New approaches in assessing the coordination abilities of student youth

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Abstract

Objective of the study was to determine the effectiveness of the test for assessing the coordination abilities of students of higher educational institutions.

Methods and structure of the study. The experiment involved 5-year students of universities in the city of Belgorod in the amount of 300 people. They were offered to perform motor and computer test tasks.

Results and conclusions. During the training of pilots, the "Gorelov Test" was used for a comprehensive assessment of coordination abilities. It was proposed to use this test to assess the coordination abilities of students. As a result of testing, data were obtained, the average time of the test in girls is better (7.92±0.25 s) than in boys (8.31±0.33 s). The average time spent on fulfilling 1 stimulus out of 9 was also calculated. And in this indicator, the time for girls (0.88±0.02 s) is better than for boys (0.92±0.03 s). When performing the test, the girls made fewer mistakes. It can be said that the Gorelov Test makes it possible to assess the coordination abilities associated with the body's ability to coordinate motor actions. As a result of the study, a comprehensive method for assessing the coordination abilities of students was determined. Validity assessment of the Gorelov Test showed a high correlation with a number of motor and computer tests.

Keywords: *physical training; coordination abilities; cadets; assessment of the level of preparedness; modified test; educational organizations of the Ministry of Internal Affairs.*

Introduction. Improvement of students' coordination abilities is an integral process of physical training and physical education. Modern studies [1, 2] indicate a close relationship between the effective mastering of educational material by students with timely diagnosis and improvement of coordination abilities by means of physical culture and sports.

Undoubtedly, a large role is assigned to coordination abilities in professional activity [3, 4]. Every day, specialists have to perform a complex of various motor actions. From coherence, which will depend on the effectiveness of professional activity [5, 6].

Bernstein N.A. noted that "coordination of movements is ensured by the interaction of all structures of movement construction due to sensory integration of the structures of the central nervous system" [7]. It can be said that coordination abilities mean a person's ability to accurately and quickly, efficiently and resourcefully solve various motor tasks [8, 9].

The development and improvement of physical abilities should take place under the full control of teachers providing the educational process [5]. Unfortunately, in educational organizations, regulatory documents provide for determining the level of development of coordination abilities only by shuttle running (10×10 meters, 4×20 meters). These test tasks cannot comprehensively assess the coordination abilities of young people. In this connection, there is a problem in finding effective means of assessing the development of coordination abilities in students.

Objective of the study was to determine the effectiveness of the test for assessing the coordination abilities of students.

Methods and structure of the study. In order to solve a certain problem, it was proposed to analyze literary sources in order to find informative means and methods for assessing the level of development of coordination abilities.

To test the proposed assessment method, 300 students from Belgorod universities were involved. Mostly students of the 5th year took part in the study.

They were offered to perform test tasks that allowed them to evaluate through motor actions "sense of time" (stop the stopwatch without visual control at certain marks), "sense of space" (three jumps of different lengths were performed), static coordination (Romberg's test), shuttle running 10×10 m, 4×20 m.

And it was also proposed to perform a number of test tasks using the "BioMouse Research": simple sensorimotor reaction (SSR), complex sensorimotor reaction (CSR), reaction to a moving object (RMO), distribution of attention (AD) and number addition (NA).

Results of the study and their discussion. An analysis of literary sources made it possible to reveal that during the training of pilots the "Gorelov Test" was used for a comprehensive assessment of coordination abilities. Currently available sources do not indicate that this test is widely used in the diagnosis of coordination abilities.

The essence of the test is to move by jumping, on specially prepared squares, for a while. Numbers are depicted on the squares, the number of squares was limited to 9. The task was to move, jumping on two legs, through the squares in ascending order from 1 to 9 or in descending order. At the beginning of the test, the subject did not see the location of the squares, and when performing a new attempt, the squares changed places. The total time spent on the test, the number of errors, and the average time to complete one stimulus were measured. Each subject was asked to perform three attempts, from which the average time was calculated. All measurements were performed with an electronic stopwatch.

As a result of testing, data were obtained, which are reflected in the table. As can be seen from the results obtained, the average test execution time for girls is better (7.92±0.25 s) than for boys (8.31±0.33 s). Also, the average time spent on the fulfillment of 1 stimulus out of 9 was calculated. And in this indicator, the time for girls (0.88±0.02 s) is better than for boys (0.92±0.03 s). When performing the test, the girls made fewer mistakes.

Validity was assessed for this test. The study involved students of 5 courses in the amount of 300 people. They were asked to complete other test tasks in addition to the Gorelov Test. Results that were compared using correlation analysis.

Results of the study and their discussion. On fig. Figure 1 shows the levels of connection between the results of the "Gorelov Test" and test tasks, which made it possible to evaluate coordination abilities through motor actions.

As can be seen from the presented figure, a high positive relationship was noted in the tests shuttle run 10 × 10 m (r - 0.55), 4 × 20 m (r - 0.57), the average positive relationship "sense of space" (r - 0.48).

It can be said that the "Gorelov Test" makes it possible to assess the coordination abilities associated with the body's ability to coordinate motor actions. On the other hand, after the "Start" command, the subject needs to evaluate the entire area with numbers and correctly perform jumps over the squares. Also during the test, the subjects realize that this test is performed as quickly as possible for the time being.

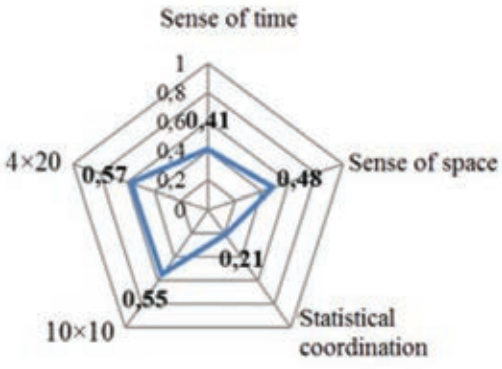

Figure 1. *The relationship of motor tests with the "Gorelov Test"*

Figure 2 shows the levels of connection between the results of the "Gorelov Test" and test tasks that were performed using the "BioMouse Research".

There is a high positive relationship in tests using "BioMouse Research", addition of numbers (r - 0.55), distribution of attention (r - 0.52) and reaction to a moving object (r - 0.47).

The presented battery of tests evaluated the relationship of the Gorelov Test with the cognitive processes of students. It can be said that when performing the Gorelov Test, the subjects need to evaluate the location of the squares, for which the distribution of attention is responsible, think over the algorithm of

The results of testing cadets in the "Gorelov Test"

	Execution time, sec	**Average execution time of 1 stimulus,** sec	**Errors,** number
Girls	7,92±0,25	0,88±0,02	0,2±0,01
Youths	8,31±0,33	0,92±0,03	0,3±0,01

their actions, then correlate their movements for an accurate jump, with minimal time costs.

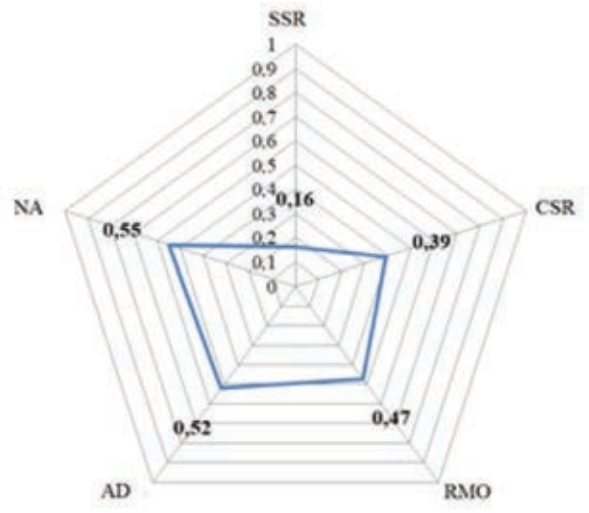

Figure 2. *The relationship of computer tests with the "Gorelov Test"*

Conclusions. As a result of the study, a comprehensive method for assessing the coordination abilities of students was determined. Validity assessment of the "Gorelov Test" showed a high correlation with a number of motor and computer tests.

Subsequent research and calculations should allow the development of a rating scale for the test. And as a result, the presented test can be recommended in the educational process of students of higher educational institutions for the purpose of a comprehensive assessment of coordination abilities.

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