Some Morphological Primary School Indicators

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Annotation: The issues of raising the physically healthy and spiritually mature young generation are one of the most topical issues of today. The study of some morphologically important physical development indicators of young school-age children, the study of health indicators is of great importance. This article provides a statistical analysis of some morphological indicators of primary school children of secondary school. Based on the results, appropriate suggestions and conclusions are made.

Keywords: Physical development, health level, morphological indicators, physiological indicators, dynamometry, medical scales, growth rate, growth dynamics, individual development.

Introduction.

For children's physically, mentally and emotionally healthy, to pay attention has been paid to the fact that the issue of creating conditions for development is a priority for the future of any society. Therefore, in order to constantly monitor the level of physical development and health of school-age children in the educational process, it is possible to conduct physiometric, anthropometric research, develop and implement a seset of measures to improve their health, has scientific and practical significance in terms of prevention of various diseases.

The development of the level of physical activity of students in the ongoing research requires taking into account the individual characteristics of school students in relation to their physiological age in the organization of physical education classes.

Studies have shown that under the influence of decreased levels of physical activity in children and adolescents in the body of the musculoskeletal system, a decrease in the activity of the main functional systems of the body and , in turn, an increase in susceptibility to various diseases. Determining the age, sex-specific characteristics of primary schol students at the level of physical development, assessing their physiiological changes on the basis of morpho-functional system indicators, are considered as promising areas of research currently underway. Therefore, in determining the health of schoolchildren, the analysis of indicators of physical development and fitness, the development of a set of medical and pedagogical correction, preventive measures are of great scientific and practical importance.

Methodology: measurement of body weight (kg). In the study, the medical scales for measuring the body weight of primary school students (TU 9441-004-00226425-2005) carried out on [10; 10-336-p; 7; 455-458-p; 6;30-p; 8; 3-24-p.] by standard method, that is the weight of the student was determined by weighting him on a medical scale while he was undressing. (the degree of accuracy of the measurement is \pm 50-100 g).

Measurement of height (cm). In the study, the weight of primary school students was measured using a medical scale (GOST 16371-93, 19917-93) using a standard method [10; 10-336-p; 7; 455-458-p; 6; 30-p]. Attention was paid to the fact that the heel of the body, buttocks, chest and neck area of of the head touch the measuring column, the eye area and the lower part of the ear supra are located in one plane. The head is held in an upright position, facing forward, until the sliding special plate of the measuring device touches the top of the head and the value (cm) was recorded [5;59-61-p].

Measurement of chest circumference length (cm) - standard method [10;10-336-p;7;455-458-p;6;30-p.] in which case the value of this indicator in the test student using a centimeter measuring tape. (GOST R 50444-92) at rest., maximum exhalation , maximum exhalation. In this case, the circumference of the students' chest (cm) was measured at the level of the sternum line, with the arms loweed along the side of the torso, standing upright (measurement accuracy is ± 0.5 cm) [9; 7-14-p; 137; 3-24-p.]

Measurement of arm strength (kg/m). The value of hand strength (kg/m) was determined using the dynamometry method to determine the level of physical development in primary school students. [5;59-61-p]

In the experiments, the dynamic instrument was used when the test arm was standing, the force arm was bent at an angle of 90° to the body and the other arm was lowered (DPR-30, "Codes", Russia). In this case, the measurement was repeated 3 times in each hand and the largest value was recorded.

The results were re-made by L.V.Denisova and other's (2008) mathematic-statistic methods. [1;125-459-p;3;5-312-p;2;7-127-p;7;455-458-p]

The results are presented in the form $M \pm m$ of the results of experiments performed on *n* repetitions, where M is the arithmetic mean and m is the standard error value.

The experimental results also showed that the level of statistical reliability of the values between the groups was calculated based on the Student t-criterion and was assessed as statistically reliable at values , <0,05, <0,01. The degree of reliability of the difference between the values of the two experimental groups was calculated according to the Student's criterion, using the following formula:.

$t = \frac{X_{1}-X_{2}}{\sqrt{m^{2}1+m^{2}2}}$

Experiments were conducted at the initial stage of the observations. The main anthropometric indicators of primary school students (7-10 years) in secondary schools are body weight (kg), height (cm), chest circumference (cm) and arm strength (kg/m) was used to make a comparative description of the level of physical development. Our observations studied the morphological characteristics of primary school students (7-10 years) of secondary school No 26, located in Pakhtaabad district of Andijan region. A total of 67 healthy and volunteer boys wereinvolved in the follow-up.

Analysis of the obtained results. Important indicators of physical development in our observations are body weight, height, chest circumference (at rest, in front of the mammary glands during deep breathing and deep exhalation), the maximum contractile force of the finger muscles that is, dynamometric indicators were studied and statistically analyzed. The result were as follows

Table 1

Values of some anthropometric indicators of primary school students No.7 (7-10 years old) located in Pakhtaabad district of Andijan region. (M±m)

Morphological-	Boys	(n=67)		
• 1• .				
indicators	Age 7 (n=16)	Age 8 (n=19)	Age 9 (n=11)	Age 10 (n=21)
Weight (kg)	22,6±0,1	$24,5\pm0,1$	$26,8\pm0,2^*$	30,8±0,4**
Height (cm)	121,7±5,3	128,3±4,4*	134,6±4,8**	140,6±6,7**
Rib cage circle (cm)	57,4±0,4	58,2±0,4	$62,8\pm0,5^*$	71,3±0,4
on a calm state;				
In a deep breath	64,7±0,4	65,2±0,3	68,2±0,5**	$77,3\pm0,7^{**}$
In a deep out breath	55,5±0,4	55,2±0,4	63,1±0,5**	66,2±0,5*
Power of hand	6,9±0,01	$9,2\pm0,0,4^*$	12,5±0,0,3**	$13,8\pm0,0,2^*$
Right hand	6,7±0,04	7,8±0,0,3	9,8±0,0,2	$11,3\pm0,0,2^*$

Note : Represents the level of statistical reliability of the difference between the values between the ages of 7-10 (*-<0.05; **-<0.01)

The average body weight of primary school students was 22.6 ± 0.1 kg in 7 years old, $24,5\pm0.1$ kg in 8 years old, $26,8\pm0.2$ kg in 9 years old, $30,8\pm0.4$ in 10 years old.

The increase in body weight index in school children aged 7-10 years was a total of 8.2 kg. It was found that 1,9 kg at the age of 7-8 years and 2.3 kg at the age of 8-9 years, and body weight increased by 4,0 kg at the age of 9-10 years.

The average indicator at the age 7 is $121,7\pm5,3$ cm, at the age 8 is $128,3\pm4,4$ cm, at the age 9 is $134,6\pm4,8$ cm, at the age 10 is $140,6\pm6,7$ cm.

The average rate of growth of height in schoolchildren at the age of 7-10 years is 18.9 cm , at the age of 7-8 years - 6.6 cm , at the age of 8-9 years - 6.3 cm , at the age of 9-10 years. 6.0 kg.

The next part of our observations is the chest circumference length (in front of the mammary glands at rest) was determined. At the same time, the average length of the chest circumference in schoolchildren at the age of 7-10 years at rest is 57.4 \pm 0.5 cm at the age of 7 years, 58.2 \pm 0.5 cm at the age of 8 years, at the age of 9 years. 62.8 \pm 0,3 cm , at the age of 10 years it was found to be 71.3 \pm 0,2

In schoolchildren, the rate of growth of the value of the length of the chest increased by 13.9 cm at the age of 7-10 years, by 0.8 cm at the age of 7-8 years, by 4.6 cm at the age of 8-9 years, and at the age of 9-10 years, increased by 8,5 cm.

In observations, the average length of the chest circumference in schoolchildren was 64,7 0,4 cm at the age of 7 years , 65.2 0,3cm 0,5 at the age of 8 years, and 68.2 years at the age of 9 years. 0.5 cm at the age of 10 years was found to be 77.3 0,7.

In schoolchildren, the chest circumference is the length of a deep breath. In the case of maximal respiration at the age of 7-10 years, the rate of increase in the value of the circumference of the chest is 12.6 cm at the age of 7-10 years, 0.5 cm at the age of 7-8 years, 3.0 cm at the age of 8-9 years, 9. At the age of 10, it was found to have increased by 9.1 cm

In the observations, students had maximal respiration between the ages of 7-10 years. The mean is 55,5 0,4 at age 7, 55,2 0,4 at age 8, 63,1 0,5 at age 9, 66,2 0,5 at age 10.

The rate of increase in the value of the circumference of the chest in schoolchildren was 10.7 cm at the age of 7-10 years, 0.3 cm at the age of 7-8 years, 7.9 cm at the age of 8-9 years, and 3.1 cm at the age of 9-10 years detected.

In the research, in No26 school's pupils at age 7, the maximum contraction force of the finger muscles is the mean value of the right hand is average 12,5 0,0,3 kg/m, 9,2 0,0,4 kg/m at age 8, 12,5 0,0,3 kg/m at age 9, 13,8 0,0,2 kg/m at age 10.

In observations, the maximum contractile force of the finger muscles, i.e, arm strength, was in the right hand at the age of 7 years. The rate of increase in right arm strength in schoolchildren between the ages of 7-10 years was 6.9 kg/m, at the age of 7-8 years 2.3 kg/mni, at the age of 8-9 years 3.3 kg/mni, 9. At the age of 10, it was found to be 1.3 kg/m3.

Maximum contractile force of the finger muscles at the age of 7 years , ie. arm strength in the left hand, averaged 6.7 ± 0.04 kg/m, 7.8 ± 0.03 kg/m at age $8, 9.8\pm0.02$ at age $9, 11.3\pm0.02$ kg/m at age 10.

In observations, the rate of increase in left arm strength in schoolchildren between the ages 7-10 years was 4.6 kg/ mga, at the age of 7-8 years 1.1 kg/mga, at the age of 8-9 years 2.0 kg/mga, and at the age of 9-10 years. An increase of 1.5 kg / mg was found. It was also observed that the values of this indicator increased linearly in students aged 7-10 years.

Based on the results of the observation, it can be seen that the morphological parameters (body weight), height, chest circumference and arm strength) studied in primary school students of school No. 26 in Pakhtaabad district) values wee found to increase linearly in the general case between the ages of 7-10 years.

Conclusion

As a result of statistical anlysis of some morphological indictors of school student, we can draw the following conclusions.

- 1. The dynamics of physical development of children of all ages (7-10 years) is increasing with age , based on the laws of growth and development.
- 2. We can see that the average values of body weight and height increase with age, and the same indicators accelerate between the ages of 9-10. At the same age, the statistical difference was significant. (p<0,01).

- 3. It can be seen that the indicators of the length of the thoracic circumference increase dynamically with age in all cases. Significant changes can be seen here at 9-10 years of age. (p<0,05)
- 4. We can also see the dynamics of growth in the maximum contraction force of the finger muscles, in the indicators of hand dynamometry. We can laso see that the right arm is organically in the 8-9-10 age range. The difference between them is statisically inevitable. (p<0.05)
- 5. As the morphological parameters increase between the ages of 7-8-9-10, we can trick this into the development of the musculoskeletal. The period of intensive bone growth is markedly marked by an increase in shaft muscle mass between the ahes of 9-10 years.

Offer. We would like to emphasize once again that regular study of the morphological and physiological indicators of growing children of different ages is an important factor in determining the level of health.

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