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Influence Of Cheerleading On Indicators Of Coordination Abilities Of 10-16 Year Old Schoolgirls.

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ABSTRACT

to define dynamics of development of coordination abilities under the influence of cheerleading at 10-16 year old girls. Cheerleading is innovative sport for our country. It unites in itself elements of choreography, acrobatics, gymnastics, sports and national dances. It is important that cheerleading is available to the engaged of any age and constitution of a body, it attracts with wealth and variety of various movements, efficiency of impact on an organism, staginess. researches were conducted on the basis of educational institutions of Kharkiv. 640 girls at the age of 10-16 years took part in them. During the experiment the educational process of students of control groups was based on types of motive activity, typical for these educational institutions (track and field athletics, volleyball, basketball). These classes included theoretical, technical and tactical training. And the educational process of girls of main groups included cheerleading (the basic movements by hands and legs, hopping elements, stunts, dancing combinations). Duration of classes was 45 minutes. Training was based on the principle from simple to difficult. the level of development of coordination abilities of 10-16 year old girls is investigated; differences in age aspect of indicators of development of various forms of manifestation of coordination abilities are considered: coordinations of movement (dexterity), ability to deduction of static balance and to management of movements on existential and dynamic characteristics; changes in the level of development of coordination abilities of the studied contingent after use of cheerleading exercises are revealed. 1) As a result of the research positive influence of cheerleading exercises on various parameters of coordination abilities of 10-16 year old schoolgirls is established.

Keywords: physical education, motive abilities, 10-16 year

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INTRODUCTION

Various aspects of health of modern youth were and remain the subject of close attention of researchers (Zakhozhiy & Dykyy, 2016; Keyl & Harris, 2013; Filenko et al., 2013; Quennerstedt, 2008; Podrigalo et al., 2016; Romanenko et al., 2018). Unfortunately, it is necessary to state about the steady tendency to decrease in the indicators reflecting the level of physical health at pupils of various educational institutions (Galamandjuk et al., 2017; Maslyak et al., 2016; Pomeshchikova et al., 2016; Azhippo et al., 2017; Aasland et al., 2017; Kuzmenko, 2017). The significant role is assigned to insufficient physical activity among factors which have an adverse effect on health of modern generation (Gabrys et al., 2018; Tingstrom & Nagel, 2017; Aygun & Cakir-Atabek, 2018).

Numerous researches proved high health-improving, developing, educational and emotional efficiency of systematic physical exercises (Aasland et al., 2017; Aghyppo et al., 2016; Andrieieva et al., 2017; Druz et al., 2017; Lyngstad, 2017; Wellard, 2011). At the same time a number of experts indicate the need of use of innovative means, forms and methods in the educational process of physical education (Danylevych et al., 2017; Braga et al., 2017; Krivoruchko, 2011) as traditional approach isn't always of interest to pupils, and sometimes even causes negative emotions.

Therefore, we consider that inclusion of cheerleading in the educational process on physical education is expedient. Cheerleading is innovative sport for our country. It unites in itself elements of choreography, acrobatics, gymnastics, sports and national dances. It is important that cheerleading is available to the engaged of any age and constitution of a body, it attracts with wealth and variety of various movements, efficiency of impact on an organism, staginess (Bala & Maslyak, 2014; Carrier & McKay, 2006; Chappell, 2005).

A number of authors enquired into the influence of cheerleading on organism of youth (Bala, 2012; Bala & Maslyak, 2011; Kryvoruchko et al., 2013; Kryvoruchko & Masljak, 2015; Ivanov & Burmakina, 2013; Pyatnickaya, 2015). They investigated influence of cheerleading exercises on the level of development of various physical qualities (Kryvoruchko et al., 2013; Ivanov & Burmakina, 2013; Pyatnickaya, 2015); on physical working capacity (Kryvoruchko & Masljak, 2015); physical health (Bala, 2012; Bala & Maslyak, 2011); physical development (Maslyak & Krivoruchko, 2016). At the same time the question of influence of cheerleading on he level of manifestation of coordination abilities of 10-16 year old girls in a prism of physical education remains unstudied. All above proves expediency of our research.

The purpose of the research is to define dynamics of development of coordination abilities under the influence of cheerleading at 10-16 year old girls.

MATERIAL AND METHODS

Participants:

Researches were conducted on the basis of educational institutions of Kharkiv. 640 girls at the age of 10-16 years took part in them. All children who participated in the research were related to main and preparatory medical groups. The informed consent to participation in the research was received from all participants.

Procedure (organization of the research):

7 control and 7 main groups were created: the 1st group – 10 year old girls, the 2nd group – 11 year old girls, the 3rd group – 12 year old girls, the 4th group – 13 year old girls, the 5th group – 14 year old girls, the 6th group – 15 year old girls, the 7th group – 16 year old girls. During the experiment the educational process of students of control groups was based on types of motive activity, typical for these educational institutions (track and field athletics, volleyball, basketball). These classes included theoretical, technical and tactical training. And the educational process of girls of main groups included cheerleading (the basic movements by hands and legs, hopping elements, stunts, dancing combinations). Duration of classes was 45 minutes. Training was carried out in several stages: 1 stage – training in basic movements, 2 stage – training in basic jumps, 3 –

training in stunts and pyramids, 4 – combination of the studied elements in liaison movements, combinations. Training was based on the principle from simple to difficult.

Research methods

Theoretical analysis and synthesis of data of scientific and methodical literature, pedagogical testing, pedagogical experiment, methods of mathematical statistics were used.

Pedagogical testing assumed determination of the level of development of coordination abilities. Were investigated: ability to coordination of movements on results of performance of shuttle run (s); ability to maintenance of static balance – the test "Flamingo" (the number of attempts of preservation of a pose within 1 minute); ability to management of movements on existential and dynamic characteristics – run by "snake" of 30 m (s).

Test 1. Shuttle run 4 × 9 m (s). On the command of "Ready!" the examinee holds position of high start behind the starting line. On the command "Go!" the participant of testing runs 9 meters to other line, takes one of two, in advance placed wooden cubes in a circle, comes back to the starting line and puts a cube. Then runs behind the second cube and, reaching the starting line, puts the second cube. Time from start till the moment when the participant of testing puts the second cube (s) is result of testing.

Test 2. "Flamingo" (number of times). The examinee stands on one leg (right) on a special support (50×3×4 cm), the second leg is bent in a knee and is kept by the left hand. The ability to keep balance was estimated by the number of attempts of preservation of a pose of "Flamingo" within 1 minute (number of times).

Test 3. Run by "snake" (s). Five racks 1,5 m high are established from the starting line at a distance of 30 m. The examinee becomes to the line of start. On the command "Go!" the examinee runs by "snake" between five racks. Time of overcoming of the set distance is result (s).

The received results were compared to a standard scale and estimated by a certain number of points.

Statistical analysis

Materials of the research were processed with use of the program Excel. Were estimated: an arithmetic average (\bar{x}) – for the characteristic of set in separate parameters; a standard mistake of an average (m) – for definition of deviation of an arithmetic average from the corresponding parameters of population; reliability of distinctions (p) – with the purpose to establish extent of changes of average sizes of the studied signs after the experiment by means of parametrical criterion of Student (t) at significance value not lower than 0,05.

RESULTS

The analysis of the received results demonstrate the lack of reliable differences in indicators of schoolgirls of control and main groups on all studied parameters ($p > 0,05$).

Studying of results of performance of shuttle run in age aspect, showed generally unreliable improvement at girls ($p > 0,05$) (tab. 1). Results of 14 and 15 year old girls, differences between which are reliable, are the exception ($p < 0,001$).

Comparing results of performance of shuttle run to norms [34], it is revealed that indicators of 10-14 year old girls correspond to assessment 4 points, 15-16 year old girls – assessment 2 points that corresponds respectively to the level "above the average" and "low" of development of dexterity.

After the experiment the reliable improvement of indicators at girls of main groups ($p < 0,05 - 0,001$) is revealed, except for indicators of 12 year old girls where improvement of results is unreliable ($p > 0,05$), (fig. 1). So, the gain of results at 10 year old girls made 4,5%, 11 years – 5,9%, 12 years – 5,2%, 13 years – 5,2%, 14

years – 4,5%, 15 years – 2,5%, 16 years – 3,0%. Thus, the most essential gain in indicators of the level of development of dexterity is noted at 11 year old schoolgirls.

Table 1: Comparison of average values of the level of development of coordination abilities of girls of main and control groups before the experiment

Age	Groups	n	Shuttle run 4x9	«Flamingo»	Run by «snake»
			m (s)	(number of times)	30 m (s)
Indicators $\bar{X} \pm m$					
10 years old	Main	15	12,03±0,14	24,3±0,54	7,12±0,07
	Control	9	12,36±0,20	24,2±0,61	7,41±0,13
	t		1,34	0,14	1,98
	p		>0,05	>0,05	>0,05
11 years old	Main	14	11,75±0,28	22,6±0,71	6,81±0,19
	Control	10	11,84±0,22	22,9±0,91	6,82±0,15
	t		0,25	0,22	0,05
	p		>0,05	>0,05	>0,05
12 years old	Main	6	11,47±0,21	20,7±0,97	6,52±0,14
	Control	10	11,56±0,19	20,5±0,45	6,42±0,20
	t		0,33	0,16	0,39
	p		>0,05	>0,05	>0,05
13 years old	Main	14	11,26±0,17	19,1±0,74	6,28±0,12
	Control	14	11,38±0,18	19,3±0,61	6,33±0,13
	t		0,46	0,15	0,29
	p		>0,05	>0,05	>0,05
14 years old	Main	16	11,06±0,17	17,6±0,55	6,10±0,10
	Control	6	11,18±0,16	17,7±0,97	6,17±0,25
	t		0,52	0,04	0,24
	p		>0,05	>0,05	>0,05
15 years old	Main	75	11,34±0,10	3,25±0,18	7,43±0,06
	Control	23	11,41±0,14	3,39±0,32	7,56±0,11
	t		0,41	0,37	1,00
	p		>0,05	>0,05	>0,05
16 years old	Main	108	11,29±0,09	2,66±0,16	7,24±0,06
	Control	34	11,37±0,15	2,82±0,25	7,33±0,15
	t		0,47	0,55	0,56
	p		>0,05	>0,05	>0,05

Results of pupils of control groups also a little changed, however these changes are inessential and unreliable ($p>0,05$). So, indicators improved by 2,1% at 10 year old girls, 11 years – 1,7%, 12 years – 0,5%, 13 years – 0,8%, 14 years – 0,1%, 15 years – 1,9%, 16 years – 2,5%.

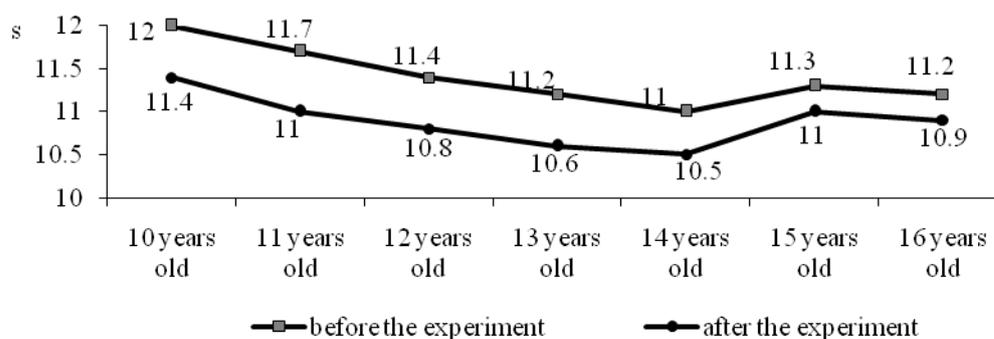


Fig 1: Age comparisons of indicators of the level of development of dexterity of 10-16 year old schoolgirls of main groups before and after the experiment

It should be noted that the reliable prevalence of results of girls of main groups over control is revealed when comparing repeated results of pupils of main and control groups ($p < 0,05 - 0,001$).

Comparison of the results of shuttle run, received after the experiment with norms (Sergienko, 2005), showed that they improved on 1 point at the studied main groups of all ages and began to correspond to assessment of 5 points ("high" level) at the studied of 10-14 years and assessment 3 points ("average" level) – at the studied of 15-16 years.

The studied control groups have results of shuttle run, as well as before the experiment, correspond to assessment 4 points at 10-14 year old girls, 2 points at 15 year old girls. Indicators of 16 year old girls, which increased by 1 point and began to correspond to assessment 3 points, are the exception.

Thus, use of cheerleading elements in the course of physical education positively affected the level of development of dexterity of 10-16 year old pupils.

The analysis of indicators of development of static balance revealed, generally the reliable improvement of results with age ($p < 0,05 - 0,001$) (tab. 1). At the same time it should be noted that age improvement of results is unreliable between indicators of schoolgirls of adjacent age groups (10-11, 11-12, 12-13, 13-14, 15-16), except for results of 14-15 year old girls, differences between which are reliable ($p < 0,001$).

Comparison of results of performance of balance on one leg with norms (Romanenko, 2005), showed that data of 10-14 year old girls correspond to the level "below the average" (2 points) of development of static balance, 15-16 year old girls– "above the average" (4 points).

It is revealed after carrying out the experiment that indicators of execution of the test "Flamingo" considerably improved and these changes have reliable character at schoolgirls of main groups ($p < 0,01-0,001$), (fig. 2). Results improved by 23,3% at 10 year old girls; 11 years – by 25,2%; 12 years – 34,3%; 13 years – 29,5%, 14 years – 29,1%, 15 years – 37,5%, 16 years – 40,6%. Thus, the most considerable gain is noted at 12, 15 and 16 year old girls.

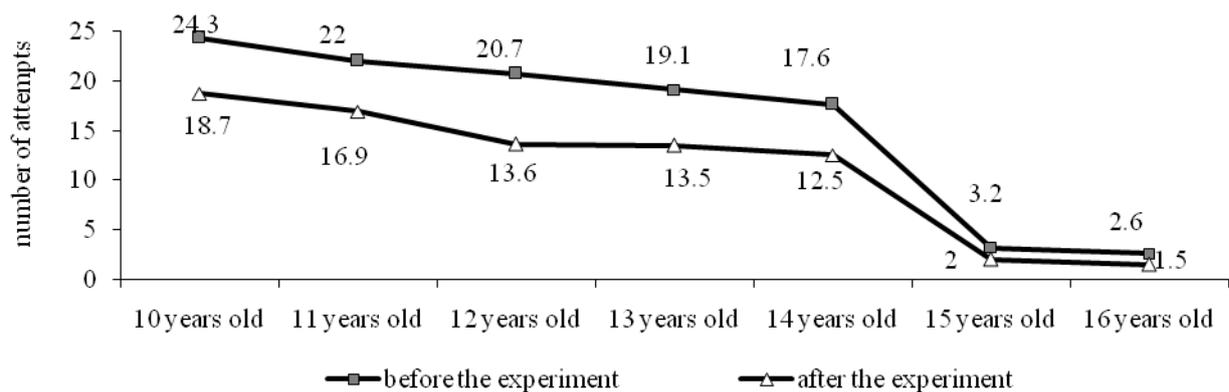


Fig 2: Age comparisons of average values of the level of development of static balance of 10-16 year old schoolgirls of main groups before and after the experiment

It is revealed in the analysis of repeated indicators of pupils of control groups, that they also a little changed, however these changes are insignificant and, as a rule, are unreliable ($p > 0,05$). So, results improved by 5,0% at 10 year old girls; 11 years – by 7,0%; 12 years – 5,8%; 13 years – 5,6%, 14 years – 8,5%, 15 years – 20,3% and 16 years – 16,6%.

It should be noted that the reliable prevalence of results of the studied main groups over control is revealed when comparing repeated results of schoolgirls of main and control groups ($p < 0,05 - 0,001$).

Comparison of results of execution of the test "Flamingo" of pupils of experimental groups with norms [35], showed that they increased by 1 point, and began to correspond to the "average" level of development (3 points) at the studied of 10-14 years and to the "high" level (5 points) at the studied of 15-16 years. Comparison of indicators of pupils of control groups didn't reveal changes on a rating scale of development of static balance.

Thus, use of cheerleading in the course of physical education positively affected ability to maintenance of static balance of 10-16 year old pupils.

Considering indicators of ability to management of movements on existential and dynamic characteristics by results of run performance by "snake", generally the reliable improvement of results with age at girls of all studied groups is revealed ($p < 0,05 - 0,001$) (tab. 1).

When comparing of the received results with norms (Romanenko, 2005), it is revealed that indicators of of 10 year old girls correspond to assessment 3 points, 11-14 year old girls - to assessment 4 points, 15-16 year old girls to 2 points that on a-level scale corresponds to "average", "above the average" and "below the average" to the level of development of coordination abilities.

After carrying out the experiment, the reliable improvement of indicators at girls of main groups is revealed ($p < 0,05 - 0,001$), (fig. 3). So, results improved by 3,8% at the studied of 10 years; 11 years – 14,7%; 12 years – 14,1%; 13 years – 11,8%, 14 years – 12,6%, 15 years – 8,7%, 16 years – 8,0%. Thus, the most considerable gain in the indicators reflecting ability to management of movements on existential and dynamic characteristics is noted at 11 year old girls.

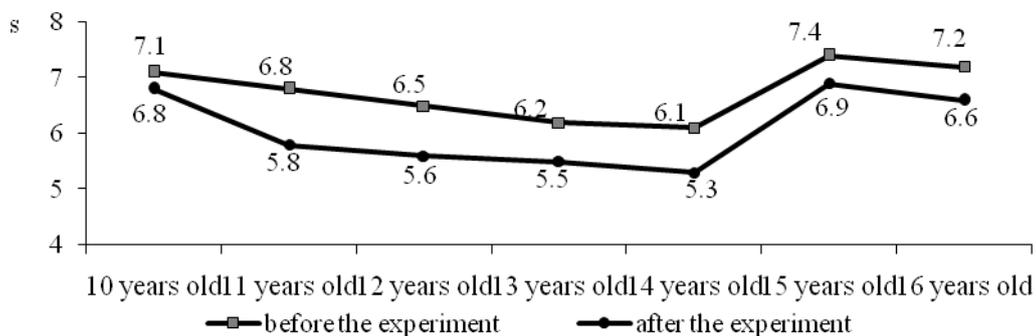


Fig 3: Age comparisons of average values of the level of development of ability to management of movements on existential and dynamic characteristics (run by "snake") of 10-16 year old schoolgirls of main groups before and after the experiment

Considering the results of schoolgirls of control groups, received after the experiment, their minor change is revealed. So, results improved by 0,7% at 10 year old girls; 11 years – 1,2%; 12 years – 2,6%; 13 years – 1,4%, 14 years – 1,5%, 15 years – 2,1%, 16 years – 4,3%. It is revealed that data of schoolgirls of main groups is reliable better than results of the studied of control groups ($p < 0,001$).

Comparison of the received results with standards showed their increase at 10 year old girls at 2 points, at the studied of 11-14 years on 1 point and owing to what they began to correspond to assessment – 5 points ("high" level). Results of 15-16 year old girls improved on 1 point and began to correspond to assessment 3 points ("average" level) of development of ability to management of movements on existential and dynamic characteristics. At the same time essential changes in a rating scale aren't revealed in the received these pupils of control groups.

Thus, use of cheerleading positively affected ability to management of movements on existential and dynamic characteristics of schoolgirls of main groups. The most essential gain in indicators is observed at year old 11-12 girls.

Analyzing the repeated results of the level of development of coordination abilities in age aspect, it is revealed that the tendency of distinctions remained invariable in comparison with the initial research.

On the basis of the above it is possible to summarize that inclusion in the educational process on physical education of cheerleading positively affected the level of development of coordination abilities of 10-16 year old schoolgirls. The most considerable shifts are noted at 12, 15 year old girls.

DISCUSSION

The analysis and generalization of scientific and methodical literature showed that the question devoted to studying of the level of physical fitness in general or separate physical qualities, was considered by many authors. Results of their researches demonstrate insufficiently high or low levels of development of the studied parameters. It confirms the obtained by us basic data of the level of development of coordination abilities of 10-16 year old girls, which is insufficient.

Analyzing indicators of the level of development of coordination abilities received after the experiment, it is revealed that they considerably improved and these distinctions, generally have reliable character at schoolgirls of main groups of all ages ($p < 0,05 - 0,001$).

The most essential gain is recorded in indicators of ability to maintaining balance of 12, 15 and 16 year old girls that it will be agreed with results (Kuramshyn, 2004) according to which this ability reaches the level characteristic of adults at girls by 10–12 years. The established positive changes in the level of development of coordination of movement are explained by intensive development of small muscles at this age that promotes increase in accuracy of movements and coordination opportunities on which development essential impact is made by physical exercises (Zhukov & Yezhova, 2004; Zilov & Smirnov, 2008). Results of 11 year old girls changed most significantly that will be coordinated with data (Romanenko, 2005; Lyah, 2006; Kholodov & Kuznetsov, 2000) according to which reserves for increase in coordination abilities and their separate parameters at systematicity and focus of influence in the course of physical education remain in this age period. The revealed positive changes in indicators of ability to management of movements on existential and dynamic characteristics of 11-12 year old girls will be coordinated with data (Volkov, 1998, 2002; Zemtsova, 2008) according to which this ability improves from 11 to 13–14 years.

Analyzing the results of pupils of control groups received after the experiment it is defined that they also a little improved, however these changes are inessential and unreliable ($p > 0,05$).

CONCLUSIONS

Use of cheerleading in the course of physical education positively affected the level of development of coordination abilities of 10-16 year old schoolgirls. In our opinion, the gain in indicators is explained by use in the course of cheerleading classes of a large number of the exercises demanding manifestation of high coordination.

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