after administering the tests and measures, physical therapists gauge responses, assess physical status, and obtain a more specific understanding of the condition and the diagnostic and therapeutic requirements.

The physical therapist may decide to use one, more than one, or portions of several specific tests and measures as part of the examination, based on the purpose of the visit, the complexity of the condition, and the directions taken in the clinical decision-making process.

As the examination progresses, the physical therapist may identify additional problems that were not uncovered by the history and systems review and may conclude that other specific tests and measures or portions of other specific tests and measures are required to obtain sufficient data to perform an evaluation, establish a diagnosis and a prognosis, and determine the plan of care. Therefore, the examination may be as brief or as lengthy as necessary. The physical therapist may decide that a full examination is necessary and then select appropriate tests and measures. Conversely, the physical therapist may conclude from the history and systems review that further examination and intervention are not required, that the individual should be referred to another practitioner, or both.

The tests and measures selected by the physical therapist should yield data that are sufficiently accurate and precise to allow the therapist to make a correct inference about the individual's condition. The selection of specific tests and measures and the depth of the examination vary based on the age of the individual; severity of the problem; stage of recovery (acute, subacute, or chronic); phase of rehabilitation (early, intermediate, late, or return to activity); home, community, or work situation; and other relevant factors.

Tests and measures vary in their precision, but even those that are less precise can yield useful data. For instance, data generated from either a gross muscle test of a group of muscles or a very precise manual muscle test could be used to reject the hypothesis that muscle performance is contributing to an activity limitation. Similarly, even though a functional assessment instrument may quantify ability in a large number of activities of daily living (ADL) or IADL, it may fail to detect the individual's inability to perform a particular task and activity that is most important to that person.

The tests and measures used by physical therapists are organized into 26 categories:

- **Aerobic Capacity/Endurance**
- **Anthropometric Characteristics**
- **Assistive Technology**
- **Balance**

- **Circulation (Arterial, Venous, Lymphatic)**
- **Community, Social, and Civic Life**
- **Cranial and Peripheral Nerve Integrity**
- **Education Life**
- **Environmental Factors**
- **Gait**
- **Integumentary Integrity**
- **Joint Integrity and Mobility**
- **Mental Functions**
- **Mobility (Including Locomotion)**
- **Motor Function**
- **Muscle Performance (Including Strength, Power, Endurance, and Length)**
- **Neuromotor Development and Sensory Processing**
- **Pain**
- **Posture**
- **Range of Motion**
- **Reflex Integrity**
- **Self-Care and Domestic Life**
- **Sensory Integrity**
- **Skeletal Integrity**
- **Ventilation and Respiration**
- **Work Life**

Evaluation

Evaluation is the process by which physical therapists:

- Interpret the individual's response to tests and measures
- Integrate the test and measure data with other information collected during the history
- Determine a diagnosis or diagnoses amenable to physical therapist management
- Determine a prognosis, including goals for physical therapist management

- Develop a plan of care

Factors that influence the complexity of the evaluation process include the clinical findings, the extent of loss of function, social considerations, and overall physical function and health status. The evaluation reflects the chronicity or severity of the current problem, the possibility of multisite or multisystem involvement, the presence of preexisting systemic conditions or diseases, and the stability of the condition. Physical therapists also consider the severity and complexity of the current impairments and the probability of prolonged impairment of body functions and structures, activity limitations, and participation restrictions; the living environment; potential destinations at the conclusion of the episode of care; and social support.

Evaluation occurs at the start of care and continues throughout the episode of care to determine the individual's response to interventions and progress toward identified goals.

Diagnosis

Diagnostic labels may be used to describe multiple dimensions of the individual, ranging from the most basic cellular level to the highest level of functioning as a person in society. Making a diagnosis requires the clinician to collect and sort data into categories according to a classification scheme relevant to the clinician who is making the diagnosis. These classification schemes should meet the following criteria:

1. Classification schemes must be consistent with the boundaries placed on the profession by law (which may regulate the application of certain types of diagnostic categories) and by society (which grants approval for managing specific types of problems and conditions).

2. The tests and measures necessary for confirming the diagnosis must be within the legal purview of the health care professional.

3. The label used to categorize a condition should describe the problem in a way that directs treatment options that are within the legal purview of the health care professional who is making the diagnosis.

Although physicians typically use labels that identify disease, disorder, or condition at the level of the cell, tissue, organ, or system, physical therapists use labels that identify the *impact of a condition on function at the level of the system (especially the movement system) and at the level of the whole person.*

Physical therapists use a systematic process (sometimes referred to as differential diagnosis) to classify an individual into a diagnostic category. This process includes integrating and evaluating the data that are obtained during the examination to describe the individual condition in terms that will guide the physical therapist in determining the prognosis and developing a plan of care. Thus, the diagnostic label indicates the primary dysfunctions toward which the physical therapist directs intervention. The diagnostic process enables the physical therapist to verify the needs of each individual relative to similar people who are classified in the same category while also capturing their unique concerns in meeting those needs in a particular sociocultural and physical environment.

The objective of the physical therapist's diagnostic process is the identification of discrepancies that exist between the level of function that is desired by the individual and the capacity of the individual to achieve that level. In carrying out the diagnostic process, physical therapists may need to obtain additional information (including diagnostic labels) from other professionals. As the diagnostic process continues, physical therapists also may identify findings that should be shared with other professionals (including referral sources) to ensure optimal care. If the diagnostic process reveals findings that are outside the scope of the physical therapist's knowledge, experience, or expertise, the physical therapist refers the individual to an appropriate practitioner.

Even if the diagnostic process does not yield an identifiable cluster (eg, of signs or symptoms, impairments in body functions and structures, activity limitations, or participation restrictions), syndrome, or category, the physical therapist may administer intervention for the alleviation of symptoms and remediation of impairments. As in all

other cases, the physical therapist is guided by individual responses to intervention and may determine that a reexamination is in order and proceed accordingly.

Prognosis

Once the diagnosis has been established, the physical therapist determines the prognosis. The *prognosis* is the determination of the predicted optimal level of improvement in function and the amount of time needed to reach that level and also may include a prediction of levels of improvement that may be reached at various intervals during the course of therapy. In determining the prognosis, physical therapists also must consider the differences between the highest level of function of which the individual is *capable* and the highest level of function that is likely to be *habitual* for that individual. Individuals are more likely to achieve the goals and outcomes that are determined with the physical therapist if they perceive a need to function at the highest level of their ability—and if they are *motivated* to function habitually at that level. Thus, understanding the difference between what a person currently does and what that person *potentially* could do is essential in making a prognosis and identifying realistic, achievable goals and outcomes. Physical therapists ultimately must abide by the decisions of the individual regarding actions, tasks, and activities that will be incorporated into a daily routine and regarding what constitutes a meaningful level of function.

Intervention

Physical therapists purposefully interact with the individual and, when appropriate, with other people involved in his or her care, using various interventions to produce changes in the condition that are consistent with the diagnosis and prognosis. Physical therapist interventions are organized into 9 categories:

- **Patient or client instruction (used with every patient and client)**
- **Airway clearance techniques**
- **Assistive technology**
- **Biophysical agents**
- **Functional training in self-care and domestic, work, community, social, and civic life**
- **Integumentary repair and protection techniques**
- **Manual therapy techniques**
- **Motor function training**
- **Therapeutic exercise**

The physical therapist selects, prescribes, and implements interventions based on examination data, the evaluation, the diagnosis and the prognosis, and the goals for a particular individual. Depending on the individual's response to intervention, the physical therapist may decide that reexamination is necessary, a decision that may lead to the use of different therapeutic methods or techniques or, alternatively, the conclusion of the episode of care.

Patient or client instruction is a type of intervention that physical therapists use with every individual they see. The process of informing, educating, or training the individual, families, significant others, and caregivers is intended to promote and optimize physical therapist services. Instruction may be related to the current condition; specific impairments in body functions or structures, activity limitations, or participation restrictions; plan of care; need for enhanced performance; transition to a different role or setting; risk factors for developing a problem or dysfunction; or need for health, wellness, or fitness programs. Physical therapists are responsible for individual instruction across all settings for all individuals.

Decisions about the type and intensity of other interventions are based on the physical therapist's assessment of the individual's current condition and are contingent on the timely monitoring of the individual's response and the progress made toward achieving the goals. In prescribing interventions for an individual, the physical therapist includes parameters for each intervention (eg, method, mode, or device; intensity, load, or tempo; duration and frequency; and progression).

Factors that influence the complexity, frequency, and duration of the intervention and the decision-making process may include:

- Accessibility and availability of resources
- Adherence to the intervention program
- Age
- Anatomical and physiological changes related to growth and development
- Caregiver consistency or expertise
- Chronicity or severity of the current condition
- Cognitive status
- Comorbidities, complications, or secondary impairments
- Concurrent medical, surgical, and therapeutic interventions
- Decline in functional independence
- Level of impairment
- Level of physical function
- Living environment
- Multisite or multisystem involvement
- Nutritional status
- Overall health status
- Potential destinations at the conclusion of the episode of care
- Premorbid conditions
- Probability of prolonged impairment in body functions and structures, activity limitations, or participation restrictions
- Psychomotor abilities
- Psychosocial and socioeconomic factors
- Social support
- Stability of the condition

Outcomes

Outcomes are the actual results of implementing the plan of care that indicate the impact on functioning (body functions and structures, activities, and participation).

As the individual reaches the end of the episode of care, the physical therapist measures the global outcomes of the services provided by characterizing or quantifying the impact of the physical therapist intervention on the following domains:

- Pathology/pathophysiology (disease, disorder, or condition)
- Impairments in body function and structure
- Activity limitations
- Participation restrictions
- Risk reduction and prevention
- Health, wellness, and fitness
- Societal resources
- Patient or client satisfaction

The physical therapist engages in outcome data collection and analysis—that is, the methodical analysis of outcomes of care in relation to selected variables (eg, age, sex, diagnosis, interventions performed)—and develops statistical reports for internal or external use.

Use of Information Generated During Physical Therapist Patient and Client Management

Plan of Care

The *plan of care* consists of statements that specify the goals, predicted level of optimal improvement, specific interventions to be used, and proposed duration and frequency of the interventions that are required to reach the goals and outcomes.

The plan of care is the culmination of the examination, diagnostic, and prognostic processes. It is established in collaboration with the individual and, when appropriate, others involved in his or her care. The plan is based on the data gathered from the history, systems review, and tests and measures and on the diagnosis determined by the physical therapist. In designing the plan of care, the physical therapist analyzes and integrates the clinical implications of the severity, complexity, and acuity of the pathology/pathophysiology (disease, disorder, or condition), the impairments in body functions and structures, the activity limitations, and the participation restrictions to establish the prognosis.

The plan of care identifies the individual's goals. *Goals* are the intended impact on functioning (body functions and structures, activities, participation) as a result of implementing the plan of care. Goals should be measurable, functionally driven, and time limited. If required, the goals may be classified as short-term and long-term.

The plan of care includes plans anticipated at the conclusion of the episode of care. In consultation with appropriate individuals, the physical therapist plans for the conclusion of care and provides for appropriate follow-up or referral. The primary criterion for conclusion of care is the achievement of the individual's goals. When the episode of care is concluded prior to achievement of identified goals, the individual's status and the rationale for

conclusion of care are documented. For individuals 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.

Coordination, Communication, and Documentation

The processes of coordination, communication, and documentation are critical to ensure that individuals receive appropriate, comprehensive, efficient, person-centered, and high-quality health care services throughout the episode of care. *Coordination* is the working together of all parties involved with the individual. *Communication* is the exchange of information. *Documentation* is any entry into the individual's health record—such as consultation reports, initial examination reports, progress notes, flow sheets, checklists, reexamination reports, or summations of care—that identifies the care or services provided and the individual's response to intervention. Documentation should follow APTA's ***Guidelines: Physical Therapy Documentation***.[1]

Appropriate documentation of physical therapist services is crucial because it:

- Is a tool for the planning and provision of physical therapist services, and is a communication vehicle among providers
- Serves as a record of care provided, including a report of the individual's status, physical therapist management, and outcome of physical therapist intervention
- May be used to demonstrate compliance with federal, state, payer, and local regulations
- Provides a historical account of encounters with the individual that can be used as evidence in potential legal situations
- May be used to demonstrate appropriate service utilization and reimbursement for many third-party payers
- May be used for policy or research purposes, including outcome analysis

Physical therapists are responsible for coordination, communication, and documentation across all settings for all individuals.

CAP 3 - Measurement and Outcomes

Measurement Concepts

Obtaining measurements is an essential and integral part of physical therapist practice. The American Physical Therapy Association's (APTA) *Standards for Tests and Measurements in Physical Therapy Practice* states that a*measurement* is the "numeral assigned to an object, event, or person, or the class (category) to which an object, event, or person is assigned according to rules."[1(p595)] Physical therapists obtain many different types of measurements during patient or client management. The magnitude and specific location of an individual's report of pain, the quantification of muscle performance, the description of the various characteristics of an individual's gait pattern, the description of the environmental and personal factors associated with the assistance an individual requires to perform a work-related task, the changes that show progress or lack of progress toward and achievement of desired goals and outcomes—all of these are measurements.

Goals are defined as the intended impact on functioning (body functions and structures, activities, and participation) as a result of implementing a plan of care. Goals should be measurable, functionally driven, and time limited. *Outcomes* are the actual results of implementing the plan of care that indicate the impact on functioning. Although measures at the level of pathology, body function, and body structure indicate the success of individual interventions during an episode of care, outcome measures directed toward activity and participation demonstrate the value of physical therapy in helping individuals achieve their identified goals.

The appropriate selection of tests and measures for a specific individual depends on the established psychometric properties of the measurements (eg, **reliability**, **validity**, scale of measurement, **responsiveness in detecting minimal change that is meaningful to the individual over time**) and on the **clinical utility** of the tests and measures. In addition, the physical therapist determines whether **self-report measures or performance-based measures** should be used.

Psychometric Properties

Reliability

Assessing a measurement's reliability is an attempt to identify sources of error.[2(p6)] A measurement is said to be reliable when it is consistent time after time, with as little variation as possible. Because all measurements have some error, the clinician must determine whether a measurement is useful or whether so much error exists that the measurement is rendered useless for a particular purpose.

Two major types of reliability—test-retest and intrarater/interrater—help determine how much error exists in a measurement. *Test-retest reliability* is the consistency of repeated measurements that are separated in time when there is no change in what is being measured; test-retest reliability indicates the stability of a measurement.*Intrarater reliability* indicates the degree to which measurements that are obtained by the same physical therapist at different times will be consistent. *Interrater reliability* indicates the degree to which measurements obtained by multiple therapists will be consistent.[1,2(p60)]

Interrater reliability is especially important. If different physical therapists obtain different measurements when measuring the same phenomenon in the same type of patient, the usefulness of that test is limited.

There are 2 other forms of reliability: *parallel-form reliability*, which relates to measurements that are obtained by using different versions of the same test or measure; and *internal consistency* (or homogeneity), which relates to measurements that are obtained by using tests or measures with multiple items or parts, where each part is supposed to measure one, and only one, concept.[2(p60)]

Validity

Validity is the "degree to which a useful (meaningful) interpretation can be inferred from a measurement."[1,2(p61)] The forms of validity include face validity, content validity, construct validity, concurrent validity, and predictive validity.

Face validity exists when the measurement seems to reflect what is supposed to be measured, but it does not depend on published evidence. Goniometric measurements, for instance, have face validity as measurements of joint position.

Content validity establishes the degree to which a measurement reflects the domain of interest. For example, an instrument that is used to assess joint pain might generate data regarding only pain on motion, not pain at rest or factors that aggravate or alleviate pain.

Construct validity is a theoretical form of validity that is established on the basis of evidence that a measurement represents the underlying concept of what is being measured.[1,2(p61-62)] For example, the overall concept of "motor function" is the construct that underlies any particular test or measure of motor function. There are no direct tests of construct validity. Theoretical evidence of construct validity is often provided by demonstrating convergence if tests or measures believed to represent the same construct are highly related. For example, a test of motor function—based on a particular concept of what "motor function" means—should correlate highly with other tests or measures based on similar concepts of motor function or based on concepts that are closely related to motor function, such as "dexterity" and "coordination." Evidence of construct validity also is found when there is a low association—or divergence—between a test or measure of one particular construct and other tests or measures reflecting distinctly different, or even unrelated, constructs. For example, there should be a low association between a test or measure of "motor function" and tests or measures based on the concepts of "aerobic conditioning" or "range of motion."

Concurrent validity exists when "an inferred interpretation is justified by comparing a measurement with supporting evidence that was obtained at approximately the same time as the measurement being validated."[1,2(p64-65)] The developers of a new balance test might compare the measurements obtained using the new test to those obtained using an established balance test involving one-legged stance. The comparative method of establishing concurrent validity is particularly relevant for self-assessment instruments.

Predictive validity exists when "an inferred interpretation is justified by comparing a measurement with supporting evidence that is obtained at a later point in time" and "examines the justification of using a measurement to say something about future events or conditions."[1,2(p61-62,65-66)] The predictive validity of a measurement of functional capacity might be established by verifying whether the measurement indicates the likelihood of return to work. Knowing the predictive validity of a measurement may facilitate the identification of achievable outcomes and increase the efficiency of planning for conclusion of care.

Predictive validity also may provide the physical therapist with several kinds of information about the value of selecting particular tests or measures for the examination. The *sensitivity* of a measurement indicates the proportion of individuals with a positive finding who already have or will have a particular characteristic or outcome.[1,3,4] In other words, sensitivity is the positive predictive validity of the measurement. In contrast, the*specificity* of a measurement indicates the proportion of people who have a negative finding on a test or measure who truly do not or will not have a particular characteristic or outcome.[1,3,4] Thus, specificity is the negative predictive validity of the test or measure.

Detecting Clinically Meaningful Change in Patient Status or Outcome

Selection of measurement tools goes beyond identifying a test's reliability and validity. Physical therapists use the standard error of measurement (SEM) and the minimal detectable change (MDC) in determining whether a change in patient or client status is likely to have occurred, and they use the minimal clinically important difference (MCID) in determining how much change is needed to be meaningful or beneficial to the individual.[5(p737),6(pp75-81)]

The MDC is considered to be "the minimal amount of change that is not likely to be due to chance variation in measurement"[5(p737)] and usually is calculated using repeated measurements obtained over a relatively brief period

of time. The MCID is the smallest change measured by the test being used that is predictive of a meaningful change that could result in a change in patient or client management. The MCID for many tests and measures used with specific types of patients has been reported in the literature. Physical therapists compare measurements obtained from individual patients with change thresholds reported in the literature to determine whether meaningful change has occurred and to determine whether intervention should be modified to achieve goals and outcomes.

Clinical Utility

In addition to the psychometric properties of the test or measure, physical therapists consider its clinical utility for a particular purpose. For instance, physical therapists consider the precision of the data yielded by a test or measure and whether it will meet the needs of the situation. Some measurements are only gross measurements—which may be useful for a population screen but may not be useful for identifying a small change in status after intervention. The measurements used by the physical therapist should be sensitive enough to detect the degree of change expected as a result of intervention.

Clinical utility considerations include[7]:

- Appropriateness of the test for application at the level of pathology or health condition, body function or structure, activity, or participation
- Precision of the test to accurately measure change
- Interpretability of the test to the individual's situation
- Acceptability of the test to the individual (including tolerance of testing positions)
- Time and cost of administering the test

Self-Report Measures Versus Performance-Based Measures

In addition to selecting a test or measure that has sound psychometric properties, the physical therapist determines whether to use self-report measures or performance-based measures. Both types of measures can be standardized using psychometric properties reported in the literature.

The findings from a self-report measure and from a performance-based measure for the same activity may be different in the same individual. The difference between these 2 types of measures reveals a distinction between the individual's perceived or self-measured ability to perform a task or activity and the clinically or professionally measured performance of a task or activity. Self-report measures relay information to the therapist about the individual's *perception* of how his or her impaired body function or structure is limiting activities and participation. Performance-based measures provide *data* to the therapist about the level of impairment in body structure or functions.

Some measures are more suited to self-report or can be performed only via self-report, such as confidence or satisfaction measures. Other measurement activities are more appropriate for a performance-based measure, such as a standardized walk test or goniometric measurement. Many measures (eg, physical fitness) involve both self-report and performance-based testing based on a number of factors, including cost, availability, access, and acuity of the condition.

General Measures Versus Specific Measures

Self-report and performance-based tests and measures may be classified as general or specific. General or global measures can be used with all individuals and are designed to provide an overall measure of health (eg, 36-Item Short-Form Survey [SF-36]).

Tests and measures may be further classified as condition specific (eg, Brief Fatigue Index), region specific (eg, Neck Disability Index [NDI]), or individual specific (eg, Patient-Specific Functional Scale). Following are examples of the types of clinical questions that the physical therapist uses in making decisions about what specific measurement tools to use:

Condition Specific

- Does the condition limit the individual functionally (eg, fatigue, arthritis)?
- How can the severity of the condition be measured (eg, Brief Fatigue Index, Western Ontario and McMaster Universities Osteoarthritis Index [WOMAC])?

Body-Region Specific

- Is body function or structure limiting the individual functionally (eg, neck, shoulder)?
- How can the impact on function be measured (eg, Neck Disability Index [NDI], Disabilities of the Arm, Shoulder and Hand questionnaire [DASH])?

Individual Specific

- Does the individual's overall health status impact function (eg, vitality, quality of life)?
- How can the impact on function be measured (eg, 36-Item Short-Form Survey [SF-36], Global Rating Scale of Change)?

Measuring Outcomes

Outcomes are the actual results of implementing the plan of care that indicate the impact on functioning (body functions and structures, activities, and participation). Outcomes relate to the goals that the physical therapist develops in collaboration with the patient or client, family, significant others, and caregivers. *Outcome status* is the impact of care on an individual's health over time. When standardized tests and measures are used to determine change in outcome status during and at the end of an episode of care, they may be referred to as*outcome measures*. Outcome measures include:

- Health or functional status (activity limitations and participation restrictions)
- Impairments of body functions and structures
- Adverse outcomes and complications
- Morbidity and mortality
- The individual's self-reported outcomes
- The individual's satisfaction with the care received
- Changes in health, wellness, and fitness

Although measurements at the level of pathology or health condition and at the level of body functions and body structures indicate the success of individual interventions during an episode of care, *outcome measurements at the level of activity and participation demonstrate the value of physical therapy in helping individuals achieve their identified goals and, therefore, are most meaningful.*

As the individual reaches the end of the episode of care, the physical therapist measures the global outcomes of the services provided by characterizing or quantifying the impact of the physical therapist intervention on any or all of the following domains, based on suitability for and the circumstances of the patient or client:

- Pathology or health condition
- Impairments in body functions and structures
- Activity limitations
- Participation restrictions
- Risk reduction/prevention
- Health, wellness, and fitness
- Societal resources
- Patient or client satisfaction

The physical therapist engages in outcome data collection and analysis—that is, the methodical analysis of outcomes of care in relation to selected variables (eg, age, sex, diagnosis, interventions performed)—and develops statistical reports for internal or external use.

Clinical Decision Making

Selecting Outcome Tools

The physical therapist selects the appropriate standardized outcome measures to quantify the individual's status just prior to, during, and at the conclusion of an episode of care. The therapist might choose **self-report or performance-based tools** or **general or specific measures**. The use of standardized outcome measures that have sound psychometric properties is critical in determining an outcome status for an individual or population. Also critical is the use of a measure that is relevant to each individual or to the population being measured. The stronger the psychometric properties, and the closer the match of the study group for the outcome tool with the individual or population that the physical therapist is measuring, the more accurate and useful that measurement will be.

Establishing a Baseline and Outcome Status

The use of standardized tests and measures early in the episode of care establishes the baseline status of the individual, providing a means to quantify change in functioning. Beginning with the history, the physical therapist identifies the individual's expectations, perceived need for physical therapist services, personal goals, and desired outcome status. The physical therapist then considers whether the desired goals and outcome status are realistic in the context of the examination data and the resulting evaluation, which includes determining the diagnosis. Based on this information and the underlying pathology or health condition causing the impairments of body functions and structures, activity limitations, and participation restrictions, the physical therapist then generates a prognosis intended to predict likely outcomes.

The physical therapist also uses standardized outcome measures *throughout* the episode of care as part of periodic examinations that provide information regarding whether outcome expectations are being met. If expectations are not being met, the physical therapist determines whether or not to modify the plan of care and whether or not to reconsider the initial prognosis. The physical therapist also determines the need to refer to or consult with another practitioner.

Outcome Measurement at Conclusion of Episode of Care

Prior to concluding the episode of care, the physical therapist measures the individual's outcomes. Outcome measures are expected to identify change in functioning; however, the physical therapist also considers changes to the environment to ensure that the change in functioning can be accurately attributed to the intervention. For example, a person may return to work not only because functioning has changed, but because there may be

monetary or family pressures or other personal or contextual factors that have an impact on outcomes (**Figure 3-1**).

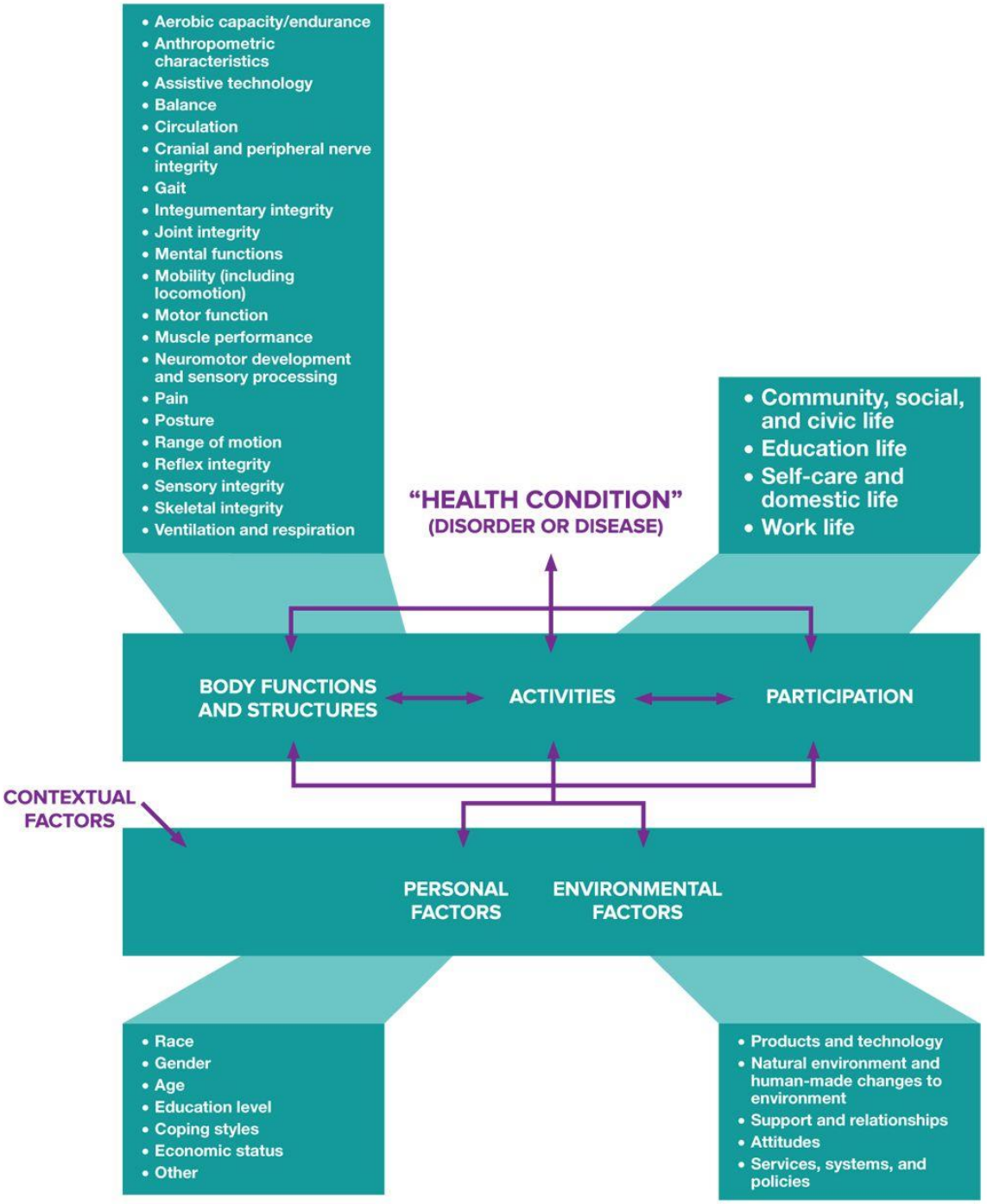

Figure 3-1. Adaptation of*International Classification of Functioning, Disability and Health*(ICF) domains and constructs, including contextual factors,[8] that may have an impact on outcome status.

Based on the results of outcome measurement, the physical therapist determines the outcome status of the patient or client and whether the identified goals have been met. The physical therapist documents the individual's status and the rationale for conclusion of care.

Physical therapists gather outcome measurements not only to determine the success of interventions within or at the end of an episode of care and to obtain information about the individual's perspective on progress, but also to contribute to comparative effectiveness research. The measurement data that physical therapists collect and analyze help demonstrate the value and impact of physical therapist services on the health of society.

CAP 4 - Physical Therapist Examination and Evaluation: Focus on Tests and Measures

Introduction

Physical therapists engage in an examination process that includes taking the individual's history, conducting a standardized systems review, and performing selected tests and measures to identify potential and existing movement-related disorders. The data gathered during history taking, including answers to review of systems questions, enables the physical therapist to generate diagnostic hypotheses and select specific tests and measures to identify and characterize signs, symptoms, and risk of movement dysfunctions. To establish the individual's specific diagnosis, prognosis, and plan of care through the evaluation process, physical therapists synthesize the collected examination data and determine whether the potential or existing disorders to be managed are within the scope of physical therapist practice.

Based on their subsequent judgments about diagnoses and prognoses, and considering an individual's goals, physical therapists manage an individual by making referrals, providing interventions, conducting reexaminations, and, as necessary, modifying interventions to achieve the individual's goals and outcomes and to determine a conclusion to the plan of care. The detailed physical therapist examination and evaluation process is similar in structure across individuals, but will vary in specific content based on the individual's needs.

History

History taking is a systematic gathering of data related to who the individual is and why he or she is seeking the services of the physical therapist. These data include demographic information, social history, employment and work information, growth and development parameters, living environments, general health status, social and health habits (past and current), family history, medical and surgical history, current conditions or chief complaints, functional status and activity level, medications, and other clinical test findings.

While taking the history, the physical therapist also completes a *review of systems* that consists of a series of questions or checklists to identify symptoms potentially associated with occult disease, medical conditions, and/or adverse medication events that may mimic conditions that are amenable to physical therapist intervention. These findings can provide alternative explanations for the symptoms reported by the individual, with the resultant action being to refer the patient or client to another health care provider. The review of systems typically includes reports related to the following:

- Cardiovascular/pulmonary systems
- Endocrine system
- Eyes, ears, nose, or throat
- Gastrointestinal system
- Genitourinary/reproductive systems
- Hematologic/lymphatic systems
- Integumentary system
- Neurologic/musculoskeletal systems

This thorough history taking occurs regardless of the individual's condition or the practice setting in which the examination takes place. The most important source of information is most often the individual, but additional

sources may include the medical record, the referring clinician, and communication from or with other health care providers, family members, and caregivers. The physical therapist uses this wide array of data to simultaneously identify possible movement- or immobility-related health conditions, health restoration and prevention needs, and coexisting health problems that may or may not require additional testing and that may have implications for referral, intervention, or management.

Systems Review

The *systems review* is a brief, standardized examination of the anatomical and physiological status of the cardiovascular, pulmonary, integumentary, musculoskeletal, and neuromuscular systems and the communication ability, affect, cognition, and learning style of the individual. The data collected allows the physical therapist to screen for the individual's ability to initiate, sustain, and modify purposeful movement for the performance of an action, task, or activity. This baseline screening examination identifies which components of the movement system will require additional tests and measures to rule in or rule out specific diagnoses and to determine the extent or severity of the diagnoses and their impact on the individual's functional capacity and performance.

Tests and Measures

Tests and measures are the means of gathering reliable and valid cellular-level to person-level information about the individual's capacity for, and performance during, movement-related functioning. Physical therapists individualize the selection of tests and measures based on the information gathered during the history and systems review in conjunction with or in the absence of a previously determined pathologic diagnosis. The appropriate selection of tests and measures for a specific individual also depends on the psychometric properties (eg, reliability, validity, scale, responsiveness) and clinical utility of the tests and measures. (See "**Measurement Concepts**" for more explanation.)

Categories of tests and measures can range from health status or quality of life assessment tools, to pathology- or impairment-specific tests, to outcome measurement tools designed to quantify and qualify change over time. Because the severity and specificity of individual needs vary, the examination and evaluation process will be as brief or lengthy as the situation demands. The physical therapist may select and use one or more than one test, or may use portions of several tests based on the purpose of the visit, the severity of the condition, the psychometric properties of the test, and the clinical decisions made during the examination process. Throughout the administration of tests and measures, the physical therapist observes the individual's responses and integrates that information into the developing evaluation.

Physical therapists collect measurement data through many different methods, such as interviewing; observation; administering questionnaires; palpation; auscultation; performance-based assessment; electrophysiological testing; taking photographs and other videographic recordings; recording data using scales, indexes, and inventories; obtaining data through the use of technology-assisted devices; administering self-assessment tests; and reviewing diaries and logs. Physical therapists then analyze and interpret the data to develop the diagnosis, prognosis, and plan of care for each individual.

Each carefully tailored examination includes the most sensitive and specific tests and measures appropriate to the needs of the individual. Selection of tests and measures depends on the findings of the history and systems review. The examination findings, for instance, might indicate that tests should be conducted while the individual performs actions or specific activities or moves from a resting state to an active state. In all cases, the purpose of tests and measures is to identify the existence of or potential for movement-related disorders to identify those individuals who will benefit from physical therapist management.

Data gathered from tests and measures yield a range of findings that may indicate that an intervention may be appropriate for a given individual, including:

- Risk factors (eg, smoking history, falls risk, recent trauma)

- Health, wellness, and fitness (eg, sedentary lifestyle, limited leg strength for squatting, lack of understanding of plantar foot shear during recreational activities)
- Pathology/pathophysiology (eg, diabetes, cellulitis, congestive heart disease)
- Signs and symptoms of pathology and health condition (eg, joint tenderness, pain, elevated blood pressure at rest or with activity, numbness or tingling, edema)
- Impairments to body functions and structures (eg, aerobic capacity, anthropometric characteristics, balance, circulation, cranial and peripheral nerve integrity, gait, integumentary integrity, mental functions, mobility, motor function, muscle performance [including strength, power, endurance, and length], neuromotor development and sensory processing, pain, reflex integrity, skeletal alignment and integrity, sensory integrity, ventilation and respiration)
- Activity limitations and participation restrictions (eg, environmental factors in built or natural environments affecting movement-related performance; need for assistive products or technology to enhance performance; environmental or personal factors impacting an individual's quality of self-care or domestic, education, work, community, social, or civic life)

Collectively, the examination and evaluation process is ongoing and continues throughout the intervention and reexamination phases of management. The physical therapist continually integrates results of specifically selected tests and measures with the history and systems review findings and the results of data gathered from tests and measures. The clinician synthesizes the information to establish the diagnosis, the prognosis, and the plan of care.

Categories of Tests and Measures

The Guide contains general categories of tests and measures that the physical therapist may decide to use during an initial examination visit or during subsequent visits as part of reexamination. Physical therapists may decide to use tests and measures that are not described in the Guide, following the principles stated in the ***Standards for Tests and Measurements in Physical Therapy Practice***.[1]

Each test and measure category includes:

- A general definition and the purpose of the test or measure. All tests and measures produce information used to identify the possible or actual causes of difficulties during attempted movement for performance of essential everyday activities, work tasks, and leisure pursuits.
- Examples of clinical indications that physical therapists may identify during the history and systems review are provided to indicate the need for selection of specific tests and measures. Particular settings or an individual's reports and condition may prompt the physical therapist's selection of tests and measures. Any tests and measures may be considered appropriate in the presence of:
    - Identified or potential for risk factors
    - Identified or potential need to initiate a program that promotes health, wellness, or fitness
    - Identified or suspected pathology or health condition that prevents or alters performance of daily functioning, including self-care and domestic, education, work, community, social, or civic life
    - Requirements of employment that specify minimum capacity for performance

    - Indications for impairment, activity or capacity limitation, participation restriction, developmental delay, or injury that prevents or alters performance of daily activities, including self-care and domestic, education, work, community, social, or civic life
    - Requirements of employment that specify minimum capacity for performance
- Tests and measures (methods and techniques)
- Tools used for gathering data
- Data 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 electrophysiological studies; federal, state, and local work surveillance and safety reports and announcements; and the reported observations of family members, significant others, caregivers, and other interested people.

List of Test and Measure Categories

Test and measure categories are listed in alphabetical order:

- **Aerobic Capacity/Endurance**
- **Anthropometric Characteristics**
- **Assistive Technology**
- **Balance**
- **Circulation (Arterial, Venous, Lymphatic)**
- **Community, Social, and Civic Life**
- **Cranial and Peripheral Nerve Integrity**
- **Education Life**
- **Environmental Factors**
- **Gait**
- **Integumentary Integrity**
- **Joint Integrity and Mobility**
- **Mental Functions**
- **Mobility (Including Locomotion)**
- **Motor Function**
- **Muscle Performance (Including Strength, Power, Endurance, and Length)**
- **Neuromotor Development and Sensory Processing**

- **Pain**
- **Posture**
- **Range of Motion**
- **Reflex Integrity**
- **Self-Care and Domestic Life**
- **Sensory Integrity**
- **Skeletal Integrity**
- **Ventilation and Respiration**
- **Work Life**

CAP 5 - Test and Measure Categories

5.1 Aerobic Capacity/Endurance

Aerobic capacity/endurance **is the ability to perform work or participate in activity over time using the body's oxygen uptake, delivery, and energy release mechanisms.**

The physical therapist uses tests and measures to determine the appropriateness of an individual's responses to increased oxygen demand. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired aerobic capacity

- Bed rest for more than 24 hours
- Disease history
- Obesity
- Recent injury that impairs movement performance
- Sedentary lifestyle
- Smoking history

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, maximal oxygen uptake for age and sex, running efficiency for sprint vs distance capacity)
- Health and wellness (eg, desire to achieve optimal weight level, inadequate understanding of the role of aerobic capacity and endurance during activity performance)

Pathology or health condition

- Cardiovascular (eg, stroke, coronary artery disease [CAD], peripheral vascular disease [PVD])
- Endocrine or metabolic (eg, osteoporosis, diabetes)
- Musculoskeletal (eg, arthritis)
- Neuromuscular (eg, Parkinson disease [PD])
- Pulmonary (eg, asthma, chronic obstructive pulmonary disease [COPD], cystic fibrosis [CF])
- Multisystem (eg, cancer, trauma, deconditioning)

Impairments of body functions and structures

- Circulation (eg, abnormal heart rate and rhythm, abnormal blood pressure at rest or with activity)

- Muscle performance (eg, specific or generalized muscle weakness, decreased muscle endurance)
- Posture (eg, abnormal body alignment)
- Range of motion (ROM) (eg, hypermobility)
- Ventilation and respiration (eg, abnormal oxygen uptake and delivery)

Activity limitations and participation restrictions

- Self-care (eg, inability to perform tasks due to abnormal vital sign response to increased movement or activity)
- Domestic life (eg, inability to vacuum due to angina)
- Education life (eg, difficulty participating in classroom activities due to dyspnea)
- Work life (eg, inability to stand at counter for long periods due to fatigue)
- Community, social, and civic life (eg, inability to engage in community social events due to exhaustion)

Examples of What Tests and Measures May Characterize or Quantify:

- Aerobic capacity during functional activities (eg, activities of daily living [ADL] scales, indexes, instrumental activities of daily living [IADL] scales, observations) **Specific Tests and Measures in PTNow**
- Aerobic capacity during standardized exercise test protocols (eg, ergometry, step tests, time/distance walk/run tests, treadmill tests, wheelchair tests) **Specific Tests and Measures in PTNow**
- Cardiovascular signs and symptoms in response to increased oxygen demand with exercise or activity, including observational changes (color, diaphoresis), pressures, and flow; heart rate, rhythm, and sounds; and symptomatic vascular responses (eg, angina, claudication, and exertion scales; electrocardiography; observations; palpation; sphygmomanometry) **Specific Tests and Measures in PTNow**
- Pulmonary signs and symptoms in response to increased oxygen demand with exercise or activity (eg, breath and voice sounds); observational changes (diaphoresis and skin color); gas exchange; respiratory pattern, rate, and rhythm; and ventilatory flow, force, and volume (eg, auscultation, dyspnea and exertion scales, gas analyses, observations, oximetry, palpation, pulmonary function tests) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Devices for gas analysis
- Electrocardiographs
- Ergometers
- Force meters

- Indexes
- Measured walkways
- Nomograms
- Observations
- Palpation
- Pulse oximeters
- Scales for weighing
- Sphygmomanometers
- Spirometers
- Steps
- Stethoscopes
- Stopwatches
- Treadmills

Examples of Data Used in Documentation:

- Cardiovascular and pulmonary signs, symptoms, and responses per unit of work
- Gas volume, concentration, and flow per unit of work
- Heart rate and rhythm per unit of work
- Oxygen uptake during performance of functional activity
- Oxygen uptake, time and distance walked or bicycled, and maximal aerobic performance
- Peripheral vascular responses per unit of work
- Respiratory rate, rhythm, pattern, and breath sounds per unit of work

5.2 Anthropometric Characteristics

Anthropometric characteristics **are traits that describe body dimensions, such as height, weight, girth, and body fat composition.**

The physical therapist uses tests and measures to quantify anthropometric traits and to compare an individual's current data with his or her previous data or with relevant predictive norms.

Examples of Clinical Indications:

Risk factors for altered anthropometric characteristics

- Alteration in body fluid or distribution of fluid
- Alteration in nutritional status
- Disease history
- High-risk pregnancy
- Obesity or cachexia
- Sedentary lifestyle

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, excess body fat leading to limited mobility, lack of nutrition resources)
- Health and wellness (eg, inadequate understanding of the relationship between nutrition and body composition)

Pathology or health condition

- Cardiovascular (eg, ascites, lymphedema)
- Endocrine or metabolic (eg, weight gain, weight loss)
- Genitourinary (eg, fluid loss or retention with pregnancy or renal failure)
- Musculoskeletal (eg, muscular dystrophy, total knee replacement [TKR])
- Neuromuscular (eg, premature birth, spinal cord injury [SCI])
- Multisystem (eg, acquired immunodeficiency syndrome [AIDS], cancer)

Impairment of body functions and structures

- Circulation (eg, abnormal regional distribution, flow, and pressure)
- Gait (eg, inefficient gait due to larger center of gravity during pregnancy)
- Integumentary integrity (eg, local or systemic retention or loss of fluid)
- Muscle performance (eg, hypertrophy, atrophy)
- Motor function (eg, hemiplegia)

Activity limitations and participation restrictions

- Self-care (eg, difficulty with donning shoes, stockings, or long-sleeved garments due to abnormal fat or fluid distribution)
- Domestic life (eg, difficulty with scrubbing, accessing limited spaces in bathrooms)
- Education life (eg, inability to gain access to classroom environment due to delayed growth)

- Work life (eg, inability to restock shelves due to decreased range of motion and decreased muscle performance)
- Community, social, and civic life (eg, inability to transfer in and out of vehicles, climb stairs, or participate in amateur sports due to edema or abnormal body size; decreased participation in social activities due to altered body image)

Examples of What Tests and Measures May Characterize or Quantify:

- Body composition (eg, body mass index, impedance measurement, skinfold thickness measurement) **Specific Tests and Measures in PTNow**
- Body dimensions (eg, girth measurement, length measurement, head circumference) **Specific Tests and Measures in PTNow**
- Edema (eg, girth measurement, palpation, scales for weighing, volume measurement) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Body mass index
- Calipers
- Cameras and photographs
- Impedance devices
- Nomograms
- Palpation
- Rulers
- Scales for weighing
- Tape measures
- Video cameras and video recordings
- Volumeters

Examples of Data Used in Documentation:

- Body composition
- Girth
- Head circumference
- Height, weight
- Presence and severity of abnormal body fluid distribution
- Volume

5.3 Assistive Technology

Assistive technology **is any item, piece of equipment, or product system—acquired commercially off the shelf, modified, or customized—that is used to increase, maintain, or improve the functional capabilities of a person with a disability. Discrete types of assistive technology include:**

- **Aids for locomotion**
- **Orthotic devices**
- **Prosthetic requirements**
- **Seating and positioning technology**
- **Other assistive technology to improve function**

Aids for Locomotion

Aids for locomotion refer to the ability to move from one location to another. There are 2 broad categories of aids for locomotion: (1) ambulation aids, that is, supportive devices needed to improve the balance and stability of a person who is able to attain and maintain an upright standing position; and (2) wheeled mobility technologies needed for locomotion when walking is not safe or functional. Ambulation aids include canes, crutches, walkers, rollators, platform walkers, and gait trainers. Wheeled mobility technologies include manual wheelchairs, scooters or power-operated vehicles (POVs), power wheelchairs, and specialty mobility devices.

The physical therapist uses tests and measures to determine the optimal aids for function. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for improper or inadequate use of aids for locomotion

- Deconditioning and/or chronic illness (eg, rheumatoid arthritis [RA])
- Inability to maintain mobility at speed of adult with no walking impairments
- Isolation or depression
- Repetitive use injury in the upper extremities (eg, rotator cuff injury)
- Risk of falling (eg, during ambulation or tips and falls of wheelchair)

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, use of inappropriate biomechanics for wheelchair propulsion)
- Health and wellness (eg, inadequate knowledge about the effects of repetitive movements, lack of awareness of potential use of ambulation aids in the community)

Pathology or health condition

- Cardiovascular (eg, lymphedema, edema, stroke, peripheral vascular disease [PVD])

- Integumentary (eg, pressure ulcers)
- Musculoskeletal (eg, amputation, osteoarthritis [OA])
- Neuromuscular (eg, spinal cord injury [SCI], Parkinson disease [PD], multiple sclerosis [MS])
- Multisystem (eg, complex regional pain syndrome, Guillain-Barré syndrome [GBS], RA)

Impairments of body functions and structures

- Anthropometric characteristics (eg, leg length discrepancy, atypical limb/trunk ratio)
- Motor function (eg, lower extremity weakness/paralysis, reduced motor control)
- Muscle performance (eg, dystonia, quadriplegia, ataxia, athetosis, tremor)
- Range of motion (eg, hip, knee, or ankle limitations affecting gait or seated position)
- Ventilation and respiration (eg, limited vital capacity, ventilator dependency)

Activity limitations and participation restrictions

- Self-care (eg, difficulty with bathing due to impaired endurance)
- Domestic life (eg, inability to prepare family meals due to impaired ambulation, endurance, or reach)
- Education life (eg, inability to negotiate hallways in school building)
- Work life (eg, inability to maneuver in meeting rooms)
- Community, social, and civic life (eg, difficulty with ambulating or wheeling long distances)

Examples of What Tests and Measures May Characterize or Quantify:

- Environmental access (eg, home access, transportation plan, work or school access, terrain typically encountered) **Specific Tests and Measures in PTNow**
- Functional activities (eg, activities of daily living [ADL] scales, functional scales, instrumental activities of daily living [IADL] scales, interviews, observations) **Specific Tests and Measures in PTNow**
- Gait (eg, gait assessment measures) **Specific Tests and Measures in PTNow**
- Locomotion (eg, quality assessment, endurance assessment) **Specific Tests and Measures in PTNow**
- Simulation and/or trial of aids to locomotion (eg, simulation trials with wheeled mobility or ambulation device) **Specific Tests and Measures in PTNow**
- Technology currently being used (eg, assessment of current aids to locomotion, including features, age, condition) **Specific Tests and Measures in PTNow**
- Wheelchair mobility function (eg, wheelchair tests) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Activity status indexes
- Angle finders/inclinometers
- Calipers
- Flexible rulers
- Functional performance inventories
- Goniometers
- Motion analysis or gait analysis equipment
- Roll-on/accessible scales for weighing
- Stopwatches
- Tape measures
- Trials of aids to locomotion (ambulation aids, wheeled mobility devices)
- Video cameras and video recordings
- Yardsticks

Examples of Data Used in Documentation:

- Clinical rationale to support necessity of recommended devices
- Current mobility technologies description (eg, make, model, age, condition, accessories)
- Endurance level
- Environmental considerations (eg, home, school, and work access; transportation)
- Functional level in transfers and locomotion
- Functional level with or without devices
- Functional mobility concerns, needs, and goals
- Height and weight and other anthropometric body measurements
- Muscle performance measurements
- Patient and, as appropriate, caregiver goals and specific limitations that may affect care
- Patient and caregiver description of experience with aids to locomotion
- Range of motion measurements
- Reflex/tonal influence on body

- Sitting balance measurements (eg, unsupported and supported; impact of external supports)
- Technology simulation and/or trial results

Orthotic Devices

Orthotic devices refer to externally applied devices "used to modify the structural and functional characteristics of the neuromuscular and/or skeletal system" (International Organization for Standardization [ISO], general terms for external limb prostheses and external orthoses, ISO 8549-1:1989) or devices used to protect some part of the body from potential injury. These devices include braces, serial casts, splints, shoe inserts, helmets, protective and supportive taping, compression garments, corsets, and elastic wraps.

The physical therapist uses tests and measures to determine the optimal technology for function. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for improper or inadequate use of orthosis

- Risk of skin breakdown
- Uncontrolled edema
- Weight fluctuations

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inability to participate in endurance activities with current orthosis, inadequate orthotic components or fit for running or walking)
- Health and wellness (eg, inadequate knowledge about importance of orthotic fit during recreational activities)

Pathology or health condition

- Cardiovascular (eg, peripheral vascular disease [PVD], stasis ulcer)
- Integumentary (eg, burn, pressure ulcer)
- Musculoskeletal (eg, compartment syndrome, scoliosis, heterotopic ossification)
- Neuromuscular (eg, hemiplegia, dystonia, seizure disorder)
- Multisystem (eg, lupus erythematosus, Guillain-Barré syndrome [GBS])

Impairments of body functions and structures

- Circulation (eg, decreased ankle motion, claudication lymphedema)
- Gait (eg, foot drop, circumduction, knee genu recurvatum)
- Muscle performance (eg, decreased muscle endurance)
- Neuromuscular (eg, spasticity, hypotonia)

- Pain (eg, osteoporotic spinal fractures)

Activity limitations and participation restrictions

- Self-care (eg, inability to don ankle-foot orthosis [AFO] due to edema)
- Domestic life (eg, inability to vacuum due to back pain)
- Education (eg, inability to use a keyboard due to improper fit of hand orthosis)
- Work life (eg, inability to manipulate parts on assembly line due to pain and tingling in wrist and fingers)
- Community, social, and civic life (eg, inability to self-propel manual wheelchair in neighborhood due to poor fit or function of thoracolumbrosacral orthosis [TLSO], inability to play because unable to access play area)

Examples of What Tests and Measures May Characterize or Quantify:

- Components, alignment, fit, and ability to use and care for the orthotic device (eg, interviews, logs, observations, pressure-sensing maps, reports) **Specific Tests and Measures in PTNow**
- Impairments, activity limitations, or participation restrictions with use of the orthotic device (eg, motor performance tests, activity status indexes, activities of daily living [ADL] scales, functional performance inventories, health assessment questionnaires, instrumental activities of daily living [IADL] scales, pain scales, play scales, technology-assisted assessments, videographic assessments) **Specific Tests and Measures in PTNow**
- Involved limb or adjacent segment impairment, including edema, range of motion [ROM], skin integrity, and strength (eg, goniometry, muscle tests, observations, palpation, photographic assessments, skin integrity tests, technology-assisted assessments, videographic assessments, volume measurement) **Specific Tests and Measures in PTNow**
- Orthotic device use during functional activities (eg, ADL scales, functional scales, IADL scales, interviews, observations) **Specific Tests and Measures in PTNow**
- Safety during use of the orthotic device (eg, diaries, fall scales, interviews, logs, observations, reports) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Goniometers
- Pressure-sensing devices
- Scales for weighing
- Tape measures
- Technology-assisted analysis systems
- Video cameras and video recordings

- Volumeters

Examples of Data Used in Documentation:

- Anthropometric measurements of involved limb or adjacent segment
- Description of alignment and fit of the device
- Functional level in using and caring for device
- Functional level with and without devices
- Justification and clinical rationale for components of orthotic devices
- Level of independence with device
- Level of practicality of device
- Level of safety with device
- Movement patterns with or without device

Prosthetic Requirements

Prosthetic requirements are the biomechanical elements necessitated by the loss of a body part. A *prosthesis* is an artificial device used to replace a missing part of the body.

The physical therapist uses tests and measures to assess the effects and benefits, components, alignment and fit, and safe use of the prosthesis. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for improper or inadequate use of prosthesis

- Cachexia
- Cognitive impairment
- Obesity
- Severe deconditioning and/or chronic illness (eg, brittle medical condition or end-stage disease)
- Skin breakdown risk (eg, insensate residual limb, extreme scarring)
- Unilateral or bilateral lower extremity amputation that is very high (eg, hemipelvectomy, bilateral short transfemoral amputation)

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inability to participate in endurance activities, inadequate prosthetic components or fit for running)
- Health and wellness (eg, inadequate knowledge about importance of prosthetic fit)

Pathology or health condition

- Cardiovascular (eg, peripheral vascular disease [PVD], coronary artery disease [CAD])
- Endocrine or metabolic (eg, diabetes)
- Integumentary (eg, burn, frostbite, scarring)
- Musculoskeletal (eg, amputation, joint injury, compartment syndrome)
- Multisystem (eg, congenital anomalies, gangrene)

Impairments of body functions and structures

- Aerobic capacity (eg, dyspnea on exertion)
- Circulation (eg, claudication)
- Gait (eg, altered stride length)
- Muscle performance (eg, decreased muscle endurance)
- Pain (eg, residual limb pain)

Activity limitations and participation restrictions

- Self-care (eg, inability to don and doff prosthesis independently)
- Domestic life (eg, inability to climb stairs with toddler)
- Education life (eg, inability to use a keyboard due to loss of fingers)
- Work life (eg, inability to walk child to school due to distal residual limb ache)
- Community, social, and civic life (eg, inability to engage in bird watching due to residual limb discomfort on uneven terrain, inability to ride bicycle to school due to poor prosthetic fit)

Examples of What Tests and Measures May Characterize or Quantify:

- Components, alignment, fit, and ability to care for the prosthetic device (eg, interviews, logs, observations, pressure-sensing maps, reports) **Specific Tests and Measures in PTNow**
- Impairments, activity limitations, or participation restrictions with use of the prosthetic device (eg, aerobic capacity tests, motor performance tests, activity status indexes, activities of daily living [ADL] scales, functional performance inventories, health assessment questionnaires, instrumental activities of daily living [IADL] scales, pain scales, play scales, technology-assisted assessments, videographic assessments) **Specific Tests and Measures in PTNow**
- Prosthetic device use during functional activities (eg, ADL scales, functional scales, balance scales, IADL scales, interviews, observations) **Specific Tests and Measures in PTNow**
- Residual limb or adjacent segment and remaining extremities, including edema, range of motion (ROM), skin integrity, and strength (eg, goniometry, muscle tests, observations, palpation, photographic assessments, skin integrity tests, technology-assisted assessments, videographic assessments, volume measurement) **Specific Tests and Measures in PTNow**

- Safety during use of the prosthetic device (eg, diaries, fall scales, interviews, logs, observations, reports) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Diaries, journals, logs
- Dynamometers, weights, manual resistance
- Goniometers
- Inclinometers
- Indexes
- Interviews
- Inventories
- Observations
- Palpation
- Pressure-sensing devices
- Questionnaires
- Scales for weighing
- Stopwatches
- Tape measures
- Technology-assisted analysis systems
- Video cameras and video recordings
- Volumeters

Examples of Data Used in Documentation:

- Description of alignment and fit of devices
- Functional level in using and caring for device
- Functional level with and without devices
- Level of practicality of device
- Level of safety with and without device
- Movement patterns with or without device

- Physiological and functional effects of device
- Prosthetic device component description
- Residual limb or adjacent segment(s) description

Seating and Positioning Technology

Seating and positioning technology includes individually selected or configured or custom-designed technology for one or more of the following purposes: (1) to provide support to a person's body in a desired sitting position, (2) to provide support in positions other than a sitting position (eg, standing, sidelying, supine), (3) to provide support in a way that will assist in maintaining or restoring skin integrity, or (4) to provide a mechanical method to change position relative to gravity (eg, tilt, recline, elevate, stand).

The physical therapist uses tests and measures to determine the optimal technology for function. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for improper or inadequate use of seating and positioning technology

- Impairment or dependence in performing functional activities
- Pain and/or fatigue with prolonged sitting
- Postural asymmetry or deformity (eg, scoliosis, habitual suboptimal posture)
- Respiratory compromise
- Risk of or presence of pressure ulcers or skin breakdown

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, use of inappropriate biomechanics for wheelchair propulsion due to poor sitting posture)
- Health and wellness (eg, inadequate knowledge of importance of skin protection)

Pathology or health condition

- Cardiovascular (eg, stroke, peripheral vascular disease [PVD])
- Integumentary (eg, cellulitis)
- Musculoskeletal (eg, osteoarthritis [OA], amputation, arthrogryposis, hip dislocation)
- Neuromuscular (eg, spinal cord injury [SCI], Parkinson disease [PD])
- Multisystem (eg, complex regional pain syndrome [CRPS], rheumatoid arthritis [RA])

Impairments of body functions and structures

- Anthropometric characteristics (eg, leg length discrepancy)

- Circulation (eg, lymphedema, edema)
- Integumentary integrity (eg, pressure ulcers)
- Motor function (eg, ataxia, athetosis, dystonia, tremor, righting reactions)
- Muscle performance (eg, impaired sitting balance, quadriplegia)
- Posture (eg, scoliosis, windswept deformity)
- Range of motion (eg, hamstring tightness, hip extension contracture)
- Sensation (eg, absent or impaired sensation)
- Ventilation and respiration (eg, limited vital capacity, mechanical suction)

Activity limitations and participation restrictions

- Self-care (eg, inability to bathe independently due to loss of balance)
- Domestic life (eg, inability to prepare family meals due to inadequate reach)
- Education life (eg, inability to tolerate sitting for duration of class)
- Work life (eg, inability to access office equipment)
- Community, social, and civic life (eg, inability to tolerate mobility on uneven surfaces, limiting access to play environment for children and recreation center for adults)

Examples of What Tests and Measures May Characterize or Quantify:

- Environmental access (eg, home access, transportation plan, work or school access, terrain typically encountered) **Specific Tests and Measures in PTNow**
- Equipment simulation and/or trial (eg, simulation with or without seating technology) **Specific Tests and Measures in PTNow**
- Functional activities using seating and positioning technology (eg, activities of daily living [ADL] scales, functional scales, instrumental activities of daily living [IADL scales], interviews, observations) **Specific Tests and Measures in PTNow**
- Mat activities (eg, sitting balance, range of motion, posture in sitting and supine positions)**Specific Tests and Measures in PTNow**
- Technology currently being used (eg, assessment of current seating and positioning technology)**Specific Tests and Measures in PTNow**
- Tolerance of seating and positioning technology (eg, sitting time, pain scale, discomfort scale, function from seating position, interview and observations) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Angle finder/inclinometers
- Calipers

- Flexible rulers
- Goniometers
- Pressure mapping/sensing systems
- Roll-on/accessible scales for weighing
- Seating simulators (planar or molded)
- Shape-sensing technologies (computer-aided design/computer-aided manufacturing [CAD/CAM])
- Tape measures
- Trial seating and positioning devices
- Yardsticks

Examples of Data Used in Documentation:

- Anthropometric measurements (eg, height, weight, seating dimensions)
- Clinical rationale to support necessity of recommended devices
- Current seating, positioning, mobility technologies description (eg, make, model, age, condition, accessories)
- Description of training needs for successful integrated use of the components in all settings of anticipated use
- Environmental and transportation considerations (eg, home, school, or workplace needs)
- Functional levels (eg, sitting balance, transfers, locomotion, feeding, swallowing)
- Interface pressures and effectiveness of pressure relief activities
- Patient and, as appropriate, caregiver goals and specific limitations that may affect care, past experience with postural support devices
- Postural measurements (eg, pelvis position and flexibility, spinal position)
- Range of motion (eg, hip, knee, ankle, upper extremity)
- Reflex/tonal influence on body
- Sensation and integumentary status (eg, moisture, heat, pressure, friction, shear)
- Sitting balance measurements (eg, unsupported, supported and impact of external supports)
- Technology simulation and/or trial results

Other Assistive Technology to Improve Function

Other assistive technology to improve function includes 3 categories of technology: (1) transfer technologies, including gait belts, sliding boards, sliding sheets, and manual or electric lifts designed to move a person from one surface to another; (2) assistive devices used in a bathroom setting, including raised toilet seats, adaptive commodes, shower commodes, shower chairs, benches and sliders; and (3) electronic aids to daily living (EADLs), including environmental controls and access methods to electronic technologies (eg, sip-and-puff switch to control a power wheelchair, adapted switch to control an automatic door opener or hospital bed movement).

The physical therapist uses tests and measures to determine the optimal technology for function. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for improper or inadequate use of other assistive technology to improve function

- Confined to bed, on bed rest
- Falls history
- Sedentary lifestyle for individuals with assistive technology
- Unkempt appearance

Health, wellness, and fitness needs

- Health and wellness (eg, inadequate knowledge about proper use of electric lift device when transporting to and from community events and medical appointments)

Pathology or health condition

- Cardiovascular (eg, stroke, anoxic brain injury, edema, lymphedema)
- Endocrine or metabolic (eg, diabetes, peripheral neuropathy)
- Integumentary (eg, pressure ulcer)
- Musculoskeletal (eg, spinal compression fractures, muscular dystrophy [MD])
- Neuromuscular (eg, spinal cord injury [SCI], multiple sclerosis [MS])
- Multisystem (eg, multiple comorbidities, such as end-stage renal disease [ESRD], chronic obstructive pulmonary disease [COPD], rheumatoid arthritis [RA])

Impairments of body functions and structures

- Aerobic capacity (eg, decreased endurance, hypoventilation)
- Balance and locomotion (eg, poor sitting balance that limits ability to transfer from bed to chair and from chair to bed)
- Circulation (eg, postural hypotension)
- Integumentary (eg, skin breakdown associated with improper or inadequate use of device, such as unpadded bath bench, solid full-body sling for mechanical lift)

- Motor function (eg, athetosis, ataxia)
- Muscle performance (eg, decreased muscle endurance, weakness, paralysis)

Activity limitations and participation restrictions

- Self-care (eg, inadequate use of appropriate technology—such as slide boards, raised toilet seats with drop arms, shower benches, mechanical lifts with removable slings—to assist with daily activities)
- Domestic life (eg, inability to open and close door to house for safe entry and exit)
- Education life (eg, inadequate safety awareness related to use of attendant control for power wheelchair, remote stop switch to allow mobility around the campus)
- Work life (eg, inability to consistently and effectively operate standard joystick controller on power wheelchair due to fatigue during day)
- Community, social, and civic life (eg, inability to operate power wheelchair control on uneven terrain, inability to transfer into automobile)

Examples of What Tests and Measures May Characterize or Quantify:

- Ability to effectively and safely use and maintain assistive technology (eg, diaries, fall scales, interviews, logs, observations, reports) **Specific Tests and Measures in PTNow**
- Assistive technology use to perform functional activities (eg, activities of daily living [ADL] scales, functional scales, instrumental activities of daily living [IADL] scales, interviews, observations)**Specific Tests and Measures in PTNow**
- Environmental access (eg, home access, transportation plan, work or school access, terrain typically encountered) **Specific Tests and Measures in PTNow**
- Impairments, activity limitations, or participation restrictions with use of the assistive devices for functional activities (eg, aerobic capacity tests, motor performance tests, activity status indexes, ADL scales, functional performance inventories, health assessment questionnaires, IADL scales, pain scales, play scales, technology-assisted assessments, videographic assessments) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Goniometers
- Tape measures
- Technology-assisted analysis systems
- Trial assistive technology devices
- Video cameras and video recordings
- Wheelchair seating simulators (eg, for switch access assessment)

Examples of Data Used in Documentation:

- Activity or participation status with assistive technology
- Clinical rationale to support necessity of recommended assistive technology
- Descriptions of assistive technology component
- Functional level in using and caring for assistive technology
- Functional level with and without devices
- Level of practicality of assistive technology
- Level of safety with the recommended assistive technology
- Physiological and functional effects of assistive technology

5.4 Balance

Balance **is the ability to maintain the body in equilibrium with gravity both statically (ie, while stationary) and dynamically (ie, while moving), and while upright (ie, standing, ambulating) and while sitting (ie, supported, unsupported).**

The physical therapist uses tests and measures to determine an individual's level of balance. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, participation restriction, or disability.

Examples of Clinical Indications:

Risk factors for impaired balance

- Back or limb pain
- Concussion history
- Decreased coordination
- Impaired limb or trunk sensation
- Obesity
- Polypharmacy
- Stroke history
- Vestibular disorder history

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inadequate static or dynamic balance for climbing, limited leg strength for squatting)
- Health and wellness (eg, inadequate understanding of need for dynamic balance in all functional/recreational actions)

Pathology or health condition

- Cardiovascular (eg, stroke, peripheral vascular disease [PVD], hypoxia)
- Endocrine or metabolic (eg, diabetes mellitus with peripheral neuropathy)
- Musculoskeletal (eg, muscular dystrophy [MD])
- Neuromuscular (eg, central vestibular disorders, Parkinson disease [PD], cerebral palsy [CP])
- Multisystem (eg, trauma, Down syndrome [DS])

Impairments of body functions and structures

- Circulation (eg, claudication)
- Joint integrity and mobility impairment (eg, unstable ankle with standing and movement)
- Motor function (eg, abnormal movement patterns)
- Muscle performance (eg, asymmetrical muscle weakness, decreased power and endurance, ankle inversion with spasticity)
- Skeletal integrity (eg, severe kyphoscoliosis)

Activity limitations and participation restrictions

- Self-care (eg, difficulty with dressing due to abnormal sitting and standing balance)
- Domestic life (eg, inability to do the laundry due to difficulty with transitional balance)
- Education life (eg, inability to safely negotiate classroom)
- Work life (eg, inability to do shopping as household manager due to unsafe balance)
- Community, social, and civic life (eg, inability to dance or to coach a Little League team due to unsafe balance)

Examples of What Tests and Measures May Characterize or Quantify:

- Balance during functional activities with or without the use of assistive technology (eg, activities of daily living [ADL] scales, instrumental activities of daily living [IADL] scales, observations, videographic assessments) **Specific Tests and Measures in PTNow**
- Balance (dynamic and static) with or without the use of assistive technology (eg, balance scales; nerve conduction studies and needle, fine wire, or surface electromyography; dizziness inventories; dynamic posturography; fall scales; motor impairment tests; observations; photographic assessments; postural control tests) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Diaries

- Force platforms
- Motion analysis systems
- Observations
- Posturography
- Profiles
- Rating scales
- Scales for weighing
- Technology-assisted analysis systems
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Balance characteristics with or without use of devices or equipment
- Balance ratings on and in different physical environments
- Level of safety during balance
- Quantification of static and dynamic balance in sitting and standing or while ambulating

5.5 Circulation (Arterial, Venous, Lymphatic)

Circulation **is the movement of blood through organs and tissues to deliver oxygen and to remove carbon dioxide and the passive movement (drainage) of lymph through channels, organs, and tissues for removal of cellular byproducts and inflammatory wastes.**

The physical therapist uses the results of tests and measures to determine whether the cardiovascular pump, circulation, oxygen delivery, and lymphatic drainage systems are adequate to meet the body's demands at rest and with activity. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, participation restriction, or disability.

Examples of Clinical Indications:

Risk factors for impaired circulation

- Cardiovascular disease history
- Diabetes
- Hypercholestremia
- Hypertension
- Sedentary lifestyle

- Smoking history

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, suboptimal requirements for running, swimming, skiing)
- Health and wellness (eg, suboptimal for age, sex, and work requirements)

Pathology or health condition

- Cardiovascular (eg, atherosclerosis, coronary artery disease [CAD], peripheral vascular disease [PAD], lymphedema, lymphadenitis, congenital birth defect, congestive heart failure [CHF], stroke)
- Endocrine or metabolic (eg, diabetes)
- Genitourinary (eg, renal hypertension, vulvovaginal pain)
- Integumentary (eg, cellulitis)
- Musculoskeletal (eg, fracture)
- Neuromuscular (eg, spinal cord injury [SCI])
- Multisystem (eg, cancer, trauma)

Impairments of body functions and structures

- Circulation (eg, abnormal cardiovascular pump function, including alterations in heart rate and rhythm and blood pressure at rest or with activity; orthostatic hypotension; angina; edema)
- Muscle performance (eg, ischemic pain with activity, localized swelling or tingling)
- Ventilation and respiration (eg, dyspnea, orthopnea)

Activity limitations and participation restrictions

- Self-care (eg, difficulty bathing and dressing due to dyspnea, angina, cramping, lymphedema, or regional pain)
- Domestic life (eg, difficulty with cooking and cleaning, inability to do yard work due to angina)
- Education life (eg, difficulty taking notes in class due to limited use of upper extremities with lymphedema)
- Work life (eg, difficulty with lifting, carrying, or walking due to angina, dyspnea, cramping, or regional pain; difficulty with computer work due to pain with seated repetitive use of upper extremities)
- Community, social, and civic life (eg, inability to play sports, access public facilities, or access public transportation due to circulatory and lymphatic drainage abnormalities)

Examples of What Tests and Measures May Characterize or Quantify:

- Cardiovascular signs (eg, auscultation, electrocardiography, girth measurement, observations, palpation, sphygmomanometry, thermography) **Specific Tests and Measures in PTNow**
- Cardiovascular and lymphatic symptoms (eg, angina, dyspnea, orthopnea, claudication, pain and perceived exertion scales) **Specific Tests and Measures in PTNow**
- Physiological responses to position change, (eg, auscultation, electrocardiography, observations, palpation, sphygmomanometry, distal or digit temperature changes) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Doppler ultrasonographs
- Electrocardiographs
- Observations
- Palpation
- Scales for weighing
- Sphygmomanometers
- Stethoscopes
- Tape measures
- Thermographs
- Tilt tables
- Volumetric measures

Examples of Data Used in Documentation:

- Cardiovascular signs and symptoms at rest and with activity and edema
- Central pressure and volume
- Intracranial pressure responses
- Nail changes
- Peripheral arterial circulation status
- Peripheral lymphatic circulation status
- Peripheral pressure and volume
- Peripheral venous circulation status
- Physiological responses to position change
- Presence and severity of abnormal heart sounds, rate, or rhythm at rest and with activity

- Presence of bruits
- Quantifications of cardiovascular pump demand
- Skin color
- Vital signs at rest and with activity

5.6 Community, Social, and Civic Life

Community, social, and civic life **refers to the ability to engage in organized social life outside the home. Activities may be play, recreation, and leisure (community and social life) and religion and spirituality, human rights, politics, and citizenship (civic life).**

Community integration or reintegration is the process of assuming or resuming roles and functions in the community, involving tasks such as accessing transportation, community environments, and public facilities.*Social integration or reintegration* is the process of assuming or resuming roles and functions of a vocational and enjoyable pastimes, such as recreational activities and hobbies. *Civic life integration or reintegration* involves taking roles in local or national activities of citizenship.

The physical therapist uses tests and measures to make judgments as to whether an individual is prepared to assume or resume community roles, including all instrumental activities of daily living (IADL), with or without the need for assistive technology to facilitate participation. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, participation restriction, or disability.

Examples of Clinical Indications:

Risk factors for activity limitations and participation restrictions in community, social, and civic life

- Falls risk in community environments
- Impaired endurance (eg, inability to tolerate distances required for community mobility for typical daily activities)
- Inefficient locomotion (eg, inability to move at speed of unimpaired walking adult)
- Isolation and/or depression
- Lack of safety awareness in all environments (eg, visual impairment that affects depth perception, field deficits, and way finding)
- Mobility impairments (eg, inability to drive automobile with or without adaptations secondary to impairments from traumatic brain injury [TBI])

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, limited endurance to be mobile in community environments)
- Health and wellness (eg, inadequate understanding of community resources for adaptive fitness programs)

Pathology or health condition

- Cardiovascular (eg, congestive heart failure [CHF], peripheral vascular disease [PVD], stroke)
- Genitourinary (eg, pelvic floor dysfunction, urinary incontinence)
- Musculoskeletal (eg, amputation, status after joint replacement)
- Neuromuscular (eg, cerebellar ataxia, cerebral palsy [CP], multiple sclerosis [MS], Parkinson disease [PD])
- Pulmonary (eg, asthma, cystic fibrosis [CF], chronic obstructive pulmonary disease [COPD])
- Multisystem (eg, obesity, diabetes)

Impairments of body functions and structures

- Circulation (eg, claudication)
- Cognitive (eg, memory, judgment, way finding, impulsivity)
- Motor function (eg, abnormal movement control, incoordination, ataxia)
- Muscle performance (eg, decreased strength and muscular endurance)
- Posture (eg, pain with prolonged sitting, kyphotic posture, hip flexion contractures)
- Ventilation (eg, abnormal breathing pattern, oxygen desaturation)

Activity limitations and participation restrictions

- Civic life (eg, inability to resume civic activities due to difficulty manipulating voting cards to hand to voters during an election)
- Community and social life (eg, inability to attend a concert due to incontinence, inability to play on the park equipment due to limited dynamic balance, inability to use recreational facilities due to abnormal movement control)

Examples of What Tests and Measures May Characterize or Quantify:

- Ability to assume or resume community, social, and civic activities with or without assistive technology (eg, activity profiles, disability indexes, functional status questionnaires, IADL scales, observations, physical capacity tests) **Specific Tests and Measures in PTNow**
- Ability to gain access to community, social, and civic environments (eg, needs assessment, barrier identification, interviews, observations, transportation assessments) **Specific Tests and Measures in PTNow**
- Safety in community, social, and civic activities and environments (eg, diaries, falls risk assessments, interviews, logs, observations, videographic assessments) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs

- Data loggers
- Driving simulators
- Trial of assistive technology during performance of activities in community settings
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Clinical rationale to justify need for appropriate assistive technology to participate in community, social, and civic life
- Level of ability to participate in variety of environments
- Level of safety in community during social and civic activities
- Physiological responses to activity

5.7 Cranial and Peripheral Nerve Integrity

Cranial nerve integrity **is the soundness of the 12 pairs of nerves connected with the brain, including their somatic, visceral, afferent, and efferent components.** ***Peripheral nerve integrity*** **is the soundness of the spinal nerves, including their afferent and efferent components.**

The physical therapist uses the results of tests and measures to determine whether cranial and peripheral nerve function is intact or impaired.

Examples of Clinical Indications:

Risk factors for impaired cranial or peripheral nerve integrity

- Crush injury
- Frailty
- Habitual suboptimal posture
- Repetitive movements
- Risk of falling

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, schoolchild's inadequate hand control, limited neuromuscular control of jumping, adult's decline on continuum of functional to frail)
- Health and wellness (eg, inadequate comprehension of value of sensation in gross motor activities)

Pathology or health condition

- Cardiovascular (eg, stroke)

- Endocrine or metabolic (eg, Ménière disease, viral encephalitis)
- Integumentary integrity (eg, neuropathic ulcer)
- Neuromuscular (eg, Erb palsy, labyrinthitis, stroke)
- Pulmonary (eg, amyotrophic lateral sclerosis [ALS], Parkinson-related pneumonia)
- Multisystem (eg, Guillain-Barré syndrome [GBS], diabetes)

Impairments of body functions and structures

- Cranial nerve and peripheral nerve integrity (eg, poor eye tracking, nystagmus, decreased pupillary reflex, numb and tingling fingers)
- Gait (eg, staggering gait, foot drop)
- Motor function (eg, shuffling gait)
- Muscle performance (eg, upper extremity weakness)
- Sensation (eg, numbness of face, feet, and hands)
- Ventilation (eg, decreased thoracic expansion and excursion, aspiration, weak cough)

Activity limitations and participation restrictions

- Self-care (eg, difficulty in buttoning due to numbness of fingers)
- Domestic life (eg, decreased mobility in the home due of unsteadiness)
- Work (eg, inability to perform electrical wiring and circuitry due to numbness of fingers)
- Education life (eg, difficulty taking notes or using a tape recorder due to decreased coordination)
- Community, social, and civic life (eg, inability to play cards due to proprioceptive deficit, inability to sing in choir due to inadequate phonation control)

Examples of What Tests and Measures May Characterize or Quantify:

- Electrophysiological integrity (eg, nerve conduction studies; needle, fine wire, or surface electromyography) **Specific Tests and Measures in PTNow**
- Motor distribution of the cranial nerves (eg, dynamometry, muscle tests, observations) **Specific Tests and Measures in PTNow**
- Motor distribution of the peripheral nerves (eg, dynamometry, muscle tests, observations, thoracic outlet tests) **Specific Tests and Measures in PTNow**
- Response to neural provocation (eg, tension tests, vertebral artery compression tests) **Specific Tests and Measures in PTNow**
- Response to stimuli, including auditory, gustatory, olfactory, pharyngeal, vestibular, and visual (eg, observations, provocation tests) **Specific Tests and Measures in PTNow**

- Sensory distribution of the cranial nerves (eg, discrimination tests; tactile tests, including coarse and light touch, cold and heat, pain, pressure, and vibration) **Specific Tests and Measures in PTNow**
- Sensory distribution of the peripheral nerves (eg, discrimination tests; fine motor skills tests; tactile tests, including coarse and light touch, cold and heat, pain, pressure, and vibration; thoracic outlet tests) **Specific Tests and Measures in PTNow**
- Various systems' integrity using differential testing of systems (eg, somatosensory, vestibular, vision) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Dynamometers
- Muscle tests
- Observations
- Palpation
- Pin prick
- Rating scales
- Sensory testing tools for taste and smell
- Tuning forks
- Vision eye charts

Examples of Data Used for Documentation:

- Description of fine motor manipulation skills
- Descriptions of swallowing ability, mastication, and speech
- Differentiation of central verses peripheral lesions
- Electrophysiological response to stimulation
- Presence or absence of gag reflex
- Response to neural provocation
- Sensory responses to provocation of cranial and peripheral nerves
- Vestibular responses

5.8 Education Life

Education life **integration or reintegration is the process of assuming or resuming activities and roles in schools and other education settings, which requires abilities such as negotiating environmental terrain, gaining access to appropriate school settings, and participating in essential activities for education life.**

The physical therapist uses tests and measures to make judgments as to whether an individual is prepared to assume or resume education-related roles with or without the need for assistive technology or environmental adaptations.

Examples of Clinical Indications:

Risk factors for activity limitations and participation restrictions in education life

- Depression
- Falls risk
- Impaired endurance (eg, inability to tolerate day-long movement or mobility necessary for typical work activities)
- Inefficient locomotion (eg, inability to keep pace with other students in hallway and on playground)
- Lack of safety awareness (eg, visual impairment that affects depth perception, way finding deficits, cognitive and/or memory impairment)
- Mobility impairment (eg, inability to self-propel manual wheelchair across school or college campus in timely manner to attend classes)
- Pain (eg, wrist and hand pain with typing, knee/ankle pain with walking, shoulder pain with operating wheelchair)

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inadequate fine motor skills to perform tasks needed for education program)
- Health and wellness (eg, inadequate understanding of ways to maintain health or of risks for reinjury, difficulty modifying behaviors to reduce risks for reinjury)

Pathology or health condition

- Cardiovascular (eg, unstable angina, congestive heart failure [CHF], chronic obstructive pulmonary disease [COPD], asthma, bronchopulmonary dysplasia)
- Endocrine or metabolic (eg, diabetes with peripheral neuropathy)
- Genitourinary (eg, urinary incontinence)
- Musculoskeletal (eg, herniated lumbar disk, status after joint replacement, status after lumbosacral spinal fusion, status after tendon lengthening)
- Neuromuscular (eg, cerebellar ataxia, cerebral palsy [CP], paraplegia)
- Pulmonary (eg, asthma, COPD, cystic fibrosis)
- Multisystem (eg, chronic low back pain, carpal tunnel syndrome, cervical disk disease, CP, muscular dystrophy [MD])

Impairments of body functions and structures

- Circulation (eg, claudication)
- Mental functions (eg, memory, judgment, way finding, impulsivity)
- Muscle performance (eg, decreased strength)
- Neuromotor development (eg, abnormal movement and postural control)
- Posture (eg, pain with prolonged standing, pain with lifting)
- Range of motion (eg, decreased muscle length)

Activity limitations and participation restrictions

- Education life (eg, inability to sit at desk due to pain or balance deficits)
- Community, social, and civic life (eg, inability to walk from parking area to school entrance)

Examples of What Tests and Measures May Characterize or Quantify:

- Ability to assume or resume activities related to school or other educational environments with or without assistive technology (eg, assessment of developmental level, activity profiles, disability indexes, functional status questionnaires, instrumental activities of daily living [IADL] scales, observations, physical capacity tests) **Specific Tests and Measures in PTNow**
- Ability to gain access to school or other educational environments (eg, needs assessment, barrier identification, interviews, observations, physical capacity tests, transportation assessments)**Specific Tests and Measures in PTNow**
- Safety in performing school-related activities (eg, ergonomic assessments, diaries, falls risk assessments, interviews, logs, observations, videographic assessments) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Equipment needed to perform developmental and/or physical capacity tests
- Still and video cameras

Examples of Data Used in Documentation:

- Clinical rationale to justify need for appropriate assistive technology
- Developmental level of motor ability
- Functional capacity for school or educational environments
- Level of ability to participate in a variety of educational environments
- Level of safety in education-related activities

- Physiological responses to school-related activity
- Results of ergonomic assessment

5.9 Environmental Factors

Environmental factors **make up the physical, social, and attitudinal environment in which people live and conduct their lives. Environmental factors may be facilitators or barriers for individuals with a variety of health conditions.**

The physical therapist uses tests and measures to determine whether the individual's environment is adequate to enable them to participate optimally in their various roles. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for barriers in routinely encountered environments

- Decreased access to home, school, work, or community environments
- Falls risk
- Impaired mobility function (eg, unsafe or inefficient locomotion)
- Inability to obtain goods and services required for community living (eg, groceries, pharmacy, medical appointments)
- Isolation and/or depression
- Lack of emergency evacuation plan

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, no access to public transportation or standard exercise equipment)
- Health and wellness (eg, inability to access medical table for annual gynecology examination, increased falls risk on uneven outdoor terrain due to impaired balance)

Pathology or health condition

- Cardiovascular (eg, congestive heart failure [CHF])
- Musculoskeletal (eg, amputation, joint replacement, muscular dystrophy [MD])
- Neuromuscular (eg, peripheral neuropathy, cerebral palsy [CP], multiple sclerosis [MS], traumatic brain injury [TBI])
- Pulmonary (eg, chronic obstructive pulmonary disease [COPD])
- Multisystem (eg, trauma)

Impairments of body functions and structures

- Balance (eg, ataxic gait)
- Endurance (eg, fatigue after 5 minutes of standing or walking)
- Joint integrity (eg, joint contracture)
- Locomotion (eg, limited ability to propel manual wheelchair long distances)
- Muscle performance (eg, decreased muscle strength and endurance)
- Ventilation (eg, increased respiratory rate with long-distance mobility)

Activity limitations and participation restrictions

- Self-care (eg, inability to get into bathtub due to impaired balance)
- Domestic life (eg, inability to climb stairs to bathroom due to decreased muscle endurance)
- Education (eg, inability to gain wheelchair access to science station in school due to station height)
- Work life (eg, inability to enter building because no ramp is available)
- Community, social, and civic life (eg, inability to join friends on sailboat due to dock instability, inability to propel manual wheelchair on a sandy beach)

Examples of What Tests and Measures May Characterize or Quantify:

- Assistive technology needs (eg, observations, questionnaires, videographic assessments) **Specific Tests and Measures in PTNow**
- Caregiver capacity (eg, assessment of caregiver and caregiver resources) **Specific Tests and Measures in PTNow**
- Current and potential barriers (eg, checklists, interviews, observations, questionnaires, safety assessment) **Specific Tests and Measures in PTNow**
- Physical space and environments routinely encountered (eg, accessibility survey, observations, photographic assessments, questionnaires, videographic assessments) **Specific Tests and Measures in PTNow**
- Quality of life (eg, scales, surveys) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Equipment trial and simulation
- Structural specifications (eg, blueprints or building plans)
- Tape measures

- Universal design criteria
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Clinical rationale to justify need for appropriate assistive technology or reasonable accommodations
- Description of environmental factors that create barriers to activity and participation (eg, lack of access to workplace due to long distance from parking area to main entrance)
- Description of features of home, work, school, or community physical environments
- Descriptions of physical space, including doorway widths, floor surfaces, distances of required travel, maneuvering space, and accessibility of bathrooms
- Level of compliance with regulatory standards (eg, compliance of public buildings with Americans with Disabilities Act)

5.10 - Gait

***Gait* is the manner in which a person walks, characterized by rhythm, cadence, step, stride, and speed.**

The physical therapist uses tests and measures to determine the presence and underlying cause of gait deviations. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired mobility

- Decreased coordination
- Joint pain
- Limb or trunk sensation impairment
- Obesity
- Trauma

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inadequate ankle strength for an adequate walking or running program)
- Health and wellness (eg, inability to safely ambulate to avoid a sedentary lifestyle)

Pathology or health condition

- Cardiovascular (eg, peripheral vascular disease [PVD], lower extremity lymphedema)
- Integumentary (eg, infection with skin breakdown on metatarsal heads)
- Musculoskeletal (eg, radicular back pain with distal weakness, osteoarthritis [OA])
- Neuromuscular (eg, stroke, Parkinson disease [PD], cerebral palsy [CP], peripheral nerve injury)
- Multisystem (eg, multiple sclerosis [MS], rheumatoid arthritis [RA])

Impairments of body functions and structures

- Joint integrity and mobility (eg, hip pain with mobility, joint hypermobility or hypomobility)
- Muscle performance (eg, decreased power and endurance, limited muscle length of hamstrings)
- Range of motion (eg, hip flexion contracture)

Activity limitations and participation restrictions

- Self-care (eg, inability to roll adequately in bed to relieve pressure points)
- Domestic life (eg, inability to walk the dog because of unstable ambulation)
- Education life (eg, inability to attend school due to unsafe toilet transfer, inability to lift and carry books or computer)
- Work life (eg, inability to do laundry as household manager because of painful shoulders when moving the laundry to and from the washer and dryer)
- Community, social, and civic life (eg, inability to coach a Masters running team because of unsafe gait patterns)

Examples of What Tests and Measures May Characterize or Quantify:

- Gait with or without the use of assistive technology locomotion aids (eg, nerve conduction studies and needle, fine wire, or surface electromyography; footprint analyses; gait indexes; mobility skill profiles; observations; photographic assessments; technology-assisted assessments; videographic assessments; weight-bearing scales) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Batteries of tests
- Cameras and photographs
- Dynamometers
- Force platforms
- Goniometers

- Motion analysis systems
- Observations
- Rating scales
- Reports
- Scales for weighing
- Technology-assisted analysis systems
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Description of gait on and in different physical environments
- Gait characteristics with or without use of locomotion aids
- Level of safety during gait

5.11 - Integumentary Integrity

Integumentary integrity **is defined as intact skin, including the ability of the skin to serve as a barrier to environmental threats such as bacteria, pressure, shear, friction, and moisture.**

The physical therapist uses tests and measures to determine whether the skin and subcutaneous changes, resulting from a wide variety of disorders and conditions, can serve as an adequate barrier to environmental threats.

Examples of Clinical Indications:

Risk factors for impaired integumentary integrity

- Comorbidities (eg, cardiovascular or pulmonary dysfunction, edemas, autoimmune disorders)
- Malnutrition
- Obesity, increased body mass index
- Risk-prone behaviors (eg, excessive exposure to sun or cold)
- Sedentary lifestyle
- Smoking and alcohol history

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, risk of skin trauma due to injury from activity or from poorly fitting footwear and equipment)

- Health and wellness (eg, inadequate understanding of skin monitoring and protection strategies such as protection from sun while outdoors or from plantar foot shear during weight-bearing activities)

Pathology or health condition

- Cardiovascular (eg, venous and/or arterial insufficiency, lymphedema, emboli)
- Endocrine or metabolic (eg, diabetes, liver disease, kidney disease)
- Integumentary (eg, infection, burns, frostbite, trauma, surgical incisions, dermatological conditions, skin lesions secondary to disease, pressure ulcers)
- Musculoskeletal (eg, fracture, osteomyelitis, osteopenia, bony deformities, muscle weakness and atrophy, congenital deformities)
- Neuromuscular (eg, coma, spinal cord injury [SCI], stroke, multiple sclerosis [MS])
- Pulmonary (eg, respiratory failure, pulmonary edema, cystic fibrosis [CF])
- Multisystem (eg, rheumatoid arthritis [RA], systemic lupus erythematosus, trauma or metastatic disease)

Impairments of body functions and structures

- Aerobic capacity (eg, deconditioning)
- Circulation (eg, claudication, rest pain, poor tissue perfusion)
- Integumentary integrity (eg, lesions, ulcers, calluses, rashes, scars, adhesions)
- Sensory integrity (eg, diminished or absent sensation; hypersensitivity; loss of vibration, pressure, or reflexes)

Activity limitations and participation restrictions

- Self-care (eg, inability to bathe due to wound or burn)
- Domestic life (eg, inability to wash dishes due to hand blisters)
- Education or work life (eg, inability to do construction work due to lower extremity cellulitis, inability to wear usual shoes due to neuropathic ulcer, inability to sit for prolonged periods due to pressure ulcer)
- Community, social, or civic life (eg, inability to attend community activities due to wound drainage, inability to participate in recreational activities due to adaptive footwear)

Examples of What Tests and Measures May Characterize or Quantify:

Peri-wound and extrinsic tissue

- Condition and fit of footwear (eg, description of the condition of insoles, seams or grommets inside the shoe, wear pattern) **Specific Tests and Measures in PTNow**

- Condition aids for locomotion, orthotic devices, prosthetic requirements, seating and positioning technology, and other assistive technology to improve function that may produce or relieve trauma to the skin (eg, description of pressure or abrasion of padding around bony prominences, rough or exposed surfaces, proper size and fit of the device) **Specific Tests and Measures in PTNow**

- Positioning, and postures that produce or relieve trauma to the skin (eg, observations, pressure-sensing maps, risk assessment scales) **Specific Tests and Measures in PTNow**

- Signs of impaired skin (eg, pulse rate, girth measurement, sensory testing using monofilaments, goniometric measurements, manual muscle testing, gait assessment) **Specific Tests and Measures in PTNow**

- Skin characteristics, including blistering, continuity of skin color, dermatitis, hair growth, nail growth, moisture, temperature, texture, and turgor (eg, observations, palpation, photographic assessments, thermography, and other methods of identifying skin characteristics) **Specific Tests and Measures in PTNow**

Wound

- Classification of wound based on etiology and description of depth of tissue destruction (eg, condition-specific staging, classification scales, observations, palpation) **Specific Tests and Measures in PTNow**

- Positioning and postures that aggravate the wounded tissue or that produce or relieve trauma (eg, observations, pressure-sensing maps) **Specific Tests and Measures in PTNow**

- Scar tissue characteristics, including banding, contracture, maturity, pliability, sensation, pruritus, and texture (eg, observations, scar-rating scales) **Specific Tests and Measures in PTNow**

- Signs of infection (eg, observations of systemic changes, cultures, tissue observations, odor, pain scales, palpation) **Specific Tests and Measures in PTNow**

- Wound characteristics (eg, location, tissue types present, amount and type of drainage, wound edges/margins, contraction, exposed anatomical structures, odor, shape, tunneling, tracts, and undermining) **Specific Tests and Measures in PTNow**

- Wound size, (eg, length, width, depth) (eg, planimetry, tracing, photography) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs

- Culture kits

- Goniometers

- Handheld Doppler

- Infrared skin thermometers

- Measuring guides

- Monofilaments
- Pain scales
- Patient charts
- Pressure-sensing devices
- Reflex hammers
- Risk and wound assessment tools
- Tuning forks

Examples of Data Used for Documentation:

- Descriptions of devices and equipment that produce, alleviate, and/or redistribute skin trauma:
  - Ankle-foot orthosis
  - Braces
  - Casts
  - Compression devices
  - Drains
  - Heel protector devices
  - Intubation and tracheostomy tubes and devices
  - Nasal cannula (also at ears)
  - Ostomy appliances
  - Wheelchairs
- Descriptions of gait patterns that cause or relieve skin trauma
- Descriptions and quantifications of skin characteristics:
  - Edema
  - Hair pattern
  - Indurations
  - Pain
  - Sensation
  - Skin color and continuity
  - Temperature, texture, turgor

    - Tissue integrity
- Descriptions of wound characteristics:
    - Dimensions
    - Drainage
    - Edges and margins
    - Odor
    - Pain
    - Peri-wound characteristics
    - Scar tissue characteristics
    - Signs of infection
    - Skin color
    - Tissue type
    - Undermining, tracts, and tunnels
- Range of motion measurements
- Strength measurements

5.12 - Joint Integrity and Mobility

Joint integrity and mobility **represent the structure and function of the joint and are classified in biomechanical terms as arthrokinematic motion. Joint mobility is the capacity of the joint to be moved passively, evaluating the structure and integrity of the joint surface in addition to periarticular soft tissue characteristics.**

The physical therapist uses tests and measures to assess accessory joint movements (movements not under voluntary control), including the existence of either excessive motion (hypermobility) or limited motion (hypomobility). Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired joint integrity and mobility

- Habitual suboptimal posture
- Joint injury and/or surgery history
- Joint pathology history
- Periods of immobility

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, reduced knee mobility for weight lifting, running, and biking)
- Health and wellness (eg, inadequate understanding of relationship between mobility and pain-free functional activities)

Pathology or health condition

- Endocrine or metabolic (eg, gout, osteoporosis)
- Hematologic (eg, bleeding disorders)
- Musculoskeletal (eg, fracture, osteoarthritis [OA], osteogenesis imperfecta, sprains)
- Neuromuscular (eg, cerebral palsy [CP], Parkinson disease [PD])
- Pulmonary (eg, restrictive lung disease)
- Multisystem (eg, rheumatoid arthritis [RA], vehicular trauma)

Impairments of body functions and structures

- Anthropometric characteristics (eg, leg length discrepancy, obesity)
- Gait (eg, uneven step length)
- Joint integrity (eg, edema)
- Posture (eg, scoliosis)
- Range of motion (eg, limited shoulder range of motion [ROM])
- Ventilation (eg, reduced thoracic expansion capacity)

Activity limitations and participation restrictions

- Self-care (eg, inability to fasten garments due to limited elbow ROM)
- Domestic life (eg, inability to sew on a button due to finger joint stiffness and pain)
- Education life (eg, difficulty taking tests due to limited ROM and pain in joints of hands)
- Work life (eg, inability to clean teeth as a dental hygienist due to neck and shoulder stiffness, inability to climb a ladder due to limited knee ROM)
- Community, social, and civic life (eg, inability to attend driver's education due to limited ROM in neck, inability to play golf due to shoulder joint pain)

Examples of What Tests and Measures May Characterize or Quantify:

- Joint integrity and mobility (eg, apprehension, compression and distraction, drawer, glide, impingement, shear, and valgus or varus stress tests; arthrometry) **Specific Tests and Measures in PTNow**
- Joint play movements, including end feel (all joints of the axial and appendicular skeletal system) (eg, joint play tests, end feel tests) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Arthrometers
- Palpation

Examples of Data Used in Documentation:

- Accessory joint motion:
  - Correlation of individual's pain report with onset of tissue resistance
  - End feels (all joints of the axial and appendicular skeletal system)
  - Measurement of hypermobility or hypomobility
- Presence and severity of abnormal joint articulation (eg, subluxation or dislocation)
- Presence of apprehension
- Presence of joint impingement

5.13 - Mental Functions

Mental functions **of the brain include both global mental functions (such as consciousness, orientation function, motivation, and impulse control) and specific mental functions (such as attention, memory, emotion, and perception).**

The physical therapist uses tests and measures to characterize the individual's level of mental function. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired mental functions

- Chronic illness
- Depression and other psychological or psychiatric diagnoses
- Medication side effects
- Older adult

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, impaired judgment during workout, ineffective attention and recall for training regimen)
- Health and wellness (eg, inadequate understanding of the role of attention to safety during activities)

Pathology or health condition

- Cardiovascular (eg, malignant hypertension, stroke)
- Neuromuscular (eg, hydrocephalus, traumatic brain injury [TBI])
- Psychological or psychiatric (eg, depression or schizophrenia)
- Pulmonary (eg, end-stage chronic obstructive pulmonary disease [COPD])
- Multisystem (eg, Down syndrome [DS])

Impairments of body functions and structures

- Circulation (eg, abnormal blood pressure in shock)
- Mental functions (eg, lack of response to stimulation, inability to follow instructions, lability)
- Motor function (eg, psychomotor function, inability to regulate speed of response)
- Ventilation and respiration (eg, hypoventilation, somnolence)

Activity limitations and participation restrictions

- Self-care (eg, inability to perform bathroom transfers due to lack of safety awareness)
- Domestic life (eg, decreased activity in domestic tasks due to poor attention span)
- Education life (eg, inability to play at age-appropriate level due to lack of internal desire to move)
- Work life (eg, inability to perform bricklaying due to inability to recall steps of task)
- Community, social, or civic life (eg, inability to participate as volunteer at child's school due to inattention, inability to participate in routine exercise program due to lack of interest)

Examples of What Tests and Measures May Characterize or Quantify:

- Cognition, including ability to process commands (eg, developmental inventories, indexes, interviews, mental state scales, observations, questionnaires, safety checklists) **Specific Tests and Measures in PTNow**
- Communication (eg, functional communication profiles, interviews, inventories, observations, questionnaires) **Specific Tests and Measures in PTNow**
- Consciousness and orientation, including agitation and coma (eg, adaptability tests, arousal and awareness scales, indexes, profiles, questionnaires) **Specific Tests and Measures in PTNow**
- Motivation (eg, adaptive behavior scales) **Specific Tests and Measures in PTNow**

- Orientation to time, person, place, and situation (eg, attention tests, learning profiles, mental state scales) **Specific Tests and Measures in PTNow**
- Recall, including memory and retention (eg, assessment scales, interviews, questionnaires)**Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Indexes
- Interviews
- Inventories
- Observations
- Profiles
- Questionnaires
- Rating scales
- Safety checklists

Examples of Data Used in Documentation:

- Degree and type of orientation (eg, ability to recognize time, person, place, and situation)
- Degree of short-term and long-term memory
- Level of ability to attend to task or to participate
- Level of motivation (eg, energy and drive)
- Presence and severity of:
    - Cognitive impairment
    - Coma
    - Communication deficits
    - Depression
    - Impaired consciousness
    - Impaired motivation

5.14 - Mobility (Including Locomotion)

Mobility (including locomotion) **is an individual moving by changing body positions or locations or by transferring from one place to another. This includes ambulation and wheeled mobility.**

The physical therapist uses tests and measures to determine the mobility level of an individual in different activities. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired mobility

- Confusion
- Congenital body deformities
- Decreased coordination
- Joint pain
- Limb or trunk sensation impairment
- Obesity
- Trauma

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inadequate strength and balance for safely traversing uneven terrain)
- Health and wellness (eg, inability to move adequately to avoid a sedentary lifestyle)

Pathology or health condition

- Cardiovascular (eg, angina, peripheral vascular disease [PVD])
- Integumentary (eg, pressure ulcers)
- Musculoskeletal (eg, radicular back pain with distal weakness, osteoarthritis [OA], osteoarthrosis)
- Neuromuscular (eg, stroke, Parkinson disease [PD], cerebral palsy [CP])
- Multisystem (eg, autoimmune conditions, multiple sclerosis [MS], rheumatoid arthritis [RA])

Impairments of body functions and structures

- Circulation (eg, claudication)
- Joint integrity and mobility (eg, hip pain with mobility, joint hypermobility or hypomobility)
- Motor function (eg, abnormal movement patterns)
- Muscle performance (eg, decreased power and endurance, limited muscle length of hamstrings)
- Range of motion (eg, severe kyphotic posture)

Activity limitations and participation restrictions

- Self-care (eg, inability to roll adequately in bed to relieve pressure points)
- Domestic life (eg, inability to walk the dog because of unstable ambulation)
- Education life (eg, inability to attend school due to unsafe toilet transfer, inability to lift and carry books or computer)
- Work life (eg, inability to do laundry as household manager because of painful shoulders when moving the laundry to and from the washer and dryer)
- Community, social, and civic life (eg, inability to coach a Masters running team because of unsafe gait patterns)

Examples of What Tests and Measures May Characterize or Quantify:

- Locomotion during functional activities with or without the use of assistive technology (eg, activities of daily living [ADL] scales, gait indexes, instrumental activities of daily living [IADL] scales, mobility skill profiles, observations, videographic assessments) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Batteries of tests
- Goniometers
- Observations
- Profiles
- Rating scales
- Scales for weighing

Examples of Data Used in Documentation:

- Descriptions of mobility on and in different physical environments
- Level of safety during mobility
- Mobility characteristics with or without use of devices or equipment

5.15 - Motor Function

Motor function **is the ability to learn or to demonstrate the skillful and efficient assumption, maintenance, modification, and control of voluntary postures and movement patterns.**

The physical therapist uses tests and measures to assess weakness, paralysis, dysfunctional movement patterns and postures, abnormal timing, poor coordination, clumsiness, and the individual's ability to control voluntary postures and movement patterns. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired motor function

- Clumsiness
- Decreased coordination
- Falls history
- Frailty (eg, low gait speed, grip strength, and physical activity level; unintended weight loss)

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inability to control throwing motion, inadequate eye-hand coordination in sports)
- Health and wellness (eg, inadequate understanding of the value of motor planning and practice in task performance)

Pathology or health condition

- Cardiovascular (eg, congenital heart anomalies, diabetic cardiac autonomic neuropathy)
- Musculoskeletal (eg, muscular dystrophy [MD])
- Neuromuscular (eg, cerebral palsy [CP], multiple sclerosis [MS], Parkinson disease [PD], spinal cord injury [SCI], traumatic brain injury [TBI], vestibular disorders)
- Pulmonary (eg, hyaline membrane disease)
- Multisystem (eg, encephalitis, meningitis, seizures)

Impairments of body functions and structures

- Balance (eg, increased tone in extremities)
- Coordination (eg, sequence, timing, unilateral and bilateral assessments)
- Gait (eg, foot drop)
- Locomotion (eg, altered position sense)
- Motor function (eg, irregular movement pattern)
- Muscle performance (eg, muscle weakness)

Activity limitations and participation restrictions

- Self-care (eg, difficulty with combing hair due to weakness and/or apraxia)
- Domestic life (eg, inability to clean the shower due to dysfunctional movement pattern, fear of movement or falling, decreased self-confidence)

- Education life (eg, inability to prepare for classes due to ideomotor apraxia)
- Work life (eg, inability to perform functions as toll collector due to dizziness, inability to sort mail due to clumsiness)
- Community, social, or civic life (eg, inability to play softball due to poor coordination, inability to volunteer as greeter at senior citizen center due to muscle weakness and decreased endurance)

Examples of What Tests and Measures May Characterize or Quantify:

- Age-appropriate activity levels **Specific Tests and Measures in PTNow**
- Balance measures (eg, dizziness scales, motion scales, falls risk tests, static and dynamic tests and measures) **Specific Tests and Measures in PTNow**
- Dexterity, coordination, and agility (eg, coordination screens, motor impairment tests, motor proficiency tests, observations, videographic assessments) **Specific Tests and Measures in PTNow**
- Educational needs **Specific Tests and Measures in PTNow**
- Electrophysiological integrity (eg, nerve conduction studies; needle, fine wire, or surface electromyography) **Specific Tests and Measures in PTNow**
- Falls risk factors **Specific Tests and Measures in PTNow**
- Frailty assessment to determine the continuum from functional to frail and to determine at-risk populations **Specific Tests and Measures in PTNow**
- Hand function (eg, fine and gross motor control tests, finger dexterity tests, manipulative ability tests, observations) **Specific Tests and Measures in PTNow**
- Initiation, modification, and control of movement patterns and voluntary postures (eg, activity indexes, developmental scales, gross motor function profiles, motor scales, movement assessment batteries, neuromotor tests, observations, physical performance tests, postural challenge tests, videographic assessments) **Specific Tests and Measures in PTNow**
- Movement transition qualities (eg, timing and sequencing in such activities as driving, identifying synergistic patterns that facilitate or hinder mobility skills) **Specific Tests and Measures in PTNow**
- Reaction times **Specific Tests and Measures in PTNow**
- Task analysis (eg, home environment; work station; activities of daily living; functional mobility; activity and participation indexes) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Indexes
- Observations
- Palpation
- Profiles
- Rating scales
- Screens
- Tilt boards
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Descriptions or quantifications of:
    - Apraxia
    - Atypical movements
    - Balance skills
    - Dexterity, coordination, and agility
    - Hand movements
    - Head, trunk, and limb movements
    - Perceptual and/or visual neglect
    - Sensorimotor integration
    - Voluntary age-appropriate postures and movement patterns
- Differential diagnosis and reports of treatment of various neuromuscular disorders
- Electrophysiological responses to stimulation
- Falls risk factors
- Home safety assessments
- Task analysis results

5.16 - Muscle Performance (Including Strength, Power, Endurance, and Length)

Muscle performance **is the capacity of a muscle or a group of muscles to generate forces to produce, maintain, sustain, and modify postures and movements that are the prerequisite to functional activity.** ***Strength*** **is the muscle force exerted to overcome resistance under a specific set of circumstances.** ***Power*** **is the work produced per unit of time or the product of strength and speed.** ***Endurance*** **is the ability of muscle to sustain forces repeatedly or to generate forces over a period of time.** ***Length*** **refers to the maximum extensibility of a muscle-tendon unit. Recruitment of motor units, fuel storage, and fuel delivery, in addition to balance, timing, and sequencing of contraction mediate integrated muscle performance.**

The physical therapist uses tests and measures to determine an individual's ability to produce, maintain, sustain, and modify movements that are the prerequisite to functional activity. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired muscle performance

- Diabetes
- Hypercholestremia

- Injury and/or surgery history
- Medications (eg, statins, drug therapies for myopathies/myositis)
- Obesity
- Sedentary lifestyle
- Smoking history
- Spinal stenosis, cervical myelopathy
- Stroke history

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, limited ability to perform fitness and recreational roles)
- Health and wellness (eg, inadequate understanding of the role of muscle strength and muscle endurance during activity performance)

Pathology or health condition

- Cardiovascular (eg, coronary artery disease [CAD], peripheral vascular disease [PVD], stroke, lymphadenitis)
- Endocrine or metabolic (eg, diabetes)
- Integumentary (eg, cellulitis)
- Musculoskeletal (eg, fracture, spinal stenosis, compartment syndrome)
- Neuromuscular (eg, spinal cord injury [SCI], muscular dystrophy [MD])
- Multisystem (eg, cancer, trauma)

Impairments of body functions and structures

- Circulation (eg, claudication, fatigue)
- Gait (eg, abnormal gait patterns)
- Genitourinary (eg, urinary incontinence)
- Motor function (eg, abnormal movement patterns, decreased power)
- Posture (eg, suboptimal habitual postures)
- Range of motion (eg, hypermobility)
- Ventilation (eg, abnormal breathing patterns)

Activity limitations and participation restrictions

- Self-care (eg, difficulty with bathing, dressing, and feeding due to muscle weakness)
- Domestic life (eg, limited ability to cook, clean, and do yard work due to decreased muscle length and muscle endurance)
- Education life (eg, inability to access all classes due to muscle fatigue)
- Work life (eg, difficulty with physically active tasks such as lifting, carrying, or walking, or seated repetitive use of upper extremities)
- Community, social, and civic life (eg, inability to play sports, access public facilities, access public transportation due to impaired muscle performance)

Examples of What Tests and Measures May Characterize or Quantify:

- Electrophysiological integrity (eg, nerve conduction studies; needle, fine wire, or surface electromyography) **Specific Tests and Measures in PTNow**
- Muscle strength, power, and endurance (eg, dynamometry, manual muscle tests, muscle performance tests, physical capacity tests, technology-assisted assessments, timed activity tests)**Specific Tests and Measures in PTNow**
- Muscle strength, power, and endurance during functional activities (eg, activities of daily living [ADL] scales, functional muscle tests, instrumental activities of daily living [IADL] scales, observations, video assessments) **Specific Tests and Measures in PTNow**
- Muscle tension (eg, palpation) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Dynamometers
- Palpation
- Technology-assisted analysis systems
- Timed activity tests
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Descriptions of postures and functional movement
- Measurements of muscle strength, power, endurance, and muscle length

5.17 - Neuromotor Development and Sensory Processing

Neuromotor development **is the acquisition and evolution of movement skills throughout the life span.** ***Sensory processing*** **is the ability to integrate movement-related information that is derived from the environment.**

The physical therapist uses tests and measures to characterize movement skills in infants, children, and adults. The physical therapist also uses tests and measures to assess mobility, achievement of motor milestones, postural control, voluntary and involuntary movement, balance, righting and equilibrium reactions, eye-hand

coordination, and other movement skills. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired neuromotor development and sensory processing

- Autism spectrum disorders
- Falls history
- Poor nutritional status of mother during gestation
- Premature birth
- Substance abuse by the individual or by the mother during gestation

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inappropriate timing or sequencing for skipping)
- Health and wellness (eg, inadequate understanding of the need for developmental screening)

Pathology or health condition

- Cardiovascular (eg, cardiac or associated vessel disorders)
- Endocrine or metabolic (eg, fetal alcohol syndrome, lead poisoning)
- Neuromuscular (eg, hearing loss, visual deficit)
- Pulmonary (eg, anoxia, hypoxia)
- Multisystem (eg, autism, premature birth, seizure disorder)

Impairments of body functions and structures

- Balance (eg, poor sitting or standing posture)
- Motor function (eg, presence of involuntary movements)
- Muscle performance (eg, muscle weakness)
- Neuromotor development (eg, delayed acquisition of motor skills)
- Posture (eg, lack of postural control)
- Prosthetic requirements (eg, poor balance with prosthesis)
- Ventilation (eg, asymmetrical expansion)

Activity limitations and participation restrictions:

- Self-care (eg, inability to grasp bottle for feeding due to weakness)
- Domestic life (eg, inability to dust due to poor sensory processing)
- Education life (eg, difficulty following instructions in lab class due to limited visual perceptualskills)
- Work life (eg, inability to do assembly piecework due to poor eye-hand coordination)
- Community, social, or civic life (eg, inability to knit due to poor motor control, inability to play with peers in day care due to inability to crawl)

Examples of What Tests and Measures May Characterize or Quantify:

- Acquisition and evolution of motor skills, including age-appropriate development (eg, activity indexes, developmental inventories and questionnaires, infant and toddler motor assessments, learning profiles, motor function tests, motor proficiency assessments, neuromotor assessments, reflex tests, screens, videographic assessments) **Specific Tests and Measures in PTNow**
- Oral motor function, phonation, and speech production (eg, interviews, observations) **Specific Tests and Measures in PTNow**
- Sensorimotor integration, including postural, equilibrium, and righting reactions (eg, behavioral assessment scales, motor and processing skill tests, observations, postural challenge tests, reflex tests, sensory profiles, visual perceptual skill tests) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Behavioral assessment scales
- Cameras and photographs
- Electrophysiological tests
- Indexes
- Interviews
- Inventories
- Motor assessment tests
- Motor function tests
- Neuromotor assessments
- Observations
- Postural challenge tests
- Proficiency assessments
- Profiles
- Questionnaires

- Rating scales
- Reflex tests
- Screens
- Skill tests
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Behavioral response to stimulation
- Descriptions of movement skills, including age-appropriate development, gross and fine motor skills, and reflex development
- Descriptions of oral motor function, phonation, and speech production
- Measurements of dexterity, coordination, and agility
- Observations and description of atypical movement
- Quantifications of sensorimotor integration, including postural, equilibrium, and righting reactions

5.18 - Pain

***Pain* is a disturbed sensation that may cause disability, suffering, or distress.**

Physical therapists use tests and measures to determine a cause or a mechanism for an individual's pain and to assess the intensity, quality, and temporal and physical characteristics associated with the pain.

Examples of Clinical Indications:

Risk factors for pain

- Disease history
- Habitual suboptimal posture
- Injury and/or surgery history
- Risk-prone behaviors (eg, lack of use of safety gear, performance of tasks and activities requiring repetitive motion)
- Sedentary lifestyle

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, decreased ability to tolerate strength training due to pain, limited participation in leisure sports due to pain)

- Health and wellness (eg, inadequate knowledge about living with pain)

Pathology or health condition

- Cardiovascular (eg, myocardial infarction, peripheral arterial occlusive disease)
- Endocrine or metabolic (eg, osteoporosis, rheumatologic disease)
- Integumentary (eg, burn, incision, ulcer, wound)
- Musculoskeletal (eg, amputation, fracture, spinal stenosis, temporomandibular joint dysfunction [TMJ])
- Neuromuscular (eg, nerve compression, spinal cord injury [SCI])
- Pain (eg, reflex sympathetic dystrophy)
- Pulmonary (eg, lung cancer, pleurisy)
- Multisystem (eg, trauma, rheumatoid arthritis [RA])

Impairments of body functions and structures

- Circulation (eg, decreased ability to walk due to chest discomfort)
- Integumentary (eg, limited range of motion due to painful rash or scar)
- Joint integrity (eg, decreased range of motion due to knee pain)
- Muscle performance (eg, weakness due to muscle injury and pain)
- Posture (eg, forward head position causing altered temporomandibular dysfunction and pain)
- Ventilation (eg, decreased expansion due to splinting of painful chest wall)

Activity limitations and participation restrictions

- Self-care (eg, difficulty with eating due to jaw pain)
- Domestic life (eg, inability to shovel snow due to shoulder soreness)
- Education life (eg, difficulty concentrating on studies due to pain in temporomandibular joint)
- Work life (eg, inability to mop floor due to chest pressure)
- Community, social, and civic life (eg, inability to canoe due to backache, inability to play with grandchildren because legs ache while walking)

Examples of What Tests and Measures May Characterize or Quantify:

- Pain, soreness, and nociception (eg, angina scales, analog scales, discrimination tests, pain drawings and maps, provocation tests, verbal and pictorial descriptor tests) **Specific Tests and Measures in PTNow**

- Pain in specific body parts (eg, pain indexes, pain questionnaires, structural provocation tests)**Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Indexes
- Pain drawings and maps
- Palpation
- Questionnaires
- Rating scales

Examples of Data Used in Documentation:

- Activities or postures that aggravate or relieve pain
- Localization of pain
- Pain according to specific body part
- Sensory and temporal qualities of pain
- Severity of pain, soreness, and discomfort related to activity limitations and/or participation restrictions
- Somatic distribution/mapping of pain

5.19 - Posture

Posture **is the alignment and positioning of the body in relation to gravity, center of mass, or base of support.**

The physical therapist uses tests and measures to assess an individual's structural alignment. Optimal posture is a state of musculoskeletal balance and skeletal alignment that may protect the individual against injury or progressive deformity. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired posture

- Disease history
- Habitual suboptimal posture
- Injury and/or surgery history

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, difficulty running, swimming, skiing, or biking due to postural abnormalities)

- Health and wellness (eg, inadequate understanding of the impact of posture on functional activities)

Pathology or health condition

- Cardiovascular (eg, stroke)
- Genitourinary (eg, pelvic floor dysfunction, pregnancy)
- Musculoskeletal (eg, amputation, intervertebral disk disorders, joint replacement, scoliosis)
- Neuromuscular (eg, cerebral palsy [CP], neurofibromatosis, spina bifida)
- Pulmonary (eg, pneumonectomy, restrictive lung disease)
- Multisystem (eg, rheumatoid arthritis [RA], trauma)

Impairments of body functions and structures

- Description of body alignment (eg, leg length discrepancies)
- Joint integrity (eg, knee osteoarthritis)
- Muscle performance (eg, weakness, imbalance)
- Range of motion (eg, decreased shoulder range of motion [ROM], pain)
- Ventilation (eg, limited or asymmetrical thoracic expansion)

Activity limitations and participation restrictions

- Self-care (eg, difficulty with donning and doffing shoes and socks due to limited and painful spinal ROM)
- Domestic life (eg, inability to do laundry due to dyspnea)
- Education or work life (eg, inability to sit at a computer workstation due to painful head and neck postures)
- Community, social, and civic life (eg, inability to drive due to painful sitting posture)

Examples of What Tests and Measures May Characterize or Quantify:

- Postural alignment and position (static and dynamic), including symmetry and deviation from midline (eg, grid measurement, observations, photographic and video assessments, technology-assisted assessments) **Specific Tests and Measures in PTNow**
- Specific body parts (eg, angle assessments, forward-bending test, goniometry, observations, palpation, positional tests) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Goniometers

- Observations
- Palpation
- Plumb lines
- Posture grids
- Tape measures
- Technology-assisted analysis systems
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Description of static and dynamic alignment, including symmetry and deviation from midline
- Postural measurements, including alignment of body parts

5.20 - Range of Motion

Range of motion (ROM) **is the arc through which active and passive movement occurs at a joint or a series of joints and the angle(s) created during this limb or trunk movement.** ***Muscle length*** **(the maximum extensibility of a muscle-tendon unit), in conjunction with joint and soft tissue extensibility, determines flexibility. Range of motion in biomechanical terms is classified as osteokinematic motion. Evaluating ROM abnormalities includes consideration of arthrokinematics (accessory movement at joint surfaces); tissue extensibility, such as muscle-tendon length and movement; and muscle tone, including spasticity.**

The physical therapist uses tests and measures to assess an individual's ROM. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired range of motion

- Bone, joint, and/or musculotendinous pathology history
- Habitual suboptimal posture
- Injury and/or surgery history
- Periods of immobility

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, limited shoulder ROM)
- Health and wellness (eg, inadequate understanding of relationship between mobility and pain-free functional activities)

Pathology or health condition

- Anthropometric (eg, obesity)
- Genitourinary (eg, pregnancy)
- Musculoskeletal (eg, avulsion of tendon; disorders of muscle, ligament, and fascia; fracture; osteoarthritis [OA]; scoliosis; spinal stenosis; sprain; strain)
- Neuromuscular (eg, Parkinson disease [PD])
- Ventilation (eg, restrictive lung disease)
- Multisystem (eg, trauma)

Impairments of body functions and structures

- Cranial and peripheral nerve integrity (eg, abnormal gait)
- Joint integrity (eg, joint edema)
- Muscle performance (eg, muscle weakness)
- Range of motion (eg, limited ROM of elbow, limited motion of pelvic floor muscles)

Activity limitations and participation restrictions

- Self-care (eg, inability to put on stockings due to limited knee ROM)
- Domestic life (eg, inability to load dishwasher due to difficulty bending)
- Education life (eg, difficulty getting school materials in and out of backpack)
- Work life (eg, inability to cut hair due to stiff and painful fingers, inability as a dancer to assume en pointe position due to limited ankle ROM)
- Community, social, and civic life (eg, inability to rollerblade due to knee pain and swelling, inability to volunteer in hospital due to foot stiffness on standing)

Examples of What Tests and Measures May Characterize and Quantify:

- Functional ROM (eg, observations, squat testing, toe touch tests) **Specific Tests and Measures in PTNow**
- Joint active and passive movement (eg, goniometry, inclinometry, observations, photographic assessments, technology-assisted assessments, videographic assessments) **Specific Tests and Measures in PTNow**
- Muscle length, soft tissue extensibility, and flexibility (eg, contracture tests, goniometry, inclinometry, ligamentous tests, linear measurement, multisegment flexibility tests, palpation)**Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Back and neck ROM devices
- Camera and photographs

- Cervical protractors
- Flexible rulers
- Goniometers
- Inclinometers
- Observations
- Palpation
- Scoliometers
- Tape measures
- Technology-assisted analysis systems
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Descriptions of functional or multisegmental movement
- Muscle, joint, and soft tissue characteristics
- Osteokinematic ROM

5.21 - Reflex Integrity

Reflex integrity **is the soundness of the neural path involved in a reflex. A** ***reflex*** **is a stereotypic, involuntary reaction to sensory stimuli.**

The physical therapist uses tests and measures to determine the excitability of the nervous system and the integrity of the neuromuscular system.

Examples of Clinical Indications:

Risk factors for impaired reflex integrity

- Habitual suboptimal posture
- Risk of falling
- Trauma

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inability to jump or hop, inadequate knowledge of proper stretch techniques)
- Health and wellness (eg, inadequate knowledge of relaxation)

Pathology or health condition

- Cardiovascular (eg, cerebral vascular accident)
- Neuromuscular (eg, amyotrophic lateral sclerosis [ALS], cerebral palsy [CP], coma, prematurity, traumatic brain injury [TBI])
- Pulmonary (eg, anoxia)
- Multisystem (eg, Guillain-Barré syndrome [GBS])

Impairments of body functions and structures

- Balance (eg, instability standing or walking)
- Muscle performance (eg, muscle weakness, abnormal muscle tone)
- Motor function (eg, delayed gross motor skills)
- Posture (eg, asymmetrical alignment)
- Reflex integrity (eg, abnormal muscle tone, clonus)

Activity limitations and participation restrictions

- Self-care (eg, difficulty eating due to jaw pain with chewing)
- Domestic life (eg, inability to take out trash cans due to poor coordination)
- Work life (eg, inability to restock shelves due to poor coordination)
- Community, social, or civic life (eg, inability to hike with friends due to poor coordination and weakness)

Examples of What Tests and Measures May Characterize or Quantify:

- Deep reflexes (eg, myotatic reflex scale, observations, reflex tests) **Specific Tests and Measures in PTNow**
- Electrophysiological integrity (eg, nerve conduction studies; needle, fine wire, or surface electromyography) **Specific Tests and Measures in PTNow**
- Postural reflexes and reactions, including righting, equilibrium, and protective reactions (eg, observations, postural challenge tests, reflex profiles, videographic assessments) **Specific Tests and Measures in PTNow**
- Primitive reflexes and reactions, including developmental levels (eg, reflex profiles, screening tests) **Specific Tests and Measures in PTNow**
- Resistance to passive stretch (eg, tone scales) **Specific Tests and Measures in PTNow**
- Superficial reflexes and reactions (eg, observations, provocation tests) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Myotatic reflex scales

- Observations
- Rating scales
- Reflex profiles
- Screens
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Age-appropriate reflexes
- Deep tendon reflexes
- Electrophysiological responses to stimulation
- Postural reflexes and righting reactions
- Superficial reflexes

5.22 - Self-Care and Domestic Life

Self-care **is caring for oneself, washing and drying oneself, caring for one's body parts, dressing, eating and drinking, and looking after one's health.** ***Domestic life*** **management is carrying out everyday actions and tasks associated with home life, such as acquiring and maintaining a living space, shopping, performing household tasks, caring for dependents, and performing yard work.**

The physical therapist uses tests and measures to make judgments as to whether an individual is prepared to assume or resume independent living with or without the need for assistive technology or environmental adaptations.

Examples of Clinical Indications:

Risk factors for activity limitations and participation restrictions in self-care and domestic life

- Lack of safety awareness in all environments
- Recent or chronic reduction in mobility
- Risk-prone behaviors (eg, performance of tasks requiring repetitive motion, lack of safety gear use)
- Sedentary lifestyle
- Suboptimal posture

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inadequate strength, balance, or endurance to accomplish essential tasks or perform necessary activities)

- Health and wellness (eg, inadequate understanding regarding adaptations to allow independent function)

Pathology or health condition

- Cardiovascular (eg, cerebral vascular accident, congestive heart failure [CHF], peripheral vascular disease [PVD])
- Endocrine (eg, rheumatologic or diabetic disorders)
- Musculoskeletal (eg, muscular dystrophy [MD])
- Neuromuscular (eg, multiple sclerosis [MS])
- Pulmonary (eg, chronic obstructive pulmonary disease [COPD])
- Multisystem (eg, trauma, amputation)

Impairments of body functions and structures

- Aerobic capacity (eg, shortness of breath at rest and with activity)
- Circulation (eg, edema, orthostatic hypotension)
- Gait (eg, abnormalities increasing risk or rate of falling in the home environment)
- Muscle performance (eg, pelvic floor dysfunction, difficulty with reaching, carrying, or transfers)
- Range of motion (eg, inability to dress due to limited shoulder range)
- Ventilation and respiration (eg, shortness of breath when attempting to sweep the floor)

Activity limitations and participation restrictions

- Self-care (eg, difficulty climbing in and out of tub and shower or dressing a wound due to limited range of motion and strength)
- Domestic life (eg, difficulty scrubbing or accessing limited spaces in bathrooms due to decreased endurance and coordination, inability to wash clothes due to loss of strength)
- Education life (eg, inability to access education campuses due to environmental barriers)
- Work life (eg, inability to effectively perform job due to fatigue from preparing for work)
- Community, social, and civic life (eg, inability to engage in community social events due to inability to properly dress oneself)

Examples of What Tests and Measures May Characterize or Quantify:

- Ability to gain access to home environments (eg, barrier identification, observations, physical performance tests) **Specific Tests and Measures in PTNow**
- Ability to assume or resume activities related to self-care and home management activities with or without assistive technology (eg, activities of daily living [ADL] scales, aerobic capacity tests,

instrumental activities of daily living [IADL] scales, interviews, observations, profiles) **Specific Tests and Measures in PTNow**
- Safety in performing self-care and home management activities (eg, diaries, fall scales, interviews, logs, observations, reports, videographic assessments) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Barrier identification checklists
- Diaries
- Indexes
- Interviews
- Inventories
- Logs
- Observations
- Profiles
- Questionnaires
- Reports
- Scales
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Descriptions and quantifications of:
    - Descriptions of need for devices or equipment
    - Functional capacity
    - Level of ability to participate in variety of environments
    - Level of safety in self-care and domestic life activities
    - Physiologic responses to activity performance

5.23 - Sensory Integrity

Sensory integrity **is the soundness of cortical sensory processing, including proprioception, vibration sense, stereognosis, and cutaneous sensation.** ***Proprioception*** **is the reception of stimuli from within the body (eg, from muscles and tendons) and includes position sense (the awareness of joint position) and kinesthesia (the awareness of movement).** ***Vibration sense*** **is the ability to sense mechanical vibration.** ***Stereognosis*** **is the ability to perceive, recognize, and name familiar objects.** ***Cutaneous sensation*** **is the ability to determine location of and discriminate between 2 points of sensory stimulation.**

The physical therapist uses the results of tests and measures to determine the integrity of an individual's sensory, perceptual, and somatosensory processes. Responses monitored at rest, during activity, and after activity may indicate the presence or severity of an impairment, activity limitation, or participation restriction.

Examples of Clinical Indications:

Risk factors for impaired sensory integrity

- Lack of safety awareness in all environments
- Risk-prone behaviors (eg, working without protective gloves)
- Substance abuse

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inadequate balance, limited perception of arms and legs in space)
- Health and wellness (eg, inadequate understanding of role of proprioception in balance)

Pathology or health condition

- Cardiovascular (eg, lymphedema, peripheral vascular disease [PVD])
- Integumentary (eg, burn, frostbite)
- Musculoskeletal (eg, derangement of joint; disorders of bursa, synovia, and tendon)
- Neuromuscular (eg, cerebral palsy [CP], stroke, developmental delay, spinal cord injury [SCI], traumatic brain injury [TBI])
- Pulmonary (eg, ventilatory pump failure)
- Multisystem (eg, acquired immunodeficiency syndrome [AIDS], Guillain-Barré syndrome [GBS], trauma)

Impairments of body functions and structures

- Circulation (eg, numb feet)
- Integumentary integrity (eg, redness under orthosis)
- Muscle performance (eg, decreased grip strength)
- Posture (eg, asymmetrical alignment)

Activity limitations and participation restrictions

- Self-care (eg, inability to put on trousers while standing due to foot numbness)
- Domestic life (eg, difficulty with sorting laundry due to hand numbness)

- Education (eg, inability to sit for full classes to sensory loss in trunk and lower extremities)
- Work life (eg, inability to operate cash register due to clumsiness)
- Community, social, and civic life (eg, inability to drive car due to loss of spatial awareness, inability to play guitar due to hyperesthesia)

Examples of What Tests and Measures May Characterize or Quantify:

- Combined/cortical sensations (eg, stereognosis tests, tactile discrimination tests) **Specific Tests and Measures in PTNow**
- Deep sensations (eg, kinesthesiometry, vibration tests) **Specific Tests and Measures in PTNow**
- Electrophysiological integrity (eg, nerve conduction studies; needle, fine wire, or surface electromyography) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Esthesiometers
- Filaments
- Kinesthesiometers
- Pressure scales
- Thermographic instruments (hot and cold objects)
- Tuning forks

Examples of Data Used in Documentation:

- Position and movement sense
- Sensory processing
- Sensory responses to provocation

5.24 - Skeletal Integrity

Skeletal integrity **is the optimal alignment, density, and soundness of the bony structures of the body.**

The physical therapist uses tests and measures to assess an individual's risk for decreased bone mineral density (BMD), bony malformations, and abnormal bony movements.

Examples of Clinical Indications:

Risk factors for impaired skeletal integrity

- Chronic illness history
- Habitual suboptimal posture
- Long periods of bed rest

- Poor nutrition or malabsorptive disorders
- Recent fall or injury

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, limited performance of recreational activities, decreased weight-bearing activities as part of normal routine)
- Health and wellness (eg, decreased bone density as part of aging)

Pathology or health condition

- Musculoskeletal (eg, osteopenia, osteoporosis, osteogenesisimperfecta)
- Neuromuscular (eg, cerebral palsy [CP], spina bifida)
- Pulmonary (eg, cystic fibrosis [CF])
- Multisystem (eg, rheumatoid arthritis [RA])

Impairments of body functions and structures

- Muscle performance (eg, weakness, imbalance)
- Posture (eg, severe kyphosis, back pain)
- Range of motion (eg, decreased shoulder range of motion)
- Skeletal integrity (eg, edema, excess bony movement not at a joint)
- Ventilation (eg, limited or asymmetrical thoracic expansion)

Activity limitations and participation restrictions

- Self-care (eg, difficulty donning and doffing shoes and socks due to limited and painful spinal range of motion)
- Domestic life (eg, inability to do laundry due to dyspnea)
- Education life (eg, inability to sit at a computer workstation due to painful head and neck postures)
- Work life (eg, inability to stand at a counter due to low back pain)
- Community, social, and civic life (eg, inability to participate in community ballet due to acute foot pain)

Examples of What Tests and Measures May Characterize or Quantify:

- Signs of decreased BMD (eg, height measurements, posture changes) **Specific Tests and Measures in PTNow**

- Signs and symptoms of interrupted bony integrity (eg, erythema, pain, edema, point tenderness at mid-sections of long bones) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Goniometers
- Palpation
- Plumb lines
- Posture grids
- Tape measures

Examples of Data Used in Documentation:

- Descriptions of bony alignment and symmetry
- Edema
- Erythema
- Extremity girth compared with contralateral side
- Postural measurements, including alignment of bony structures
- Postural alignment using posture grids

5.25 - Ventilation and Respiration

Ventilation **is the movement of a volume of gas into and out of the lungs.** ***Respiration*** **is the exchange of oxygen and carbon dioxide across a membrane either in the lungs or at the cellular level.**

The physical therapist uses tests and measures to determine whether an individual has an adequate ventilatory pump and oxygen uptake/carbon dioxide elimination system to meet oxygen demands at rest, during movement, and during the performance of purposeful activity.

Examples of Clinical Indications:

Risk factors for impaired ventilation or respiration

- Exposure to indoor or outdoor air pollutants
- Exposure to inhaled allergens or pathogens in a work or living environment
- First- or secondhand exposure to tobacco smoke

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, limited ventilation and respiration based on predicted norms and requirements for specific activities such as running, swimming, skiing, hiking at altitude, scuba diving)
- Health and wellness (eg, limited ventilation and respirations for work requirements)

Pathology or health condition

- Cardiovascular (eg, congestive heart failure [CHF], peripheral vascular disease [PVD])
- Neuromuscular (eg, amyotrophic lateral sclerosis [ALS], spinal cord injury [SCI])
- Pulmonary (eg, pneumonia, asthma, cystic fibrosis [CF], emphysema, chronic bronchitis)
- Multisystem (eg, thoracic trauma, cancer)

Impairments of body functions and structures

- Aerobic capacity (eg, limited ventilatory rate, volume, decreased oxygen uptake)
- Circulation (eg, structure or function that interferes with gas exchange centrally or peripherally)
- Ventilation and respiration (eg, increased work of breathing, reduced ventilatory capacity, decreased airway protection and clearance functions)

Activity limitations and participation restrictions

- Self-care (eg, ventilatory discomfort during bathing, dressing, or feeding due to systemic or localized abnormality associated with dyspnea or orthopnea)
- Domestic life (eg, limited ability to participate in physically active home management such as cooking, cleaning, and yard work due to reduced ventilatory capacity)
- Education life (eg, difficulty carrying books and walking from class to class due to thoracic pain)
- Work life (eg, inability to perform job duties due to dyspnea, wheezing, or coughing with repetitive use of upper extremities)
- Community, social, and civic life (eg, inability to play sports, access public facilities, or access public transportation due to signs and symptoms associated with ventilatory or respiratory abnormalities)

Examples of What Tests and Measures May Characterize or Quantify:

- Pulmonary signs of respiration/gas exchange (eg, observation, respiratory rate at rest and with activity, auscultation, gas analysis, pulse oximetry) **Specific Tests and Measures in PTNow**
- Pulmonary signs of ventilatory function (eg, observation of posture, ventilatory patterns, and muscle use; respiratory rate, rhythm, and pattern; airway protection/cough and swallow assessment; breath and voice sounds; ventilatory flow, forces, and volumes) **Specific Tests and Measures in PTNow**
- Pulmonary symptoms (eg, dyspnea and perceived exertion indexes and scales) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Airway clearance tests
- Force meters
- Gas analyses
- Indexes
- Observations
- Palpation
- Pulmonary function assessment tools
- Pulse oximeters
- Spirometers
- Stethoscopes

Examples of Data Used in Documentation:

- Ability to clear and protect airway
- Breath and voice sounds
- Chest wall excursion measurements
- Description of accessory muscle usage
- Description of intercostal muscle movement
- Gas exchange at rest and with activity
- Phonation
- Presence, location, and level of cyanosis
- Pulmonary vital signs
- Pulmonary function and ventilatory mechanics at rest and with activity
- Thoracoabdominal ventilatory patterns
- Ventilatory pump function at rest and with activity

5.26 - Work Life

Work life **integration or reintegration is the process of assuming or resuming activities and roles in work settings. It requires abilities such as negotiating environmental terrain, gaining access to appropriate work settings, and participating in essential activities for work.**

The physical therapist uses tests and measures to make judgments as to whether an individual is prepared to assume or resume work-related roles, including activities of daily living (ADL) and instrumental activities of daily living (IADL), or to assess the need for assistive technology or environmental adaptations.

Examples of Clinical Indications:

Risk factors for activity limitations and participation restrictions in work life

- Depression
- Falls risk
- Impaired endurance
- Inefficient locomotion
- Lack of safety awareness
- Mobility impairment
- Pain
- Sedentary lifestyle

Health, wellness, and fitness needs

- Fitness, including physical performance (eg, inadequate fine motor skills to perform work-related tasks, inadequate gross motor skills to safely navigate place of employment)
- Health and wellness (eg, inadequate understanding of ways to maintain health to reduce risks for reinjury in work environment, resistance to modifying behaviors to reduce risks for reinjury)

Pathology or health condition

- Cardiovascular (eg, unstable angina, congestive heart failure [CHF], chronic obstructive pulmonary disease [COPD], asthma, bronchopulmonary dysplasia)
- Genitourinary (eg, urinary incontinence)
- Musculoskeletal (eg, herniated lumbar disk, status after joint replacement, status after lumbosacral spinal fusion, status after tendon lengthening)
- Neuromuscular (eg, cerebellar ataxia, cerebral palsy [CP], paraplegia)
- Pulmonary (eg, asthma, COPD, cystic fibrosis)
- Multisystem (eg, trauma, CP, rheumatoid arthritis [RA])

Impairments of body functions and structures

- Circulation (eg, claudication)
- Mental functions (eg, memory, judgment, way finding, impulsivity)

- Muscle performance (eg, decreased strength)
- Neuromotor development (eg, abnormal movement and postural control)
- Posture (eg, pain with prolonged standing, pain with lifting)
- Range of motion (eg, decreased muscle length)

Activity limitations and participation restrictions

- Self-care (eg, inability to manage clothing when performing toilet transfers)
- Work life (eg, inability to sit at desk due to pain or balance deficits, inability to walk from parking area to office entrance)

Examples of What Tests and Measures May Characterize or Quantify:

- Ability to assume or resume work-related activities with or without assistive technology (eg, developmental capacity tests, activity profiles, disability indexes, functional status questionnaires, IADL scales, observations, physical capacity tests) **Specific Tests and Measures in PTNow**
- Ability to gain access to work environments (eg, needs assessment, barrier identification, interviews, observations, physical capacity tests, transportation assessments) **Specific Tests and Measures in PTNow**
- Safety in performing work-related activities (eg, ergonomic assessments, diaries, falls risk assessments, interviews, logs, observations, videographic assessments) **Specific Tests and Measures in PTNow**

Examples of Data-Gathering Tools:

- Cameras and photographs
- Equipment needed to perform developmental and physical capacity tests
- Video cameras and video recordings

Examples of Data Used in Documentation:

- Ability to participate in a variety or work environments
- Clinical rationale to justify need and appropriate assistive technology
- Developmental level of motor ability
- Functional capacity for work
- Level of safety in work-related activities
- Physiological responses to work-related activities
- Results of ergonomic assessment

CAP 6 - Interventions

Introduction

Intervention is the purposeful interaction of the physical therapist with an individual—and, when appropriate, with other people involved in that individual's care—to produce changes in the condition that are consistent with the diagnosis and prognosis.

Decisions about the interventions selected are based on the physical therapist's assessment of the individual's current condition and are contingent on the timely monitoring of the individual's response and the progress made toward achieving the goals. In prescribing interventions for an individual, the physical therapist includes parameters for each intervention (eg, method, mode, or device; intensity, load, or tempo; duration and frequency; and progression).

Physical therapist intervention is focused on optimizing functional independence, emphasizes patient or client instruction, and promotes proactive, wellness-oriented lifestyles. Through appropriate education and instruction, the individual is encouraged to develop habits that will maintain or improve function; prevent recurrence of problems; and promote health, wellness, and fitness.

Intervention is an integral element of physical therapy that may occur at multiple points during examination and evaluation as well as after the physical therapist has determined the diagnosis, prognosis, and plan of care.

Selection of Interventions

The physical therapist uses information gleaned through the examination and evaluation to select interventions best suited to meet the individual's needs according to his or her presentation. Findings may include health condition (disease, disorder, or injury); body function and structure impairments; activity limitations; and participation restrictions; environmental factors; risk reduction or prevention needs; and health, wellness, and fitness needs.

Physical therapists select interventions based on:

- *Examination* findings (ie, data collected from the history, systems review, and tests and measures)
- An *evaluation* and a *diagnosis* that supports physical therapy intervention
- A *prognosis* that is associated with improved or maintained health status through risk reduction; health, wellness, and fitness programs; or the remediation of impairments, activity limitations, participation restrictions, or environmental barriers
- A ***plan of care*** designed to improve, enhance, and maximize function.

Factors that influence the complexity of both the examination process and the selection of interventions may include: the chronicity or severity of current condition; the level of current impairment and probability of prolonged impairment of body functions and structures; activity limitations; participation restrictions; living environment; multisite or multisystem involvement; overall physical function and health status; potential destinations at the conclusion of care; preexisting systemic conditions or diseases; social supports; and stability of the condition.

Through monitoring and reexamination, the physical therapist determines the need for any alteration in an intervention or in the plan of care. The interventions prescribed are consistent with the individual's needs and physiological and cognitive status, goals and outcomes, and resource constraints. The independent performance of the intervention by the individual (or significant other, family, or caregiver) is encouraged, following instruction in safe and effective application.

Goals and Outcomes

Physical therapists select, prescribe, and implement one or more interventions based on goals and outcomes that have been developed with the individual. *Goals* are the intended impact on functioning (body functions and structures, activities, and participation) as a result of implementing the plan of care. Goals should be measurable, functionally driven, and time specific. Goals may be classified as short-term and long-term. *Outcomes* are the actual results of implementing the plan of care that indicate the impact on functioning.
As the individual reaches the end of the episode of care, the **physical therapist measures the outcome** of the services provided by characterizing or quantifying the impact of the physical therapist intervention.

Criteria for Concluding an Episode of Care

The physical therapist concludes an episode of care when the goals or outcomes for the individual have been achieved, when the individual is unable to continue to progress toward goals, when the individual chooses to conclude care, or when the physical therapist determines that the individual will no longer benefit from continued physical therapy.

In consultation with appropriate individuals, and in consideration of the goals and outcomes, the physical therapist plans for appropriate follow-up or referral at the conclusion of an episode of care.

Categories of Interventions

The Guide contains general categories of interventions that the physical therapist may decide to use during the **episode of care**. Each intervention category includes:

- **A general definition and purpose of the intervention for each category**. Physical therapists select, prescribe, and implement interventions based on examination findings, diagnosis, and prognosis.
- **Types of interventions**. Types of interventions are listed under each category with illustrative examples.
- **Goals and outcomes**. Goals and outcomes are categorized according to an intervention's impact on: signs or symptoms; impairments to body functions or structures; activity limitations; participation restrictions or environmental barriers; risk reduction or prevention; health, wellness, and fitness needs; societal resources; and patient or client satisfaction.

List of Intervention Categories

The categories of interventions are listed alphabetically, with patient and client instruction first:

- **Patient or Client Instruction**
- **Airway Clearance Techniques**
- **Assistive Technology: Prescription, Application, and, as Appropriate, Fabrication or Modification**
- **Biophysical Agents**
- **Functional Training in Self-Care and in Domestic, Education, Work, Community, Social, and Civic Life**
- **Integumentary Repair and Protection Techniques**
- **Manual Therapy Techniques**
- **Motor Function Training**
- **Therapeutic Exercise**

INTERVENTION CATEGORIES

6.1 - Patient or Client Instruction

Patient or client instruction is the process of informing, educating, or training patients or clients, families, significant others, and caregivers with the intent to promote and optimize the physical therapist episode of care. Instruction may be related to the current condition (eg, specific impairments in body functions or body structures, activity limitations, or participation restrictions); the plan of care; the need to enhance performance; a transition to a different role or setting; risk factors for developing impairments in body functions or structures, activity limitations, or participation restrictions; or the need for health, wellness, and fitness programs.

Physical therapists are responsible for patient or client instruction across all settings for all individuals.

Patient or client instruction may include the provision of information, education, and training regarding the following:

- Health, wellness, and fitness programs
- Impairments in body functions and structures, activity limitations, and participation restrictions
- Pathology or health condition
- Performance enhancement
- Plan of care
- Psychosocial influences on treatment (eg, fear-avoidance beliefs, behavior change techniques)
- Risk factors for pathology or health condition, impairments in body functions and structures, activity limitations, and participation restrictions
- Transitions across new settings
- Transitions to new roles

Goals and outcomes may include the following:

- Ability to perform physical actions, tasks, or activities is improved.
- Awareness and use of community resources are improved.
- Behaviors that foster healthy habits, wellness, and prevention are acquired.
- Decision making is enhanced regarding health and the use of health care resources by the patient or client, family, significant others, and caregivers.
- Intensity of care is decreased.
- Level of supervision required for task performance is decreased.
- Knowledge and awareness of the diagnosis, prognosis, interventions, and goals and outcomes are increased.

- Knowledge of personal and environmental factors associated with the pathology or health condition is increased.
- Risk of recurrence of the condition is reduced.
- Risk of secondary impairment is reduced.
- Safety of the patient or client, family, significant others, and caregivers is improved.
- Self-management of symptoms is improved.
- Use and cost of health care services are decreased.

6.2 - Airway Clearance Techniques

Airway clearance techniques are a group of therapeutic activities intended to manage or prevent the consequences of impaired mucociliary transport or the inability to protect the airway (eg, impaired cough). Techniques may include breathing strategies for airway clearance, manual/mechanical techniques for airway clearance, positioning, and pulmonary postural drainage.

Physical therapists select, prescribe, and implement airway clearance techniques when the examination findings, diagnosis, and prognosis indicate the use of these techniques to enhance exercise performance; reduce risk factors and complications; enhance health, wellness, or fitness; enhance or maintain physical performance; improve cough; improve ventilation; or prevent or remediate impairments in body functions and structures, activity limitations, or participation restrictions.

Airway clearance techniques may include the following:

- Breathing strategies
    - Active cycle of breathing or forced expiratory techniques
    - Assisted cough/huff techniques
    - Autogenic drainage
    - Paced breathing
    - Pursed lip breathing
- Manual/mechanical techniques
    - Assistive devices
    - Chest percussion, vibration, and shaking
    - Chest wall manipulation
    - Suctioning
    - Ventilator aids
- Positioning
    - Positioning to alter work of breathing
    - Positioning to maximize ventilation and perfusion

- Pulmonary postural drainage

- Supplemental oxygen therapy
  - Techniques to maximize ventilation (eg, inspiratory hold maneuver, staircase breathing, manual hyperinflation, incentive spirometry)

Goals and outcomes may include the following:

- Impact on pathology or health condition
  - Atelectasis is decreased.
  - Nutrient delivery to tissue is increased.
  - Physiological response to increased oxygen demand is improved.
  - Symptoms associated with increased oxygen demand are decreased.
  - Tissue perfusion and oxygenation are enhanced.

- Impact on impairments in body functions and structures
  - Airway clearance is improved.
  - Cough is improved.
  - Endurance is increased.
  - Energy expenditure per unit of work is decreased.
  - Exercise tolerance is improved.
  - Muscle performance (strength, power, and endurance) is increased.
  - Ventilation and respiration are improved.
  - Work of breathing is decreased.

- Impact on activity limitations and participation restrictions
  - Ability to assume or resume self-care and roles in domestic, education, work, community, social, and civic life with or without devices and equipment is improved.

- Risk reduction or prevention
  - Preoperative and postoperative complications are reduced.
  - 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.

- Impact on health, wellness, and fitness
  - Ability to participate in fitness activities is improved.

    - Fitness is improved.
    - Health status is improved.
    - Physical capacity is increased.
- Impact on societal resources
    - Utilization of physical therapist services is optimized.
    - Utilization of physical therapist services results in efficient use of health care dollars.
- Patient or client satisfaction
    - Access, availability, and services are acceptable to the patient or client.
    - Administrative management of the practice is acceptable to the patient or client.
    - Clinical proficiency of the physical therapist is acceptable to the patient or client.
    - Coordination of care is acceptable to the patient or client.
    - Cost of health care services is decreased.
    - Intensity of care is decreased.
    - Interpersonal skills of the physical therapist are acceptable to the patient or client, family, significant others, and caregivers.
    - Sense of well-being is improved.
    - Stressors are decreased.

6.3 - Assistive Technology: Prescription, Application, and, as Appropriate, Fabrication or Modification

Assistive technology includes the prescription, application, and, as appropriate, fabrication or modification of seating and positioning technologies; aids for locomotion; orthotic devices; prosthetic devices; and other assistive technologies to improve functioning. *Prescription, application, and, as appropriate, fabrication or modification of assistive technologies* are processes used to select, fit, and deliver assistive technology devices that are used to reduce the level of physical disability, promote activities and participation, and decrease pain caused by various pathologies and injuries. Proper prescription, application, and fabrication and/or modification of assistive technologies can promote good posture; maximize comfort, safety, and efficiency during locomotion; enhance breathing and digestion; minimize risk for pressure ulcers, skin irritation, and other secondary impairments; slow progression of disability; minimize pain; and maximize function during activities of daily living (ADL) and instrumental activities of daily living (IADL).

Physical therapists select, prescribe, apply, fabricate, and modify assistive technologies when the examination findings, diagnosis, and prognosis indicate that the use of these technologies will meet the individual's unique immediate and anticipated medical and functional needs. When such technologies are already in use, physical therapists use examination data, diagnosis, and prognosis to determine how effectively the technologies are working to meet the individual's needs.

Prescription, application, and, as appropriate, fabrication/modification of assistive technologies may include the following:

- Aids for locomotion (eg, crutches, canes, walkers, rollators, manual wheelchairs, power wheelchairs, power-operated vehicles)

- Orthoses (eg, ankle-foot orthoses [AFOs], knee-ankle-foot orthoses [KAFOs], body jackets, wrist cock-up splints, shoe inserts)
- Prostheses (eg, transtibial and transfemoral prostheses, upper extremity prostheses)
- Seating and positioning technologies (eg, custom-molded seating, removable lateral trunk supports and upper extremity support trays for wheelchairs, sidelyers, prone standers, manual or power recline systems for wheelchairs)
- Other assistive technologies to improve safety, function, and independence, such as transfer technologies (eg, transfer boards, mechanical lifts/hoists) and bathroom technologies (eg, raised toilet commodes, adaptive commodes, transfer benches, sliders)

Goals and outcomes may include the following:

- Impact on pathology or health condition
    - Edema, lymphedema, or effusion is reduced.
    - Joint swelling, inflammation, or restriction is reduced.
    - Pain is decreased.
    - Physiological response to increased oxygen demand is improved.
    - Soft tissue swelling, inflammation, or restriction is reduced.
    - Symptoms associated with increased oxygen demand are decreased.
- Impact on impairments in body functions and structures
    - Airway clearance is improved.
    - Balance is improved.
    - Endurance is increased.
    - Energy expenditure per unit of work is decreased.
    - Joint stability is improved.
    - Motor function (motor control and motor learning) is improved.
    - Optimal joint alignment is achieved.
    - Optimal loading on body parts is achieved.
    - Postural alignment and control are improved.
    - Quality and quantity of movement between and across body segments are improved.
    - Range of motion is improved.
    - Ventilation and respiration/gas exchange are improved.
    - Weight-bearing status is improved.
    - Work of breathing is decreased.
- Impact on activity limitations and participation restrictions

- Ability to assume or resume self-care and roles in domestic, education, work, community, social, and civic life is improved.
- Ability to attend to environment is improved.
- Ability to communicate is improved.
- Ability to perform physical actions, tasks, or activities related to self-care and domestic, education, work, community, social, and civic life is improved.
- Level of supervision required for task performance is decreased.
- Performance of and independence in ADL and IADL are increased.
- Tolerance of positions and activities is increased.

- Risk reduction or prevention
  - Pressure on body tissues is reduced.
  - Protection of body parts is increased.
  - 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.
  - Stresses precipitating injury are decreased.
- Impact on health, wellness, and fitness
  - Ability to participate in fitness activities is improved.
  - Health status is improved.
  - Physical capacity is increased.
  - Physical function is improved.
- Impact on societal resources
  - Utilization of physical therapist services is optimized.
  - Utilization of physical therapist services results in efficient use of health care dollars.
- Patient or client satisfaction
  - Access, availability, and services provided are acceptable to the patient or client.
  - Administrative management of the practice is acceptable to the patient or client.
  - Advocacy on behalf of the patient or client is helpful and appreciated.
  - Clinical proficiency of the physical therapist is acceptable to the patient or client.
  - Coordination of care is acceptable to the patient or client.
  - Cost of health care services is decreased.
  - Intensity of care is decreased.

- Interpersonal skills of the physical therapist are acceptable to the patient or client, family, significant others, and caregivers.
- Quality of life is improved.
- Stressors are decreased.

6.4 - Biophysical Agents

Biophysical agents are a broad group of agents that use various forms of energy and are intended to assist muscle force generation and contraction; decrease unwanted muscular activity; increase the rate of healing of open wounds and soft tissue; maintain strength after injury or surgery; modulate or decrease pain; reduce or eliminate edema; improve circulation; decrease inflammation, connective tissue extensibility, or restriction associated with musculoskeletal injury or circulatory dysfunction; increase joint mobility, muscle performance, and neuromuscular performance; increase tissue perfusion and remodel scar tissue; and treat skin conditions.
Physical therapists select, prescribe, and implement the use of biophysical agents when the examination findings, diagnosis, and prognosis indicate the use of these agents to reduce risk factors and complications; enhance health, wellness, or fitness; enhance or maintain physical performance; or prevent or remediate impairments in body functions and structures, activity limitations, or participation restrictions. *The use of biophysical agents in the absence of other interventions should not be considered to be physical therapy unless there is documentation that justifies the necessity of their exclusive use.*

Biophysical agents may include the following:

- Athermal agents
  - Pulsed electromagnetic fields
- Biofeedback
- Compression therapies
  - Compression bandaging
  - Compression garments
  - Taping
  - Total contact casting
  - Vasopneumatic compression devices
- Cryotherapy
  - Cold packs
  - Ice massage
  - Vapocoolant spray
- Electrical stimulation (muscle and nerve)
  - Electrical muscle stimulation (EMS)
  - Electrical stimulation for tissue repair (ESTR)
  - Functional electrical stimulation (FES)
  - High-voltage pulsed current (HVPC)

    - Neuromuscular electrical stimulation (NMES)
    - Transcutaneous electrical nerve stimulation (TENS)
- Hydrotherapy
    - Contrast bath
    - Fluidotherapy
    - Pools
    - Pulsatile lavage
    - Whirlpool tanks
- Hyperbaric oxygen therapy
- Light agents
    - Infrared
    - Laser
    - Ultraviolet
- Mechanical devices
    - Continuous passive motion (CPM)
    - Standing frame
    - Tilt table
    - Traction devices
- Sound agents
    - Phonophoresis
    - Ultrasound
- Thermotherapy
    - Dry heat
    - Hot packs
    - Paraffin baths

Goals and outcomes may include the following:

- Impact on pathology or health condition
    - Atelectasis is decreased.
    - Debridement of nonviable tissue is achieved.
    - Edema, lymphedema, or effusion is decreased.
    - Joint swelling, inflammation, or restriction is reduced.

    - Neural compression is decreased.
    - Nutrient delivery to tissue is increased.
    - Osteogenic effects are enhanced.
    - Pain is decreased.
    - Soft tissue or wound healing is enhanced.
    - Soft tissue swelling, inflammation, or restriction is reduced.
    - Tissue perfusion and oxygenation are enhanced.

- Impact on impairments in body functions and structures
    - Airway clearance is improved.
    - Integumentary integrity is improved.
    - Motor function (motor control and motor learning) is improved.
    - Muscle performance (strength, power, and endurance) is increased.
    - Postural alignment and control are improved.
    - Quality and quantity of movement between and across body segments are improved.
    - Range of motion is improved.
    - Relaxation is increased.
    - Sensory awareness is increased.
    - Weight-bearing status is improved.
    - Work of breathing is decreased.

- Impact on activity limitations and participation restrictions
    - Ability to perform physical actions, tasks, or activities related to self-care and domestic, education, work, community, social, and civic life with and without devices and equipment is improved.
    - Level of supervision required for task performance is decreased.
    - Performance of and independence in activities of daily living and instrumental activities of daily living with or without devices and equipment are increased.
    - Tolerance of positions and activities is increased.

- Risk reduction or prevention
    - Complications of immobility are reduced.
    - Preoperative and postoperative complications are reduced.
    - Risk factors are reduced.
    - Risk of recurrence of condition is reduced.
    - Risk of secondary impairment is reduced.
    - Self-management of symptoms is improved.

- Impact on health, wellness, and fitness
    - Fitness is improved.
    - Health status is improved.
    - Physical capacity is increased.
    - Physical function is improved.
- Impact on societal resources
    - Utilization of physical therapist services is optimized.
    - Utilization of physical therapist services results in efficient use of health care dollars.
- Patient or client satisfaction
    - Access, availability, and services provided are acceptable to the patient or client.
    - Administrative management of the practice is acceptable to the patient or client.
    - Clinical proficiency of the physical therapist is acceptable to the patient or client.
    - Coordination of care is acceptable to the patient or client.
    - Interpersonal skills of the physical therapist are acceptable to the patient or client, family, significant others, and caregivers.
    - Sense of well-being is improved.
    - Stressors are decreased.

6.5 - Functional Training in Self-Care and in Domestic, Education, Work, Community, Social, and Civic Life

Functional training in self-care and domestic life integration and reintegration is the education and training of individuals to improve their ability to perform physical actions, tasks, or activities in an efficient, typically expected, or competent manner. *Self-care* includes activities of daily living (ADL), such as bed mobility, transfers, dressing, grooming, bathing, eating, and toileting. *Domestic life* includes more complex ADL and instrumental activities of daily living (IADL), with training in activities such as caring for dependents, maintaining a home, performing household chores and yard work, and shopping. Education and training may include accommodation to or modification of environmental and home barriers, guidance and instruction in injury prevention or reduction, functional training programs, training in the use of assistive technology during self-care and domestic life activities, task simulation and adaptation, and travel training.

Functional training in education life integration or reintegration is the education and training of individuals in the assumption and resumption of roles and functions in the education environment, so that the physical actions or activities required for these roles and functions are performed in an efficient, typically expected, or competent manner. Education and training may include accommodations to or modifications of environmental barriers, functional training programs (eg, conditioning programs), guidance and instruction in injury prevention or reduction, and training in the use of assistive technology in a school environment.

Functional training in work life integration or reintegration is the education and training of individuals in the assumption and resumption of roles and functions in the work environment, so that the physical actions or activities required for these roles and functions are performed in an efficient, typically expected, or competent manner. Education and training may include accommodations to or modifications of environmental and work barriers; functional training programs (eg, work hardening or conditioning programs); guidance and instruction in

injury prevention or reduction; job coaching; leisure and play activity training; task simulation and adaptation; and training in the use of aids for locomotion, orthotic devices, prosthetic requirements, seating and positioning technology, and other assistive technology to improve function during work.
Functional training in community, social, and civic life integration or reintegration is the education and training of individuals in the assumption and resumption of roles and functions in community, social, and civic life, so that the physical actions or activities required for these roles and functions are performed in an efficient, typically expected, or competent manner. Education and training may include gaining access to transportation (eg, driving a car, boarding a bus), to a neighborhood (eg, negotiating curbs, crossing streets, including physical activity as routine), to community businesses and services (eg, banking, shopping), and to public facilities (eg, attending theaters, town hall meetings, places of worship) or resuming roles and functions of a vocational and enjoyable pastimes such as recreational activities (eg, playing a sport, accessing activity-based video games) and age-appropriate hobbies (eg, collecting antiques, gardening, making crafts).

Physical therapists select, prescribe, and implement specific education and functional training activities when the examination findings, diagnosis, and prognosis indicate the use of this training to enhance musculoskeletal, neuromuscular, and cardiovascular/pulmonary capabilities; improve body mechanics; increase assumption or resumption of self-care and of roles in domestic, work, community, social, and civic life in a safe and efficient manner; increase posture awareness; enhance health, wellness, or fitness; prevent or remediate impairment in body functions and structures, activity limitations, or participation restrictions to improve physical function; or reduce risk and/or increase safety during activity performance.

Functional training may include the following:

- ADL training
    - Bathing
    - Bed mobility and transfer training
    - Dressing
    - Eating
    - Grooming
    - Toileting
- Barrier accommodations or modifications
- Developmental activities
- Device and equipment use and training
    - Assistive and adaptive device or equipment training during IADL
    - Orthotic, protective, or supportive device or equipment training during IADL
    - Prosthetic device or equipment training during IADL
- Functional training programs
    - Back schools
    - Job coaching
    - Simulated environments and tasks
    - Task adaptation

    - Task training
    - Travel training
    - Work conditioning
    - Work hardening
- IADL training
    - Community service training
    - School and play activities training
    - Work training
- Injury prevention or reduction
    - Injury prevention education during domestic, education, work, community, social, and civic integration or reintegration
    - Injury prevention education with the use of devices and equipment
    - Safety awareness training during work, community, social, and civic life integration or reintegration

Goals and outcomes may include the following:

- Impact on pathology or health condition
    - Pain is decreased.
    - Physiological response to increased oxygen demand is improved.
    - Symptoms associated with increased oxygen demand are decreased.
- Impact on impairments in body functions and structures
    - Balance is improved.
    - Endurance is improved.
    - Energy expenditure per unit of work is decreased.
    - Motor function (motor control and motor learning) is improved.
    - Muscle performance (strength, power, and endurance) is increased.
    - Postural alignment and control are improved.
    - Sensory awareness is increased.
    - Weight-bearing status is improved.
    - Work of breathing is decreased.
- Impact on activity limitations and participation restrictions
    - Ability to assume or resume self-care and roles in domestic, education, work, community, social, and civic life with and without devices and equipment is improved.

- Ability to perform physical actions, tasks, or activities related to self-care and domestic, education, work, community, social, and civic life integration or reintegration with and without devices and equipment is improved.
- Level of supervision required for task performance is decreased.
- Performance of and independence in ADL and IADL with or without devices and equipment are increased.
- Tolerance of positions and activities is increased.

- Risk reduction or prevention
  - Risk factors are reduced.
  - Risk of secondary impairment is reduced.
  - Safety is improved.
  - Self-management of symptoms is improved.

- Impact on health, wellness, and fitness
  - Fitness is improved.
  - Health status is improved.
  - Physical capacity is increased.
  - Physical function is improved.

- Impact on societal resources
  - Costs of work-related injury or disability are reduced.
  - Utilization of physical therapist services is optimized.
  - Utilization of physical therapist services results in efficient use of health care dollars.

- Patient or client satisfaction
  - Access, availability, and services provided are acceptable to the patient or client.
  - Administrative management of the practice is acceptable to the patient or client.
  - Advocacy on behalf of the patient or client is helpful and appreciated.
  - Clinical proficiency of the physical therapist is acceptable to the patient or client.
  - Coordination of care is acceptable to the patient or client.
  - Cost of health care services is decreased.
  - Intensity of care is decreased.
  - Interpersonal skills of the physical therapist are acceptable to the patient or client, family, significant others, and caregivers.
  - Sense of well-being is improved.
  - Stressors are decreased.

6.6 - Integumentary Repair and Protection Techniques

Integumentary repair and protection involve the application of therapeutic methods and techniques to enhance wound perfusion and establish an optimal environment for wound healing by any of the following mechanisms: facilitation of cellular changes needed for wound healing, removal of nonviable tissue, removal of wound exudate, elimination of peripheral edema, and management of scar tissue. Methods and techniques may include debridement, dressing selection, orthotic selection, protective and supportive device recommendations and modifications, biophysical agents, and topical agents.

Physical therapists select, prescribe, and implement integumentary repair and protection interventions when the examination findings, diagnosis, and prognosis indicate use of these interventions. Physical therapists also (1) assist in the identification of factors that impede wound healing and functional impairments that contribute to wound formation or prevent wound healing and (2) provide individualized education to modify or eliminate those factors.

Integumentary repair and protection may include the following:

- Biophysical agents
    - Electrical stimulation
    - Hyperbaric oxygen therapy
    - Light therapies (eg, ultraviolet-C, low-level laser)
    - Negative pressure wound therapy
    - Pneumatic compression therapy
    - Ultrasound (high and low frequency)
- Debridement
    - Autolytic (support through proper dressing utilization)
    - Biologic (maggots or leeches)
    - Low-frequency, contact ultrasound
    - Mechanical
    - Pulsed lavage with suction
    - Sharp or selective (with instruments such as forceps, scalpels, or scissors)
- Dressings
    - Antimicrobial dressings
    - Cellular-based and tissue-based products
    - Compression bandages/systems
    - Primary and secondary dressings
- Topical agents
    - Anti-inflammatories
    - Cleansers

- Creams
- Enzymes
- Moisturizers
- Ointments
- Sealants

Goals and outcomes may include the following:

- Impact on pathology or health condition
  - Nutrition is optimized as evidenced by laboratory values.
  - Peripheral edema is minimized.
  - Tissue perfusion and oxygenation are enhanced.
- Impact on impairments in body functions and structures
  - Balance is optimized and no longer impaired by the presence of a wound.
  - Integumentary integrity is improved.
  - Joint integrity and mobility are improved.
  - Muscle performance (strength, power, and endurance) is improved.
  - Posture is maintained during gait and transfers.
  - Range of motion is improved.
  - Sensation is optimized, or patient is aware of deficits and able to adapt in order to prevent further tissue injury.
  - Weight-bearing status is improved.
  - Wound healing
    - Clinical infection signs are not present.
    - Inflammation signs are not present.
    - Necrotic tissue is debrided.
    - Pain levels are decreased to less than what the individual considers acceptable.
    - Wound exudate is minimized.
    - Wound healing advances to the next phase.
    - Wound is in the remodeling phase of healing.
    - Wound odor is eliminated.
    - Wound size decreases.
    - Wound tissue is healthy (eg, granulation, new epithelium).
- Impact on activity limitations and participation restrictions
  - Ability to achieve and maintain positions necessary to facilitate wound healing or prevent recurrence is improved.

- Ability to assume or resume self-care and roles in domestic, education, work, community, social, and civic life with and without devices and equipment is improved.
- Ability to perform physical actions, tasks, or activities related to self-care and domestic, education, work, community, social, and civic life with and without devices and equipment is improved.
- Level of supervision required for task performance is decreased.

- Risk reduction and prevention
  - Caregivers are independent in safe patient handling.
  - Preoperative and postoperative complications are reduced.
  - Risk factors are reduced.
  - Risk of recurrence of condition is reduced.
  - Risk of secondary impairment or infection is reduced.
  - Safety is improved.
  - Self-management of symptoms is improved.
- Impact on health, wellness, and fitness
  - Emotional stress is minimized so as not to affect wound healing.
  - Fitness is improved.
  - Health status is improved.
  - Physical capacity is increased.
  - Physical function is improved.
- Impact on societal resources
  - Utilization of physical therapist services is optimized.
  - Utilization of physical therapist services results in efficient use of health care dollars.
- Patient or client satisfaction
  - Access, availability, and services provided are acceptable to the patient or client.
  - Administrative management of practice is acceptable to the patient or client.
  - Clinical proficiency of the physical therapist is acceptable to the patient or client.
  - Coordination of care is acceptable to the patient or client.
  - Cost of health care services is decreased.
  - Intensity of care is decreased.
  - Interpersonal skills of the physical therapist are acceptable to the patient or client, family, significant others, and caregivers.
  - Sense of well-being is improved.
  - Stressors are decreased.

6.7 - Manual Therapy Techniques

Manual therapy techniques are skilled hand movements and skilled passive movements of joints and soft tissue and are intended to improve tissue extensibility; increase range of motion; induce relaxation; mobilize or manipulate soft tissue and joints; modulate pain; and reduce soft tissue swelling, inflammation, or restriction. Techniques may include manual lymphatic drainage, manual traction, massage, mobilization/manipulation, and passive range of motion.

Physical therapists select, prescribe, and implement manual therapy techniques when the examination findings, diagnosis, and prognosis indicate use of these techniques to decrease edema, pain, spasm, or swelling; enhance health, wellness, and fitness; enhance or maintain physical performance; increase the ability to move; or prevent or remediate impairment in body functions and structures, activity limitations, or participation restrictions to improve physical function.

Manual therapy techniques may include the following:

- Manual lymphatic drainage
- Manual traction
- Massage
    - Connective tissue massage
    - Therapeutic massage
- Mobilization/manipulation
    - Dry needling
    - Soft tissue
    - Spinal and peripheral joints
- Neural tissue mobilization
- Passive range of motion

Goals and outcomes may include the following:

- Risk reduction and prevention
    - Preoperative and postoperative complications are reduced.
    - Risk factors are reduced.
    - Risk of recurrence of condition is reduced.
    - Risk of secondary impairment is reduced.
    - Self-management of symptoms is improved.
- Impact on health, wellness, and fitness
    - Fitness is improved.
    - Physical capacity is increased.

- Physical function is improved.

- Impact on pathology or health condition
  - Edema, lymphedema, or effusion is decreased.
  - Joint swelling, inflammation, or restriction is reduced.
  - Neural compression is decreased.
  - Pain is decreased.
  - Soft tissue swelling, inflammation, or restriction is reduced.

- Impact on impairments in body functions and structures
  - Airway clearance is improved.
  - Balance is improved.
  - Energy expenditure per unit of work is decreased.
  - Gait, locomotion, and balance are improved.
  - Integumentary integrity is improved.
  - Joint integrity and mobility are improved.
  - Muscle performance (strength, power, and endurance) is increased.
  - Postural alignment and control are improved.
  - Quality and quantity of movement between and across body segments are improved.
  - Range of motion is improved.
  - Relaxation is increased.
  - Sensory awareness is increased.
  - Weight-bearing status is improved.
  - Work of breathing is decreased.

- Impact on activity limitations and participation restrictions
  - Ability to assume or resume self-care and roles in domestic, education, work, community, social, and civic life with and without devices and equipment is improved.
  - Ability to perform movement tasks is improved.
  - Ability to perform physical actions, tasks, or activities related to self-care and domestic, education, work, community, social, and civic life with and without devices and equipment is improved.
  - Tolerance of positions and activities is increased.

- Impact on societal resources
  - Utilization of physical therapist services is optimized.
  - Utilization of physical therapist services results in efficient use of health care dollars.

- Patient or client satisfaction

- Access, availability, and services provided are acceptable to the patient or client.
- Administrative management of the practice is acceptable to the patient or client.
- Clinical proficiency of the physical therapist is acceptable to the patient or client.
- Coordination of care is acceptable to the patient or client.
- Cost of health care services is decreased.
- Intensity of care is decreased.
- Interpersonal skills of the physical therapist are acceptable to the patient or client, family, significant others, and caregivers.
- Sense of well-being is improved.
- Stressors are decreased.

6.8 - Motor Function Training

Motor function training is the systematic performance or execution of planned physical movements, postures, or activities. Motor function training may include balance training, both static and dynamic; gait training; locomotion training; motor training; perceptual training; and postural stabilization and training.

Physical therapists select, prescribe, and implement motor function training activities when the examination findings, diagnosis, and prognosis indicate the use of these activities to enhance bone density; enhance or maintain physical performance; reduce complications, pain, and restriction; enhance posture control and relaxation; increase sensory awareness; increase tolerance to activity; prevent or remediate impairments in body functions and structures, activity limitations, and participation restrictions; enhance health, wellness, and fitness; or reduce risk and increase safety during activity performance.

Examples of motor function training activities may include the following:

- Balance training
  - Developmental activities training
  - Motor control training or retraining
  - Neuromuscular education or reeducation
  - Perceptual training
  - Standardized, programmatic, and complementary exercise approaches
  - Task-specific performance training
  - Vestibular training
- Gait and locomotion training
  - Developmental activities training
  - Implement and device training
  - Perceptual training
  - Standardized, programmatic, and complementary exercise approaches
  - Training of specific components of gait

    - Wheelchair feature and propulsion training (manual and motorized wheelchairs)
- Posture training
    - Developmental activities training
    - Neuromuscular education or reeducation
    - Postural awareness training
    - Postural control training
    - Postural stabilization activities
    - Vestibular training

Goals and outcomes may include the following:

- Risk reduction and prevention
    - 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.
- Impact on health, wellness, and fitness
    - Fitness is improved.
    - Health status is improved.
    - Physical capacity is increased.
    - Physical function is improved.
- Impact on pathology or health condition
    - Osteogenic effects are enhanced.
    - Pain is decreased.
- Impact on impairments in body functions and structures
    - Aerobic capacity is increased.
    - Balance is improved.
    - Endurance is increased.
    - Energy expenditure per unit of work is decreased.
    - Functionality of gait pattern is improved, resulting in safer ambulation.
    - Locomotion is improved (including ambulation and wheeled mobility).
    - Postural alignment and control are improved.
    - Quality and quantity of movement between and across body segments are improved.

- Sensory awareness is increased.
- Weight-bearing status is improved.

- Impact on activity limitations and participation restrictions
  - Ability to assume or resume self-care and roles in domestic, education, work, community, social, and civic life with or without devices and equipment is improved.
  - Ability to perform physical actions, tasks, or activities related to self-care and domestic, education, work, community, social, and civic life with or without devices and equipment is improved.
  - Level of supervision required for task performance is decreased.
  - Performance of and independence in activities of daily living and instrumental activities of daily living with or without devices and equipment are increased.
  - Tolerance of positions and activities is increased.

- Impact on societal resources
  - Utilization of physical therapist services is optimized.
  - Utilization of physical therapist services results in efficient use of health care dollars.

- Patient or client satisfaction
  - Access, availability, and services provided are acceptable to the patient or client.
  - Administrative management of the practice is acceptable to the patient or client.
  - Clinical proficiency of the physical therapist is acceptable to the patient or client.
  - Coordination of care is acceptable to the patient or client.
  - Cost of health care services is decreased.
  - Intensity of care is decreased.
  - Interpersonal skills of the physical therapist are acceptable to the patient or client, family, significant others, and caregivers.
  - Sense of well-being is improved.
  - Stressors are decreased.

6.9 - Therapeutic Exercise

Therapeutic exercise is the systematic performance or execution of planned physical movements or activities intended to enable the patient or client to remediate or prevent impairments of body functions and structures, enhance activities and participation, reduce risk, optimize overall health, and enhance fitness and well-being. Therapeutic exercise may include aerobic and endurance conditioning and reconditioning; agility training; body mechanics training; breathing exercises; coordination exercises; developmental activities training; muscle lengthening; movement pattern training; neuromotor development activities training; neuromuscular education or reeducation; perceptual training; range of motion exercises and soft tissue stretching; relaxation exercises; and strength, power, and endurance exercises.

Physical therapists select, prescribe, and implement therapeutic exercise activities when the examination findings, diagnosis, and prognosis indicate the use of these activities to enhance bone density; enhance

breathing; enhance or maintain physical performance; improve safety; increase aerobic capacity/endurance; increase muscle strength, power, and endurance; enhance postural control and relaxation; increase sensory awareness; increase tolerance of activity; prevent or remediate impairments in body functions and structures, activity limitations, and participation restrictions to improve physical function; enhance health, wellness, and fitness; reduce complications, pain, restriction, and swelling; or reduce risk and increase safety during activity performance.

Therapeutic exercise may include the following:

- Aerobic capacity/endurance conditioning or reconditioning
    - Aquatic programs
    - Gait and locomotor training
    - Increased workload over time
    - Movement efficiency and energy conservation training
    - Walking and wheelchair propulsion programs
- Flexibility exercises
    - Muscle lengthening
    - Range of motion
    - Stretching
- Neuromotor development training
    - Developmental activities training
    - Motor training
    - Movement pattern training
    - Neuromuscular education or reeducation
- Relaxation
    - Breathing strategies
    - Movement strategies
    - Relaxation techniques
    - Standardized, programmatic, complementary exercise approaches
- Strength, power, and endurance training for head, neck, limb, pelvic-floor, trunk, and ventilator muscles
    - Active assistive, active, and resistive exercises (including concentric, dynamic/isotonic, eccentric, isokinetic, isometric, and plyometric)
    - Aquatic programs
    - Standardized, programmatic, or complementary exercise approaches
    - Task-specific performance training

Goals and outcomes may include the following:

- Impact on pathology or health condition
    - Atelectasis is decreased.
    - Joint swelling, inflammation, or restriction is reduced.
    - Nutrient delivery to tissue is increased.
    - Osteogenic effects are enhanced.
    - Pain is decreased.
    - Physiological response to increased oxygen demand is improved.
    - Soft tissue swelling, inflammation, or restriction is reduced.
    - Symptoms associated with increased oxygen demand are decreased.
    - Tissue perfusion and oxygenation are enhanced.
- Impact on impairments in body functions and structures
    - Aerobic capacity is increased.
    - Airway clearance is improved.
    - Endurance is increased.
    - Energy expenditure per unit of work is decreased.
    - Integumentary integrity and mobility are improved.
    - Muscle performance (strength, power, and endurance) is increased.
    - Quality and quantity of movement between and across body segments are improved.
    - Range of motion is improved.
    - Relaxation is increased.
    - Ventilation and respiration are improved.
    - Work of breathing is decreased.
- Impact on activity limitations or participation restrictions
    - Ability to perform physical actions, tasks, or activities related to self-care and domestic, education, work, community, social, and civic life with or without devices and equipment is improved.
    - Level of supervision required for task performance is decreased.
    - Performance of and independence in activities of daily living and instrumental activities of daily living with or without devices and equipment are increased.
    - Tolerance of positions and activities is increased.
- Risk reduction and prevention
    - 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.
- Impact on health, wellness, and fitness
    - Fitness is improved.
    - Health status is improved.
    - Physical capacity is increased.
    - Physical function is improved.
- Impact on societal resources
    - Utilization of physical therapist services is optimized.
    - Utilization of physical therapist services results in efficient use of health care dollars.
- Patient or client satisfaction
    - Access, availability, and services provided are acceptable to the patient or client.
    - Administrative management of the practice is acceptable to the patient or client.
    - Clinical proficiency of the physical therapist is acceptable to the patient or client.
    - Coordination of care is acceptable to the patient or client.
    - Cost of health care services is decreased.
    - Intensity of care is decreased.
    - Interpersonal skills of the physical therapist are acceptable to the patient or client, family, significant others, and caregivers.
    - Sense of well-being is improved.
    - Stressors are decreased.

CAP 7 - Appendix: History of Guide Development

During the early 1990s, state legislative bodies began to request that health care professionals develop practice parameters. In February 1992, the American Physical Therapy Association's (APTA) Board of Directors embarked on a process to determine whether practice parameters could be delineated for the profession of physical therapy. The Board initiated development of a document that would describe physical therapist practice—content and processes—both for members of the physical therapy profession and for health care policy makers and third-party payers.

The initial foundation for the document was laid by the Board-appointed Task Force on Practice Parameters, whose work led to the appointment of the Task Force to Review Practice Parameters and Taxonomy. The deliberations of these task forces and the materials that they produced resulted in the Board's development of *A Guide to Physical Therapist Practice, Volume I: A Description of Patient Management* ("Volume I").[1] Volume I was published in the August 1995 issue of *Physical Therapy* (**PTJ**). Volume II was to be "composed of descriptions of preferred physical therapist practice for patient groupings defined by common physical therapist management." A Board-appointed Project Advisory Group and a Board Oversight Committee were charged to lead the Volume II project. In early 1997, Volume I and Volume II became Part One and Part Two of a single document ("the Guide"). The first edition of the Guide was published in the November 1997 issue of **PTJ**.[2]

In 1998, APTA began development of Part Three of the Guide to catalog the tests and measures used by physical therapists in the examination of patients and clients and in the documentation of the outcomes of physical therapist patient or client management.

Throughout 1999 and 2000, Board-appointed project editors revised Part One and Part Two of the Guide to reflect input from the general membership, the Task Force on Development of Part Three of the *Guide to Physical Therapist Practice* (Second Edition),[3] and the leadership of APTA and to refine and clarify terminology and definitions used in the Guide.
In 2001, the Guide project editors further refined the catalog of tests and measures ("Part Three"), and an editorial review group reviewed the citations of articles on reliability and validity of measurements obtained using the tests and measures. In 2002 the catalog was incorporated into the *Interactive Guide to Physical Therapist Practice With Catalog of Tests and Measures*,[4] the CD-ROM version of the Guide Second Edition. In 2010, the CD was discontinued, and the Guide moved to a website at its current URL: **http://guidetoptpractice.apta.org**.
Descriptions of the Guide often noted that it was to be a "living document" and that further revisions were expected to occur to reflect changes in practice. In 2009, the project editors developed a work plan and requested input from all APTA components on recommended changes to the Guide. The plan resulted in additional phases of field review, input from a focus group, and input from an expert panel. In 2013, the APTA Board of Directors appointed a Board Guide Oversight Workgroup to complete, with staff assistance, the document revision. For more about the revisions in Guide 3.0, visit **here**.

References

1. 1. A Guide to Physical Therapist Practice, Volume I: A Description of Patient Management. *Phys Ther*.1995;**75**:707-764.
   Abstract/FREE Full Text
2. 2. Guide to Physical Therapist Practice. *Phys Ther*. 1997;**75**:1163-1650.
3. 3. Guide to Physical Therapist Practice. 2nd ed. *Phys Ther*. 2001;**81**:9-744.
   MedlineWeb of Science
4. 4. *Interactive Guide to Physical Therapist Practice With Catalog of Tests and Measures* [CD-ROM]. Alexandria, VA: American Physical Therapy Association; 2002.

- Last updated August 1, 2014.

Glossary

A

Activity

The execution of a task or action by an individual. It represents the individual perspective of functioning

Activity limitations

The difficulties an individual may have in executing activities.

Aerobic capacity/endurance

The ability to perform work or participate in activities over time using the body's oxygen uptake, delivery, and energy release mechanisms.

Airway clearance techniques

A group of therapeutic activities intended to manage or prevent the consequences of impaired mucociliary transport or the inability to protect the airway (eg, impaired cough).

Anthropometric characteristics

Traits that describe body dimensions, such as height, weight, girth, and body fat composition.

Arthrokinematic

Accessory movement at joint surfaces.

Assistive technology

Any item, piece of equipment, or product system—acquired commercially off the shelf, modified, or customized—that is used to increase, maintain, or improve the functional capabilities of a person with a disability. *Assistive technology* includes the prescription, application, and, as appropriate, fabrication or modification of seating and positioning technologies; aids for locomotion; orthotic devices; prosthetic devices; and other assistive technologies to improve functioning.

B

Balance

The ability to maintain the body in equilibrium with gravity statically (ie, while stationary) and dynamically (ie, while moving), and while upright (eg, standing, ambulating) and while sitting (eg, supported, unsupported).

Barriers

Factors within an individual's environment that, through their absence or presence, limit functioning and create disability. See also "**Environmental factors**."

Biophysical agents

A broad group of agents that use various forms of energy to assist muscle force generation and contraction; decrease unwanted muscular activity; increase the rate of healing of open wounds and soft tissue; maintain strength after injury or surgery; modulate or decrease pain; reduce or eliminate edema; improve circulation; decrease inflammation; increase connective tissue extensibility or decrease restriction associated with musculoskeletal injury or circulatory dysfunction; increase joint mobility, muscle performance, and neuromuscular performance; increase tissue perfusion and remodel scar tissue; and treat skin conditions.

Body functions

The physiological functions of body systems, including psychological functions.

Body structures

The structural or anatomical parts of the body, such as organs, limbs, and their components, classified according to body systems.

C

Capacity

Indication of the highest probable level of functioning that a person may reach in a domain in "Activities and Participation" at a given moment. It is measured in a uniform or standard environment and reflects the environmentally adjusted ability of the individual. (See also "**Performance**.")

Cardiovascular pump
Structures responsible for maintaining cardiac output, including the cardiac muscle, valves, arterial smooth muscle, and venous smooth muscle.

Cardiovascular pump dysfunction
Abnormalities of the cardiac muscles, valves, conduction, or circulation that interrupt or interfere with cardiac output or circulation.

Circulation
The movement of blood through organs and tissues to deliver oxygen and to remove carbon dioxide, and the passive movement (drainage) of lymph through channels, organs, and tissues to remove cellular byproducts and inflammatory wastes.

Client instruction
See "**Patient or client instruction**."

Clients
Individuals who engage the services of a physical therapist and who can benefit from the physical therapist's consultation, interventions, professional advice, health promotion, fitness, wellness, or prevention services. Clients also are businesses, school systems, and others to whom physical therapists provide services.

Community, social, and civic life
The engagement in organized social life outside the home.

Conclusion of episode of care
The end of an episode of care for 1 more of the following reasons: when the anticipated goals or expected outcomes for the patient or client have been achieved, when the patient or client is unable to continue to progress toward goals, or when the physical therapist determines that the patient or client will no longer benefit from physical therapy.

Consultation
The rendering of professional or expert opinion or advice by a physical therapist.

Contextual factors
The environmental and personal factors that constitute the complete context of an individual's life.

Cranial nerve integrity
The soundness of the 12 pairs of nerves connected with the brain, including their somatic, visceral, afferent, and efferent components.

D

Disability
An umbrella term for impairments, activity limitations, and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors).

Disease
See "**Health condition**."

Disease management
A group of coherent interventions designed to prevent or manage 1or more chronic conditions using a systematic, multidisciplinary approach and potentially employing multiple treatment modalities. The goal of disease management is to identify individuals at risk for 1or more chronic conditions; to promote patient or client self-management; and to address the illnesses or conditions with maximum clinical outcome, effectiveness, and efficiency regardless of treatment setting (s) or typical reimbursement patterns.

Disorder
See "**Health condition**."

Domains
See "**Health-related states and health-related domains**."

Domestic life
Carrying out domestic and everyday actions and tasks.

E

Education life
Tasks and actions required to engage in education.

Endurance
See "**Aerobic capacity/endurance**" and "**Muscle endurance**."

Environmental factors
The physical, social, and attitudinal environment in which people live and conduct their lives. These are either barriers to or facilitators of the individual's functioning. (See also "**Barriers**" and "**Facilitators**.")

Episode of care
The managed care provided for a specific problem or condition during a set time period. The episode can be either for a short period or on a continuous basis, or it may consist of a series of intervals marked by 1 or more brief separations from care.

F

Facilitators
Factors in an individual's environment that, through their absence or presence, improve functioning and decrease disability. (See also "**Environmental factors**.")

Functional training in self-care and in domestic, education, work, community, social, and civic life
The education and training of individuals to improve their ability to perform physical actions, tasks, or activities in an efficient, typically expected, or competent manner.

Fitness
A dynamic physical state comprising cardiovascular and pulmonary endurance; muscle strength, power, endurance, and flexibility; relaxation; and body composition that allows optimal and efficient performance of daily and leisure activities.

Flexibility
Muscle length (the maximum extensibility of a muscle-tendon unit) in conjunction with joint and soft tissue extensibility.

Functioning
An umbrella term for body functions, body structures, activities, and participation. *Functioning* is the positive interaction between an individual with a health condition and that individual's environmental and personal factors (contextual factors). It comprises activities that an individual identifies as essential to support his or her physical, social, and psychological well-being and to create a personal sense of meaningful living.

G

Gait
The manner in which an individual walks, characterized by rhythm, cadence, step, stride, and speed.

Gas exchange
See "**Respiration**."

Goals
The intended impact on functioning (body functions and structures, activities, and participation) as a result of implementing the physical therapist plan of care. Goals should be measurable, functionally driven, and time limited. If required, the goals may be classified as short-term and long-term.

H

Habilitation
Health care services that help an individual keep, learn, or improve skills and functioning for daily living. Examples include therapy for a child who isn't walking or talking at the expected age. These services may include physical therapy, occupational therapy, speech-language pathology, and other services for people with disabilities in a variety of inpatient and outpatient settings.

Health
A state of being associated with freedom from disease, injury, and illness that also includes a positive component (wellness) that is associated with a quality of life and positive well-being.

Health condition
An umbrella term for acute or chronic disease, disorder, injury, or trauma. It also may include other circumstances, such as aging, stress, pregnancy, congenital abnormality, or genetic predisposition.

Health promotion
Any effort taken to allow an individual, group, or community to achieve awareness of—and empowerment to pursue—prevention and wellness.

Health-related states and health-related domains
A *health-related state* is the level of functioning within a given health-related domain of ICF.*Health-related domains* are the areas of functioning that, while they have a strong relationship to a health condition, are not likely to be the primary responsibility of the health system but rather of other health systems contributing to overall well-being. (In ICF, only domains of well-being related to health are covered.)

Health status
The state or status of the conditions that constitute health.

I

Impairments
Problems in the body functions and/or structures as a significant deviation or loss.

Integration or reintegration
The process of assuming or resuming roles and functions.

Integumentary integrity
Intact skin, including the ability of the skin to serve as a barrier to environmental threats, such as bacteria, pressure, shear, friction, and moisture.

Integumentary repair and protection
The application of therapeutic methods and techniques to enhance wound perfusion and establish an optimal environment for wound healing by any of the following mechanisms: facilitation of cellular changes needed for wound healing, removal of nonviable tissue, removal of wound exudate, elimination of peripheral edema, and management of scar tissue.

J

Joint integrity
The soundness of the structure and function of the joint, which are classified in biomechanical terms as arthrokinematic motion.

Joint mobility
The capacity of the joint to be moved passively, for evaluating the structure and integrity of the joint surface and the characteristics of periarticular soft tissue.

M

Manual therapy techniques
Skilled hand movements and skilled passive movements of joints and soft tissue.

Mental functions
Functions of the brain including global mental functions, such as consciousness, orientation function, motivation, and impulse control; and specific mental functions, such as attention, memory, emotion, and perception.

Mobility (including locomotion)
Moving by changing body positions or locations; by transferring from one place to another; by carrying, moving, or manipulating objects; by walking, running, or climbing; and by using various forms of transportation. This includes ambulation and wheeled mobility.

Mobilization/manipulation
Manual therapy techniques comprising a continuum of skilled passive movements to joints and/or related soft tissues at varying speeds and amplitudes, including a small-amplitude/high-velocity therapeutic movement. These interventions require immediate and continuous examination and evaluation throughout the intervention and, therefore, are performed exclusively by the physical therapist.

Motor function
The ability to learn or to demonstrate the skillful and efficient assumption, maintenance, modification, and control of voluntary postures and movement patterns.

Motor function training
The systematic performance or execution of planned physical movements, postures, or activities.*Motor function training* may include static and dynamic balance training, gait training, locomotion training, motor training, perceptual training, and postural stabilization and training.

Muscle endurance
The ability of muscle to sustain forces repeatedly or to generate forces over a period of time.

Muscle length
The maximum extensibility of a muscle-tendon unit.

Muscle performance
The capacity of a muscle or a group of muscles to generate forces to produce, maintain, sustain, and modify postures and movements that are prerequisite to functional activity.

Muscle power
The work produced per unit of time, or the product of strength and speed.

Muscle strength
The muscle force exerted to overcome resistance under a specific set of circumstances.

N

Neuromotor development
The acquisition and evolution of movement skills throughout the life span.

O

Osteokinematics
Gross angular motions of the shafts of bones in sagittal, frontal, and transverse planes.

Outcomes
The actual results of implementing the plan of care that indicate the impact on functioning (body functions and structures, activities, and participation).

P

Pain
A disturbed sensation that may cause disability, suffering, or distress.

Participation
An individual's involvement in a life situation; the societal perspective of functioning.

Participation restrictions
Problems an individual may experience in involvement in life situations. The presence of a participation restriction is determined by comparing an individual's participation to that which is expected from an individual without a disability in a particular culture or society.

Patient or client instruction
The process of informing, educating, or training patients or clients, families, significant others, and caregivers with the intent to promote and optimize the physical therapist episode of care.

Patients
Individuals who are the recipients of physical therapy examination, evaluation, diagnosis, prognosis, and intervention and who have a disease, disorder, condition, impairment, functional limitation, or disability.

Performance
What individuals do in their current environment, bringing in the aspect of a person's involvement in life situations. (See also "**Capacity**.")

Peripheral nerve integrity
The soundness of the spinal nerves, including their afferent and efferent components.

Personal factors
Contextual factors that relate to the individual, such as age, gender, social status, and life experiences. (See also "**Contextual factors**.")

Physical therapist/physiotherapist

An individual who is a graduate of a physical therapist education program accredited by the Commission on Accreditation in Physical Therapy (CAPTE) and is licensed to practice physical therapy. The terms “physical therapist” and “physiotherapist” are synonymous.

Physical therapist assistant

A technically educated individual who assists the physical therapist in the provision of selected physical therapist interventions. Physical therapist assistants, under the direction and supervision of the physical therapist, are the only individuals who assist a physical therapist in the provision of selected interventions. The physical therapist assistant is a graduate of a physical therapist assistant associate degree program accredited by the Commission on Accreditation in Physical Therapy (CAPTE).

Physical therapy/physiotherapy

Examination, evaluation, diagnosis, prognosis, and intervention provided by physical therapists/physiotherapists. Physical therapy includes diagnosis and management of movement dysfunction and enhancement of physical and functional abilities; restoration, maintenance, and promotion of optimal physical function, optimal fitness and wellness, and optimal quality of life as it relates to movement and health; and prevention of the onset, symptoms, and progression of impairments of body structures and functions, activity limitations, and participation restrictions that may result from diseases, disorders, conditions, or injuries. The terms “physical therapy” and “physiotherapy” are synonymous.

Physical therapist of record

The physical therapist who assumes primary responsibility for patient or client management and as such is held accountable for the coordination, continuation, and progression of the plan of care.

Plan of care

Statements that specify the goals, predicted level of optimal improvement, specific interventions to be used, and proposed duration and frequency of the interventions that are required to reach the goals and outcomes.

Posture

The alignment and positioning of the body in relation to gravity, center of mass, and base of support.

Prevention

The avoidance, minimization, or delay of the onset of impairment, activity limitations, and/or participation restrictions. Includes primary, secondary, and tertiary prevention initiatives for individuals as well as selective intervention initiatives for subsets of the population at risk for impairments, activity limitations, and/or participation restrictions.

a. Primary prevention prevents a target condition in a susceptible or potentially susceptible population through specific measures such as general health promotion efforts.

b. Secondary prevention decreases duration of illness, severity of disease, and number of sequelae through early diagnosis and prompt intervention.

c. Tertiary prevention limits the degree of disability and promotes rehabilitation and restoration of function in patients with chronic and irreversible diseases.

Primary care

The provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients and practicing within the context of family and community. [*Defining Primary Care: An Interim Report*. Washington, DC: Institute of Medicine, National Academy Press; 1995.]

R

Range of motion (ROM)

The arc through which active and passive movement occurs at a joint or a series of joints and the angle(s) created during this limb or trunk movement. *Range of motion* in biomechanical terms is classified as osteokinematic motion.

Reflex integrity

The soundness of the neural path involved in a reflex. A reflex is a stereotypic, involuntary reaction to sensory stimuli.

Rehabilitation

Health care services that help an individual keep, restore, or improve skills and functioning for daily living that have been lost or impaired because a person was sick, hurt, or disabled. These services may include physical therapy, occupational therapy, speech-language pathology, and psychiatric rehabilitation services in a variety of inpatient and outpatient settings.

Reintegration

See "**Integration**."

Respiration

The exchange of oxygen and carbon dioxide across a membrane either in the lungs or at the cellular level.

Review of systems

Information about all major body systems to determine whether there are symptoms that suggest the need for referral for additional medical evaluation. The physical therapist conducts a review of systems during the history-gathering component of examination.

S

Self-care

Caring for oneself, such as washing and drying oneself, caring for one's body parts, dressing, eating and drinking, and looking after one's health.

Sensory integrity

The soundness of cortical sensory processing, including proprioception, vibration sense, stereognosis, and cutaneous sensation.

Sensory processing

The ability to integrate movement-related information that is derived from the environment.

Skeletal integrity

The optimal alignment, density, and soundness of the bony structures of the body.

Strength

See "**Muscle strength**."

Systems review

A brief or limited hands-on examination of (1) the anatomical and physiological status of the cardiovascular/pulmonary, integumentary, musculoskeletal, and neuromuscular systems and (2) the communication ability, affect, cognition, language, and learning style of the individual. The systems review is 1 of 3 components of examinations, along with history, and tests and measures.

T

Tests and measures

The means of gathering reliable and valid cellular- to person-level information, including the individual's environmental factors, and addressing their capacity for, and performance during, movement-related functioning.

Therapeutic exercise

The systematic performance or execution of planned physical movements or activities that may include aerobic capacity/endurance conditioning or reconditioning; flexibility exercises; neuromotor development training; relaxation; and strength, power, and endurance training.

V

Ventilation

The movement of a volume of gas into and out of the lungs.

Ventilatory pump

Thoracic skeleton and skeletal muscles and their innervation responsible for ventilation. The muscles include the diaphragm; the intercostal, scalene, and sternocleidomastoid muscles; the accessory muscles of ventilation; and the abdominal, triangular, and quadratuslumborum muscles.

Ventilatory pump dysfunction

Abnormalities of the thoracic skeleton, respiratory muscles, airways, or lungs that interrupt or interfere with the work of breathing or ventilation.

W

Wellness

A state of being that incorporates all facets and dimensions of human existence, including physical health, emotional health, spirituality, and social connectivity.

Work life

Carrying out the tasks and actions required to engage in work.

- Last updated August 1, 2014.
    - TOMADO DE: http://guidetoptpractice.apta.org/
    -