GENERAL LAWS OF GROWTH AND DEVELOPMENT OF THE ORGANISM OF CHILDREN AND ADOLESCENTS

Mamajonov Ne'matjon,
Associate Professor of the Department of Theory and Methodology of Physical Culture

Sulaymanov Qurbanali,
Candidate of History, Associate Professor

Qurbonova Diyora,
2nd year master Fergana State University

Abstract
Properly raise children, it is necessary to know the main characteristics of their body, such as growth and development. Growth and development is a characteristic of the human body, like all living organisms. All-round growth and development of the organism begins from the moment of its appearance. These two processes are considered complex, integrated and interconnected.

Keywords: Of height, weight gain, development, growth and development, uneven development or heterochrony.

Growth means an increase in the size of a living organism as a result of the increase of body cells, that is, an increase in height and weight. The child does not stop until a certain age , but during the period of growth, inappropriate growth of some body parts (head, legs, arm bones, chest and abdominal internal organs) at different speeds at different ages may be, however, the growth of all tissues and cells, i.e., organs, is completed at the same time, on average, by 18-19 years for women, and 19-20 years for boys.
the course of growth, the process of increasing their function in the cell is observed. It is a developmental process. Development refers to the formation of tissues, cells and organs of a growing body, that is, the cells of a child's body improve and acquire some complex systems characteristic of adolescents and adults.
This includes aging processes that begin in adulthood and, as a rule, the body begins to redevelop. The development process is manifested in the functional differentiation and improvement of the activities of organs and their systems . For example, the reflex activity of the central nervous system is known to improve due to the development and complexity of internal cortical connections, cardiovascular, digestive, locomotor and other systems.

Growth and development are common biological properties of living matter, and are in the form of a continuous progressive process. The presence of age-related characteristics in the structure or activity of one or another physiological system does not indicate that the child's organism is fully developed in a particular age-related period . It is precisely such a set of specific characteristics that characterizes this or that age period. In the growth and development of the organism , it goes through all the stages of childhood, adolescence, youth, maturity. Growth is a quantitative indicator of the organism, and development is a qualitative indicator, and these two processes emerge on the basis of heterochrony, continuity and acceleration processes.

Uneven development or heterochrony. Although in the normal state of the organism, growth and development are closely related and co-operative, they do not occur simultaneously and at the same rate, because the increase in the mass of any organ does not mean that it is functionally improved at the same time. . In ontogeny, first of all, the rate of development of organs and systems necessary for the survival of the organism at this stage of ontogeny or in the near future changes. The development of functional systems that are not necessary at this stage , on the contrary, lags behind.

look at some examples of heterochrony . In order to ensure the baby 's survival at the time of birth, the functional systems important for life at the first stage of ontogenesis are matured in advance during embryogenesis. This includes the infant 's reflexes for feeding, coughing, opening and closing eyes, and protection against harmful environmental influences. The biological activity of these reflexes is important. If at the time of the birth of the baby , his sucking functional system is not mature (occurs when the child is born much earlier), then there is a need to take measures to release the sucking reflex. With the help of sneezing, coughing , and eye-opening reflexes, particles and dust that can cause a life-threatening situation in the baby's respiratory tract and eyelids are removed. There are functional systems that are immature or incomplete at birth . The trigeminal nerve, which has nerve endings in the skin of the baby's scalp, is structurally and functionally not ready to perform its specific functions at the time of birth. Heterochrony in kidney innervation is manifested in the form of maturation and progression of sympathetic innervation, while parasympathetic innervation (vagus nerve) begins to fully participate in the control of cardiac activity only by 15-16 years of age .

is a consequence of long-term phylogenesis and ontogenesis, as well as generational strengthening of progressive forms of adaptation in evolutionary changes .

A newborn baby is distinguished by relatively short arms and legs, body and head size. The length of his head is 1/4 of the length of the body, and in a two-year-old child - 1/5, in a six-year-old - 1/6, in a twelve -year-old - 1/7, and in an adult - 1/8. As the age increases, the growth

of the head slows down, and the growth of the limbs increases. There is no difference in body proportions until the onset of puberty, and they appear during puberty.
Three stages of variation in body height- to-width proportions can be distinguished: from 4 to 6 years, from 6 to 15 years, and from 15 to adulthood. If during pre-puberty the total height increases due to the growth of legs, then during puberty it increases due to the growth of the body (thickening of bones and growth of muscle tissue).
of the body is manifested as follows. The height of a newborn child is 48-52 cm. In the first year of a child's life, his height grows by 25 cm and reaches 75 cm. In the second year, the growth of the body slows down and it grows only by 1G cm. In the following years (up to 6-7 years), the growth rate slows down even more. At the beginning of the junior school age, height grows by 6-10 cm, and by 8-10 years - by 3-5 cm. During puberty , the growth rate increases again, the annual growth is 5-10 cm. The greatest increase in body growth is observed in girls by the age of 12, and in boys by the age of 15. Height growth is mostly completed by 19 years for girls and 20 years for boys. From birth to adulthood , a person's height increases 3 times, body - 3.5 times, arms - 4 times, legs - 5 times. Growth of the body in the first year of life is related to its mass increase, and its slowing down in the next period - to the activation of the processes of differentiation of cells, tissues, and organs of functional systems.
changes with age as follows . The average weight of newborn girls is 3.5 kg, and that of boys is 3.4 kg . The weight of the child increases by 600 g in the first month after birth, and by 800 g in the second month . The weight of a one-year-old child increases three times its birth weight and reaches 9-10 kg. At the age of 2, 2.5-3.5 is added to the child's weight . At the age of 4, 5, 6, the child's weight increases by 1.5-2 kg every year . From the age of 7, his weight increases rapidly. Up to 10 years old boys and girls have the same weight change. With the onset of puberty, the weight of girls increases from 4.5-5 kg to 5-8 kg annually at the age of 14-15 years. At the age of 13-14 , the weight of boys increases by 7-8 kg, and from the age of 15, their weight exceeds the weight of girls.
However, periods of active growth may not coincide with periods of rapid differentiation. For example, the growth of the brain and spinal cord mass can be almost complete by the age of 18, equal to the weight of the adult human brain, while the functional improvement of the nervous system takes a longer time.
Acceleration is the rapid development of the young generation mentally and physically.
At the end of the 19th century and the beginning of the 20th century, in many countries it was found that the growth of children was accelerated, and the information about this was published in the press in 1876. By 1935, the German scientist P. Koch called this acceleration in development acceleration. Acceleration is a Latin word and accyeles means acceleration. Acceleration is the rapid development of the young generation, mentally and physically,

compared to their previous peers. Acceleration is clearly visible in 100 years, that is, in a century . for it was called "secular trend" in a broad sense, i.e. century trend . In the next 100-150 years, acceleration processes are observed on earth, including in Uzbekistan .

The problem of acceleration in development has attracted the attention of biologists, doctors and sociologists all over the world. Social and biological types of acceleration differ from each other.

Biological acceleration should be understood as all changes related to human biological development . It includes a number of indicators describing the morphological and functional development of a person . These changes occur in a certain social environment and are largely determined by social causes. By social acceleration, it should be understood that the volume of children's knowledge has increased compared to that of their peers who lived 50-100 years ago.

Since the 20s of the 20th century, information has appeared that children aged 6-14 years in Sweden, England, Germany, the USA, Japan and other countries have far surpassed their peers in their development compared to their peers who lived a hundred years ago . started with It was found that the height of young and middle- aged children increased by 10-15 cm, and their weight increased by 8-10 kg. This phenomenon is called the age-related increase in height and weight . In the following years, it was observed that the acceleration was more pronounced . 50 years ago, the maximum length of people's height corresponded to 25-26 years of age, but in our time, boys reach full physical maturity at 18-19 years, and girls at 16-17 years. they reach the horse. The length of the body of newborn babies is on average 1 cm longer than in the 1930s and 1940s.

Acceleration also extends to later ages. Children born in 1970 are 2 cm taller when they turn one year old than their peers born in 1900-1910. Three-year- old boys are 15.5 cm taller than in 1901-1905. From 1924 to 1961, the height of Warsaw children of this age increased by 4 cm . Seven-year -old boys were 9 cm taller in 1959 than in 1901-1905. Many such examples can be cited. However, we must point out that in 1941, the coloring of girls stopped at the age of 20, now at the age of 18, while that of boys at the age of 25, now it stops at the age of 20. . The average length of the body (in Russia, 180-182 cm in Europe) is still approaching the upper limit of the norms observed over the centuries, when the development efficiency has been preserved.

The increase in the mass of the gavda is also attracting attention. An increase in growth in height will inevitably lead to an increase in mass. At the same time, the increase in mass is greater than the increase in height. It can be said that the weight gain of a newborn baby is a consequence of the lack of rationality in pregnant women .

One-year-old children are 1.5-2 kg heavier than their peers 50 years ago . According to data from a number of cities in Europe , in the last 80 years, the weight of 13-year-old children has

increased by 12 kg. The mass of adult Muscovites has increased by 9 kg in the last 40 years. It is more correct to conclude that such a sharp increase in mass is not a result of acceleration, but a result of overeating .

Acceleration also affects the development of many functional systems of the body : basic movement, endocrine, etc. For example, hardening of the fingers and wrist bones is happening 1-2 years earlier than in 1936. The transition of milk teeth to permanent teeth is also brought forward to these periods.

Puberty is happening 2 years earlier than at the beginning of the century. In 1914, Czech girls started menarche at an average age of 14, but by 1963 it was 12 years and 8 months. In Norway, girls started menstruating at age 17 in 1850 and at age 13.5 in 1967.

The well -researched view that the timing of puberty is determined by geographical, climatic conditions and racial characteristics is being revised . For example, in Nigeria, puberty occurs at the age of 14.3 years, in the Eskimos it begins at the age of 14.7 years, in the Baltic countries it is earlier than in the Mediterranean countries, and in England it is a year earlier than in Nigeria and India. starts before

of puberty is more influenced by lifestyle. Urban girls reach puberty 2-3 years earlier than rural girls.

of puberty, the onset of climax is prolonged. Currently, the climax is observed at the age of 48-50, but at the beginning of the 20th century, it began at the age of 43-44. Thus, the childbearing period of women increased by 7-8 years.

are the basis for confirming the acceleration of human development consist of the above.

recent decades , a number of theories have been proposed to explain the rapid development of children.

Heliogenic Acceleration Theory - authored by Dr. Koch (1935), according to his theory , the primary stimulus for accelerating growth is the sun. Good living conditions and lighting, being outdoors for a long time , caloric diet, providing the child's body with vitamin D, are factors that contribute to acceleration. However, this theory cannot explain the differences in the rate of development between urban and rural children, children from well-to-do and low-income families .

Lenz's alimentary theory. According to Lentz , the increase in meat and fat consumption in the United States and European countries over the past 100 years is the main reason that accelerated development. According to Lentz, the acceleration effect of proteins and fats is carried out with the participation of the pituitary gland and the thyroid gland. However, studies show that the increase in anthropometric indicators is greater than the consumption of these products. During and after World War II, urban and rural children were fed the same diet, and in some cases rural children were better fed, but urban children were found to be larger. So, while nutrition is an important factor , it is not considered the only cause of acceleration.

Among the inhabitants of the Fire Land, there is a tribe called "Mother" , whose height is 175 cm, and another tribe called Yakhgan, whose height does not exceed 158 cm. Both these tribes live side by side under the same climatic conditions and differ little in their diet.

According to Berger's theory of the era of vitamins, great importance is attached to the effect of vitamins B $_1$ B $_{]2}$ and D on the acceleration of growth processes. But it has been shown that there were changes in growth processes before the beginning of the vitamin era .

arouse some scientific interest , but it is impossible to explain the acceleration with only one of them. Probably, it is necessary to look for the causes of acceleration in the combination of the observed phenomena and the improvement of conditions in a complex set of nutrition, heterosis, urbanization, radiation, socio-domestic, that is, social and biological factors . The consequences of acceleration are not the same , because during growth acceleration, rapid development of all systems of the body occurs: heart contractions, breathing frequency decreases faster, puberty occurs earlier. And this is not always good, because there are cases where a physically less developed child is more resistant to acceleration.

Acceleration increases heterochrony, that is, the unevenness of growth and development. When a child is 10-11 years old , strong changes occur in his endocrine system due to increased release of hormones. They stimulate the growth of the body, but the growth of the chest lags behind. This disproportion increases in the adolescent who is experiencing acceleration . The discrepancy between body and heart sizes becomes more noticeable . This delay in heart growth has a significant impact on blood supply and the supply of oxygen and nutrients to the body. Accelerated hypertensives due to delayed development of the blood-vascular system due to the acceleration of body growth are also encountered. Such a phenomenon is not observed in children who grow slowly.

As mentioned above, in addition to biological acceleration, there can also be social acceleration. Not only the physiological mechanisms are strengthened, but also the mental processes become much older. In other words, children are not only taller and bigger, but at the same time they are growing up earlier. It is possible to understand that when thinking theoretically, it accelerates the growth of children. If puberty occurs 2 years earlier, in this case the entire endocrine system and with it the activity of all functional systems, including the nervous system, is changed again. Therefore, it can be concluded that acceleration includes physiological and mental processes and mechanisms.

To some extent, it depends on starting education earlier in school with acceleration. Children's wealth of information contributes to successful education, and because of this, it is observed that the analytical capabilities of the brain develop at a high level.

Acceleration process has both positive and negative aspects. Accelerated respiratory diseases in children, chronic tonsillitis, allergic diseases; hypertension, diabetes, rheumatism, nervous diseases are common. Due to the observed acceleration , the issues of solving problems in

social, spiritual, medical, legal, and educational spheres are emerging. Protection of children's health , development of scientific works on pedagogical processes, sexual education of children and adolescents and other issues. Due to the acceleration, the need to revise the standards of hygiene (energy costs, amount of food products, clothes, shoes, school equipment) remains one of the important issues. Since the 90s of our century, as a result of the economic crisis observed in some countries, retardation, that is, a decrease in physical development indicators compared to peers, is also observed.

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