

THE LEVEL OF MANIFESTATION OF SPEED ABILITIES AT SENIOR PUPILS

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Abstract. The analytical data of the level of development of speed abilities at senior pupils are given in the article. It is determined that indicators of manifestation of speed abilities at 16–17 year old pupils are “below the average” level. The dominance of boys’ results over girls’ data ($p < 0,05–0,001$) and, mainly, the slight improvement in indicators with age ($p > 0,05$) are established in sexual and age aspects.

Keywords: physical qualities, speed abilities, senior pupils, physical education.

Introduction. The preservation of nation’s health, especially of the younger generation, is a priority for the socio-economic development of our State. However, the results of recent researches confirm the negative trend of deterioration of state of health of the population of Ukraine, including children of school age [1; 9; 12; 14]. The serious causes of deterioration of pupils’ health are the lack of motor activity; the loss of popularity of physical cultural and sports activities; the indifference to physical culture lessons; the spread of harmful habits, especially among senior children and etc. [4; 11].

There is no doubt that the lack of movements leads to the decrease in the level of functional and motor preparedness of pupils and physical education is effective means of compensating for the lack of motor activity [3; 5].

However, the leading experts point out that the existing system of physical education in general secondary education institutions needs fundamental changes that will contribute to the solution of the noted problem [6; 9]. Therefore, modern

scientific researches are aimed at finding new approaches to solving the current issue - to increase the level of development of physical qualities at children of different ages. So, in order to improve the physical training process, specialists propose using the cheerleading exercises [2]; the differentiated study [7; 8; 10]; the assessment of the level of physical preparedness taking into account indicators of physical development [4]; the introduction of athletic gymnastics, wellness running and basic aerobics [13] and etc.

At the same time, it should be noted that the selective effectiveness of means, methods and forms of physical education mainly depends on the assessment of the initial level of development of physical qualities of pupils, directly different forms of speed. Therefore, in our opinion, the research of the level of development of speed abilities at senior students is relevant.

Connection of the work with scientific programs, plans, themes. The research was conducted according to the Thematic Plan of the research work of Kharkiv state academy of physical culture under the theme “Improvement of the physical education process of different segments of the population” for 2020–2026 (the state registration No. 0120U101110).

The purpose of the research is to research the level of development of speed abilities at the 10th–11th grades pupils.

Research tasks:

1. To determine the level of development of speed abilities at 16-17 year pupils.
2. To carry out the comparative analysis of the obtained indicators in sexual and age aspects.

Material and methods of the research. The research was attended by 64 senior pupils of the school № 150 in Kharkov. All the pupils, who took part in the research, were almost healthy and under the supervision of the medical worker. The following methods were used to achieve this purpose: theoretical analysis and synthesis of scientific literature; pedagogical testing; methods of mathematical statistics. The manifestation of speed abilities was determined by indicators of motor

tests proposed by V. O. Romanenko [15]. The development of simple motor reaction was investigated by the “*relay*” test – grip of a falling stick (cm); frequency of movements was examined by the “*tapping test*” for 10 seconds (number of times); complex rate manifestation was examined by the test running on 60 m (sec).

Results of the research and their discussions. The performed analysis of indicators of the “*relay*” test in the age aspect (Tab. 1) determined that the results of boys are reliably higher than girls’ data ($p < 0,05$; $0,01$).

Table 1

The comparison of development indicators of speed abilities at the 10th-11th grades pupils in the sexual aspect

Grades	n	Boys	n	Girls	t	p
	Indicators $\bar{X} \pm m$					
“Relay” test (cm)						
10 grade	15	17,54±0,57	18	18,07±0,49	2,07	<0,05
11 grade	16	17,18±0,44	15	18,09±0,59	3,51	<0,01
“Tapping test” for 10 s (number of times)						
7 grade	15	60,80±6,17	18	53,00±11,88	7,53	<0,001
8 grade	16	63,50±9,33	15	53,06±14,20	8,43	<0,001
Running on 60 m (sec)						
7 grade	15	9,09±0,02	18	10,33±0,10	14,42	<0,001
8 grade	16	8,91±0,02	15	10,36±0,11	15,10	<0,001

The analysis of similar data in the age aspect (Tab. 2) determined that indicators of the 11th grades boys are better than data of the 10th grades boys, but these differences are insignificant ($p > 0,05$). The slightly different trend is found in indicators of girls (Tab. 2). It was established that the results of the 10th grades girls are insignificantly higher than data of the 11th grades girls ($p > 0,05$).

The comparison of average indicators of the “*relay*” test with the normative estimates presented by V. A. Romanenko [15] determined that the average results of the 10th–11th grades pupils are the rating of 3 points.

Analyzing the results of performing the “*tapping test*” in the sex aspect (Tab. 1), the reliable dominance of boys’ indicators over girls’ data is established ($p < 0,001$). It is defined in the age aspect (Tab. 2) that indicators of the 11th grades

boys are higher than data of the 10th grades and these differences are reliable ($p < 0,05$). Age differences are insignificant ($p > 0,05$) in girls' indicators (Table. 2).

The comparison of results of the “tapping test” with the normative estimates [15] indicates that indicators of the 10th–11th grades pupils are the rating of 2 points.

Table 2

The comparisons of development indicators of speed abilities at the 10th–11th grades pupils in the age aspect

Grades	n	10 grade	n	11 grade	t	p
	Indicators $\bar{X} \pm m$					
“Relay” test (cm)						
Boys	15	17,54±0,57	16	17,18±0,44	1,39	>0,05
Girls	18	18,07±0,49	15	18,09±0,59	0,08	>0,05
“Tapping test” for 10 s (number of times)						
Boys	15	60,80±6,17	16	63,50±9,33	2,70	<0,05
Girls	18	53,00±11,88	15	53,06±14,20	0,05	>0,05
Running on 60 m (sec)						
Boys	15	9,09±0,02	16	8,91±0,02	3,27	<0,01
Girls	18	10,33±0,10	15	10,36±0,11	0,28	>0,05

Considering the data of running on 60 m in the sexual aspect (Tab. 1) it is established that indicators of boys are reliably better than results of girls ($p < 0,001$). Analyzing the marked data in the age aspect (Tab. 2) it was found that results of the 11th grades boys are better than indicators of the 10th grades and these differences are reliable ($p < 0,01$). The comparison of girls' data didn't find significant differences with age ($p > 0,05$).

The comparison of indicators of running on 60 m with the normative estimates [15] determined that boys' results of both age groups are the rating of 3 points and indicators of girls - the rating of 2 points.

Summarizing the obtained indicators of the manifestation of simple motor reaction, frequency of movements and complex manifestation of speed, we concluded that the general level of development of speed abilities at 16-17 year old pupils is equal to the score of 2,4 points (“below level average” the).

Conclusions:

1. The conducted research determined “below the average” level of manifestation of speed ability at 16-17 year old pupils (manifestation of simple motor reaction – 3 points, frequency of movements – 2 points, complex manifestation of speed – 2,5 points).

2. In the sexual aspect there is a significant dominance of boys’ indicators over girls’ data on all the studied parameters ($p < 0,05 - 0,001$).

3. In the age aspect it was found that the results of pupils improve with age, but these differences are mainly insignificant ($p > 0,05$), except for boys’ indicators of the “tapping” test and running on 60 m, where the age differences are reliable ($p < 0,05; 0,01$).

The further research prospect is the development of special exercise complexes aimed at improving the level of development of speed abilities of senior pupils and determining their effectiveness.

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