

COMPARATIVE ANTHROPOMETRIC INDICATORS OF PHYSICAL DEVELOPMENT OF CHILDREN IN BUKHARA REGION

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Abstract: The physical development of children is an indicator of social well-being, the medical and environmental state of any country. The main signs of the health of this generation are the development of children of children during the period of growth.

The general patterns of human development in a specific period of time and conditions can only be identified trends and the appearance of negative changes in the child population. The dynamics of growth and puberty of a child in different age categories depends on endo- and exogenous factors.

Key words: anthropometry, children, Bukhara region, physical development.

Introduction. The totalities of morphological and functional features, their relationship with hereditary and external factors are indicators of physical development and environmental conditions [3]. At the same time, the latter are able to change the process of physical development in a positive or negative direction [2,3,8].

Environmental conditions can affect the process of physical development in a negative direction. According to N.N. Rudenko, I.Yu. Melnikova (2009) one of the informative criteria of children's health that characterize this dynamic process determines physical development [12,15,17].

Under the influence of environmental factors, the transformation of genotypic manifestations into phenotypic ones occurs, which indicates the process of growth in the development of the organism, which reflects physical development [1,9,11].

Indicators of somatometry, physiometry and functional activity data are a reflection of the morphometry of physical development. Body length, body weight and chest circumference are the main anthropometric parameters of the physical development of children at certain stages of ontogenesis [6,7,9].

Indicators of vital capacity of the lungs, length of the lower limb, torso, shoulder width, pelvis, grip strength of the hand, are important detailed characteristics of physical development indicators. Somatoscopy, which is an informative indicator of an external examination of the body, the study of the muscular and skeletal systems, the condition of the skin, mucous membranes, and the degree of puberty, is of no small importance [4,10,13].

To determine the level of harmony in the physical development of children, the most common method is based on centile tables [15,16].

Yu.G. Kuzmichev et al. (2020) conducted a comparative analysis of the anthropometric indicators of adolescents using regional evaluation tables and international standards of the World Health Organization [9,13,15].

In the studies of Ya.A. Leshchenko et al. (2019) found that the main factors in the physical development of preschool children are biological risk factors that have a high strength of intensity [15].

The study of the physical development of children with health problems is of particular scientific interest [16].

In connection with this, we set ourselves the **aim of** studying the anthropometric indicators of boys and girls from 0 to 11 years old in various Bukhara regions.

Materials and methods. And proceeding from the purpose of the study, an object of study based on the principles of evidence-based medicine was chosen, and the amount of scientific work that needs to be done was determined. The entire study process was randomized to the most representative groups. When dividing the subjects into age groups, the principles of random selection of children were observed. A total of 571 children were studied, of which 278 were boys and 293 were girls. The age of the examined was from 0 to 11 years.

The research materials were subjected to statistical processing using the methods of parametric and non-parametric analysis. Accumulation, correction, systematization of initial information and visualization of the obtained results were carried out in Microsoft Office Excel 2010 spreadsheets. Statistical analysis was carried out using the IBM SPSS Statistics v.23 program (developer - IBM Corporation).

Results of the study and discussion. Anthropometry is one of the main methods for studying the morphological features of a person, which is widely used in medicine, mainly in the study of human physical development .

The physical development of a person is influenced by heredity, environment, socio-economic factors, working and living conditions, nutrition, physical activity, sports and various diseases, and pathologies of organs and body systems.

Physical the development of children is assessed according to three main parameters, body weight, height and chest circumference in a pause , the following results were obtained by the method of anthropometry of children.

In newborns (from birth to 28 days of life) of boys , body height averaged 51.1 ± 0.44 sm , and girls - 49.6 ± 0.44 sm . Body weight was equal to an average of 3.4 ± 0.11 kg , in girls - 3.84 ± 0.10 kg , the chest circumference of the boys in the inspiratory pause was on average - 34.4 ± 0.32 sm , in girls on average - 35.9 ± 0.43 sm.

In infancy (from 6 months to 1 year of life), boys' growth in the silt was on average 65.1 ± 0.18 sm and in girls 59.2 ± 0.21 sm, body weight was equal to an average of 6.5 ± 0.04 kg and 5.9 ± 0.12 kg, respectively, the chest circumference parameter was equal to the average for boys - 38.4 ± 0.14 sm, for girls - 36.5 ± 0.24 sm.

In male children at 3 years of age, body height was on average - 99.7 ± 0.68 sm , while in female children it was - 98.2 ± 0.74 sm , body weight was equal to the average - 12.3 ± 0.34 kg , and in females - 13.3 ± 0.36 kg , chest circumference (in pause) averaged - 39.3 ± 0.56 sm and 51.7 ± 0.63 sm similar.

By the age of 4, in males, the body length averaged 111.3 ± 0.94 sm, in females - 102.2 ± 0.61 sm, with an average body weight of - 13.9 ± 0.19 kg, in girls - 14.4 ± 0.17 kg , when, as about the circumference of the chest of boys, it is on average 42.9 ± 0.49 sm and in girls - 52.8 ± 0.52 sm

The indicators of physical development of 5-year-old children did not differ significantly from the parameters of 4-year-old children ($p > 0.05$) and almost repeat the above data.

In 5-year-old boys, the average height was 117.3 ± 0.89 sm and in girls 106.2 ± 0.81 sm, body weight was equal to an average of 15.5 ± 0.25 kg and 15.6 ± 0.23 kg, respectively, the chest circumference parameter was equal to the average for boys - 46.3 ± 0.31 sm, for girls - 52.2 ± 0.24 sm.

The results of the study showed that the growth of the body in boys by the age of 6 is equal to an average of 119.2 ± 0.81 sm, in girls - 118.2 ± 0.96 sm, the average weight was 19.2 ± 1.67 kg and 18.7 ± 0.32 kg similarly, the chest circumference in boys is on average 48.8 ± 2.1 sm, in girls - 57.5 ± 0.19 sm.

As a result of the research, it was found out that the length of the body in 7-year-old males averaged - 124.1 ± 1.38 sm, while this indicator in girls is 121.8 ± 0.31 sm, body weight in boys was on average 21.0 ± 1.09 kg and in girls 21.4 ± 0.29 kg, the chest circumference in the pause was on average 52.2 ± 0.68 sm and 61.8 ± 0.29 sm respectively. All the above parameters of the physical development of 7-year-old children were almost the same in 8-year-old boys ($p > 0.05$).

It was revealed that by the age of 8 years in boys and girls, the average height was 127.5 ± 1.75 sm and 123.7 ± 0.96 sm, along with these data, the body weight was equal to an average of 24.3 ± 1.62 kg and 23.6 ± 0.65 kg, and the average chest circumference in the pause was 54.7 ± 1.39 sm and 60.4 ± 0.62 sm similarly.

The data for 9-year-old children were as follows: for boys, height averaged - 139.8 ± 0.56 sm, in girls - 130.7 ± 1.23 sm, body weight was equal to the average - 29.4 ± 0.72 kg and 28.4 ± 0.91 kg, chest circumference was 58.9 ± 0.59 sm and 61.4 ± 0.69 sm, respectively.

Table 1. Anthropometric indicators of the physical development of male and female children by periods of childhood

Periods	Sex	Body height (sm)	Body weight (kg)	Chest circumference (sm)
newborns	B	47.9-55.0 51.10 ± 0.44	2.8-4.5 3.4 ± 0.11	31.5-36.7 34.4 ± 0.32
	G	46.9-54.0 49.5 ± 0.44	2.9-4.5 3.84 ± 0.10	32.5-39.4 35.9 ± 0.43
Breast age	B	61.9-69 $65.1 \pm 0.18^*$	6.6-8.5 7.3 ± 0.04	35.6-41.2 38.4 ± 0.15
	G	51.7-63.2 59.2 ± 0.21	5.7-6.3 5.9 ± 0.12	33.1-39.2 36.5 ± 0.24
Early childhood	B	93.6-104.0 99.7 ± 0.68	10.0-13.9 $12.3 \pm 0.24^*$	41.3-45.4 36.3 ± 0.56
	G	95.6-107.6 98.2 ± 0.74	10.9-16.7 13.3 ± 0.36	49.5-59.9 51.7 ± 0.63
I period childhood	B	106.8-120.0 117.9 ± 0.4	14.8-21.3 17.4 ± 0.17	51.1-61.7 $47.6 \pm 0.28^*$
	G	106.2-117.1 112.1 ± 0.28	15.5-32.4 18.5 ± 0.44	54.2-63.2 56.2 ± 0.23
II period childhood	B	130.1-147.2 $137.2 \pm 0.43^*$	24.5-41.3 29.6 ± 0.44	65.6-79.7 61.9 ± 0.36
	G	118.8-147.6 136.8 ± 0.75	20.0-41.3 30.4 ± 0.55	56.0-73.8 63.9 ± 0.46

Note: B-boys, G-girls

* - $p < 0.05$ reliability of differences between periods of childhood;

Based on the results of the study, in 10-year-old boys, the body length was 139.9 ± 0.75 sm on average, in girls - 142.9 ± 0.75 sm, body weight was 32.3 ± 0.91 kg on average, and for girls - 32.4 ± 0.91 kg, at the same time, the chest circumference of boys in the pause was equal to the average - 62.3 ± 0.81 sm, girls - 64.3 ± 0.81 sm (Fig. 1).

The data of the results of the study of physical development in children aged 11 years did not actually differ from the indicators of 9-10 year old boys in two parameters ($p > 0.05$), except for chest circumference ($p > 0.05$).

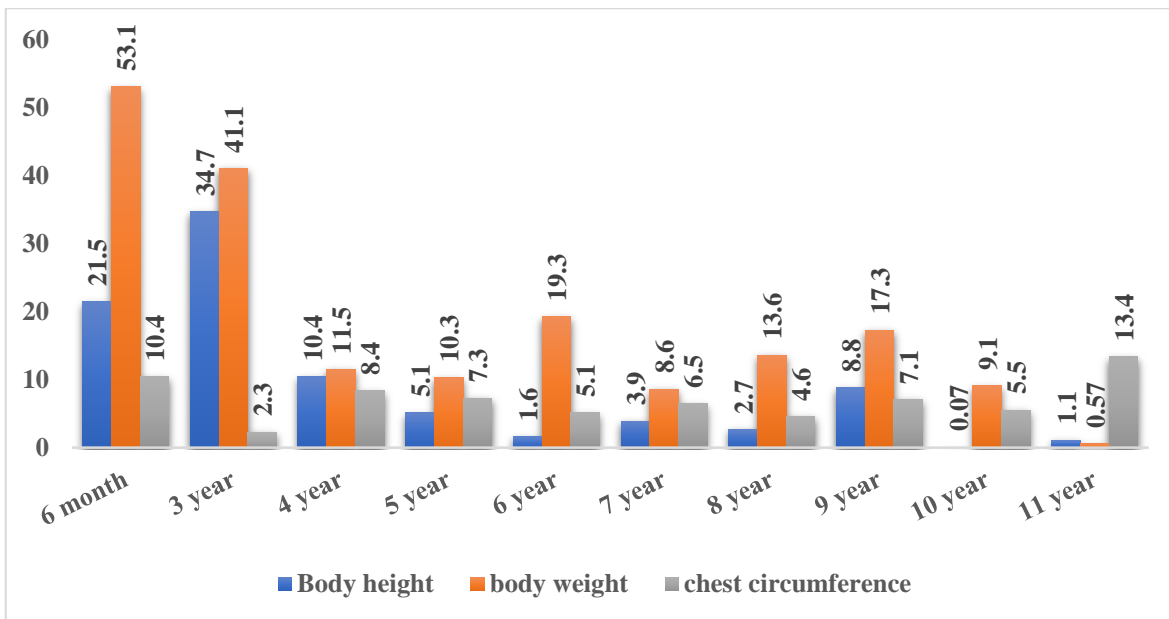


Figure 1. Comparative analysis of indicators of the growth rate of physical development of boys aged 0-11

It was revealed that in 11-year-old male children, the average height was 141.5 ± 4.44 sm, in the female - 149.6 ± 4.16 sm, body weight was equal to an average of 32.5 ± 2.49 kg and 33.0 ± 2.64 kg, and the indicators of chest circumference were equal on average - 71.9 ± 1.58 sm and 68.8 ± 2.06 sm. Table 1 shows, and anthropometric indicators of the physical development of male children and female by periods.

Biological risk factors that have a high strength of intensity according to Ya.A. Leshchenko et al. are factors that affect the state of physical development of preschool children. The dynamic process of growth and biological maturation of a child in different age periods depends on a number of endo and exogenous factors that reflect the state of physical development of healthy children.

Figures 1 and 2 show the comparative indicators of the growth rate of the physical development of boys and girls aged 0-11

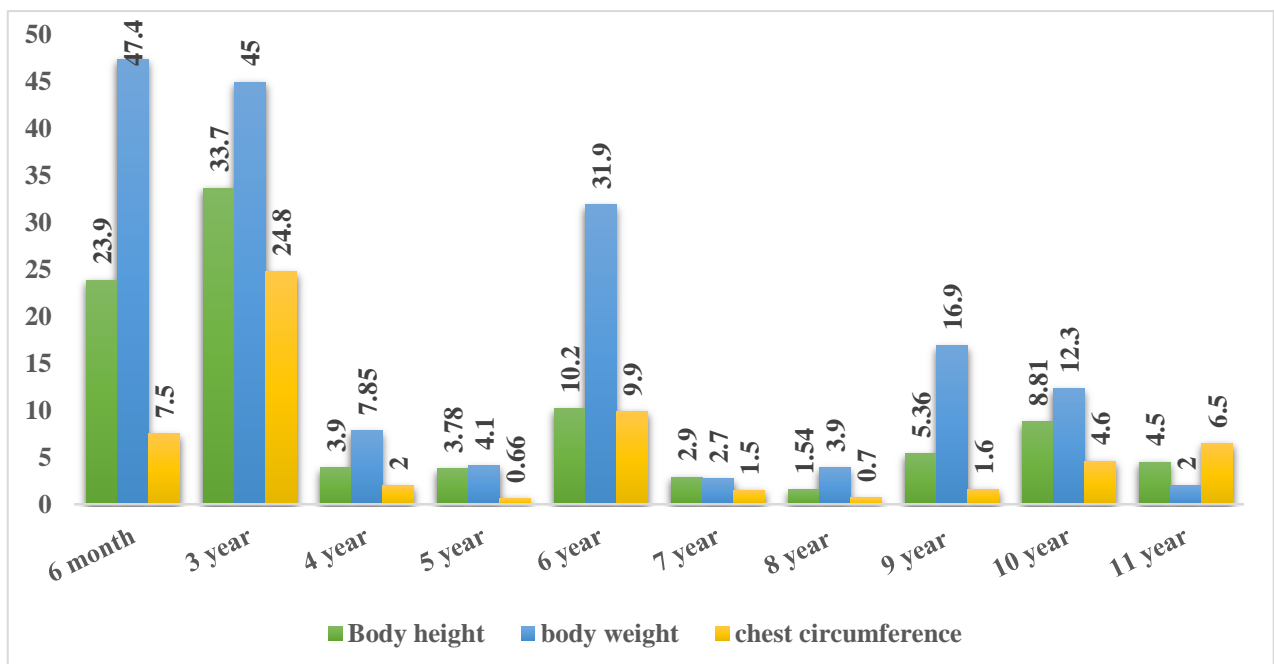


Figure 2. Comparative analysis of indicators of the growth rate of the physical development of girls 0-11 years old

Conclusions

1. In fact, all parameters of physical development in children significantly differed from the previous age, with a gradual increase ($p>0.05$).
2. In male children, the growth rate of chest circumference, length and body weight of boys increased by 2.1, 2, 8 and 9.6 times, respectively.
3. In females, the growth rate of chest circumference, length and body weight of boys increased by 1.9, 3.0 and 9.7 times, respectively.

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