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The Influence of Endogenous Factors on the Level of Physical Development and Readiness of Children

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Abstract:

Monitoring the level of physical development and fitness of children allows making such corrections as determining the level of development of an organism living in certain environmental conditions, determining medical, pedagogical, age-related characteristics, and indicators of physical development.

Keywords: endogenous factor, genetic factor, phenotype, intensive, physical development, physical abilities, ontogenesis, adaptation, neurohumoral, anthropometric.

In the human body, the main anthropometric indicators, including body weight and height, are considered to be indicators that develop under the influence of genetic factors, and in optimal conditions, the maximum effect of genes on the phenotype is noted[2].

In human ontogeny, 1-10 years (middle childhood) corresponds to the period of schooling and is characterized by the rapid growth and development of the organism. During this period, physical development and the development of the nervous system take place intensively, and internal factors (heredity, hormones, etc.) and external factors have a strong influence on the physical development of the body.

In elementary school students, anatomical and functional indicators of musculoskeletal system, nervous system (higher nervous activity), respiratory system have specific values depending on physiological age characteristics [1] [2].

In particular, the rapid development of the locomotor apparatus during this age period is noted, and the optimal level of physical activity directly prevents the development of changes such as the formation of correct stature and flat feet. Also, as mentioned above, it has been confirmed in many studies that the optimal level of physical development and movement activity of elementary school students is important for their mental and spiritual formation and development[4][5].

Physiological age of elementary school students is one of the most complex stages from the point of view of biological growth and development, and it is during this period that significant physical and mental changes occur in the ontogeny of the organism, and in turn, it is important to ensure the balance in the state of health[4].

From the point of view of ontogeny, the growth and development of the child's organism in the direction of rapid implementation of mental-physiological adaptation mechanisms to the influence of internal and external environmental factors and raising the organism to a new functional level is a characteristic feature. Especially in the final part of childhood, when the process of sexual maturation increases, neurohumoral and hormonal regulatory mechanisms are activated in the body, and in turn, the ability to adapt to the effects of internal and external factors changes[5].

In turn, it has been noted that the disruption of physiological neurohumoral changes occurring in the body of children and adolescents can directly lead to a sharp decrease in the body's adaptation capabilities[8].

The internal environment of the human body (including the state of the neuroendocrine system) and external environmental factors significantly affect physical development indicators[7].

Studying the process of growth and development related to the physiological age of the human organism during ontogenesis is of great importance from a theoretical and practical point of view[2], based on indicators of physical development, provides an opportunity to objectively assess the health status of the population[3].

Especially during childhood, the level of morpho-functional development of the organism is clearly expressed, and based on the recording and analysis of anthropometric indicators, there is an opportunity to rationally describe standard norms from the medical, pedagogical and social point of view[6].

It is also noted that the values of anthropometric indicators of the children's organism depend on the exact affiliation (genome) [5].

Physical development in the body of children and adolescents takes place at a relatively high pace on the basis of biological laws and is characterized by a heterochronic characteristic, in turn, it is possible to evaluate the level of physical development. Also, in connection with issues of urbanization, migration, and acceleration, researching the issue of physical development is an urgent issue in terms of studying the mechanisms of adaptation of the body of children and adolescents to new environmental conditions. [2] [5].

Physical development is assessed on the basis of the compatibility of anthropometric indicators with respect to physiological age in the human organism, as well as the compliance of functional indicators of organ systems with the normative value. As a physiological age period of ontogeny with a high level of sensitivity to the influence of various external and internal factors, indicators of physical development readiness in the organism of children and adolescents show a clearly expressed response reaction of the organism to the influence of various endogenous, exogenous, pathological factors. [4] [5].

Also, monitoring the level of physical development readiness allows to determine the level of development of the body of children living in certain environmental conditions and on the basis of a

well-defined lifestyle, as well as to identify deviations from the norm in a timely manner and to implement appropriate medical and pedagogical corrections. [8].

In general, it is noted that a large number of endogenous and exogenous factors affect the level of preparation for physical development. Together with the fact that exogenous factors are considered the main factor that modifies the level of phenotypic variability of the organism, it is noted that genetic factors have a significant impact on indicators of physical development readiness [1].

It is noted that the level of physical development depends on environmental, climate-geographical factors, economic-social, sanitary-hygienic, as well as diet and diet[1] [7].

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