CHAPTER 1

Geriatric Physical Therapy in the 21st Century: Overarching Principles and Approaches to Practice

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The Physical Therapist in Geriatrics

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INTRODUCTION

All physical therapists, not just those working in settings traditionally identified as “geriatric,” should possess strong foundational knowledge about geriatrics and be able to apply this knowledge to a variety of older adults. Although the fundamental principles of patient management are similar regardless of patient age, there are unique features and considerations in the management of older adults that can greatly improve outcomes.

The first wave of the baby-boomer generation turned 65 years old in 2011. This group, born post–World War II, is much larger than its preceding generation, in terms of both the number of children born during this era (1946 to 1965) and increased longevity of those in that cohort. The 2008 landmark report of the Institute of Medicine (IOM) Retooling for an Aging America\(^1\) provides a compelling argument for wide-ranging shortages of both formal and informal health care providers for older adults across all levels of the health care workforce (professional, technical, unskilled direct care worker, and family caregiver). These shortages include shortages of physical therapists and physical therapist assistants. The report provides numerous recommendations for enhancing the number of health care practitioners and the depth of preparation of these practitioners. The goal of this textbook is to provide a strong foundation to support physical therapists who work with older adults.

The U.S. Census Bureau reports that in 2016, 15% of the population was age 65 years or older; by 2030, one in five Americans is projected to be an older adult.\(^2\) Undoubtedly, with very few exceptions, the majority of the caseload of the average physical therapist will soon consist of older adults. Despite this, physical therapists still tend to think about “geriatrics” in terms of care provided to frail individuals in a nursing home, hospital, or home care setting. Although these are important practice settings for geriatric physical therapy, physical therapists must recognize and be ready to provide effective services for the high volume of older adult patients who range from the very fit to the very frail, across inpatient and outpatient settings.
AGING

When working with the older adult, it is important to understand the concept of aging and the rationale behind the high variability and differences among older adults in the aging process. Usual aging, or typical changes in physiological functioning observed in older adults, represents a combination of normal (unavoidable) aging-related decline and modifiable factors associated with lifestyle such as physical activity, nutrition, and stress management. For many older adults, a substantial proportion of “usual” age-related decline in functional ability represents “deconditioning” as most older adults do not engage in sufficient physical activity and exercise to derive health benefits. This decline can be partially reversible with lifestyle modification.

Aging trajectories that go beyond typical aging have been described by a variety of terms such as healthy aging, optimal aging, successful aging, active aging, and aging well. In 1997, Rowe and Kahn provided a model of successful aging that includes the following components: (1) absence of disease and disability, (2) high cognitive and physical functioning, and (3) active engagement with life. Although helping older adults avoid disease and disease-related disability is a central consideration for all health care practitioners, the reality is that the majority of older adults do have at least one chronic health condition, and many, particularly among the very old, live with functional limitations and disabilities associated with the sequelae of one or more chronic health conditions. Brummel-Smith expanded the concepts of Rowe and Kahn in the depiction of optimal aging as a more inclusive term than successful aging. Brummel-Smith defines optimal aging as “the capacity to function across many domains—physical, functional, cognitive, emotional, social, and spiritual—to one’s satisfaction and in spite of one’s medical conditions.” This conceptualization recognizes the importance of optimizing functional capacity in older adults regardless of the presence or absence of a chronic health condition. Recently, the American Geriatrics Society published a White Paper on Healthy Aging in which they recommend that the definition of healthy aging include “concepts central to geriatrics, such as culture, function, engagement, resilience, meaning, dignity and autonomy, in addition to minimizing disease.”

HEALTH, FUNCTION, AND DISABILMENT

The World Health Organization (WHO) defines health as a “state of complete physical, psychological, and social well-being, and not merely the absence of disease or infirmity.” According to this definition, “health” is best understood as an end point in the major domains of human existence: physical, psychological, and social. In contrast to assuming “complete health” as the expected end point of an episode of care, physical therapists work across the spectrum, from wellness to the end of life, to ensure outcomes associated with achieving the highest level of function possible wherever someone may be placed on that spectrum.

There have been several attempts to construct a model of health status that describes the relationship between health and function or, more precisely, describes the process of how individuals come to be disabled (disablement) and identifies factors, including therapeutic interventions, that can mitigate disablement (enablement process). The traditional medical model of disablement assumes a causal relationship between disease and illness. In this narrow perspective, disablement is primarily dependent on the characteristics of the individual (i.e., his or her pathology) that require an intervention to alleviate that can only be provided by a health care professional. The social model of disability fundamentally broadens the focus away from an exclusive concentration on the disease-related physical impairments of the individual to also include the individual’s physical and social environments that can impose both disabling limitations and enabling mitigation of limitations. Subsequent models of the twin processes of disablement and enablement have further explored the relationship of the environment to functional independence. In the 1960s, sociologist Saad Nagi characterized disablement as having four distinct components that evolve sequentially as an individual loses well-being: disease or pathology, impairments, functional limitations, and disability. His work is associated with the biopsychosocial model, which recognizes the importance of psychological and social factors on the patient’s experience of illness. In the late 1980s and early 1990s, Jette, Verbrugge, and Guccione began exploring the process of disablement as a framework to assist physical therapists to clarify the domains of practice. They proposed a multifactorial disablement framework that included the influence of environmental demand and individual capabilities on disability (Fig. 1.1).

A further elaboration of Nagi’s model was presented by Brandt and Pope in a 1997 report from the IOM. This revised model introduced the concept of enablement that explicated the balance between inevitable and reversible disablement depending on the confluence of disabling and enabling factors at the interface of a person with the environment. If ramps were introduced to allow access to the home or therapeutic exercises implemented that improved functional performance, then the individual with a neuromuscular condition precluding his or her ability to negotiate stairs has experienced a “disabling–enabling process.” The IOM model has three dimensions: the person, the environment, and the interaction between the person and the environment. Their conceptualization allows us to understand how two older adults presenting with similar impairments associated with a right cerebrovascular accident can have different levels of disability according to the uniqueness of each individual and the environment in which they live. Physical therapists can use this information to promote optimal aging in the older adult.
International Classification of Functioning, Disability, and Health

The WHO also independently took on the task of developing a conceptual framework for describing and classifying the consequences of diseases. In 1980, they presented the International Classification of Impairments, Disabilities, and Handicaps (ICIDH). In response to concerns about the ICIDH, the WHO developed a substantially revised International Classification of Functioning, Disability and Health (ICF) in 2001 to “provide a unified and standard language and framework for the description of health and health-related states.” In 2007, the IOM endorsed the adoption of this framework “as a means of promoting clear communication and building a coherent base of national and international research findings to inform public and private decision making.” The 2008 House of Delegates for the American Physical Therapy Association also embraced terminology of the ICF and initiated the process of incorporating ICF language into all relevant association publications, documents, and communications.

The ICF model, illustrated in Fig. 1.2, employs a biopsychosocial approach that is compatible with many of the concepts from Nagi and the IOM’s work on enablement and disablement. The ICF model is designed to encompass all aspects of health and include all situations that are associated with human functioning and its restrictions. Key operational definitions that allow interpretation and application of the ICF model are listed in Box 1.1. There are varying levels within the ICF’s taxonomic classification schema of human functioning and disability. The first level consists of the broad categories of body functions, body structures, activities and participation, and environmental factors. Physical therapists will typically be most interested in the section that discusses activities and participation and the subsection on mobility that delineates actions associated with (1) changing and maintaining body position; (2) carrying, moving, and handling objects; (3) walking and moving; and (4) moving around using transportation. The ICF attempts to provide a common language to describe patients’ behaviors and environmental situations that need to be taken into consideration when making clinical decisions, especially in regard to optimizing human performance in the older adult.

Health Condition. In contrast to focusing on disease, health condition is an ongoing pathologic state that is delineated by a particular cluster of signs and symptoms. The ICF includes any health condition that takes the individual...
away from the “state of complete physical, psychological, and social well-being” and builds upon the evolving acceptance of wellness as an attainable goal. The International Classification of Disease, 11th revision (ICD-11), also a product of the WHO, offers a classification schema that provides a comprehensive listing of health conditions.

**Impairment of Body Structure or Function.** Impairments, defined as alterations in anatomic, physiological, or psychological structures or functions, typically evolve as the consequence of disease, pathologic processes, or lesions, altering the person’s normal health state and contributing to the individual’s illness. For example, physical impairments, such as pain and decreased range of motion (ROM) in the shoulder, may be the overt manifestations (or symptoms and signs) of either temporary or permanent disease or pathologic processes for some, but not necessarily all, older adult patients. The genesis of an impairment can often be unclear. Poor posture, for example, is neither a disease nor a pathologic state, yet the resultant muscle shortening and capsular tightness may present as major impairments in a clinical examination. Thus, not all older adults are patients because they have a disease. Some individuals are treated by physical therapists because their impairments are a sufficient enough cause for intervention regardless of the presence (or absence) of disease or active pathology.

Given that much of physical therapy is directed toward remediating or minimizing impairments, additional elaboration of the concept of impairment is particularly useful in geriatric physical therapy. Shenkman and Butler have proposed that impairments can be classified in three ways: direct, indirect, and composite effect. Direct impairments are the effect of a disease, syndrome, or lesion and are relatively confined to a single system. For example, they note that weakness can be classified as a neuromuscular impairment that is a direct effect of a peripheral motor neuropathy in the lower extremity. Indirect impairments are in other systems that can “indirectly” affect the underlying problem. For example, amputation training of a patient with a peripheral motor neuropathy may put excessive strain on joints and ligaments, resulting in new musculoskeletal impairments. The combination of weakness from the primary motor neuropathy and ligamentous strain from excessive forces on the joints may lead to a composite effect, the impairment of pain.

Using neurologic dysfunction as the vehicle, Shenkman and Butler described this three-category concept of impairment by categorizing clinical signs and symptoms into impairments that have a direct, indirect, or composite effect, thus bringing together into a cohesive relationship the diverse data of the medical history and the findings of the clinical examination. For example, consider a 79-year-old woman with severe peripheral vascular disease (PVD). Upon clinical examination, the physical therapist notes that this individual has lost sensation below the right knee. Sensory loss is an impairment that would be classified as a direct effect of PVD. As the individual is ambulating less and cannot sense full ankle ROM, loss of ROM may be an indirect effect of the patient’s PVD on the musculoskeletal

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<td><strong>Health Condition:</strong> umbrella term for disease (acute or chronic), disorder, injury, or trauma; may also include other circumstances such as pregnancy, aging, stress, congenital anomaly, or genetic predisposition; coded using International Classification of Disease, 11th revision</td>
<td><strong>Disability:</strong> umbrella term for impairments, activity limitations, and participation restrictions; denotes the negative aspects of the interaction between an individual (with a health condition) and that individual’s contextual factors (environment and personal factors)</td>
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<td><strong>Body Functions:</strong> the physiological functions of body systems, including psychological functions</td>
<td><strong>Contextual Factors:</strong> factors that together constitute the complete context of an individual’s life, and in particular the background against which health states are classified in the ICF; there are two components of contextual factors: environmental factors and personal factors</td>
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<td><strong>Body Structures:</strong> the structural or anatomic parts of the body such as organs, limbs, and their components classified according to body systems</td>
<td><strong>Environmental Factors:</strong> constitute a component of the ICF and refer to all aspects of the external or extrinsic world that form the context of an individual’s life and as such have an impact on that person’s functioning; they include the physical world and its features, the human-made physical world, other people in different relationships and roles, attitudes and values, social systems and services, and policies, rules, and laws</td>
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<td><strong>Impairment:</strong> a loss or abnormality in body structure or physiological function (including mental functions)</td>
<td><strong>Personal Factors:</strong> contextual factors that relate to the individual such as age, gender, social status, life experience, and so on that are not currently classified in the ICF but which users may incorporate in their application of the classification</td>
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<td><strong>Activity:</strong> the execution of a task or action by an individual; represents the individual perspective of functioning</td>
<td><strong>Participation Restriction:</strong> problems an individual may experience in involvement in life situations</td>
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<td><strong>Activity Limitation:</strong> difficulties an individual may have in executing activities</td>
<td><strong>Participation:</strong> a person’s involvement in a life situation; represents the societal perspective of functioning</td>
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<td><strong>Participation:</strong> a person’s involvement in a life situation; represents the societal perspective of functioning</td>
<td><strong>Functioning:</strong> umbrella term for body functions, body structures, activities, and participation; denotes the positive aspects of the interaction between an individual (with a health condition) and that individual’s contextual factors (environmental and personal factors)</td>
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system. The combination of the direct impairment (sensory loss below the knee) and the indirect impairment (decreased ROM in the ankle) may help to explain another clinical finding, poor balance, which can be understood as a composite effect of other impairments. Piecing clinical data together in this fashion allows the therapist to uncover the interrelationships among a patient’s PVD, loss of sensation, limited ROM, and balance deficits. Without a framework that sorts the patient’s clinical data into relevant categories, the therapist might never comprehend how the patient’s problems came to be and thus how to intervene. Treatment consisting of balance activities alone would be inappropriate, because the therapist must also address the loss in ROM as well as teach the patient to compensate for the sensory loss to remediate the impairments.

**Activity Limitation.** Although most of us anticipate that our body systems will deteriorate somewhat as we age, an inability to do for oneself from day to day perhaps most clearly identifies when adults are losing their health. Activity limitations result from impairments and consist of an individual’s inability to perform his or her usual functions and tasks such as reaching for something on an overhead shelf or carrying a package. As measures of behaviors at the level of a person, and not anatomic or physiological conditions, limitations in the performance of activities should not be confused with diseases or impairments that encompass aberrations in specific tissues, organs, and systems that present clinically as the patient’s signs and symptoms.

Although most older adults seeking care for a health condition are likely to carry at least two medical diagnoses, each of which will manifest itself in particular impairments of the cardiopulmonary, integumentary, musculoskeletal, or neuromuscular systems, impairment does not always entail activity limitations. One cannot assume that an individual will be unable to perform the actions and roles of usual daily living by virtue of having an impairment alone. For example, an adult with osteoarthritis (disease) may exhibit loss of ROM (impairment) and experience great difficulty in transferring from a bed to a chair (action). Another individual with osteoarthritis and equal loss of ROM may transfer from bed to chair easily by choosing to use an assistive device or by participating in a supervised muscle-strengthening program. Sometimes patients will overcome multiple, and even permanent, impairments by the sheer force of their motivation.

The degree to which limitations in physical functional activities may be linked to impairments has not been fully determined through research, and there is a critical need to update the epidemiology of impairment and action/function among older adults. The relatively few studies that have been reported in the literature support a generally linear but modest relationship between impairments such as strength and functional status, perhaps because functional status requires a relatively low level of strength and thus experiences a ceiling effect. Such data are essential to both (1) identifying relevant functional outcomes of an intervention and (2) establishing the dose–response relationship for an efficacious intervention that is known to remediate impairments to a particular degree or magnitude and is sufficient to produce a clinically important change in an individual’s functional status.

**Participation Restriction.** In revising the ICIDH, the WHO rejected the term *handicap* and introduced an alternative concept, *participation*, which is associated with its specific definition of *activity* and *activity limitation*. It is defined as “involvement in life situations” and is characterized by a person’s performance of actions and tasks in that individual’s actual environment. Participation restriction is characterized by discordance between the actual performance of an individual in a particular role and the expectations of the community for what is normal or typically expected behavior for an adult. Being unable to fulfill desired social roles is also associated with the term *disability*. The meaning of disabled is taken from the community in which the individual lives and the criteria for normal within that social group. The term *disabled* connotes a particular status in society. Labeling a person as disabled requires a judgment, usually by a professional, that an individual’s behaviors are somehow inadequate based on the professional’s understanding of the expectations that the activity should be accomplished in ways that are typical for a person’s age as well as cultural and social environment.

The ICF has redefined the term *disability* to reflect the summative negative aspects of the interaction between an individual who has a health condition and that individual’s environment and personal factors. It encompasses impairment, activity limitations, and participation restrictions. Thus, *disability* is the broadest term in the ICF framework and harkens back to the IOM conceptualization that locates disability at the interface of a person’s capabilities and abilities, personal factors, and the biopsychosocial environment.

The evidence suggests that activity limitations and participation restrictions in an older adult population change over time, and not all older adults exhibit functional decline. If we follow any cohort of older adults over time, there will be more activity limitations and subsequent restrictions in participation overall within the group, but some individuals will actually improve and others will maintain their functional level. Restricting the use of the term *disabled* to describe only long-term overall functional decline in older adult populations encourages us to understand a particular older adult’s activity limitations and participation restrictions in a dynamic context subject to change, particularly after therapeutic intervention. Participation restrictions depend on both the capacities of the individual and the expectations that are imposed on the individual by those in the immediate social environment, most often the patient’s family and caregivers. Physical therapists who apply a health status perspective to the assessment of patients draw on a broad appreciation of
an older adult as a person living in a particular social context as well as having individual characteristics. Changing the expectations of a social context—for example, explaining to family members what level of assistance is appropriate to an older adult after a stroke—may help to diminish disability as much as supplying the patient with assistive devices or increasing the physical ability to use them.

KEY PRINCIPLES IN GERIATRIC PHYSICAL THERAPY

Role of Physical Activity and Exercise in Maximizing Optimal Aging

Lack of physical activity (sedentary lifestyle) is a major public health concern across age groups. In 2014, 26.9% of adults between 65 and 74 years and 35.3% aged ≥75 years reported participating in no leisure-time physical activity. Sedentary lifestyle increases the rate of age-related functional decline and reduces capacity for exercise sustainability to regain physiological reserve following an injury or illness. It is critical that physical therapists overtly address sedentary behavior as part of the plan of care for their older adult patients.

Exercise may well be the most important tool a physical therapist has to positively affect function and increase physical activity in older adults. Despite a well-defined body of evidence to guide decisions about optimal intensity, duration, and mode of exercise prescription, physical therapists often underutilize exercise, with a negative impact on the potential to achieve optimal outcomes in the least amount of time. Underutilization of appropriately constructed exercise prescriptions may be associated with such factors as age biases that lower expectations for high levels of function, lack of awareness of age-based functional norms that can be used to set goals and measure outcomes, and perceived as well as real restrictions imposed by third-party payers regarding number of visits or the types of interventions (e.g., prevention) that are covered and reimbursed under a person’s insurance benefit. Physical therapists should take every opportunity to apply evidence-based recommendations for physical activity and exercise programs that encourage positive lifestyle changes and thus maximize healthy aging.

Slippery Slope of Aging

Closely linked to the concept of healthy aging is the concept of a “slippery slope” of aging (Fig. 1.3). The slope, originally proposed by Schwartz, represents the general decline in overall physiological ability (that Schwartz expressed as “vigor”) that is observed with increasing age. The curve is arbitrarily plotted by decade on the x-axis so the actual location of any individual along the y-axis—regardless of age—can be modified (in either a positive or negative direction) based on lifestyle factors and illness that influence physiological functioning.

Schwartz has embedded functional status thresholds at various points along this slope. Conceptually, these thresholds represent key impact points where small changes in physiological ability can have a large impact on function, participation, and disability. These four distinctive functional levels are descriptively labeled fun, function, frailty, and failure. Fun, the highest level, represents a physiological state that allows unrestricted participation in work, home, and leisure activities. The person who crosses the threshold into function continues to accomplish most work and home activities but may need to modify performance and will substantially self-restrict or adapt leisure activities (fun) because of declining physiological capacity. Moving from function into frailty occurs when managing basic activities of daily living (BADLs; walking, bathing, toileting, eating, etc.) consumes a substantial portion of physiological capacity, with substantial limitations in ability to participate in community activities and requiring outside assistance to accomplish many home or work activities. The final threshold into failure is reached when an individual requires assistance with BADLs as well as instrumental daily activities and may be completely bedridden.

The concept of functional thresholds and the downward movement from fun to frailty helps explain the apparent disconnect that is often observed between the extent of change of physiological functions (impairments) and changes in functional status. For example, for a person who is teetering between the thresholds of function and frailty, a relatively small physiological challenge (a bout of influenza or a short hospitalization) is likely to drop him or her squarely into the level of “frailty,” with its associated functional limitations. Once a person moves to a lower functional level (down the curve of the y-axis), it requires substantial effort and, typically, a longer time
period to build physiological capacity to move back up to a higher level (back up the y-axis). Clegg et al., as depicted in Fig. 1.4, depicted this phenomenon around a comparable threshold descriptor of “functional dependency.” Lifestyle changes including increased exercise activities may enhance efforts for an upward movement along the slippery slope. Moreover, the further the person is able to move above a key threshold, the more physiological reserve is available for protection from an acute decline in a physiological system. A major role of physical therapy is to maximize the movement-related physiological ability (vigor) of older adult patients/clients to keep them at their optimal functional level and with the highest physiological reserve.

Ageism

The perception of someone as being old or geriatric is a social construct that can differ greatly among cultures and social groups. A Pew Foundation survey found that, on average, a representative sample of the U.S. population perceives age 68 years as the age at which a person crosses the threshold to be classified as old. However, the age of the survey respondent influenced perceptions: Respondents under the age of 30 years identified old age as starting at 60 years; those between 30 and 64 years indicated 70 years as the beginning of old age; and those older than age 64 years indicated that old age starts at 74 years. The age of 65 years, which is the typical age when individuals in the United States become eligible for Medicare, is probably the most common age identified by medical researchers and social policy advocates when categorizing individuals as old.

In reality, perceiving a specific individual as old is often more associated with the person’s physical appearance and health status than his or her chronological age. An 80-year-old who is independent, fit, and healthy may not be described as old by those around her, whereas a 60-year-old who is unfit, has multiple chronic health problems, and needs help with daily activities that are physically challenging is likely to be perceived and described as old.

Ageism, stereotyping, and prejudice toward older adults, is prevalent in Western culture, including health care settings. The subtle negative attitudes toward older adults that are often identified among health care practitioners become more obvious and influential when old age is combined with a perception of the patient as having low motivation, poor compliance, or poor prognosis. Ageism can result in disparate treatment for women as compared to men if they are viewed as being too frail and less encouragement of older patients to follow widely endorsed physical activity guidelines, and can lead to ineffective communication if the health condition is seen as just being associated with “old age.”

Many interactions with physical therapists occur at very vulnerable points in an older adult’s life. For example, it is common to first evaluate an older adult in the midst of an acute hospitalization from a sudden and significant illness, in a skilled nursing facility for rehabilitation after hip fracture, or in the outpatient department during a disabling bout of back pain. When formulating a prognosis and making recommendations for the aggressiveness of interventions, it is easy to fall back on stereotypes suggesting old patients have low potential for improvement and low motivation for rehabilitation. It is true that some older adults enter physical therapy very low on the slippery slope of aging (frailty and failure stages). Rehabilitation may be particularly challenging given prior functional level, requiring the individual to make conscious decisions about where they want to place their efforts in the presence of substantially limited energy reserves, in which case goals not achievable through physical rehabilitation may guide their decisions. However, for most older patients, appropriately aggressive physical therapy can substantially affect functional ability and quality of life. Physical therapists who let ageist stereotypes influence their judgment are likely to make assumptions that underestimate prior functional ability of individuals and future potential for improvement. Do not let stereotypes cloud judgment about the capacity of older adults and the benefit to be achieved by appropriately aggressive rehabilitation.

Objectivity in Use of Outcome Tools

Older adults become increasingly dissimilar with increasing age. A similarly aged person can be frail and reside in a nursing home or be a senior athlete participating in a triathlon. Dissimilarities cannot be attributed to age alone and can challenge the therapist to set appropriate goals and expectations. Functional markers are useful to avoid
Evidence-Based Practice

Evidence-based practice is an approach to clinical decision making about the care of an individual patient that integrates three separate but equally important sources of information in making a clinical decision about the care of a patient. Fig. 1.5 illustrates these three information sources: (1) best available scientific evidence, (2) clinical experience and judgment of the practitioner, and (3) patient preferences and circumstances. The term evidence-based practice sometimes misleads people into thinking that the scientific evidence is the only factor to be considered when using this approach to inform a patient-care decision. Although the scientific literature is an essential and substantive component of credible clinical decision making, it is only one of the three essential components. An alternative, and perhaps more accurate, label for this approach is evidence-informed practice.

The competent geriatric practitioner must have a good grasp of the current scientific literature and be able to interpret and apply this literature in the context of an individual patient situation. This practitioner must also have the clinical expertise to skillfully perform the appropriate tests and measures needed for diagnosis, interpret the findings in light of age-related and condition-specific characteristics of the patient, and then skillfully apply the appropriate interventions to best manage the problem. This is all done with clear and full communication with the patient to ensure the goals and preferences of the patient are a central component of the development of a plan of care.

Incorporation of best evidence into clinical decision making is an anchor of quality clinical practice. We live in an information age. For almost any topic, an overwhelming amount of information can be accessed in seconds with an Internet search. The challenge is to quickly identify and apply the best evidence. The best evidence is credible, clinically important, and applicable to the specific patient situation.

When faced with an unfamiliar clinical situation, a clinician reflects on past knowledge and experience, and may identify missing evidence needed to guide his or her decision making. A four-step process is typically used to locate and apply best evidence: (1) asking a searchable clinical question, (2) searching the literature and locating evidence, (3) critically assessing the evidence, and (4) determining the applicability of the evidence to a specific patient situation.

Sources of Evidence. Physical therapists must be competent in finding and assessing the quality, importance, and applicability of the many evidence sources available to them. As depicted in Box 1.2, each piece of evidence falls along a continuum from foundational concepts and theories to the aggregation of high-quality and clinically applicable empirical studies. On casual review of published studies, it is sometimes difficult to determine just where a specific type of evidence falls within the continuum of evidence and a closer review is often required.

The highest-quality research to answer a clinical question (i.e., providing the strongest evidence that offers the most certainty about the implications of the findings) is typically derived from the recommendations emerging from a valid systematic review that aggregates numerous high-quality studies directly focusing on the clinical question. However, only a very small proportion of evidence associated with the physical therapy management of older adults is well enough developed to support systematic reviews yielding definitive and strong recommendations. And the variety of factors that contribute to the health status of older adults makes it hard to aggregate across multiple studies or apply findings directly to your unique situation. More commonly, best evidence consists of the integration of the findings of one or several individual studies of varying quality by practitioners who then incorporate this evidence into their clinical judgments. The evidence-informed practitioner must be able to quickly locate, categorize, interpret, and synthesize the available evidence and also judge its relevance to the particular situation.

Finding Evidence. PubMed is generally the best database to search for biomedical evidence. PubMed is a product of the U.S. National Library of Medicine (NLM) at the National Institutes of Health (NIH) and thus is free to access. This database provides citations and abstracts.
from an expansive list of biomedical journals, most in English, but also including major non-English biomedical journals. All journals indexed in PubMed must meet high-quality standards, thus providing a certain level of comfort about using PubMed-indexed journals as trusted sources. PubMed Central provides a link to all articles freely available full-text.

Cumulative Index of Nursing and Allied Health Literature (CINAHL) is a database that focuses specifically on nursing and allied health literature. You must either pay to subscribe to CINAHL or gain access through membership in a library or a professional organization such as the American Physical Therapy Association (APTA). The criteria for being indexed in CINAHL are less stringent than PubMed. Thus, although there is an overlap with many journals indexed in both databases, those indexed in CINAHL but not PubMed tend to be smaller journals containing studies more likely to be representing foundational concepts.

Finally, a simple Google search can be a reasonable initial starting place. It is easy to use, is familiar to most, and handles specific search terms that other search engines might find difficult. However, the reader must pay particular attention to the source of the evidence for quality and bias. Google Scholar, which limits the search to scholarly works, provides a simple way to broadly search the peer-reviewed literature. A disadvantage is that Scholar is not limited to medicine, so it may return a variety of results across disciplines; however, it links to full-text when available.

All health care practitioners should have a strategy to regularly review current evidence in their specialty area. A simple review of the table of contents of core journals in the topic area can be useful. Most journals will send you a list of the table of contents and newly published articles when you sign up to receive them. Core peer-reviewed journals in geriatrics and geriatric physical therapy are listed in Box 1.3. In addition, choose one or two core journals in a professionally applicable subspecialty area of your choice (stroke, arthritis, osteoporosis, etc.) and check table of contents regularly.

A second approach is to go to a site such as AMEDEO (http://www.amedeo.com), which is a free service providing regular e-mails aggregating article citations specific to any interest across a wide range of health care specialties. The citations are typically taken from ongoing searches of newly published issues of core journals in the specialty area (or a subset of these journals as requested) and pushed to you through an e-mail listing. PubMed also allows an individual to identify and save a specific search strategy within it, have the search automatically run periodically to identify any new citations, and have the new citations automatically forwarded via e-mail. The PubMed approach allows you to be the most specific about the characteristics of the studies of interest and searches across the widest variety of journals.
Evidence Translation Sources. Clinical practice guidelines, particularly those based on a systematic review of the literature and expert consensus in applying the evidence to clinical practice, can be efficient sources of evidence. When examining the practice guidelines, confirm the comprehensiveness and objective analysis of the literature on which the guideline is based. The strength of the evidence should be based on quality, consistency, and number of studies supporting the recommendation.

Patient Autonomy

The scientific evidence and the expertise of the practitioner are combined with the preferences and motivations of the patient to reach a shared and informed decision about goals and interventions. Patient autonomy is grounded in the principle that patients have the right to make their own decisions about their health care. There is a tendency for health care providers to behave paternalistically toward older adult patients, assuming these patients are less capable than younger adults to make decisions about their health and rehabilitation. The reality of clinical practice is that physical therapists encounter a wide variety of decision-making capabilities in their older adult patients. Physical therapists have a responsibility to ensure their patients (and family/caretakers, as appropriate) have all pertinent information needed to make therapy-related health care decisions, and that this information is shared in a manner that is understandable to the patient and free of clinician bias. The patient should understand the potential risks, benefits, and harms; amount of effort and compliance associated with the various options; and likely prognosis.

Patients should have the opportunity to express their preferences and be satisfied that the practitioner has heard them accurately and without bias. The goals and preferences of the older adult patient may be very different from what the physical therapist assumes (or believes he or she would want for him- or herself under similar circumstances). Part of the “art” of physical therapy is creatively addressing the patient’s goals using appropriate evidence, clinical skills, and available resources.

THE PHYSICAL THERAPIST IN GERIATRICS

Geriatric Care Team

Physical therapists working with older adults must be prepared to serve as autonomous primary care practitioners and as consultants, educators (patient and community), clinical researchers (contributors and critical assessors), case managers, patient advocates, interdisciplinary team members, and practice managers. Although none of these roles is unique to geriatric physical therapy, what is unique is the remarkable variability among older adult patients and the regularity with which the geriatric physical therapist encounters patients with particularly complex needs. Unlike the typical younger individual, older adults are likely to have several complicating comorbid conditions in addition to the condition that has brought them to physical therapy. Patients with similar medical diagnoses often demonstrate great variability in baseline functional status and may be simultaneously dealing with significant psychosocial stresses such as loss of a spouse, loss of an important aspect of independence, or a change in residence. Thus, issues such as depression, fear, reaction to change, and family issues can compound the physical aspects and provide an additive challenge to the physical therapist. The physical therapist must be creative, pay close attention to functional clues about underlying modifiable or accommodative impairments, and listen carefully to the patient to ensure goal setting truly represents mutually agreed-upon goals.

In addition, the older patient is likely to be followed by multiple health care providers, thus making the physical therapist a member of a team (whether that team is informally or formally identified). As such, the physical therapist must share information and consult with other team members, recognize signs and symptoms that suggest a need to refer out to other practitioners, coordinate services, provide education to the patient and caretaker/family, and advocate for the needs of patients and their families.

Geriatric Competencies

Following the 2008 IOM report on the critical need to “retool” the health care workforce, 21 professional organizations representing 10 different health professions (including physical therapy) came together to develop a consensus document of core competencies applicable across health disciplines. The Multidisciplinary Competencies in the Care of Older Adults at the Completion of the Entry-Level Health Professional Degree emerged and was subsequently endorsed by 31 professional organizations, including the APTA.

Six key competency domains emerged as critical to all professions when serving older adults: (1) health promotion and safety, (2) evaluation and assessment, (3) care planning and coordination across the care spectrum, (4) interdisciplinary and team care, (5) caregiver support, and (6) health care systems and benefits. Competency and subcompetency statements listed under each domain were specific enough to provide structure and direction for each profession to operationalize yet general enough to allow customizing to the needs of each profession. Each profession was encouraged to provide guidance statements that tailored the competencies to practitioners within their field.

Over the next several years, three different national task forces appointed by the Academy of Geriatric Physical Therapy, using the multidisciplinary competency
document as a framework, customized the original document to three levels of practitioner within physical therapy: completion of physical therapist entry-level program of study, completion of physical therapist assistant entry-level program of study, and physical therapist completion of a postprofessional program of study such as geriatric residency programs. The concepts and competencies embedded within each domain are captured across the various chapters of this book. A review of the competencies attests to the breadth and depth knowledge, skills, and attitudes needed for best practice as a geriatric physical therapist.

**Expert Practice**

Jensen and colleagues provide compelling insights into the process of moving from novice to expert in physical therapy clinical practice. All experts, regardless of specialty area, were found to be highly motivated with a strong commitment to lifelong learning. Experts sought out mentors and could clearly describe the role each mentor had in their development, whether for enhanced decision making, professional responsibilities, personal values, or technical skill development. Experts had a deep knowledge of their specialty practice and used self-reflection regularly to identify strengths and weaknesses in their knowledge or thought processes to guide their ongoing self-improvement. The expert did not “blame the patient” if a treatment did not go as anticipated. Rather, the expert reflected deeply about what he or she could have done differently that would have allowed the patient to succeed.

The geriatric clinical specialists interviewed by Jensen and colleagues each provided reflections about how they progressed from novice to expert. In describing their path from new graduate generalist to geriatric clinical specialist, the geriatric experts noted that they did not start their careers anticipating specialization in geriatrics. They each sought a generalist practice experience as a new graduate and found themselves gradually gravitating toward the older adult patient as opportunities came their way. They came to recognize the talent they had for working with older adults and were called to action by their perceptions that many at-risk older adults were receiving inadequate care. They became firm believers in the principles of optimal aging and had a genuine high regard for the capabilities of older adults if given the opportunity to fully participate in rehabilitation. These specialists model clinical excellence by not settling for less than what the patient is capable of. Physical therapists are essential practitioners in geriatrics. The physical therapist must embrace this essential role—and recognize the positive challenge—of mastering the management of a complex and variable group of patients.

Physical therapists who find geriatrics particularly rewarding and exciting enjoy being creative and being challenged to guide patients through a complex maze to achieve their highest level of healthy aging. Navigating an effective solution in the midst of a complex set of patient issues is professionally affirming and rarely dull or routine.

**Clinical Decision Making**

The complexity of clinical decision making can be daunting because of the sheer volume of information and detailed considerations unique to the individual. However, physical therapists who make movement-related human performance the central focus of their decision-making process and approach each decision-making step systematically with a clear organizational strategy for gathering and utilizing information will find it easier to identify and apply pertinent information. Many approaches are organized around the five components of the Guide to Physical Therapist Practice’s Patient/Client Management Model (Fig. 1.6). Schenkman and Butler argue that task analysis in the environmental context is one of the skills that defines the physical therapist and is essential for effective decision making. They also include the previously described enablement–disability process as a fundamental organizing principle to formulate clinical hypotheses that guide the analysis, synthesis, and judgments made by physical therapists about the physical therapy management of their individual patients (Fig. 1.7).

**Examination.** Older adults typically enter physical therapy with a referral that may contain a few useful facts about the patient’s medical history or the medical reason for the referral. In these circumstances the first question to ask oneself is, “Given the facts about the patient that are available before the examination, have any impairments or activity limitations been identified even before the patient is seen for the first time?” The collection of two kinds of clinical data should be integrated into the format for the first clinical encounter. First, as summarized in Box 1.4, there are a number of factors identified in the literature and reviewed elsewhere in this text that may influence the trajectory of a patient from disease to disability. Physical therapists should always account for these potentially enabling–disabling influences as part of the patient examination. Additional information that would assist in setting goals and designing intervention, and information from other disciplines can also be very helpful. Data on the individual’s current medical conditions and medications, for example, are extremely relevant.

If the overall goal is to optimize patient function, then one of the first steps is to ascertain the patient’s current level of function. Whenever the patient’s communication ability is intact, the initial interview begins by allowing patients to identify what they see as the primary activity limitations that have prompted the need for physical therapy. In their formulation of a hypothetico-deductive
strategy for making clinical judgments, Rothstein and Echternach emphasize the value of listening as patients identify their problems and allowing the individuals to express the desired goal of treatment in their own terms. By talking with the patient, the therapist begins to develop not only a professional rapport but also an appreciation of the patient’s understanding of the situation. The input of the patient in terms of preferences, motivations, and goals are central pieces of “evidence” in an evidence-based approach to decision making. This is especially pertinent to care provided to older individuals, who may find their ability to control their own personal destinies compromised by professional judgments made “in their best interests.” When the patient is unable to communicate effectively, the therapist may turn to proxy information. The patient’s family and friends may be able to give some insight as to what the patient would regard as the goals of intervention. The therapist may also hypothesize about a patient’s functional deficits based on previous experience with similar patients.

Data from the history, as well as data on how the patient’s problems have been treated in the past, allow the therapist to hypothesize that certain impairments or activity limitations might exist by virtue of the individual’s medical condition(s) and sociodemographic and other personal characteristics. For example, suppose the physical therapist learns from the patient’s history that the patient has a medical diagnosis of Parkinson disease, that she is 81 years old, and that she lives alone. The diagnosis of Parkinson disease suggests the possibility of the following impairments: loss of motor control and abnormal tone, ROM deficits, faulty posture, and decreased endurance for functional activities. Using epidemiologic research about what activity limitations are likely for women living alone, specific questions about independence in instrumental activities of daily living (IADLs),
with specific tests and measures as indicated, would be appropriate to include in the examination. Social isolation, for example, may lead to depression, which could further aggravate a person’s functional difficulties.

Because there is a lot of variability (e.g., physical fitness, cognition, chronic conditions) in older adults, a screen of all systems is crucial to ensure that the physical therapist does not miss a critical finding. Screening begins with a thorough patient history as the physical therapist relies heavily on the clinical presentation of the patient and any signs or symptoms that indicate the need for specific screening tests or questions. Therapists must recognize, for example, when integumentary signs may be indicative of systemic connective tissue disorders or oncologic disease, when the patient would concomitantly benefit from the services of other health care professionals, and when additional signs and symptoms may suggest other impairments that would benefit from physical therapy. The combination of the patient history and screening of systems leads to more focused tests and measures. As physical therapists strive to be efficient, they realize that performing all tests to rule in or out a potential diagnosis is time prohibitive. Expert clinicians rely on “pattern recognition” as well as early generation of hypotheses for interpreting collected data. Concurrent with these observations and interim judgments, the physical therapist may reach a conclusion that the signs and symptoms are not consistent with any pattern of disease or illness that is in the scope of physical therapist practice and may refer the patient to another health care professional.

The therapist initially makes a working hypothesis regarding the underlying cause of any deficits noted during the history and systems review and then selects specific tests and measures that would most likely confirm his or her suspicions about a tentative diagnosis. The process of confirming or refuting clinical impressions is the substance of the examination. Without knowing what you are looking for, it is difficult to know when you find it.
Without this important list of possible conditions or issues, a therapist can get lost in the multitude of impairments and functional deficits that may be present. Thus, the clinical hypothesis (or hypotheses) provides focus for the examination.

During the examination, the therapist should begin by performing a detailed analysis of functional activities (e.g., transferring from the bed to a chair) that also takes into consideration the environment in which the task is being performed. Functional activities will inform impairments that are observed to affect function. Movement analysis is at the crux of establishing a diagnosis that can point to an intervention in the domain of physical therapist practice. Physical therapists are well prepared to identify dysfunction at the level of actions by examining the movement-oriented component of tasks. Specific tests and measures are used in the examination to clarify and characterize the nature and extent of activity limitations and further implicate impairments and other factors that impede performance. Is the inability to climb stairs in an older adult associated with knee and hip extensor weakness? What about balance deficits due to sensory loss in the feet and ankles? Thus, broadening the examination to focus on observing and critiquing the performance of actions and tasks is crucial to ensure a thorough evaluation of the patient’s inability to perform functional activities as well as the environment in which it is performed.

Evaluation and Diagnosis. After the examination, the therapist evaluates the data by making clinical judgments about their meaning and their relevance to the patient’s condition and to confirm or reject hypotheses posed during the examination. The therapist then hypothesizes which findings contribute to the patient’s functional deficits and will be the focus of patient-related instruction and direct intervention.

It is not unusual for older patients to have multiple impairments and activity limitations, many of which can be identified by a physical therapist and treated using physical therapy procedures. However, the overall purpose of evaluation is twofold: (1) to indicate which deficiencies in functioning prevent a person from achieving optimal well-being and (2) to identify the actions and tasks that are most associated with the patient’s current level of function and must be remediated for the patient to reach an optimal functional level. An element of assessing data on the patient’s ability to perform functional activities is to determine whether the manner in which actions and tasks are done represents an important quantitative or qualitative deviation from the way in which most people of similar age would perform them. In the absence of norms for age-stratified functional performance, the therapist must bring previous experience with similar patients to bear on this judgment. Even if the therapist concludes that the patient’s performance is other than “normal,” this judgment does not imply that a person cannot meet socially imposed expectations of what it means to be independent or that an individual is permanently disabled. Furthermore, identifying the impairment alone may not fully explain the inability to perform an activity as the individual’s motivation to perform the activity as well as the environment in which it is performed may affect goal achievement. Thus, the physical therapist must review activity limitations in light of other clinical findings that identify the patient’s impairments and other psychological, social, and environmental factors that modify function in determining whether a patient will become disabled. Upon completion of the evaluation, physical therapists establish a prognosis and plan of care, if needed.

Physical therapists are encouraged to take an integrated approach to diagnosing deficits in human performance. Deconstructing movement in the context of human performance requires the examination of the complex interaction of sensoroperceptual, biomechanical, neuromotor, respiratory, and circulatory capabilities as well as the influence of personal motivation, cognition, behavior, and the environment on movement. Physical therapists must determine if the limitation in activity is at the level of task, action, and/or impairment. Ultimately, the physical therapist will pose a hypothesis or several hypotheses linking an inability to perform an action to a specific impairment or cluster of impairments. Consider, for example, the range of impairments that might explain the deficit in performing the required actions to accomplish the tasks that compose the activity limitation that is reported as “I can’t get to my mailbox.” Furthermore, suppose that we know that individual has low vision, lives in a second-floor walk-up, is somewhat reluctant to go outside particularly in strong daylight, has osteoarthritis in one knee, and is currently on medication for early stages of congestive heart failure. Each component of this activity (getting the mail) involves a series of tasks to be accomplished (e.g., opening a door, descending stairs, negotiating terrain, handling latches) that require specific actions (e.g., standing, walking, stepping, turning, pulling, grasping, carrying). It is highly likely that several impairments such as decreased muscle strength, reduced joint mobility, limited dynamic balance, or diminished endurance will need to be hypothesized and confirmed to account for this activity limitation.

Prognosis and Plan of Care. The physical therapist uses the data gathered in the evaluation and diagnosis process to state a prognosis, which is a prediction about the optimal level of function that the patient will achieve and the time that will be required to reach that level. Having done that, the therapist and the patient can then mutually agree upon anticipated goals of treatment, which generally are related to expected outcomes of care. Therefore,
the functional outcomes of treatment should be stated in patient-centered (behavioral) terms. On the basis of these anticipated goals and expected outcomes, the physical therapist then completes a plan of care that specifies the interventions to be implemented, including their frequency, intensity, and duration.

When the therapist’s attention turns toward planning intervention, the key question is: Of the impairments that are hypothesized to be causal to the patient’s activity limitations, which ones require a physical therapist intervention? Furthermore, if the patient’s impairments cannot be remediated initially or even with extensive treatment, the physical therapist then seeks to determine how the patient may compensate by using other abilities to accomplish the action or task, and also how the task can be adapted so that the activity can be performed within the restrictions that the patient’s condition imposes on the situation. The current evidence base for determining the optimal proportion, timing, and sequence of remediation, compensation, and adaptation of both initial and subsequent plans of care is shallow. Therefore, physical therapists must consider the balance among each of these three intervention approaches dynamically, depending on the persistence of deficits in structure or function, availability of compensatory resources without unintended negative consequences for other functioning, likelihood of full recovery with further remediation, and surmountability of environmental challenges. If it is decided that an individual’s impairments and activity limitations are amenable to physical therapy intervention, the therapist should establish a schedule for evaluating the effectiveness of the intervention. If the patient achieves the anticipated goals for changes in impairments but does not also achieve the expected functional outcomes, this is an indication that the therapist has incorrectly hypothesized the relationship between the patient’s impairments and functional status. In this instance, the therapist may reexamine the patient to modify the plan of care.

Although a host of procedures and techniques might be used to remediate an impairment or minimize an activity limitation, those that are most likely to promote the outcome and that consider cost-effectiveness should be chosen for inclusion in the plan of care. The combination of direct interventions used with any particular patient will vary according to the impairments and activity limitations that are addressed by the plan of care for that individual. Three patients may have the same activity limitation, for example, an inability to transfer independently from bed to chair, yet require entirely different programs of intervention. If the first individual lacked sufficient knee strength to come to a standing position, then the plan of care would incorporate strengthening exercises to remedy the impairment and improve the patient’s function. If the second patient lacked sufficient ROM at the hip owing to flexion contractures to allow full upright standing, then intervention would focus on increasing ROM at the hip to improve function. The third individual may possess all the musculoskeletal and neuromuscular prerequisites to allow function but still require appropriate instruction to do it safely and with minimal exertion. Each individual may achieve a similar level of functional independence, yet none of the three would have received the exact same treatment to achieve the same outcome.

Most of the direct interventions used by physical therapists are aimed at remediating impairments that underlie activity limitations. Although physical therapists sometimes apply therapeutic exercise in the position of function (e.g., standing balance exercises) or try to simulate the environment in which the functional activity is performed (e.g., a staircase), the functional activity in and of itself should not be confused with the core elements of a physical therapist’s plan of care, that is, therapeutic exercise and functional training. It is particularly helpful for the therapist working with older adult patients to appreciate that there are some impairments that will not change, no matter how much direct intervention is provided. This realization will diminish unnecessary treatment. In these instances, physical therapists may still achieve positive patient outcomes by teaching patients how to compensate for their permanent impairments by capitalizing on other capabilities or by modifying the environment to reduce the demands of the task. One of the beneficial consequences of a careful deconstruction of an activity limitation into tasks and actions is that this analysis indicates what kinds of outcomes are most suitable to demonstrating the success of the intervention. The most proximate outcomes of the remediation of impairments can be found in an improved ability to perform actions, somewhat irrespective of personal and environmental factors that are outside of the physical therapist’s control. In comparison, activity limitations are typically measured with respect to broader outcome measures such as basic and instrumental activities of daily living. Relevant chapters of this book provide recommendations for valid and reliable functional measures to assess the outcomes of a physical therapy episode of care.

**SUMMARY**

The key principles underlying contemporary geriatric physical therapy practice described in this chapter are woven throughout the remainder of this book. The need is great and opportunities abound for talented physical therapists committed to optimal aging and ready to apply best evidence, to fully develop their clinical expertise, and work collaboratively with their patients and other health care providers. It is a time full of opportunity to be a geriatrically focused physical therapist. However, whether as a geriatrically focused physical therapist or a physical therapist who occasionally treats older patients, the number and complexity of the older adult patients among the caseload of all physical therapists will increase in the decades to come, emphasizing the clinical relevance of the material in this book.
REFERENCES