

The Impact Of Physical Inactivity On The Vascular System

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Article History	Abstract
Received: 24 th February, 2026 Accepted: 20 th March, 2026	<p>Physical inactivity, or hypokinesia, a sedentary lifestyle, is becoming an increasingly pressing problem in the modern world, especially in the context of vascular disorders. With increasing levels of urbanization and technological development, the physical activity of most people has decreased markedly. According to WHO, about 30 percent of the world's adults do not achieve recommended levels of physical activity. In some countries, levels of physical inactivity can reach 60 percent among office workers. According to the Ministry of Health, the prevalence of cardiovascular diseases is increasing every year, statistics responsible for about 30 percent of deaths. The effect of physical inactivity on the vascular system contributes to the accumulation of fat in the body (increased cholesterol levels in the blood), which leads to stenosis and ischemic diseases, and increased blood pressure, and the formation of blood clots (most patients over 40 years of age). Consequently, the relevance of physical inactivity in the modern world, especially in the context of vascular disorders, requires an integrated approach to solving this problem.</p>
<p>Keywords: blood vessel, physical activity, healthy lifestyle, abuse, stress, psychological stability, blood circulation, oxygenation, genetics</p>	

Introduction

According to the literature reviewed during the course of this study, physical inactivity (hypodynamia) is considered a disease of modern society. Hypodynamia is a condition characterized by insufficient physical activity, which leads to deterioration of overall health. A sedentary lifestyle is not an independent disease; however, its manifestations indicate the early stages of pathological changes in various organs and systems of the body.

In order for muscles to maintain an adequate level of contractile strength and effectively respond to stimuli, they require continuous physical load. In the absence of such activity, muscle fibers begin to atrophy, nerve impulse conduction deteriorates, and consequently, muscle contractility decreases. This applies not only to skeletal muscles but also to the heart: the “pump” becomes less efficient in circulating blood throughout the body, leading to hypoxia of organs and tissues.

The causes of complications associated with hypodynamia include several key factors. Urbanization plays a major role, as prolonged sitting or lying without movement, such as working at a computer, leads to blood stagnation in vessels and reduced vascular elasticity. Technological progress has simplified physical activity through automation and delivery services, reducing the need for movement. Social habits, including excessive engagement in sedentary leisure activities such as watching television and playing video games, further contribute to inactivity. Poor nutrition, characterized by excessive consumption of fatty, sugary, and salty foods along with insufficient intake of vitamins and minerals, negatively affects vascular health. Additionally, stress and psycho-emotional tension can cause persistent vascular spasms, which over time lead to narrowing of blood vessels and impaired circulation.

Risk factors for the development of vascular hypodynamia include age, heredity, and gender. With aging, blood vessels lose elasticity and become more prone to narrowing. A family history of cardiovascular diseases increases the likelihood of similar conditions. In women, particularly after menopause, the risk increases due to decreased estrogen levels, which normally have a protective effect on blood vessels.

Hypodynamia has a significant impact on vascular walls and may lead to various cardiovascular pathologies. Blood vessels play a crucial role in supplying nutrients throughout the body, and impaired circulation can result in serious consequences. One of the key effects is increased vascular permeability. Insufficient physical activity disrupts metabolic processes, leading to increased permeability of the endothelium, the inner layer of blood vessels. This condition promotes inflammation and lipid accumulation, contributing to the formation of atherosclerotic plaques.

Another major consequence is atherosclerosis. Hypodynamia reduces the level of high-density lipoproteins (HDL) and increases low-density lipoproteins (LDL), creating favorable conditions for lipid deposition on vascular walls. This leads to narrowing of the vascular lumen and increases the risk of ischemia and myocardial infarction. Additionally, reduced physical activity contributes to elevated arterial blood pressure due to decreased vascular tone and elasticity, placing additional strain on vessel walls and increasing the risk of damage.

Inflammatory processes also play a significant role. Hypodynamia promotes systemic inflammation by increasing pro-inflammatory cytokines in the bloodstream. Chronic inflammation damages the endothelium and worsens vascular function, thereby accelerating atherosclerotic changes. Furthermore, sedentary behavior leads to venous stasis, particularly in the lower extremities, increasing the risk of thrombosis, including deep vein thrombosis and pulmonary embolism.

Another important consequence is the reduction of vascular elasticity. Regular physical activity helps maintain vascular tone and flexibility, whereas hypodynamia leads to their weakening and loss of elasticity. This increases the risk of hypertension and other vascular diseases. Additionally, regenerative capacity is impaired due to reduced production of growth factors and oxygen supply, which are essential for tissue repair, thereby hindering recovery of damaged vessels.

Symptoms of vascular hypodynamia vary depending on the severity of circulatory impairment. The most common manifestations include headaches, often dull and aggravated by physical exertion; dizziness, especially during sudden movements or standing; fatigue; and swelling of the lower extremities, which typically subsides after rest.

Prevention of vascular hypodynamia involves a комплекс of measures aimed at reducing its development. Regular physical activity, including sports or even simple walking, is one of the most effective ways to strengthen blood vessels and improve circulation. A balanced diet with reduced intake of fatty, sugary, and salty foods and increased consumption of fruits, vegetables, and lean meat is essential. Avoidance of smoking and alcohol is strongly recommended due to their negative effects on vascular health. Additionally, adopting healthy stress-management strategies such as yoga, meditation, and outdoor activities plays an important role in maintaining vascular function.

Conclusion

Hypodynamia represents a significant risk factor for vascular health. The diagnosis of vascular hypodynamia begins with a detailed patient interview, including assessment of complaints and medical history. This is followed by a physical examination, during which the physician measures blood pressure and pulse, and evaluates the condition of the skin and mucous membranes. To confirm the diagnosis, additional investigations may be performed, including vascular ultrasound, Doppler studies, and radiographic examinations.

Research findings indicate that vascular pathologies play a crucial role in maintaining the normal functioning of the body. Understanding the underlying mechanisms of these processes is essential for the development of effective diagnostic and therapeutic approaches to vascular diseases.

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