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Cheerleading exercises influence on 5-9th forms the schoolchildren's coordination abilities

Abstract. Purpose: to study cheerleading influence on individual demonstration types of coordination abilities for pupils of 5–9 forms. **Materials and Methods:** theoretical analysis and generalization of scientific and methodical literature, pedagogical testing, pedagogical experiment and mathematical statistics methods. **Results:** indicators of the development level of the ability to control the movements by the dimensional and temporal parameters, as well as degree of their change under Cheerleading training influence for pupils of 5–9 forms of a secondary school are presented. **Conclusions:** cheerleading usage had a positive influence on the degree of demonstration of individual forms of coordination abilities for secondary school pupils.

Keywords: coordination abilities, cheerleading, secondary school pupils.

Introduction. Now the unsatisfactory level of physical preparedness, functional state and health is noted among children of school age that is directly connected with the essential decrease in the general physical activity of pupils [1; 4; 5; 7; 8]. According to experts, the modern practice of physical training of pupils doesn't provide the necessary level of their physical preparedness [6]. In this regard the search of the most effective remedies and methods of the development of physical qualities, and, in particular, coordination abilities are necessary.

Coordination abilities occupy one of the central places (among other physical qualities) in the development and formation of the main morphological and functional structures of organism [11].

A number of experts (T. M. Bala, I. P. Maslyak, 2008, 2011; I. A. Kuzmenko, 2013, 2015; K. O. Olefirenko, 2014; R. I. Boychuk, 2015; V. Kirichenko, 2015, etc.) dealt with issues of the development of separate manifestations of coordination abilities in children of different age, due to a change or addition of the maintenance of lessons of physical culture with various means, methods and forms. However in available to us scientific and methodical literature it isn't revealed the works concerning the influence of cheerleading on indicators of the level of development of coordination abilities of pupils of the 5-9th classes that points to expediency of studying of the influence of exercises of cheerleading in the course of classes in physical culture at pupils of middle classes. It should be noted that cheerleading is one of the innovative means of physical training in Ukraine. According to E. A. Zhuchenko [14], classes by cheerleading promote the all-round development of the personality (physical, intellectual and spiritual), the formation of vital motive skills, and education of physical qualities. Thus, this scientific work is actual and timely.

Communication of the research with scientific programs, plans, subjects. The research was conducted according to the Consolidating plan of the RW in the sphere of physical culture and sport for 2006-2010 of the Ministry of Ukraine for family, youth and sport in the direction 3.1 "Improvement of the process of physical training of pupils in educational institutions" on a subject No. 3.1.4 "Improvement of the process of physical training of pupils in educational institutions of a different profile" (number of the state registration is 0106U011983) and to the thematic plan for 2011-2015 of Ministry of education, science, youth and sport of Ukraine in the direction 3. "Theoretical-methodological and technological bases of physical training and sport for all" on a subject No. 3.1 "Improvement of programmatically-standard principles of physical training in educational institutions" (number of the state registration is 0111U001733).

The objective of the research: to study the influence of cheerleading on separate forms of manifestation of coordination abilities of pupils of the 5-9th classes.

Material and methods of the research: theoretical analysis and generalization of scientific and methodical literature, pedagogical testing, pedagogical experiment and methods of mathematical statistics. The tests presented by V. A. Romanenko [13] were used namely for the definition of the level of development of ability to management of the movements on existential parameters of pupils of the 5-9th classes: a difference in run on 15 m by a face and a back forward (s), run by a "snake" of 30 m (s).

The researches were conducted on the basis of the comprehensive school No. 119 of Kharkov for 2010–2011 academic years. 255 pupils of the 5-9th classes took part in them from who five experimental and five control groups were made. All children who were taking part in the experiment were almost healthy and were under supervision of a school doctor.

During the research pupils of control groups were engaged only according to the standard program for general education educational institutions "Physical culture. 5–9 classes", and the educational process on physical training of pupils of experimental groups was added with the variable Cheerleading module developed by us which included such elements as: high V, low V, T motion, half T, muscle man, touchdown, tuck, spread eagle, double hook, Thigh stand, Staddle lift, Suspended split, etc. [3]. The specially picked up exercises of cheerleading made the maintenance of lessons of the Cheerleading module, and also joined in the preparatory part of a lesson of other variable modules, in the system of organized changes and were given in the form of homeworks.

Results of the research and their discussion. The received results of the primary research testify to lack of reliable distinctions in results of coordination tests of pupils of control and experimental groups on all studied parameters ($p > 0,05$).

In the analysis of the data reflecting an ability to orientation in space (a difference in run by a face and a back forward), generally reliable decrease in a difference in run on 15 m by a face and a back forward with age at boys ($p < 0,05–0,001$) and doubtful decrease in a difference in run at girls is revealed ($p > 0,05$). Thus the prevalence of results of boys is revealed

over indicators of girls, however these distinctions are doubtful ($p > 0,05$).

When comparing results of the research with the norms offered by V. A. Romanenko [13] the low level of ability to be guided in space at pupils of the 5-8th classes is found which according to a rating scale corresponds to 1 point. Results of pupils of the 9th classes weren't compared to norms because of the absence of those in available to us scientific and methodical literature.

After carrying out the experiment the reliable decrease in a difference in run on 15 m by a face and a back forward both at boys, and at girls of experimental groups is revealed ($p < 0,05-0,001$). The exception is made by indicators of boys of the 7th class where the difference in running by a face and a back forward decreased doubtfully ($p > 0,05$). So, at boys of the 5th class results improved for 26%; the 6th class – for 32,5%; the 7th – for 36,8%; the 8th – for 29,3% and the 9th class – for 23,5%, at girls respectively – for 20,3%; 22,3%; 31%; 22,5%; 23,2%. Thus, the most considerable gain in the indicators reflecting ability to be guided in space is noted at pupils of the 7th classes. Thus more essential gain in indicators of boys is recorded, than girls.

In the analysis of data in age and sexual aspects it is revealed that the tendency of distinctions remained invariable in comparison with the basic data. It should be noted that the prevalence of indicators of boys over the data of girls began to have a reliable character after the experiment ($p < 0,01-0,001$), except for results of pupils of the 7th class where distinctions are doubtful ($p > 0,05$).

Considering the results of pupils of control groups received after the experiment a minor change in indicators of run by a face and a back forward is revealed ($p > 0,05$). So, at boys of the 5th class results improved for 2,2%; the 6th class – for 2,3%; the 7th – for 2,5%; the 8th – for 1,8% and the 9th class – for 0,6%, at girls respectively – for 1,7%; 1,3%; 2,2%; 1%; 1,6%.

The comparison of these indicators depending on age and sex didn't reveal essential changes in comparison with the basic data.

The data of the studied experimental groups became authentically best of all than results of pupils of control groups after carrying out the experiment (tab.) ($p < 0,001$).

When comparing of the obtained data with the norms developed by V. A. Romanenko [13] it is revealed that results of boys of the 5-6th classes increased on 1 point and began to correspond to the below average level of the development of ability to orientation in space (2 points), the data of the studied 7-8th classes increased by 2 points and began to correspond to the average level of development of ability to orientation in space (3 points), the data of girls of the 5-6th classes also positively changed, however it wasn't reflected in a rating scale also they as well as before the experiment, answer the low level of development of ability to orientation in space. The analysis of results of pupils of control groups testifies that they also changed a little, however it wasn't reflected in a rating scale in any way.

Thus, cheerleading application, positively affected the extent of development of ability to orientation in space of the studied experimental groups. Indicators of pupils of the 7th classes improved most considerably.

Considering indicators of ability to the management of the movements on results of a performance of run by a «snake», generally the reliable improvement of results with age both at boys, and at girls of all studied groups is revealed ($p < 0,05-0,001$). Analyzing these data on a gender sign, it is revealed that indicators of boys are reliable better than results of girls ($p < 0,01-0,001$). The exception is made by the data of pupils of the 7th, 9th classes of control group where the prevalence of results of boys over indicators of girls are doubtful ($p > 0,05$).

When comparing of the received results with the norms presented by V. A. Romanenko [13] it is revealed that indicators of girls of the 5th classes correspond to an assessment 3 points, and boys of the 5th and pupils of the 6-9th classes an assessment 4 points that on a-level scale corresponds to an average and above an average to the level of development of coordination abilities.

After carrying out the experiment the reliable improvement of indicators both at boys, and at girls of experimental groups is received ($p < 0,05-0,001$). An exception indicators of boys of the 7th class, where the improvement of results are doubtfully ($p > 0,05$). At boys of the 5th class results improved for 4,7%; the 6th class – for 6,4%; the 7th – for 10,6%; the 8th – for 9,6% and the 9th class – for 8,6%; at girls for 3,8%; 14,7%; 14,1%; 11,8%; 12,6% respectively.

Thus, the most considerable gain in the indicators reflecting ability to management of the movements on existential and dynamic characteristics is noted at boys of the 7th and girls of the 6th of classes. Thus more essential gain in indicators of girls, than boys is recorded.

Analyzing the obtained data in age and in sexual aspects, it is revealed that the tendency of distinctions remained invariable in comparison with the initial research. Thus it should be noted that after the advantage of indicators of boys over data of girls began to have a doubtful character the experiment ($p > 0,05$), except for results of pupils of the 5th, 8th classes where distinctions are reliable ($p < 0,01; 0,001$).

Considering the results of pupils of control groups received after the experiment their minor change is revealed. So, at boys of the 5th class results improved for 0,6%; the 6th class – for 1,3%; the 7th – for 2,4%; the 8th – for 6,3% and the 9th class – for 2,5%, at girls respectively – for 0,7%; 1,2%; 2,6%; 1,4%; 1,5%. When studying these indicators depending on age and sex the lack of essential changes is revealed in comparison with the basic data.

After carrying out the experiment it is revealed (tab.) that the data of experimental groups are reliable better than results of pupils of control groups ($p < 0,05-0,001$).

The comparison of the received results in run by «snake» with the standard estimates presented by V. A. Romanenko [13] showed that results of girls of the 5th class increased by 2 points and began to correspond to an assessment of 5 points, the results investigated the 6-9th and boys of the 5th of classes increased on 1 point and also began to correspond to 5 points that corresponds to the high level of ability to management of the movements on existential characteristics. Thus the obtained data of pupils of control groups didn't reveal essential changes on a rating scale.

Thus, cheerleading application positively affected ability to management of the movements on existential characteristics

Comparison of average values of coordination abilities of pupils of experimental and control groups after the experiment

Classes	Groups				t	p	
	n	Experiment	n	Control			
Indicators, $\bar{X}\pm m$							
Difference in run on 15 m by a face and a back forward (s)							
5 class	B	13	1,59±0,07	16	2,19±0,08	5,87	<0,001
	G	15	1,81±0,06	9	2,30±0,08	5,11	<0,001
6 class	B	13	1,35±0,07	13	2,11±0,06	7,81	<0,001
	G	14	1,71±0,07	10	2,23±0,07	5,44	<0,001
7 class	B	19	1,22±0,05	14	1,96±0,10	6,93	<0,001
	G	6	1,47±0,07	10	2,27±0,10	6,36	<0,001
8 class	B	16	1,16±0,07	13	1,63±0,11	3,51	<0,001
	G	14	1,45±0,07	14	1,89±0,12	3,24	<0,001
9 class	B	12	1,14±0,06	12	1,56±0,10	3,52	<0,001
	G	16	1,39±0,06	6	1,88±0,15	2,98	<0,01
Run «snake» 30 m (s)							
5 class	B	13	5,88±0,16	16	6,28±0,07	2,23	<0,05
	G	15	6,85±0,10	9	7,46±0,12	3,87	<0,001
6 class	B	13	5,58±0,10	13	5,90±0,12	2,12	<0,05
	G	14	5,81±0,06	10	6,74±0,09	8,42	<0,001
7 class	B	19	5,30±0,15	14	6,01±0,14	3,51	<0,001
	G	6	5,60±0,22	10	6,24±0,20	2,18	<0,05
8 class	B	16	5,16±0,08	13	5,48±0,10	2,55	<0,01
	G	14	5,54±0,13	14	6,24±0,11	4,17	<0,001
9 class	B	12	5,11±0,09	12	5,42±0,10	2,33	<0,01
	G	16	5,33±0,08	6	6,08±0,11	5,43	<0,001

of pupils of experimental groups. The most essential gain in indicators is observed at boys of the 7-8th and girls of the 6-7th classes.

Conclusions. Thus, results of the research allow drawing the following conclusions:

1. The data of the primary research testify to the low level of development of ability to be guided in space and above an average level of development of ability to management of the movements on existential characteristics that answers the 1st and 4th points respectively.

In the age aspect the reliable improvement of results with age, both at boys, and at girls of the studied groups is generally observed ($p < 0,05 - 0,001$). In the sexual aspect it is revealed that indicators of boys in all studied parameters authentically prevail over results of girls ($p < 0,01 - 0,001$).

2. The inclusion in the process of physical training of exercises of cheerleading positively affected the level of development of ability to be guided in space and the level of development of ability to management of the movements on existential characteristics of pupils of experimental groups which increased on average by 1 point. The greatest gain in indicators is recorded at pupils of 12 years old. The studied indicators of pupils of control groups didn't undergo considerable changes after the experiment.

The analysis of results of the repeated researches in age and sexual aspect didn't reveal considerable changes, in comparison with the initial data.

3. The conducted researches testify to the positive influence of the offered by us sets of exercises of cheerleading on the level of development of separate manifestations of coordination abilities of pupils of the 5-9th classes that gives the chance to recommend to teachers of physical culture to include in the educational process on physical training of pupils of

middle classes the cheerleading exercises which are developed by us.

Prospects of further researches in this direction can be carried out by the definition of the extent of influence of classes by cheerleading on the level of the development of feeling of a rhythm of pupils of middle classes.

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