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The effects of physical inactivity

Abstract

Physical inactivity constitutes the basis of diseases that reduce life duration and quality and rank first among the causes of death in the world. Worldwide, it has been determined that 23 % of adults aged 18 and over are not active enough. According to the World Health Organization, sedentary life is among the main risk factors for deaths from non-communicable diseases worldwide and causes approximately 3.2 million deaths per year. For this reason, the issue of reducing inactivity has gained importance in the world today. As a solution, it is thought that increasing physical activity requires not only individual but also community-specific, multi-sectoral, multi-disciplinary and culturally appropriate approaches.

Keywords: lack of activity, physical activity, world health organization, exercise

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Introduction

Physical activity is defined as "any bodily movement that occurs with energy consumption using our muscles and joints". Physical activity is one of the basic tools for the physical and spiritual development of individuals. Physical activity promotes community well-being, protection of the environment and constitutes an investment for future generations. On the other hand, lack of physical activity is a public health problem.[1,2]

Throughout history, while physical activity was a mandatory condition for human beings to survive and transfer their genes to the next generations, today the place of movement has started to decrease gradually in both working life and transportation and leisure activities in parallel with technological development. Physical activity is an essential part of life from birth. A regular physical activity; It is necessary for healthy growth, development and maintenance of health at all ages. It is an effective and easy to apply tool in preventing diseases.[2]

The minimum requirements for being "physically active" are 60 minutes / day for those aged 17 and under and 150 minutes / week for those aged 18 and over.[3,4]

Inactive life is one of the most important problems for the modern society, which even carries out daily shopping from virtual markets on the computer. Although technological developments make life easier, it increases the number of inactive individuals in the long term and negatively affects health. Physical inactivity, which is one of the common risk factors of chronic diseases, ranks fourth in the ranking of risk factors causing death worldwide (6% of deaths worldwide)[3,4]

Physical inactivity causes non-communicable diseases to increase rapidly. Major of these diseases are; cardiovascular system diseases, obesity, diabetes, high blood pressure, metabolic diseases and cancers. In other words; Physical inactivity constitutes the basis of diseases that reduce life expectancy and quality and rank first among the causes of death in the World.[5]

It is estimated that physical inactivity is the main cause of approximately 21-25% of breast and colon cancers, 27% of diabetes and 30% of ischemic heart disease. The widespread of a sedentary lifestyle is one of the important factors that increase obesity.[4,6]

Physical inactivity is the main cause of more than 35 chronic diseases. Some of these diseases are major chronic diseases such as type 2 diabetes, Alzheimer's disease and coronary artery disease. With the evidence obtained from epidemiological studies; There was an increase in the prevalence of major causes of death in the physically inactive group, ranging from 30-50 %. As a result, physical inactivity has proven to be a cause of both short life expectancy and premature death.[1,3]

Level 1 physical inactivity means "little or no physical activity at home, at work, while traveling";

Level 2 physical inactivity means "doing a certain amount of physical activity; but staying at home, at work, while traveling, below 150 minutes of moderate activity or 60 minutes of vigorous activity per week".[1]

Physical inactivity accelerates the decline of important factors such as VO2max, skeletal muscle mass / strength, and cognition, but the molecular nature of these effects is not yet clear. Molecular neurobiological studies of physical inactivity in humans are only in childhood. There are no studies investigating the effects in adults yet.[6,7]

The main causes of illness and disability due to physical inactivity;[2-4]

Coronary Heart Disease (CHD), stroke, obesity, type II diabetes, high blood pressure, colorectal cancer, stress and anxiety, osteo-arthritis, osteoporosis, low back pain.

Physical inactivity types and general effects on the body can be explained as follows:

Bed Dependence: In healthy young men who stayed in bed for only 20 days, marked decreases in VO2max, maximal heart rate, and maximal cardiac output were seen.

Space Travels: The skeletal system is not exposed to weight bearing, so decalcification is seen in the bones. An important aspect of spaceflight seen as a model of physical inactivity is that it can distinguish gravity from other exercise responses.

Limb Immobilization: The effect is the loss of bone strength and difficulty in regaining muscle mass.

Decrease in the Number of Steps per Day: Nowadays, walking, one of the simplest forms of physical activity, has been removed from the society with the widespread use of motorized transport vehicles.

Today, it has been observed that people take an average of 100 steps less daily than 40 years ago.[1,4]

Metabolic effects of physical inactivity on white adipose tissue and skeletal muscle

I. In Skeletal Muscle: Decrease in fatty acid oxidation, decrease in glucose use, decrease in insulin signals, decrease in muscle mass

II. In Adipose Tissue: Increase in adipose mass, Increase in cell volüme, reduction of free fatty acid traffic to triglyceride stores.

Also, in addition to what is stated; physical inactivity cognitive dysfunction; It increases the risk of depression and anxiety. The decrease in VO2max seen with age starts in sedentary people in young adulthood.[7,8]

Physical inactivity prevents optimal bone maturation and at the same time suppresses some components of the immune system.[8]

Physical inactivity and above average fat mass were found to be positively associated with infertility in both men and women. It has been observed that physically active people have a lower rate of arterial stiffness than sedentary people of their age.[7,9]

Physical inactivity increases individual and social health expenses as it negatively affects human health. Protecting individual health and therefore social health with a fun, low-cost and high-efficiency acquisition such as physical activity habits can be used as an effective tool in reducing health expenditures.[6,7]

Physical inactivity in children

By definition, it is the time spent sitting for more than 1 hour continuously, excluding sleep in children. The most important causes of physical inactivity in children are the time spent in front of the TV and computer. It is more than 1 continuous hour per day and a lack of desire to start regular physical activity.[10]

Physical inactivity in adults

For a healthy and happy society to be formed, active life and exercises should be a part of our daily life. A minimum of 150 minutes of moderate intensity exercise per week is recommended for every adult. It should be preferred that these exercises consist of endurance activities involving large muscle masses such as walking, jogging, cycling or swimming, each exercise session should be at least 10 minutes and spread over at least 3-5 days a week. Increasing the weekly exercise period brings along the increase of the benefit from physical activity.[9,11]

In addition, adding strength exercises involving large muscle groups in different parts of our body 2 days a week is important in terms of preventing and protecting bone tissue and muscle tissue loss. Activities that increase the range of motion of the joints and prevent falls should be added to the weekly exercises, such as flexibility and balance.

A 49% decrease was observed in the daily living activities skills of inactive persons (> 50 years old) compared to active persons. It has also been observed that inactive individuals experience higher percentage of functional losses and get sick more easily than active individuals in the later stages of their lives. A significant positive relationship was found between active and healthy aging.[9,11]

Physical inactivity in the elderly

Aging is a lifelong and irreversible process that begins at birth. Chronologically, 65 years and over is accepted as old age all over the world. Life expectancy in the world is getting longer and the ratio of the elderly population to the young population is gradually increasing. In 2025, the number of elderly people in the world is expected to be 800 million. Depending on this increase, healthy aging and being independent in social life gain importance.

Old age is not a disease. Changes in organ systems with aging alone do not cause a loss of functions or disease. However, the development of chronic diseases such as hypertension, diabetes, coronary vascular diseases, osteoarthritis (calcification), osteoporosis (osteoporosis) becomes easier as a result of the decrease in the reserves of many organ systems.

Lack of physical activity, that is, inactivity, accelerates the physiological changes that occur with the aging process, increases the frequency of many chronic diseases, enables these diseases to be seen at an earlier age, in short, it accelerates old age and shortens the life span. Regular physical activity has positive effects on the function of many systems and organs. It has been shown that regular exercise increases the life expectancy and quality of life even in people who did not do regular physical activity until old age. It has been scientifically proven that physical activity has many positive effects.

One of the false beliefs is that old age and illness are obstacles to physical activity. Regular physical activity is recommended for many chronic diseases because of its therapeutic and / or preventive effects. The biggest threat to active aging is sedentary life. With inactivity and advancing age, obesity, cardiovascular diseases, diabetes, hypertension, osteoarthrosis, osteoporosis and some types of cancer increase and cognitive deficiencies develop. Regular and appropriate exercises have a very important place in the prevention and treatment of these diseases.[5,12,13]

The effects of aging and lack of physical activity are summarized in Table 1.

	Effects of lack of physical activity
Cardiovascular System	The blood pumping power of the heart decreases, the vascular wall becomes narrow and thick (atherosclerosis), blood pressure rises.
	The amount of blood that goes to organs and tissues is reduced.
	Heart nutrition is impaired due to thickening and narrowing of the vessels feeding the heart.
	Increased risk of coronary heart disease and heart failure
Respiratory System	Decreased breathing capacity during physical inactivity,
	Risk of lung infections increases as a result of weakening of respiratory muscles, decrease in coughing power and ability to produce sputum.

Table Continued...

	Effects of lack of physical activity
Immune system	Those who are not physically active are more likely to have infections than those who do regular physical activity.
Endocrine System	Lack of physical activity causes an increase in body mass index, an increase in adipose tissue and excessive fat accumulation in the abdominal area. Consequently, the risk of developing glucose intolerance and type 2 diabetes increases.
Gastrointestinal (Digestive) System	Lack of physical activity can cause an increase in blood cholesterol and triglyceride levels, leading to fat in internal organs, especially the liver. Those with insufficient physical activity are more likely to have colon cancer, diverticulitis and gallstones than the physically active elderly. Physical activity prevents constipation by increasing bowel movements.
Neurocognitive (Nerve System)	Inactive individuals are more likely to have depression and sleep problems than those who are physically active. Again, according to this, the possibility of social phobia is high in sedentary individuals.
Musculoskeletal System	In case of less physical activity; muscle mass and strength decrease.
	Bone mineral density decreases and causes deterioration in its quality.
	Increase in body fat mass, decrease in muscle mass and strength increase the load on joints and joint damage.
	Complaints of osteoporosis, joint pain and osteoarthritis are more common in immobile individuals.
	It causes muscle weakness, balance and gait disturbance and prepares the ground for falls and accidents.

Conclusion

Lack of physical activity is now a public health problem. It is an undeniable fact that physical inactivity is a global health problem. In the WHO Global Action Plan, a relative reduction of 10% in the incidence of insufficient physical activity by 2025 in the envisaged current voluntary targets is one of nine global goals. While sedentary life is known to be an independent risk factor for health, the evidence of the health benefits of physical activity is solid; role is important. Therefore, in order to ensure cooperation at different levels, such as experts, academic institutions and civil society, as well as non-health sectors, these areas should be encouraged in general measures to be taken.

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Conflicts of interest

The author declares there is no conflcit of interest.

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