ISSN: 2754-4745

Journal of Physical Medicine Rehabilitation Studies & Reports

SCIENTIFIC Research and Community

Review Article

Open Access

The Role of Physical Therapy in Enhancing the Well-being of Elderly Patients

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ABSTRACT

The elderly population is growing, and with it, the demand for healthcare services that cater to their unique needs. Physiotherapists have traditionally worked with older persons after an injury (e.g., a fall-related hip fracture) or event (e.g., a stroke). However, in order for our profession to make a substantial contribution to the healthy aging agenda, we must use our knowledge in movement and exercise prescription, as well as our counseling skills, to encourage our clients throughout the health continuum to be physically active in their daily lives. To summarize, we must incorporate physical activity promotion into our work with older people in order to prevent chronic illnesses that impair their functional capacity, quality of life, and well-being.

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Received: July 04, 2023; **Accepted:** July 11, 2023; **Published:** July 19, 2023

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

Introduction

Physical activity is a widely believed and supported method for aging healthily. It specifically increases cognitive health and mobility, two fundamental qualities that are critical for functional capacity and strong indications of overall health [1]. Physical activity on a regular basis is the most effective behavioral technique for improving health span and promoting healthy aging [2]. Physical activity is an important technique for extending life expectancy since it successfully prevents chronic noncommunicable diseases like diabetes, cardiovascular disease, and dementia [3, 4]. Falls prevention is an area where physiotherapists have been instrumental in promoting healthy aging [5]. Because many older persons who fall have several comorbidities, physiotherapists are most qualified to conduct this program, and physiotherapists have the expertise to tailor the program to individual needs [2].

Understanding the Elderly Population

In 2022, there will be 771 million persons aged 65+ worldwide, accounting for about 10population. This category has been rising at a rapid pace, and it is predicted to reach 16States alone, the percentage of people 65 and older has more than tripled over the last century, rising from 4.112.9Falls, cardiovascular disease, and trouble with everyday tasks are all prevalent, but not universal. physiological changes of normal aging, diseases, and syndromes frequent in persons over the age of 85, cognitive and psychological changes, social and environmental changes, and then addresses common discussions that clinicians engage with these patients and their families regularly. Normal aging includes some hearing and vision loss, as well as a drop in immunological function. Cardiovascular disease, osteoporosis, and dementia are all frequent chronic illnesses in those over the age of 85. As the population ages and grows more overweight, the prevalence of osteoarthritis, diabetes, and related mobility disabilities will rise [8]. Osteoarthritis is the second most frequent chronic illness, causing chronic pain and disability in elderly Americans. In one study, 52 percent of 85-year-olds were diagnosed with osteoarthritis [9, 10]. According to US Census research, 73% of Americans over the age of 85 had some difficulty walking. Mobility impairment is linked to social isolation, falls, and sadness. One-third of disabled adults over the age of 85 live alone [11]. Falls are a major cause of morbidity and disability among older adults, with 30-40adults over the age of 70 falling each year, and rates are especially high for older adults in long-term care facilities. Falls account for more than half of injuries among older adults, with adults over the age of 85 having a higher rate of death [12]. A holistic approach to elder care emphasizes the importance of considering all aspects of an individual's well-being, including their physical, mental, emotional, social, and spiritual health. This approach has many benefits, including improved quality of life, personalized care plans, preventive and proactive care, empowerment and independence, and the involvement of family and friends.

The Role of a Physical Therapist

Older adult care is complicated since it involves several conditions that require the expertise of numerous specializations. Musculoskeletal, cardiovascular, and neurological diseases are common among the elderly [13]. These categories may overlap since older persons frequently have multiple medical conditions. Because of the aging influence on older adults' health status and illness pattern of presentation, it is recommended that physiotherapy in older adults be trained in musculoskeletal,

neurological, and cardiovascular assessment and management of older persons. A physiotherapist specializing in geriatric care should consequently have a thorough understanding of physiotherapy methods in all three areas, focusing on the care of older persons [14]. Physiotherapy is a key component of the complete geriatric assessment (CGA), which has been shown to enhance outcomes for older persons, especially those who are frail. A CGA strategy is used in successful orthogeriatric treatment as well as in the new field of perioperative surgical care for the elderly. [14] Assessments and treatment concepts for older people should follow national protocols and guidelines. The assessment of older persons differs from that of younger people in that it takes into account the physical changes that occur with age. The World Health Organization's (WHO) International Classification of Functioning, Disability, and Health [15] is the most global and inclusive approach to rehabilitation. The International Classification of Functioning, or ICF, is a model that allows healthcare practitioners to analyze different impairments and relate them to the important domains of an individual's life to guide assessment, goal setting, and treatment planning. The ICF is useful to physicians because it can help them conduct a complete examination of the elderly. The ICF assists physicians in determining how impairments frequently affect everyday activities and how a person can engage in social responsibilities in later life [16].

Medical History: It is critical to obtain a full medical/surgical history as well as a supportive medication history.

- **Medication Impact on Mobility:** Medication, particularly in older adults, can significantly affect mobility and increase the risk of falls.
- **Underreported Major Medical Issues:** Individuals may fail to report significant medical issues, such as cardio- vascular conditions, posing a potential risk to their health.

Social History: Vital, older adults frequently rely on formal or informal (family and friends) support. For example, how can a physiotherapist (and other allied health professionals) assist rehabilitation in the instance of an elderly person who is to be discharged home alone but is unable to stand comfortably to prepare a meal or walk to the grocery store? The ICF can guide clinicians through the assessment process and serve as a checklist to ensure that all essential history and evaluations are included [16].

A Comprehensive Physical Therapy Program for Seniors Should Include

- **Evaluation:** Assessment of the patient's strength, balance, range of motion, and functional abilities.
- **Manual Therapy:** Techniques to increase range of motion, alleviate discomfort, and promote recovery.
- **Modalities:** Application of methods like heat, ice, and electrical stimulation to relieve pain and inflammation.
- **Balance Training:** Exercises designed to improve balance and prevent falls.
- **Home Exercise Program:** Tailored exercises for the patient's individual needs and abilities to be performed at home.
- **Functional Training:** Activities focused on enhancing seniors' ability to perform everyday tasks.

Falls Prevention and Balance Enhancement

Falls and unbalance are widespread among the elderly, and fall/instability is one of the 'giants' in geriatric medicine [17]. Falls can trigger a downward spiral of immobility, diminished confidence, and incapacity, eventually leading to institutionalization. Every year, more than one-third of people 65 and older fall, and half of these falls are recurring [20, 21]. A serious injury, such as a hip fracture, other fracture, subdural hematoma, other serious soft tissue injury, or brain injury, occurs in approximately one out of every ten falls [22, 23]. Fall-related admissions have not decreased over the last ten years, and there is an urgent need to create effective fall prevention methods that are acceptable and sustainable in the long run for older individuals [18]. Balance improving activity and lower-limb resistance training have been identified as the best exercise modality for fall prevention in older individuals [19]. Physical activity has thus been shown to prevent this effect.

However, it is yet unclear which sort of exercise will be most effective for this goal [19, 25, 26]. Increased physical activity reduces overall morbidity and mortality, as well as the chance of falling by 30% to 50% [27, 28]. Leg strength training and balance training, in particular, have been identified as appropriate strategies for reducing the risk of falls. However, because balance is the foundation of being able to remain erect and move around, balance training should also play an essential part in fall prevention [29]. Almost all research on the risk of falling among the elderly agree that physical activity, especially leisure exercises, are excellent way to maintain a healthy balance and prevent falls [30, 31, 32]. Various research has looked into various types of exercise, such as Pilates, stair climbing, vibration training, and dancing [33, 34-39]. All of these studies demonstrated significant increases in balance ability and give evidence that physical activity can minimize the chance of falling. Tai-Chi training is another typical exercise intervention that has been reported to improve balance and was included as a comparator intervention in the study of Zhao et al. Several systematic reviews and meta-analyses have examined the effects of Tai-Chi on balance in elderly populations, with all concluding that such exercise is effective in increasing balance and functional measures related to quality of life in the elderly, such as flexibility or strength, and is also capable of reducing the risk of falls [40, 41, 43].

Pain Management and Mobility Improvement

Chronic pain is one of the most frequent health problems among older persons (those over the age of 65), and it is connected with severe disability. Chronic pain limits mobility in the elderly is connected with melancholy and anxiety, and can impair familial and social connections [44, 45].

When caring for elderly people, it is critical to consider the overall therapeutic goal of treatment. Rehabilitation's primary goal is to improve impairment (loss of physiologic or anatomical structure or function), which is typically accomplished through modalities that address the underlying pathophysiologic etiology (e.g., core strengthening and stabilization exercises for degenerative lumbar spondylosis). When improving impairment seems unlikely, rehabilitation should instead focus on improving patient disability (restricted in ability to perform an activity due to impairment) [44].

Multiple modalities of therapy have been found to improve musculoskeletal function and results when the impairment is amenable to improvement. Physical therapy programs that emphasize strength training are very beneficial in increasing overall mobility, balance, and physical function in the aged population [46-49]. Resistance-based strengthening interventions, for example, have dramatically improved patient- reported pain outcomes in older people with hip or knee osteoarthritis [50-52]. Similar functional improvements in the aged population have been found across a wide range of active therapy methods. In

one study of adults 60 years or older, regimens focused on high-intensity strengthening (8 repetitions at 80% of single repetition maximum) and low- intensity strengthening (13 repetitions at 50% of single repetition maximum) revealed equivalent improvement in endurance and function.[53] Low-impact modalities, such as Tai Chi and Aqua-aerobic regimens, may also improve balance and musculoskeletal function when done on a regular, consistent basis [54].

Encouragement of older patients to attend sessions at an exercise facility or community facility with a trained and attentive instructor may reduce these undesirable effects while also improving mood through the development of positive social contacts [54].

Older adults should maintain an active lifestyle for a multitude of benefits, including improved physical and mental health, enhanced cognitive function, reduced risk of chronic diseases, and increased social interaction. Engage in enjoyable activities gradually and seek support to stay motivated.

Rehabilitation after Surgery or Injury

Hospitalizations for cardiac events, infections, fall-related injuries, stroke, cancer, or surgical or medical procedures are widespread among the elderly population [56]. Physiotherapy is a crucial component of post-surgery recovery. It can assist patients in regaining strength, mobility, and independence while also lowering the chance of re-injury. Physiotherapy can help you achieve your goals safely and effectively, whether you have had a simple surgery or a large operation. If you are going for surgery or have recently had one, you should talk to your doctor or surgeon about the importance of physiotherapy in your rehabilitation process. You can reach your rehabilitation goals and return to your daily activities as soon as possible with the correct physiotherapy program [57]. Geriatric Rehabilitation (GR) attempts to improve the quality of life and restore function in older adults, particularly those with debilitating impairments and/or frailty [58]. The current rehabilitation approach emphasizes function and well-being rather than sickness [59]. Rehabilitation for older individuals aids in the preservation of functional independence and the enhancement of quality of life.[60] 11% of elderly patients are referred to rehabilitation centers after being admitted to the hospital [62]. Older adult rehabilitation should focus on functional activity to maintain functional mobility and capability [61].

Some Examples of Orthopedic Conditions that Commonly Require Physical Therapy

Osteoarthritis

This is a degenerative condition that primarily affects the hands, ankles, and fingers, as well as the spine and knees. Osteoarthritis makes it harder to carry out daily tasks, particularly those that involve flexibility, movement, or fine motor ability.

Fractures

This is yet another important issue for the elderly. People's bone mineral density diminishes as they age. This is especially troublesome in postmenopausal women. Mineral deficiency causes weaker, more brittle bones. It worsens as people age because they have more unsteady balance and vision problems, increasing their risk of fractures. Strength training exercises can help build bone strength and reduce the probability of fracture.

Dislocations

When a joint dislocates, the bones that make up that joint move from their original position. This is frequent following a fall, when the jolt knocks bones out of the joint. Older persons with dislocated joints have immediate pain, which subsides once a physician assists in repositioning the joint. Many orthopedic conditions commonly require physical therapy which we will discuss in detail in the chronic disease management section [63].

Benefits of Early Mobilization and Rehabilitation

Early mobilization interventions benefit patients with critical illnesses by reducing muscle weakness acquired in the intensive care unit (ICU). Adequate awareness of the population at risk of developing muscle problems is critical, and the two most obvious dangers are prolonged mechanical breathing and immobility. [64] As a result, the physiotherapy team must assess the potential risks of adverse consequences associated with mechanical ventilation and immobility of critically sick patients in the ICU, such as loss of strength and muscle mass [69]. There are various early mobilization programs available in the literature, with differences in the development of activities and even their start time. Other instruments, such as neuro-muscular electrical stimulation (NMES), the cycle ergometer, and the orthostatic board, have been integrated into the early mobilization regimens. Early mobilization and electrostimulation are suggested as the most effective solutions for short-term outcomes by Conolly et al. [65-68]. The benefits of various early mobilization strategies are associated with the prevention and reduction of critical patient polyneuropathy and myopathy, improvement of patient's quality of life, reduction of ICU stay and hospitalization, and mortality during hospitalization. Other results include reduced mechanical breathing time and weaning, as well as preservation of peripheral and respiratory muscle strength [69]. Significant research has recently been dedicated to understanding the effects of physical exercise training on cognitive performance and brain plasticity in older people [70]. Findings support the concept that executive cognitive skills, which are important for controlling goal-oriented actions and adaptive behaviors, are severely reduced by aging but also positively and specifically sensitive to aerobic exercise training [71, 72]. Physical training research aimed at improving cognitive functioning has primarily focused on modifying exercise's quantitative characteristics (intensity, duration, and frequency) to find a dose-response link between physical activity and cognitive performance [73]. In contrast, not much attention has been made to analyzing the nonphysical components of exercise (i.e., the complexity of the cognitive or coordinative demands inherent in movement tasks), which might contribute to its cognitive effects [71, 74, 75]. The lack of long-term exercise interventions that challenge neuro-muscular coordination is surprising, given that research on motor training clearly shows that movement task complexity and the associated involvement of executive function have a strong impact on neuro-plasticity and thus cognitive function [76]. There is some evidence that cognitive gains can be acquired through training programs that focus on neuro-muscular coordination and balance rather than endurance and resistance [77].

Neuro-Muscular Re-Education Training

Manual techniques (e.g., PNF-proprioceptive neuromuscular facilitation), activities for balance and core control (e.g., Bosu exercises and Therapeutic Ball exercises), and other therapeutic exercises are used in neuromuscular re-education to re-develop normal, controlled movement patterns. The purpose of neuromuscular re-education activities in the outpatient orthopedic context is the same as it is in any other situation: to re-train a body component to do a previously capable job [79].

1) **Balance and Proprioception Exercises:** Balance: and proprioception exercises: By challenging stability, balance

exercises improve bodily awareness and control. These activities, such as single-leg balancing or standing on unstable surfaces, challenge the body to recruit muscles and activate brain pathways involved in balance maintenance. Proprioception exercises, which concentrate on the body's sense of position and movement, increase coordination and stability even more.

2) **Dynamic Stability and Agility Training:** Dynamic: stability exercises consist of movements that evaluate stability in several planes of motion. Exercises like lateral lunges and single-leg squats provide better control and balance during strenuous tasks. Agility training improves quickness, response time, and change-of-direction abilities through ladder or cone drills.

3) **Exercises for Core and Functional Strength:** Core: exercises target the muscles of the belly, lower back, and pelvis, providing a stable foundation for movement and stability. Core strength enhances general body control and lowers the chance of injury. Functional strength workouts are designed to mirror motions in everyday tasks or sports, ensuring optimal movement patterns and control.

Hand Exercises for Fine Motor Skill Improvement

1) **Painting Using your Fingers:** This practice is especially beneficial for seniors who have difficulty communicating how they feel or what they desire vocally. Finger painting will help children to express themselves while also allowing them to be creative.
2) **Playdough:** Allow your older parent to stretch, shape, and form the playdough. This is a great workout for folks who want to strengthen their fingers.
3) **Simple Hand Exercises:** Simple hand exercises can be quite beneficial, but the senior must maintain consistency to see gains. They can put pegs in a pegboard, transport beans from one bucket to another, exercise their fingers by wrapping rubber bands around them, and squeeze a stress ball. It may take hours of repetition for these exercises to be beneficial, so urge your loved one to do so.
4) **Make a Fleece Blanket with Ties:** Fleece blankets with ties on all sides are simple to construct and can help develop finger muscles. They will also be proud to show off something they created themselves to relatives and friends.
5) **Assist with Household Tasks:** Even basic tasks like folding clothes can help an elderly person's fine motor abilities. Other things kids can do are open jars and containers, fix hooks and buttons on garments and tidy shelves.

The Link Between Physical Activity and Mental Health

- Physical activity enhances cognitive function by improving memory, attention, learning, and cognitive flexibility.
- Regular exercise reduces the risk of Alzheimer's disease and dementia by combating inflammation and oxidative stress.
- Physical activity promotes better mood and sleep, further contributing to cognitive well-being.

Chronic Disease Management

Physiotherapy can assist in reducing pain caused by ill-nesses such as arthritis or osteoporosis. Joint inflammation, traumas, arthritis, gout, and other factors typically cause joint pain. If left untreated for an extended period, it can limit mobility and cause weakness or instability in performing typical activities. The physiotherapist aims to restore muscle, bone, joint, tendons, and ligament function [82].

Benefits of Physiotherapy in Geriatrics:

- Physiotherapy plays a vital role in restoring functionality, reducing pain, and improving quality of life.
- Regular exercises can result in improved balance, strength, coordination, motor control, flexibility, en- durance, and even memory. It also helps to maintain cognitive function, reduces the risk of heart disease, and enables individuals to carry out daily activities with ease.
- Physiotherapy also enhances mood and self-esteem, re- duces the risk of falls, and minimizes the impact of illnesses that are more likely to affect older people.
- It treats and prevents joint problems, balance disorders, strength decline, and reduces high blood pressure and obesity.
- Additionally, physiotherapy has been proven to be beneficial for seniors suffering from conditions such as stiff joints, unbendable ligaments and overall body movement, Parkinson's disease, arthritis, and neurological problems [82].

Here are the most **common medical conditions** treated by physical therapists [83]:

A. Muscular Dystrophy

As we age or suffer from various diseases, our muscles and bones atrophy and weaken. Mobility exercises and the usage of supporting frames can be beneficial in this regard.

B. Back and Neck Pain

Acute back and neck pain that appears quickly or chronic back and neck pain that lasts months or years limits normal functioning. Physical therapy helps to reduce pain and increase mobility.

C. Osteoporosis

Thin and brittle sponge-like bones with numerous holes inside them break. Similarly, debilitating fractures might be avoided with immediate treatment.

D. Chronic Fatigue Syndrome

This complex illness produces exhaustion that is not alleviated by rest. Doctors and physical therapists work together to create a treatment plan that incorporates endurance training assignments.

E. Respiratory Issues

Chronic bronchitis and other respiratory problems can be addressed with pulmonary rehabilitation strategies that include diaphragmatic breathing exercises to strengthen the lungs.

F. Joint Replacement

Post-operative care for surgical removal and replacement of a hip or knee joint with an artificial joint (prosthesis) will almost probably give adequate knee pain alleviation.

G. Parkinson's Disease

Chronic motor impairments and tremors are caused by this neurological and progressive movement condition. Physical therapy and resistance strength exercises can also be used to treat it.

H. Huntington's Disease

Huntington's illness affects both intentional and involuntary motions. Common symptoms include spasms, slurred speech, and an unsteady gait, which can be treated with physical therapy.

Psychological and Emotional Wellbeing

Mental health is described as a condition of well-being in which each individual realizes his or her potential, can manage typical life stresses, can work creatively and fruitfully, and can contribute to his or her community [84]. Physical therapists work with patients who may have mental health concerns in addition to other long-term health issues, and exercise is an evidence-based treatment for persons with mental health issues [85, 87]. The prevalence of depression, anxiety, and other mental diseases needs a coordinated, multi-sectoral approach. Not only should public awareness be raised, but treatment and prevention techniques must also be developed to lessen this enormous and growing health problem, as well as the economic losses associated with it. The links between poor mental health and an increased prevalence of musculoskeletal disorders, different types of pain, and chronic and avoidable

diseases highlight the importance of an effective and holistic interdisciplinary approach to managing these conditions [86, 87]. Physiotherapists, as health care practitioners, are also involved in the prevention and promotion of health, including mental health. It is their obligation to appropriately enlighten persons about mental health, dispel myths about mental disease, and send them to trained professionals in mental health and psychiatry as needed [88]. Motivation and encouragement are essential aspects of maintaining mental health for elderly patients. They play a crucial role in helping seniors cope with the challenges of aging, promoting positive well-being, and enhancing their quality of life. Motivation provides the drive and energy for elderly patients to engage in activities that promote their mental and emotional well-being. It encourages them to participate in social interactions, pursue hobbies, and maintain a sense of purpose in life. Encouragement fosters a supportive and nurturing environment that empowers elderly patients to believe in their abilities and overcome obstacles. It involves providing positive reinforcement, recognizing their achievements, and expressing genuine care and concern for their wellbeing.

Strategies for Promoting Motivation and Encouragement

- Goal Setting
- Social Engagement
- Physical Activity
- Learning and Development
- Positive Reinforcement
- Empathetic Communication
- Family and Community Support
- Professional Guidance

Conclusion

Physical therapy is a critical component of comprehensive elder care, contributing to the overall well-being of elderly patients. By addressing a wide range of issues, including fall prevention, pain management, mobility improvement, and emotional support, physical therapists play a pivotal role in enhancing the quality of life for the aging population. The interdisciplinary approach to elder care that incorporates physical therapy is essential in promoting health, independence, and a higher quality of life for seniors.

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