

THE ROLE OF PHYSICAL THERAPY IN ENHANCING PHYSICAL AND FUNCTIONAL HEALTH AMONG OLDER ADULTS

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Abstract

The global aging population is steadily increasing, resulting in a growing demand for healthcare services that address the unique and complex needs of older adults. Traditionally, physiotherapists have played a pivotal role in the rehabilitation of elderly individuals following injuries (such as fall-related hip fractures) or acute health events (including stroke). However, to make a meaningful contribution to the healthy aging agenda, the profession must extend beyond conventional rehabilitative roles. This requires capitalizing on physiotherapists' specialized expertise in human movement, exercise prescription, and health counseling to encourage individuals across the health continuum to adopt and sustain regular physical activity as part of their daily lives. Integrating the promotion of physical activity into physiotherapy practice with older adults is therefore essential to preventing chronic conditions that compromise functional capacity, quality of life, and overall well-being.

Keywords: Elderly Population, Movement and Exercise Prescription, Stroke Prevention, Health Continuum, Chronic Illnesses

INTRODUCTION

One of the most widely accepted and strongly endorsed strategies for promoting healthy aging is engagement in regular physical activity. Physical activity plays a fundamental role in enhancing cognitive health and mobility, both of which are essential determinants of functional capacity and key indicators of overall health status [1]. Moreover, sustained participation in physical activity represents the most effective behavioral intervention for extending health span and supporting healthy aging processes [2]. It is also a critical factor in increasing life expectancy, as it contributes substantially to the prevention of chronic noncommunicable diseases, including diabetes, cardiovascular disease, and dementia [3].

Physiotherapists occupy a central role in fall prevention initiatives and make a significant contribution to the promotion of healthy aging [4]. Given that many older adults who experience falls present with multiple comorbidities, physiotherapists are particularly well positioned to implement fall prevention programs, as they possess the specialized expertise required to individualize interventions according to specific functional needs and health conditions [2].

Globally, approximately 10 percent of the population—equivalent to 771 million individuals—were aged 65 years and older in 2022. This demographic group is expanding rapidly, with projections indicating that it will comprise a substantially larger proportion of the population in the coming decades. Over the past century, the proportion of individuals aged 65 and older has more than tripled, rising from 4% to 12.9%. Although not universal, common health concerns among older adults include falls, cardiovascular disease, and limitations in performing activities of daily living.

Aging is associated with a range of physiological changes, prevalent diseases and syndromes—particularly among individuals aged 85 years and older—as well as cognitive, psychological, social, and environmental transformations. Normal aging is often characterized by gradual declines in hearing and vision, along with a reduction in immune function. Chronic conditions such as cardiovascular disease, osteoporosis, and dementia are especially prevalent among the oldest age groups. Furthermore, the combined effects of population aging and rising obesity rates are expected to increase the prevalence of osteoarthritis, diabetes, and related mobility impairments [5].

Osteoarthritis is the second most common chronic condition affecting older adults and represents a major cause of persistent pain and disability. Evidence indicates that 52 percent of individuals aged 85 years have been diagnosed with osteoarthritis [6]. Data from the US Census further reveal that 73% of Americans aged 85 years and older experience some degree of difficulty with walking. Mobility impairment is closely linked to adverse outcomes, including social isolation, an elevated risk of falls, and increased depressive symptoms. Despite these challenges, approximately one-third of adults aged 85 years and older with disabilities continue to live independently.

Falls constitute a major source of morbidity and disability among older adults, with an estimated 30–40% of individuals over the age of 70 experiencing at least one fall each year. The incidence is notably higher among residents

of long-term care facilities. Falls account for more than 50% of injuries in older adults, and individuals aged 85 years and older exhibit the highest fall-related mortality rates [7].

A comprehensive approach to elder care underscores the importance of addressing all dimensions of well-being, including physical, mental, emotional, social, and spiritual health. Such an approach offers multiple benefits, including improved quality of life, individualized care planning, preventive and proactive healthcare strategies, enhanced autonomy and independence, and greater involvement of family members and social networks.

The Role of a Physical Therapist

Geriatric care is inherently complex due to the wide range of interrelated health problems that require the coordinated expertise of multiple healthcare professions. Musculoskeletal, cardiovascular, and neurological disorders are particularly prevalent among older adults [8], and these conditions frequently coexist, as elderly individuals often present with multiple comorbidities. Given the profound influence of aging on health status and disease presentation, physiotherapists working with older adults must demonstrate competence in the assessment and management of musculoskeletal, neurological, and cardiovascular conditions. A physiotherapist specializing in geriatric care is therefore required to possess a comprehensive understanding of physiotherapy principles and interventions across these three domains, with a particular emphasis on age-specific therapeutic approaches [9].

Physiotherapy constitutes a fundamental component of the comprehensive geriatric assessment (CGA), which has been shown to improve health outcomes in older adults, especially among those who are frail. The CGA approach is widely applied in effective orthogeriatric management and has gained increasing importance in the evolving field of perioperative surgical care for the aging population [9]. Assessment and intervention strategies for older adults should be aligned with established national standards and clinical guidelines, while also accounting for the physiological changes associated with aging that distinguish geriatric evaluation from that of younger populations.

One of the most inclusive and internationally recognized frameworks for rehabilitation is the World Health Organization's (WHO) International Classification of Functioning, Disability, and Health [10]. The International Classification of Functioning (ICF) provides a structured framework that enables healthcare professionals to identify impairments and relate them to meaningful aspects of an individual's life, thereby guiding assessment, goal setting, and intervention planning. In geriatric practice, the ICF supports clinicians in conducting comprehensive evaluations by facilitating an understanding of how impairments affect daily activities and an individual's capacity to fulfill social roles in later life [11].

A thorough medical history, including past medical and surgical conditions as well as a detailed review of current and supporting medications, is essential in the assessment of older adults. Medication use, particularly among the elderly, can significantly influence movement patterns and substantially increase the risk of falls. Additionally, major medical conditions may be underreported by older individuals, either intentionally or unintentionally, placing them at heightened risk for adverse outcomes. Social history is equally critical, as many older adults rely on formal or informal support from family members, caregivers, and friends. For example, when an older individual is discharged home alone yet lacks the ability to stand safely to prepare meals or ambulate to essential community resources such as grocery stores, physiotherapists and other allied health professionals must collaboratively identify and address these functional challenges. In this context, the ICF serves as a valuable tool to guide assessment and function as a comprehensive checklist, ensuring that all relevant historical, functional, and contextual factors are systematically considered [11].

empowerment and independence, and the engagement of family and friends.

Falls Prevention and Balance Enhancement

Instability represents a major clinical challenge in geriatric medicine. Falls often act as a catalyst for a progressive decline in mobility, diminished self-confidence, and increasing disability, which may ultimately lead to institutionalization. Each year, nearly one-third of individuals aged 65 years and older experience at least one fall, with approximately 50% of these events being recurrent. Furthermore, approximately one in ten falls results in a serious injury, including traumatic brain injury, subdural hematoma, hip fracture, other fractures, or severe soft tissue damage [12]. Despite these substantial consequences, fall-related hospital admissions have remained relatively unchanged over the past decade, underscoring the urgent need for the development and implementation of effective, acceptable, and sustainable fall prevention strategies for older adults.

Exercise-based interventions have been consistently identified as a cornerstone of fall prevention. Specifically, balance enhancement and lower-limb resistance training have been recognized as the most effective exercise modalities for reducing fall risk in older populations [13]. Accordingly, regular engagement in physical activity has been shown to significantly mitigate fall-related outcomes. However, uncertainty remains regarding which specific types of exercise are most efficacious for achieving optimal fall prevention outcomes [14].

Increased levels of physical activity are associated with reductions in overall morbidity and mortality, as well as a 30% to 50% decrease in the risk of falling [15]. Interventions focusing on lower-limb strength and balance training have been widely acknowledged as effective strategies for reducing fall risk. Among these, balance training warrants particular emphasis, as it underpins the fundamental ability to maintain postural stability and perform functional movements safely [16]. The majority of studies examining fall risk in older adults consistently report that physical

activity—particularly recreational forms of exercise—plays a crucial role in maintaining balance and preventing falls [17].

A growing body of research has explored a wide range of exercise modalities, including Pilates, stair climbing, vibration training, and dance [18]. These interventions have consistently demonstrated significant improvements in balance performance, providing robust evidence that physical activity can effectively reduce the likelihood of falls in older adults. Tai Chi, a traditional form of exercise known for its balance-enhancing properties, has frequently been employed as a comparator intervention in fall prevention studies, including the work conducted by Zhao et al. Numerous systematic reviews and meta-analyses examining the effects of Tai Chi in older populations have concluded that this intervention is effective in improving functional aspects of quality of life—such as muscular strength and flexibility—while also enhancing balance and reducing fall risk [19].

Pain Management and Mobility Improvement

Chronic pain is a highly prevalent health concern among older adults aged 65 years and above and is frequently associated with substantial levels of disability. In this population, chronic pain commonly restricts mobility, is strongly correlated with depression and anxiety, and may adversely affect family dynamics as well as social participation [20]. Within the context of geriatric care, it is therefore essential to establish and evaluate the overarching therapeutic goals of treatment. The primary aim of rehabilitation is to improve impairment, defined as the loss of physiological or anatomical structure or function, which is typically addressed through interventions targeting the underlying pathophysiological mechanisms (for example, core strengthening and stabilization exercises for degenerative lumbar spondylosis). When improvement in impairment is unlikely or limited, rehabilitation efforts should instead prioritize the reduction of patient disability, understood as limitations in the ability to perform activities as a consequence of impairment [21].

A range of therapeutic interventions has demonstrated efficacy in enhancing musculoskeletal function and clinical outcomes when impairments are amenable to improvement. Physical therapy programs that emphasize progressive strength training have been shown to produce significant gains in overall mobility, balance, and physical function among older adults [22]. In particular, resistance-based strengthening interventions have yielded notable improvements in patient-reported pain outcomes in elderly individuals with hip or knee osteoarthritis [23]. Similar functional benefits have been observed across various active therapeutic modalities within the older population. Evidence from a study involving individuals aged 60 years and older indicated that both high-intensity strengthening protocols (eight repetitions at 80% of one-repetition maximum) and low-intensity protocols (thirteen repetitions at 50% of one-repetition maximum) resulted in comparable improvements in muscular endurance and functional performance [24].

Low-impact exercise modalities, such as Tai Chi and aquatic aerobic exercises, have also been shown to enhance balance and musculoskeletal function when performed on a regular and sustained basis [25]. Furthermore, encouraging older adults to participate in exercise programs or community-based activities under the supervision of qualified and attentive instructors may help minimize adverse effects while simultaneously improving mood through positive social engagement [25]. Maintaining an active lifestyle is strongly recommended for older individuals due to its wide-ranging benefits, including improved physical and mental health, enhanced cognitive function, reduced risk of chronic disease, and increased opportunities for social interaction. Gradual participation in enjoyable activities, coupled with the use of external support to sustain motivation, is essential for long-term adherence and optimal outcomes.

Rehabilitation after Surgery or Injury

Hospitalization resulting from cardiac events, infections, fall-related injuries, strokes, cancer, as well as surgical and medical procedures is highly prevalent among older adults [26]. Within this context, physiotherapy represents a core component of postoperative rehabilitation, playing a critical role in facilitating the recovery of strength, mobility, and functional independence, while simultaneously reducing the risk of re-injury. Regardless of whether the surgical intervention is minor or major, physiotherapy provides a structured and safe approach to achieving rehabilitation goals. Accordingly, individuals who are scheduled for surgery or who have recently undergone a surgical procedure should consult their physician or surgeon regarding the role and importance of physiotherapy within the recovery process. With an appropriately designed physiotherapy program, patients can achieve optimal recovery outcomes and return to daily activities in a timely and effective manner [27].

Geriatric Rehabilitation (GR) is specifically aimed at enhancing quality of life and restoring functional capacity in older adults, particularly those experiencing significant impairments and/or frailty [28]. Contemporary rehabilitation paradigms increasingly emphasize functionality and overall well-being rather than a disease-centered approach [29]. Rehabilitation interventions for older adults are therefore essential in supporting the maintenance of functional independence and improving quality of life [30]. Despite its recognized benefits, only 11% of geriatric patients are referred to rehabilitation facilities following hospital admission [31]. Rehabilitation programs for older adults should prioritize functional, task-oriented activities to preserve mobility, competence, and independence.

Orthopedic conditions, including osteoarthritis, fractures, and dislocations, commonly necessitate physiotherapy interventions to improve mobility and alleviate symptoms. Osteoarthritis, a progressive degenerative condition, frequently affects the hands, ankles, fingers, spine, and knees, thereby limiting flexibility and fine motor function

required for daily activities. Physiotherapy plays a key role in pain management and the optimization of joint function in individuals with osteoarthritis. Fractures represent another major concern in the elderly population, largely due to age-related reductions in bone mineral density, compounded by balance impairments and visual deficits. Postmenopausal women are particularly vulnerable, as mineral deficiencies contribute to increased bone fragility. Strength-training exercises prescribed and supervised by physiotherapists have been shown to enhance bone strength and reduce fracture risk.

Dislocations, which occur when bones are displaced from their normal joint alignment, are frequently associated with falls in older adults. Although acute pain typically subsides following joint reduction by a physician, subsequent physiotherapy is essential to restore joint function, improve stability, and prevent recurrence. Collectively, these conditions underscore the indispensable role of physiotherapy in the effective management of chronic orthopedic disorders and functional limitations in the aging population [32].

Neuro-Muscular Re-Education Training

Manual therapeutic approaches, including proprioceptive neuromuscular facilitation (PNF), balance and core control activities such as Bosu and therapeutic ball exercises, as well as a range of other therapeutic exercises, are commonly utilized within neuromuscular re-education to restore normal, coordinated, and regulated movement patterns. In the outpatient orthopedic setting, the primary objective of neuromuscular re-education exercises is consistent with that in other clinical contexts: to retrain a specific body component to successfully perform a task that it was previously capable of executing [33].

Balance and proprioception exercises constitute a critical component of interventions aimed at improving postural stability and neuromuscular coordination. Tasks such as single-leg stance activities or standing on unstable surfaces challenge the neuromuscular system by promoting the activation of stabilizing musculature and enhancing the efficiency of neural pathways responsible for balance control. Proprioceptive training further refines the individual's awareness of joint position and movement, thereby contributing to improved stability and coordination.

Dynamic stability and agility training similarly emphasize controlled movement across multiple planes of motion. Exercises such as lateral lunges and single-leg squats are designed to enhance balance and postural control during complex functional tasks, while agility drills incorporating ladders or cones improve reaction time, movement speed, and the ability to change direction efficiently. In addition, core stabilization and functional strength exercises are fundamental in establishing a stable biomechanical foundation. Core strengthening targets the abdominal, lumbar, and pelvic musculature, thereby enhancing trunk control and reducing the risk of injury. Functional strength training, which replicates everyday or sport-specific movement patterns, promotes optimal motor control and contributes to improved overall physical performance. Collectively, these exercise modalities play an essential role in enhancing stability, movement control, and functional resilience across a wide range of activities.

Chronic Disease Management

Physiotherapy plays a pivotal role in alleviating pain associated with conditions such as arthritis and osteoporosis. Joint pain commonly arises from inflammatory processes, traumatic injuries, arthritis, gout, and other pathological causes. When left untreated over extended periods, joint pain may significantly restrict mobility and contribute to muscular weakness or instability during the performance of routine daily activities. Within this context, the physiotherapist aims to restore optimal function of muscles, bones, joints, tendons, and ligaments through targeted therapeutic interventions [34].

Beyond pain management, physiotherapy is fundamental to the restoration of functional capacity, the reduction of disability, and the enhancement of overall quality of life. Regular participation in physiotherapy-guided exercise programs has been shown to improve balance, muscular strength, coordination, motor control, flexibility, endurance, and memory. Such interventions also contribute to the preservation of cognitive function, reduce the risk of cardiovascular disease, and facilitate the efficient performance of activities of daily living. Furthermore, physiotherapy has a positive impact on psychological well-being by enhancing self-esteem and life satisfaction, while simultaneously reducing fall risk and mitigating the effects of conditions that are more prevalent in older adults.

Physiotherapy interventions address and prevent a wide range of age-related impairments, including joint dysfunction, balance deficits, and muscular weakness, and play a supportive role in managing conditions such as hypertension and obesity. In addition, physiotherapy has demonstrated effectiveness in older adults experiencing joint stiffness, ligament inflexibility, generalized mobility limitations, Parkinson's disease, arthritis, and various neurological disorders [34].

Psychological and Emotional Wellbeing

Mental health is defined as a state of well-being in which individuals are able to recognize their abilities, cope effectively with the normal stresses of life, work productively and creatively, and contribute meaningfully to their communities [35]. In clinical practice, physical therapists frequently work with patients who experience mental health concerns alongside other chronic health conditions. Within this context, exercise has been widely recognized as an evidence-based intervention for individuals with mental health disorders [36]. The growing prevalence of depression, anxiety, and other mental health conditions highlights the need for a coordinated, multisectoral approach to care. Addressing this expanding public health challenge, as well as the associated economic burden, requires not only the development of effective treatment and prevention strategies but also increased public awareness. The well-

documented association between poor mental health and a higher incidence of musculoskeletal disorders, various pain syndromes, and chronic yet preventable diseases further emphasizes the necessity of adopting a comprehensive, holistic, and interdisciplinary approach to management [37].

As healthcare professionals, physiotherapists play an important role in health promotion and disease prevention, including the promotion of mental well-being. This role involves educating individuals about mental health, correcting misconceptions related to mental illness, and facilitating timely referral to qualified mental health and psychiatric professionals when appropriate [38]. Within the geriatric population, motivation and encouragement are particularly critical for the maintenance of mental health. These elements support older adults in coping with age-related challenges, fostering psychological resilience, and enhancing overall quality of life. Motivation acts as a driving force that encourages older individuals to engage in activities that promote mental and emotional well-being, including social participation, leisure pursuits, and the preservation of a sense of purpose. Encouragement, in turn, helps create a supportive and compassionate environment that empowers older adults to confront challenges with confidence. This includes providing positive reinforcement, acknowledging personal achievements, and demonstrating genuine care and concern for their overall well-being.

CONCLUSION

Physical therapy plays a central and indispensable role in the provision of comprehensive geriatric care and in the promotion of overall health among older adults. By delivering evidence-based interventions that address a wide spectrum of age-related challenges—including fall prevention, pain management, mobility enhancement, functional independence, and psychosocial well-being—physical therapists contribute substantially to improving health outcomes and quality of life in the aging population. Beyond individual-level benefits, physiotherapy interventions have the potential to reduce healthcare utilization, prevent avoidable complications, and support aging in place, thereby alleviating the burden on healthcare systems.

Accordingly, an interdisciplinary approach to elder care that formally integrates physical therapy within primary, secondary, and community-based healthcare services is essential. Health policies should prioritize the early and systematic inclusion of physiotherapy in geriatric care pathways, particularly for individuals at risk of frailty, functional decline, or recurrent hospitalizations. Furthermore, future research should focus on evaluating the cost-effectiveness, long-term outcomes, and implementation strategies of physiotherapy-led interventions to inform evidence-based policy development. Strengthening the role of physical therapy within national aging and public health strategies is therefore critical to promoting healthy aging, enhancing independence, and optimizing quality of life for older adults.

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