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Flexibility development among 5–6th grade schoolchildren under the influence of cheerleading activity

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Purpose: *to determine the degree of change in the level of development of the flexibility of 5–6th grade schoolchildren under the influence of cheerleading activity.*

Material & Methods: *103 schoolchildren of 10–11 years took part in the research. Methods: theoretical analysis and generalization of scientific and methodological literature, pedagogical testing, pedagogical experiment and methods of mathematical statistics.*

Results: *the indicators of the level of development of flexibility are presented, as well as the degree of their change under the influence of cheerleading activities among schoolchildren of the 5th and 6th grades of the general education school.*

Conclusion: *the use of cheerleading activity positively influenced the degree of manifestation of the flexibility of schoolchildren of middle classes in all the parameters studied.*

Keywords: *flexibility, cheerleading, middle school students.*

Introduction

Care for the health of the nation should be central to Ukrainian society. According to the Ministry of Health in Ukraine over the past decade, there has been a trend towards deteriorating health status of schoolchildren. So, only 50% of children belong to the main medical group. It is known that one of the main tasks of physical education is the preservation and strengthening of schoolchildren's health. However, analysis of the literature suggests that the level of physical fitness, physical health and physical performance of students is at an unsatisfactory level [1; 10; 17; 18; 21; 34].

According to experts, in order to improve the health status, increase the level of physical preparedness of the population of Ukraine, first of all it is necessary to improve the training of the younger generation [14; 15; 24; 36] through the use of various innovative means of physical education [2; 3; 8; 22; 25; 33].

It should be noted that one of the innovative means of physical education is cheerleading activity. Cheerleading includes a wide arsenal of various intensive movements that contribute not only to strengthening physical and spiritual forces, the education of aesthetic taste, the formation of interest in a healthy lifestyle [4; 12; 35], but also improves the elasticity of muscles and ligaments, and also increases the mobility of the joints, which is important in the daily life of a person [7; 9; 13; 23].

A number of scientific papers are devoted to the study of the development of flexibility through the use of a variety of means, methods and approaches [19; 20; 26 and etc.]. Thus, in the works of A. V. Fedoryaki, N. V. Bachinskaya (2016), the positive influence of rhythmic gymnastics on the development of the flexibility of girls aged 7–8. O. Smolyar (2011) notes that the use of modern dances has a positive effect on physical preparedness and especially on flexibility. V. M. Favoritov, K. A. Silyavina (2014) indicate that the use of exercise complexes that represent springy flexion-extension, flies, static tension, as well as overcoming resistance in paired exercises and simulators, effectively influence the flexibility parameters girls 6–7 years old, engaged in gymnastics. G. V. Tolcheva (2015) revealed an improvement in the flexibility and coordination abilities of university students in the process of hatha yoga classes during the school year. In turn, T. M. Bala, I. P. Maslyak (2011, 2014) note the positive impact of cheerleading exercises on the indices of flexibility of middle-class girls, and N. V. Krivoruchko (2015) in her study – the positive effect of cheerleading activities on level of development of flexibility among female students of higher education institutions of the I–II level of accreditation.

Thus, analysis of modern literature indicates a sufficient number of studies devoted to the study of the development of flexibility through the use of various innovative tools. However, we note that the question of the effect of chiding exercises on the level of development of the flexibility of schoolchildren aged 10–11 years remains insufficiently studied, which is of particular relevance in detailed consideration.

Relationship of research with scientific programs, plans, themes. The research was carried out according to the thematic plan of the Kharkov State Academy of Physical Culture, the scientific theme "Improvement of the process of physical education in educational institutions of different profile" for 2016–2020. (State Registration No. 0115U006754).

The purpose of the research: to determine the degree of change in the level of development of the flexibility of 5–6th grade schoolchildren under the influence of cheerleading activity.

Material and Methods of the research

The research was carried out on the basis of the secondary school No. 119 in Kharkov. 103 schoolchildren of grades 5–6 took part in them, of which two experimental groups and two control groups. All the children who took part in the experiment were practically healthy and were supervised by the school doctor.

In the course of the study, the schoolchildren of the control groups were engaged only in the generally accepted program for general educational institutions "Physical culture. 5–9 class ", and the educational process on the physical education of schoolchildren of experimental groups was supplemented by the variational module" Cheerleading "developed by us, which included such elements as: high V, low V, T motion, half T, muscleman, touchdown, tuck, spreadeagle, doublehook, Thighstand, Staddlelift, Suspendedsplit and other [11]. Specially selected exercises cheerleading made the content of the lessons of the module "Cheerleading", and also included in the preparatory part of the lesson of other variational modules, into the system of organized changes and were offered in the form of homework assignments.

Research methods: theoretical analysis and generalization of scientific and methodological literature, pedagogical testing, pedagogical experiment and methods of mathematical statistics.

To determine the level of development of the flexibility of schoolchildren of grades 5–6, the tests presented by L. P. Sergienko [28] and V. A. Romanenko [27] were used, namely: the inclination of the angle body d from the initial sitting position (cm), side split (cm) and twists hands with a gymnastic stick (cm).

Results of the research and their discussion

Analyzing the obtained data of the primary study, the absence of reliable differences in the indices of schoolchildren of control and experimental groups for all investigated parameters (p>0,05).

When comparing the results in the age aspect, improvement in the results with age was found in terms of the performance of the angle body and the side split, as well as worsening of the results according to the performance of arm twisting, both in schoolchildren of control and experimental groups. It should be noted that these age differences are mostly unreliable (p> 0,05), with the exception of the results of the torso tilt forward, where the differences are mostly reliable (p<0,05–0,001).

As a result of the obtained data, the dominance of the results of girls over the boys' indices on all the parameters studied was revealed. It should be noted that, based on the results of the angle body and side split, the observed differences are mostly reliable (p<0,01; 0,001), and according to the results of the execution of hand-wrenching – unreliable (p> 0,05), with the exception of the indicators of boys of the 5th grade, where the differences are reliable (p<0,01).

Comparing the results of the angle body with the norms presented by L. P. Sergienko [28], it was found that the results of schoolchildren of 5 and boys of 6 grades correspond to an evaluation of 1 point, girls of 6 grades – 2 points.

Comparing the results of the performance of the side split with the normative estimates presented by V. A. Romanenko [27], it was found that in boys they correspond to an evaluation of 3 points, and in girls – 4 points.

When comparing the results of the performance of arm twists with the norms presented by V. A. Romanenko [27], it was revealed that the data of schoolchildren of grades 5–6 correspond to an average level of mobility in the shoulder joints, which according to the scoring scale corresponds to 2 points respectively.

Thus, in schoolchildren aged 10–11 years, on average, the level of development of flexibility below the average.

Investigating obtained data after the application of specially selected cheerleading exercises in the process of physical education (Table 1), it was found that the students of all experimental groups showed the level of development of flexibility significantly and these changes are, as a rule, reliable (p<0,05–0,001).

Table 1

Indicators of the level of development of the flexibility of schoolchildren in experimental groups before and after the experiment

Period of study	Grade 5 Indicators, $\bar{X}\pm m$		Grade 6 $\bar{X}\pm m$	
Boys				
Angle body d from the initial sitting position (cm)				
Before experiment	(n=13)	3,2±0,60	(n=13)	3,9±0,68
After experiment		7,1±0,65		8,9±0,86
t		4,34		4,55
p		<0,001		<0,001
Side split (cm)				
Before experiment	(n=13)	28,3±2,53 2,53	(n=13)	27,4±1,90
After experiment		20,9±1,65		18,0±1,52
t		2,44		3,85
p		<0,01		<0,001
Wriggled hands with a gymnastic stick (cm)				
Before experiment	(n=13)	61,0±3,97	(n=13)	63,8±4,50
After experiment		58,1±3,16 3,16		59,5±3,49
t		0,56		0,76
p		>0,05		>0,05
Girls				
Angle body d from the initial sitting position (cm)				
Before experiment	(n=15)	6,3±0,90	(n=14)	9,2±1,64
After experiment		11,1±1,01		14,2±1,57
t		3,51		2,20
p		<0,001		<0,01
Side split (cm)				
Before experiment	(n=15)	16,3±3,16 2,59	(n=14)	14,9±1,45
After experiment		8,9±1,72		8,1±1,34
t		2,38		3,43
p		<0,01		<0,001
Twists hands with a gymnastic stick (cm)				
Before experiment	(n=15)	47,8±2,37	(n=14)	57,8±1,77
After experiment		45,8±1,70 1,70		54,6±1,38
t		0,69		1,43
p		>0,05		>0,05

Only exception is the results of the execution of the twists by the hands of all age groups studied, where the improvement of the results is not valid (p>0,05).

So, according to the angle body, in the boys of the 5th and 6th grades, the above indices improved more than twice; girls of the 5th grade – on 77,8%; 6th grade – on 54,3%. According to the results of the side split in boys of the 5th grade, the results improved by 26,1%; 6th grade – by 34,3%; in girls – by 45,3% and 45,7% respectively. According to the results of twists by the hands results, the boys of the 5th grade improved by 4,7%; 6th grade – by 6,8%; in girls, respectively, by 4,2% and by 5,6%.

Thus, the most significantly improved the results of schoolchildren of the 5th grade in terms of mobility of the spinal column and boys of the 6th grade according to mobility data in the shoulder joints.

Comparing the results of the schoolchildren of the experimental and control groups obtained after the expiration of the experiment (Table 2), the predominantly reliable prevalence of the results of the schoolchildren of the experimental groups over the control.

Considering the data of repeated studies of schoolchildren of experimental groups in the age and sex aspects, it should be noted that the tendency of differences remained unchanged compared to the initial data.

When analyzing the indicators of schoolchildren of control groups obtained after the experiment, it was found that they also changed somewhat, however, these changes are not significant and, as a rule, are not reliable (p>0,05).

So, according to the angle body, in boys of the 5th grade the results improved by 31,9%; 6th grade – by 20,6%; girls respectively 29,6%; 20,9%. According to the results of the angle body boys 5th grade results have improved by 9,4%; 6th grade – by 9,5%; in girls – by 8%; 11,9% respectively. According to the twists by the hands results, the boys of the 5th grade improved by 3,9%; 6th grade – by 1,3%; girls respectively – by 1,2%; 0,5%.

In the age and sex aspects, the results of schoolchildren in the control groups showed no significant changes in comparison with the baseline data.

When comparing the results of the angle body from the initial sitting position of schoolchildren of experimental groups with the norms presented by L. P. Sergienko [28], revealed that the results of girls of the 5th grade improved by 2 points and began to correspond to 3 points; boys of grades 5–6 improved by 1 point and began to correspond to 2 points; girls of the 6th grade improved by 2 points and began to correspond to 4 points.

Comparing the repeated indices of the schoolchildren of the experimental groups with the norms given in the work of V. A. Romanenko [27], it is determined that the results of performing the side split of the boys of all study groups improved by 1 point and began to correspond to the 4 points; the rates of girls of the 6th grade increased by 1 point in the same way and corresponded to 5 points; girls of the 5th grade, despite a significant increase, remained unchanged on the assessment scale, and also, as before the experiment, correspond to an assessment of 4 points.

When comparing the results of the performance of handwringing, it was revealed that the indicators of girls of the 5th grade increased from below the average to the average level and began to correspond to 3 points, the improvement in the indicators of boys of the 5th, schoolchildren of the 6th grades was not reflected on the scoring scale and they also and before the experiment, correspond to below average and low level of mobility of shoulder joints of schoolchildren of middle classes.

An analysis of the results obtained by schoolchildren in control groups revealed no changes in the level of development

Table 2

Indicators of the level of development of the flexibility of schoolchildren in experimental and control groups after the experiment

Grades		Group				t	p
		n	Experimental	n	Control		
		Indicators, $\bar{X}\pm m$					
Angle body from the initial sitting position (cm)							
5 grade	B	13	7,1±0,65	16	4,1±0,60	3,35	<0,001
	G	15	11,1±1,01	9	7,8±1,14	2,16	<0,05
6 grade	B	13	8,9±0,86	13	4,9±0,66	3,68	<0,001
	G	14	14,2±1,57	10	9,8±1,00	2,37	<0,01
Side split (cm)							
5 grade	B	13	20,9±1,65	16	26,8±2,22	2,10	<0,05
	G	15	8,9±1,72	9	15,1±2,03	2,32	<0,01
6 grade	B	13	18,0±1,52	13	24,3±2,48	2,17	<0,05
	G	14	8,1±1,34	10	13,3±1,63	2,48	<0,01
Twists hands with a gymnastic stick (cm)							
5 grade	B	13	58,2±3,16	16	64,1±1,97	1,59	>0,05
	G	15	45,8±1,70	9	53,9±2,06	3,03	<0,01
6 grade	B	13	59,5±3,49	13	65,5±1,33	1,59	>0,05
	G	14	54,6±1,38	10	62,0±2,55	2,56	<0,01

of flexibility in the study of all age groups for all studied parameters.

Thus, after using cheerleading activity at physical culture lessons, the indicators of the level of development of flexibility have significantly improved in schoolchildren of experimental groups. The most significant increase in the results is observed in boys and girls 10 years.

Consequently, the results of the study allow us to draw the following conclusions.

Conclusions

1. Data of the primary study of the level of flexibility development of schoolchildren of grades 5–6 in comparison with normative criteria correspond to an assessment of 2 points ("below average").

In the age aspect, in the main there is a significant improvement in the results with age in both boys and girls in the study groups ($p<0,05–0,001$). In the sexual aspect, the dominance of the results of girls over the data of boys ($p<0,01; 0,001$).

2. Inclusion in the process of physical education of cheerleading exercises positively influenced the level of development of the flexibility of schoolchildren of experimental groups, which corresponded to the average level of 3 points. The greatest increase in the indicators was registered among schoolchildren for 10 years. Indicators of the level of development of the flexibility of the children of the control groups after the experiment did not undergo significant changes.

Analysis of the results of repeated studies in the age and sex aspects did not reveal significant changes in comparison with the initial data.

3. Conducted researches testify to the positive influence of the complexes of cheerleading exercises offered by us on the level of development of students' flexibility of the 5th and 6th grades, which makes it possible to recommend physical education teachers to include in the educational process of physical education of middle school students the exercises for cheerleading.

Prospects for further research in this direction can be carried out by determining the degree of influence of cheerleading activities on the level of development of the speed of schoolchildren in the middle classes.

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