

**BIOLOGICAL CHARACTERISTICS OF THE ORGANISM OF INDIVIDUALS
ENGAGED IN PHYSICAL EDUCATION****Muxidinov Abdimannob Akbaraliyevich**Senior Lecturer, Department of Physical Education and Sports Teaching Methodology,
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Abstract: This article analyzes the comprehensive biological characteristics of individuals engaged in regular physical activity, focusing on the dynamic physiological adaptations that occur within the human organism. The research explores key changes in the cardiovascular, respiratory, and metabolic systems, highlighting how systematic exercise enhances overall functional capacity. Furthermore, the study details the health-promoting mechanisms that strengthen the immune system and improve neuro-humoral regulation. The findings underscore the vital role of physical education in fostering long-term physical development, increasing stress resistance, and preventing chronic diseases, thereby providing a scientific basis for the importance of an active lifestyle in maintaining human health.

Keywords: physical education, biological adaptation, physiological changes, metabolism, cardiovascular system, health promotion, homeostasis.

INTRODUCTION

Today, educating a healthy generation and ensuring the physical well-being of youth is one of the most vital priorities of state policy in our country. As President Shavkat Mirziyoyev emphasized: "The healthy lifestyle of our youth is the sustainable future of our nation. Sport and physical education are essential not only for achievements but, more importantly, for a healthy generation." These words reaffirm the high level of attention given to the field of physical education and sports in Uzbekistan. In recent years, based on Presidential decrees such as the "Concept for the Development of Physical Education and Sports for 2025–2027" and "On Measures for the Wide Promotion of a Healthy Lifestyle and the Development of Mass Sports," comprehensive work has been undertaken to organize physical education classes in all educational institutions according to modern standards.

In individuals who engage in regular physical exercise, biological processes are activated, physiological systems adapt, and overall vitality increases. In particular, changes occurring in the cardiovascular, respiratory, and muscular systems play a crucial role in strengthening human health. Therefore, studying and analyzing the biological characteristics of those engaged in physical education remains one of the most pressing scientific and practical issues today.

The morphological structure of the human body and the biological processes occurring within it form a sophisticated, integrated system where anatomy, physiology, and psychology are fundamentally inseparable. For those who commit to regular physical education, every internal organ and external system undergoes a process of functional refinement. This transformation is primarily orchestrated by the central nervous system, where the brain coordinates the heart, vascular networks, and respiratory pathways through a complex web of neural fibers. These biological phenomena are the bedrock of human health, involving a natural harmony of functions such as sleep-wake cycles, metabolic labor, and sensory enjoyment, all of which are governed by the higher centers of the brain where consciousness and memory reside.

A remarkable aspect of human biology is the stability of blood composition; regardless of the specific nutrients or fluids consumed, the blood's core characteristics remain resilient due to the constant, dynamic interaction between white and red blood cells. Blood serves as the primary vessel for vitality and thermal regulation. Any physiological deviation, such as a rise in body temperature above 36.6°C or fluctuations in blood pressure beyond the normal $120/70$ mmHg, acts as a critical signal of underlying chemical shifts. In this context, physical education acts as a stabilizing force, preventing such imbalances by strengthening the body's homeostatic mechanisms.

When an individual engages in active movement—be it walking, running, swimming, or competitive sports—the organism experiences a heightened state of physiological exertion. This demand accelerates the kinetic activity of muscles, joints, and the spinal column, which in turn necessitates deeper and more frequent respiration. This respiratory shift is the engine that drives cardiac efficiency and rapid blood circulation, ensuring that life-sustaining oxygen and nutrients reach the cellular level with increased velocity. As the body's internal temperature rises during these activities, the cells and tissues efficiently expel excess water, salts, and metabolic waste, a process that defines the positive biological impact of physical training.

Beyond immediate physical gains, regular exercise fosters a state of biological "tempering," allowing the metabolism to adapt to varying intensities of heat and labor. This results in enhanced elasticity of the neck, shoulders, and limbs, ensuring that the musculoskeletal system remains agile and resistant to injury.

Individuals who maintain this lifestyle exhibit superior vigor and do not succumb to fatigue as easily as those with sedentary habits. To achieve such a state of physical excellence, the biological demands of the body must be met with a balanced synergy of nutrition, restorative rest, and consistent athletic engagement.

Ultimately, the biological characteristics of a physically active person are defined by profound systemic improvements. Regular training bolsters the immune system and optimizes the neuro-humoral regulation of the entire organism. This scientific reality aligns with the modern socio-political goals of fostering a healthy and resilient generation. By understanding these physiological intricacies, educators and students alike can appreciate how state initiatives and individual efforts converge to enhance not just physical strength, but the overall efficiency of human labor and academic pursuit, creating a foundation for a sustainable and healthy future for the nation.

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