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ANALYSIS OF PHYSICAL DEVELOPMENT OF PUPILS OF GENERAL EDUCATION SCHOOLS

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Annotatsiya: Ushbu maqolada maktab o‘quvchilari jismoniy rivojlanishining yillik dinamikasi keltirilgan bo‘lib, unda tana uzunligi, vazni va ko‘krak qafasi kengligi o‘zgarishining dinamikasi tahlil qilingan va xulosalar berilgan.
Kalit so‘zlar: jismoniy rivojlanish, jismoniy tayyorgarlik, antropometrik ko‘rsatkichlar, jismoniy yuklama
Аннотация: В данной статье представлена годовая динамика физического развития школьников, в которой проанализирована динамика изменения длины тела, массы тела и ширины грудной клетки и даны выводы.
Ключевые слова: физическое развитие, физическая подготовка, антропометрические показатели, физическая нагрузка.
Abstract: This article presents the annual dynamics of physical development of schoolchildren, in which the dynamics of changes in body length, weight and chest width are analyzed and conclusions are given.
Key words: physical development, physical training, anthropometric indicators, physical load

Introduction

Today, in all countries of the world, a number of measures are being taken to raise the level of state policy to attach great importance to physical education and sports among schoolchildren, to improve the health of the population and to attract them to sports.

As a result of the analysis of a number of scientific research works in the world, it was found that the development of physical education and sports in general secondary educational institutions has a significant impact on the physical activity and readiness of schoolchildren, age-specific characteristics of development, the development of muscle strength in boys, and the development of physical education classes for primary and high school students. Scientific research is being conducted to standardize the exercise load, develop tools and methods for developing physical qualities (strength, agility, speed, endurance and flexibility). Taking into account the age characteristics of students in grades 5-9 studying in general secondary schools, there is a need to develop a methodology for using special exercises to develop their physical qualities and scientifically substantiate them in research.

Literature Analysis

As a result of studying the scientific and methodological literature of foreign scientists, it became clear that a number of scientific studies have been conducted on physical education. In particular, these include the works of V.K. Balsevich, L.I. Lubisheva, S.V. Rybalkina, Yu.F. Kuramshin, V.A. Bogdanova, G.V. Zhulina, N.I. Chukturova, A.N. Kondratev, V.A. Baranov and others.

V.G. Nikitushkin, V.P. Filin, L.V. Volkov, V.E. Kote shov, T. Bompa and other specialists conducted scientific research on the development of a system for training young athletes, sports training for children and adolescents, and a methodology for planning training loads taking into account the age characteristics of children.

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Among the scientists of our country, R.S. Salomov studied the age-specific characteristics of the physical development and training of schoolchildren, T.S. Usmonkhodjaev studied the scientific and pedagogical foundations of the relationship between children's physical activity and physical development, Kh.Kh. Soliyev studied the development of muscle strength in 7-12-year-old boys with different body types and development options, A.T. Sodikov conducted scientific research on the standardization of exercise loads in physical education classes for students in grades I-IV, B.G. Boyboboyev studied the issues of standardization of loads for 11-14-year-old boys in physical education classes, and O.V. Goncharova highlighted the means and methods of developing children's strength, agility, endurance, and flexibility.

Research Methodology

The study used the methods of scientific and methodological literature analysis, questionnaire, pedagogical observation, pedagogical testing, pulsometry, anthropometry, pedagogical experience and mathematical and statistical analysis.

Analysis And Results

The process of morphological and functional state of the organism in natural conditions and the legal changes in physical qualities and abilities based on it is called physical development.

M.Ya.Nabatnikova identified 5 intensity zones of the load on the heart rate:

1. Zone of low intensity. 130 in boys.
2. Zone of medium intensity. 131-155 in boys.
3. Zone of high intensity. 156-175 in boys.
4. Zone of very high intensity. Above 176 in boys.
5. Zone of maximum intensity.

In school physical education classes, the teacher should pay special attention to the load of physical exercises, taking into account the physical fitness and condition of students.

One of the indicators of the effectiveness of physical training in school physical education classes is physical development. Anthropometric indicators are necessary for the education of physical qualities. At the age of schoolchildren, the whole organism and its parts are characterized by maximum development. In our study, we determined the main anthropometric indicators of students.

When measuring the indicators of physical development of 5th grade students studying in schools, their height at the beginning of the school year is 140.4±5.8 cm, and at the end of the school year it is an average of 143.2±4.7 cm. It was found that the annual growth difference in the indicators of physical development of students of this age is 2.8 cm (2.14%). There is no statistical difference. Even when compared with B. Madaminov's research, the body length of 5th grade students was significantly higher than that of the experimental (141.2±1.44 cm) and control groups (142.1±2.56 cm). According to the results obtained, it was found that the statistical differences in physical development were not reliable (R>0.05).

The development processes of 11-year-old schoolchildren in terms of body weight were studied. According to it, the body weight of students at the beginning of the school year was on average 34.1±2.4 kg, and at the end of the school year this indicator reached 35.4±1.8 kg. The difference in annual growth of weight indicators in the physical development of students of this age differed by 1.3 kg (0.84%). The statistical differences between the indicators are not reliable (R>0.05). Here, when comparing with the research work of B. Madaminov, the body weight indicators of 5th grade students in the experimental (33.4±1.67 cm) and control groups (36.0±2.36 cm.) were determined (R>0.05). No statistical difference was observed.

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Physical development indicators of schoolchildren

T/r	Indicators	*O'YB*		*O'YO*		*Difference*	*%*	*t*	*R*
		X±σ	*V%*	*X±σ*	*V%*				
11 years									
1.	Height(sm)	140,4±5,8	4,1	143,2±4,7	3,2	2,8	1,21	1,5	>0,05
2.	Weight(kg)	34,1±2,4	7,0	35,4±1,8	5,0	1,3	0,84	0,95	>0,05
3.	Chest circumference(sm)	66,9±4,7	7,0	69,2±3,2	4,6	2,3	0,49	2,95	<0,05
12 years									
1.	Height(sm)	143,1±6,1	4,2	146,4±4,2	2,8	3,3	2,3	1,11	>0,05
2.	Weight(kg)	36,7±2,1	5,7	39,2±1,8	4,5	2,5	6,8	0,73	>0,05
3.	Chest circumference (sm)	65,4±5,4	8,2	67,9±3,5	5,1	2,5	3,8	3,12	<0,05
13 years									
1.	Height (sm)	148,8±5,8	3,8	152,7±4,1	2,7	3,9	1,3	1,9	>0,05
2.	Weight (kg)	40,5±2,9	7,1	42,9±3,7	8,6	2,4	5,9	0,58	>0,05
3.	Chest circumference (sm)	65,9±4,9	7,4	68,7±2,8	4,0	2,8	4,2	0,89	>0,05
14 years									
1.	Heighti (sm)	157,9±4,7	2,9	161,1±3,1	1,9	5,2	3,2	1,38	>0,05
2.	Weight (kg)	45,9±2,5	5,4	48,6±1,9	3,9	2,7	5,9	1,14	>0,05
3.	Chest circumference (sm)	73,1±3,8	5,1	76,4±2,7	3,5	3,3	4,5	1,61	>0,05
15 years									
1.	Height (sm)	162,8±5,1	3,1	167,7±3,9	3,2	4,9	3,0	1, 84	>0,05
2.	Weight (kg)	50,5±3,2	6,3	53,6±2,1	3,9	3,1	6,1	2,92	<0,05
3.	Chest circumference(sm)	76,4±4,4	5,7	79,9±3,0	3,8	3,5	4,6	1,34	>0,05

Note: O'YB – at the beginning of the school year, O'YO – at the end of the school year.

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When the chest circumference of students was measured at the beginning of the school year, it was on average 66.9±4.7 cm. At the end of the year, the physical development process increased by 4.6 cm and was 69.2±3.2 cm. Even in the above results, the differences between the indicators of physical development are not reliable (R>0.05) (Table 3.1).

Since information about body weight does not give clear instructions, the volumes of body length and width are used to study it. In the works of R.N. Dorokhov, body weight was analyzed depending on somatic types and development options.

Body weight and its component composition serve as a generalized indicator of the development and growth of the organism. Body weight depends not only on genetic characteristics, but also on the mode of movement, nutrition and environmental conditions.

In the ontogenesis period of 7-12 years, the growth of body weight from year to year is uneven, there are periods of rapid and slow growth. The variability of body weight growth is clearly visible in the curvilinear representation of the intensity of annual volume growth and in determining the coefficient of variation.

When examining the physical development of 6th grade students at school, the results obtained in terms of height at the beginning of the school year were 143.1±6.1 cm. On average, physical development reached 146.4±4.2 cm. The results obtained showed a difference of 3.3 cm during the year. The above results also indicate that the differences between physical development indicators are not reliable (R>0.05).

According to the development processes of body weight of 6th grade students, the average body weight of students at the beginning of the school year was 36.7±2.1 kg, and at the end of the school year this indicator reached 39.2±1.8 kg. The annual difference in weight gain indicators in the physical development of students of this age differed by 2.5 kg (6.8%). The statistical differences between the indicators are not reliable (R>0.05).

When measuring the physical development indicators of 12-year-old students in schools, the chest circumference of students at the beginning of the school year was 65.4±5.4 cm, and at the end of the school year this indicator was 67.9±3.5 cm on average. The annual growth difference in the indicators of physical development of students of this age was found to be 2.5 cm (3.8%). Statistical differences between the indicators are not reliable (R>0.05).

Three phases can be distinguished in the growth of development: an increase in the level of development, relative stability and a gradual decline in human physical capabilities. The most dynamic development occurs in preschool and junior school age and continues throughout all periods of school education. Creating conditions for physical development makes it possible to select gifted children. Because talent is passed on from generation to generation. Therefore, not every student can achieve high results. Each student can ensure his good physical development in the conditions of regular, conscientious participation in goal-oriented training, but it is necessary to create conditions for the protection of the body and achieving decent success in work. To achieve such development, a specially directed and organized activity called "Physical Education" is used.

According to the results obtained on the indicators of physical development of students studying in the 7th grade of secondary schools, at the beginning of the school year The average height of students is 148.8±5.8 cm, and at the end of the school year the average is 152.7±4.1 cm. The annual difference in physical development indicators of students of this age was found to be 3.9 cm (1.27%). The statistical differences between the development are not reliable (R>0.05).

Body weight indicators increase with age. The development processes of 13-year-old schoolchildren in terms of body weight were studied. According to it, the average body weight of students at the beginning of the school year was 40.5±2.9 kg, and by the end of the school year this indicator reached 42.9±3.7 kg. The annual

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difference in physical development indicators of students of this age - body weight gain - was 2.4 kg (5.9%). The statistical differences between the indicators are not reliable (R>0.05).

In 13-year-old students, whose physical development indicators and age dynamics were analyzed, the chest circumference at the beginning of the school year was on average 65.9±4.9 cm, and at the end of the year the physical development indicator increased by 2.8 cm and was 68.7±2.8 cm. The analyzed results also show that the differences between the physical development indicators are not reliable (R>0.05).

The dynamics of the specific physical development indicators of students with different levels of development were studied. The results obtained from measuring the height of 8th grade students in terms of physical development were on average 157.9±4.7 cm at the beginning of the school year, and at the end of the year the physical development indicator reached 161.1±3.1 cm. The results obtained showed a difference of 5.2 cm during the year. Even in the above results, the differences between the indicators of physical development are not reliable (R>0.05).

We have already mentioned that the indicators of physical development vary depending on age. If we turn to the developmental processes of 14-year-old students in terms of body weight, then the average body weight of students at the beginning of the school year was 45.9±2.5 kg., and at the end of the school year this indicator reached 48.6±1.9 kg. The annual growth difference in the indicators of body weight gain in the physical development of students of this age was 5.9 kg. (5.88%). During pedagogical observations, when we measured the physical development indicators of 8th grade students with different body types, we found that at the beginning of the school year, the students' chest circumference was 73.1±3.8 cm, and at the end of the school year, this indicator was on average 76.4±2.7 cm. The annual growth difference in the physical development indicators of students of this age was found to be 2.7 cm (5.9%). The statistical differences between the indicators are not reliable (R>0.05).

By examining 15-year-old schoolchildren, the patterns of age-related changes in morphofunctional development indicators were identified.

Body length indicators increase steadily with age. At the beginning of the school year, this indicator was 162.8±5.1 cm, and at the end of the year it was 167.7±3.9 cm.

Body weight indicators in 9th grade students also increase with age. When studying the developmental processes of students' body weight, it was found that the average body weight of students at the beginning of the school year was 50.5±3.2 kg, and at the end of the school year this indicator reached 53.6±2.1 kg. The annual difference in body weight gain indicators for students of this age was 3.1 kg (6.1%). The statistical differences between the indicators are not reliable (R>0.05).

When measuring physical development indicators in 15-year-old schoolchildren, it was observed that at the beginning of the school year, the chest circumference of students was 76.4±4.4 cm, and at the end of the school year, it was 79.9±3.0 cm on average. The annual growth difference in physical development indicators of students of this age was found to be 3.5 cm (4.6%). The statistical differences between the indicators are not reliable (R>0.05).

Conclusion

According to the results of the analysis of scientific and methodological literature, the tools and methods used to develop the physical qualities of students in the process of physical education lessons in grades 5-9 The need to develop it taking into account the age characteristics of the participants was confirmed.

When measuring the physical development indicators (height, body weight, chest circumference) of 5th grade students studying in general education schools, their height at the beginning of the school year was 140.4±5.8 cm, and at the end of the school year it was an average of 143.2±4.7 cm. It was found that the annual growth

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difference in the physical development indicators of students of this age was 2.8 cm (1.21%). There is no statistical difference. Even when compared with the research work of B. Madaminov [2005], it was found that the results of the body length of 5th grade students in the experimental (141.2±1.44 cm) and control groups (142.1±2.56 cm) showed no statistically significant differences in physical development. It was also found that the physical development indicators of 13-15 year old students did not differ statistically significantly throughout the year (R>0.05).

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