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Research Article

DYNAMICS OF PHYSICAL DEVELOPMENT AND PHYSICAL FITNESS OF YOUNG GYMNASTS AT THE PRIMARY TRAINING STAGE

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ABSTRACT

In this article, the physical development and physical fitness of young gymnasts at the initial training stage are covered by researches, which are related to their age-specific characteristics.

KEYWORDS

Physical development, physical training, general physical training, special physical training, special movement training, technical training.

INTRODUCTION

Specialists working in the field of training theory and methodology of young gymnasts in our country began to pay special attention to the cases of engaging 4-6 year old children in sport gymnastics. However, the structure of the training process, the means of controlling the "internal" and "external" aspects of the load, its effects on the body's systems, require scientific study and the organization of special researches in the field, as well as scientific justification.

During the analysis and summarization of literary sources, it became known that the gradual development of special movement abilities and basic physical qualities of children of preschool and junior school age, special movement (SM), special-physical (SP) and technical training of young gymnasts at the initial stage of training TT) requires the development of an effective system of complex control [1]. This, in turn, means the need to take into account the physical development of children's bodies. Analysis of the

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situation of this problem in sports gymnastics shows that it is not sufficiently studied scientifically. Until now, the main attention has been paid to the issues of training and improvement of programming exercises, that is, technical training. Leading scientists of the field I.V. Kulkova, A. M. According to Shlemin, A.K.Eshtaev, M.N.Umarov, prospective criteria of young gymnasts during basic training, the structure and content of training, including the distribution of elementary means of training, taking into account the age of children of preschool and junior school age, in all-around gymnastics, have not been sufficiently studied. [1,4,5].

The purpose of the research to study the influence of types of training (GPT, SPT, MXT, TT) on the physical development of young gymnasts at the stage of initial training.

Organization of the research. Development indicators of the main morpho-functional characteristics of 5-7-year-old gymnasts were organized.

It is impossible to plan, effectively manage and control any training processes, without having a complete and clear idea about the structure of the controlled object and the laws of its transition from one state to another.

In order to describe the physical development and body structure characteristics of children up to junior school age, total body mass was measured in 180 5-6-year-old children (90 girls and 90 boys) who were admitted to the primary training groups of the first year of education at the gymnastics department of the Kokan city ChASS and Tashkent city ASS. , transverse and circumferential dimensions, body weight composition were studied.

It is known that the child's organism has its own anatomical and physiological characteristics. However, the effect of physical exercises, especially regular exercises with gymnastics, on the body of 5-7-year-old children has not been thoroughly studied yet.

Comparative indicators of physical development of girls and boys are presented in tables 1 and 2. It should be noted that these tables primarily reflect age-related gender differences in the total indicators of girls and boys.

Table 1

The main indicators of physical development in 5-7-year-old girls

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Indicators	Age	n	$\overline{X}$	$\pm\delta$	V	t_{Δ}	P
Length of the body (cm)	5 6 7	30 30 30	110,9 115,5 119,7	4,0 2,23 3,88	3,6 1,93 3,24	- 10,7 7,78	 > >
Body weight (kg)	5 6 7	30 30 30	18,5 20,0 21,7	2,38 1,70 2,16	12,8 8,5 9,95	- 5,56 5,31	 > >
Chest circumference (cm)	5 6 7	30 30 30	55,4 56,8 58,4	1,91 1,99 2,14	3,45 3,5 3,66	- 5,47 4,85	 > >
Shoulder width (cm)	5 6 7	30 30 30	24,8 25,8 26,7	0,93 0,83 0,92	3,75 3,22 3,44	- 8,3 6,42	 > >
Pelvic width (cm)	5 6 7	30 30 30	18,05 18,53 19,0	1,15 0,93 0,95	6,37 5,02 5,0	- 3,43 3,13	 > >
Excursion of the chest (cm)	5 6 7	30 30 30	4,28 4,62 4,4	0,99 0,93 0,9	2,31 2,01 2,04	- 2,61 1,57	 >
Excursion of the shoulder muscles (cm)	5 6 7	30 30 30	0,73 1,10 1,24	0,26 0,25 0,21	3,56 2,27 1,69	- 12,3 4,12	 > >

Table 2

The main indicators of physical development in boys aged 5-7 years

Indicators	Age	n	$\overline{X}$	$\pm\delta$	V	t_{Δ}	P
Length of the body (cm)	5 6 7	30 30 30	112,1 116,0 121,3	2,65 2,81 2,50	2,36 2,42 2,06	- 8,2 11,04	 > >
Body weight (kg)	5 6 7	30 30 30	19,5 21,3 23,2	1,9 1,64 2,06	9,7 7,7 8,88	- 5,29 5,59	 > >
Chest circumference (cm)	5 6 7	30 30 30	57,2 58,3 60,3	2,27 1,86 1,41	3,97 3,19 2,34	- 2,82 7,14	 > >
Shoulder width (cm)	5 6 7	30 30 30	24,9 26,2 27,0	1,37 0,70 0,42	5,50 2,67 1,55	- 5,65 8,16	 > >

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Pelvic width (cm)	5 6 7	30 30 30	19,05 19,16 19,7	0,66 0,83 0,56	3,46 4,33 2,84	- 0,69 4,5	 < >
Excursion of the chest (cm)	5 6 7	30 30 30	3,69 4,28 4,6	0,88 1,05 1,07	2,38 2,45 2,33	- 3,1 1,6	 > <
Excursion of the shoulder muscles (cm)	5 6 7	30 30 3	1,31 1,42 1,92	1,31 0,9 1,08	10,0 6,34 5,62	- 0,5 2,63	 < >

The analysis of weight-height indicators allows to determine that according to these parameters, body length in boys is on average 1.5-2 cm, and body weight is slightly excessive by 1-1.5 kg.

The third measure of body size examined was chest circumference, which describes the size of a person's chest.

According to our data, boys here have a much higher performance than girls from the age of 5. Chest circumference increases from 57.2 to 60.3 cm in boys and from 55.4 to 58.4 cm in girls from 5-7 years old.

However, it should be noted that the chest excursion in 5-6-year-old girls is larger than in boys of their age ($R < 0.05$).

Shoulder muscle excursion is weak at this age and is not statistically different in boys. But its indicators are higher compared to girls.

As for the width of the shoulders and hips, their sizes increase more rapidly in girls over time. In addition, it should be noted that the initial indicators in boys are insignificantly higher than the sizes of girls.

The period from 1 to 7 years is called by many authors (2,3) the period of neutral activity, because boys and girls do not differ from each other in terms of body size. At the same time, the study of the physical development of the children we examined, on the contrary, shows that there are gender differences in the body sizes of 5-7-year-old girls and boys. Of course, with age, all indicators increase significantly in boys.

Information that the muscular apparatus of 5-7-year-old children, along with other systems of the body, is at a stage of rapid development does not require confirmation. Therefore, first of all, it is the task of polydynamometry to determine the level of manifestation of the initial force in the basic bending and writing movements of the arms, legs and body.

In children, the absolute strength of various muscle groups gradually increases with age, although each muscle group develops only in its specific characteristics (Table 3).

The plantar flexor muscle groups, which mainly record the body and lower parts of the body and are based on the conditions of life and movement, have much larger indicators.

From the age of 6-7, the strength of the body flexor muscles develops significantly. In 2 years (from 5 to 7 years old) it increases by an average of 4.25 kg (38.9 %) in girls, and by 5.7 kg (48.4 %) in boys.

Absolute wrist flexor and extensor strength increases with age, but the pattern of growth is not specific. Give the following data as evidence: in girls, from 5 to 7 years of age, muscle strength increases by 3.86 kg in the shoulder flexor muscles, 3.75 kg in the wrist flexor

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muscles, 3.36 kg in the shoulder flexor muscles, and 2.75 kg in the wrist flexor muscles.

In boys, the results are more impressive: the shoulder flexor muscle strength increases by 4.88 kg, the shoulder flexor muscle strength increases by 4.5 kg, the wrist flexor muscle strength increases by 3.99 kg, and the wrist flexor muscle strength increases by 3.57 kg.

The data we obtained allowed us to compare the integral indicators of absolute muscle strength in young children.

Our attention was drawn to the fact that these indicators reliably increase until the age of seven, and this happens as follows: in girls - from 5 to 6 years - 37.1%, from 6 to 7 years - 5.8% and from 5 to 7 years - 45.1%: in boys - from 5 to 6 years - 20.7%, from 6 to 7 years - 20.5% and from 5 to 7 years - 45.4%.

It should also be noted that the difference in absolute strength indicators between boys and girls of the same age begins to be evident with age.

Relative muscle strength is of great importance for sports gymnastics, which involves overcoming the inertia of individual body weight.

The development of relative strength in body muscle groups, the predominance of benders over benders, is characterized by the fact that 5-7-year-old gymnasts retain all-round development and are clearly expressed. Except for the wrist flexor strength, which develops much higher than the writing strength.

Table 3

Absolute strength indicators of the main muscle groups in 5-7-year-old children (кгс) ($\overline{X} \pm \delta$)

Gender	Age	n	Wrist		Shoulder		Body		Femur		Foot claws	Integral indicators	t_{Δ}
			й	ё	й	ё	й	ё	й	ё			
Girls	5	30	8,65 ±2,48	7,32 ±2,20	8,84 ±2,04	9,89 ±2,87	10,9 ±2,87	22,2 ±7,68	9,17 ±2,54	20,5 ±6,85	18,8 ±5,9	116,2 ±27,13	-
	6	30	11,16 ±2,45	9,23 ±2,50	11,13 ±2,46	12,58 ±2,96	13,96 ±3,02	31,6 ±7,85	12,12 ±3,16	31,1 ±8,18	27,1 ±6,9	159,3 ±30,2	10,0

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	7	30	12,4 ±2,5	10,07 ±2,89	12,2 ±2,11	13,75 ±3,14	15,14 ±3,57	34,6 ±8,26	13,07 ±3,14	33,1 ±10,9	27,2 ±7,3	168,6 ±39,4	2,36
Boys	5	30	10,49 ±2,84	8,36 ±2,24	9,68 ±2,33	11,75 ±3,68	11,83 ±2,73	27,2 ±8,61	10,67 ±3,1	26,33 ±8,06	24,1 ±7,1	140,71 ±31,5	-
	6	30	12,52 ±2,84	10,08 ±2,91	11,71 ±2,47	14,15 ±3,2	14,02 ±3,44	33,08 ±8,03	12,66 ±2,68	32,21 ±9,78	28,2 ±6,6	169,83 ±30,73	5,02
	7	30	14,48 ±2,23	11,93 ±3,1	14,56 ±2,81	16,45 ±3,56	17,51 ±3,85	42,5 ±9,28	15,15 ±3,51	39,2 ±9,77	32,7 ±6,6	204,6 ±33,9	5,7

It is true that the description of the development of relative strength integral indicators is somewhat different. If the growth of relative strength (n.k.) in boys from 5 to 6 years and from 6 to 7 years is 10.6% on average in one year, and 22.3% in two years, the rapid growth in girls is from 5 to 6 years in the period - 26.7% occurs, from 6 to 7 years the results decrease significantly, but not reliably - by 2.4%.

In the practice of working with gymnasts, coaches, as a rule, not only with any individual muscle groups, but with the strength of body parts; they work with hands, feet, body. Therefore, below we will consider them as such.

As can be seen from Figure 1, the indicators related to leg muscle strength are much higher, because the period from 5 to 7 years is characterized by increased movement activity, mainly in the lower parts of the body. They have a very high growth (girls - 32.3 kg and boys - 25.9 kg).

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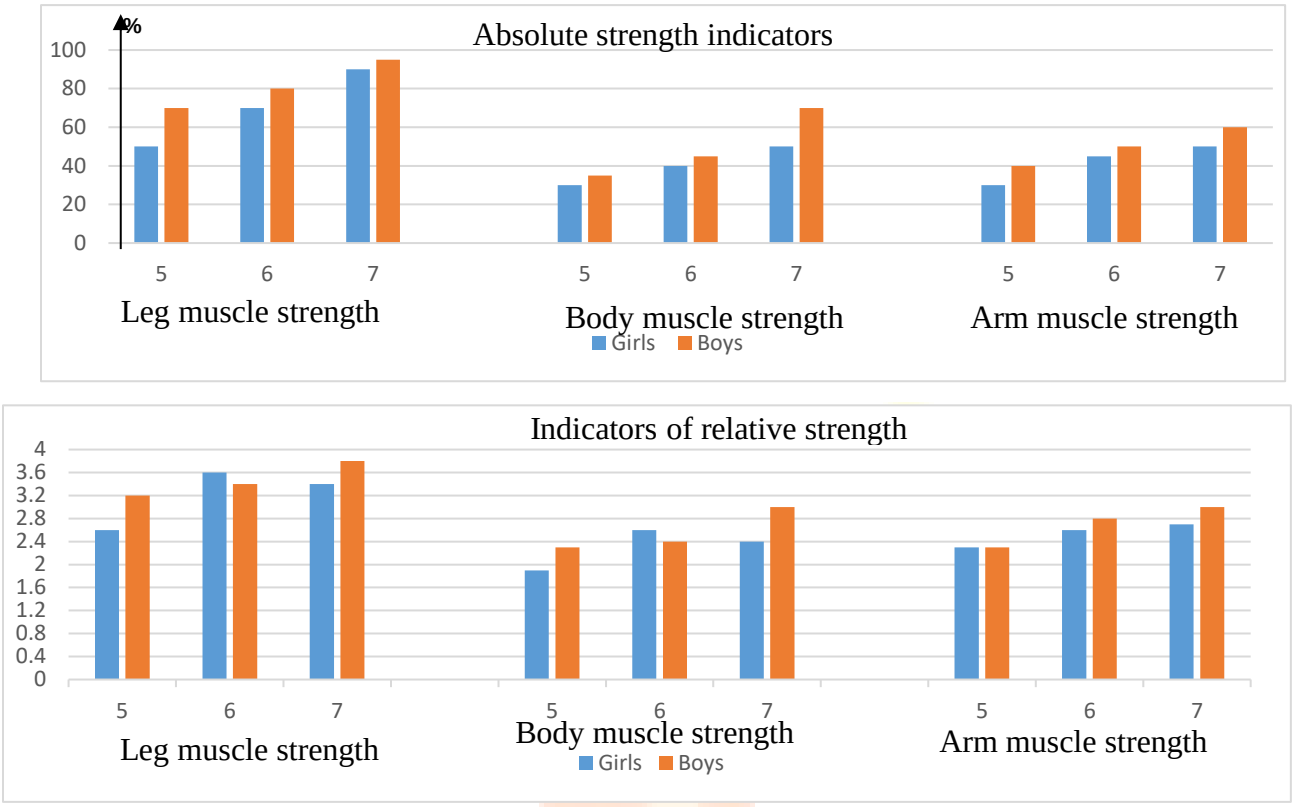

Figure 1. Muscle strength indicators of individual body parts of 5-7-year-old children.

It should be noted that all absolute indicators different from relative indicators of 5, 6, 7-year-old children are statistically different ($r > 0.05$). At the same time, in 5-6-year-old children, the difference in relative strength is observed only in the indicators of arms and body muscles.

Boys are superior to girls in all absolute measures of strength. At the same time, the relative strength of the legs and body muscles in 6-year-old girls is higher than that of boys.

Thus, studying the level of initial development of muscle strength in young gymnasts, we found that there is a similarity in the topology of muscle strength in both girls and boys.

It is characterized by high relative strength of the muscles that flex the body, then the hips and legs, while the muscles that flex the shoulder and hip and flex the wrist are relatively weak.

In many cases, unreliable age-related increases in relative muscle strength are detected. This confirms the thesis about its conservativeness, obtained in much older gymnasts.

In our studies, the morpho-functional indicators of young gymnasts, their characteristics were considered, and the indicators of muscle strength development were analyzed. It is muscle power that is the natural basis and substrate for the manifestation and practical application of a person's personal physical qualities.

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Pole dynamometry data allows only to discuss about muscle strength possibilities, to evaluate it only in a single act movement. In addition to this, for practice, it is necessary to know how it is carried out in tests, special exercises, movements that are structurally compatible with the main competition exercises.

Analyzing the test data of the strength training exercises, it should be noted that the results of the first measurement were very low due to the fact that most of the participants were performing such exercises for the first time (bending the arms in a parallel seat, holding an angle while hanging, etc.).

The results of the first test also show gender differences in gymnasts. 5-6-year-old boys showed significantly higher scores in drawing and hand bending than girls. Of course, it is true that seven-year-old girls have much higher results in hanging and bending the arms. Although it is statistically unreliable in some cases, five-year-old gymnasts perform significantly higher in pull-ups, handstands, and hang angles (seven-year-olds) than six-year-olds. A very fast dynamics in their development is typical for them.

CONCLUSION

1. Thus, the information we received about the manifestation of physical qualities of 5, 6 and 7-year-old gymnasts. It confirms that their development is of a heterochronic description. 5-year-old gymnasts use relatively more muscle power. It was found that test results on SPT gradually improve with age, only in tests describing quick-strength training.

In these exercises, gender differences were observed, which characterized the results of boys as superior to those of girls. At the same time, it was also revealed that there is an opposite idea in flexibility exercises.

2. In the course of research, it was found that the rate of growth of SPT results in 6- and 7-year-old gymnasts was slower compared to 5-year-old gymnasts, mainly in strength training. This, in turn, leads to the need for a scientific examination of questions such as the passage of the first high jump in this period, how much it is related to this process, and what should be the corrections made to the methods and tools used in the training of young gymnasts at the initial training stage.

3. Preliminary studies showed the need to study some features of correlation between the level of physical and sports-technical preparation of young gymnasts studying in the first and second year of the first and second year of primary training, using the tools of mathematical statistics.

4. The results of the research allow to determine the structure of training types and the most important parameters describing the physical development and special-movement training of 5-6-year-old gymnasts, and to consider the obtained correlation as a theoretical basis for the effectiveness of practical activities.

All of the above, the information obtained from the special literature, training practices and initial experimental materials, require the substantiation of the research results and the timely application of the research results to the training processes of 5-7 year old gymnasts.

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