

## PHYSICAL DEVELOPMENT AND HEALTH OF SCHOOLGIRLS

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### Annotation

In this article, the main features of the indicators of physical development of schoolgirls are presented, and in general, the methodology of obtaining anthropometric indicators is covered in detail.

Physical development is the process of changing the forms and functions of the human body under the influence of living conditions and education. There are three levels of physical development: high, medium and low, and two intermediate levels above average and below average. In the narrow sense of the word, physical development is understood as anthropometric indicators (height, weight, circumference-chest volume, foot size, etc.).

The level of physical development is determined in comparison with the normative tables. Physical development. This is the process of formation, formation and subsequent change during the life of an individual of the morphological and functional properties of his body and the physical qualities and abilities based on them.

Physical development is characterized by changes in three groups of indicators.

1. Indicators of physique (body length, body weight, posture, volumes and shapes of individual parts of the body, the amount of fat deposition, etc.), which primarily characterize the biological forms, or morphology, of a person.

2. Indicators (criteria) of health, reflecting the morphological and functional changes in the physiological systems of the human body. Of decisive importance for human health is the functioning of the cardiovascular, respiratory and central nervous systems, digestive and excretory organs, thermoregulation mechanisms, etc.

3. Indicators of the development of physical qualities (strength, speed abilities, endurance, etc.). Up to about 25 years of age (the period of formation and growth), most morphological indicators increase in size and body functions improve. Then, until the age of 45-50, physical development seems to be stabilized at a certain level. In the future, with aging, the functional activity of the body gradually weakens and worsens, body length, muscle mass, etc. may decrease.

The nature of physical development as a process of changing these indicators during life depends on many reasons and is determined by a number of patterns. Successfully managing physical development is possible only if these patterns are known and they are taken into account when building the process of physical education. Physical development is to a certain

extent determined by the laws of heredity, which must be taken into account as factors that favor or, conversely, hinder the physical improvement of a person. Heredity, in particular, should be taken into account when predicting a person's ability and success in sports.

The process of physical development is also subject to the law of age gradation. It is possible to intervene in the process of human physical development in order to manage it only on the basis of taking into account the characteristics and capabilities of the human body in different age periods: in the period of formation and growth, in the period of the highest development of its forms and functions, in the period of aging.

The process of physical development obeys the law of the unity of the organism and the environment and, therefore, essentially depends on the conditions of human life. The conditions of life are primarily social conditions. The conditions of life, work, upbringing and material support to a large extent affect the physical condition of a person and determine the development and change in the forms and functions of the body. The geographic environment also has a certain influence on physical development. Of great importance for the management of physical development in the process of physical education are the biological law of exercise and the law of the unity of the forms and functions of the body in its activity.

These laws are the starting point when choosing the means and methods of physical education in each case. Choosing physical exercises and determining the magnitude of their loads, according to the law of exercise capacity, one can count on the necessary adaptive changes in the body of those involved. This takes into account that the body functions as a whole.

Therefore, when choosing exercises and loads, mainly of selective effects, it is necessary to clearly imagine all aspects of their influence on the body.

Since the concepts of "physical development" and "physical fitness" are often confused, it should be noted that physical fitness is the result of physical fitness achieved during the performance of motor actions necessary for a person to master or perform a professional or sports activity. Optimal physical fitness is called physical readiness.

Physical fitness is characterized by the level of functional capabilities of various body systems (cardiovascular, respiratory, muscular) and the development of basic physical qualities (strength, endurance, speed, agility, flexibility). Assessment of the level of physical fitness is carried out according to the results shown in special control exercises (tests) for strength, endurance, etc. To assess the level of physical fitness, it must be measured. General physical fitness is measured using tests. The set and content of tests should be different for age, gender, professional affiliation, and also depending on the physical culture and health program used and its purpose.

Human performance is the ability of a person to perform a given function with varying efficiency. Factors affecting anthropometric indicators Continuous processes of metabolism and energy in the human body determine the features of its development. The rates of changes in weight, height, body circumferences in different periods of life are not the same. Each of

you can judge this if you remember your development in preschool and school age. Distinctive features are available in boys and girls, people in adulthood and the elderly. Growth, weight, consistency in the increase in various parts of the body, its proportions are programmed by hereditary mechanisms and, under optimal conditions of life, go in a certain sequence. However, some factors can not only disrupt the sequence of development, but also cause irreversible changes. These include:

External:

- unfavorable intrauterine development;
- social conditions;
- irrational nutrition;
- sedentary lifestyle;
- bad habits;
- regime of work and rest;
- environmental factor.

Internal:

- heredity;
- the presence of diseases.



## 1. Methods for the study of physical development

The physical development of a person is influenced by heredity, environment, socio-economic factors, working and living conditions, nutrition, physical activity, and sports. It is known that health is determined not only by the presence or absence of diseases, but also by harmonious development, the normal level of basic functional indicators.

Therefore, one of the main directions in the work of promoting health by means of physical education is medical supervision of the influence of physical culture and sports on the physical condition of a person.

According to the program developed by the International Committee for the Standardization of Physical Readiness Tests, the definition of performance should take place in four areas:

- 1) medical examination;
- 2) determination of physiological reactions of different body systems to physical activity;
- 3) determination of physique and body composition in correlation with physical performance;
- 4) determination of the ability to perform physical loads and movements in a set of exercises, the fulfillment of which depends on different body systems.

The main methods for studying the physical development of a person are external examination (somatoscopy) and measurements - anthropometry (somatometry).



### External examination (somatoscopy)

When studying the physical development of a person, along with the data obtained by instrumental methods, descriptive indicators are also taken into account. The examination

begins with an assessment of the skin, then the shape of the chest, abdomen, legs, the degree of development of muscles, fat deposits, the state of the musculoskeletal system and other parameters (indicators).

The skin is described as smooth, clean, moist, dry, elastic, lethargic, acne, pale, hyperemic, etc. The state of the musculoskeletal system is assessed by the general impression: massiveness, shoulder width, posture, etc.

The spine - performs the main supporting function. It is examined in the sagittal and frontal planes, the shape of the line formed by the spinous processes of the vertebrae is determined, attention is paid to the symmetry of the shoulder blades and the level of the shoulders, the state of the waist triangle formed by the waist line and the lowered arm.

### **Anthropometry (somatometry)**

The level of physical development is determined by a set of methods based on measurements of morphological and functional characteristics. There are basic and additional anthropometric indicators. The first ones include height, body weight, chest circumference (with maximum inhalation, pause and maximum exhalation), hand strength and back strength (back muscle strength). In addition, the main indicators of physical development include determining the ratio of "active" and "passive" body tissues (lean mass, total fat) and other indicators of body composition. Additional anthropometric indicators include sitting height, neck circumference, size of the abdomen, waist, thigh and lower leg, shoulder, sagittal and frontal diameters of the chest, arm length, etc.

Thus, anthropometry includes the determination of length, diameters, circumferences, etc. Standing and sitting height is measured by a stadiometer (see Fig. Standing and sitting height measurement). When measuring height while standing, the patient stands with his back to a vertical stand, touching it with his heels, buttocks and interscapular region. The tablet is lowered until it touches the head.

### **Measurement of standing and sitting height**

When measuring height while sitting, the patient sits on a bench, touching the vertical stand with the buttocks and the interscapular region. The measurement of height in a sitting position, when compared with other longitudinal dimensions, gives an idea of the proportions of the body. With the help of an anthropometer, the length of individual parts of the body is also determined: the upper and lower limbs, the length of the body. Anatomical points on the human body accepted in anthropology help to carry out these measurements. To determine any longitudinal size, you need to know the location of the upper and lower anthropometric points that limit this size. The difference between their heights is the desired value.

### **Anthropometric points**

Body length can change significantly under the influence of physical activity. So, in basketball, volleyball, high jumps, etc. body growth in length accelerates, while when doing weightlifting, gymnastics, acrobatics, it slows down. Therefore, height is a guideline in the selection for practicing a particular sport. Knowing the length of the body standing and sitting, you can find the coefficient of proportionality (CP) of the body.

$$CP = ((L1 - L2) / 2) \times 100$$

where: L1 — standing body length, L2 sitting body length.

Fine CP = 87—92%, in women it is slightly lower than in men.

Body weight is determined by weighing on a lever medical scale. Body weight in total expresses the level of development of the musculoskeletal system, subcutaneous fat layer and internal organs. The circumference of the head, chest, shoulder, thigh, lower leg is measured with a centimeter tape.

### **Circumference measurement**

Head circumference measurement (a); shoulder (b); chest (in); shins (d), thighs (d) The muscular strength of the arms characterizes the degree of development of the muscles and is measured with a hand dynamometer (in kg).

Produce 2-3 measurements, record the highest rate. The indicator depends on the age, gender and type of sport that the subject is involved in.

The deadlift determines the strength of the extensor muscles of the back and is measured with a deadweight dynamometer. Contraindications for measuring back strength: hernias (inguinal and umbilical, Schmorl's hernia, etc., menstruation, pregnancy, hypertension, myopia (-5 or more), etc. Thick-walled compasses (large and small) are used to measure diameters.

The reading on the scale is carried out while fixing the compass in the established position. Studies of the physical development of people involved in physical education and sports have the following tasks: 1) assessment of the impact on the body of systematic physical education and sports; 2) selection of children, adolescents for practicing certain sports; 3) control over the formation of certain features of physical development in athletes on their way from a beginner to a master of sports.

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