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The Role of Physical Activity in Successful Aging and Its Impact on Health and Life Satisfaction in Seniors

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Abstract:

Introduction and Purpose: Demographic aging of populations is a phenomenon observed in most countries worldwide. As a result, extending healthy life has become one of the key objectives of health policies in many nations. The World Health Organization (WHO) has developed a definition of healthy aging, describing it as the process of developing and maintaining functional abilities that ensure well-being in older age. In addition to systemic solutions supporting seniors, physical activity plays a critical role in the process of healthy aging. It is fundamental for maintaining physical fitness and independence in older adults. This paper aims to discuss the role of physical activity in the process of successful aging, reducing the risks associated with comorbidities, and its positive impact on overall life satisfaction.

Materials and Methods: A review of the available literature was conducted by searching official databases such as PubMed and Google Scholar using the following keywords: seniors, physical activity in seniors, demographics of Poland, global demographics in relation to original research, meta-analyses, and reviews in both Polish and English, published in scientific journals and articles.

Results: Population aging is one of the major global challenges. Regular physical activity, tailored to the capabilities of seniors, allows for longer life in good health and positively impacts overall life satisfaction.

Conclusions: Further research aimed at promoting physical activity among seniors and selecting appropriate exercises is one of the pillars of healthy and successful aging.

Key words: seniors, physical activity in seniors, demographics of Poland, global demographics

Introduction

In the face of aging populations and the systematic extension of average life expectancy, increasing attention is being paid to the quality of life in older age. Advances in modern medicine and civilization have enabled longer lives; however, how these additional years are spent largely depends on health and lifestyle choices. Consequently, one of the key challenges of contemporary times is not merely prolonging life but ensuring that these additional years

are filled with health, vitality, and the ability to enjoy daily activities. Maintaining functional capacity in old age offers an opportunity to retain independence, pursue personal passions, and actively participate in social life.

Extending the period of life spent in good health constitutes one of the primary objectives of health policies in many countries. When healthy life expectancy increases at a faster rate than average life expectancy, it signifies that individuals are spending a greater proportion of their lives in good health. Between 1991 and 2019, the average life expectancy of Poles significantly increased—by 8.2 years for men and 6.7 years for women. However, due to the COVID-19 pandemic and the associated increase in mortality, life expectancy significantly decreased in 2020 and 2021 compared to 2019. This negative trend was reversed in 2022 when life expectancy began to rise again. In 2023, further growth was observed, with an average life expectancy of 74.7 years for men and 82 years for women, surpassing pre-pandemic levels and marking the highest recorded in Poland's history. [1]

Projections published by the United Nations (UN), based on global trend analyses, indicate that average life expectancy will continue to rise in most countries worldwide. Key drivers of this phenomenon include significant advancements in preventive healthcare and public health protection. [2] Nevertheless, the overall health status of individuals aged 60 and above, measured by functional, physical, and mental capacity, as well as autonomy and independence from others' care, remains unsatisfactory. This underscores the necessity of implementing comprehensive systemic solutions to ensure older adults have access to preventive services and diverse forms of physical activity, both of which are crucial for maintaining health and quality of life in later years.

Physical activity is intrinsically linked to health and plays a pivotal role in determining the quality of life. Regular exercise improves physical fitness, strengthens the cardiovascular system, prevents musculoskeletal disorders, and enhances mental well-being. Unfortunately, 85% of individuals aged 60 and above suffer from chronic diseases, primarily cardiovascular conditions and musculoskeletal disorders. [3] Furthermore, many older adults face the risk of disability, not only due to illnesses but also because of factors such as low physical activity, smoking, excessive alcohol consumption, obesity, or an inadequate diet. [4,5] As people age, the number of individuals experiencing limitations in performing both complex and basic activities of daily living increases. [6]

Therefore, health-promoting interventions should focus on preserving high levels of physical and mental capacity among seniors and fostering their social relationships. Physical activity plays a crucial role in counteracting lifestyle-related health risks and promoting successful aging. It helps maintain good physical condition and contributes to improved quality of life by supporting independence and physical and mental well-being. Regular exercise prevents diseases associated with modern lifestyles, such as obesity, heart disease, or osteoporosis, and has a positive impact on mood, energy levels, sleep quality, and the slowing of aging processes. [7,8]

It is important for seniors to engage in diverse forms of physical activity that are tailored to their age, health status, and capabilities. These activities may include aerobic exercises such as walking, swimming, or cycling, as well as strength training to improve balance and flexibility. Even moderate regularity in physical activity yields long-term health benefits, preventing numerous diseases and enhancing overall quality of life. [9]

Physical Activity as a Key to Healthy Aging

The senior population is characterized by significant variability in multiple aspects of aging, such as health status, comorbidities, physical and mental condition, living circumstances, family relationships, sense of happiness, and overall life satisfaction. There is no universally defined threshold for old age; instead, only conventional benchmarks are applied. According to the World Health Organization (WHO), the aging process begins at the age of 60, while the United Nations (UN) sets this threshold at 65 years. Given the increasing human lifespan, four subperiods of old age are distinguished: young-old (65–74 years), middle-old (75–84 years), old-old (85–99 years), and oldest-old (over 100 years). [10]

With the progression of aging, there is a gradual decline in independence, which affects daily functioning. This process encompasses changes in all body systems and organs. Aging leads to a reduction in bone density, increasing the risk of falls and fractures. [11] Muscle mass also decreases, replaced by adipose tissue, resulting in diminished muscular strength. Research indicates that, in individuals aged 80 years, muscle strength can be 30–50% lower compared to those aged 40. [12] This decline particularly affects the muscles of the lower limbs, limiting physical activity and accelerating the loss of muscle mass. As a result, seniors may experience difficulties in performing daily activities, reduced motor coordination, and an elevated risk of falls, which can have severe consequences. [13]

Physical inactivity and a sedentary lifestyle are among the primary contributors to the progressive decline in physical capacity in older individuals, alongside chronic diseases. In seniors, a sedentary lifestyle exacerbates cardiovascular dysfunction, including reduced stroke volume and cardiac output and elevated blood pressure. [14,15]

Thus, physical activity plays a critical role in maintaining health and functional capacity. Regular exercise induces morphological and functional changes in the body that can prevent numerous diseases, delay their onset, and improve physical performance. The World Health Organization recommends that older adults engage in moderate physical activity for at least 30 minutes five times per week or intense exercise for 20 minutes three times per week. Additionally, muscle-strengthening and endurance exercises are recommended 2–3 times weekly. Strength training and coordination exercises are particularly important as they reduce the risk of falls. [15] An active lifestyle offers numerous health benefits: it lowers the risk of cardiovascular disease, helps regulate blood pressure, prevents obesity, enhances respiratory function, supports healthy digestion, and normalizes bowel movements. Moreover, it preserves motor functions, strength, and coordination, reduces the risk of osteoporosis and depression, improves cognitive function, lowers stress levels, and positively impacts sleep quality. Regular physical activity enables older individuals to maintain independence in daily activities and improve their quality of life. [16]

Physical activity forms the cornerstone of healthy aging, defined as the development and maintenance of functional abilities necessary for well-being in old age. These abilities encompass meeting basic needs, making decisions, learning, developing, maintaining mobility, and building and nurturing social relationships.

As functional capacity declines and the number of seniors facing significant health challenges grows, it becomes essential to establish support systems that facilitate daily functioning and promote physical activity within this demographic. A key element of preventive measures in gerontology is the promotion of rehabilitation programs among older adults, as regular physical activity has been proven to have a protective role, reducing the risk of disability and enhancing the quality of life for seniors.

Age-Appropriate Activity: Optimal Exercises for Seniors

In health-oriented training, endurance, strength, coordination, and flexibility exercises play a particularly significant role. One of the core elements is aerobic (oxygen-based) exercise, with

its intensity and frequency adjusted to the health status and physical condition of the participant. Strength exercises are another critical component, with loads tailored individually to accommodate the maximal effort capacity of the individual during exertion. [17,18] Flexibility exercises, which enhance bodily elasticity and are adapted to individual needs, can supplement these programs. Isometric exercises strengthen weakened muscles, while stretching gymnastics effectively counteracts muscle shortening. [19]

With advancing age, certain muscle groups, including the superficial and deep neck flexors, quadriceps femoris, and gluteal muscles, tend to weaken. Conversely, muscles such as the pectoralis major, flexors of the arms and fingers, and the quadratus lumborum frequently shorten, potentially leading to reduced mobility and postural issues. [19] To counteract these effects, older adults without medical contraindications should engage in regular physical activity. Recommendations from the Polish Society of Cardiology and the Polish Society of Gerontology emphasize the importance of dynamic exercises involving large muscle groups as well as endurance and aerobic exercises performed at low to moderate intensity. [20] Activities that minimize joint strain, such as water-based exercises, are particularly recommended. [21]

Physical activity should be comprehensive, encompassing various forms of movement, and performed regularly, as irregular and sporadic exercise fails to produce lasting effects. Additionally, the benefits of exercise in seniors are often short-lived, meaning that a prolonged break of several months may result in the loss of achieved adaptations. [4] Training should start with low loads that are gradually increased, allowing the body to adapt without risking overtraining or fatigue. Overly intense exercise may discourage beginners and increase the risk of injury. For individuals aged 65 years and older, it is recommended to perform 150 to 300 minutes per week of moderate-intensity aerobic exercise or 75 to 150 minutes per week of high-intensity exercise. To achieve additional health benefits, it is advisable to perform muscle-strengthening exercises targeting all major muscle groups at least twice a week. [22]

Summary

The International Council of Sport Science and Physical Education (ICSSPE-CIEPSS) recommends the Fullerton Test (Senior Fitness Test – FFFT) as a tool for assessing physical fitness in older adults. This test facilitates a comprehensive evaluation of physical abilities in individuals over 60 years of age. It comprises six components that assess upper and lower body strength, flexibility in these regions, agility, balance, and exercise tolerance. Long-term, systematic physical activity has a significant impact on improving all parameters evaluated by the FFFT. [31]

Stretching exercises combined with strength training significantly enhance most parameters assessed in the test, with the exception of the endurance trial. Moderate-intensity strength training, supplemented by stretching exercises, substantially improves functional fitness in older adults, which facilitates the performance of daily activities. Over time, this contributes to prolonged independence and reduces the risk of disability. [6,13] Regular physical activity also serves a preventive role in mitigating complications related to the cardiovascular system and improves the functionality of the skeletal and respiratory systems. [26]

Another critical aspect is the positive effect of physical activity on quality of life. An analysis of the findings from the EuroQol Group International Task Force on Self-Reported Health indicates that although quality of life, as measured by the EQ VAS scale, declines with age, it remains higher in individuals who engage in regular physical activity. [32]

Seniors should dedicate 150 to 300 minutes per week to moderate-intensity aerobic exercises or 75 to 150 minutes to high-intensity aerobic activities. They should also perform muscle-strengthening exercises at least twice a week. Activities such as walking, Nordic walking, cycling, and swimming support endurance, while strength training using elastic bands or weights strengthens the muscles. Additionally, classes such as yoga, Pilates, or Zumba improve flexibility, balance, and coordination, which are particularly important for fall prevention. Regularity and proper adaptation of the training program to an individual's physical abilities are key to achieving positive health outcomes. [24]

To prevent falls and enhance stability, it is crucial to include training aimed at developing coordination and functional balance, particularly by strengthening the lower limb muscles. [9]

Endurance (aerobic) activities include walking, Nordic walking, cycling, swimming, and dancing. These forms of exercise enhance aerobic capacity and are recommended two to three times per week for a minimum of 20 minutes per session. Strength training can be accomplished through bodyweight exercises or by using equipment such as resistance bands or weights, with sessions lasting 20 minutes, two to three times per week, performed in sets of 8–12 repetitions. [7,23]

Flexibility exercises, such as yoga or Pilates, are recommended five to seven times per week, while activities aimed at improving balance and coordination, such as Zumba, should be performed daily for 5–10 minutes. Systematic physical activity not only supports physical health but also improves overall quality of life and helps maintain independence in older age. [24]

Training programs for seniors should be both safe and effective. When planning exercises, it is essential to consider limitations due to comorbidities, general health, and physical condition, as well as potential difficulties with concentration and the limited capacity of older adults to assimilate new movement patterns. Therefore, exercises should be simple, straightforward, and free from overly complex sequences to avoid discouraging seniors from participating. The most commonly chosen activities among older adults include walking, Nordic walking, cycling, swimming, gymnastics, and water exercises. [25]

Regular walking, lasting 30 minutes on most days of the week, offers numerous benefits, including improved cardiorespiratory fitness, strengthened bones, leg muscles, and lower trunk regions. Additionally, walking positively affects posture and helps regulate blood glucose levels. Walking serves as an excellent foundation for aerobic endurance training among seniors and can be easily incorporated into daily activities. It is essential that the effort lasts for at least 10 uninterrupted minutes. [26,17]

Cycling is another popular form of physical activity. However, it is important to ensure the proper selection of equipment, an adequate warm-up, and correct body positioning during cycling to prevent injuries such as knee joint strain or lower back pain. [27,28] Initial cycling routes should be flat, facilitating easier progress, while the accompanying exposure to nature may have additional positive effects on mental health. [29] Cycling positively impacts the

cardiovascular system, reducing the long-term risk of thrombosis, atherosclerosis, and heart attack. It also promotes increased production of synovial fluid in the joints of the lower limbs and strengthens the calves, gluteal muscles, and deep abdominal muscles. [30]

Swimming and water-based exercises engage the entire musculoskeletal system while minimizing joint strain. These exercises combine elements of endurance training with gymnastics. Consequently, cardiorespiratory fitness and oxygen capacity improve, as does motor coordination. Additionally, group activities such as aqua aerobics can positively influence the psychological well-being of seniors.

Disclosures

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