

## DESCRIPTION OF HOW THE SPECIALIZATION INFLUENCES THE DYNAMICS OF THE FUNCTIONAL AND MOTOR ABILITIES AMONG THE THIRD TO FIFTH YEAR MALE STUDENTS

Chernenko S. A.

Donbass State Machine-Building Academy

**Annotation.** *Purpose:* To analyze the effect of specialization (football, basketball, athletic gymnastics) on the dynamics of functional and motor abilities of students of 3-5 years. *Material:* In pedagogical study involved 171 students. Recorded the following parameters: heart rate, running 100 meters, long jump from their seats, pull-up bar. *Results:* The analysis of the results of the index Rufe samples Stange, Genchi, Romberg. The dynamics of the development of functional status and motor abilities of students. The degree of influence of different breakout sessions focus on the development of functional and motor abilities in men. *Conclusions:* There is a significant improvement targets cardiovascular, respiratory, strength, agility, coordination, speed and power abilities in the process used specializations. **Keywords:** student, functional, motor, power, index, dispersive.

### Introduction

One of the factors of the modern society influencing student's way of life is the rigid regulation of school hours according to the schedule against acceleration of rates of life, a great amount of necessary information, rather wide expansion of addictions among youth, a household depression, a low level of physical activity [1, 7]. Implementation of various forms and means of carrying out physical training in educational process will allow not only to satisfy interest of youth in a choice of sports specializations, but also will promote development of athletic skills of an organism. In this regard search of the new improving technologies having effective impact on a gain of moving abilities of students in the course of studying is one of the problems of any changing society. Therefore studying of the matter demands the additional research directed on identification of dynamics of development of the higher school students' physical abilities.

In existing works on problems of physical training among youth the prevailing place is taken by the researches directed on studying of questions of professionally applied physical training [2, 3, 6, 10]. A large number of works is devoted to the determination of leading physical qualities and organism functions in formation of intellectual workers. So, S. I. Kirichenko (1998), N. I. Tonkov (1999) note that the speed and accuracy of movements, attention span and switch, the general endurance, and also intellectual, strong-willed, pedagogical, organizing and athletic skills are necessary for experts of an economic profile.

The researches directed on studying of techniques of vocational training of students by means of various means of physical training are of interest. So, S. V. Sergiyenko (2004) developed and proved a system of physical preparation by means of hand-to-hand fighting taking into account specifics of professional activity, I. N. Chaykin (1999) did it by means of sports orientation; S. V. Kalnitsky (2003) did it by means of mini-football, fitness [15], and various modes of training [14]. Just the formation of educational groups on the principle of sports specialization promotes the growth of indicators of physical and functional readiness in comparison with students who were engaged according to the program of the overall physical condition [8, 9]. Questions of studying of extent of impact of section occupations on physical qualities, and also a gain of athletic and functional abilities of an organism owing to the influence of other means of physical training for students of higher educational institutions are less taken up.

Due to the aforesaid the additional researches directed on the definition of influence of football, basketball, athletic gymnastics on physical abilities and their effective use in the process of educational – training occupations in higher educational institutions are necessary.

The subject of the research is a part of program of research work of physical training department of the Donbas state machine-building academy "Organizational and pedagogical aspects of optimization of physical training of students on the basis of the sports focused technologies".

### Purpose, tasks of the work, material and methods

The goal of research is the analysis of influence of the specializations (football, basketball, and athletic gymnastics) on dynamics of development of functional and moving abilities of students of the third to fifth courses.

Research problems are:

1. To reveal dynamics of development of a functional state and moving abilities of students of the third to fifth courses.
2. To define the extent of influence of the chosen section occupations on development of functional and moving abilities of male students of the third to fifth courses.

For the solution of the goal and tasks the pedagogical experiment was made. Students of DSMA aged 20- 22 years which belong to the main group according to the state of health took part in the research. The educational groups were consistent in the majority of indicators, considerable differences between them weren't observed ( $p > 0,05$ ). All students visited obligatory classes in physical training 2 times a week according to the schedule.

In the course of pedagogical research the following indicators were registered: heart rate (times), Stange's test (sec.), Genche's test (sec.), running 100m. (sec.), a standing long jump (cm), Romberg's test (sec.), pull ups (times). 171

students of DSMA of Kramatorsk took part in the pedagogical research. There were 60 male students of the fifth course, 60 - of the fourth course, 51 - of the third course among them.

In the course of the solution of the tasks the following methods of research were used:

1. Theoretical analysis and generalizations of scientific and methodical literature.
2. Pedagogical testing.
3. The analysis of results of pedagogical research was made by means of methods of mathematical statistics.

Such parameters were analyzed: arithmetic middling ( $\bar{X}$ ), standard deviation ( $\sigma$ ), probability of difference of middling ( $t$ ). The assessment of probability of difference of statistics ( $t$ ) was carried out by Student's test. For check of reliability of improvement of indicators of results of control tests of value  $F$  estimated was compared to critical  $F_{\alpha, \gamma_1, \gamma_2}$  from the table of theoretical distribution of Fischer for  $\alpha = 0,05$ .

With the help of the dispersive analysis by correlation of data we defined the extent of influence of different types of the chosen specializations on development of the main moving abilities of male students of the third to fifth courses.

### Results of the research

The results of research presented in tables 1 – 6 display the characteristic of indicators of functional and moving abilities of the male students of the third to fifth courses. The analysis of the results of Ruffye's index, Stange's, Genche's, Romberg's tests, running 100 m, a standing long jump, muscles strength of hands gave the chance to define influence of various means of the chosen specialization (football - group 1, basketball - group 2, athletic gymnastics - group 3) on development of cardio – vascular, respiratory system and moving abilities.

The greatest gain of differences of arithmetic middling after control testing by male students of the third course is observed on the following indicators: in the second group on 3,6 sec., in the first group a breath holding by breathing out increases for 2,1 seconds; the result of running 100 m was improved in the second group on 0,1 sec. at the average; a standing long jump in the third group was improved on 18,4 cm, in the second group on 3,4 cm; pull ups in the second group were improved on 1 time at the average.

The greatest gain of differences of arithmetic middling by male students of the fourth courses is reached on indicators: value of Ruffye's index decreases by 0,4 points in group 3; the third group - on 7,4 sec. a breath holding by breathing in in the first group increases up to 7 sec., (Stange's test); a breath holding by breathing out in the second group increases on 6,7 sec, the third group - 6,1 sec., the first group - 5,6 sec.; the third group - on 1,4 sec, the second group improve indicators of static balance on 1,1 sec.. The male students of the fourth courses of the third group increased the result of muscles strength of hands at the average on 1,8 times, the first group on 1,4 times.

The greatest gain of differences of arithmetic middling by students of the fifth course is observed on indicators: the first group increases a breath holding by breathing in up to 7 sec; the second group increases a breath holding by breathing out on 10 sec., the first group - up to 3 sec., the third group - up to 1,5 sec.; the first group improve indicators of static balance on 1,1 sec.; students of the third group increased the result of pull ups at the average on 1,7 times, the first group on 1,5 times.

As  $t_{estimated} \geq t_{critical}$  therefore we can claim that the essential difference of the majority of results between control tests that were made throughout all stages of observations is observed.

The results of the dispersive analysis by correlation of data that are given in tables 4 – 6 testify the extent of influence of different types of specialization on development of functional and moving abilities of students of the third – fifth courses.

So, the greatest influence of the factor that was studied by us (a type of specialization) throughout the entire period of training (0 – 43 classes) is observed at male students of the third course: group 3 (Stange's test); groups 2, 1 (Genche's test); group 2 (33, 5%) (a standing long jump).

By male students of the fourth course (0 – 29 classes) the greatest influence of the factor was shown in group 1 (Ruffye's index); in groups 1, 3 (Stange's test); in groups 1, 2 (Genche's test); group 3 (44%), group 1 (14%) (Romberg's test); in groups 1, 3 (pulls up).

As to the students of the fifth course (0 – 14 classes) the extent of influence of specialization was the greatest in the first group (a breath holding by breathing in), groups 1, 2 (a breath holding by breathing out); static balance in group 1; muscles strength of hands in the first group.

Students of the third course in the course of studying according to the specializations improved the results during this period on the following indicators: Stange's test in the third group; Genche's test - groups 1, 2; speed and power qualities - groups 2, 3; pull ups in the second group. The dispersive analysis of results of the male students of the third course gave the chance to find out that these improvements are reliable. From the table of theoretical distribution of Fischer for  $\alpha = 0,05$  and numbers of the degrees of freedom 1 and 16,  $F_{0,05;1;16} = 4,54$ . As,  $F_{est} > F_{0,05;1;16}$ , therefore the improvements are reliable, but on such indicators in control exercises as Ruffye's index (groups 1, 2, 3); Stange's test (groups 1, 2) Genche's test (group 3); Romberg's test (groups 1, 2, 3); running 100 m (groups 1, 2, 3); a standing long jump (group 1); muscles strength of hands (group 1, 3)  $F_{est}$  is below critical value of  $F$ . It testifies that in case of sufficient development of cardio – vascular, respiratory system and moving abilities influence of the chosen types of specializations decreases.

The dispersive analysis of results of testing of the male students of the fourth courses gave the chance to find out that their increases are reliable. Doubtful results of changes are observed in groups: 1, 2 (Ruffye's index), 2 (Stange's test); 2 (pull ups).

As for the fifth courses there were two levels of factors  $F_{0,05;1;19} = 4,35$ . The analysis of results of male students of the fifth courses gave the chance to find out that the increases of results are reliable. Falsity of changes of results is observed throughout the entire period of research (0 - 14) on the following indicators: Ruffye's index in groups 1, 2, 3, group 2 - Stange's test; group 3 - Genche's test; groups 2, 3 - Romberg's test; force of muscles of hands – groups 2, 3.

With the help of the dispersive analysis by correlation of data we defined the extent of influence on a variation of a productive sign of the factors taken by us (a type of specialization) during the academic year, checked the main assumption of equality of group averages at re-testing.

Table 1

*Characteristic of indicators of a functional state and moving abilities of male students of the third course*

Group (specialization)	Static indicators	Ruffye's index	Stange's test	Genche's test	Romberg's test	Running 100m	Standing long jump	Pull ups
		Classes 0–43						
1. Football	$\bar{X}$	1	5,5	2,1	1,2	0,3	3,1	1,1
	$\sigma$	7,42	17,3	3,91	4,38	1,41	36,42	4,32
	t	0,6 P>0,05	1,32 P>0,05	2,17 P<0,05	1,16 P>0,05	0,98 P>0,05	0,35 P>0,05	1,01 P>0,05
2. Basketball	$\bar{X}$	0,3	1,8	3,6	0,3	0,04	3,4	0,9
	$\sigma$	1,21	6,6	4,74	1,21	0,41	4,73	1,11
	t	1 P>0,05	1,1 P>0,05	3,2 P<0,05	1 P>0,05	2,9P<0,05	3,7 P<0,05	3,2 P<0,05
3. Athletic gymnastics	$\bar{X}$	0,4	8,7	0,9	0,6	0,1	18,4	0,4
	$\sigma$	4,61	21,95	17,87	7,18	0,68	16	2,42
	t	0,4 P>0,05	1,64 P>0,05	0,2 P>0,05	1,91 P>0,05	0,54 P>0,05	4,74 P<0,05	0,6 P>0,05
$t_{(0,05;16)} = 2,13$								

Table 2

*Characteristic of indicators of a functional state and moving abilities of male students of the fourth course*

Group (specialization)	Static indicators	Ruffye's index	Stange's test	Genche's test	Romberg's test	Pull ups
		Classes 0–29				
1. Football	$\bar{X}$	0,1	6,9	5,6	0,9	1,4
	$\sigma$	1,43	3,45	1,54	1,04	1,04
	t	0,3 P>0,05	8,87 P<0,05	16,1 P<0,05	3,66 P<0,05	5,81 P<0,05
2. Basketball	$\bar{X}$	0,4	4,3	6,7	1,1	0,2
	$\sigma$	0,96	27,3	10,45	0,89	1,4
	t	1,9 P>0,05	0,7 P>0,05	2,8 P<0,05	5,29 P<0,05	0,64 P>0,05
3. Athletic gymnastics	$\bar{X}$	0,4	7,4	6,1	1,4	1,8
	$\sigma$	0,24	2,43	2,61	0,93	0,89
	t	7 P<0,05	13,5 P<0,05	10,4 P<0,05	6,47 P<0,05	9 P<0,05
$t_{(0,05;19)} = 2,08$						

Table 3

*Characteristic of indicators of a functional state and moving abilities of male students of the fifth course*

Group (specialization)	Static indicators	Ruffye's index	Stange's test	Genche's test	Romberg's test	Pull ups
		Studies 0–14				
1. Football	$\bar{X}$	0,1	7	3	1,1	1,5
	$\sigma$	1,43	3,78	2,8	0,94	1,5
	t	0,2 P>0,05	8,23 P<0,05	6,97 P<0,05	4,97 P<0,05	6,18 P<0,05
2. Basketball	$\bar{X}$	2	2,3	32,8	1,5	1,1
	$\sigma$	5,69	19,8	10	4,75	3,28
	t	1,6 P>0,05	0,52 P>0,05	14,6 P<0,05	1,4 P>0,05	1,5 P>0,05
3. Athletic gymnastics	$\bar{X}$	0,3	0,7	1,5	0,5	1,7
	$\sigma$	1,17	4,12	2,16	1,28	3,03
	t	1,3 P>0,05	0,71 P>0,05	3 P<0,05	1,75 P>0,05	2,51 P<0,05
$t_{(0,05;19)} = 2,08$						

Table 4

The extent of influence of specializations on results of the functional and moving tests (%) of male students of the third course

Classes	Group	Statistics													
		Ruffye's index		Stange's test		Genche's test		Romberg's test		Running 100 m		Standing long jump		Pull ups	
		$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$
0-43	1	1	0,32	6,7	3,59	2	9,71	4,6	1,35	2,7	0,96	0	0,12	3	1,02
	2	2	0,1	0	2,51	4	20,1	2	1	0	0,17	1,4	8,54	1	10,7
	3	1	0,21	8,1	5,51	0	0	0	0,1	0	0,29	33,5	22,5	0	0,36
$F_{0,05;1;16} = 4,54$															

Table 5

The extent of influence of specializations on results of the functional and moving tests (%) of male students of the fourth course

Classes	Group	Statistics									
		Ruffye's index		Stange's test		Genche's test		Romberg's test		Pull ups	
		$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$
0-29	1	0	0,1	14,6	78,7	10	260	14	13,4	7	33,7
	2	1	3,47	1	0,48	13	8,22	11	28	0	0,41
	3	2	49,4	13,7	182,4	8	108,9	44	41,8	21	81
$F_{0,05;1;19} = 4,35$											

Table 6

The extent of influence of specializations on results of the functional and motive tests (%) of male students of the fifth course

Classes	Group	Statistics									
		Ruffye's index		Stange's test		Genche's test		Romberg's test		Pull ups	
		$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$	$\eta$	$F_{est}$
0-14	1	0	0,1	12,1	67,7	10	164,1	20	24	11	38
	2	6	2,57	0	0,27	87	213	3	1,99	1	1,69
	3	0	1,64	0	0,5	1	8,98	2	3,06	4	6,3
$F_{0,05;1;19} = 4,35$											

### Conclusions:

1. The reliable improvement of control indicators of cardio – vascular, respiratory system, strength, speed, coordination of movements and speed and power abilities in the course of used specializations is observed.
2. The conducted researches give the chance to claim that football, basketball, athletic gymnastics influence level of moving condition of students of the third to fifth courses of higher educational institutions.

The perspective direction of research is studying of influence of other types of specializations on moving abilities of young men of the first to fifth courses.

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**Information about the author**

**Chernenko S.A.:** ORCID: 0000-0001-9375-4220; chernenko.sergey@mail.ru; Donbass State Machine-Building Academy; Shkadinova str. 72, Kramatorsk, Donetsk area, 84313, Ukraine.

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