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The Key to Active Aging in Older Individuals: Physical Activity and Exercise Practices

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ABSTRACT

Regular physical activity (FA)/exercise practices are one of the most important activities you can do for your health. This work; Why should we do FA and/or exercise, the risks of sedentary behavior, FA and/or exercise frequency, FA and/or exercise recommendations aim to create more active people. The human aging process is universal, ubiquitous, and inevitable. Every physiological function is constantly decreasing. Aging and a sedentary lifestyle are associated with declines in muscle function and cardiorespiratory fitness, resulting in impaired capacity to perform daily activities and maintain independent functioning. However, in the presence of adequate exercise/FA, these changes in muscle and aerobic capacity decrease significantly with age. Additionally, both structured exercise and overall FA play important roles as preventative strategies for many chronic diseases, including cardiovascular disease, stroke, diabetes, osteoporosis, and obesity. More importantly, exercise practices are often aimed at several physiological systems simultaneously, rather than targeting a single outcome, as is the case with pharmacological approaches to disease management. As a result; Exercise practices are important in terms of their effectiveness in mitigating the physiological changes of aging, preventing diseases and/or improving older adults with chronic diseases and disabilities.

1. INTRODUCTION

The world population is aging, and the number of adults aged 65 and over is predicted to double to ~1.5 billion by 2050. Due to the concurrent increase in life expectancy, the number of people aged 80 and over is predicted to triple between 2019 and 2050. The human aging process is universal, ubiquitous, inevitable and gradual. Every physiological function is constantly decreasing. At the age of 20-30, a person has achieved all the physiological development he can achieve. Active lifestyles contribute to maintaining and improving health and well-being and preventing disease among people [1]. In particular, physical activity (PA) and/or exercise practices reduce the risk of cardiovascular disease [2] and osteoporosis [3] and improve cognitive functioning [4] and subjective well-being. improves. Estimates based on physical activity indicate that global life expectancy would increase by 0.68 years if inactivity were eliminated [5]. FA is any body movement produced by skeletal muscles that significantly increases energy expenditure [6]. The intensity and duration of FA can vary significantly. Exercise is a subcategory of planned, structured, and repetitive PA in which body movements are performed with or without the explicit intention to improve or maintain one or more components of physical fitness (aerobic capacity, muscular strength, and endurance) [7].

1.1. Promoting Health And Preventing Diseases In The Elderly

Although aging is the main risk factor for most chronic diseases, the relationship is bidirectional because chronic diseases can accelerate biological aging. The World Report on Aging and Health prepared by the World Health Organization (WHO) in 2015 defined healthy aging as the process of developing and maintaining functional ability [8]. The main factors affecting health and longevity include genetics, environment, and behavior, all of which can alter the expression of the other. Among modifiable

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factors associated with beneficial effects throughout life, insufficient physical activity (PA) and sedentary lifestyle are among the most important public health problems that need to be corrected to promote healthy aging, according to WHO [9].

Exercise and PA improve physical function and quality of life, which generally reduces the burden of noncommunicable diseases and premature deaths, including certain causes of death such as cardiovascular disease, cancer, and chronic lower respiratory tract diseases, as well as strong evidence of the benefits of PA and exercise in the prevention and treatment of many chronic diseases. There is scientific evidence [10]. The effects of FA on aging and chronic diseases are closely related to the attenuation of adverse age-related changes in body composition. In addition to changes in body composition, aging, inactivity and sedentary lifestyles, and declines in exercise capacity have important health consequences. Declines in muscle function and cardiorespiratory fitness with aging result in impaired ability to perform daily activities and maintain independence [11]. In addition to the effect of exercise on improving muscle strength, muscle quality, muscle mass, bone density, and mobility in older adults, exercise also has beneficial effects on cognitive function [12]. A recent systematic review found preliminary evidence supporting the positive effect of routine PA participation on an index of cognitive function in young and middle-aged adults.

Table 1. Physical activity and observed relative risk reduction

Early all-cause death
31% risk reduction
45% risk reduction when aerobic fitness is evaluated
Cardiovascular disease
33% risk reduction
50% or greater risk reduction when aerobic fitness is assessed
Paralysis
31% risk reduction
Risk reduction of 60% or more when aerobic fitness is assessed
Hypertension
32% risk reduction
50% or greater risk reduction when aerobic fitness is assessed
Colon cancer
30% risk reduction
Breast cancer
20% risk reduction
Type 2 diabetes
40% risk reduction
50% or greater risk reduction when aerobic fitness is assessed
Osteoporosis
Bone adaptations to exercise are load dependent and site specific
Routine physical activity is associated with improved bone health [13].

1.2. The Importance of Physical Activity in Active Aging

Regular physical activity and/or exercise practices play a very important role in maintaining health. It is suggested that regular physical activity is very important in preventing many diseases such as cardiovascular diseases. Today, participation in moderate physical activity (e.g. walking) just 5 days a week has been shown to reduce the risk of death from cardiovascular diseases by 30% [14]. For example, using the stairs instead of the elevator, standing on one leg while doing the dishes, or standing and sitting slowly without using your arms are ways to incorporate aerobic, balance, and strengthening exercises into daily activities, respectively [15]. WHO's 'Global recommendations on physical activity for health' recommend that adults aged 65 and over should engage in 150 minutes of moderate or 75 minutes of vigorous aerobic activity and muscle-strengthening activity (e.g./resistance training) two or more days per week [16]. The U.S. Department of Health and Human Services (HHS) recommends multicomponent exercise training that includes balance training as well as muscle strengthening (at least 2 days per week) and at least moderate-intensity aerobic activities performed 3 or more times per week.

However, current FA guidelines are rarely met, especially in older adults. For example, the proportion of US adults meeting guidelines for both aerobic and resistance exercise (defined as ≥ 150 minutes per week of moderate-to-vigorous aerobic activity and ≥ 2 sessions of resistance training training per week) from 2015 to 2019 was not high. Insufficient FA combined with a sedentary lifestyle that often accompanies aging are precursors to obesity and chronic diseases [17]. When the human body engages in regular physical activity several days a week, the above-mentioned systems undergo some special adaptations to increase the body's efficiency and capacity. The amount of these changes or adaptations depends on the type, intensity, frequency and duration of physical activity [1]. It is known that regular physical activity is one of the basic elements of a healthy lifestyle. However, when physical activity habits are examined in our country, it is seen that regular physical activity habits are not common. Research on the relationship between physical activity and health emphasizes determining not only total energy consumption during the day or week, but also physical activity habits over a long period of time. While increasing the rate of physical activity leads to the development of health, increasing the habit of physical activity contributes to the development of individual health and therefore social health. PA and exercise practices, which are low-cost and highly effective, should be used as an effective tool in reducing health expenditures, which are increasingly costly and have a large share in country budgets (Table 2) [18].

Table 2. Health benefits of physical activity in active aging

	Children
3-6	Years Improved bone health and weight status
	Years Improved cognitive function (6-13 years)
	Improved cardiorespiratory and fitness
6-17	Improved bone health
	Improved cardiovascular risk factor status
	Improved weight status and adiposity
	Fewer symptoms of depression
	Adults of all ages
All-cause death	Low risk
	Lower cardiovascular incidence and mortality (including heart disease and stroke)
	Low incidence of hypertension Lower incidence of type 2 diabetes
Kardiyometabolik Durumlar	Lower cardiovascular incidence and mortality (including heart disease and stroke)
	Adults of all ages
Cancer	Reduced incidence of bladder, breast, colon, endometrium, esophagus, kidney, stomach and lung cancer
Brain health	Brain health, Reduced risk of dementia, Improved cognitive function Improved cognitive function following aerobic activity, Improved quality of life, Improved sleep, Reduced feelings of anxiety and depression in healthy individuals and those with existing clinical syndromes, Reduced incidence of depression
Weight Status	Reduced risk of excessive weight gain, Prevention of weight loss and weight gain after initial weight loss when adequate doses of moderate-to-vigorous physical activity are achieved, An additive effect on weight loss when combined with moderate dietary restriction
	Older Adults
Fall	Reduced incidence of falls
Physical Function	Reduced incidence of fall-related injuries, Improved physical function in older adults with and without frailty [18].

1.3. Physical activity / exercise recommendations in active aging

Due to the positive effects of physical activity and energy expenditure on health, the first evidence of physical activity recommendations was published by the CDC and ACSM in 1995. As mentioned previously, there is strong evidence that exercise training is effective in the treatment of major non-communicable chronic diseases and associated comorbidities (cognitive impairment, frailty, falls, and mobility impairment) [19]. Although progress has been made in integrating exercise counseling during health care encounters with community-dwelling older adults, advice is generally limited to those without significant

physical or mental impairments. Given the accumulated evidence on the benefits of exercise in older adults according to their level of frailty, removing exercise prescription from clinical encounters can no longer be justified. One of the key challenges for the future is to integrate exercise programs as a mandatory component of the care of older patients with frailty in hospital, outpatient clinic, or institutional care settings [6].

Current position statements and consensus guidelines for PA in older adults generally recommend a multimodal exercise practice that includes aerobic, strengthening, balance, and flexibility training through a combination of structured and incidental (lifestyle-integrated) activities [20,21]. However, it is wise to begin with a single method of exercise to allow the sedentary older adult to gradually adapt to the new exercise routine before adding other components [22]. Given the well-known curvilinear relationship between mortality risk and exercise volume, even a small amount of exercise is better than no exercise. In addition to these guidelines, recommendations regarding the frequency, severity and duration of FA in important organizations such as WHO, ACSM and CDC are given in Table 3 [23]. The importance of physical activity is increasing day by day in improving and protecting health. In this regard, in order to achieve the desired health benefits, the person should choose an exercise he likes and the sustainability of these exercises should be planned according to the intended frequency, intensity and duration (Table 3).

Table 3. Physical activity/exercise recommendations in active aging

Age Groups	Physical Activity Recommendations
Adults 18-64 years old	1. At least 150 minutes of moderate-intensity aerobic physical activity or 75 minutes of vigorous-intensity aerobic physical activity week or an equivalent combination of moderate- and vigorous-intensity activity 2. Aerobic activity should be done in intervals of at least 10 minutes. 3. For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week or engage in 150 minutes per week of vigorous-intensity aerobic physical activity or an equivalent combination of moderate- and vigorous-intensity activity. 4. Muscle-strengthening activities involving large muscle groups should be done 2 or more days a week.
Adults 65 and older	1. At least 150 minutes of moderate-intensity aerobic physical activity during the week, or at least 75 minutes of vigorous-intensity aerobic physical activity during the week, or an equivalent combination of moderate- and vigorous-intensity activity 2. Aerobic activity should be done in intervals of at least 10 minutes. 3. For additional health benefits, older adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week or engage in 150 minutes per week of high-intensity aerobic physical activity or an equivalent combination of moderate- and vigorous-intensity activity. 4. Older adults with poor mobility should engage in physical activity 3 or more days a week to improve balance and prevent falls. 5. Muscle-strengthening activities involving large muscle groups should be done 2 days or more a week. 6. Older adults should be as physically active as their abilities and conditions allow when they are unable to do the recommended amount of physical activity due to their health condition.

1.4. As Results

Our overview of the health benefits of PA showed clear evidence that almost everyone can benefit from being physically active. Regular PA is an effective primary and secondary prevention strategy against at least 25 chronic medical conditions. Currently, around one in four people are not active enough to meet global FA recommendations. He argued that men are more active than women and older adults are much less active than adults, and that these programs should take these vulnerable populations into account. Physical activity is important at all ages and should be integrated into multiple daily environments. Whether employed or not, older adults inparticular can benefit from regular physical activity to maintain physical, social, and mental health (including preventing or delaying dementia), prevent falls, and achieve healthy active aging.

Strengthening the provision of and access to appropriate opportunities and programs can enable all older adults to maintain an active lifestyle according to their capabilities. In the prevention and treatment of diseases, it is recommended to increase the level of physical activity and make lifestyle changes and ensure continuity. Both structured exercise and general PA play important roles as preventive strategies for many chronic diseases, including cardiovascular disease, stroke, diabetes, osteoporosis, and obesity. Importantly, exercise practices often address several physiological systems simultaneously rather than targeting a single outcome as in pharmacological approaches to disease management. In conclusion; Exercise practices are important for their effectiveness in mitigating the physiological changes of aging, preventing disease, and/or healing older adults with chronic diseases and disabilities.

Contribution Rate of Researchers

PTD.: Literature review, Modeling, Article writing and Editing

Conflict of Interest

No conflict of interest is declared by tehe authors. In addition, no financial support was received.

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