INFLUENCE OF HORTING ELEMENTS ON THE LEVEL OF MOTOR PREPARATION OF 15 YEAR OLD PUPILS

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Abstract. Indicators of the level of physical preparation at the 10th grades pupils of general secondary education institutions and also their changes under the influence of specially selected horting exercises are given in the article. It was established that the inclusion of horting exercises affected positively the level of motor preparation in the physical education process of pupils of main groups, which began to meet the "above average" level.

Keywords: horting, variable module, physical qualities, high school students.

Introduction. Nowadays the issue of increasing the level of physical preparation and improving the younger generation health is becoming increasingly urgent. Statistics show that the number of children who have health deviations and low level of physical preparation increases every year. Experts consider that one of the main reasons for this situation is insufficient motor activity of pupils, which progresses every year [2, 6–7].

In order to solve this problem, it is necessary to find modern innovative technologies of physical education, which will contribute to increasing the level of physical preparation of pupils [2, 4, 9]. A number of researchers note in their works the positive influence of various specially selected exercises on the level of development of individual motor abilities and physical preparation of pupils of different ages [1, 3, 5, 8]. However, it should be noted that the analysis of the literature shows that there isn’t enough work that would touch upon the problem of influence of horting exercises on the level of physical preparation of high school

students, which proves the expediency of our research.

Connection of the work with scientific programs, plans, themes. The research was conducted in accordance with the Thematic Plan of the research work of Kharkiv state academy of physical culture for 2016–2020 under the theme "Improvement of physical education in various educational institutions" (the state registration number 0115U006754) and for 2020–2026 "Improvement of the physical education process of different segments of the population" (the state registration number 0120U101110).

The purpose of the research is to determine changes in the level of physical preparation of the 10^{th} grades pupils under the influence of horting elements.

Material and methods of the research. The research was carried out on the basis of the comprehensive school № 150 in Kharkov step by step during 2016–2017 years. They were attended by 47 pupils of the 10^{th} grades, of which 1 main and 1 control group were made. The main group included 23 pupils (11 boys and 12 girls), the control group – 24 pupils (12 boys and 12 girls). All the children who took part in the experiment were almost healthy and under the supervision of a school doctor.

During the experiment pupils of control groups were engaged only in the generally accepted program for general secondary education institutions "Physical culture. The 10^{th}–11^{th} grades" and the educational process on physical education of pupils of main groups were supplemented by the variable module "Horting". Specially selected horting exercises made up the contents of the module lessons "Horting", and were also included in the preparatory part of the lesson of other types of variable modules, in the system of organized breaks and were given in the form of homework.

The following **methods** were used to solve the tasks: theoretical analysis and generalization of scientific methodological literature, pedagogical testing, pedagogical experiment and methods of mathematical statistics.

The level of physical preparation of high school students was determined by the performance indicators of motor tests proposed by V. A. Romanenko [10], L. P. Serhiienko [11].

Results of the research and their discussions. Analyzing the obtained results, the absence of reliable differences in the indicators of pupils of control and main groups was found by all the analyzed parameters ($p>0,05$).

Considering the obtained data, which show the degree of manifestation of power abilities in the sexual aspect, it was found that the result of boys significantly higher than the indicators of girls and these differences are reliable ($p<0,001$).

Comparing the indicators of arm bending and extension lying with the normative estimates offered by L. P. Serhiienko [11], it was found that the results of boys of the10th grades meet the rating of 4 points, and the data of girls – 3 points, which is equal to the "above average" and "average" levels of force development respectively.

Analyzing the results of torso inclination forward by gender, it was found that the indicators of girls are reliably better than the results of boys ($p<0,001$).

When comparing the obtained data with the norms presented by V. A. Romanenko [10], we found that the indicators of the10th grades boys meet the rating – 2 points, and the results of girls – 3 points. This indicates the "low" level of flexibility development for boys and the "below average" level for girls.

Considering the obtained indicators, which characterize the level of speed development in the sexual aspect, it was found that the results of boys prevail over the data of girls and these differences are reliable ($p<0,001$).

Comparing the noted indicators with the evaluation scale [11], it was established that boys' results of running on 60 m meet the score of 3 points, and the data of girls' – score of 2 points, which testifies to the "average" level of speed development at boys and the "low" level at girls.

It was found that the results of boys dominate the data of girls and these differences are reliable in the investigated data, which characterize the level of development of coordination abilities in the sexual aspect ($p<0,01$).

Comparing this data with the evaluation scale [10], we found that the results of the 10th grades pupils meet the score of 4 points. This shows that the ability to show

dynamic parameters of movements of high school students meets the "above average" level.

Analysis of the results, which show the level of endurance development by gender, it was found that results of boys are reliably higher than indicators of girls ($p<0,01$).

When comparing the obtained data with the norms proposed by L. P. Serhiienko [11], it was found that the indicators of the 10th grades pupils meet the rating of 2 points, which indicates the "low' level of endurance development at 15 year old pupils.

On the basis of the analysis of results of the carried out by us research, it can be stated that the level of motor preparation 15 year old pupils on average meets – 3 points, which is equal to the "average" level.

Comparing the results obtained after the introduction of horting elements into the physical education process (Table 1), it was found that the results of pupils of the main group improved both at boys and at girls. The reliable differences are observed in the results of arm bending and extension lying, throwing a small ball to the range and serial jumps up, where the results are reliable ($p<0,05–0,001$).

The trend of differences remained unchanged in comparison with the initial data by gender, that is, the results of boys dominate over the indicators of girls ($p<0,01$).

When comparing the obtained data of pupils of control groups, we found a slight and unreliable improvement in the results ($p>0,05$). The analysis of results in the sex aspect didn't find changes compared to the initial data.

Comparing the data of pupils of main and control groups, the results of pupils of the main group were found to prevail reliably over the indicators of the control group ($p<0,05–0,01$), except for running on 60 m, where the differences are unreliable ($p>0,05$).

Comparing the results obtained after the introduction of horting elements into the physical education process with the normative estimates, it was found that the results of the 10th grades pupils improved by one point by the girls' results at

performing jumps up, throwing a small ball to the range, torso inclination forward and arm bending and extension lying.

Table 1

The comparison of average indicators of motor abilities at pupils of the main group before and after the experiment

Indicators	Before the experiment	After the experiment	t	p
	X±m			
	(n=11) *Boys* (n=11)			
Arm bending and extension lying (number of times)	33,78±1,01	42,64±0,98	2,27	<0,01
Torso inclination forward (cm)	9,8±2,89	11,30±1,48	1,24	>0,05
Running on 60 m (s)	10,27±0,18	10,02±1,25	0,98	>0,05
Throwing a small ball to the range (m)	65,78±1,07	70,56±1,20	2,31	<0,01
Serial jumps up (number of times)	33,15±1,06	37,21±1,78	2,01	<0,05
(n=12) *Girls* (n=12)				
Arm bending and extension lying (number of times)	15,48±0,33	22,54±1,05	3,86	<0,001
Torso inclination forward (cm)	14,10±3,04	16,32±2,51	1,25	>0,05
Running on 60 m (s)	11,31±0,18	10,28±0,72	2,05	>0,05
Throwing a small ball to the range (m)	31,71±2,06	42,48±0,97	3,71	<0,001
Serial jumps up (number of times)	26,04±1,26	29,41±1,86	2,34	<0,05

The exception is indicators of running on 60 m of both investigated groups and arm bending and extension at boys. Where the results improved, but this didn't appear on the evaluation scale, and they as well as before the experiment are equal to 3 points at boys and 2 points at girls on indicators of running on 60 m and rating 4 points after results at performance of arm bending and extension at boys.

Determining the level of motor preparation of pupils of the main group after the experiment, it was established that it improved from the "average" level to the "above average" level both at boys and at girls. The most significantly improved results of arm bending and extension lying and serial jumping up.

From the above, we can sum up that using the specially selected horting exercises in the physical education process positively affected the level of physical preparation of high school students.

Conclusions:

1. The data of primary research show the "average' level of physical preparation for the 10th grades pupils.

The prevalence of boys' results over girls' indicators was found in the sexual aspect ($p<0.01–0.001$).

2. The introduction of horting exercises in the physical education process of the 10th grades pupils of the main group positively affected the level of their physical preparation, which began to meet the "above average" level. The indicators of pupils of control groups didn't experience significant changes after the experiment.

3. The analysis of results of the repeated researches in the sexual aspect didn't reveal significant changes in comparison with the initial data.

4. The carried out research showed the positive influence of horting exercises on the level of motor preparation at the 10th grades pupils, which provides an opportunity to recommend physical culture teachers to include horting exercises in the educational process on physical education of high school students.

The further research prospect can be pursued by determining the extent of influence of horting activities on physical health indicators of high school students.

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