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2. Improving the training of athletes of different qualification.
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4. Human health, physical rehabilitation and physical recreation.
5. Biomechanical and informational tools and technologies in physical education and sport.
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CONTENT

Anatskiy R., Kolomiytseva O.

INDICATORS OF THE PERFORMANCE OF TOTAL CONTROL
EXERCISE ON THE ONLY ONE OBSTACLE BY CADETS DURING THE
STUDY OF THE PRIMARY TRAINING 5–10

Batieieva N. P.

INVESTIGATION OF THE LEVEL OF PHYSICAL PREPAREDNESS OF
STUDENTS OF KIEV NATIONAL UNIVERSITY OF CULTURE AND
ART.....11–15

Boychenko N.

CONTROL COORDINATION ABILITIES IN SHOCK COMBAT
SPORTS.....16–20

Dzhym V.

IMPROVING THE TRAINING PROCESS OF SKILLED BODYBUILDERS
IN SPECIALLY-PREPARATORY PHASE OF THE PREPARATORY
PERIOD.....21–28

Yermolayeva A.

CERTAIN FEATURES OF HEMODYNAMIC AND MOTOR DISORDERS
IN CHRONIC ATHEROSCLEROTIC CEREBRAL ISCHEMIA FOR
SELECTION OF PHYSICAL REHABILITATION.....29–36

Gamaliy V., Shlonska O.

MODELING ATTACKING OF HIGH SKILLS VOLLEYBALL
PLAYERS.....37–44

Gradusov V., Rybak O., Vynogradskiy B., Muzyka F.

APPLICATION OF OPERATIONAL CAR CREW UNIVERSAL SPEED
STENOGRAM.....45–49

Kemin O.

THE FORMATION OF PHYSICAL CULTURE TRADITIONS IN
UKRAINIAN SCOUTING.....50–55

Kolokolov V.

COMPARATIVE ANALYSIS OF PHYSICAL FITNESS OF STUDENTS
AND CADETS NUCPU TO PERFORM PROFESSIONAL DUTIES.....56–61

Kotelevskiy V., Tymoshenko O., Leontieva F.

DIFFERENTIATED COMPLEXES OF PHYSICAL REHABILITATION OF
YOUNG PEOPLE WITH DISORDERS OF THE SPINE.....62–71

Maslyak I., Mameshina M., Zhuk V.

THE STATE OF APPLICATION OF INNOVATION APPROACHES IN
PHYSICAL EDUCATION OF REGIONAL EDUCATION
ESTABLISHMENTS.....72–76

Mikhnov A.

SELF-APPRAISAL OF HOCKEY PLAYERS OF HIGH CLASS OF
DIFFERENT PLAYING POSITION.....77–85

Mikhnov A. ESTIMATION OF COMPETITION ACTIVITY OF HOCKEY PLAYERS HIGH CLASS TAKING INTO ACCOUNT GENERIC MODELS.....	86–96
Petrenko V., Petrenko I. PROBLEMS ATTENDANCE IN PHYSICAL EDUCATION STUDENTS OF TECHNICAL SPECIALTIES....	97–103
Pylypko O. FEATURES OF TECHNICAL AND TACTICAL ACTIONS OF HIGHLY SKILLED ATHLETES AT SWIMMING OF COMPETITIVE DISTANCES OF 50, 100 AND 200 METERS WAY TO CRAWL ON HIS BACK.....	104–109
Rybalchenko T. DETERMINATION OF MODEL OF COMPETITION ACTIVITY OF QUALIFIED RUNNERS IN THE MARATHON.....	110–114
Shevchenko O. CHANGES OF INDICATORS OF SPECIAL PHYSICAL FITNESS OF YOUNG FEMALE TENNIS-PLAYERS AT THE STAGE OF BASIC TRAINING.....	115–118
Sutula V., Lutsenko L., Kyzim P., Shuteev V., Fishev Yu. WAYS OPTIMIZATION PHYSICAL ACTIVITY STUDENTS.....	119–127
Sinyugina M., Dyomin S. INDICATORS CHEST RHEOGRAPHY AT SWIMMERS AT REST AND AFTER EXERCISE IN DIFFERENT BODY POSITIONS.....	128–133
Talova N. PHYSIOTHERAPY PROGRAM OF PHYSICAL REHABILITATION OF PATIENTS WITH CONTRACTURE OF THE ELBOW.....	134–139
Tropin Y., Ponomaryov V., Klemenko O. ANALYSIS OF THE PERFORMANCE OF NATIONAL TEAMS IN GRECO-ROMAN WRESTLING AT THE EUROPEAN NATIONS CUP 2014.....	140–144
Tsybul'ska V. ORGANIZATIONAL METHODS CONDITIONS OF FORMATION OF MOTIVATION AT CORRESPONDING PEDAGOGICAL SKILLS TO PROFESSIONAL-APPLIED PHYSICAL TRAINING.....	145–153
Wu Linna, Brusentsev V. EVALUATION OF THE LEVEL OF DEVELOPMENT OF SPORT TOURISM CHINA AND EUROPE.....	154–159

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INDICATORS OF THE PERFORMANCE OF TOTAL CONTROL EXERCISE ON THE ONLY ONE OBSTACLE BY CADETS DURING THE STUDY OF THE PRIMARY TRAINING

Abstract. Purpose: *to determine the level of the results of the exercise "obstacle course" students of the National Academy of the National Guard of Ukraine, identify common mistakes. Material and Methods:* *the study involved 46 students of the first year, which took basic training. We used the following methods: theoretical analysis and synthesis of scientific and instructional materials, teacher observation, testing, peer review, methods of mathematical statistics. Results:* *it was noted that the classes with students to overcome the single obstacle course aimed at the development and improvement of skills in overcoming the artificial and natural obstacles, throwing grenades and performing special moves and actions, development of speed and speed strength endurance, improving skills for collective action on the background strenuous exercise, nurturing self-confidence, courage and determination. The study revealed that the students specialty "Management of the actions of special forces" demonstrate better endurance than the students specialty "Automobiles and automobile industry." Compared with the regulations given in the Manual of physical training and sports of Interior Troops of Ukraine, the data correspond to the evaluation "below satisfactory". With the help of teacher observations and peer review were identified common mistakes that allow the cadets during the passage of the obstacle. Conclusions:* *the characteristics of the obstacle course: the time, the number of hitting the target and typical errors will improve the physical fitness of students in subsequent studies.*

Keywords: *cadets, obstacle, while overcoming, common mistakes, target hit.*

Introduction. Most of entrants who decided to join the ranks of HEI of a military profile, begin the preparation previously. Usually it is teenagers who follow in their parents footsteps, but cases happen when entrants don't even realize the whole responsibility due to various reasons and don't represent, what difficulties expect them during the whole study, especially during the pass of the basic training.

The modern fight imposes the increased requirements to the serviceman – his fighting skill, physical and psychological preparedness. The latest events, in particular anti-terrorist operation in the east of Ukraine in which guards take part, subdivisions of Armed Forces of Ukraine and National Guard of Ukraine testify that the smallest losses are sustained by those military subdivisions in which the purposeful combat training is conducted. Special physical training is one of the main

components of the general combat training of a serviceman. It is known that substantially special physical fitness of officers of law enforcement agencies is formed during the study in military higher educational institutions [3; 7]. In modern literature questions of physical training of cadets of HEI are rather investigated, results are presented in scientific works [2; 6; 9].

The management of physical preparation and sport of internal troops of the Ministry of Internal Affairs of Ukraine by which teachers of the department of physical training and sport of National academy of National Guard of Ukraine during the classes with cadets are guided, comprises more than 30 exercises, including overcoming of an obstacle course. There is data in literature, devoted by the researches of the correlation communication of results of the performance of overcoming of an obstacle course and 10x10 m run, 100 m, 1000m, 3000 m [8]. There was also an attempt to improve a technique of estimation of running and tactical skill of wrestlers of a military and sports complex in the overcome obstacle courses [5]. But this data concern the military personnel of Armed forces of Ukraine.

Communication of the work with scientific programs, plans, subjects. The research is a component of the research work of the department of physical preparation and sport of National academy of National guard of Ukraine.

Thus, began to determine the level of results of the performance of exercise of overcoming of an obstacle course by cadets of National academy of National guard of Ukraine became **the aim of the research**, to find typical mistakes and to track dynamics of changes of results in the long term.

Material and methods of the research. Cadets of the first year of the study who passed BT took part in the researches. 27 cadets entered the first group (I gr.), the specialty "Managements of Actions of Subsections of a Special Purpose" who joined the ranks of the academy after finishing the general education educational institutions. 19 cadets entered the second group (II gr.), the specialty "Cars and Automobile Economy" who in the majority arrived from military units.

The following **methods** were applied to achieve the purpose: theoretical analysis and generalization of scientifically methodical literature, pedagogical supervision, testing, expert assessment, methods of mathematical statistics.

Results of the research and their discussion. Classes with cadets with overcoming of the only one obstacle course are directed on the formation and the improvement of skills in overcoming of artificial and natural obstacles, grenades throwing and performance of special receptions and actions, development of speed and high-speed and power endurance, improvement of skills in collective actions against big physical activities, education of confidence in the forces, courage and determination. Overcoming of obstacles is one of the main sections of the Management of physical preparation and sport of internal troops of the Ministry of Internal Affairs of Ukraine [4].

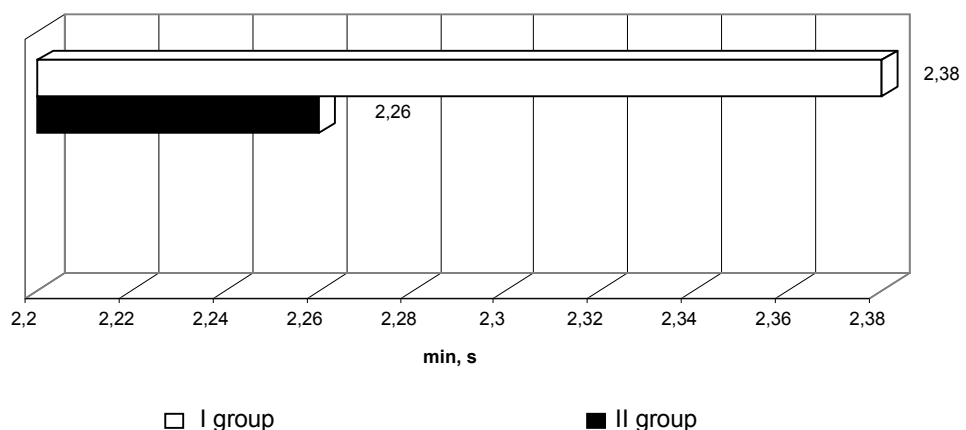
The general control rights on the only obstacle course 400 m long is carried out without weapon in a military uniform. The initial situation – standing in a trench; to throw the grenade with weighing 600 gr from a trench on 20 m on a wall (breaches) or on a platform of 1x2,6 m before a wall (a direct hit is set off); when missing in the

purpose to continue by the first grenade throwing, but it is no more than three grenades to defeat of the purpose, to jump out of a trench, to run 100 m on a path in the direction to the line of the beginning of a strip; to run all over a tag, to run 20 m and to jump over a ditch with 2,5 m width; to run on passes of a labyrinth; to climb over a fence, to climb on a vertical ladder on the second (bent) piece of the destroyed bridge; to run on beams, having jumped through a gap, and to come off on the earth from situation, standing since the end of the last piece of a beam; to overcome three steps of the destroyed ladder with an obligatory contact two feet of the earth between steps, to run under the fourth step; to creep in a wall breach; to come off in a trench, to pass on a connection gait; to jump out of a well; a jump to overcome a wall; to run out on an inclined ladder on the fourth step and to run away on steps of the destroyed ladder; to get out on a vertical ladder on a beam of the destroyed bridge, to run on beams, jumping through gaps, and to run away on the inclined board; to jump over a ditch in 2 m width; to run 20 m and, runs all over a tag, to run in the opposite direction 100 m on a path to the line of the finish.

Results of overcoming of an obstacle course by cadets are presented in pic.1.

The conducted research allowed to find out that at the beginning of the first year of the study the result averaged 2 min 26 s $\pm 0,13$ s at cadets of the I group, cadets of the II group – 2 min 38 s $\pm 0,19$ s. Thus, though the reliability of differences between the received indicators isn't observed, on absolute measures it is visible that cadets of the specialty "Managements of Actions of Subsections of a Special Purpose" show the best endurance, than cadets of the specialty "Cars and Automobile Economy". In comparison with the standards presented in the Management of physical preparation and sport of internal troops of the Ministry of Internal Affairs of Ukraine [4], the received data answers an assessment "below satisfactory".

Other picture is observed in the analysis of the accuracy of hit by the grenade in the purpose. So, it makes 48% at cadets of the I groups, that is those who joined the ranks of academy after finishing general education educational institutions.



Pic. 1. Indicators of time of passing of an obstacle course by cadets of the first year of the study during BT

Cadets of the II group who arrived from military units, showed the big accuracy of hit by the grenade in the purpose – 79%. In our opinion, it can be connected with small quantity or lack of exercises on throwing which are applied in the course of physical training and predraft training of boys at comprehensive schools.

As shows the experiment of classes with cadets, overcoming of an obstacle course demands from their sufficient level of manifestation of all physical and special qualities, and final time of run depends on its intermediate indicators [1] significantly. By means of pedagogical supervision and an expert assessment we separated typical mistakes (tab. 1) which cadets make during passing of an obstacle course, thereby worsening the efficiency of the performance of this exercise.

Table 1

Typical mistakes which cadets make when passing an obstacle course

Element of obstacle course	Typical mistakes
Grenade throwing	– take away a hand with the grenade back for attempt the performance incorrectly (incomplete); – grenade throwing is carried out horizontally (thus the grenade which isn't added to the purpose), it is necessary a lobbing;
Ditch of 2,5 m	– don't select a foot for a push at a jump through a ditch; – land on two feet that leads to traumatizing (it is necessary on one); – before a jump to slow down run which leads to falling in a ditch;
Labyrinth	– carry out overcomings of a labyrinth by run by a snake which leads to loss of time (it is necessary by an added step);
Fence	– don't carry out running start for overcoming of a fence at an exit from a labyrinth; – don't put a foot in an emphasis on a fence;
Destroyed bridge	– carry out overcomings of beams at slow pace; – don't maintain balance during passing of the bridge; – dismount to the place of a landing is carried out from straight lines on direct feet;
Destroyed ladder	– run on stacks is carried out starting two feet when passing of the destroyed ladder in the opposite direction (that is on each stack stand on two feet) that leads to loss of speed;
Breach in a wall	– don't bend down a head to a foot.

Therefore, cadets thereby receive penalties 5 s making mistakes at a grenade throwing in the purpose and missing at it which are added to the total time. When overcoming "ditch" of delay of run and a landing on two feet leads to loss about 3 s. When passing "labyrinth" by a snake which is a mistake, cadets lose till 5 s. The wrong performance of the "destroyed bridge" element pulls for itself loss till 7s. The mayor of safety when passing of "a breach in a wall" leads non-compliance to traumatizing cadets. Thus, it is necessary to pay attention to the elimination of the listed mistakes which will give the chance to cadets to improve technology of the performance of elements of an obstacle course and, as a result – to improve the result.

Conclusions:

1. It is denoted that cadets of the specialty "Managements of Actions of Subsections of a Special Purpose" overcame an obstacle course for 2 min 26 s ± 0,13 s, cadets of the specialty "Cars and Automobile Economy" – for 2 min 38 s ± 0,19 s. In comparison with the standards presented in the Management of physical preparation and sport of internal troops of the Ministry of Internal Affairs of Ukraine, the received data answer an assessment "below satisfactory".

2. The accuracy of hit by the grenade in the purpose at cadets who joined the ranks of the academy after finishing general education educational institutions, makes 48%, at cadets who arrived from military units, – 79%.

3. Typical mistakes were found which cadets make, overcoming an obstacle course.

4. Thus, the received characteristics of overcoming of an obstacle course, namely time, the number of hits and characteristic mistakes, will allow to improve the process of physical training of cadets at the subsequent study.

Prospects of the subsequent researches. It is provided to analyze the time of the performance of each obstacle and to track dynamics of changes of results of passing of an obstacle course within the academic year.

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INVESTIGATION OF THE LEVEL OF PHYSICAL PREPAREDNESS OF STUDENTS OF KIEV NATIONAL UNIVERSITY OF CULTURE AND ART

Abstract. Purpose: to address the level of physical preparedness of students of Kyiv National University of Culture and Arts. **Material and Methods:** the study involved students of the I-st and II-nd courses of KNUKiM in institutions: "film and television studies", "hotel and restaurant business", "journalism and international relations." The total number of students was 136 persons of 17–18 years old, of which 107 girls and 29 boys. We used methods of theoretical analysis and synthesis of scientific and methodical literature, conducted testing of motor abilities of students to determine their level of physical preparedness; found the average test results. **Results:** found that the most physically fit at the time of study, students (boys and girls) of the 2nd year of KNUKiM, the level of physical preparedness of students of the 1st year is sufficient and appropriate assessment "satisfactory". The low level in terms of strength training at students and students of 1st course is defined. **Conclusions:** the findings suggest the need to improve physical fitness of student's of the I-st and II-nd courses of KNUKiM on discipline "Physical Education".

Keywords: physical preparedness, strength, speed, endurance, flexibility, physical education, students, youth.

Introduction. Physical culture and sport in educational institutions is an integral part of formation of the general professional culture of a modern expert [3]. The common aim of HEI – training of highly skilled specialists who are capable to adapt in labor market successfully according to requirements of time, the system of physical training also has to promote it [11]. In particular, in the Law of Ukraine "About physical culture and sport" which is received by the Supreme Council and approved by the President of Ukraine (17.11.2009) and it came into force since January 1, 2011 [4], physical training of students is recognized as one of the main directions of introduction of physical culture among student's youth, organic part of the general education of students urged to provide the development of physical, moral and strong-willed, mental capacities and professionally applied skills [1].

The modern training system of experts in higher educational institutions is characterized by the process intensification of a study, a mental saturation, insufficient volume of physical activity and, as a result, insufficient level of physical fitness, a state of health, professional work of experts of a necessary profile [8; 10; 13].

The optimization of process of physical education of youth of higher

educational institutions is the central problem of a technique. Its importance is connected with that behind results of tests in Ukraine only 30-40% of students carry out appropriate standards of physical fitness. Thus, physical education is urged to promote the increase of level of health of student body and its motive abilities [1].

Works of L. S. Lutsenko, 2008; Yu. O. Ostapenko, V. V. Ostapenko, 2011; V. S. Muntyan, 2011 and others were devoted to problems of the increase of efficiency of process of physical education of student's youth, the increase of motivation of students to classes of physical activity, to application of special techniques. However more and more actual are questions of the approved and reasonable researches for the practical application which would unite the educational, improving and developing components [1].

Physical education of students of cultural and art direction has certain features. The necessity of the increase of a level of the development of motive skills of students of Kiev national university of culture and arts is caused further by high requirements of the professional activity. The professional capacity of a worker depends on his level of physical efficiency, the development of professional important qualities [2]. The best realization of the process of training of students of cultural and art direction for professional activity requires knowledge of the level of their physical fitness. At the same time special scientific researches on determination of the level of physical fitness of students of Kiev national university of culture and arts in literature aren't revealed, that is caused a choice of a subject of scientific research.

The connection of the work with the scientific programs, plans, subjects.

The work is performed within the implementation of the complex scientific project "The Theoretic-methodological principles of the formation of personal physical culture at children and youth as bases of their health" (the state registration number is 0113U001205).

The aim of the study: to determine the level of physical fitness of students of Kiev national university of culture and arts.

The material and the methods of the study. The research was conducted in September-October 2013/2014 academic years on the basis of Kiev national university of culture and arts. 136 students, from them 107 girls and 29 boys were tested. The age of students made 17-18 years old. Students of the first and second courses of Kiev national university of culture and arts who study at institutes took part in the research: "film and television studies", "hotel and restaurant business", "journalism and international relations".

There were used methods of the theoretical analysis and the generalization of scientific and methodical literature, testing of motive abilities of students for the determination of their level of physical fitness is held; average values of results of testing are defined.

The results of the study and their discussion. A level of the development of physical qualities of students of the I-II courses of Kiev national university of culture and arts are defined as a result of the carried-out primary test examinations (tab. 1, 2).

Table 1

**Indicators of the level of physical fitness of students of the 1st and 2nd courses
KNUKiM (girls n=107) (p < 0,05)**

№	Tests	Groups		t _p	t _{кр}	p
		I course (n=68)	II course (n=39)			
		$\bar{X} \pm m$	$\bar{X} \pm m$			
1	Run 1000 m, s	316,25±3,52	295,51±1,95	5,15	2,00	<0,05
2	Bending and extension of hands in lying position on a floor, times	17,72±0,2	19,25±0,32	4,05	2,00	<0,05
3	Raising a trunk in sitting position for 1 min, times	38,35±0,32	41,17±0,51	4,68	2,00	<0,05
4	Run 100 m, s	15,95±0,15	15,25±0,19	2,89	2,00	<0,05
5	Long jumps from a place, sm	168,55±1,81	181,33±2,76	3,93	2,00	<0,05
6	Inclination of a trunk forward from sitting position, sm	16,13±0,29	14,27±0,48	3,31	2,00	<0,05

The analysis of the results, which are displayed in tab. 1, testifies that the reliability of divergences exists between all indicators of the level of physical fitness of students of the 1st and 2nd courses.

A comparison of indicators of testing of girls of the I course with standard tests allowed to establish that in general their results answer an assessment "satisfactorily". Thus, it should be noticed that in test on definition of a power indicator "a long jump from a place" they received an assessment "unsatisfactorily".

A similar comparison of indicators of physical fitness of girls of the II course with standard tests gives the chance to say that results in tests for endurance, high-speed and power abilities, forces of muscles of hands and an abdominal tension answer an assessment "good", but in tests for flexibility and force of feet – is "satisfactory".

Thus, results of the researches showed that students of the II course were the most physically prepared at the time of carrying out the research.

In tab. 2 the results of testing of the students (boys) of the I-II courses are presented.

The analysis of the results are given in tab. 2 testifies that the reliability of divergences exists between indicators of endurance, high-speed and power abilities, force of muscles of feet and an abdominal tension.

The received indicators when testing boys of the I course and their comparison with standard tests testify that in test of bending and extension of hands in lying position on a floor, results answer an assessment "unsatisfactorily"; run on 1000 m, a long jump from a place, a raising a trunk in sitting position for 1 min, an inclination of a trunk forward from sitting position – is "satisfactory" and results of test for run 100 m answer to an assessment "excellent".

Table 2

Indicators of the level of physical fitness of students of the 1st and 2nd course KNUKiM (boys, n=29) (p < 0,05)

№	Tests	Groups		t _p	t _{кр}	p
		I course (n=17)	II course (n=12)			
		$\bar{X} \pm m$	$\bar{X} \pm m$			
1	Run 1000 m, s	253,33±3,81	232,10±2,50	4,59	2,00	<0,05
2	Bending and extension of hands in lying position on a floor, times	27,94±0,68	30,33±1,03	1,93	2,00	>0,05
3	Raising a trunk in sitting position for 1 min, times	46,47±0,78	49,51±0,45	4,35	2,00	<0,05
4	Run 100 m, s	13,41±0,22	12,53±0,26	2,64	2,00	<0,05
5	Long jumps from a place, sm	226,11±5,04	241,16±3,62	2,42	2,00	<0,05
6	Inclination of a trunk forward from sitting position, sm	14,51±0,39	11,32±0,4	5,57	2,00	<0,05

The results of testing of boys of the II course give the chance to establish that indicators in tests for endurance, force of hands and flexibility at them answer an assessment "satisfactorily"; forces of muscles of feet and an abdominal tension – an assessment "good" and high-speed and power abilities – an assessment "excellent".

In general the results of testing found a considerable difference in physical fitness between students of the first and second courses. According to standard estimates (L. P. Sergiyenko, 2010) the level of physical fitness of the first-year students answers "below an average". As testing was held in September, October, in our opinion, a number of problems of physical development of youth consists in the insufficient implementation of requirements of the school program from physical education in the senior classes of comprehensive schools.

Proceeding from above noted, we have an opportunity to draw the following **conclusions:**

1. It is established that students and students of the II course were the most physically prepared at the time of carrying out the research.

2. It is certain that flexibility and force of feet are poorly developed at students of KNUKiM. The results of the research of boys showed that the level of indicators of tests for endurance, force of hands and flexibility, are at a low level.

3. It is necessary to pay more attention to the development of physical qualities and motive abilities for teachers of the department of physical training for the increase of the level of physical fitness of students of Kiev national university of culture and arts.

The prospect of the subsequent researches will consist in the research of changes of the level of physical fitness of students of Kiev national university of culture and arts which are carried out in the course of classes on physical education for the academic year.

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CONTROL COORDINATION ABILITIES IN SHOCK COMBAT SPORTS

Abstract. ***Purpose:** optimize the process control level of coordination abilities in martial arts. **Material and Methods:** analysis and compilation of scientific and methodological literature, interviews with coaches of drum martial arts, video analysis techniques, teacher observations. **Results:** identified specific types of coordination abilities in shock combat sports. Pod branny and offered specific and nonspecific tests to monitor the level of species athletes coordination abilities. **Conclusion:** it is determined that in order to achieve victory in the fight martial artists to navigate the space to be able to assess and manage dynamic and spatio-temporal parameters of movements, maintain balance, have a high coordination of movements. The proposed tests to monitor species coordination abilities athletes allow an objective assessment of not only the overall level of coordination, and the level of specific types of manifestations of this ability.*

Keywords: *martial arts, coordination abilities, types of coordination, control, specific tests, nonspecific tests.*

Introduction. Coordination abilities take a special place in the structure of special motive preparedness of a wrestler. After all due to a high level of the development of this ability a sportsman seizes new movements quicker, seizes a technique of chosen sport more effectively, is well guided in space and time, is capable quickly to reconstruct physical actions according to circumstances which arise on a carpet and so on.

The analysis of special literature showed that researches of coordination abilities were conducted in such directions: century features of the development and manifestation of agility of children of preschool and school age were studied [2; 8]; the structure of coordination abilities in different types of sport was investigated [1; 2; 5; 6]; agility of fighters of different somatic groups [9] was investigated; genetics of the development of coordination abilities was studied [2; 8].

An interest to the development of model characteristics of coordination abilities of athletes and school students grew [7] at the present stage; much attention is paid to the control of coordination abilities of school students and athletes [4; 6; 7]; to the studying of the structure of coordination abilities [3].

Communication with scientific programs, plans and subjects. The work is performed according to the plan of Kharkov state academy of physical culture.

The aim of the research: to optimize the process of control of a level of the development of coordination abilities in single combats.

Tasks of the research:

1. To define the most important types of coordination abilities in shock types of single combats.
2. To carry out the selection of control tests of types of coordination abilities which have the dominating value in shock types of single combats.

Material and methods of the research. Such methods were used for the solution of the put tasks: the analysis and synthesis of these scientifically methodical references, conversations with coaches-teachers from shock types of single combats, the analysis of videos of techniques, pedagogical supervision.

Results of the research and their discussion. The assessment of a condition of preparedness of a wrestler is carried out during the testing or in the course of competitions and provides: the assessment of special physical fitness; the assessment of technical and tactical preparedness; the assessment of a psychological state and behavior at competitions. The assessment of a state of health and the main functional systems is carried out, as a rule, by medico-biological methods of experts in branches of physiology, biochemistry and sports medicine.

The assessment of special physical fitness consists of separate estimates of the level of the main physical qualities: forces, speeds, endurance, coordination abilities and flexibility. Thus the main attention is paid to leaders for each type of single combats to physical qualities or separate abilities.

The analysis of references, videos of the performance of techniques which enter an arsenal of basic training of a karateka, and also the conversation with coaches-teachers from shock types of single combats allowed to define types of coordination abilities to the development of which it is necessary to pay more attention: ability to the maintenance of the permanent situation, ability to the orientation in space, to the assessment and regulation of dynamic and existential parameters of movements, coordinate movements. Behind these types of coordination abilities nonspecific tests were picked up, a specific test (tab. 1-5) was developed for each nonspecific test.

It is necessary to observe during the control matches of athletes except testing of types of coordination abilities. The competitive activity acts as a control basis.

The choice of control tests was carried out taking into account recommendations of V. A. Romanenko[4].

When performing separate techniques it is necessary to be able to hold the permanent situation in shock types of single combats.

The ability to the maintenance of an effective pose is the leading coordination quality and is defined by a number of specific factors. It is the size of the area of a support, size of mechanical action from the opponent, abilities in due time to change a pose according to the area of a support, the center of weight.

The removal from a balance is applied as a way of tactical preparation of a technique in single combats. The purpose of this way – to force the opponent to cross, squat, lean for the purpose of the maintenance of balance to spin, to bend or evade, that is to bring him out of a protective, static position, and then to use his attempt to renew balance for an attack.

Table 1

Tests for control of ability to the preservation of a steady pose

Nonspecific test	Specific test
The content of a position "swallow" to the balance loss. The content time is registered (s).	The maintenance of a foot in the position of a kick back, hands about a breast in a fighting position, a head is returned sideways kick. The content time is registered before the balance loss (s).
Test of Yarotsky I. P. – feet together, spin by a head in one side to the balance loss. Quantity (N) and time (t, s) of the performance of the test. $BY = (N/t) \times 100$	A circular kick with a turn through a back within 110–120 sm (individually). The number of kicks is registered within (N) and the time of the performance (t, s). $BY = (N/t) \times 100$

The ability to the orientation in space is defined by the ability of an athlete to assess a situation quickly which developed on the relation of spatial conditions, and to react to it by rational actions which provide the effective implementation of training or competitive exercises.

Table 2

Test for control of ability to the orientation in space

Nonspecific test	Specific test
The advance by jumps on one foot within a corridor (width 50 sm) three meters, after four complete revolutions round a vertical axis in the position of an inclination. The time of passing of a distance is registered (s).	The same, but instead of jumps lateral kicks by feet in turn.
Run 30 m. Registration of time (s). The average difference between specific and nonspecific tests is calculated.	Run by "snake" between 5 stances of 30 m. Registration of time (s)

Coordinate movements as the ability to rational manifestation and the reorganization of physical actions in specific conditions on the basis of a stock of motive skills, has the especially great importance for the achievement of good results in single combats where a need of fast change of physical actions at the preservation of their expedient interrelation and sequence appears constantly.

The ability to an assessment and regulation of dynamic and existential parameters of movements. Feature of all types of single combats is a direct contact of a sportsman with an opponent, a partner, tatami. The perception of the opponent during a match is carried out not only visually, but also directly contacting to him. The feeling of a distance is of great importance for carrying out attacking and actions of the defense.

The exact feeling of time is important when performing receptions. If the feeling of time developed insufficiently, the reception is not effective, and in general cannot leave. Also the sportsman has to feel intuitively time intervals of a match for the skillful implementation of the tactical plan.

Table 3

Test for control of ability to coordinate movements

Nonspecific test	Specific test
<p>G.S.P – sitting, feet separately, a ball before a breast. By a signal to throw a ball – to rise – to catch a ball. Time is registered(s).</p>	<p>G.S.P – standing, a ball before a breast. By a signal to throw a ball – to execute in turn 2 lateral kicks by feet – to catch a ball. Time is registered(s).</p>
<p>The measurement of ability to the development of new movements: S.P – S.N 1 – a jump on 360°. 2 – the right foot is bent by a jump in a knee joint and crossed taking out a shin and a foot before a pivot foot, parallel to a floor, clap by the left hand on inside of the foot forward. 3 – with a jump on a pivot foot a clap with the right hand on outside of the foot. 4 – with a jump on a pivot foot a shin and foot of the right foot are taken out for a pivot foot, clap by the left hand on inside of the foot. 5 – with a jump on a pivot foot a shin and a foot are taken out forward, clap by the right hand on raising of a shin. 6 – a jump on 360°. Results are calculated by a formula: $\Theta = 1 \times (N \cdot n)^{-1}$; N – number of attempts for the exercise development. n – number of attempts at the control performance. The closer result to 1, the better ability to development of new movements is.</p>	<p>The same, but: S.P. – a fighting stance. 1 – half-step by the right foot, direct strike by the left foot. 2 – putting the left foot ahead, a direct strike by the left hand with the subsequent performance of a direct strike by the right hand. 3 – lateral kick by the right foot, "switch". 4 – lateral kick by the left foot, putting it ahead, a direct strike by the left hand with the subsequent performance of a direct strike by the right hand. The assessment of results is similar to nonspecific test.</p>

Table 4

Test for control of ability to an assessment and regulation of dynamic and existential parameters of movements

Nonspecific test	Specific test
<p>Assessment of time interval 60 s. The difference between certain and nonspecific tests is considered.</p>	<p>The same, but during a shadow-fighting.</p>

Conclusions:

1. It is certain that a wrestler should be guided well in space, to be able to estimate and regulate dynamic and existential parameters of movements, to keep balance, to have high coordinate movements for the achievement of a victory in a match.

2. The offered tests for the control of types of coordination abilities of wrestlers will allow to estimate objectively not only the general level of the development of coordination, but also the level of manifestation of specific types of this ability.

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DZHYM V.

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IMPROVING THE TRAINING PROCESS OF SKILLED BODYBUILDERS IN SPECIALLY-PREPARATORY PHASE OF THE PREPARATORY PERIOD

Abstract. Purpose: *to study methods of improving the training process of skilled bodybuilders in a specially-preparatory phase of the preparatory period. Materials and Methods:* *the study involved 18 skilled bodybuilders are included in the team of the Kharkiv region of bodybuilding. Results:* *a comparative characteristic of the most commonly used methods of training process in bodybuilding. Developed and justified the optimal technique for skilled bodybuilders, depending on the initial form of the athlete at the beginning of a specially-preparatory phase of training. Shows the dependence of changes in body weight bodybuilder from the training process. Conclusions:* *on the basis of the research the author proposes an optimal method of training depending on the training microcycle in the run specially-preparatory stage.*

Keywords: *structuring training, bodybuilding, training process, skilled bodybuilders, best practices, microcycle.*

Introduction. The growth of popularity of sports which are aimed at the development of the main physical qualities (force, endurance and so forth), receiving a beautiful constitution, is the subsoil for the growth of popularity of bodybuilding. This rather new and Non - Olympic kind of sport hasn't yet a complex theoretic-methodical foundation.

The system of training of the skilled sportsmen in this look is based on a rationally constructed training process in total with food as a factor which provides a necessary material for the growth of muscular weight.

Therefore a technique of training process of skilled bodybuilders was developed and proved in the preparatory period of a specially - preparatory stage [1;2].

There are very few scientifically substantiated training techniques of the preparation of qualified bodybuilders in the preparatory period of a specially - preparatory stage in native sport. Thus, trainers and sportsmen should gather practical experience by trials and errors [6; 9].

In bodybuilding the preparatory period of a specially - preparatory stage lasts 8 weeks. During this period the skilled sportsmen, of different age groups and all categories, try to work as much as possible a technique of training exercises and to reduce a fatty layer due to training with optimum encumbrances. At the end of each microcycle the form of a sportsman is estimated by a trainer, and amendments are

introduced in the training process and the plan of food [3; 15–18].

Such outstanding native experts in the field of physical culture and sport, as V. M. Platonov, L. S. Dvorkin, A. I. Stetsenko, I. Sheyko, V. G. Oleshko, O. I. Kamayev, D. O. Bezkorovayny, V. V. Usichenko dealt with this problem [4–10]. Their researches were based on the experience of such foreign experts in branch, as Joe Weider, Ben Weider, E. Connors, T. Kimber, M. McCormick [12–14].

Communication of the work with scientific programs, plans, subjects. The scientific research is executed behind a subject of the Built plan of the research work in the sphere of physical culture and sport for 2011-2015 behind a subject 3.7 "Methodological and organizationally methodical bases of definition of individual norm of a physical condition of a person" (number of the state registration is 0111U000192).

Purpose of researches: to prove a technique of the improvement of training process of skilled bodybuilders in a specially – preparatory stage of the preparatory period.

Material and methods of the research. *Methods of researches:* theoretical method and generalization of literature, pedagogical supervision, pedagogical experiment, method of mathematical statistics.

Research materials: members of a national team of the Kharkov area took part in this research. 18 bodybuilders were attracted from to the experiment from which 4 Masters of Sports, 14 CMS, at the age of 18–25 years, the average body weight of sportsmen makes $85 \pm 2 - 100 \pm 2$ kg. Participants were distributed behind sports qualification on the control and the experimental groups. Participants of an experiment of the control group trained 5–6 times for a week, and participants of the experimental group trained 4 times for a week.

Results of the research and their discussion. The usage of the training process of skilled bodybuilders caused the application of two options of training techniques which differed in loading and volume of training exercises, rest and other components. The assessment is carried out by means of diaries of training in which the quantity and volumes of training work were instructed.

The efficiency of preparation estimated by means of a method of expert evaluations which provided the application of information concerning the implementation of instructions of the trainer, dynamics power and enduring indicators, and also subjective qualities (health, mood, desire to train and so forth).

Sportsmen of the control group trained within 8 weeks with big percentage encumbrances, and sportsmen of the experimental group – trained in smooth dynamics with the emphasis on static loading of muscles (tab. 1, 2). Before the experiment weighing of both groups, and also anthropometrical intentions were carried out the test weighing, by means of which we could find the best result in a gain of indicators. For carrying out weighing the device analyzer of a body weight – (TANITA BC-545 scales, the producer is Japan) and a centimetric tape were used (tab. 3, 4).

Difference of the specially - preparatory stage from the all-preparatory consists in smoother transition from one training microcycle to another, and also in intensity of training classes (tab. 1). The increase in training classes, reductions of gaps, between training days plays a large role in preparation at this stage. The considerable role is played by intensity, apparently from the tab. 1, the time of exercise performance significantly decreased, both on positive phases, and on negative phases, and is more main only that pauses between repetitions decreased in a recovery microcycle till 0,5 seconds, and there was no rest between repetitions at all in lead-in.

Features of this stage is a small percentage application of small encumbrances which makes in the first control preparatory mesocycle of EG of 40-50%, in CG makes 70–90%, and in the second control - preparatory mesocycle in EG are made by 50–40%, in CG of 80-100%, thus, in EG it is paid more attention to study of muscles, but not to a raising of weight that is the main at this stage.

Table 1

Contents of the training program depending on the mass of encumbrance in the preparatory period of a specially - preparatory stage of skilled bodybuilders of the control and the experimental group

Indicators of a training load and classification of muscular groups	Mesocycles			
	Control - preparatory		Control - preparatory	
	CG	EG	CG	EG
Loading range in percentage from maximum	70–90	40–50	80–100	50–40
Number of training days	5	4	6	4
Number of repetitions	5–7	10–12	3–5	12–15
Number of trials	5–6	4–5	5–6	5–6
Time of performing an exercise, s				
Positive phase (movement up)	1	0,5	1,5	0,5
Negative phase (movement down)	1,5	1	0,5	1
Pauses between repetitions, s	0,8	0,5	0,8	-
Rest between trials, min				
In basic exercises	3–4	1,5–2	5	1,2
In forming exercises	3	1–1,2	4	1
Rest-hour between loading of muscular groups, days				
Hips	5	4–3	5	4–3
Backs	5	5	5	5
Chest	3	4	3	4
Delta-similar muscle	4	5	4	5
Bicipital muscle	2	5	2	5
Three-headed muscle	3	4	3	4
Forearm	6	5	6	5
Three-headed muscle of a shin	6	3	6	3
Oblique and direct muscles of a stomach	3	1	3	1
Neck	0	5	0	5

The data provided in the tab. 2 testify that sportsmen of the experimental group trained with average encumbrances from the maximum loadings, the control group trained with a small amount of repetitions, but with big encumbrances that it isn't recommended in this mesocycle as sportsmen begin preparation for competitions and reduce amount of carbohydrates at this stage. So, in the preparatory period on the specially – preparatory (forming) stage much attention is paid to muscles of a hip and a shin – the number of raising of a bar (NRB) for two microcycles makes in EG – 834 rises in CG – 417,0 mainly at the expense of muscles of hands, a chest, and a back, which are identical practically (516–544 raising of a bar, and also in 92,890–98,250 kilograms). But the main role is played by the forming exercises in this period which were different behind NRB and the counted kilograms therefore the most large number of raising of a bar were at the expense of direct and oblique muscles of a stomach and made in EG – 2,900 NRB, in CG insignificant attention paid to stomach muscles – 1,450 NRB. Total amount in general exercises of NRB makes in EG – 2,790 and in CG – 1,395, and in the forming exercises of EG – 7,606 and in CG – 3,803 NRB. Thus, CG used more power program of preparation and small NRB with big encumbrances, EG used more static program of preparation and used big NRB at the expense of what the volume of kilograms was high.

Table 2

The total amount of training work which is performed by the skilled bodybuilders of the control and the experimental groups in the preparatory period of the specially - preparatory stage

Groups of muscles	Volume, NRB		Volume, thousands kg	
	CG	EG	CG	EG
Basic exercises on:				
Muscles of a belt of upper extremities	176,0	352,0	33,260	28,160
Muscles of hands	272,0	544,0	100,280	98,250
Muscles of a chest	258,0	516,0	101,880	92,890
Muscles of a back	272,0	544,0	100,400	98,250
Muscles of a hip and a shin	417,0	834,0	181,200	151,400
Total	1,395	2,790	517,020	468,950
Forming exercises on:				
Muscles of a belt of upper extremities	214,0	428,0	65,805	77,800
Muscles of hands	450,0	900,0	50,560	56,760
Muscles of a chest	203,0	406,0	22,223	27,120
Muscles of a back	354,0	708,0	38,850	42,960
Muscles of a hip and a shin	1,132	2,264	320,580	371,680
Oblique and direct muscles of a stomach	1,450	2,900	-	-
Total	3,803	7,606	498,018	576,320

Note. NRB – Number of raising of a bar.

Total amount in the counted kilograms in general exercises in EG makes 468,950, in CG – 517,020, carrying out the forming exercises total amount makes in EG – 576,320 kilograms, in CG – 498,018. It is possible to draw the general conclusion that sportsmen of the experimental group trained in this stage with

average number of kilograms and paid much attention to muscles of a stomach and muscles of feet as after the all-preparatory (basic) stage what proceeded 20 microcycles, there was a large increase of a fatty layer on muscles of a stomach and a hip, in turn sportsmen of CG paid more attention to general exercises and power indicators, than the forming exercises did.

Measurements of anthropometrical indicators bodybuilders were taken before the experiment. Apparently from the tab. 3, coefficients of a variation of all main anthropometrical indicators separately for the control and the experimental groups practically didn't exceed the general initial level.

The anthropometrical examination was conducted before the beginning and at the end of the specially - preparatory stage (tab. 3, 4).

Table 3

Average value of anthropometrical data of the control and the experimental groups of skilled bodybuilders at the beginning of the specially - preparatory (forming) stage of the preparatory period (n1=n2=9)

Indicators	CG		EG		t	P
	$\bar{X}_1 \pm m_1$	V, %	$\bar{X}_2 \pm m_2$	V, %		
Body weight, kg	91,00±3,60	11,88	92,67±4,03	13,04	0,25	>0,05
Neck circumference, sm	41,28±1,35	9,79	42,78±1,29	9,03	0,66	>0,05
Chest circumference (inspiration), sm	111,88±2,00	5,36	117,38±2,58	6,59	1,38	>0,05
Chest circumference (expiration), sm	103,33±2,07	6,02	106,72±2,21	6,22	0,91	>0,05
Biceps circumference, sm	42,00±1,87	13,32	43,43±1,59	10,99	0,48	>0,05
Waist circumference, sm	77,28±2,28	8,84	81,95±2,52	9,22	1,12	>0,05
Hip circumference, sm	77,38±1,82	7,04	78,48±1,92	7,34	0,34	>0,05
Shin circumference, sm	39,45±1,32	10,03	41,12±1,41	10,32	0,70	>0,05
Forearm circumference, sm	37,00±1,35	10,91	37,83±1,89	14,99	0,29	>0,05
Body length, sm	168,00±1,40	2,50	170,50±2,25	3,96	0,77	>0,05
Trunk height, sm	77,83±0,65	2,49	78,00±0,63	2,43	0,15	>0,05
Length of lower extremity, sm	90,17±0,88	2,93	90,33±0,91	3,02	0,11	>0,05
Length of upper extremity, sm	83,67±1,22	4,39	83,67±1,22	4,39	0,001	>0,05

So, at the beginning of the specially - preparatory (forming) stage of the preparatory period the divergence are not reliable: in body weight (the control group – 91,00 kg, the experimental group – 92,67 kg; $P > 0,05$); a waist circumference (respectively – 77,28 sm, 81,95 sm; $P > 0,05$); a hip circumference (respectively – 77,38 sm, 78,48 sm; $P > 0,05$); a neck circumference (respectively – 41,28 sm, 42,78 cm; $P > 0,05$); a chest circumference on an inspiration (respectively – 111,88 sm, 117,38 sm; $P > 0,05$) and on an exhalation (respectively – 103,33 sm, 106,72 sm; $P > 0,05$) and a shin circumference (respectively – 39,45 sm, 41,12 sm; $P < 0,05$).

Coefficients of a variation of all main anthropometrical indicators separately for the control and the experimental groups practically didn't exceed the general initial level. For example, it made % V=11,88 for the mass of the control group, for the experimental group – % V=13,04. Respectively coefficients of a variation made the following values for the control and the experimental groups: circumference of hips is V=7,04 of %, % V=7,34; a waist circumference – V=8,84 of %, % V=9,22; a

waist circumference – $V=8,84$ of %, % $V=9,22$; a biceps circumference – $V=13,32$ of %, % $V=10,99$.

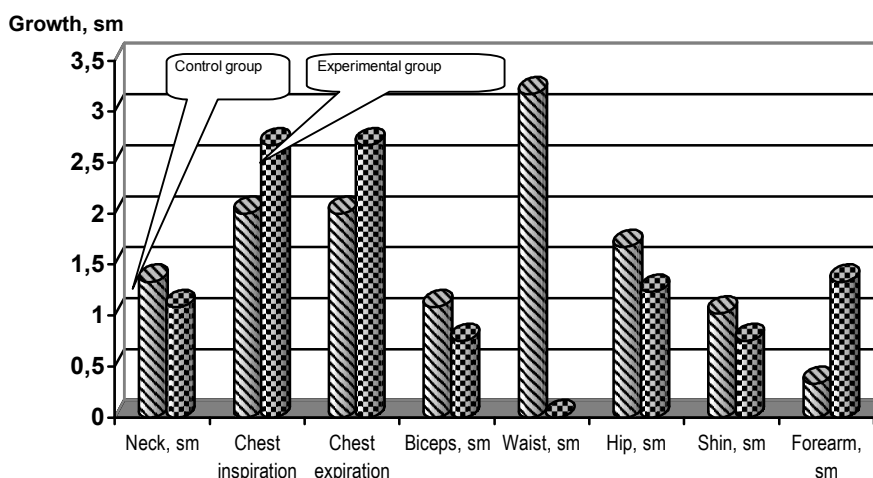
Table 4

Indicator of a gain of average anthropometrical data of the control and the experimental groups of skilled bodybuilders at the end of the specially - preparatory (forming) stage of the preparatory period ($n_1=n_2=9$)

Indicators	CG	EG	t	P
	$\bar{X}_1 \pm m_1$	$\bar{X}_2 \pm m_2$		
Body weight, kg	3,17±0,25	1,33±0,20	4,64	<0,01
Neck circumference, sm	1,33±0,17	1,08±0,07	1,1	>0,05
Chest circumference (inspiration), sm	2,00±0,21	2,67±0,17	2	>0,05
Chest circumference (expiration), sm	2,00±0,21	2,67±0,17	2	>0,05
Biceps circumference, sm	1,08±0,07	0,75±0,09	2,39	<0,05
Waist circumference, sm	3,17±0,14	0,01±0,00	19	<0,01
Hip circumference, sm	1,67±0,17	1,23±0,14	1,61	>0,05
Shin circumference, sm	1,02±0,01	0,75±0,09	2,35	>0,05
Forearm circumference, sm	0,33±0,17	1,33±0,17	3,35	<0,01
Body length, sm	168,00±1,40	170,50±2,25	0,77	>0,05
Trunk height, sm	77,83±0,65	78,00±0,63	0,15	>0,05
Length of lower extremity, sm	90,17±0,88	90,33±0,91	0,10	>0,05
Length of upper extremity, sm	83,67±1,22	83,67±1,22	0,0001	>0,05

At the end of the specially - preparatory (forming) stage of the preparatory period the divergence of the gain to body weight in the control group made 3,17 kg, whereas in the experimental group – 1,33 kg ($t=4,64$; $P < 0,01$). Also the reliable divergences are found between changes in a circumference of a bicipital muscle of a shoulder (biceps) and a waist. The average gain of value of a circumference of a bicipital muscle of a shoulder (biceps) made 1,08 sm in the control group; in the experimental group – 0,75 sm ($t=2,39$; $< 0,05$).

The divergence in a gain of other indicators is doubtful ($P > 0,05$).



Pic. 1. The comparative chart of a gain of anthropometrical data of the control and the experimental groups of skilled bodybuilders at the end of the specially - preparatory (forming) stage of the preparatory period.

Conclusions. Thus, the improvement of the training process of skilled bodybuilders allows to consider that in EG the effect was more expressed and the level of readiness can be estimated as the most optimum. Dynamics of loading in this group significantly reduces the probability of formation of adverse shifts of a functional condition of sportsmen (an overstrain, an overtraining, injuries), allows to reach the necessary level of sportswear without an overstrain of adaptation and compensatory mechanisms. Concerning the creation of the training process, in EG a technique of training promotes more the performance of the put task – to the increase in muscular body weight not by means of a fatty layer and hypodermic water, and at the expense of only muscles that was authentically proved, anthropometrical indicators in the control group made 3,17 kg on the specially - preparatory (forming) stage, whereas in the experimental group – 1,33 kg; ($P < 0,01$). Also the reliable divergences are found between changes in a circumference of a bicipital muscle of a shoulder (biceps) and a waist circumference. The average gain of value of a circumference of a bicipital muscle of a shoulder (biceps) is received in the control group – 1,08 sm; whereas in the experimental group – 0,75 sm ($P > 0,05$).

The advanced technique of training for skilled bodybuilders on the specially - preparatory (forming) stage of the preparatory period can be recommended for training of sportsmen, for the observance of requirements of sports and medical control, ensuring an effective and high-quality renewal in a transition period.

The subsequent researches have to contain the development and the foundation of the training process of skilled bodybuilders in the competitive period.

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CERTAIN FEATURES OF HEMODYNAMIC AND MOTOR DISORDERS IN CHRONIC ATHEROSCLEROTIC CEREBRAL ISCHEMIA FOR SELECTION OF PHYSICAL REHABILITATION

Abstract. Purpose: *to determine the characteristic changes in the functional state of the cardiovascular system and the features of motor disorders in women with chronic atherosclerotic ischemia of the brain, in the future to select appropriate means of physical rehabilitation. **Material and Methods:** analysis and synthesis of scientific and methodological literature and Internet sources on the topic of the study; analysis of case histories; methods of study of the cardiovascular system (electrocardiography, ultrasound of the brain vessels and neck, etc.). **Results:** found that all the examined patients had certain hemodynamic and movement disorders. **Conclusions:** it was found that a comprehensive assessment of the functional state of the individual patient is a prerequisite for individual orientation of rehabilitation measures, among which, along with medical physical culture, massage and physical therapy is appropriate to apply the elements of the modern fitness technology.*

Keywords: hemodynamic disturbances, chronic cerebral ischemia, physical rehabilitation, fitness elements of modern technology.

Introduction. Cardiovascular diseases at middle age women is a provide sources of risk, between worldwide reasons of death and losing ability to work, main part of which are cerebrovascular diseases. Fundamentally the last one are blood circulation disturbeds of cerebrum(brain) “disculator encephalopathy”, what is determined with pathological changes of cerebral vessels. So those are the reasons why the problem of disturbed functions of this disease is in actuality.[6]

Term “disculator encephalopathy”(DE) was offered in 1957 by G.A.Maxudov. Later, in 1967 E.V.Shmiddy described clinical stages of this disease.[5;7] But given term haven't been used in modern international classification of diseases of 10 review, in which for given nosological form were used term “chronic cerebral ischemia” which is equivalent of section – 167,8.

Chronic cerebral ischemia – is a syndrome of progressing much focal or defusial disease(effect) of cerebrum, which in clinical cases appears into neurological, neuropsychological or psychological effects, which lead to the motor disorders. Counted pathological symptoms and syndromes are determined with chronic cerebral and vessels failure or occasional cerebrovascular diseases.

The most common pathogenetic factor, which leads to evolution of given nosological form, is atherosclerotic disease of cerebrum vessels, which appears as subside faintness, headache, noise in ears, disability while disease go through, eyes

disorders and low operative memory. All these complex of syndromes needs differential approach for indicating ways of recovery from pathology.

Modern views about atherosclerotic chronic ischemia of cerebrum (ACIC) let us mark 3 stages of clinical onsets of disease: compensated, subcompensated and decompensated.

Although, clinical ACIC mainly determines with basic syndromes: asthenic, cephalgic, vestibulo-ataxic.

However, exists a connection between formations of define syndrome, stages of disease and localisation of effected vessels.

In the beginning of (compensated) stage of cerebrovascular disorders, mainly are forming of asthenic and cephalgic syndromes.

Asthenic syndrome appears with expressed tiredness, annoying, weakness, falling of humour and tearfulness. Asthenic formations with becoming bigger, as a rule, accompanied with aspontaniety, inactivity and apathy.[4]

The next most common is cephalgic syndrome, which accompanied with constant diffusion headache, expression of which becoming lower while the disease progress. In evolution of cephalgic syndrome a big role plays miofasceal syndrome, what is forming on the base of osteohondrosis of the neck part of vertebra, and headache intense (HAI) – a variant of psycholgia, for appearing of which helps depression.

Given syndrome is mainly accompanied with emotions: asthenic, anxiodepressive, vegetative and psycho-vegetative disorders.[8;9]

At the second stage dominative neurological syndrome accepts vestibulo-ataxic, which is characterized by faintness, noise in ears, disability while disease go through and motor disorders.

Faintness, disability while disease go through and motor disorders, partly might be connected with age-related changes in vestibular system, motor system and ischemic neuropathy with including of eights cerebral nerve, what is truth because of systematic complaining for “the noise in ears”. [1]

Definition of specific changes in functional state of cerebrovascular system and special women disorders with ACIC is a condition of individual rehabilitation solutions, which will effect on its potency. All that was said demonstrates the actuality of this research .

Connection of the research with scientific programs, plans, themes.

The research work is a part of dissertation, which is doing in accordance with master plan of scientific-research work in the area of physical culture and sports in 2011-2015. ministry of education and science, youth and sport of Ukraine ,by the topic “Rehabilitation of disabled people according to the psycho-phisical and compensatory-adopting reactions of musculeate activity ”(State registration number 0111U001170)

Aims of the research: to define the characteristic changes in the functional state of cardio-vascular system and specifications of women motor disorders with atherosclerotic chronic cerebrum ischemia and in future choosing of appropriate ways

of physical rehabilitation.

Material and Methods: analysis and synthesis of scientific and methodological literature and Internet sources on the topic of the study; analysis of case histories; methods of study of the cardiovascular system (electrocardiography, ultrasound of the cerebra, vessels and neck, etc.).

On the base of Dnipropetrovsk local hospital №5 was researched cardiovascular functional state among 100 women of middle age (from 45-to 59 years), from whom the first stage ACIC were found among 43% and the second stage –57%. All patients had chronic cerebrum ischemia which was provoked because of atherosclerosis of cerebral vessels. The sick people were hospitalized with acute condition of prior disease and were looked by the neurologist and had a standard medical therapy, that is approached for this nosological form.

Results of the research and their discussion. From the results of the history of disease analysis were determined, that examined women with hemodynamic cerebral derangements had following accompanied diseases: atherosclerosis of cerebral vessels (AOCV)- 100%, arterial hypertension –75%, vegetative-vascular dystonia-74%, osteochondrosis of the neck part of vertebra – 71%, chronic cardiac decompensation –36%, and lipotrophy –24%.

As with I or II stage of disease dominated suffers for the headache (accordingly 79% and 89,4%), faintness (74,4 and 92,9%), local weakness (62,7 and 63,1%), low memory and attention (65,1 and 85,9%), motor disorders (34,8 and 59,6%)

Main characteristics of women neurologic state, who were under examination are given in the table 1.

Table 1

Main characteristics of women neurologic state with I and II stage of atherosclerosis chronic cerebral ischemia

Clinical aspects	Compensative stage (n=43)		Subcompensative stage (n=57)	
	Absolute numbers	%	Absolute numbers	%
Horizontal nistagmus	16	37,2	27	47,3
Hipomnesia for inline events	28	65,3	50	87,7
Language disorders	1	2,3	5	8,7
Weakness in Rombergs pose	32	74,4	53	92,9
Dismetria over finger-to-nose test (FNT)	26	60,4	36	63,1
Intentional tremor	13	30,2	29	50,8
Face asymmetry	19	44,1	34	59,6

While analyzing objective data of neurological state were determined, that with compensative stage from the clinical aspects the highest was weakness in Rombergs pose (74,4%), hipomnesia for inline events (65,1%), Dismetria over finger-to-nose test (FNT) (60,4%). While subcompensated stage were determined the same symptoms, but they were much more of times (92,9%, 87,7%, 63,1%) and were more strongly.

Need to be noticed that the clinical aspects of atherosclerotic chronic cerebral ischemia at examined women were characterized with following neurological syndromes , which are given in the table 2.

Table 2

Neurological syndrome at women with I and II stage of atherosclerotic chronic cerebral ischemia

Syndromes	Compensative stage (n=43)		Subcompensative stage (n=57)	
	Absolute numbers	%	Absolute numbers	%
Asthenical	35	81,3	53	92,9
Cephalgical	31	72,0	49	85,9
Vestibulo- ataxis	25	58,1	51	89,4

Following table determinate that with compensative stage appeared mainly asthenical syndrome – 81,3%, which leads to low working ability and worth psycho-emotional state. Next most common was cephalgical syndrome – 72,0%, which was characterized by oftime headache. Vestibulo- ataxis syndrome was found in 58,1% of sick women, who suffered from faintness .

While in subcompensated stage even more, then in compensated stage dominate asthenical syndrome – 92,9%, which told us about progress of the disease and worse systemic conditions. Vestibulo- ataxis and cephalgical syndromes were more oftimes too and were more strongly.

Determinate of functional state of cardiovascular system were made with help of objective data: periodicity of cardiac beat (PCB), arterial tension (AT), ultrasound investigation cerebral vessels and neck (UI), electrocardiography (ECG)

Patients, periodicity of heart beat, with compensated and subcompensated stage of ACIC were normal ($73,5 \pm 11,42$ та $75,98 \pm 5,69$ beat·min⁻¹), but between criterias in the II stage , disease have a tendence of becoming higher then in the I stage.l

Arterial tension by the method of Korotkov was measured on the brachial artery. Women with the I stage in 37,2% cases (16 persons) was registrated normal systolic pressure ($115,6 \pm 2,88$ mm rt. cm); hipertension of different levels was found at 62,8% sick (27 persons), its indicates at average $147,4 \pm 17,5$ mm rt. cm. Diastolic pressure was different and more stable then systolic. So normal indicates had 51,2% sick (22 persons) and at average $76,1 \pm 5,24$ mm rt. cm.; high diastolic pressure had 48,8% cases (21 patient) and its equal $95,2 \pm 7,94$ mm rt. cm.

Among patients with subcompensated stage of atherosclerotic chronic cerebral ishemia, normal systolic pressure is registered in a few cases, then at patients with I stage – 28,1% (16 patients), middle number was $119,4 \pm 3,51$ mm rt. cm.; indicators of normal diastolic pressure although were in a few cases at women, in comparison with the I stage (49,1% – 28 patients), middle number – $77,1 \pm 2,48$ mm rt. cm. Rise of systolic and diastolic pressure with that stage of illness are more common then in initial stage. So, hypertension were registered after systolic pressure detection in 71,9% of cases (41 patient) the middle number $144,6 \pm 9,32$ mm rt. cm.; diastolic

pressure – in 50,9% of cases (29 patients) and middle numbers were about $96,1 \pm 10,0$ mm. rt. cm.

In an ultrasound examination of cerebrum magistral artery (CMA) and neck was found the stage of cerebral blood circulation with help of the next parameters, which allows us to estimate the tone and frank of structural changes in arterias and vains: Vps ($\text{sm} \cdot \text{s}^{-1}$) – peak systolic velocity; Ved ($\text{sm} \cdot \text{s}^{-1}$) – maximal final diastolic velocity; RI – total peripheral resistance index; PI – pulsation index, TAMH($\text{sm} \cdot \text{s}^{-1}$) – midedled in time maximal velocity [3].

In analyzing the results UI of surveyed women recorded the following structural changes, such as: thickening intima-media complex (IMC) of vessels was observed in 80% of cases with stage I (to 0,09-0,1) and 100% (to 0,09-0,14) in the second stage; stenosing damage of brachiocephalic arteries (SDBA) were recorded in 15% of patients with stage I ACIC (diameter reduction to 20-25%) and 60% for II stage (to 20-45%); kink course of the common carotid (CCA) and internal carotid (ICA) artery, was registered in 45% stage I and 80% in the second; kink course of the vertebral artery diameter narrowing in stage I – 36%, stage II – at 68% of surveyed women. The resulting hemodynamic parameters were compared with indicators of healthy individuals of the same age group (45-59 years) Table. 3.

Table 3

Comparative analysis of hemodynamic indication in extracranial part of carotid and vertebral artery at surveyed women with ACIC and healthy individuals

Artery		Indicators	Countable parameters of blood circulation of CMA and neck		
			Surveyed women		Practically healthy individuals
			I stage (n=43)	II stage (n=57)	
Internal carotid	Right	Vps, $\text{sm} \cdot \text{s}^{-1}$	38±0,8	27±0,4	53±12
		Ved, $\text{sm} \cdot \text{s}^{-1}$	20±5	18±3	20±6
		RI	0,61±0,07	0,65±0,06	0,5±0,06
		PI	2,0±0,2	2,0±0,4	1,03±0,2
Internal carotid	Left	Vps, $\text{sm} \cdot \text{s}^{-1}$	38±0,7	27±0,02	53±11
		Ved, $\text{sm} \cdot \text{s}^{-1}$	21±6	19±5	22±6
		RI	0,6±0,08	0,67±0,05	0,59±0,08
		PI	2,01±0,2	1,9±0,5	0,96±0,24
Vertebral artery	Right	Vps, $\text{sm} \cdot \text{s}^{-1}$	24±5	22±6	35±9
		Ved, $\text{sm} \cdot \text{s}^{-1}$	9±4	8±3	11±4
		RI	0,75±0,09	0,85±0,6	0,6±0,07
		PI	1,9±0,9	1,7±0,8	1,22±0,27
Vertebral artery	Left	Vps, $\text{sm} \cdot \text{s}^{-1}$	41±14	47±16	38±9
		Ved, $\text{sm} \cdot \text{s}^{-1}$	15±4	17±5	13±3
		RI	0,71±0,7	0,74±0,9	0,63±0,07
		PI	1,9±0,9	1,7±0,8	1,07±0,26

According to the data table. 3, when the comparative analysis of hemodynamic indication in the extracranial part of carotid and vertebral neck arteries of women

with chronic cerebral ischemia atherosclerotic genesis and healthy individuals, defined the declining of systolic and diastolic blood circulation velocity with increasing resistance index and index of pulsation at patients with ACIC.

In comparison of hemodynamic parameters at women with stage I and II of disease, among others, it was found that with subcompensated stage reduction of systolic blood circulation velocity and increase of resistance index is more noted than with compensated, that indicates increasing in vascular tone, which is connected with fibrous-sklerotyc changes in the vascular wall.

In assessing of the datas of blood circulation in arteries base of the cerebrum at women with stage I and II ACIC showed decrease of systolic blood circulation velocity and TAMH and a slight decrease of the pulsation index in comparison with healthy individuals in the same age group.

In the second stage the reduction in systolic blood circulation velocity was more defined than in stage I, in MCA, ZMA, HA and TAMH, indicating more noted disorders of blood circulation in cerebral vessels.

For the qualitative and quantitative characteristics of he state of venous hemodynamics were evaluated phasis (the shape of the Doppler reflected spectrum) or chronic (surge of amplitude associated with the act of breathing).

Indicators of blood circulation in the deep veins of the brain (the vein of Rosenthal, tentorial sinus) at patients with ACIC, in comparison with almost healthy individuals were different in linear increasing of blood circulation and appearance of pseudopulsation that says about disorders of the venous outflow from the cavity of skull, but with subcompensated stage these disorders were more noted.

To determine the functional state of the cardiovascular system in middle-aged women with chronic cerebral blood circulation was made a registration of the electrical activity of the myocardium in standard (I, II, III), boosted monopolar (avR and avF) and chest (V1-V6) leads. Analysis of the ECG results showed certain pathological changes in 100% of patients examined, including: arrhythmias was observed in 30% of cases with stage I and 70% – in the second stage; incomplete right bundle-branch block was in 25% of cases and 45% accordingly; slowing of the internal precordial conduction in – 15% and 35%; QRST voltage reduction in extremity lead – 60 and 80%. Signs of myocardial ischemia (reduced in the interval below the isoline ST and negative T wave) registered at only 20% of the patients with stage II of disease. Revealed disorders indicate diffuse myocardial changes in atherosclerotic nature and high probability of ischemic coronar artery disease.

Therefore, the complex assessment of the functional state of an individual patient is one of the prerequisite for individual orientation rehabilitation and improve their effectiveness.

More and more significant in this nosological form acquire physical recovery methods, aimed for conscious and active participation of the patient in recovery process, among them the biggest part belongs to the Therapeutic Physical Culture (TPC). Using of special medical gymnastic exercises combined with breathing exercises with cerebrovascular disease contributes to the improvement of emotional state, movement disorders, normalization of cerebral blood circulation and preventing

recurrent cerebral dyzhemia. In chronic cerebral ischemia is not reduced the importance of morning exercises, including its positive effect on the activity of skin and muscle receptors of the vestibular apparatus, the excitability of the central nervous system that indirectly contribute to the improvement of the musculoskeletal system and internal organs. Given that the nervous system is the first that perceives the mechanical stimulation, equally effective way with chronic cerebral blood circulation disorders is a massage that making cerebral vessels to work better, helps to activate blood circulation, normalizes blood pressure, improves mental ability, helps to reduce the negative stress influence and refine psycho-emotional state. An important components of physical rehabilitation are physiotherapy methods of recovery, that unlike to the medical therapy is not addictive and give a chance to avoid organism sensibilization.

The need to develop more effective means of physical rehabilitation at ACIC leads to search new technologies to prevent disease progression and prevent invalidity.

It should be certified that in the present days more and more urgent becoming the use of elements of Eastern and Western health fitness techniques in physical rehabilitation; such as breathing exercises of yoga, Pilates and others. [2]. The usege of them gives a positive effect on respiratory and cardiovascular system and thus can greatly contribute the improving of cerebral blood circulation.

Regarding this, our future research is planned to develop a complex program of physical rehabilitation of the patients with chronic atherosclerotic ischemia of the cerebrum, with the inclusion of elements of health and fitness technologies and considering the clinical features of the disease.

Conclusions:

1. Analysis of the data shows that the clinical course of ACIC in middle-aged women is determined by the multifocal brain lesions, with the predominance of pathological changes in the deep parts of it that lead to the isolation of cortical and subcortical structures and in the future – to the formation of complex neurological and neuropsychological symptoms, deterioration of motor control functions, which determines the need for an integrated approach to the rehabilitation of patients.

2. Results of the clinical course of features ACIC justify the choice of physical rehabilitation that are aimed to normalization of disturbed hemodynamics and motor functions, among which near the Therapeutic Physical exercise, massage and physical therapy might be appropriate to apply elements of modern fitness technology.

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MODELING OF ATTACKING ACTIONS OF HIGH SKILLS VOLLEYBALL PLAYERS

Abstract. Purpose: *to determine the model indicators of technical and tactical actions in the attack highly skilled volleyball players. Material and Methods:* *the study used statistical data of major international competitions: Olympic Games – 2012 World Championships – 2010, World League – 2010–2014 European Championship – 2010–2014. A total of 130 analyzed games. Methods were used: analysis and generalization of scientific and methodological literature, analysis of competitive activity highly skilled volleyball players, teacher observation, modeling technical and tactical actions in attacking highly skilled volleyball players. Results:* *it was found that the largest volume application of technical and tactical actions in the attack belongs to the group tactics «supple movement», whose indicator is 21,3%. The smallest amount of application belongs to the group tactics «flight level» model whose indicators is 5,4%, the efficiency of 3,4%, respectively. It is found that the power service in the jump from model parameters used in 51,6% of cases, the planning targets – 21,7% and 4,4% planning to reduce. Attacks performed with the back line, on model parameters used in the amount of 20,8% efficiency –13,7%. Conclusions:* *we prove that the performance of technical and tactical actions in the attack can be used as model in the control system of training and competitive process highly skilled volleyball players*

Keywords: *technical and tactical actions, competitive activity, the model parameters, volume, efficiency, highly skilled volleyball players.*

Introduction. High level of achievement in modern volleyball causes necessity continuous improvement on all sides prepare of highly skilled volleyball players, primarily technical and tactical, which provides the integral application of methods during the competition. Investigation of the parameters of technical and tactical activities of highly skilled volleyball players currently has important practical significance for the development of Ukrainian volleyball [5, 6]. In turn, the quality characteristics of competitive process are elements of a single system, the function in go which depends on the effective news so fetch methods, that is necessary in studying of the systematic approach to the competitive activity in volleyball.

Evaluating of the effectiveness and determination of model indicators in competitive activity of highly skilled volleyball players currently has an actual problem of the development in Ukrainian volleyball, which is to use of the new effective approaches to improve its effectiveness. Also remains an actual of the

simulation attacking action of the Ukrainian highly skilled volleyball players, by results of competitive activity, which necessitates the use of highly specialized means of preparation, that provide maximum training effect.

General theoretical approaches to the problem of estimation and modeling of technical and tactical actions through various kinds of sports was described in the works by L.P Matveev [9] and V.N Platonov [11]. Problem of improving the technical and tactical skills of volleyball players in detail described by Refs L.R. Airapet'yants [1], E.K. Akhmerova [2] A.V. Rotisserie [4] A.G. Furmanova [13], M. Cieślicka, B. Dix, M. Napierała, W. Zukow [14], R. Lobietti, S. Coleman, E. Pizzichillo, F. Merni [15]. The main focus of these researches is the creation of theoretical premises roles of simulation and competitive activity volleyball players of different levels, training, which are based on processing the statistical indicators of technical and tactical activity during official games.

The research results of E.Yu. Doroshenko [7], in which the author notes the proposed methods of modeling competitive activity of highly skilled volleyball players to permit to form the optimal direction of the training process, with the use of specialized means at different stages of long-term training. In scientific studies,

A.V. Vertelia [4], L.R. Airapet'yantsa [1], E.K. Akhmerova [2], development of models of the strongest athletes and highly skilled volleyball players holds a special meaning. Particularly noteworthy are studies that have been conducted at major international competitions – the World Championship of Europe, Olympics games [4, 5, 7, 10], which allows to determine not only individual indicators technical and tactical actions of the best volleyball players in the world, but and the trends of modern volleyball. In our opinion, namely indicators of technical and tactical actions in the attack affect the result of a team as a whole and determine the effectiveness of training and competitive process of high skilled volleyball players.

Currently, there are various ways applications of modeling technical and tactical actions highly skilled volleyball players, having a range of its own shortcomings. At the same moment in the scientific literature there are no data for determine the models parameters technical and tactical actions in the attack highly skilled volleyball players Ukraine. The uncertainty of the assessment methods used in volleyball, create preconditions for the necessary of simulation indicators attacking action of high class volleyball players as a means of improving the competitive activities of skilled players.

Work carried out in accordance with the «Consolidated Plan R & D in the field of physical culture and sports on 2011 – 2015 yy» the Ministry of Ukraine for Family, Youth and Sports Related 2.16 «Improvements of funds of technical and tactical training of qualified athletes using modern measurement technologies , analysis and simulation of movements»(state registration number 0110U002416).

The purpose of the study –to determine the model indicators technical and tactical actions in the attack of highly skilled volleyball players.

Research methods – analysis and compilation of scientific and methodological literature, analysis of competitive activity of highly skilled volleyball

players, pedagogical observation, modeling of technical and tactical actions in the attack of highly skilled volleyball players.

Results of the study. Pedagogical observation of highly skilled volleyball players competitive activity has been carried out with the help of video analysis games World Volleyball League 2010 – 2012, World Championship – 2010, Olympics Games – 2012, European Championship – 2012. Pedagogical observation of competitive activity highly skilled volleyball players Ukraine was based on video analysis of competitive activity of the athletes with their participation in the volleyball Championship of Ukraine's among the teams of Super League 2010 – 2013. Totally were analyzed 130 games. Table 1 and 2 show the statistics indicators of technical and tactical actions in the attack of highly skilled volleyball players in the world and Ukraine on the results of the official competition.

Table 1

Statistics of application of technical and tactical actions in the attack of highly skilled volleyball players of the world

Teams	technical and tactical actions													
	supple movement		flight level		takeoff		area		base line		hit		merely	
	\bar{X}	S	\bar{X}	S	\bar{X}	S	\bar{X}	S	\bar{X}	S	\bar{X}	S	\bar{X}	S
Highlyskilledvolleyball playersof the world	25	1,7	6	0,9	14	0,8	14	0,8	18	1,8	20	0,9	20	3,2
Highlyskilledvolleyball playersof the Ukraine	20	0,9	3	0,3	13	0,7	9	0,9	14	1,1	15	0,8	39	4,5
«Burevestnik»	18	0,3	2	0,2	9	0,7	8	0,1	11	0,5	13	0,3	49	1,8

Note. \bar{X} – the arithmetic mean; S – standard deviation.

Table 2

Statistics of application of technical and tactical actions in the attack of highly skilled volleyball players of the world

Teams	Technical and tactical actions in the attack													
	supple movement		flight level		takeoff		area		base line		hit		merely	
	\bar{X}	S	\bar{X}	S	\bar{X}	S	\bar{X}	S	\bar{X}	S	\bar{X}	S	\bar{X}	S
Highlyskilledvolleyball playersof the world	10	1,2	4	0,9	10	0,5	7	0,7	12	0,6	10	1,2	6	1
Highlyskilledvolleyball playersof the Ukraine	8	0,4	2	0,3	8	0,5	6	0,3	7	0,4	6	0,4	4,6	0,7
«Burevestnik»	5	0,5	1	0,1	6	0,3	5	0,1	6	0,1	7	0,1	11	1,3

Note. \bar{X} – the arithmetic mean; S – standard deviation.

Average statistical indicators highly skilled volleyball players testify that the largest number of technical and tactical actions during one game, players used 25 times tactical combination «supple movement», the individual technical and tactical actions high-class players used in the same value – 14 times attacking shots from the back line used by average statistical indicators value of 18 times ($p < 0.05$).

Teams of highly skilled volleyball players of Ukraine on this average statistical indicators is lower, their results are shown in Table 1 and 2: the greatest number of strikers action of Ukrainian athletes perform through the use of the attacker's actions «merely» (attacking stroke sat presence of high balls from the point guard player, that accompanied of the group block the opponent). In second place is the use of attack combination «supple movement», which is performed during a one game 20 times, «hit»– 15 attacking strikes from the back line – 14, respectively. Average statistical indicators of technical and tactical actions in the attack highly skilled volleyball players of the world to create conditions for building of group models technical and tactical actions in the attack in indicators of volume and efficiency, which are shown in Figure 1.

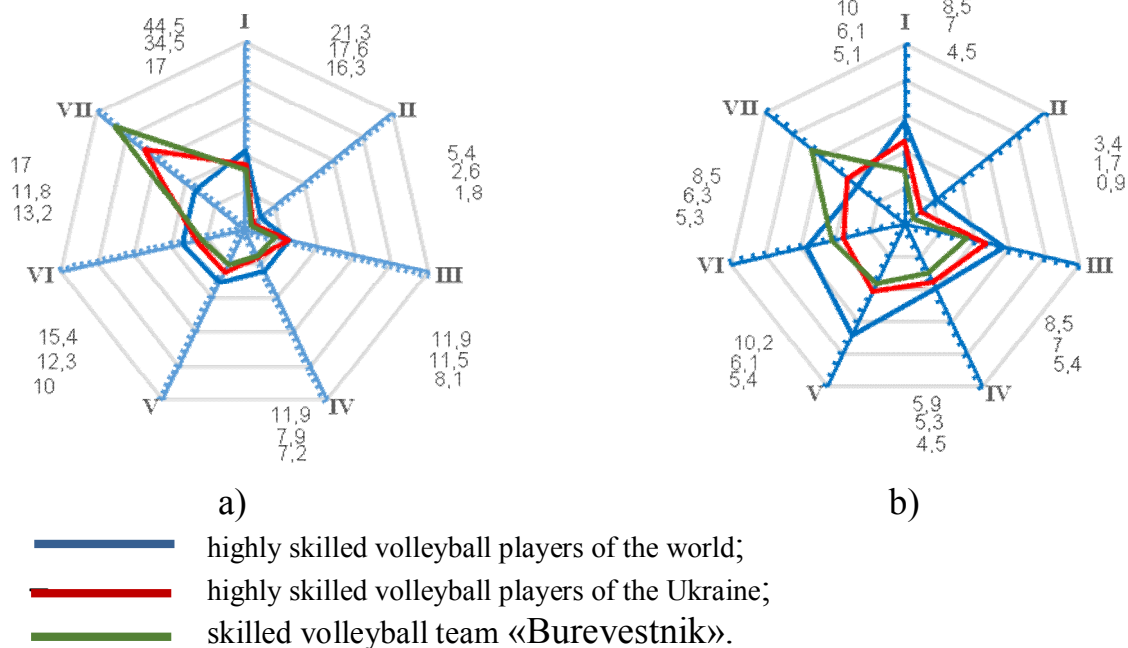


Figure 1 Model of technical and tactical actions in the attack of highly skilled volleyball players of the world and Ukraine on indicators volume a), and the effectiveness of b), in %:

I – «supple movement»; II – «flight level»; III – «take off»; IV – «area»; V – «base line»; VI – «hit»; VII – «merely».

By results of research can be determined that the teams of highly volleyball players of the world in greater volume (21,3%) use group tactics combination «supple movement» at which attacking actions are performed hitters in related areas, that is not difficult during its realization – the effectiveness of this group combinations 8,5%.

Very important for the competitive activity has application of tactical combination «flight level». On the average statistic data this tactical scheme used 6

times, but in 4 cases of the attack is win. Accordingly the indicator of volume this combination of the technical and tactical actions is 5,4%, effectiveness – 3,4%, which is a consequence of the presence of complex conditions for the organization this combination, namely – the interaction between players first and second tempo attacks between players front and rear line.

The analysis shows an increase in the number of attacks from the depths of the volleyball court (zone 1, 5 and 6), namely – the volume and effectiveness up to 15,4% and 10,2%, respectively, that indicating the needs for further improvement of this technical and tactical actions. This is a consequence of increasing the number of attacking players at the expense of the back line players in the game 5x1.

Volume indicators of tactical combination «take off» and «area» have equal value – 11,9%, but the values, they have significant differences in their effectiveness – 8,5% and 5,9% respectively. Also high-class volleyball team shave trend to the same volume of application of individual tactical actions «hit» and «merely» that is 17%, but the effectiveness of these actions is 7,6% and 5,1%, respectively.

Comparative analysis of the competitive activities of highly skilled volleyball players in the World and Ukraine shows the difference between the structure of technical and tactical actions in the attack Ukrainian athletes. The largest volume of performing technical and tactical actions highly skilled volleyball players of Ukraine and Ukrainian Super League team "Burevestnik" constitutes the attacking action «merely» with indicators of 34,5% and 44, 5% respectively. But the effectiveness of the technical and tactical action has a lower figure than the world volleyball players – 6,1% and 5,1%, respectively. This trend in Ukrainian volleyball associated with sufficiently low level of technical and tactical skills, which is due to low efficiency of competitive activity. Second place in volume of attacking action relates to the individual technical and tactical action, «hit», which amounts to 13,2%, and the efficiency of – 5,3%, indicating that the imperfect form of tactical interactions in the game of volleyball players in Ukraine. Application of attacking action from the back line of the volleyball ground by the volume in these groups volleyball players constitutes 12,3% and 10% respectively, the effectiveness of – 6,1% and 5,4%.

Table 3 presents the statistics indicators performance of various kinds of innings by high skill volleyball players world and Ukraine.

Table 3

Statistical indicators of the performance supply in the competitive activity of highly skilled volleyball players in the world and Ukraine

Teams	Total		Strenyth service		Planning				Winning		Losing	
					target		shorting					
	\bar{x}	S	\bar{x}	S	\bar{x}	S	\bar{x}	S	\bar{x}	S	\bar{x}	S
highlyskilledvolleyball players in the world	105	15,4	54,3	4,2	22,8	8	4,7	1,1	7,2	0,6	16	1,5
highlyskilledvolleyball players of Ukraine	94,5	10,6	36,4	4,4	27,6	2,8	12,1	1,4	3,6	0,3	14,8	1,7
«Burevestnik»	93	3,6	30	1,1	31	0,6	18	1	4	0,07	10	0,8

Note. \bar{X} – thearithmetic mean; S – standard deviation.

We noted a tendency to increase the amount of the serve in the jump, that was of power character. Accordingly to the results of the research which can be argued that the team of highly skilled volleyball players in the world mostly in competitive activity using of the power serve in the jump, which corresponds to modern trends in the development of volleyball. Figure 2 shows the group model of application of serves in the jump in conditions competitive activity of high skilled volleyball players in the World and Ukraine.

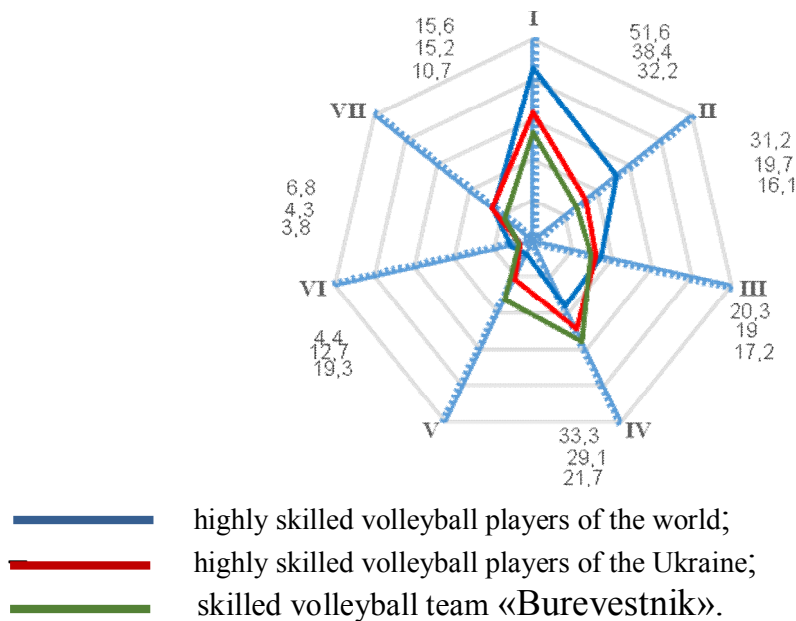


Figure 2 Model applying supply in the jump at the result of competitive activity of highly skilled volleyball players of the world and Ukraine, in %.

I – Power serve in a jump; II – a complicated power supply in a jump; III – the force of a jump that brought to an opponent with an attack rate of the first offensive player; IV – planning target serve in the jump; V – planning's hurting serve in the jump; V – winning submission; VII – Losing serve.

Based on comparative analysis of competitive activity of volleyball players has been found that the power innings in the jump is performed at a largest volume (51,6%) by high skilled volleyball players of the world. The volume of application of power innings in the jump in competitive activity of high skilled volleyball players of Ukraine is 38,4%, the «Burevestnik» team 32,2%.

Therefore, the greatest value of the efficiency of power inning in the jump belongs to the teams of highly skilled volleyball players of the world, whose indicators is – 31,2% highly skilled volleyball players Ukraine – 19,7%, the «Burevestnik» team – 16,1%.

Volume innings, which were brought to the point guard at the highly skilled volleyball players of the world is – 20,3%, players of Super League of Ukraine – 19%, the "Burevestnik" team players – 17,2%.

The greatest volume of " aimed planning innings" on the results of own studies have been reported in the «Burevestnik» team is – 33,3%, highly skilled volleyball players Ukraine – 29.1%, for highly skilled volleyball players world – 21,7%. High

indicators volume of shortened planning innings also have skilled players of "Burevestnik" team is – 19,3%, skilled volleyball players Ukraine – 12,7% for highly skilled volleyball players world – 4,4%, respectively.

Ratio of won and lost balls enables us to state that during the power inning in the jump significantly increased indicator of lost balls, up to 15,6% for highly skilled volleyball players of the world, 15,2% in volleyball players of Ukraine and 10,7% of the players «Burevestnik» team and, according to leading experts and practitioners in the field of modern volleyball [8, 12] is an acceptable risk in the competitive activity from high skill volleyball players. Percent of won balls of the world players is –6,8%, which confirms the high level of professionalism in the technical and tactical training of highly skilled players. The players of Super League of Ukraine this figure is – 4.3%, and players of the «Burevestnik» – 3,8%, respectively.

Conclusion:

Analysis of the data to determinate the permission and the basic patterns of that exist in competitive activity highly skilled volleyball players:

- The largest volume application of technical and tactical actions in the attack belongs to the group tactics «supple movement» "supple movement", whose indicator is 21,3%;

- The smallest volume of application belongs to the group tactics «flight level» whose model indicator of 5,4%, the efficiency of 3,4%, respectively;

- It was found that the power serve in the jump from the model parameters used in 51,6% of cases, the planning – 21,7% and 4,4% shorter;

- attacks from the base line playground for model parameters used in the volume of 20.8%, the efficiency of which is 13,6%;

- volleyball teams of Super League of Ukraine and qualified team players "Burevestnic" significantly inferior to highly skilled volleyball players of the world in terms of volume and effectiveness of technical and tactical actions in the attack.

Especially this tendency is confirmed by the use of attack action from the back line of the volleyball court, which must be taken into account in the organization of technical and tactical Ukrainian athletes training for optimize the training and competitive activities.

Prospects for further research on this issue will be associated with the development of individual models technical and tactical activities highly skilled volleyball players based on their gaming specialization that will make up the methodical basis of training and competitive activities of the players.

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APPLICATION OF OPERATIONAL CAR CREW UNIVERSAL SPEED STENOGRAM

Abstract. Purpose: experimentally to check up possibility and efficiency of application of operative cars of universal speed shorthand records of unknown roads crews. **Materials and Methods:** theoretical analysis and generalization, pedagogical supervisions, pedagogical experiment, methods of mathematical statistics. In research took part 20 professional crews road patrol State Automobile Inspectorate, in all 40 persons, up-diffused on 2 groups for 10 crews: experimental and control. **Results:** application of methods of universal speed shorthand record of CP an experimental group allowed to shorten time-of-flight of segment of control distance on 7,37%. **Conclusion:** the results of pedagogical experiment at participation of professional crews road patrol State Automobile Inspectorate on official cars in the contention terms of the real route testify to possibility and efficiency of application of operative cars of the special setting of universal speed shorthand records of unknown roads crews during their professional activity.

Keywords: crew, operative car, shorthand record, result.

Introduction. Extreme working conditions of drivers of special operational and saving cars of the Ministry of Internal Affairs, the Ministry of Emergency Situations, the Ministry of Health, and the Ministry of Defense [1; 2] are connected with the need as soon as possible, but it is safe to deliver the special staff and the necessary equipment by unfamiliar and often difficult roads to the right place. Participants of automobile rallies are also obliged to overcome difficult special parts (SP) as soon as faster, however for the purpose of the improvement of sports result and the increase of the level of own safety [3], they apply the special description of the route – so-called high-speed shorthand reports. Such shorthand reports are laid by crews during the acquaintance with routes of SP and contain the advancing information about the invisible fragments of the route in front, somehow the length of direct pieces, the direction and the steepness of turns, dangerous places and so forth.

It is possible to assume that the usage by drivers of operational and saving cars of similar technologies and the best practices of application of high-speed shorthand reports by rally crews will give the chance to facilitate and increase the efficiency of performance of the official duties by them significantly.

Results of the researches of authors [4] on the example of crews of cars of safety of organizers of automobile rallies showed that application by them at high-speed passing of the unfamiliar route of the universal high-speed shorthand reports

concluded by the organizer significantly increases the result and reduce the accident rate. However the experiment was made in the conditions of absolutely safe artificial operated environment – on the special exercise machine simulator of a sports car for shorthand record preparation of rally crews [5]. Before the experiment amateur drivers were involved who were never engaged in automobile rallies.

Therefore carrying out the similar experiment with the participation of professional crews of traffic police of SVI on official cars in the competitive conditions of the real route will give the chance to confirm or deny opportunity and efficiency of application by crews of operational cars of special purpose of universal high-speed shorthand reports of unfamiliar roads during their professional activity.

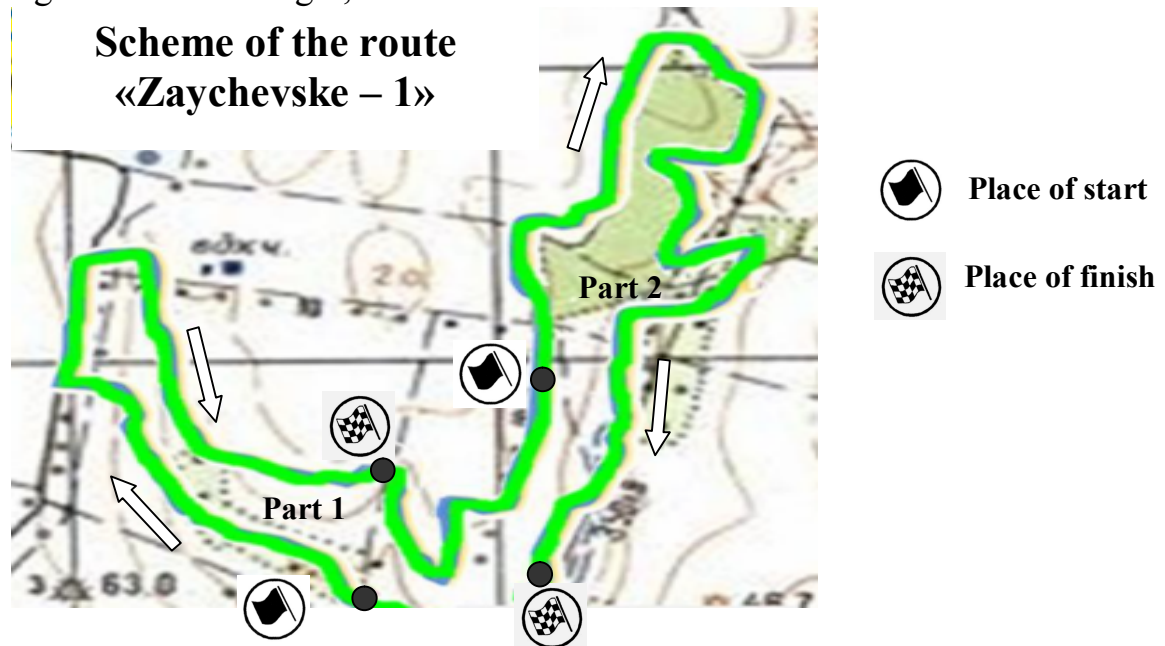
The aim of the research: to check opportunity and efficiency of the application by crews of operational cars of universal high-speed shorthand reports of unfamiliar roads experimentally.

Material and methods of the research. Participants of the pedagogical experiment – crews of traffic police of SVI of Nikolayev area on brand cars VAZ with a front-wheel drive and with an engine capacity up to 1600 sm³ who took part in the competition of driver's skill organized for them by the Nikolayev regional automobile club on August 24 in 2014 (in all – 20 crews). To the pedagogical experiment 40 policemen – men were drawn with the age of 23-36 years old which never was engaged in motoring. Crews were divided into two groups in a casual order (behind surnames of drivers in alphabetical order) – experimental and comparative – on ten crews in everyone.

For the competition the safe route of SP "Zaychevske-1" with an equal soil covering 19,01 km long was chosen by organizers which was divided into two timed parts (pic. 1). The first part of the route 6,55 km long all crews which took part in the pedagogical experiment, passed on speed without application of the universal shorthand report. The second part of the route 7,92 km long the crews which were included into the experimental group, passed on speed for the organizer imprisoned by experts the universal shorthand report while crews of the comparative group overcame this distance without shorthand report. The crews of different groups were awarded separately behind the results of passing of the second part of a distance. The previous acquaintance of crews with the route wasn't allowed. The pedagogical installation for all participants of the pedagogical experiment is – a full avoidance of any accidents under severe threat of an exception of the competition.

The universal shorthand report was concluded according to recommendations of authors [4], and included distances between turns in meters with bindings to characteristic objects on the district, the steepness of turns from "1" (smooth turn which to be taken place at the maximum speed) to "6" (a turn which demands the maximum reduction in the rate of the movement), and also additional information on roads of a section of the route, invisible behind longitudinal changes, narrow, slippery and hilly parts and so forth. The shorthand report was issued to crews of the experimental group the day before the special instructing about an order of its use. Automatic timekeeping of results was carried out by system "Teletrek" [3] with

exactness till 1,0s. The start was given from a place with the working engine behind a green signal of a traffic light, the finish – the course.



Pic. 1. The scheme of the route on which the pedagogical experiment was organized

Communication of the research with scientific programs, plans, subjects.

The work is performed according to the tasks of the subject 2.8. "Improvements of training of sportsmen in separate groups of sports" (number of the state registration is 0111U006473) of the Built plan of the research work in the sphere of physical culture and sport for 2011-2015.

Results of the research and their discussion. The results of the pedagogical experiment which is made by us are given in the tab.

Table 1

Results of passing by participants of the pedagogical experiment of two pieces of a special part of SP "Zaychevske-1"

№	Initials of members of a crew	Results of the 1 st piece, s	Results of the 2 nd piece, s	№	Initials of members of a crew	Results of the 1 st piece, s	Results of the 2 nd piece, s
The experimental group				The comparative group			
1	P. – Ya.	421	636	1	Zh. – L.	406	556
2	G. – P.	430	663	2	B. – D.	455	623
3	K. – F.	409	612	3	K. – K.	425	589
4	Kh. – R.	415	615	4	P. – Yu.	424	600
5	G. – V.	453	689	5	G. – L.	440	604
6	R. – A.	441	617	6	A. – B.	432	619
7	M. – A.	437	644	7	B. – V.	452	637
8	K. – D.	413	607	8	Yu. – M.	411	557
9	M. – L.	455	692	9	Yu. – Ye.	420	596
10	O. – R.	447	661	10	M. – K.	450	611
	<i>X, s</i>	432,1	643,6		<i>X, s</i>	431,5	599,2
	Σ	5,38	10,00		Σ	5,47	8,37

Check of a normality of the distribution of results of passing by crews – participants of the pedagogical experiment – route of SP pieces behind the universal shorthand report and without it, as small selections ($n \geq 10$), it was carried out behind the Shapiro – Wilk test [6]. The value of W-criterion is paid off behind a formula (1):

$$W = b^2 / (n - 1) S^2, (1)$$

For the volume of a selection of $n=10$ was chosen a tabular value $W_{0,05}$ which was compared to the calculated by us value of W-criterion. As $W_{0,05} < W$, it is possible to claim, that the zero hypothesis is accepted, that empirical data answer a normal distribution for the level of a significance value $\alpha=0,05$.

A difference between results of passing of the first piece of a distance crews of both groups behind Student's t-criterion for the independent selections and a significance value $\alpha=0,05$ is statistically doubtful ($t=0,105765 < t_{cr}=2,262157$), and the second is reliable ($t=4,103924 > t_{cr}=2,262157$).

Results of the pedagogical experiment testify that the application by crews of the experimental group of the universal high-speed shorthand report of SP gave them the chance significantly and it is statistically authentically best of all to take place a distance of the second piece. A difference between the average time of passing of this piece by crews of the experimental group ($599,2 \pm 8,4$ s) and the comparative ($643,6 \pm 10,0$ s) group makes 47,4 s (7,37%), while the average time of passing by crews of both groups of the first piece ($432,1 \pm 5,4$ s and $431 \pm 5,5$ s) doesn't differ statistically.

Conclusion. Results of the pedagogical experiment with the participation of professional crews of traffic police of SVI on official cars in the competitive conditions of the real route will give the chance to confirm or deny opportunity and efficiency of application by crews of operational cars of special purpose of universal high-speed shorthand reports of unfamiliar roads during their professional activity.

Prospects of the subsequent researches. It is expedient to simplify a procedure of application by drivers of operational and saving cars of the advancing information on characteristics of invisible ahead parts of the unfamiliar road. Specially concluded by rally experts of the program for GPS-navigators can be applied for this purpose, which are intended for the office use. Their appendix will give the chance beforehand to warn these drivers about invisible features of the unknown road ahead without additional documents and dictation of the shorthand report by other member of a crew.

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THE FORMATION OF TRADITIONS OF PHYSICAL CULTURE IN THE UKRAINIAN SCOUTING.

Abstract. Purpose: *determine the features of formation of the Ukrainian Scouting and Scout body training system. Material and Methods:* *the studied problems studied by theoretical analysis and synthesis of scientific literature, organizing, logical conclusions. Results:* *we analyzed healthforming means and methods that were established by the founders of the scout movement in Ukraine and abroad. Conclusions:* *it was figured out that scout methods of physical development are formed on profound scientific and methodological works of famous Ukrainian pedagogues and scholars, who were the founders of the scout movement in Ukraine.*

Keywords: *scout system of bodyeducation, traditions of physical cultivation, physical education of youth.*

Introduction. The solution of any problem demands a careful studying of traditions, a return to primary sources. The question of the harmonious development of children and teenagers, the search of ways of optimization of their psychophysical state induces to the consideration of the theory and practice of physical training in youth scout organizations from the first days of the foundation. The research of their activity in a historical retrospective promotes the detection of perspective kits and methods of organization of the educational process which don't lose the relevance and today.

The first positive achievements appeared in the solution of questions of strengthening of health of children and youth at the end of the XIX century – at the beginning of the XX century. Physical training as a subject matter takes root into this period, the first institutions are created in which teachers of gymnastics for schools are trained, ideas of physical training of youth in educational editions are actively propagandized, sports organizations and societies are created which stimulate the development of physical culture of the personality [4].

The perspective of the development of the system of physical training is represented by the researches of many Ukrainian and foreign scientists. The special attention is deserved by scientific works of Ya. Bodnar [1], O. Vatssebi [2], O. Vinnichuk [3], R. Gakh [4], E. Prystupa [13], A. Tsyos [17].

However the experience of physical training of youth and the recreational activity of Plast still expect the perfect studying.

The aim of the research: to establish features of the formation of a Ukrainian scouting and scout systems of bodyeducation.

Material and methods of the research. The perspective of the research was studied by the method of the theoretical analysis and the generalization of scientific literature, systematization, logical conclusions.

Results of the research and their discussion. The idea of a new educational system of youth radically differing from school was actually around the world at the beginning of the XX century.

The Canadian writer Ernest Seton-Thompson (1860–1946) – the author of "A birch bark parcel" and "The textbook of a boy-scout" – books which were actively used by scouts became one of ideologists and inspirers of a scout movement. Described in a series of articles, Seton-Thompson's experience pushed the founder of scouting Lord Robert Baden-Powell of Gilwell (1847–1941) to the edition in 1908 of the first textbook "Scouting for boys" [8]. The importance of Baden-Powell system is that it forms a habit to carry out tasks exercises in the morning and in the evening at boys, makes a certain line of conduct and brings up the most valuable traits of character. The main scout method is a game, after all an activity which contains game elements, has the most effective results.

The bodyeducation (a motive profile) society "Sokil" can be considered as the soil on which the Ukrainian scouting was formed, which played a significant role in the national revival of Slavic people. Society "Sokol-Batko" was the center of the development of that time of Galician sport which conductor is Ivan Bobersky – connected the sports gymnastic movement with national and brought up a number of scout figures (between them O. Tisovsky and P. Franco) [10].

In the conditions of foreign enslavement the formation of physical training was connected with the Ukrainian host shooters. The idea of the improvement of military training of youth was the beginning of the movement (1911) for the purpose of the reconstruction of the Ukrainian Armed Forces which are capable to liberating competitions for the independence of Ukraine. Physical training, from the Cossack times, took a separate place in preparation of youth and military and had brightly applied character [12; 17]. The formation and the development of Ukrainian physical training during Austro-Hungarian and Polish domination were carried out on a voluntary basis by the dedicated work by national conscious intellectuals, separate figures, students. The dense network of cultural and educational, youth and sports societies and organizations was created thanks to their sacrificial activity in the Galician edge. The Galician teacher in his activity paid attention not only to the education of physical and spiritual abilities of a young man, but also to the national education [1].

Ivan Bobersky is considered as a father of the Ukrainian bodyeducation. Taken by the progressive European ideas, Bobersky laid the foundations in the formation of the sports movement, managed to use physical culture, as an effective remedy to awakening of national consciousness.

Realizing the value of promotion of sport by means of a printing word, Ivan Bobersky combines practical public and sports activities with the creative activity successfully. Books with descriptions of children's mobile entertainments, grants for classes by soccer, hockey, tennis, and also textbooks for training of specialists on

physical training appear from under his peer in Ukrainian for the first time: "Entertainments and outdoor games", "Eighteen ball mountains", "Dig ball" (soccer), "Sytkivka" (tennis), "Gakivka" (hockey), "Viryad" (front teams), "Free-handed exercises", "Prorukh", "New ways of physical training" and a number of other methodical literature [2]. Professor I. Bobersky is the author of the Ukrainian sports terminology.

Ivan Bobersky considered the organization Plast as an important cell of education of youth. "Here the youth gathers the experience and force to come to the aid of each neighbor", – wrote in the article to a calendar "Whists from Zaporozha for 1914". He listed the fundamental obligations of a scout, and finally he noted that: "Scout has to know a measure and a limit in everything" [11].

The organizational experience and connections of some existing societies were used for the reorganization of the Ukrainian scout movement. Among them are so-called "Dragomanivka" – the society of self-educated clubs of M. Dragomanov, one of which, under a wire of a student I. Chmola, turned into "a scout club" [10]. His club, near the clubs of Alexander Tisovsky and Petro Frank, became one of three sources of origin to "Plast". Military education and training of the Ukrainian youth was a task of a club first of all for future armed struggle for independent Ukraine. There is a thought that Ivan Chmola created the military Plast, Petro Franco – sports Plast, and Alexander Tisovsky – the whole Plast.

The two-week camp was arranged in the summer in 1912 on Goverla where 14 participants left scout and military training. It can be considered as the first camp in the history of Ukrainian Plast [7].

Understanding the importance of the all-round development of young patriots, Ivan Chmola wrote: "From a harmoniously developed person it is required the all-round dissipation of all its abilities, full dissipation of spiritual and physical signs <...>. Wide but distribution in the last times the out-of-school educational system of youth we called "Plast", and in homeland of that system in England – "Scouting" gets to itself. Still it isn't thought up anything the best from this party." [6].

A famous researcher of sport, a pupil of Lvov Plast, Ivan Bobersky's follower – Edward Zharsky (1906–2003) conducts the history of the Ukrainian physical training from "progulkarstva", and actually – from 1830 when "Golovatsky, Shashkevich, Vagilevich's walks and others, across Podillya, Pidkarpattya, and even the Carpathians..." were. These were the first attempts to lay the foundation to a traveler in Galicia [5]. E. Zharsky is an author of over than 100 publications from the theory and stories of sport, in particular brochures of "Runs" (1925), "Run through gossips" (1928), "Fight with the fists (boxing)" (1936), "Track and field athletics" (1936, 1954), "Bases of sokilstvo" (1935, 1937), "Bases of sports training" (1931), "Self-defense", "Sokilsky catechism", "The pressed by a bullet" (1928), "Physical training" (1937), "That is "physical culture" (1938). The creative operating time of this outstanding scientist and teacher (over 300 works) expects a careful research in Ukraine.

From all founders of "Plast" the least known is Stepan Gayduchok, though he founded the first clubs on a sample of English scouts. His love to rukhanka and sport

were a basis of the influence on pupils. He considered physical culture, physical training as powerful means of fight for the strong and healthy younger generation [3].

In the 1920-1930th S. Gayduchok actually was the most authoritative person in sports and sokil lives of Western Ukraine. Historical investigation of S. Gayduchok "Physical training of the Ukrainian people" draws attention today. It, in fact, is one of the first attempts of a complete image of the history of the Ukrainian physical culture and the development of Ukrainian sport in different regions and emigration in Ukraine. "... By motive exercises stride a bearing, fasten the whole organism, do a face fresh, and an eye clear...", – S. Gayduchok said in the book "Influence of physical training on temper of our youth". In this work the author notes that only physical training and sport can positively affect temper of our younger generation [13]. Theoretical provisions and practical recommendations of S. Gayduchok are actual and expedient as in theoretical, and practical aspects.

Taras Ivanovich Franco (1889–1958) made the significant contribution to the development of Ukrainian sports movement, educational and methodical publishing who considered physical culture and sport as powerful means of revival of the nation in the monograph "History and theory of rukhanka" (1923). "To revive broad masses and bring up new strong generation only rukhanka can <...>. Rukhanka strains and evenly develops all muscles of a body and fixes action of all bodies... makes a beautiful bearing, flexibility of a body, rotary, springiness and endurance. It maintains harmony between mind and body, makes courage, strength of will, orientation of speed" [16].

In the article "New in school rukhanka" he investigates the ponderability of physical exercises considering their advantage for health. At school he recommends to apply such exercises which "have physiologic cost (lead to the fast address of blood, and not too tire, exercises which muscles fix and increase mobile joints)" [2].

The noticeable trace in the matter of the formation and the development of Glician bodyeducation was left by Petro Ivanovich Franco (1890–1941) – an active sport author and an outstanding military. The versatile and tireless activity he considerably promoted organizationally the formation of the methodical, ideological principles of scouting societies [15]. In physical improvement he saw a main goal to a scouting.

Petro Franco is an author of books "Scout games and entertainments". "Rules to a retina", "The textbook of the Swedish rukhanka". He was among the leading figures of the scouting movement in Ukraine, made the significant contribution to the creation and the development of "Plast". P. Franco considered the Ukrainian scouting as one of the ways of education of youth which develops physical and spiritual abilities, makes character, teaches to be a citizen.

We can't ignore an operating time of a doctor Alexander Tisovsky (1886–1968) which generalized the previous experience, he worked the principles for the new organization, he signed the Plast Law behind which lives the Ukrainian scouting more than century, finally he issued the textbook "Lives in Plast". The basic principle of scouting system – through the work on itself to the development and temper of character. Games and noble competition for the best performance of the debt are a

key element in education of youth, for Tisovsky. Dr. Tisovsky accented not only on an educational or informative, but also improving role of the scouting traveler and camping. "It is possible to tell safely, – he wrote, – that there isn't a real Plast without this direct connection with the nature, without physical and spiritual enthusiasm, without these opportunity and adventures among which our scouting experience and self-confidence grows. In camps we have an opportunity not only to get different scouting skills, but also to spend cheerfully and with the concern time among the beauty of the nature and to derive from it strength for a body and spirit" [14, page 466].

O. Tisovsky didn't ignore by his attention and daily physical culture which calls "prorukh": "To reconstruct and make our organism repulsed on works and not benefits, each clever young man has to enter the daily prorukh in custom<...>; Prorukh is a corresponding selection of motive exercises, what carried out according to the instruction throughout longer time, increase forces of our muscles, joints and the whole organism, and correct a physical build whole, provide to it elasticity and convenience. Exercises of prorukh increase also the efficiency of a person, and also thanks to them gets prettier our health, we become mo joyous and more cheerful." [14, page 177]. The purpose of physical culture – a strengthening of health: "...we, scouts, need to cherish, to develop, to strengthen reasonably our health reorganization of our whole organism according to our natural data and to our age." [14, page 176]. Questions of sport and tourism as health formatted components of scouting, it is necessary to consider in separate researches as carrying out sports competition between scouting huts is a tradition [9] which is actively supported, and backpackings, with skills of a survival under natural conditions, is an indispensable component of the scouting program.

We can claim that O. Tisovsky created out-of-school system of the psychophysical improvement and the harmonious development of children and teenagers which besides has educational, informative, educational influence on young citizens, and, above all – promotes formation of national and patriotic outlook of young Ukrainians.

Conclusion. The historical review of scientifically methodical sources testifies that the scout system of physical improvement was formed on works of famous Ukrainian scientists and public figures, founders of Plast, – I. Bobersky, E. Zharsky, S. Gayduchok, I. Chmola, brothers Francs and O. Tisovsky. At this stage this detailed scientific operating time is little-known the Ukrainian scientific community and deservedly expects reprinting in the conditions of the independent Ukrainian state.

Games and travelling which provided the improvement and the versatile development of younger generation were the main methods of physical training in Plast, according to founders of the Ukrainian scouting. The introduction of scout system of physical training will give the chance in a new way to approach the solution of problems and calls of the present time, will help to bring up a conscientious attitude to own health at youth.

Prospects of the subsequent researches are directed on the introduction of the scout system of bodyeducation in recreational and improving activity of children and youth.

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KOLOKOLOV V.*National University of Civil Defense of Ukraine***COMPARATIVE ANALYSIS OF PHYSICAL PREPARATION OF CADETS AND STUDENTS OF NATIONAL UNIVESIY OF CIVIL DEFENSE IN UKRAINE FOR PROFESSIONAL DUTIES PERFORMANCE**

Abstract. Purpose: *to determine the difference in physical preparation of cadets and students of the I course, faculties "Civil Protection", "Fire Safety", "Anthropogenic-environmental security."* **Material and Methods:** *The research was conducted on the basis of educational and sports complex of the National University of Civil Defense of Ukraine. Into the research were involved 80 students-boys and 80 cadets-boys.* **Results:** *A comparative analysis of the physical fitness of students and cadets was carried out. The results of testing were lied out.* **Conclusions:** *The difference in performance terms was set out, but only subjected to three exercises: pull-ups, long jump, shuttle run, which allows you to optimize the physical fitness of cadets and students considering future careers.*

Keywords: *physical preparation, physical training, cadet, student, motor abilities.*

Introduction. Modern expert rescuer must comply to all the requirements in given in the European and global labor market, have a high level of professionalism and competitiveness [1; 3; 5].

The productivity and success of future professional activities totally dependent on the health, a high level of physical and mental working abilities, advanced coordination, space orientation, attention concentration and switch ability, advanced features of visual and auditory analyzers and ability to work in emotional and nervous tension in short time limit, in specific hard conditions associated with danger to life and health [2; 4; 6].

The system of physical education in universities of State Emergency Service of Ukraine (SES) should be a reliable foundation for a high level of mental capacity and intellectual development of students and cadets in the learning process, involving them into regular physical exercises and sports, forming the need for physical development and improvement to ensure a high level of health and professional longevity [3; 5; 6].

Thus, appears a need for high-quality physical preparation of experts in specialized higher education institutions SES of Ukraine, which is essential for professional duties performance.

Physical preparation varies in its diverse selection tools improving physical development, empowerment of their own body, and what is the most important – health promotion.

Scientists claim that exactly in a student's age the physical culture and sport are a biological basis for stimulation the formation and development of young human as a personality, the most important tool for health promotion and substantial increase of opportunities for effective learning and the acquisition of professional skills [6; 8; 9].

With help of the regular physical exercises program increases general working ability, so that there are some changes in the body formation, like physiological, psychological, biochemical and other processes that cause corresponding changes in motor and functional areas, expanding the range of motor skills and abilities, improving mental activity, regulates the psycho-emotional state, the labour organization is optimized, physical health is preserved and finally students healthy lifestyle is forming [1; 3; 4].

At universities of State Emergency Service of Ukraine fulfills the preparation of specialists in governing bodies and their units, that are directly involved into firefighting, emergency response, perform the rescue works in the water, and at the National University of Civil Protection of Ukraine, in particular, also pyrotechnics experts and mountain rescuers. Physical preparation of cadets and students aimed at preserving health, creative and work activity, the all-round development of physical qualities, essential knowledge and skills necessary to perform professional tasks [1].

By the authors O.M. Boltienkova (2010) [4], I.G. Bondarenko (2011) [3], V.M. Voronov (2012) [6] is proved the need for continuous improvement of physical fitness, searching for the new approaches to organization and realization of physical preparation at universities.

Therefore, to the question of physical preparation development in the process of preparation for the future professional activity in general is given a considerable attention. However, the actuality of this issue is still not reduced at present days, so that a number of authors points to the deficient level of physical fitness of university students, who didn't even have the entrance examination of physical preparation [5].

However, the requirements for physical fitness in SES university of Ukraine to the future professionals, cadets and students are alike.

Due to this, it is necessary to compare the level of physical fitness of cadets and students.

The objectives of he research. To determine the difference in physical preparation of cadets and students of the I course, faculties "Civil Protection", "Fire Safety", "Job safety".

Research tasks:

1. To analyze the scientific and methodological literature, on the issue of physical preparation in the field of civil protection SES of Ukraine.

2. To carry out a practical testing of physical fitness at the beginning and at the end of the I educational year, of cadets and students, faculties: "Civil Protection", "Fire Safety", "Anthropogenic-environmental security".

3. In terms of six exercises to determine the level of physical fitness of cadets and students of the I course, faculties "Civil Protection", "Fire Safety", "Anthropogenic-environmental security".

4. To conduct a comparative analysis of physical fitness of cadets and students of the I course, faculties: "Civil Protection", "Fire Safety", "Anthropogenic-environmental security."

Materials and methods. To the research were involved students and cadets of the first course in the amount of 160 persons, who, for their health state are referred to the main medical group.

The difference in physical fitness was determined by the results of educational testing of basic physical qualities: endurance, speed, agility, flexibility and strength.

The tests contents consisted of six control exercises which are included into the State tests and norms for evaluation of physical fitness of students, who are the main component of control events and attestations of the discipline "Physical Education". Into the research were included the following exercises: running at 100 m (s), running at 1000 m (s) shuttle run 4x9 m (s), chin-up (number of times), long jump(sm), complex-strength exercise (number of times per 1 minute).

Results of research and its discussion. Into the research were involved 80 students-boys and 80 cadets-boys of the National University of Civil Defence of Ukraine. The testing was conducted in educational and sports university complex at the beginning and at the end of the first course.

In this case we used techniques and methods for determining indicators, which sufficiently characterize the set of research group. In each individual case, was determined the arithmetic mean (\bar{X}), the standard error of the arithmetic mean (m), the coefficient of variation (σ), standard deviation (V), t-test of St'yudent (t). With help of the St'yudent table was defined a level of significance (p), for which it was judged on the degree of reliability differences in indicators which were compared.

The overall result of the practical test was formed by the amount of points earned for completing each exercise. The testing carried out cadets and students, faculties: "Civil Protection" (CP), "Fire Safety" (FS) and "Anthropogenic-environmental security." (AES).

Clearly the difference between the results on the faculties reflected in the table. 1-3.

Table 1

The results of testing students and cadets of the Faculty of "Protection"

Control exercises	Cadets, n=24				Students, n=24				t	p
	\bar{X}	σ	V	m	\bar{X}	σ	V	m		
Running 100 m (s)	13,54	0,62	0,05	0,12	13,88	0,86	0,06	0,26	1,7	>0,05
Running 1000 m (s)	212	10	0,03	0,02	239	22	0,06	0,07	1,2	>0,05
Shuttle running 4x9 m (s)	9,3	1,85	0,2	0,35	9,51	0,63	0,07	0,19	2,3	<0,05
Chin-up (number of times)	13,82	5,2	0,33	1,05	15,96	3,49	0,25	0,98	2,8	<0,01
Long jump (sm)	243	0,1	0,04	0,02	238	0,15	0,06	0,05	2,9	<0,01
Complex-strength exercise (number of times per minute)	50,04	3,63	0,07	0,69	42,91	9,53	0,22	2,87	1	>0,05

In the 100 m running, cadets result is $13,54 \pm 0,62$ s, students – $13,88 \pm 0,86$ sec. The results of running 1000 meters of cadets are 212 ± 10 s, the students – 239 ± 22 s. In the terms of exercise "shuttle run" the results of cadets – $9,3 \pm 1,85$ c, students – $9,51 \pm 0,63$ sec. Cadets results of chin-up exercise – $13,82 \pm 3,49$ times, the students – $15,96 \pm 5,2$ times. The results of the exercise "Long jump" of cadets – $243 \pm 0,1$ cm, the students – $238 \pm 0,15$ cm. The results of the exercise "complex-strength exercises" of cadets – $50,04 \pm 3,63$ times, students – $42,91 \pm 9,53$ times. In calculating the results for the Student t-test, the differences between distributions statistically significant results for the exercise "chin-up» ($p < 0,01$; $t = 2,8$), «long jump» ($p < 0,01$; $t = 2,9$), "shuttle run» ($p < 0,05$; $t = 2,3$). It means that the cadets results are better the results of students in the performing of the test exercises. According to the results of other exercises, the differences between the distributions were not statistically significant (Table. 1).

In the 100 m running cadets result is $14,18 \pm 0,68$ sec, students – $14,28 \pm 0,62$ sec. The results of running 1000 meters of cadets is 213 ± 18 s, the students – 218 ± 25 s. In the terms of exercise "shuttle run" the results of cadets – $9,37 \pm 0,51$ c, students – $9,59 \pm 0,51$ sec. Results of chin-up exercise, cadets is – $15,79 \pm 4,08$ times, students – $14,72 \pm 4,74$ times. The results of the exercise "long jump" of cadets is – $246 \pm 0,15$ cm, the students – $235 \pm 0,17$ cm. The results of the exercise "CSE" cadets – $50,21 \pm 2,92$ times, students – $48 \pm 4,45$ times.

In calculating the results for the t-test differences between distributions statistically significant results for the exercise "chin-up» ($p < 0,01$; $t = 2,8$), «long jump» ($p < 0,01$; $t = 2,8$), "shuttle run» ($p < 0,05$; $t = 2,1$). It means that the cadets results are better then students results in the performing of the test exercises. According to the results of other exercises differences between the distributions were not statistically significant (Table. 2).

Table 2

The test results of cadets and students of the Faculty "Fire Safety"

Control exercises	Cadets, n=56				Students, n=56				t	p
	\bar{X}	σ	V	m	\bar{X}	σ	V	m		
Running 100 m (s)	14,31	0,7	0,05	0,14	14,09	0,75	0,05	0,14	1,6	>0,05
Running 1000 m (s)	213	18	0,03	0,02	218	25	0,05	0,03	1,2	>0,05
Shuttle running 4x9 m (s)	9,37	0,51	0,05	0,1	9,59	0,51	0,05	0,09	2,1	<0,05
Chin-up (number of times)	12,6	1,89	0,15	0,39	14,72	4,74	0,32	0,89	2,8	<0,01
Long jump (sm)	246	0,15	0,06	0,03	234	0,14	0,06	0,03	2,8	<0,01
Complex-strength exercise (number of times per minute)	49,4	4,71	0,09	0,96	48	4,45	0,09	0,84	0,9	>0,05

In the 100 m running cadets result is $13,54 \pm 0,62$ sec, students – $13,94 \pm 0,65$ sec. Result of running at 1000 m of cadets is 220 ± 22 s, the students – 225 ± 31 s. In

the terms of exercise "shuttle run" the results of cadets – $9,87 \pm 0,79$ c, students – $9,62 \pm 0,87$ sec. Chin-up results of cadets – $12,3 \pm 7,53$ times, the students – $12,33 \pm 5,6$ times. The results of the exercise "long jump" are, cadets – $260 \pm 0,14$ cm, the students – $253 \pm 0,23$ cm. The results of the exercise "CSE" are, cadets – $50,04 \pm 3,63$ times, the students – $45,52 \pm 6,79$ times.

In calculating the results for the Student t-test the differences between distributions statistically significant results for the exercise "chin-up» ($p < 0,01$; $t = 2,9$), «long jump» ($p < 0,01$; $t = 2,8$), "shuttle run» ($p < 0,05$; $t = 2$). It means that the cadets results are better than results of students in the performing of the test exercises. According to the results of other exercises differences between the distributions were not statistically significant (Table. 3).

Table 3

The test results of cadets and students of the Faculty "Anthropogenic-environmental security"

Control exercises	Cadets, n=21				Students, n=21				t	p
	\bar{X}	σ	V	m	\bar{X}	σ	V	m		
Running 100 m (s)	13,54	0,62	0,05	0,13	13,94	0,65	0,05	0,14	1,5	>0,05
Running 1000 m (s)	220	22	0,89	0,09	225	31	0,16	0,13	1,4	>0,05
Shuttle running 4x9 m (s)	987	0,79	0,08	0,16	962	0,87	0,09	0,19	2	<0,05
Chin-up (number of times)	12,3	7,53	0,61	1,54	12,33	5,6	0,45	1,22	2,9	<0,01
Long jump (sm)	260	0,14	0,05	0,03	253	0,23	0,09	0,05	2,8	<0,01
Complex-strength exercise (number of times per minute)	50,04	3,63	0,07	0,74	45,52	6,79	0,15	1,48	0,7	>0,05

Conclusions:

1. Analysis of scientific and methodological literature indicates that in the scientific researches on physical preparation of specialists in the field of civil protection, no attention is paid to the problem of physical preparation of students.

2. The results shown in the inception of the experiment indicate that, students, who were accepted for education at university, have an insufficient level of physical fitness in performing of three exercises: chin-up, long jump, shuttle run.

3. The results of the study indicates a low level of physical fitness of students compared with cadets. Due to that it is necessary: firstly, to entrance exam in physical education in recruitment of students to enter the university; secondly, to develop a special program of physical preparation of students in the educational process of students with discipline physical education.

Prospects of the further researches. Based on the received data it is planned to investigate the dynamics of the physical fitness development of students in future: while transition from course to course, and to develop a separate curriculum in

physical education, which would contribute the development and optimization of physical fitness of university students SES of Ukraine.

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DIFFERENTIATED COMPLEXES OF PHYSICAL REHABILITATION OF YOUNG PEOPLE WITH PATHOLOGY OF A SPINE

Abstract. Purpose: identification and analysis of differentiated approaches to physical rehabilitation of students with spine pathology with different types of behavioral responses to stress – coping strategies. **Material and Methods:** a theoretical analysis, synthesis and special scientific-methodical literature, the analysis of experimental studies on animals and the results of physical rehabilitation students ‘ strategies in 76 students 19–20 years with neurological manifestations of vertebral osteochondrosis of 1 degree. **Results:** identified and analyzed the main features of rehabilitation measures among youth with spinal pathology (correction, massage therapy, kinesiotherapy) with different types of coping strategies. **Conclusions:** the proven effectiveness of differentiated application of physical rehabilitation on the basis of the definition of coping strategies among students with spine pathology.

Keywords: vertebral osteochondrosis, coping strategies, physical rehabilitation, stress.

Introduction. Researches of features of the influence of a neurogenetic stress on a condition of osteochondral system and for today it is actual not only for theoretical physiology, but also for modern physical rehabilitation. More and more specialists of this branch [4; 18; 19] provide a great value of a role of a neurogenetic stress in developing of degenerate and dystrophic diseases and consider anti-stress therapy as one of means of the increase of the efficiency of rehabilitation.

Features of specific and nonspecific action of a stress on musculoskeletal system of animals and a person, various manifestations of an adaptation syndrome are rather reflected in details in literature [2; 5; 7; 10; 13]. But the researches connected with the processes of interaction with a stressful factor, so-called coping-strategy of overcoming, and their physiologic influence on a condition of osseous-articular system in scientific publications insufficiently. Studying of this question became a basis for writing of this article.

The assumption that a neurogenetic stress, influencing the musculoskeletal system of people with different behavioural reactions to the stressful factor became the main idea of our research, attracts diverse structural and biochemical fouds of osteochondral tissue of a spine and needs differentiated approaches to the

rehabilitation process. The accounting of features of these fouls definitely can serve as physiologic justification of purpose of the differentiated programs of rehabilitation at patients with pathology of a spine with different types of behavioural reactions. The careful analysis of references and the researched experiments on this subject was necessary for studying of expediency of this assumption.

Communication of the research with scientific programs, plans, subjects.

The work is performed according to the Combined plan of RW in the sphere of physical culture and sport during 2011-2015 on a subject 4.6.3.1. "Theoretic-methodological principles of physical training and sport in the formation of healthy lifestyle", and also on the subject 3.5.2. "Programming and technique of physical rehabilitation of persons of different nosological and aged groups".

The purpose of the research. Therefore, the definition and the analysis of the differentiated approaches to physical rehabilitation of student's youth with pathology of a spine with different types of behavioural reactions to a stressful situation – coping-strategy on the basis of the references given studying, the made skilled experiments on animals and results of physical rehabilitation of student's youth, with neurologic manifestations of vertebral osteochondrosis of the 1 degree was the purpose of this work.

The tasks of the research. The tasks answered the purpose of the research:

1. To find features of definition of coping-strategy both in animals, and in people and the possibility of their use for carrying out more effective rehabilitation process on the basis of the analysis of scientifically methodical literature.
2. To define regularities of the influence of a neurogenetic stress on a condition of osseous-articular system of animals with different types of behavioural reactions to a stress by studying of some biochemical components of urine of white rats behind results of the experiment.
3. To define features of the purpose of the differentiated rehabilitation complexes at patients with degenerate and dystrophic diseases depending on the diagnosed coping-strategy and to analyze their efficiency in the course of rehabilitation of students with initial neurologic manifestations of vertebral osteochondrosis.

Material and methods of the research. Methods of the research became: the analysis of scientifically methodical literature on this problem, the analysis of laboratory researches of rats at the influence of neurogenetic stress, psychophysiological tests, clinical researches of student's youth by which a course of physical rehabilitation was conducted.

The analysis of the experimental studies on animals (32 white female rats of the age of 12 months) on the basis of the department of problems of laboratory diagnostics and immunology of M. I. Sitenko Kharkov institute of spine and joint pathology and results of physical rehabilitation of student's youth – 76 students of 19-20 years old with neurologic manifestations of vertebral osteochondrosis of the 1 degree on the basis of the department of health and physical rehabilitation of Sumy state pedagogical university was applied in the research.

Results of the research and their discussion. For the first time the question of different options of strategy of behavior of animals in stressful conditions was put forward by Walter Kennon. W. Kennon for the first time analyzed the mechanism of the emergence of stressful reaction as a result of neurohumoral processes and defined strategy of behavior of animals in the conditions of a stress as "fight" or "escape" [17]. This view of the neurohumoral nature of a stress found display and in works of the outstanding Canadian scientist, the founder of the theory of a stress H. Selye [15]. It possesses authorship of the concept of a stress which led actually to revolutionary overturn in this field of knowledge. Under the term "stress" H. Selye understood the nonspecific answer of an organism or the general adaptation syndrome according to any made demand – to intellectual or physical efforts, emotional excitement, fatigue, pain and so forth. The special attention in the theory of an adaptation syndrome is paid to the influence of stressful factors on a mental condition of a person. H. Selye uses the term *a mental stress*, understanding as it a stress which is followed by any interpersonal behavior and is attracted with human relations, their situation in the society. From this party the stress acts as mental and emotional reaction of a person to a situation, and any situation – both physical, and emotional [11]. Further the name "emotional stress" was provided to mental manifestations of the adaptation syndrome described by H. Selye. The emotional intensity is an obligatory component of a stress therefore the stress as result of psychological actions, was called emotional [2]. The stress and emotions develop in consciousness of a person almost right after the beginning of action of a stressor [5]. The first phase of a stressful reaction, passing a condition of alarm (by H. Selye), urged to prepare a human body, it occurs at the unconscious level, providing the protective behavior at the expense of the reflex sensomotor reactions. The second phase – the emergence of the corresponding emotions after a danger assessment – necessary for the subsequent conscious management and a choice of tactics of behavior, but can't affect the orientation of stressful mechanisms in any way. Understanding and an assessment of force of stressful reaction in many respects are defined by the manifestation of emotion [16].

R. Lazarus suggested to divide the physiologic stress caused by a real physical irritant, and the mental (emotional) stress connected with a value judgment of future situation as menacing when the subjective perception of threat acts [8] as the major stress and genetic factor. G. Lazarus, having learned a stress from a position of physiologic, psychological and behavioural levels, came to a conclusion that the physiologic stress is a direct reaction of an organism which is followed by the expressed physiologic shifts, on action of different external and internal incentives of physically chemical nature. In other words, at a physiologic stress of reaction high-stereotypic, and at psychological – reactions individual and not always predictable. At the differentiation of concepts of a physiologic and psychological stress of R. Lazarus noted that in the last case the stressful reaction should be understood as result of that, "why the individual demands from himself exactly in each concrete situation" and whether he has means to cope with subjectively perceived threat [8] effectively. Therefore, developing of a mental stress in a certain situation can be explained by not

objective characteristics, but by subjective features of the perception and the available reaction stereotypes. R. Lazarus's followers consider a stress as individually adaptive reaction of a person to the complication of a situation. The central place in their theories is taken by the individual importance and subjective (cognitive) assessment of the situation in which problems appear at a person, and also those ways by means of which he tries to overcome them. R. Lazarus and S. Folkman consider that the psychological stress is significant for wellbeing of the identity of relationship with the environment which strike to test the available resources of an organism and in certain cases can exceed them. Character and intensity of a stressful situation are defined generally by "the divergence degree between demands which are made by concrete activity to the personality, and those potentialities which are owned by the subject" [20]. Special value in the course of formation of physiologic and psychological adaptation is provided to features of nervous system and the psychoemotional sphere of the person which is under the influence of a stressful factor. Theoretical provisions of W. Kennon (in 1935) about the reaction of alarm in response to a stressful situation as the reaction of fight or escapes [14] were found by displays in modern views of psychology to a stress problem as the adaptive kit of behavior. The psychophysiological sphere joins the first at the influence of a new factor in reaction. It is about the adaptive kits of behavior directed on "saving" of expenses of an organism. Depends on results of action of this sphere, whether in the adaptation process physiologic and biochemical reactions which need the considerable tension of an organism will be involved. There are some classifications of adaptive kits of behavior. According to one of them three types of adapted behavior of live organisms [12] are distinguished:

- 1) an escape from an adverse irritant (an example of the first type the person can have a carrying of clothes, living in rooms, transformation of the environment by means of technical means, migrations to optimum areas of the existence but other);
- 2) passive submission to an irritant (formation of firmness, ability to store functions at change of force of influence of an ecological factor by the principle of tolerance);
- 3) active counteraction due to the development of specific adaptive reactions (active adaptation by the principle of resistance – joins when the organism doesn't owe the opportunity to use the first two types of adaptive behavior; the principle consists in compensation by means of specific adaptive mechanisms of the changes caused by the operating factor, and, therefore, in support of a homeostasis).

The analysis of references of rather psychological mechanisms testifies that two of their types generally are allocated: mechanisms of a psychological defense, compensation (protective mechanisms), and coping-mechanisms, psychological mechanisms of overcoming of a stress. A number of authors recognizes "mechanisms of a psychological defense", allocating active and passive [1] one. Other researchers allow the parallel existence of "mechanisms of a psychological defense" and "coping-mechanisms" [10]. Some authors consider "protective mechanisms" as a passive type of coping-behavior [6]. Most of authors consider mechanisms of a psychological defense and mechanisms of coping-behavior as ways of adaptation to a stressful

situation where the coping-behavior is defined as the strategy of actions of the personality directed on the elimination of a situation of psychological threat. Among psychological mechanisms of coping-behavior a number of authors consider the cognitive sphere of mentality, its conscious and irresponsible components [9]. Another question which interested us from the rehabilitation point of view, first of all, was the clarification of that how exactly the musculoskeletal device of the person reacts at the influence of a stressful situation depending on its individually typological features, its nervous system and the psychoemotional sphere, including from the existence of a certain kit of coping-strategy. But, to learn this question, at first we hold and analyzed the experiment on animals. There were certain regularities and the analyzed results of the influence of the neurogenetic stress on a condition of osseous-articular system of animals with different types of behavioural reactions to a stress by means of studying of some biochemical components of urine of white rats.

The research of the influence of the neurogenetic stress on a condition of musculoskeletal system of 32 white male rats of the age of 12 months was conducted for 30 days. The neurogenetic stress was modelled, causing in animals alarm neurosis by Desiderato (a situational stress of expectation) [17]. White rats were kept in the expectation stress conditions within 15 minutes every day. The maintenance of oxyproline, uronic acids, calcium, in daily urine by the corresponding techniques were defined at the beginning and after carrying out the experiment. Types of behavioural reactions defined in two groups by a technique of an open field [17] (group A of 18 rats – behavioural reactions of katatoxic type – "fight" and group B of 14 rats – behavioural reactions of syntactic type – "escape"). Dynamics of biochemical indicators of contents of oxyproline and uronic acids and calcium in a daily portion of urine by the beginning of the experiment and in 30 days against the action of the neurogenetic stressful factor are given in the table.

We established that biochemical criteria which display the emergence of degenerate and dystrophic changes in osteochondral tissues of white rats under the influence of the neurogenetic stressful factor, change depending on the type of behavioural reaction of animals (tab).

Orientation and extent of changes of concentration of some biochemical indicators in urine of white rats in 30 days of the influence of a neurogenetic stress (%)

№	Behavioural reactions of rats	Quantity of rats	Oxyproline	Uronic acids	Calcium
1	A behavioural reactions of katatoxic type – "fight"	18	↑45,4	↓75	↑47,5
2	B behavioural reactions of syntactic type – "escape"	14	↑55,5	↓40	↑45,0

It appeared that a big degree of the excretion of oxyproline (respectively for 10,1% – the difference is statistically reliable) as indicator of a catabolism of collagen

was observed at animals who belonged to group B, – with behavioural reactions of syntactic type ("escape"), than at animals of group A – with behavioural reactions of katatoxic type ("fight").

The most essential difference is found in the analysis of excretion of uronic acids as catabolism indicator of glycosaminoglycans with urine in white rats of both groups. Animals of the group A egested uronic acid after 30-days neurogenetic stress on 35% more, than rats that belonged to the group B (the difference is statistically reliable).

The difference of dynamics of urinary calcium in the course of the experiment at animals of two types differed insignificantly and wasn't reliable (group A – 47,5%, group B – 45,0%).

The analysis was carried out of not only biochemical indicators, but also of histomorphological changes of structure of bones of vertebrae and intervertebral disks [3; 17] in other research of influence of a neurogenetic stress on a condition of musculoskeletal system of rats with different features of nervous system. In the experiment it was proved that pathomorphological changes of the structure of bones at a stress load are met more expressed at syntactic reaction type. Changes of intervertebral disks were more powerful at katatoxic type of response to a stressful situation.

Analyzing these researches and extrapolating results of the experiment on the strategy of carrying out rehabilitation actions at patients with degenerate and dystrophic diseases, it is possible to determine the certain consistent patterns.

More expressed changes of uronic acids at rats with behavioural reaction to a stress as "fight" testify to foul in structure of bones and cartilages surveyed as a result of influence of a neurogenetic stress. However histomorphologic researches prove that more powerful fouls meet at these animals in the structure of cartilages.

More expressed changes of oxyproline at rats with behavioural reaction to a stress on the type "escape" also testify to foul in the structure of osteochondral tissue surveyed at influence of the neurogenetic stress. Histomorphological changes allow to assume that at a stress load bone structure of vertebra suffers most of all. According to these researches it was possible to come to a conclusion that depending on type of perception of a stressful situation (behind syntactic or katatoxic type) also complexes of rehabilitation actions have to differ.

Extrapolating results of the researches on animals, we decided to check correctness of these conclusions, investigating the efficiency of rehabilitation complexes at people with different strategy of behavior in a stressful situation (so-called coping-strategy). Exactly for this purpose we used "a questionnaire about ways of coping" of R. Lazarus and S. Folkman [20]. R. Lazarus and S. Folkman describe such situational- specific coping-strategy created by them on the basis of the procedural concept of the subsequent behavior [8].

1. Confrontative coping which is characterized by aggressive efforts for the change of a situation, allows a certain degree of hostility and readiness for risk.

2. Distantiation (cognitive efforts, to separate from a situation and to reduce its importance).

3. Self-checking or effort concerning the regulation of feelings and actions.

4. Search of social support or attempt to find emotional comfort and to receive information from others.

5. Acceptance of responsibility (recognition of the role in a problem with the accompanying subject of attempts of its decision).

6. Escape avoidance (the imaginary aspiration and behavioural efforts directed to escape or avoidance of a problem (but not distantiation from it)).

7. Planning of a solution (problem-focused effort concerning the change of the situation which provide analytical approach to a solution).

8. Positive revaluation (effort concerning the creation of positive value, focusing, on growth of own personality, includes also religious measurement).

Certainly, the psychological world of the person is much more difficult, than at animals. Therefore we did the carrying out of the corresponding recommendations of rehabilitation only in the presence of two extreme types of coping-strategy: 1) confrontative coping which completely answered the reaction as fight, aggressions (katatoxic A-type at animals for Walter Kennon), and 2) escape- avoidance – reactions as the type escape, passive fear (syntactic V-type at animals). At the same time, considering that some researchers in coping-strategy allocate katatoxic type as active, and all others including escape option as passive (syntactic) types, recommendations concerning rehabilitation of people with nonconfrontative type of coping-strategy came nearer to syntactic to option.

We developed and proved the comprehensive program of pedagogical correction and physical rehabilitation of student's youth with the pathology of spine which, carrying out the correctional influence on the intellectual sphere and a psychosomatic condition of students, improved a condition of their health, increased the efficiency of recovery treatment of these diseases of a spine, level of valeological education, quality of life of students. The rehabilitation stage of the comprehensive program of physical rehabilitation of student's youth included optimum sequence of rehabilitation actions: a) psychological preparation (psychocorrection or psychotherapy); b) medical massage (superficial with correction of skin of tender Head's zones (Zaharin-Geda's zones)); c) medical massage (deep with correction trigger and periosteal of sites with elements of manual correction. The correctional stage of the comprehensive program of physical rehabilitation of student's youth included the concrete recommendations about physiotherapy exercises and maintaining a healthy way of life definitely connected with data of psychodiagnostics and clinical inspection of a condition of a spine. For the purpose of the improvement of the comprehensive program of physical rehabilitation we for the first time we developed algorithm of the differentiated application of pedagogical correction, psychocorrection, medical massage, manual therapy and physiotherapy exercises, depending on certain psychological characteristics and features of nervous system taking into account coping-strategy of the identity of each student, the advanced technique of psychocorrection in the course of physical rehabilitation of students which considered type of strategy of response of the student to a stressful situation is applied. The comprehensive program of physical rehabilitation provided the

differentiated approach in carrying out improving and medical actions. So, at students with degenerate and dystrophic diseases of a spine with behavioural reaction to a stress on katatoxic type in the course of complex rehabilitation the attention of psychocorrection with application of the techniques directed on fight against the increased irritability, aggression, overfatigue was paid. Rehabilitation procedures (diet therapy, medical massage, elements of manual therapy, physiotherapy exercises, but other) were directed on the elimination of chronic tension of muscles of a back, strengthening the structures of cartilaginous tissue which according to experimental studies most of all suffered at this strategy of behavior in a stressful situation. For this reason the special attention was paid to exercises of physiotherapy exercises for strengthening of the connection apparatus of musculoskeletal system. At students with initial neurologic manifestations of degenerate and dystrophic diseases of a spine with behavioural reaction to a stress on syntactic type in the course of rehabilitation the attention was paid to the psychocorrectional techniques directed on fight against phobias, an astenic syndrome. Rehabilitation procedures (diet therapy, medical massage, elements of manual therapy, physiotherapy exercises, but other) have to be concentrated on renewal of the motive sphere of the patient, strengthening, bone tissue. The special attention was paid to exercises on relaxation.

The analysis of the efficiency of rehabilitation program was carried out on the basis of problem laboratory of improving and rehabilitation technologies of Sumy state pedagogical university of A.S. Makarenko where rehabilitation of 76 students of 19-20 years old was carried out (from them 54–71,05% are women) in improving groups with initial manifestations of osteochondrosis of different departments of a spine of the first stage (by the classification V. Ya. Fishchenko [19]). Not expressed pain syndrome or discomfort in cervical and pectoral, chest and lumbar and sacral parties of a spine prevailed among symptoms of a disease of a spine. Students were divided into two groups which were equivalent behind clinical symptomatology and localization of pathological process. The main group of students (39–51,32%) – received a course of renewal treatment according to the comprehensive program of physical rehabilitation taking into account the definition of coping-strategy. The group of comparison received a course of complex physical rehabilitation without the features of strategy of behavior investigated in the conditions of a stress (37–48,68%). The basic course of rehabilitation made 10–12 procedures lasting 1 hour daily or every other day.

The conducted clinical researches allowed to prove scientifically expediency of use of the differentiated advanced rehabilitation programs of physical rehabilitation taking into account a certain coping-strategy of each student and to confirm the efficiency of this rehabilitation program. So, high efficiency of rehabilitation on integrated indicators which included absolute clinical recovery, increase of level of health and quality of life was observed in 35 (89,74%) students of the main group from 39 persons concerning whom the differentiated rehabilitation programs were applied. In the group of comparison where the comprehensive program of physical rehabilitation without coping-strategy was applied, the similar positive effect is noted

only in 29 (78,37%) from 37 students that is 11,37% lower than results of the main group (the difference is statistically significant, $p < 0,05$).

Thus, proceeding from the analysis of scientifically methodical literature, the analysis of results of the experimental studies on animals and results the carried out rehabilitation it is possible to come to such conclusions.

Conclusions:

1. The definition of coping-strategy has to become an integral part of psychodiagnostics at people who need an anti-stress therapy. In the course of rehabilitation as the existence of extreme kits of coping-strategy (similar at people and at animals), and a complex psychological protections of persons, characteristic only for people have to be considered.

2. The research of the influence of neurogenetic stress on a condition of osseous-articular system of animals with different types of behavioural reactions to a stress by means of studying of some biochemical components of urine of white rats proved that the differentiated answer from osseous-articular system which is physiologic justification of purpose of the differentiated rehabilitation complexes at patients on degenerate and dystrophic diseases takes place at the influence of the neurogenetic stress on an organism of white rats with different types of behavioural reaction.

3. The application of the differentiated complexes of psychophysical rehabilitation for students with initial neurologic manifestations of vertebra osteochondrosis depending on the diagnosed coping-strategy which included in themselves the psychocorrection of different types of behavioural reactions and physrehabilitational of procedure more directed on renewal of cartilaginous tissue at the katatoxic type of the reaction and renewal of a bone tissue at the syntactic type of the reaction increased the efficiency of rehabilitation.

Prospects of the subsequent researches. Application of psychophysical rehabilitation programs provides the increase of efficiency of rehabilitation techniques and has a wide prospect of the development in physical rehabilitation of all segments of the population which at the same time would apply the compatible influence on the psychological sphere, on a functional condition of a spine and other factors of the development of diseases of a spine, taking into account certain coping-strategy at patients with neurologic manifestations of vertebral osteochondrosis has scientific theoretical and experimental justification.

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THE STATE OF APPLICATION THE INNOVATION TECHNOLOGIES INTO PHYSICAL EDUCATION AT REGIONAL SECONDARY SCHOOLS

Abstract. Purpose: *to determine the attitude and the level of readiness of physical culture teachers in regional secondary schools to use innovative approaches in the educational process. Material and Methods:* *At the survey took part 29 teachers of physical culture in city Izyum and Izyum district of Kharkiv region. To carry out the research were used the following methods: theoretical analysis and synthesis of scientific literature, questionnaires, methods of the mathematical statistics. Results* *The positive attitude to the innovative pedagogical approaches of physical education teachers in regional schools; it is determined that only 50% of teachers use them in the learning process. Revealed that most teachers are seeking to complete their teaching experience, but deficient of scientific and methodological literature is aimed in improving their professional skills. Conclusions:* *Positive attitude of teachers in regional secondary schools to implement innovative technologies into the educational process, but they were not prepared to innovations.*

Keywords: *physical education, modern innovation technologies, physical culture teachers, secondary educational establishments.*

Introduction. A necessary condition for the progress of modern Ukrainian society is human development. The future of our country is our children who should be healthy both spiritually and physically. Therefore the question of increasing the overall health level of the nation, and especially the younger generation, today is one of the main priorities of our Country. But recently in Ukraine was defined a problem that prevents the improvement of children and youth health. That is – the unpopularity among younger generation of leading a healthy lifestyle in general and, in particular, physical exercises and sports, physical education classes [2; 4; 5; 11].

The analysis of the modern school system shows that the educational process in secondary schools overloaded with subjects, which develop mental skills only, and do not always take into account the decline in physical development of modern children, deterioration of their health. Solving the problems of health saving and ensure the harmonious development of children in schools is an actual question and has a practical interest. Therefore, physical education specialists are nominated with new requirements, which needs the introduction of modern innovative technologies in the process of physical education of secondary school [3; 7].

Modern scholars point out that the existing system of physical education in Ukraine, do not achieve the goal of promoting the health of the community as there is

an increase of children with chronic diseases. Modern traditional lesson of the physical education provides in average about 20% of the necessary weekly physical activity, and about 50% of children have no sustained interest in physical exercises. That is why it is an actual question to search for innovative technologies of physical education in secondary schools, especially learning activities, where there is a standard approach, designed for the average student. The basic principle of professional activity of the teachers of Physical Education should be a striving for organic unity and consistency of individual biological, sex, and age characteristics and the system of its tools, methods, forms of the physical preparation [1; 6].

The main resource for the implementation of innovative technologies into the process of physical education is a teacher of physical culture. While building his own system of knowledge, the teacher should possess pedagogical, information and computer technologies, focus on a wide range of modern innovations and be able to implement them into the educational process. At the present stage for the innovation breakthrough in public education it is necessary to have coordinated work on the preparation of new teachers, teachers-researchers, and teachers-innovators.

The attitude and willingness, of the pedagogical skilled workers, for the innovation activity in the professional field, is based on the competence in innovations and practical acquaintance with different versions of their applications. Teacher of physical culture, preparedness for innovation is reflected in the light of the teacher attitude to some innovates, pupils and individual educational activities. According to experts, the main components of readiness for innovation activity of teachers of physical culture is a resistant motivation for innovations, focus on finding new technologies for better occupational of the professional tasks; the level of knowledge and skills development to conduct classes in physical education, creative thinking, etc. [9; 10].

However, the question of formation the readiness of teachers at various levels of innovation is represented not fully enough.

Connection of the research with academic programs, plans, themes. The research is carried out in accordance with thematic plan of scientific-research work of Kharkiv State Academy of Physical Education in 2013-2015 years, by the topic 3.5.29 "Theoretical and practical conditions of monitoring physical development, physical fitness and physical state of different public groups."

Purpose: to determine the attitude and the level of readiness of physical culture teachers in regional secondary schools to use innovative approaches in the educational process.

Material and methods. Learning up an attitude and willingness for innovations and implementation of the new technologies into the process of physical education in secondary schools was conducted among teachers of physical culture in city Izyum and Izyum district of Kharkiv region. At the survey took part 29 people aged from 19 to 58 years, who have an experience of work in the specialty from 1 to 32 years. To carry out the research were used the following *methods*: theoretical

analysis and synthesis of scientific literature, questionnaires, methods of the mathematical statistics.

Results and discussion. As the result of the research, which was conducted on the basis of a survey of physical education teachers on their attitude to innovations, it was found that 97% of respondents identified their positive attitude towards about the use of new technologies in the learning process. Unfortunately, 3% of teachers are indifferent to this question and consider it unimportant.

It was examined whether teachers use innovative approaches in the classroom for physical culture and what are those approaches – 38% of teachers said that they did not introduce the new technologies into the learning process at all of, 62% of respondents answered affirmative, 34% of respondents indicated that they use differentiated education, fitness and aerobic, 3% of video and Internet technologies, 3% interdisciplinary communication, 7% natural methods; 15% of teachers were unable to specify which innovative approaches they used in the learning process, so as a consequence we tend to believe that these percentage of respondents does not use any of innovative technologies on their lessons of physical education.

In the survey we determined that 14% of teachers in the educational process refers to the author programs. However, we found only one reference to the author's program (the program of Strelnikova). Most of respondents (86%) said that they did not have such a need. Thus, it can be noted that most teachers of physical culture have a positive attitude to the use of innovative approaches in the learning process of physical education at school, but much smaller number of professionals introduces them into practice.

The analysis of responses about the question of ensuring teachers with scientific and methodological literature that will help to enrich the knowledge of scientific information and give an opportunity to be familiarized with innovative technologies, showed that 62% of respondents have a great need in such methodical support as are ignorant in matters of existing modern technologies and techniques. Only 38% of teachers believe that they are provided with sufficient scientific and methodical literature, which helps them in practice.

Important for us was also information about what scientific and methodical literature the teacher of physical education are provided with. The analysis of the data showed that 31% are in need with the methodological literature of teaching sports and outdoor games; 20% are in need of books, information books and videos (the orientation of literature is not defined); 49% are undecided with the answer. According to this, we can conclude that at this stage the teachers of regional secondary schools are not enough supported with scientific-methodical literature and information materials that would provide them an opportunity to improve their theoretical and methodological level and learn more about the modern innovative technologies, for better preparation for educational activities.

The introduction of innovative programs provides the specially organized teacher trainings to master modern educational technologies and the characteristics of their implementation in the educational process in secondary schools. Therefore, our questionnaire included questions about whether teachers take part in teaching

seminars, associations, conferences and more. The analysis of responses shows that a small number of teachers (10%) are not involved into methodological and research activities, at all. Most respondents (90%) confirmed their participation in the methodological and research seminars, associations. According to this once a month they are visiting these events 7% of teachers, 2-4 times in six months – 6%, 1-5 times a year – 40%, 37% of respondents did not tell exactly how many times they visit methodological events. It should be noted that a large number of teachers are seeking to improve their professional skills and exploring best practical implementation of innovative technologies in the educational process in secondary schools.

Analysis of the questionnaires showed a positive trend to the increasing of interest regarding the application of new learning and educational technologies in physical education, of teachers in secondary schools.

Conclusions:

1. In the result of the research it was found that most teachers of physical education (97%) are positive about the introduction of innovative technologies in the educational process of secondary school.

2. A significant number of teachers (62%) are introducing the differentiated instruction, fitness, aerobic, Internet technologies and interdisciplinary communication, into the learning process of secondary schools. For the author's programs are addressing only 14% of respondents, while only one respondent was able to specify the name of the used program.

3. The survey showed that a significant number of teachers (62%) are in need of scientific and methodological literature, which would help them to complete their theoretical knowledge for a more creative approach to the educational process.

4. It was determined that 90% of respondents visit methodological and scientific seminars, association and are seeking to enrich their experience in scientific information and improve their pedagogical skills, learn the modern innovative technologies.

5. Based on the analysis of the given data it was determined that the introduction of innovative technologies into the educational process of secondary schools is in actuality and teachers of physical education are interested in receiving information on this question. However, as we think, across the variety of pedagogical innovations, this process revealed a lack of teachers preparation for that type of activity.

Prospects for the further research in this area is the development of electronic aids, remote trainings and seminars on the innovation activity of physical education teachers.

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SELF-APPRAISAL OF HOCKEY PLAYERS OF HIGH CLASS OF DIFFERENT PLAYING POSITION.

Abstract. Purpose: to expose the features of display of self-appraisal for the hockey players of high class of different playing position. **Material and Methods:** for the exposure of level of self-appraisal for hockey players, information of sportsmen of high class, taking part in the matches of the Kontinental hockey league (KHL) in a season 2013–2014 was probed sixteen hockey players, having a sporting digit MS and MSWC, took part in researches. Methods were used: pedagogical supervision, pedagogical analysis and generalization of front-rank experience, psychological testing, analysis of data of the special scientific-methodical literature, expert questioning, an analysis of data is the Internet. **Results:** findings allowed to set that the players of line of attack (central and extreme forward) have more high level of self-appraisal for certain, than players of defence and hockey goalkeepers. This tendency is looked over both on the separate constituents of self-appraisal and on the whole on all spectrums of the studied indexes. The got results of researches rotined that the hockey players of high class had or middle or high level of self-appraisal. Among testable hockey players, players were not exposed with the low level of self-appraisal. **Conclusions:** the exposed distinctions in the level of self-appraisal of hockey players of high class can be used for diagnostics of playing predisposition and choice of playing line of business in a command.

Keywords: level of self-appraisal, level of claims, playing line of business, competition activity, technique-tactical actions.

Introduction. One of the most significant factors which influence the preparation and the productivity of the competitive activity of high-class hockey players, self-appraisal is which can be considered as one of the most significant components among other properties of athletes. The optimum level of self-assessment is an important condition for high competitiveness of an athlete, and also a serious reserve and incentive for self-improvement [4; 7; 8].

Among factors which cause the formation of mechanisms of self-control, the central place belongs to self-appraisal which determines the direction and the level activity of a person, the formation of his personality. The self-appraisal of an athlete is interpreted as personal education which is directly involved in regulation of his behavior and activity as the autonomous characteristic of his personality [2; 3; 6].

The self-appraisal of a hockey player can be considered as a difficult and multiple-factor component of his consciousness, a difficult process of the mediated knowledge of who has dependence on an assessment of other persons taking

participation in the development of the identity of athletes [5; 7].

It is known that specifics of the competitive activity of high-class hockey players differ in multiple-factor component and ingenuity [1; 3; 4]. Hockey players should act in the conditions of continuous change of game variations, the need to be reconstructed quickly and find adequate ways of continuation of a fight on the ice. Hockey players carry out different game functions on a platform. In modern hockey it is accepted to allocate four main game roles: center forward, wing forward, defender and goalkeeper. Each of these game functions imposes the requirements to the level of manifestation of various qualities and the parties of preparedness of the athlete.

An actual task, in our opinion, is studying of features of manifestation of self-appraisal taking into account a game role of athletes. The obtained data can be useful at a choice of the game specialization at different stages of long-term improvement.

Communication of the research with scientific programs, plans, subjects.

The work is performed within a research subject 2.4. "Theoretic-methodical bases and individualization of educational and training process in game sports" according to the Consolidating plan of RW in the sphere of physical culture and sport for 2011-2015.

The aim of the researches: to reveal features of manifestation of self-appraisal at high-class hockey players of various game roles.

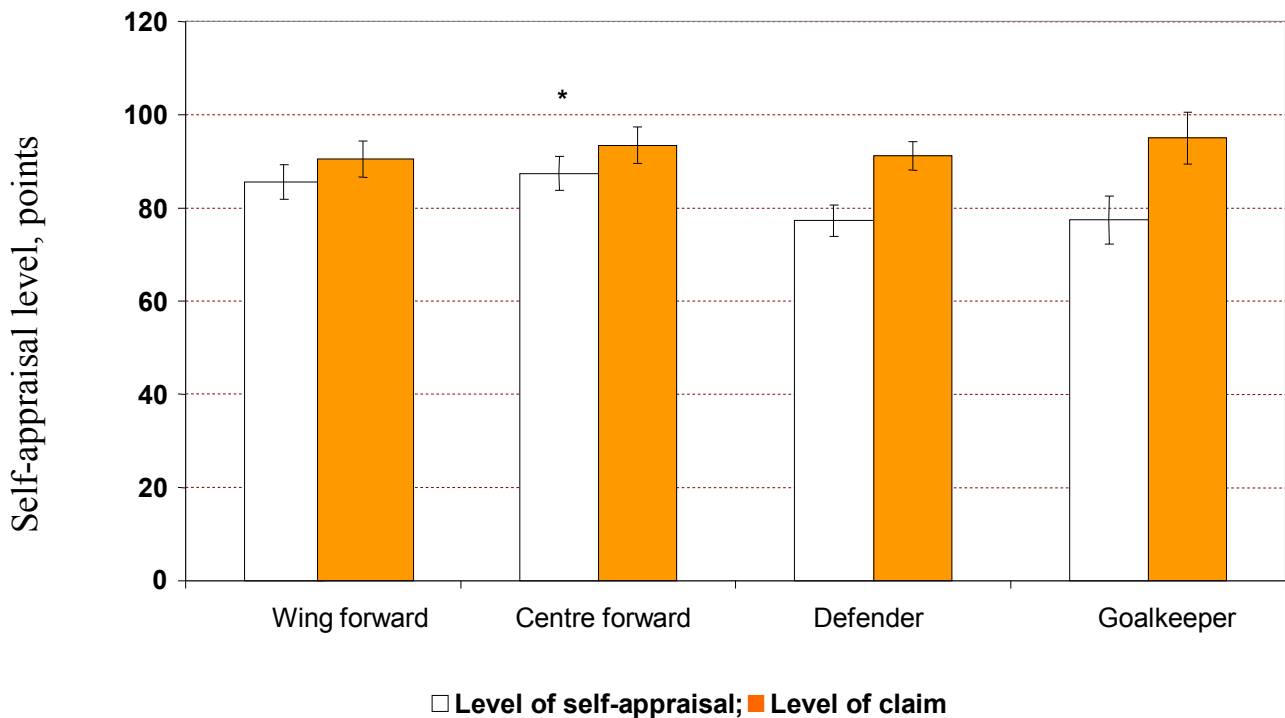
Material and methods of the researches: pedagogical supervision, pedagogical analysis and generalization of the best practices, psychological testing, analysis of data of special scientific and methodical literature, expert poll, analysis of data Internet.

Results of the researches and their discussion. Sportsmen who took part in our researches (five wing forwards, five center forwards, four defenders and four goalkeepers), should determine the level of the development or the possession by a 100-points scale (technique of Dembo-Rubinsheyn, where 100 is maximum of manifestation, and 0 is at least), and also the desirable level which an athlete can really reach on each of twenty offered indicators for the identification of the level of self-appraisal.

Thus, we determined the actual level of self-appraisal of hockey players, the level of their claims, and also the range of target deviation from the desirable result.

The data of the analysis of level of self-appraisal and claim of high-class hockey players of various roles on the block of indicators are submitted in pic. 1, which reflect physical abilities and health. This generalized indicator was revealed on the basis of the definition of arithmetic-mean on all separate indicators entering into the group. The first column (painted in light tone) reflects the actual level of self-appraisal of hockey players in the picture, and the second column (painted in more dark color) characterizes the level of claim of players.

Analyzing the data presented in the picture, it is possible to see that players of the line of attack, a wing and a center forward, have authentically higher level of self-appraisal, than the hockey players acting on positions of a defender and a goalkeeper.



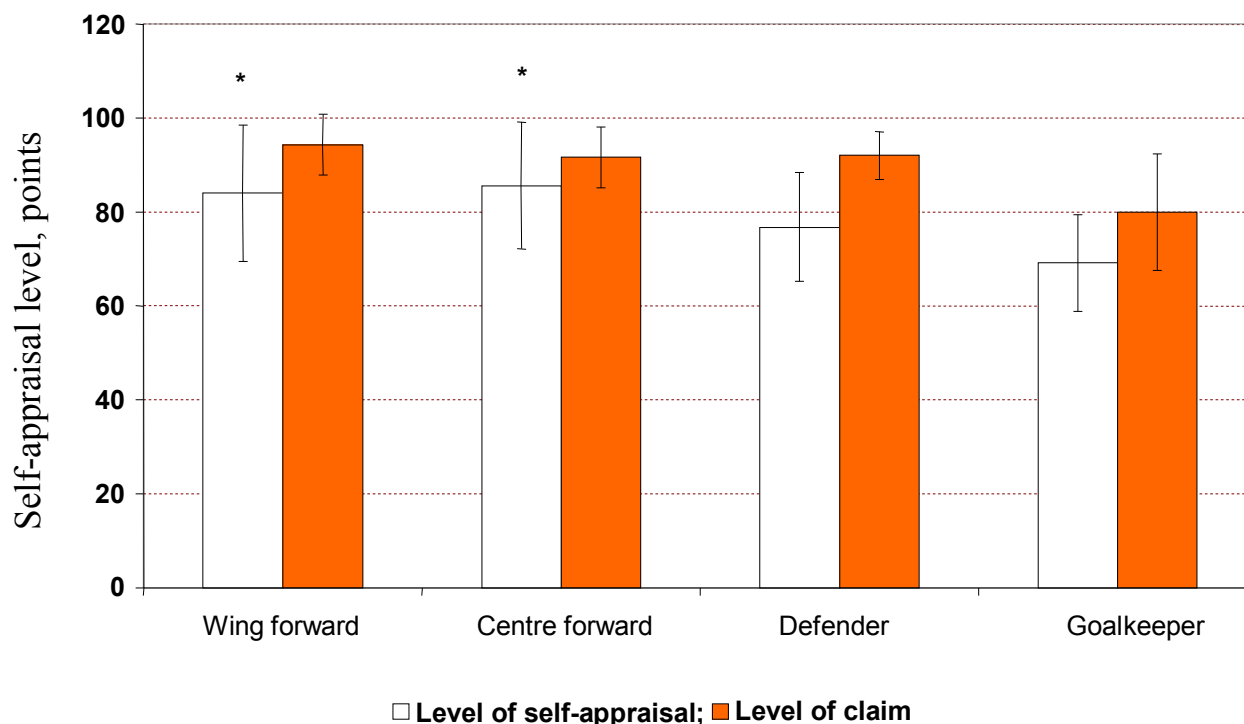
Pic. 1. Level of self-appraisal and claim of high-class hockey players of various roles on the block of the indicators characterizing physical abilities and health

So, the average level of self-appraisal for hockey players of attack made: for the wing forward of $85,6 \pm 3,69$ points, for the center forward – $87,4 \pm 3,62$ points. The defender and the goalkeeper have authentically ($p < 0,05$) lower values: the defender – $77,3 \pm 3,34$ points, the goalkeeper – $77,4 \pm 5,08$ points.

And here on the level of claims it is possible to observe some other results. Defenders and goalkeepers authentically didn't concede to players of attack on this indicator, and in comparison with the wing forward in general had higher level (statistically not reliable). For the wing forward the level of claim was equal – $90,5 \pm 3,86$, for the center forward – $93,4 \pm 3,90$, for the defender – $91,2 \pm 3,06$, for the goalkeeper – $95,0 \pm 5,59$.

Players of the line of attack on the studied block of indicators had the smaller range of a target deviation that can testify to more adequate level of a goal-setting. On average for players of attack the level of a target deviation didn't exceed ten points, and here the level of a target deviation reached a point of twenty points, and sometimes and more for defenders and goalkeepers.

On the following block of indicators which characterized self-appraisal of technical and tactical preparedness, similar results (pic. 2) were receive.

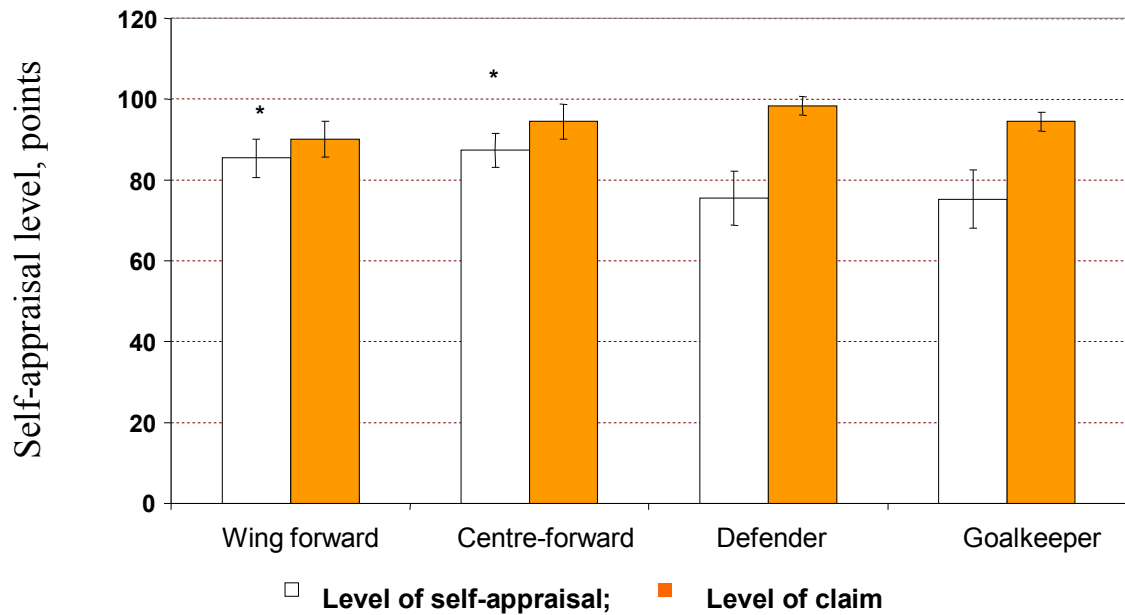


Pic. 2. Level of self-appraisal and claim of high-class hockey players of various roles on the block of the indicators characterizing technical and tactical preparedness

Players of the attacking line had authentically ($p < 0,05$) higher level of self-appraisal of technical and tactical preparedness, than defenders and goalkeepers. The average level of self-appraisal for the wing forward was equal – $84,0 \pm 14,52$ points, for the center forward – $85,6 \pm 13,50$ points, for the defender – $76,8 \pm 11,61$ points and the lowest level of self-appraisal was revealed at hockey goalkeepers – $69,1 \pm 10,3$ points.

On the level of claims it is also possible to note that, to similarly previous block of indicators, distinctions on indicators of technical and tactical preparedness aren't so much obvious as in a case with self-appraisal, it is possible to see the only difference for hockey goalkeepers who on the level of claims considerably (statistically authentically) concede to field hockey players.

The third block of indicators which we also analyzed separately, reflected self-appraisal of psychological preparedness (pic. 3).

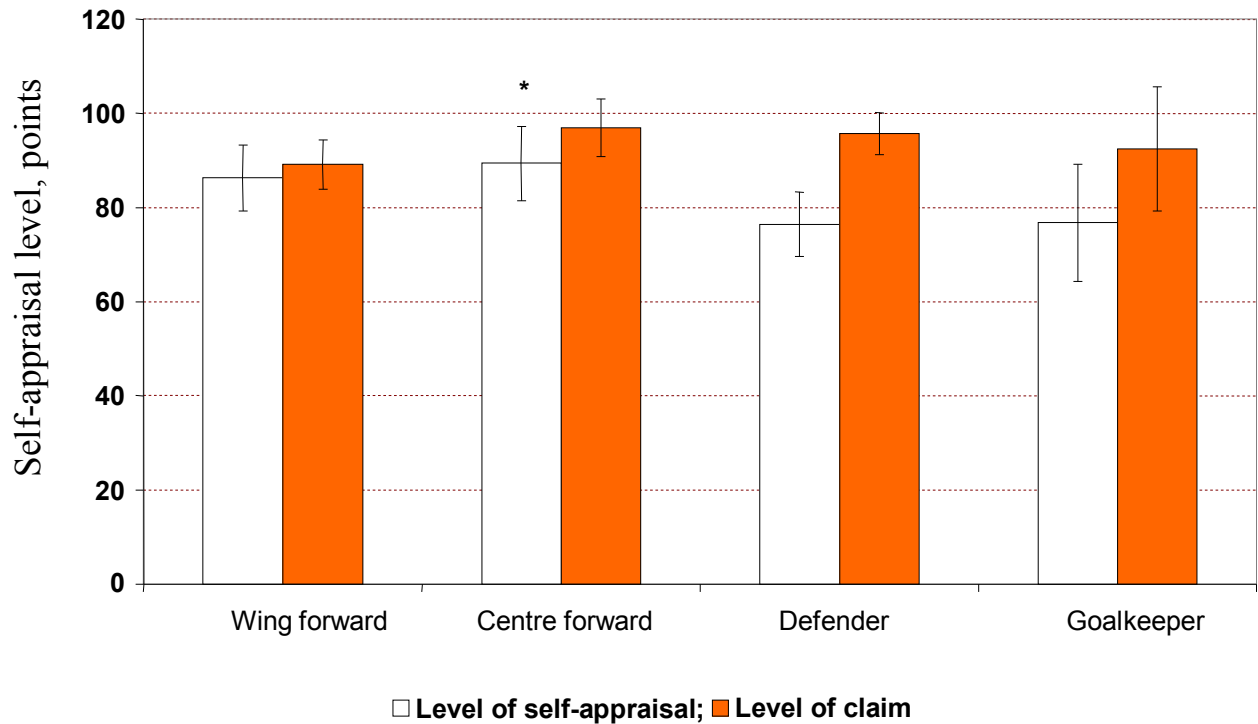


Pic. 3. Level of self-appraisal and claim of high-class hockey players of various roles on the block of the indicators characterizing psychological preparedness

Sportsmen were offered to estimate, at what level at him are developed or important psychological qualities are shown (the detailed analysis of all qualities and properties on which it was offered to athletes to carry out such assessment, will be submitted further in work).

So, it was established that a wing and a center forward had authentically higher level of manifestation of self-appraisal. Actually, on all blocks of indicators which we analyzed, the single trend was observed. Defenders and goalkeepers conceded to forwards on the self-appraisal level, had worse the developed goal-setting mechanism, and on the level of claims of statistically reliable differences between players weren't observed.

Also, besides the manifestation of separate components of self-appraisal, we were interested in the generalized (total) data on all indicators which were used in the real research. So, the total self-appraisal of hockey players of various roles was defined (pic. 4).



Pic. 4. General level of self-appraisal and claim of high-class hockey players of various roles

It should be noted what exactly these generalized data further formed the basis of the development of psychosportogram for hockey players of various game roles, scales of estimation of the level of manifestation of indicators, etc.

So, the integrated (generalized) level of self-appraisal for the wing forward made – 86,3±6,98 points, for the center forward – 89,4±7,85 points, for the defender – 76,4±6,82 points, for the hockey goalkeeper – 76,7±12,41 points.

The level of claims for the wing and the center forward was recorded at the level – 89,2±5,22 and 97,0±6,13 points respectively, for the defender this indicator made – 95,6±4,43 points, for the goalkeeper – 92,5±13,15 points.

It is possible to see more detailed analysis of the conducted research of self-appraisal of hockey players of high qualification of various roles are given below in the tab. 1. In the table it is possible to analyze as the level of manifestation of separate indicators, and to see the general statistics on the allocated blocks of indicators.

If to compare the data with the standard scale of adequacy of the level of self-appraisal obtained by us, of course, practically all athletes investigated by us either had high self-appraisal, or approached to it.

The data obtained by us will be agreed with the opinion of experts that today in an elite sport athletes who have high self-appraisal are met more often. The high self-appraisal, according to experts, is strong incentive of self-improvement as to the athlete who has the raised self-appraisal, it is rather difficult to perceive the progress and good results of the rival, and it stimulates the work on itself in turn. Such athlete has a need to be in the center of attention, to see respect and honor for itself of people around, and for the sphere of sport, as a rule, it is reached through the sports progress.

Table 1

Results of the research of level of self-appraisal of high-class hockey players taking into account their game specialization (in points)

№	Self-appraisal indicator	Playing role							
		Wing forward		Center forward		Defender		Goalkeeper	
		S	SD	S	SD	S	SD	S	SD
1	Power abilities	75,0	12,24	91,0	10,84	82,5	10,90	80,0	14,14
2	Endurance	84,0	13,4	88,0	10,95	78,75	10,3	77,5	17,67
3	High-speed abilities	74,0	11,4	72,0	9,08	71,25	13,76	80,0	14,14
4	Coordination abilities	74,0	5,47	83,0	8,36	76,25	2,5	82,5	24,7
5	Flexibility	88,0	2,73	86,0	9,61	77,5	2,88	85,0	7,07
6	Physical state	88,0	2,73	66,0	9,61	77,5	2,88	75,0	7,07
7	Health	78,0	12,54	89,0	4,18	73,5	12,5	75,0	7,07
	<i>Self-appraisal of physical fitness and health, on average</i>	<i>85,6</i>	<i>3,69</i>	<i>87,4</i>	<i>3,62</i>	<i>77,3</i>	<i>3,34</i>	<i>77,4</i>	<i>5,08</i>
8	Technology of movement on ice	98,0	2,73	96,0	8,94	86,25	4,78	95,0	7,07
9	Accuracy of throws	85,0	16,58	82,0	13,5	83,75	7,5	35,0	7,07
10	Game abilities	69,0	8,94	79,0	8,94	75,0	7,07	77,5	10,6
	<i>Self-appraisal of technical and tactical preparedness</i>	<i>84,0</i>	<i>4,76</i>	<i>85,6</i>	<i>13,5</i>	<i>76,8</i>	<i>11,61</i>	<i>69,16</i>	<i>10,3</i>
11	Self-control	73,0	8,36	84,0	11,4	71,25	14,36	80,0	10,1
12	Concentration of attention	69,0	7,41	70,0	12,24	77,5	17,07	80,0	10,1
13	Speed of reaction	89,0	8,21	78,0	7,58	80,0	2,6	75,0	8,1
14	The developed memory	89,0	7,41	62,0	9,08	77,5	9,57	72,5	17,6
15	Anticipation	72,0	4,47	91,0	13,3	75,0	5,77	75,0	21,2
16	Stress stability	73,0	8,36	79,0	8,94	87,5	9,57	70,0	10,1
17	Confidence	78,0	10,36	81,0	7,41	75,0	5,77	72,5	10,6
18	Variability of thinking	84,0	11,93	91,3	8,65	80,0	18,25	62,5	17,6
19	Optimism	81,0	8,94	84,0	8,21	70,0	8,16	75,0	7,01
20	Commitment	81,0	12,44	88,0	5,47	77,5	12,58	90,0	10,1
	<i>Self-appraisal of psychological preparedness</i>	<i>85,4</i>	<i>4,76</i>	<i>87,4</i>	<i>4,20</i>	<i>75,6</i>	<i>6,71</i>	<i>76,75</i>	<i>12,41</i>

Besides, the continuous fight and the competition on the sports ground, the aspiration to domination and superiority over the rival demand a certain level of psychological qualities from the hockey player. The athlete with a low self-appraisal will hardly be able to achieve serious results, especially in such sport, exacting from the point of view of physical and psychological qualities, as hockey.

However it is necessary to consider after all that circumstance that the data revealed by us are characteristic for elite athletes. Certainly that at earlier stages of long-term improvement the level of manifestation of self-appraisal of athletes can be below, however, the matters can become a subject for separate researches.

The analysis of dynamics of change not only the level of self-appraisal, and other psychological qualities and properties of the identity of athletes within long-term career are submitted quite interesting. Similar data, in our opinion, can show how the identity of the athlete develops, how sports activity is reflected in the development of these or those psychological qualities and many other things.

Conclusions:

1. The analysis of references and poll of experts showed that the self-appraisal plays an important role in the formation of the identity of the athlete, defines the orientation of his activity and outlook. Experts claim that the athletes possessing the high level of self-appraisal are more successful in the competitive activity, and reach really outstanding results more often.

2. For the identification of the level of self-appraisal of high-class hockey players of various roles, twenty informative indicators were selected which characterize the different parties of preparedness of the athlete, physical, technical and tactical and psychological.

3. The results of the researches showed that high-class hockey players of different role have the unequal level of self-appraisal. The highest rates of self-appraisal were noted at players of attack (extreme and it is central the forward). Players of forwards have also the smaller range of a target deviation in comparison with defenders and goalkeepers that in turn, can testify to more developed goal-setting mechanism at these athletes.

Prospects of the further researches are connected with studying of the influence of the level of self-appraisal of high-class hockey players on the efficiency of realization of technical and tactical actions by them in a match, and also with the research of interrelation of the level of self-appraisal of high-class hockey players with other psychological properties and qualities of the identity of athletes (tendency to risk, motivation to success, etc.).

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ESTIMATION OF THE COMPETITION ACTIVITY OF HIGH CLASS HOCKEY PLAYERS TAKING INTO ACCOUNT GENERIC MODELS

Abstract. Purpose: to develop the mechanism of estimation of competition activity of hockey players of high class on the basis of account of group model descriptions of tekhniko-tactical actions. **Material and Methods:** with the purpose of development of method of evaluation of efficiency of competition activity, information of hockey players was analysed highly who class, taking part in the matches of the Kontinental hockey league (KHL) in a season 2013-2014 The quantitative-quality indexes of realization of technique-tactical actions were analysed in the matches of regular championship. **Material and Methods:** pedagogical supervision, pedagogical analysis and generalization of front-rank experience, analysis of data of the special scientific-methodical literature, an analysis of data is the Internet. **Results:** model descriptions of competition activity of hockey players of high class of different line of business are developed, which underlay development of evaluation method. For determination of efficiency of competition activity, it is recommended to take into account the degree of positive or subzero deviation from middle model descriptions. Evaluation of efficiency of actions of sportsman, conducted on the basis of complex rejection on all studied technique-tactical actions. **Conclusions:** as a result of the conducted researches the method of evaluation of efficiency of competition activity is developed, which allowed to define efficiency of game of sportsmen.

Keywords: different playing position, model descriptions, technique-tactical actions, competition activity, coefficient of efficiency.

Introduction. The assessment of the competitive activity in hockey is difficult and multiple-factor process which demands the accounting of various criteria and indicators. Athletes should act in the conditions of the expressed deficiency of time at the change of game situations and need to find the adequate answer [1; 2; 4].

One of the widespread directions of an assessment of the efficiency of the competitive activity of hockey players is the development and the use of model characteristics of the competitive activity and directly those indicators which are on the basis of the structure of the competitive activity and influence the course of a sports competition [4; 6; 8].

In the competitive activity "athletes-players" carry out a large number of various technical and tactical actions, both in defense, and in attack. They are means for the realization of problems of a sports duel and serve as the most informative criterion which allows to reflect features of behavior of an athlete in a match and the efficiency of his game. Certainly that the competitive activity of players in a match

isn't limited only to the performance of separate technical and tactical actions, athletes carry out a significant amount of organizational, combinational and tactical and other actions which, of course, are much more difficult for analyzing and estimating objectively [3–5].

In special literature model characteristics of technical and tactical actions of hockey players of various qualification and role are submitted. However it is necessary to consider that fact that high-class athletes are extraordinary. On the top-level of skill the individual endowments of the player, his predisposition to the solution of specific objectives and game receptions in a match are shown [3; 6–9].

In this regard, in our opinion, the task is actual connected with the development of the mechanism of an assessment of the efficiency of the competitive activity of hockey players which will allow to estimate as the level of manifestation of separate technical and tactical actions of athletes in a match and their deviation from model group sizes, and to make an integrated assessment of hockey players.

Communication of the research with scientific programs, plans, subjects.

The work is performed within a research subject 2.4. "Theoretic-methodical bases and an individualization of educational and training process in game sports" according to the Consolidating plan of RW in the sphere of physical culture and sport for 2011-2015.

The aim of the research: to develop the mechanism of an assessment of the competitive activity of high-class hockey players on the basis of the accounting of game role and group model characteristics of technical and tactical actions.

Material and methods of the research: pedagogical supervision, pedagogical analysis and generalization of the best practices, analysis of data of special scientific and methodical literature, analysis of data Internet. In researches data of technical and tactical actions of sixteen hockey players acting were analyzed in Kontinental hockey league in matches of regular superiority of a season of 2012-2013.

Results of the researches and their discussion. For an assessment of the competitive activity of hockey players a large number of game actions and indicators is analyzed, however today, among the most informative for field players, it is offered to use the following:

- executed throws on goal;
- thrown pucks;
- percentage of realization of throws on goal;
- executed power receptions;
- penal minutes for the violation of the rules;
- effective handing over of a puck;
- won throw-ins of a puck;
- loose pucks on gate;
- loss of a puck;
- scored points;
- indicator of success (+/–).

For hockey players who carry out the function of a goalkeeper on a platform, it is recommended to use:

- missing pucks;
- reflected throws on goal;
- percent of reflected throws on goal;
- reliability index (integrated indicator).

The technical and tactical actions and game indicators stated above are unified for official protocols of hockey matches and are used as domestic experts, and abroad.

For the detection of features of the competitive activity we analyzed data of players during the whole game season preceding carrying out the experiment. In our opinion, studying of the efficiency of the performance in separate matches of regular superiority or games of the playoffs couldn't create a complete idea of success of the game activity of athletes.

Data processing of the competitive activity allowed to reveal essential differences in the level of realization of technical and tactical actions by the hockey players who are carrying out different functions on a platform.

In modern hockey it is accepted to allocate four game roles today. Center and wing forward, defender and goalkeeper. Considering the available features in the realization of technical and tactical actions by hockey players of different roles, results of the competitive activity are given in our research on game roles of athletes. So, data of technical and tactical actions of hockey players of different roles are provided in tab. 1 and 2.

The similar conclusion can be drawn as a result of the comparison of quantity of the missing pucks, percent of the reflected pucks and coefficient of reliability. Certainly that more exact assessment of success of the competitive activity of players will require not comparison relatively each other in the studied group, and comparison to group model indicators, characteristic for high-class hockey players.

In tab. 2 it is possible to see individual data of technical and tactical actions of the field players who are carrying out functions of forwards and defenders. Attracts attention that fact that players spent on a platform in a season different time, of 7,52 minutes for game till 20,06 minutes on average during the season. It in turn complicates comparison of individual these athletes as players who spent on ice more time, managed to execute much bigger number of technical and tactical actions.

Table 1

Technical and tactical actions of high-class hockey goalkeepers in matches of regular superiority of KHL

№	Goalkeeper	Playing actions of a goalkeeper						
		Games	Throws on gate, quantity	Loose throws on gate, quantity	Missing pucks, quantity	Percent of the reflected pucks, %	Coefficient of reliability	Playing time, min.
13	L-ov A.	17	24,2	22,0	2,23	0,908	2,62	51,23
16	M-er M.	6	23,8	22,16	1,66	0,930	1,88	52,21
S±m		11,5±5,5	24,03±0,20	22,08±0,08	1,95±0,28	0,919±0,01	2,25±0,37	52,2±0,98

Table 2

Technical and tactical actions of high-class field hockey players in matches of regular superiority of KHL

№	Player	Technical and tactical actions									
		Number of the played matches	Thrown pucks	Effective handing over	Scored points	Conditional indicator (+/-)	Penal minutes	Throws on goal	Percent of realization of throws on goal, %	Percent of the won throw-ins, %	Playing time on a platform, min.
Wing forward											
1.	K-in P.	11	0,181	0,090	0,272	-1	0,727	1,36	13,3	41,3	10,32
3.	M-ov An.	48	0,083	0,083	0,166	-18	0,208	1,27	6,6	36,4	15,57
4.	N-ko K.	29	0	0,103	0,103	-3	0,344	1,172	-	50	10,7
5.	R-ov A.	34	0	0,176	0,176	4	0,411	2,05	-	60,7	20,2
14.	M-ov Al.	47	0,148	0,127	0,276	-1	0,212	2,04	7,3	21,1	13,28
S±m		33,0±5,5	0,09±0,02	0,119±0,01	0,194±0,04	-3±1,1	0,351±0,08	1,46±0,19	7,2±2,7	49,6±10,0	13,27±1,6
Center forward											
6.	N-in K.	30	0,03	0,100	0,133	-11	0,266	1,20	2,77	45,5	11,21
7.	S-ov N.	33	0,06	0,09	0,151	-4	0,818	1,78	3,40	33,3	9,49
8.	K-ov I.	43	0,04	0,325	0,372	1	1	1,58	2,90	46,3	17,39
10.	Sh-ko A.	29	0,137	0,137	0,425	1	0,206	0,86	16,0	80,0	9,57
12.	K-in A.	54	0,148	0,277	0,275	17	0,444	1,53	9,6	53,6	12,34
S±m		38±4,7	0,08±0,02	0,186±0,04	0,271±0,05	0,8±1,6	0,547±0,155	1,39±0,16	6,93±2,6	51,7±7,78	12,0±1,44
Defender											
2.	D-ko Ya.	38	0,05	0,105	0,157	-2	-	1,23	4,3	-	15,27
9.	B-in R.	53	0,113	0,169	0,283	11	1,98	1,75	6,5	-	20,01
11.	T-ets N.	15	0,06	0,06	0,133	-2	0,266	0,73	9,09	-	7,52
15.	R-ov R.	54	0,07	0,09	0,166	5	0,296	1,87	4,0	-	20,06
S±m		40,0±9,1	0,07±0,01	0,108±0,02	0,185±0,03	3,0±3,1	0,63±0,35	1,39±0,26	5,97±1,17	-	15,7±2,95

During this research we set the task to develop the mechanism (way) of an assessment of the competitive activity of hockey players which would allow to compare athletes on the level of their efficiency in a match, irrespective of game specialization and time of stay on a platform. The developed variant of assessment, in our opinion, would allow to solve one of the main tasks of the research, to define the influence of the level of self-appraisal on the efficiency of a game of athletes in hockey.

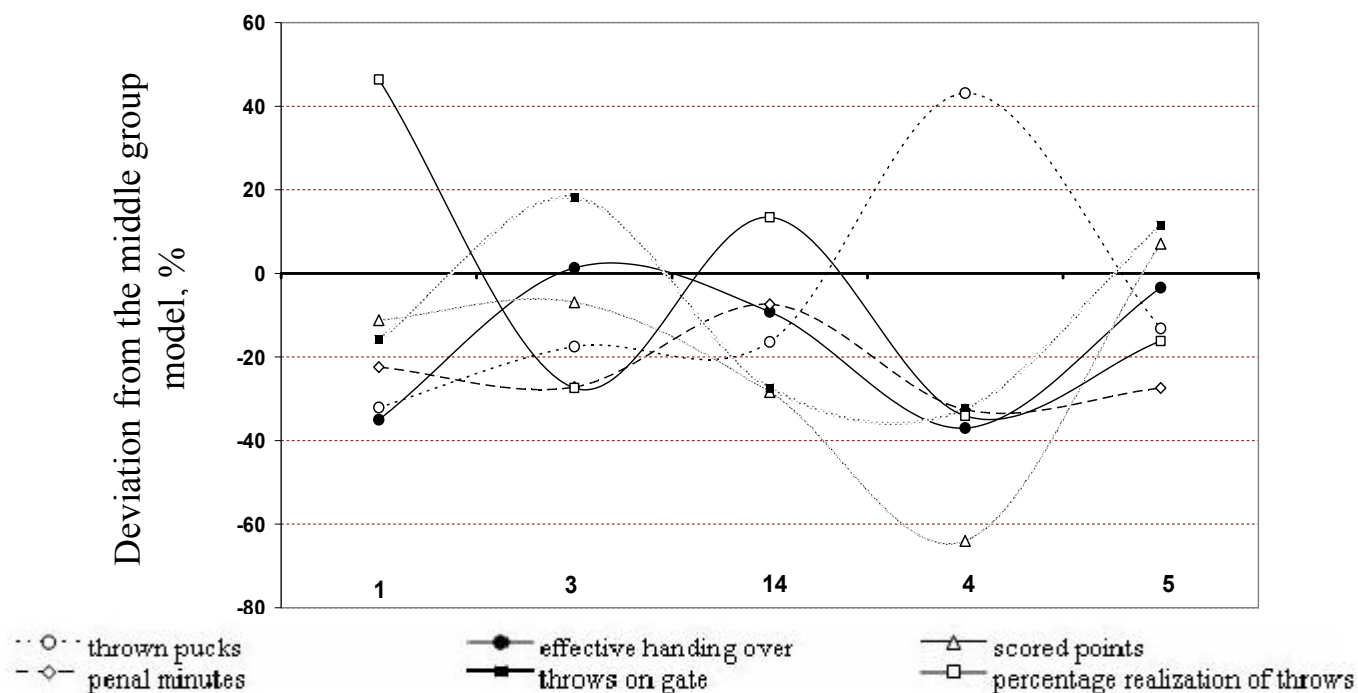
In practice of command game sports definition of integrated (total) indexes of the competitive activity which are defined by comparison positively and negatively executed technical and tactical actions is quite popular. However, according to a number of experts, use of this approach doesn't consider specialization of players, thus, raising an integrated index for one role and lowering it for others. The specified circumstance doesn't allow to use this approach for an assessment of the competitive activity of hockey players in the real work.

In the researches we made the decision to be guided by the group model characteristics of athletes and to use them as a reference point for carrying out the corresponding calculations.

For the determination of model sizes of realization of technical and tactical actions by high-class hockey players of different role, we used model characteristics of the competitive activity of players of KHL in a season of 2012-2013 [5]. The middle-group model sizes developed in these researches for hockey players of different role were used as a denominator at the determination of size of a deviation of the players who were taking part in the real research.

Results of each studied player on all studied technical and tactical actions were estimated depending on a percentage deviation from average data of the corresponding role. For obtaining exact data of the competitive activity model characteristics of players of different role were under construction taking into account a stay time on a platform. Individual data of the studied hockey players were also estimated taking into account the spent time on ice.

In pic. 1 it is possible to see how estimation of the level of realization of separate technical and tactical actions by the hockey players was carried out who are carrying out function of wing forwards on a platform.



Pic. 1. A percentage deviation of the level of realization of technical and tactical actions by wing forwards in relation to the middle group model for role

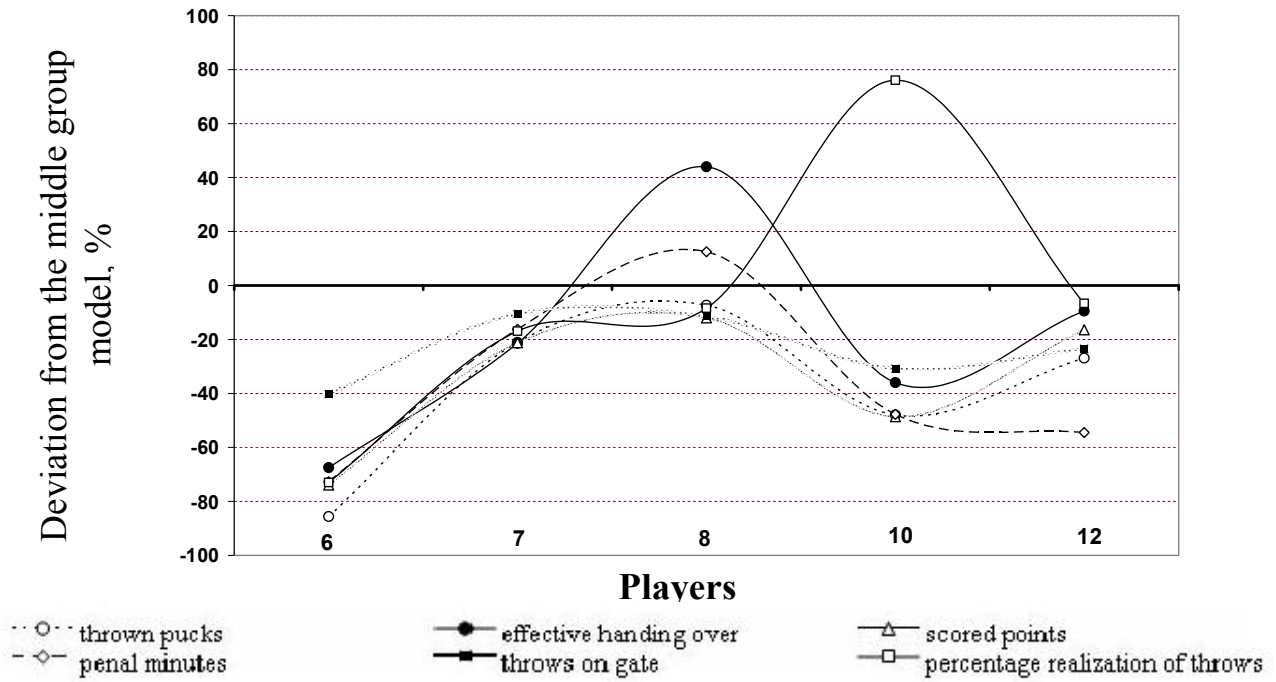
In the picture it is visible that on the same technical and tactical actions players have a negative deviation from the middle group of models, in some other indicators they are surpassed.

Deviations from the middle group of sizes of the realization of technical and tactical actions and for center forwards were similarly calculated (pic. 2).

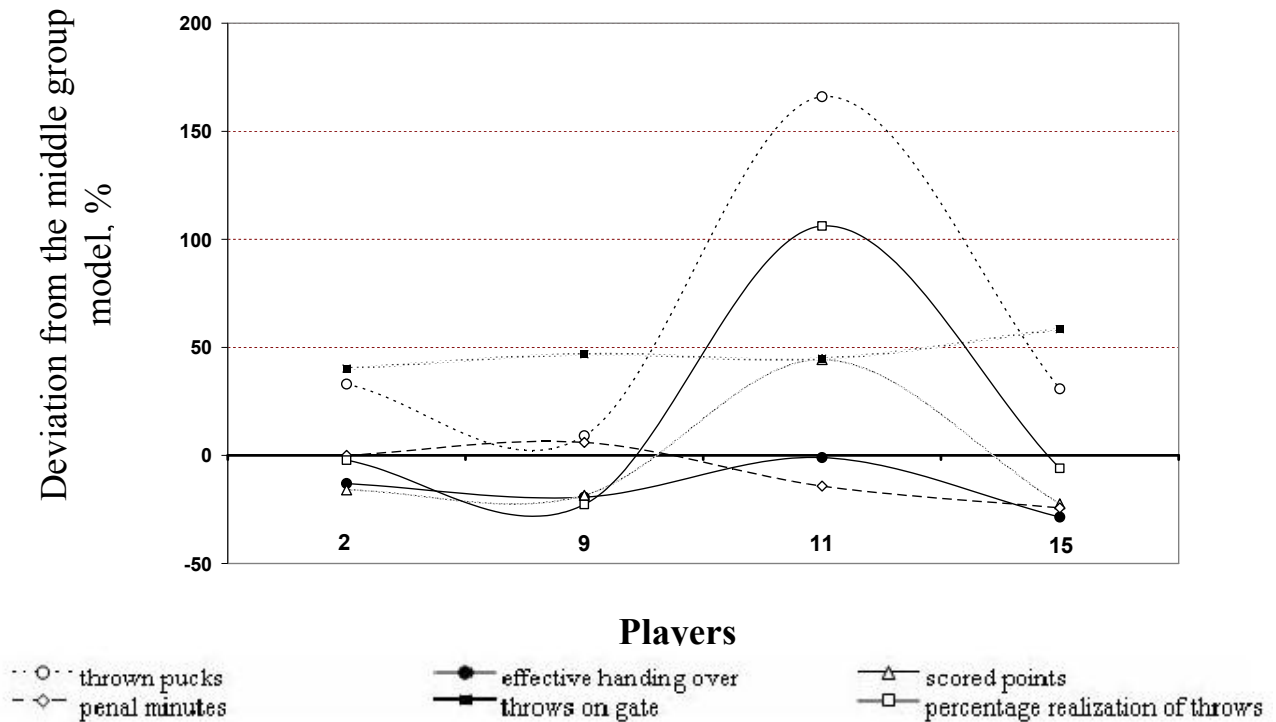
In this group individual data of the studied hockey players draw attention. So, the player No. 6 had the negative range of a deviation on all studied technical and tactical actions. On an indicator of the thrown pucks in a match the deviation from the middle group of data made minus of 85,1%. The player No. 10 on an indicator of realization of throws in a match for 76,1% surpassed the average level in role.

The advantage of the chosen mechanism of estimation of the competitive activity becomes obvious at the solution of problems of the real research. From the earlier presented tab. 1 in which quantitative data of technical and tactical actions of players was provided, it is quite difficult to draw conclusions on the efficiency of their competitive activity. But, if to look at 3 data of a percentage deviation on realization of technical and tactical actions by defenders presented in the picture, it is possible to draw a conclusion that players of this role acted more effectively in matches of regular superiority, than forwards.

At most of defenders the positive deviation from average sizes is noted. At certain athletes is (No. 11) the level of realization technical and tactical action in a match considerably exceeds the model sizes for the role.



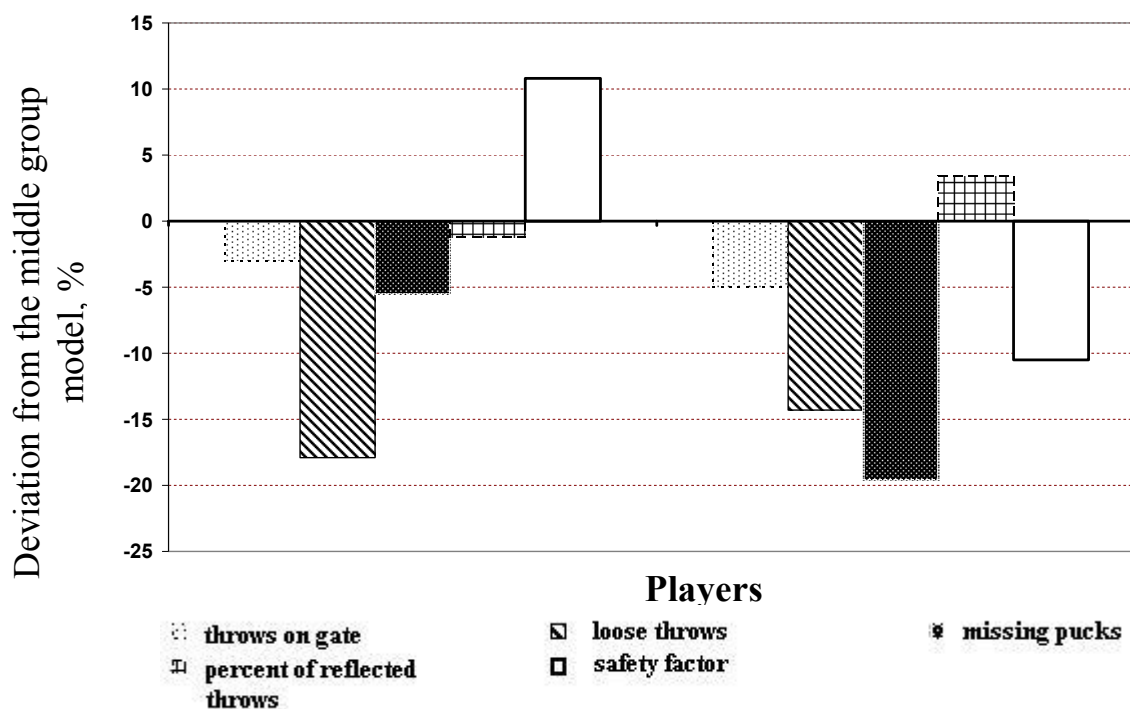
Pic. 2. A percentage deviation of level of realization of technical and tactical actions by center forwards in relation to the middle group model for role



Pic. 3. A percentage deviation of level of realization of technical and tactical actions at defenders in relation to the middle group model for role

Results of the analysis of the competitive activity for hockey goalkeepers are presented in pic. 4. So, in the picture it is visible that practically on all studied game actions, the hockey goalkeepers who were taking part in our research had a negative deviation from the middle group of model sizes.

The exception makes for the goalkeeper No. 13 an indicator of the safety factor (SF) in which the athlete surpassed a model indicator for 10,8%, and for the goalkeeper No. 16 – percent of the reflected pucks in which, in turn, the athlete surpassed model value for 3,4%.



Pic. 4. A percentage deviation of level of realization of technical and tactical actions at hockey goalkeepers in relation to the middle group model for role

The analysis of the efficiency of realization by hockey players of separate technical and tactical actions allowed to reveal specific features of athletes, however for comparison of players among themselves important definition of a complex indicator was represented which would allow to characterize the efficiency of actions of athletes in general.

For development of an integrated indicator and obtaining uniform value (or coefficient) we determined an average rejection of data of the player from model sizes by all studied technical and tactical actions.

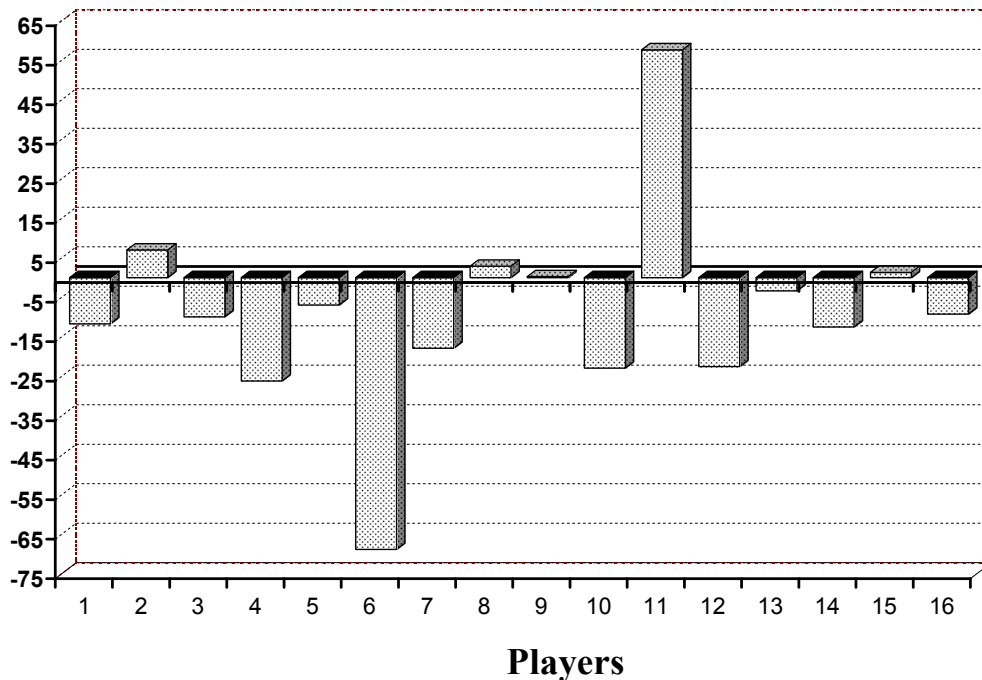
The similar total calculation allowed to define an integrated indicator of a deviation for each studied player and to compare the efficiency of their competitive activity (pic. 5).

In pic. 5 it is visible that only five studied players had a positive integrated deviation from model sizes of technical and tactical actions. In other words, athletes on average surpassed the existing average level of realization of technical and tactical actions which is characteristic for high-class hockey players.

Other studied hockey players had negative values of an integrated percentage deviation from the middle group of models. The greatest integrated negative deviation is noted at the hockey player No. 6 who conceded to model reference points for 68%.

Using the received integrated deviations from model sizes, it is possible to construct a rating of hockey players (tab. 3). In our researches, carrying out similar ranging was defined by the need of studying of influence of the offered program for

correction of self-appraisal of athletes. It should be noted that the distribution of players on the level of efficiency of the competitive activity before carrying out the experiment is presented in table 3.



Pic. 5. An integrated deviation from model sizes of technical and tactical actions by high-class hockey players

Table 3

Ranging of high-class hockey players on an integrated indicator of efficiency of the competitive activity (a deviation from average model)

Player	S.N.	An integrated deviation from model, %	Rank
11	T-ets N.	+57,7	1
2	D-ko Ya.	+7,01	2
8	K-ov I.	+2,9	3
15	R-ov R.	+1,33	4
9	B-in R.	+0,25	5
13	L-ov A.	-3,36	6
5	R-ov A.	-6,93	7
16	M-er M.	-9,20	8
3	M-ov An.	-9,93	9
1	K-in P.	-11,68	10
14	M-ov Al.	-12,5	11
7	S-ov N.	-17,8	12
12	K-in A.	-22,5	13
10	Sh-ko A.	-22,8	14
4	N-ko K.	-26,16	15
6	N-in K.	-68,8	16

Conclusions:

1. The analysis of the competitive activity of high-class hockey players allowed to establish the differences between players of different role in realization of

technical and tactical actions in a match. So, the greatest number of the thrown pucks and throws on goal is noted at forwards. Players of the line of defense, on average, surpass players of attack in amount of the spent time on a platform.

2. The middle group model characteristics of realization of technical and tactical actions taking into account role were used for the detection of efficiency of the competitive activity of hockey players.

3. The offered mechanism of estimation of the competitive activity allowed to estimate the deviation degree (positive or negative) from model characteristics of technical and tactical actions, to define integrated values of the efficiency and to carry out ranging of athletes by the efficiency of the competitive activity.

Prospects of the further researches are connected with studying of the influence of psychological properties and qualities of high-class hockey players on the efficiency of their competitive activity.

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PROBLEMS ATTENDANCE IN PHYSICAL EDUCATION STUDENTS OF TECHNICAL SPECIALTIES

Abstract. Purpose: *to examine the relevant aspects of motivation attendance in physical education students of technical specialties and make adjustments to the process of improving the quality of teaching. Material and Methods:* *during the study used the following methods: general scientific – analysis, comparison, generalization; sociological, questionnaire, interview; Mathematics and statistics. The study involved students of ICT Zhytomyr State Technological University, only 238 people. Results:* *the tendency changes of success in physical education and physical training of students of ICT. Conclusions:* *pedagogical experiment confirmed the positive impact of physical education classes in which students choose their maintenance is carried out on a competitive basis in accordance with personal interests and needs.*

Keywords: *students, motivation, success, physical activity, physical education.*

Introduction. At the present stage of the development of our society by the actual problem of pedagogics of the higher school is the problem of the educational progress of students. The increase of requirements to physical fitness of future experts is predetermined by a high rate of the development of professional technologies and a huge flow of information. The problem of physical training of students and the progress of their study rose more than once in scientifically methodical literature of the last years [3; 4; 12]. One part of researchers considers these questions for the purpose of the definition of a role of physical training in the formation of the personality, another looks for prerequisites of the increase of professional standard and the definition of the leading factors which influence the dynamics of the progress of students [6–8; 14]. The analysis of scientific literature and practical experience testify that the traditional form of classes destroys the interest of students in physical education, compels them to refuse independence, self-independence, that the degree of freedom which they own, and to work in the mode of a rigid regulation. Full submission always results in passivity which kills a desire to be engaged in physical exercises and to attend studies on physical education [2; 5; 9].

According to experts, it is necessary to refuse a rigid normativeness, obligation and authoritativeness, buildness under a set from externally standard [1; 10; 11] to create the interested relation of students to a subject, to awaken interest in possibility of creation of a sound body, formation of own health.

In this regard a special relevance is gained by a problem of the progress of

students hang from the assimilation of training material on discipline "Physical training", as a factor which causes a conscientious attitude to personal health, physical fitness, formation of a habit of healthy lifestyle, introductions, in everyday life of systematic independent classes by physical exercises.

Communication of the work with scientific plans, programs, subjects. The work was performed according to the subject "Theoretic-methodological principles of optimization of system of physical training of students of higher educational institutions of Ukraine" (the state registration number is 0112U001618).

The aim of the research: to learn actual aspects of motivation of visit of classes on physical education of students of technical specialties and to introduce amendments in the process of teaching for the improvement of its quality.

The material and methods of the research. During the research such methods were used: general scientific – analysis, comparison, generalization; sociological: questionnaire, conversation; mathematic-statistical.

Students of the I-IV courses of the faculty of Information and computer technologies of Zhytomyr state technological university, only 238 persons took part in the research. From them: 92 – the I course, 62 – the II course, 44 – the III course, 40 – the IV course, identical on the age and physical development. It was created from them the control and the experimental groups on each course.

Results of the research and their discussion. The low physical activity of students is reflected in the deterioration of indicators of the progress on classes of physical training, on assimilation of training material, the solution of educational and educational tasks. Carrying out the careful accounting of visit by students of classes and the reasons of their admissions gave the chance to define the dependence between visits of classes and dynamics of the level of physical fitness, to learn dynamics of visit by students of classes in the subject "Physical training".

The sociological researches conducted by us showed that about 18,0% of students of the 1-4 courses attended classes on physical training for the purpose of the development and the improvement of physical qualities (tab. 1).

Table 1

Studying of the motives which were guided by students concerning classes on physical culture and sport, %

№	Variants of answers	Quantity of answers
1	Promotion of health	20,0
2	Development and improvement of physical qualities	18,0
3	Passing an exam	26,0
4	Receiving a necessary sportswear	14,0
5	Desire to prepare itself for the work	11,5
6	To avoid troubles in connection with admissions of classes	12,0
7	Reduction of the excess weight of a body	10,9
8	Aspiration to communicate with companions	4,6

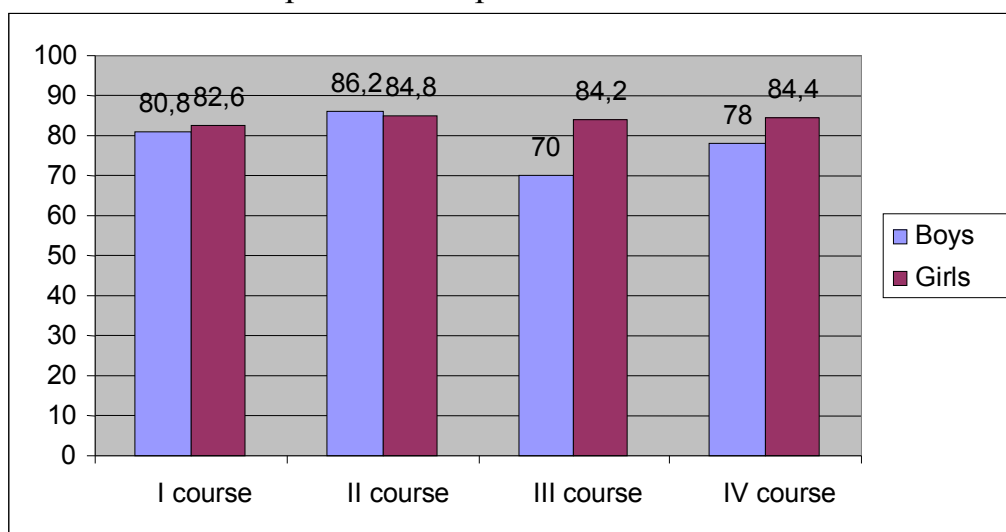
The data submitted in the table certify that more than 20% of students of all courses attend class for the purpose of promotion of their health. It should be noted that the number of such students increased to 28% till 4 courses. On a question "What does prevent to be engaged in physical culture and sport?" – 52,6% of students answered "the lack of free time", 26,2% expressed unwillingness, in general to be engaged in physical exercises, 5,8% referred to bad health. Considering this situation, quite often we weigh on the objective reasons: unsatisfactory conditions of classes, the lack of sports sections and shortcomings, in a technique of teaching (tab. 2).

Table 2

Studying of the reasons which prevent students to be engaged in sports and sports activity, %

Variants of answers	Quantity of answers
No desire	26,2
No free time: work, study, another	52,6
Bad health	5,8
Unsatisfactory conditions of classes	24,0
Lack of sports sections which interest me	8,4
Shortcomings of a teaching technique	6,2
Another	10,8

A small amount (10,8%) chose another version of the answer from the reasons of personal character: "I attend other sports activities", "far to go", "laziness". According to the data obtained as a result of questionnaire, classes on physical training visit on average 83,6% of students of the first, the second years, till the third, the fourth years – the number of students who attend class decreased to 25,4%. Thus, it is necessary to consider that 10% of students at the first year and 15,4% on the second year consider physical training not necessary subject in educational institution. But on the fourth year the number of students who were negative to classes on physical training decreased and made 8,2%. Results of the obtained data of visit by students of classes are presented in pic. 1.



Pic. 1. Dynamics of visit by students of classes on physical training, %

As we see, the average visit by students of classes fluctuates within 70–86%. The rather high rate is explained by that the main motives to classes on physical training on the 1 courses is a test, and understanding of value of the preservation of health and the development of physical qualities of students – on the major courses. The positive dynamics of visit of students (for 2,2–5,4%) is noted from the 1st to the 2nd courses. But on the 3 – 4th courses the insignificant recession (3,8–4%) is noticed. The researches show that sport and physical culture is an obligatory subject matter at university for junior students. The recession of visit on the 3rd, the 4th courses is explained by the aspiration of student's youth to independence in the material relation and compels them to work, neglecting classes on physical training.

As a result of questionnaire the positive dynamics of the development of the main physical qualities is established at the end of the academic year at students who attended not less than 81% of classes. At students who visited less than 60%, the tendency to decrease in a level of the development of physical qualities in comparison with their level was observed at the beginning of the academic year. Therefore it is completely natural that "excellent students" in a bigger measure are happy with the progress of physical training (in 82% of cases) though, in our opinion, this indicator could be higher. It testifies to the existence of a reserve in the improvement of progress of "excellent students".

The analysis of results of sociological poll allowed to establish rather interesting dependence: students who have estimates "good" on physical education, are to a lesser extent happy with the progress, than students who are engaged on "satisfactory", – 61% against 46,8%. Though students with "good" estimates own sufficient abilities, ambitions, focus and motivation to classes of physical culture and sport which is an additional reserve of the increase of the academic progress. Students with "satisfactory" estimates on physical education in this situation represent more "inert weight" as from them less than a half wishes to change a situation. The obtained data testify to the more expressed professional motivation of "excellent students". Among them there are more sportsmen who are engaged in groups of sports improvement (34%, against 25,6% of who are engaged on "satisfactory") and they take part in sports competitions more often (respectively 24,2% and 10,8%).

The essential difference between three categories of students is revealed during the study of the question of rather physical activity on classes on physical education: physically active among "excellent students" – 84,5% of students, and among those who studies on "good", – already 38,6%, and from those who on "satisfactory", – only 14,8%.

The relations to their estimates are differently shown at different categories of students. Most of all students worry who received estimates "good" on physical training, – 74%, is most rare – on "satisfactory" – 60%. In our opinion, it is explained that the student who received much lower assessment than "good", loses chance of a grant. Besides, "excellent students", as a rule, consider the estimates fair and objective and who receives "good", often expresses the dissatisfaction and sure that "test" on physical education doesn't display the level of his knowledge, sports skills.

The statistical regularity is found in regarding nature of relationship of different categories of students with teachers: the highest level of the progress on physical education, the highest respect for the teacher.

Besides, during the sociological poll it is established that "excellent students" are imposed more by competent teachers on physical education who well know the subject, and that who studies on "good", – teachers with well developed sense of humour. Sympathies between two other types of teachers "soft" and "exacting" were distributed completely equally between these categories of students.

Answers to a questionnaire question "In what kind of sport would you like to be engaged?" certify that the most attractive sports for the first-year students in off-hour time are: shaping, table tennis, swimming, football and basketball. Considering sports interests of boys and girls separately in the same educational institution, it is established that the most popular sports among boys is football (36%), basketball (21%), athletic gymnastics and single combats (fight, unarmed self-defense and self-defense), – 18%. And among girls are shaping (32%), table tennis, volleyball (19%) and swimming (12%).

Considering the received results of poll of students and the results of scientific achievements of the predecessors given above on the department of physical education, the working program on the basis of the use of technological innovations is developed which provides free choice of a type of physical activity, provides the realization of the differentiated and the individual approach to the personality taking into account sports and sports interests.

So, we allocate a half of time of the main part for training classes with alternative sports. Students of experimental groups wished to be engaged still in addition two times for a week for 90 minutes in gyms of university under control of teachers. Girls chose aerobics, table tennis, badminton. Boys showed desire to be engaged in athletic gymnastics, football, different types of martial arts for the profound preparation. In control groups classes were given in a standard state program of physical education.

Introduction of rating monitoring system of the study was also an important feature of an experimental technique. The characteristic defining properties of the system of rating control were:

- systematic and uninterrupted control (all types of educational and off – hour activity of each student were checked throughout the corresponding period of studying of discipline);
- ranking was carried out ranking of students by the assignment to each of them of a personal rating by the results of check;
- mathematical and statistical methods were used during the definition of rating;
- progress of a student was displayed in the current and total ratings.

The efficiency of physical education of students of the main office was determined by the system of rating control according to specially developed 100-pointed table. Visits of classes, timely delivery of test requirements and participation, in competitions were considered.

The analysis of results of physical education of students on an alternative basis and uses of the system of rating control allowed to draw a conclusion that the indicator of visit of classes improved at students, decreased the number of the presented certificates of an illness in comparison with previous years. 91% of students against 86% of the previous groups passed tests in time. Students began to take part in competitions more actively. The rating at students increased to 31,7% on average, and the implementation of control standards on physical preparation improved for 37,4%.

Therefore, the usage of an experimental technique which is based on a free choice of a type of physical activity of students, and systems of rating control allowed to raise the level of physical fitness of students, especially at whom it was lower than an average value behind the results of testing at the beginning of the academic year. Besides, carrying out the continuous differentiated control of physical condition of students promoted the increase of interest not only to attend class and in time to hand over test requirements regularly, but also to take part in sports and mass actions.

Conclusions. Thus, motives of visit of classes on physical training of students are different: those who are happy with classes, – visit them for the sake of physical development and strengthening of health, and those who isn't happy with classes, – visit them for the sake of tests, for the sake of avoiding of troubles through truancies. For the involvement of students to classes on physical culture it is necessary to pay attention to their advantage in a choice of forms of classes and their contents. Perspective, in our opinion, there is such methodical approach to the organization of classes at which the choice of their contents is carried out by students on an alternative basis when they choose sport according to personal interests, opportunities, requirements.

The conducted research showed the following: visit by students of an educational practical training on physical training became 98%, the level of physical fitness increased by 35–40% ($p < 0,05$). The general diseases at students lowered by 20–25% ($< 0,05$), more than 80% of students are engaged in physical culture and sport independently.

The changes on these indicators didn't take place at the same time in control groups of students.

Allocation of the following recommendation for students is expedient, for the purpose of the increase of visit of classes in physical training by them: to watch over their health; to learn to plan the activity, to distribute the time; to raise the level of responsibility and self-organization; to organize active recreation correctly, providing the watch of intellectual and physical activity and completely to renew the working capacity.

We plan to conduct **the subsequent researches** in the direction of the improvement of the organization of classes on physical education of students at which the choice of their contents is carried out on an alternative basis according to personal interests, requirements.

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**FEATURES OF TECHNICAL AND TACTICAL ACTIONS OF
HIGHLY SKILLED ATHLETES AT SWIMMING OF COMPETITIVE
DISTANCES OF 50, 100 AND 200 METERS WAY TO CRAWL ON HIS
BACK**

Abstract. Purpose: to identify the features of technical and tactical actions of highly skilled athletes, specializing in swimming crawl on way back to the distances of different lengths. **Material and Methods:** we used analysis of scientific and methodical literature, teacher observation, video, timing, methods of mathematical processing of the data. Collection of digital material was carried out during the Championship and Cup of Ukraine on swimming. Surveyed group consisted of participants of the final swim at distances of 50, 100 and 200 meters way to crawl on his back. **Results:** characterized by changes of speed, tempo and "step" cycle paddle movements in the process of overcoming competitive distances of 50, 100 and 200 meters way to crawl on his back, given their comparative characteristics. **Conclusions:** the nature of the technical and tactical actions of highly skilled athletes, specializing in swimming crawl on way back, depending on the length of competitive distance.

Keywords: technical and tactical actions, features, crawl on his back, highly skilled athletes race.

Introduction. The modern concept of training of high-class swimmers is based on studying of a wide range of various directions among which the foreground is allocated for the analysis of the competitive activity [3; 6].

Now the experts working in the sphere of swimming characterized the structure of the competitive activity in detail, defined its main components, revealed the degree of interrelation of these components with various parameters of the structure of special preparedness etc. [1; 2; 4; 5, etc.]. At the same time a number of aspects remains still studied not fully. In particular, considering that fact that the attention of the researchers who are engaged in studying of technical and tactical actions in modern sports swimming is generally concentrated on the detection of features of swimming of the competitive distances in way a crawl on a breast, demand more careful research of nuances of passing of distances in other sports ways of swimming. The detailed studying of these directions will allow to differentiate more effectively the process of training of qualified sportsmen that will promote the growth of their sports skill.

The aim of the research: to reveal features of technical and tactical actions of the highly skilled sportswomen specializing in swimming in way a back crawl at

distances of various length.

Material and methods of the research. The following methods were used for the achievement of a goal in the work: the analysis of scientific and methodical literature, pedagogical supervision, video filming, timekeeping, methods of mathematical processing of the obtained data.

The research was conducted on the basis of the pool of SC "Aquarena" in Kharkov and the pool "Meteor" in Dnepropetrovsk.

The collecting of digital material was carried out during the championships and Cups of Ukraine on swimming.

The surveyed group consisted of participants of final races at distances of 50, 100 and 200 meters in the way a back crawl. Qualification of sportswomen corresponded to a rank of MSU and MSIC.

Results of the research and their discussion. As the main parameters in the analysis of technical and tactical actions of the highly skilled sportswomen specializing in swimming in way of a back crawl were defined by us: speed of swimming, rate and "step" of a cycle of rowing movements.

The competitive activity was estimated by the efficiency of the start, the finish, passing of various distances of remote swimming.

The efficiency of the start was defined with the speed of overcoming of a distance from a starting bedside – table before the appearance of the sportswoman on a water surface.

The efficiency of the finish was estimated on the speed of passing of a stretch of "45–50 meters".

Among distances of remote swimming were investigated:

- a stretch from the moment of "break the surface" to a mark of 15 m;
- a length of 15-25 m;
- a stretch of 25-35 m;
- a length of 35-45 m.

The parameters displaying features of technical and tactical actions of sportswomen in the course of swimming of a distance of 50 meters in the way of a back crawl are specified in tab. 1.

Table 1

Indicators of technical and tactical actions of sportswomen at swimming of various distances of a competitive distance of 50 meters in the way a crawl on a back

№	Indicators	Lengths of a competitive distance, m					
		Start-break the surface	Break the surface –15	15–25	25–35	35–45	45–50
1	Speed of passing of a stretch of a distance, m·s ⁻¹	2,06	1,65	1,57	1,67	1,56	1,28
2	Rate of rowing movements, cycl/min	–	49,38	49,20	49,47	47,60	46,56
3	"Step" of a cycle of rowing movements, m	–	2,01	1,94	2,05	2,00	1,67

Apparently from the tab. 1, sportswomen overcome a distance with wavy fluctuation of speed, with the general tendency to its decrease on a finishing stretch owing to the developing exhaustion.

The highest values of indicators of speed are noted on a length "start – a «break the surface» ($2,06 \text{ m}\cdot\text{s}^{-1}$) and a stretch of "25–35 meters" ($1,67 \text{ m}\cdot\text{s}^{-1}$).

The similar tendency is noted in indicators of speed and "step" of a cycle of rowing movements.

The highest values of speed and "step" of a cycle of rowing movements are noted on a length of "25–35 meters" (49,47 cycl/min. and 2,05 m respectively).

At swimming by of a distance of 100 meters in the way a crawl on a back the most high-speed stretches are "start – break the surface " ($2,00 \text{ m}\cdot\text{s}^{-1}$) and "turn – break the surface" ($1,90 \text{ m}\cdot\text{s}^{-1}$). Thus as approaching turn and the finish swimming speed systematically decreases, coming to the level of values $1,19 \text{ m}\cdot\text{s}^{-1}$ and $1,29 \text{ m}\cdot\text{s}^{-1}$ respectively (tab. 2).

The analysis of dynamics of indicators of speed and "step" of a cycle of rowing movements in the course of overcoming of a distance of 100 m in way a crawl on a back allows to reveal the following tendency. Values of the considered parameters at swimming of the first half of a 100-meter distance become lower (changing from 45,46 to 38,77 cycles/min., from 2,25 to 1,96 m respectively). In the second half of a distance takes place on a length of "75–85 meters" and "step" the increase in speed on a stretch of "85–95 meters" with the subsequent their decrease to the finish.

The characteristic of technical and tactical actions of sportswomen at a swimming of a distance of 200 meters a crawl on a back is presented in the way in tab. 3.

Apparently from tab. 3, fluctuations of speed are recorded on the first three 50-meter lengths of a competitive distance. Thus small "splashes" are noted on stretches of "15–25 meters" ($1,41 \text{ m}\cdot\text{s}^{-1}$), "85–95 meters" ($1,41 \text{ m}\cdot\text{s}^{-1}$), "125–135 meters" ($1,42 \text{ m}\cdot\text{s}^{-1}$). On the last quarter of a distance speed systematically decreases from 1,86 to $1,23 \text{ m}\cdot\text{s}^{-1}$.

A bit different tendency is noted in dynamics of indicator of rate of rowing movements. On the first length its continuous decrease, on the second and third stretches of a distance, along with decrease takes place, small rises in values of this indicator take place ("85–95 meters" (35,37 cycles/min.) and "125–135 meters" (36,63 cycles/min.)). On the last 50-meter length of a distance of value of speed steadily raise, reaching the maximum sizes on the finish (41,81 cycles/min.). Thus sizes of "step" of a cycle of rowing movements wavy fluctuate on the first 150 meters, with the subsequent systematic reduction, beginning from a length "break the surface– 165 meters" and to the finishing line. Obviously, the sportswomen try to compensate reduction of length of a stroke due to speed increase on the finish.

The comparative characteristic of indicators of speed of overcoming of various stretches of a distance of 50, 100 and 200 meters in female swimming in way a crawl on a back is presented in tab. 4.

Table 2

Indicators of technical and tactical actions of sportswomen at swimming up of various pieces of a competitive distance of 100 meters in the way a crawl on a back

Indicators	Pieces of a competitive distance, m											
	Start-break the surface	Break the surface –15	15–25	25–35	35–45	45–50	Turn- break the surface	Break the surface – 65	65–75	75–85	85–95	95–100
Speed of passing of a stretch of a distance, m·s ⁻¹	2,00	1,69	1,63	1,60	1,55	1,19	1,90	1,68	1,50	1,47	1,48	1,29
Rate of rowing movements, cycl/min	–	45,46	45,37	44,49	43,55	38,77	–	43,72	43,16	45,05	44,66	44,53
"Step" of a cycle of rowing movements, m	–	2,25	2,16	2,16	2,14	1,96	–	2,32	2,09	1,97	2,01	1,76

Table 3

Indicators of technical and tactical actions of sportswomen at swimming by of various lengths of a competitive distance of 200 meters in the way a crawl on a back

№	Indicators	Lengths of a competitive distance, m											
		Start-break the surface	Break the surface – 15	15–25	25–35	35–45	45–50	Turn-break the surface	Break the surface –65	65–75	75–85	85–95	95–100
1	Speed of passing of a stretch of a distance, m·s ⁻¹	1,98	1,48	1,55	1,51	1,45	1,29	1,83	1,59	1,43	1,39	1,41	1,10
2	Rate of rowing movements, cycles/mines	-	38,70	38,10	36,91	35,67	28,55	–	36,07	35,00	35,05	35,37	32,61
3	"Step" of a cycle of rowing movements, m	–	2,39	2,44	2,47	2,44	2,46	–	2,65	2,46	2,39	2,40	2,14
4	Speed of passing of a stretch of a distance, m·s ⁻¹	1,90	1,48	1,30	1,42	1,39	1,12	1,86	1,50	1,43	1,40	1,38	1,23
5	Rate of rowing movements, cycles/mines	–	36,85	36,35	36,63	36,05	29,40	-	37,32	37,72	37,92	37,82	41,81
6	"Step" of a cycle of rowing movements, m	–	2,42	2,32	2,34	2,32	2,22	–	2,40	2,27	2,22	2,20	1,81

Table 4

Indicators of speed of overcoming of various lengths of a competitive distance of 50, 100 and 200 meters in swimming in way a crawl on a back

Distance	Lengths of a competitive distance, m				
	Start – break the surface	Break the surface –15 m	1 half	2 half	Finish
50 m	2,06	1,65	1,57	1,61	1,28
100 m	2,00	1,69	1,49	1,48	1,29
200 m	1,98	1,48	1,39	1,35	1,23

Apparently from the tab. 4, at the sportswomen specializing in swimming at a distance of 50 meters in the way a crawl on a back the greatest values of speed on a length "start- break the surface " and in the course of overcoming of remote stretches are noted.

Respectively at the girls specializing in swimming at a distance of 100 meters, the greatest values of speed take place on a length "break the surface – 15 meters" and a finishing stretch of a distance.

In turn sportswomen the main specialization of which is the distance of 200 meters in swimming in way a crawl on a back, distinguish the smallest values of speed.

The carried-out analysis of indicators of rate of rowing movements on various lengths displaying the structure of competitive activity allowed to establish the fact of their systematic decrease in the process of the increase in length of a competitive distance.

In turn at such parameter as "step" of a cycle of rowing movements the opposite tendency was noted. Its highest values are recorded at the sportswomen floating a distance of 200 meters.

Thus, the length of a competitive distance leaves the mark on nature of technical and tactical actions of the sportswomen specializing in swimming in way a crawl on a back.

Conclusions:

1. The main indicators of technical and tactical actions of highly skilled sportswomen allowing to estimate the efficiency of their competitive activity are swimming speed, rate and "step" of a cycle of rowing movements.

2. The quantitative indices of the efficiency of overcoming of various stretches of a competitive distance in female swimming in way a crawl on a back depend on its length.

3. The greatest values of speed are noted at the sportswomen specializing in swimming at a distance of 50 meters in the way a crawl on a back on a length "start-break the surface" and remote stretches. The greatest speed at a distance of 100 meters takes place on a length "break the surface – 15 meters" and a finishing stretch. Values of speed in the course of overcoming of lengths of a competitive distance of 200 meters in way of swimming a crawl on a back are the lowest.

4. In the process of the increase in length of a competitive distance of value of speed on various lengths displaying the structure of the competitive activity decrease

against the change in the big part of indicators of "step" of a cycle of rowing movements.

5. The improvement of technical and tactical skill of the sportswomen specializing in swimming in way a crawl on a back has to be made taking into account the length of a competitive distance.

The prospect of further researches is connected with the studying of features of technical and tactical actions of sportswomen of high qualification in the course of overcoming of distances of a various extent in other sports ways of swimming.

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DETERMINATION OF MODEL OF COMPETITION ACTIVITY OF QUALIFIED RUNNERS IN THE MARATHON

Abstract. Purpose: to determine modes of competitive activity for marathon athletes with various qualifications. **Material and Methods:** the analysis of the competitive activity of 149 athletes (men) was made. The time-keeping of separate segments of the distance was measured for qualified runners, who showed results from grade I and up. **Results:** it was proved that the most evenly the distance was run by the most qualified runners – master of sports. A common trend of lowering of the running speed during the second half of the distance, especially at the district of the marathon from 21,097 to 26,3 km, was observed. **Conclusions:** it was proved that the most rational mode of the competitive activity of qualified marathon runners is leveled running through the distance.

Keywords: *marathon, endurance, competitions.*

Introduction. In the system of physical training the key place is given to the system of competitions, because the competitive activity influences directly or indirectly onto the main tendencies of the maintaining of the whole process of sport training. Each of the levels of the development of competitive activity has its own criteria for evaluating effectiveness, which allows to realize the individual approach to the training of athletes in different components of the training process [5].

The necessity for research was caused by a significant increase in the number of athletics competitions that is a consequence of the commercialization of sport, and that, in turn, complicated the rational planning of the training process and reduced special performance on the most important parameters of competitive activity [2; 7; 8]. Improving the system of management of training process on the basis of objectification of knowledge about the structure of competitive activity and fitness is one of the promising areas of sports science [1; 6].

During the training of high-class runners on the ultra-long distances that can perform successfully on the international scene, the important issue is the preliminary definition of rough indicators, which an athlete can reach. It is important to select the optimum distance, recommendations on the method of training and selection of candidates for national teams. [3]

Connection of the research with academic programs, plans, themes. Research is conducted in accordance with thematic plan of research work of the Kharkiv State Academy of Physical Culture for 2013-2015.

Objective of the research: to determine the model of competitive activity for marathon athletes in different qualifications.

Tasks of the research:

1. To analyze the dynamics of the running speed of qualified marathon runners on the individual segments of the race.
2. To determine the most rational options for overcoming competitive distance in the marathon.

Material and methods: theoretical analysis and generalization of the special literature, chronometer, protocol analysis of competitions, methods of mathematical statistics.

The study was conducted during the competition of the championship of Ukraine in the marathon in 2014 in Belaya Cerkov among men. The results of competitive activity were analyzed depending on qualifications: master of sports, candidates for master of sports and athletes of I category. Athletes were divided into groups depending on the level of the result of the competition.

Results of the research and their discussion. Statistical analysis of the protocols of the competition showed that the Ukrainian championship marathon, which was held in the town of Belaya Cerkov in 2014, started 149 men. During the analysis of the finishing protocols it turned out that among the athletes who finished the race, 8 runners have shown results of class I and better. So, 3 sportsmen showed the master of sports (MS), 2 athletes – candidate master of sports (CMS), 3 competitors – I category, 9 athletes performed II and 132 – III category.

Timing of running separate 5.3-kilometer stretches of the distance made it possible to determine the models of competitive activity for marathon athletes of different qualifications, which are presented in Table. 1.

Table 1

Models of competitive activity of marathon runners of different qualifications

Sportsmen qualification 5,3-kilometer stretches, km	Result, min.s		
	MS	KMS	I rank
0–5,3	17.07	17.51	18.38
5,3–10,6	17.09	17.41	18.48
10,6–15,8	16.54	17.47	18.44
15,8–21,097	16.39	17.47	18.36
21,097–26,3	17.13	18.34	19.14
26,3–31,6	17.18	18.50	19.28
31,6–36,9	17.13	19.07	19.40
36,9–42,195	17.25	19.09	20.26
The average result of a 5.3- kilometer stretches min.s	17.02	18.25	19.31

The study of protocol events showed that the results of a 5.3-kilometer stretch ranged from 16.39-17.25 min.s for masters of sports, 17.41-19.09 min.s for CMS, and athletes of class I – 18.36-20.26 min.s. The analysis revealed that the ones who mostly evenly overcome marathon were masters of sports (the range of fluctuation

time was 46 s). This is evidences of good physical fitness of runners and correctly chosen tactics of competitive activity.

Comparison of time of overcoming the first 5.3 km distance showed that the athletes – master of sports ran this piece at the level of secondary competitive results, and candidates for master of sports and athletes of class I overcame this segment faster than mean values with 34 s and 53 s respectively.

Analysis of the following stages of the marathon from 5.3 to 10.6 km and from 10.6 to 15.8 km showed a similar situation. Thus, the master of sports ran these segments at the level of secondary competitive results, and candidates for master of sports and athletes of class I overcame these areas of distances faster than average values at 44 and 38 s, and 43 s and 47 s, respectively.

The next stage of the marathon from 15.8 to 21.097 km athletes of all groups overcame faster than the mean values for 23 (MS), 38 (CMR) and 55 (runners of class I).

Segment distance from 21.097 to 26.3 km masters of sports and sports master candidates ran at the secondary level of competitive results, and athletes of class I – faster than the average value for 17 seconds.

Analysis of the next stage of the marathon from 26.3 to 31.6 km revealed that more skilled runners overcame it for 16s and 25s slower than average values, and the other athletes – at the level secondary competitive result.

Comparison of time of overcoming the gap from 31.6 to 36.9 km distance showed that the master of sports and athletes of class I overcame this segment at the level of secondary competitive time, and candidates for master of sports – for 42s slower.

The last leg of the distance all the athletes have overcome slower than the competitive average time of 23 s (MS), 44 (CMS) and 55 (runners of class I). Significant fluctuations in the time of running the marathon of individual sections may be explained by the individual characteristics of athletes, because some athletes ran too fast the first half of the race and could not support the optimal speed up to the finish line.

The analysis of the dynamics of the velocity running a marathon athletes allowed to set the options for passing the distance in 2014 by runners of different qualifications (Fig. 1). It was found that the speed ranges on 5.3 km stretches varies in the scopes of 18,38-19,27 km/p/h⁻¹ for the masters of sports, 16,56-18,19 km/p/h⁻¹ – candidates for master of sports and 15,72-17,32 km/p/h⁻¹ – for the athletes I category.

The graphics show that the most evenly marathon was overcome by most skilled athletes – the master of sports, a range of speeds of overcoming the 5.3-kilometer stretch was 0.89 km/p/h⁻¹. This indicates good physical fitness of athletes and properly chosen tactics of competitive activity. Implementation of tactical training as certain variants of struggling under the conditions of the competition, according to the A. G Rybkovskiy (2007), allows the athlete to make better use of its level of special preparedness. The increased level of competition in running with equal functional readiness shows that wins the athlete who, with knowledge of the

advantages and disadvantages of himself and his opponents, together with the coach elects winning tactical program [4].

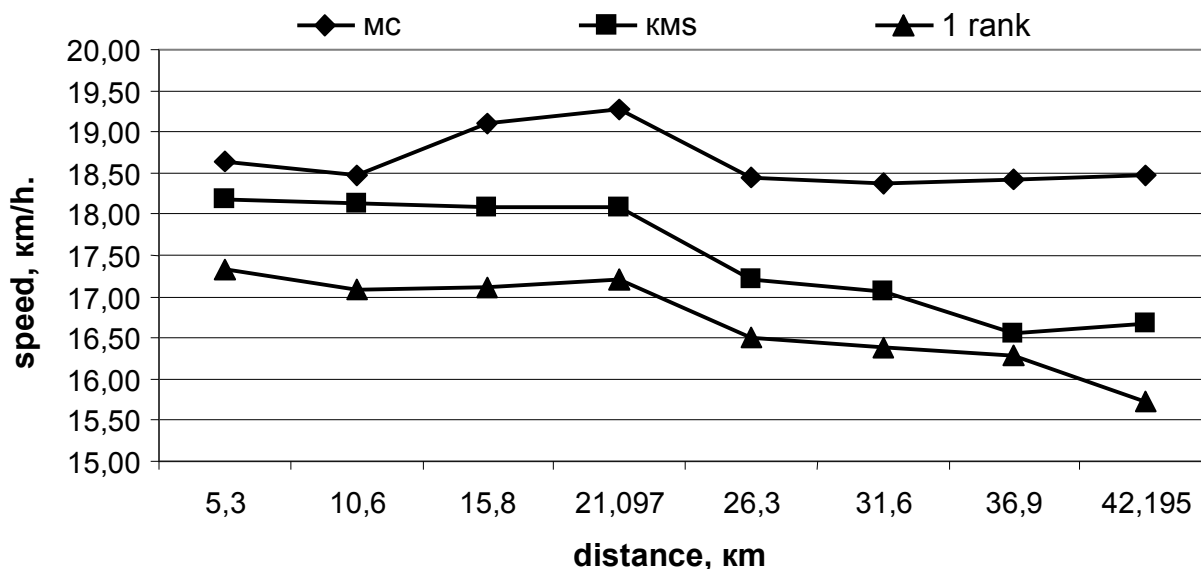


Fig. 1. Dynamics of speed of individual segments of marathon distance by sportsmen of different qualifications

For candidates for the master of sports, the range was 1.63 km/p/h^{-1} , and the runners of class I – 1.60 km/p/h^{-1} . For athletes of these groups there was a reduction in the running speed for the second half of the race. This testifies about the insufficient level of physical fitness of runners and of improperly chosen running tactics.

A sharper decline in the speed of athletes of all groups occurred in a segment of the marathon from 21.097 to 26.3 km, just after the halfway distance, which can be explained by the presence of "dead spot" in the middle of the distance. The analysis of published data showed that the main guidelines in determining the efficiency of the organization of the training process runners for the high-end ultra-long distances, as a rule, are the indicators that reflect the level of economization of functional systems.

Conclusions. Studying the dynamics of running speed at various intervals in the distance competitive conditions showed some fluctuations – decrease or increase of relatively average speed. Speed range of overcoming the 5.3-kilometer stretch was from 0.89 km/p/h^{-1} for the masters of the sport to 1.63 km/p/h^{-1} for candidates for master of sports.

In the result of the conducted analysis has shown that the most evenly marathon was overcome by the most skilled athletes – master of sports. The study found a general tendency to reduce the running speed in the second half of the race, especially in the area from 21.097 to 26.3 km.

Definitely, the most rational model of competitive activity of the qualified marathon runners in passing the distance is even passing. This confirms the physiological concept that even running speed allows for more efficient and economically decision of motor tasks associated with the manifestation of special

endurance. Athletes show their best results when they are able to maintain a constant pace throughout the race or make acceleration at the end.

Prospects for future research is to develop new methods and means of improving tactical training runners in the marathon.

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CHANGES IN INDICATORS OF SPECIAL PHYSICAL PREPAREDNESS OF YOUNG TENNIS PLAYERS AT THE STAGE OF INITIAL TRAINING

Abstract. Purpose: to improve performance of special physical qualities of young tennis players at the stage of initial training. **Material and Methods:** analysis of scientific and methodical literature, test of physical fitness, pedagogical experiment, methods of mathematical statistics. The study involved 11 women aged 7–8 years in the group of initial training. In the training sessions of physical training of young tennis players the game has been used teaching method. **Results:** to investigate the changes in the indices of physical fitness of young tennis players 7–8 years. Analyzed the impact of the development on the physical qualities of assimilation techniques. Pointed out that for the qualitative development of physical qualities necessary to use outdoor games and relay races. Revealed that the results of the physical fitness of young tennis players after the pedagogical experiment and had risen significantly different to those in the beginning of the study ($P < 0,05$), except for indicators exercises "run on 18 meters". **Conclusions:** it was found that the use of training sessions on physical preparation of mobile games and relays increase the interest and motivation for tennis lessons for children in the group of initial training.

Keywords: young female tennis-players, physical qualities, outdoor games.

Introduction. Special physical training of tennis player aims to develop basic special motor characteristics (speed, strength, flexibility, agility, endurance) that are needed in sports activities. At the same time, physical training is inextricably linked to the strengthening of organs and systems of an athletes' body, an increase in the overall level of functional preparedness and strengthening of health for young tennis players [4–6]. At the stage of initial training tennis players great value has increasing in the range of variability impacts and speed of execution techniques, depending on the athlete's ability to quickly acquire backhands and development of special physical qualities [1; 4; 7].

Training of young tennis players – a complex phased process that involves achieving a certain level of fitness – physical, technical- tactical, psychological and theoretical.

In tennis physical training has great importance in the initial stage and is equally important for the next stages of training, as modern lines of tennis development are characterized by universalization of the game on the baseline as well as at the net that without a certain level of physical fitness you cannot perform at a high level [1; 2; 4; 7].

The level of special physical preparedness essentially depends on the age of the athletes [3]. In the preschool and school age child's physical qualities may accelerate or slow down their development. Experts of tennis believe that 6-7 year old children have increased mobile activity, 7-10 years there is a feasibility to raise quickness, in 6-9 years children easily perceive new movements in 8-12 years more favorable conditions for the development of general endurance [1; 4; 7].

As shows competitive activity of tennis players, special physical training always plays a leading role in training athletes, and with age incrementing, the weight is growing.

Thus, we can determine that the development of special physical qualities at the stage of initial training lays a solid foundation of many years of training process of young tennis players.

Connection of the research with scientific programs, plans, themes. The research is part of the plan of scientific research works of department of sports and outdoor games of Kharkiv State Academy of Physical Education in 2011–2015. "Improving the educational-training process in sports games" (state registration number of 0111U003126 2011).

Goal of the research: increase of indicators of special physical qualities of young tennis players at the stage of initial training.

Material and methods of the research. Analysis of scientific and methodological literature, testing of physical training, pedagogical experiment, methods of mathematical statistics.

11 girls aged 7-8 years of initial training group 2-3 year of study participated in the experiment for 8 months.

To determine the dynamics physical preparedness of young tennis players we have used control exercises: throwing of a tennis ball at a distance, running for 18 m; shuttle run in 5 directions; grip of a falling gymnastic stick, standing long jump; throwing of a tennis ball into squares by control arm.

In carrying out consecutive pedagogical experiment, which was held for 8 months was used method of physical training gaming to the widespread use of mobile games and relays. Studies on physical training were mainly gaming and competitive nature and carried out 2 times a week. Duration of classes was 60 minutes.

For the development of physical preparedness of young tennis players we used exercises: to develop quickness – running with a change of direction and way of moving (running backward, ladders, cross steps, etc.), Start from different positions (standing, sitting, lying down); for speed-strength capabilities – various jumps – the long, side-up, up, back-up from standing position, with long run, throwing of a tennis ball at a distance; for coordination skills – catching of a tennis ball from different positions at the initial moment and at the top point of its bounce, throwing of a tennis ball on the accuracy from different distances; for endurance – the usual long run, running sideways and backward with acceleration, various jumping with rope; to develop strength – exercises with expanders for hands, medicine ball throwing with motions that are similar to performance socks left, right, filing, bending and

unbending hands from a lying support. These exercises after mastering them are applied in the relay.

In the training process are used outdoor games that focused on the development of speed, speed-strength, coordination skills, flexibility, endurance [1; 3; 4; 7]:

«*On the mark*» – for training accuracy from different distances and the ability to differentiation of muscular effort; «*Fisherman*» – to develop coordination skills, "feeling racket" and the ability to exact muscular effort; «*Mop*» – for physical activity, orientation on play field, the speed of movement; «*Undercut*» – for coordination abilities, speed-strength training; «*Burst with a ball*» – for the speed abilities; «*Shnyrok*» – for coordination abilities; «*Vicious circle*» – for coordination skills, balance; «*Basketball with a tennis ball*» – for coordination abilities, «*Pick up the ball*» – flexibility for development; «*Go through the stick*» – flexibility for development; «*Centipede*» – to develop endurance; «*Catching by pairs*» – to develop speed endurance; «*Wheelbarrows racing*» – for development of strength qualities.

Results of the research and its' discussion. Obtained results of pedagogical experiment in testing of physical preparedness of tennis players improved and had a significant difference: in the test "standing long jump" in an average of 7.6 cm at $t = 2,2$ ($P < 0,05$), in the throwing of a tennis ball at a distance – an average of 1.2 m at $t = 2,2$ ($P < 0,05$), shuttle run in 5 directions with rackets – on 0,54 s at $t = 2,4$ ($P < 0,05$) in grip of a falling gymnastics stick – an average of 6.2 cm at $t = 2,1$ ($P < 0,05$), in the throwing of a tennis ball in squares by control arm – an average of 1.4 hits at $t = 2,1$ ($P < 0,05$).

Indicators in running for 18 m had no significant difference and increased by 0.15 s at $t = 0,15$ ($P > 0,05$).

The results of pedagogical testing are shown in the Table.

Changes in indicators of young tennis players physical preparedness ($n=11$), $\bar{X} \pm m$

№	Control exercises	At the beginning of the experiment	At the end of the experiment	t	P
1	Throwing of a tennis ball at a distance, m	9,1±0,35	10,3±0,42	2,2	<0,05
2	Shuttle run in 5 directions with rackets, s	18,66±0,15	18,12±0,17	2,4	<0,05
3	Standing long jump, cm	142,1±2,1	149,7±2,7	2,2	<0,05
4	Running for 18 m, s	4,75±0,6	4,6±0,8	0,15	>0,05
5	Grip of a falling gymnastics stick, cm	26,4±2,12	20,2±2,03	2,1	<0,05
6	Throwing of a tennis ball into squares by control arm, number of hits of 12 times	3,2±0,47	4,6±0,48	2,1	<0,05

Evaluating the results obtained during the study, we can determine that increased rates of special physical preparedness of young tennis players except of

speed movement results. Subsequently it is needed to add in the training process of young tennis players training sessions focus on the development of speed movement.

Conclusions:

1. As a result of research were promoted results of special physical training young athletes at the stage of initial training and received probable indicators of shuttle run in 5 directions with rackets, throwing of a tennis ball into squares, grip of falling gymnastics stick, throwing of a tennis ball at a distance, standing long jump (at $P < 0,05$), excepting running for 18 meters.

2. Application of a game method using dynamic games and relays in tennis classes in a group of initial training contributed to increase interest and motivation for sports activities and improving the dynamics of the special physical preparedness of young athletes.

In perspective our research will be directed to determine the effect of physical fitness results in technical and tactical performance of children in the group of initial training in tennis.

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WAYS OPTIMIZATION PHYSICAL ACTIVITY STUDENTS

Abstract. Purpose: *on the basis of the analysis of results of poll of students, first, to define structure and the importance of the factors influencing formation of motivation at them to sports and sports activity, secondly, to allocate possible subjects for extension of the maintenance of theoretical and methodical-practical components of sports formation of student's youth. Material and methods:* The study involved students of first and second courses of the Institute for training bodies and the Faculty of Law of the National University №9 Yaroslav the Wise and the students of the Kyiv National University of Culture and Arts and Zhytomyr State University named after Ivan Franko. **Results:** *it is established that during training at national law university interests of students concerning factors which motivate them to sports and sports activity significantly change. The analyses data testify that a key factor which prevents students to be engaged in sports and sports activity, lack of free time is. It is proved that students consider necessary to receive information on the physical state. Conclusions:* *results of research allowed allocating the most significant factors which motivate students to be engaged in sports and sports activity. It is established subjects of theoretical and methodical and practical components of sports education which interest students of NLU and KNUCA and ZSU. It is shown that for students of Law University of importance topic of theoretical and methodological and practical components of physical education strongly depends on the year of their training.*

Keywords: *physical education, motivation, sports education of students, health, sports activities, driving mode, a sociological study, profile of factors. sports education.*

Problem statement and analysis of recent research and publications. In recent years, the problem of preserving and strengthening the health of students has become particularly acute. This is due to the fact that currently, more than 70% of the students are low and below the average level of physical health [5]. According to the example, G.V. Vlasova [2], about 50% of students are at the dispensary, and every fifth student assigned to a preparatory or special medical group, or released for health from exercise. The situation that has developed health of students is due to several reasons. Firstly, the fact that the classes of physical education in higher education only 25-30% meet the daily needs of students in motor activity [1]. Second, the immaturity of most students the necessary motivation to exercise [8, 9]. Third, the transfer of the section of a large part of self-hours (60%) allocated to the discipline "Physical Education" in connection with the introduction of the higher educational

institutions of credit-modular system of educational process [4]. Therefore, the solution to ensure the necessary level of physical health of students lies in the education of their personal responsibility for their health, and creating in them a positive attitude to exercise and to lead a healthy physically active lifestyle, that is, the formation of their certain level of personal physical training [10]. However, for the solution of these problems is still insufficient data on the structure of the factors affecting students' motivation for physical exercise, incompletely studied peculiarities of their value orientations relative to the physical health and physical self-improvement, not fully defined the direction of improving the theoretical training of students not sports high schools on discipline "Physical Education" [7].

The purpose of the article. On the basis of the results of a survey of students, first of all, to determine the structure and importance of factors that affect the formation them motivation to sports and sports activities, and secondly, identify possible topics for expanding the content and methodology of theoretical and practical components of physical education university students.

Relationship of academic programs, plans, themes. Research conducted as part of a comprehensive research project on the 2013-2014 district. "Theoretical and methodological bases of formation of personal physical training in children and young people as the basis of their health" (state registration 0113U001205).

Research methods. For the task was made a special sociological study, which was attended by students of first and second courses of the Institute for training bodies and the faculty №9 of National University «Yaroslav the Wise Law Academy of Ukraine» (NLU). The study used a mixed profile type that has passed a practical tested in previous studies [6]. During the comparative analysis of the survey results of students of first and second courses assumed that the difference between the aggregate responses of significant, if more than 5%. Results of the survey Law Academy students for a more objective assessment of them, compared with the generalized results of a similar study conducted at the National University of Culture and Arts (KNUCA) (responsible officer Batieieva N.P.) and and Zhytomyr State University named after Ivan Franko (ZSU) (responsible officer Mel'nichuk D.R.)

The main material. Results of the study the importance of factors that affect formation the students' motivation to sports and sports activities are presented in Table 1 (first question). They suggest that for students of Law of the University who participated in the survey, the most important factor that encourages them to exercise, there is a desire to improve their physical fitness. And in the second year of study, compared with the first, the number of students increased by 17.2%. On average, the students NLU this factor preferred 35.9% of respondents, significantly less than among university students who are studying in KNUCA and ZSU (54.5%). The second largest factor that affects the motivation of students to the University Law of sports activities is the awareness of the need to optimize their weight and improve physique (33.1%). This factor is almost equivalent to the first students (31.9%) and second (34.3%) courses. As the results of studies for students KNUCA and ZSU it is less important, because he preferred to only 16.6% of respondents. Suffice important factor that motivates students of the first year law university exercise is a desire to

"educate the will, character, determination." He positively assessed 28.2% of freshmen. However, second-year student, he is not the determinant (2.6%). Directly opposite trend was found in the analysis of the following factors that motivate students to exercise, namely "the desire to reduce fatigue and improve performance." He noted only 4.5% of first-year students, while second-year students, this factor is more important, it contributed 16.6% of respondents. As the results of the study other factors included in the questionnaire, namely "the desire to move gracefully", "rationally spend time", "achieve sporting success" including "time to get credit in physical education" are not meaningful for students of Law University and students KNUCA and ZSU.

Summarizing the results of evaluation of student factors that lead them to sports and sports activities, it is necessary to pay attention to the coincidence of the ranking of selected students and NLU, KNUCA and ZSU for response options (tab. 1, issue 1). Among the options proposed eight students from these schools ranked the – "the desire to improve physical fitness", the second – "the desire to optimize weight and improve your physique," the third – "a desire to educate the will, character, determination," the fourth – "the desire to remove fatigue and increase efficiency, "etc. Differences emerged only factor "desire to achieve sporting success." As a survey of students from NLU and KNUCA, ZSU conducted independently, then the result suggests that the set of students rated the importance of factors that stimulate them to sports and sports activities and has an objective and sufficiently general.

Table 1

Ways and ways of optimization of physical activity of student's youth

№	Questions and versions of answers	The generalized results of answers of students (%)				
		NLU				KNUCA та ZSU (n=246)
		1 course (n=84)	2 course (n=64)	Diffe- rence	Average value	
1	What motivates you to engage in sports and sporting activities?					
	The desire to improve physical fitness	27,4	44,6	+17,2	35,9	54,5
	The desire to optimize weight and improve physique	31,9	34,3	+ 2,4	33,1	16,6
	The desire to educate the will, character, determination	28,2	2,6	-25,5	15,4	8,2
	The desire to reduce fatigue and improve performance	4,5	16,6	+12,1	10,6	7,2
	The desire to move gracefully	4,5	0,0	- 4,5	2,25	2,3
	The desire to spend time efficiently	3,5	0,0	-3,5	1,8	1,1
	The desire to achieve sporting success	0,0	0,0	0,0	0,0	8,4
	Wish to receive the credit in physical education	0,0	0,0	0,0	0,0	0,4
	Not defined	0,0	1,9	+1,9	0,95	1,2

continuation of the table 1

What prevents you from doing physical training and sports activity?							
2	Lack of free time		70,6	48,5	-22,1	59,6	39,4
	No section of the favorite sport		0,0	16,1	+16,1	8,05	6,0
	There is a lack of knowledge for self-study		6,8	3,9	-2,85	5,4	9,4
	Lack of equipment		4,5	5,2	+0,7	4,9	11,8
	No one engages in sports and sports activities		4,5	2,6	-1,9	3,5	11,7
	Not defined		13,7	15,4	+1,7	14,5	21,2
What information on the physical state you would like to receive from experts and you receive it now?							
3	About a condition of physical health	Interests and receive	55,6	56,8	+1,2	56,2	56,9
		Interests, but I don't receive	24,1	14,3	-9,8	19,2	29,1
		Information doesn't interest	20,4	28,9	+8,6	24,6	13,9
	About the level of physical fitness	Interests and receive	42,1	65,1	+23	53,6	42,2
		Interests, but I don't receive	15,4	10,4	-5	12,9	26,6
		Information doesn't interest	42,6	24,6	-18,0	33,6	30,9
	About a harmony of development of a constitution	Interests and receive	41,3	56,8	+15,5	49,1	37,3
		Interests, but I don't receive	27,6	11,7	-15,9	19,6	25,2
		Information doesn't interest	31,2	31,5	+0,35	31,3	37,4
	About influence of physical exercises on intellectual working capacity	Interests and receive	47,7	48,5	+0,8	48,1	36,6
		Interests, but I don't receive	9,8	21,4	+11,6	15,6	37,8
		Information doesn't interest	42,6	30,2	-12,35	36,4	25,6
What topics of theoretical and methodological and practical components of physical education are you interested?							
4	As rational nutrition (yes)		61,3	79,9	+18,7	70,6	65,2
	How to control body weight (yes)		54,9	69,0	+14,1	61,9	53,9
	Organization of motor mode during exams (yes)		58,3	60,7	+2,4	59,5	36,5
	Methods of using simulators (yes)		46,6	65,1	+18,4	55,8	26,5
	Methods of using musical and rhythmic exercises (yes)		53,0	54,2	+1,2	53,6	34,5
	Method of hardening (yes)		54,5	50,3	-4,2	52,4	46,2
	Methods of self-control during lessons (yes)		36,8	63,3	+26,5	50,1	40,2
	Method of classes jogging (yes)		39,8	49,7	+10,0	44,7	21,0
	The issue of family physical education (yes)		30,1	62,0	+31,9	46,0	39,7
	Psychotraining methods (yes)		34,6	57,5	+22,9	46,0	42,4

Optimization of physical education of students involves consideration of their interests and needs in the field of physical culture and sports [10]. It is necessary to know the reasons that prevent them deal with sports and sporting activities. The survey allows students with a certain degree of probability to answer the questions posed (table 1, question 2). The results obtained in the study show, first, that "no free time" is the most significant factor that prevents students to engage in sports and athletic activities. It drew attention to an average of about 59.5% of students NLU and 39.4% of students KNUCA and ZSU. It should be noted that over the years of study at the university among the students attitude to this factor varies. For example, it is identified as a significant 70.6% of student's surveyed first-year Law University. In the second year these students were much less – 48.5%. Directly opposite assessment was made by students of the first (0.0%) and second (16.1%) courses such factor as "No section of the favorite sport". Other answers to this question, which were presented in the questionnaire ("not enough knowledge for self-study", "lack of equipment", "no one engages in sports and sports activities"), for students of Law University, had proved significant. This is a total score of these factors follows and summarized the results of a survey of students KNUCA and ZSU.

An important factor that can motivate students to sports activity is the ability to obtain them in the process of development of the discipline "Physical Education" information about their health status, level of physical fitness, the harmony of the physique and the effects of exercise on mental performance (table 1, question 3). The results of the survey indicate that 56.2% students of Law University (55.6% in the first and 56.8% in the second) required getting them information about his health, which practically coincides with the results of students' responses KNUCA and ZSU (56.9%). Draws attention to itself by the fact that in the first year of university 24.0% of students are interested in information about their health status, but such information they receive, in the second year these students are much less – 14.3%. It should be noted that during the period of study at the Law University of increasing the number of students for whom this information is of no interest (in the first year to 20.4%, and 28.9% in the second), while in other universities such students only 13.9%. Results of the study also suggest that over the period of study in Law University is growing awareness of students about their degree of physical fitness. So, if in the first year 42.1% of students are interested in and receive such information, then in the second year of such students for about 65.1%. This difference is due to increased interest second-year students in the subject matter, resulting in a decrease by 18.0% the number of students for which this information is not interesting. A similar dependence is observed when assessing students such factors as "the harmonious development of body". This information Interest and receive 41.3% of first-year students and 56.8% of students enrolled in the second year of NLU. The survey results also show the relative stability of the number of students the University of law enrolled, who are studying in the first (47.7%) and second (48.5%) courses and obtain information about the effect of exercise on their mental performance. Among students of KNUCA and ZSU much less – 36.6%.

Summarizing the results of the choice of the students answer the question "What kind of information about their physical condition you would like to receive from the experts and you get it now?" It is necessary to note the following. First, the results indicate a high enough percentage of students NLU (31.5%) and students KNUCA and ZSU (27.0%) are not interested in information about their health, about their level of physical fitness and the harmony development of a constitution, the effects of exercise on their mental performance. Second, students NLU and students KNUCA and ZSU ranked in identical sequences answers to this question. As a survey of students from NLU and KNUCA and ZSU conducted independently, this result suggests that the set of students rated the importance of factors that they are interested in is objective and quite universal.

An important area of improving the system of high school physical education is to expand and deepen the theoretical and methodological and practical components of the sports education of students [3]. For optimization is necessary to know which topics of interest to students. Results of the study indicate that students in NLU (70.6%) and KNUCA with ZSU (65.2%) are most interested in exploring the theme "how rational to eat". Interest in the subject among students of Law University increases from the first course (61.3%) to the second (80.0%), the study about 18.7%. The next most important topic of the theoretical component of physical education for students in NLU (54.9%) and KNUCA with ZSU (69.0%) subjects is associated with the control of body weight. Students of Law University interest in the topic is growing from the first (54.9%) to the second (69.0%) training for approximately 14.1%. The survey results also showed that the students interest in learning NLU topics on the organization of motor mode during exams is almost identical to the first (58.3%) and second (60.7%) courses. Students' KNUCA with ZSU this topic attracts much less celebrated its only 36.5% of respondents. Among students of Law University of the need to study the techniques of the use of simulators increases from the first (46.6%) to the second (65.1%), the study is 18.5%. Noteworthy is the fact that students NLU this topic more interesting (55.8%) than for students with KNUCA with ZSU (26.5%). Students NLU chose fifth leading highlight the theme "technique of using musical and rhythmic exercises". Interest in it is almost the same among the students of the first (53.0%) and second (54.2%) courses. Significantly below its estimate students KNUCA and ZSU (35.4%). Next in importance to students of NLU theme is linked with lighting techniques hardening. Interest in this subject is almost the same among students of first and second courses of Law University (52.4%). Close enough to it and the number of students KNUCA and ZSU (46.2%) who identified this area as significant. Results of the survey of students of the law University have also shown that the lighting techniques of self-control during the sessions much more interested in the second-year students (63.3%) compared with freshmen (36.8%). This topic is important for 40.2% of students KNUCA and ZSU. During the period of study at the University of Law in second-year students interested teaching methods jogging increases by 10.0%. On average, this topic is of interest to 44.7% of students of law universities and only 21.0% of students KNUCA and ZSU. The survey results also showed that the students of the Law University in the second

year of study (62.0%), compared with the first (30.1%), significantly increasing interest in the study of family physical education (31.9%). This is, in general, a pattern is evident in the attitude of students of the first (34.6%) and second (57.6%) courses of Law University to study "psycho-training methods". This topic interested and 42.4% of students with KNUCA and ZSU.

Conclusions.

1. The results of this study allowed identifying the most significant factors that motivate students to engage in sports activity. First place in a kind of ranking is the desire of students to improve their physical fitness, noticed the 35.9% of students in NLU and 54.5% of students KNUCA and ZSU. Second place in the ranking is the desire of students to optimize weight and improve shape. This factor noticed 33.1% of students NLU and 16.6% of students KNUCA and ZSU. A survey of students in NLU, KNUCA and ZSU also revealed that "the desire to just get credit for physical education" is not a factor in motivating students to sports activity.

2. The results showed that during the period of study at the National Law University of significantly changing interests of students concerning factors that motivate them to sports activity. Factors such as a "desire to improve their physical fitness" and "desire to reduce fatigue and increase efficiency" are more significantly for the second year students (respectively, 44.6% and 16.6%) than for the students of the first (respectively, 27.4 % and 4.5%).

3. Studies have shown that the key factor that prevents students engage in sports activity is the lack of free time. In it, as the most significant noticed 59.6% of students NLU and 39.4% of students enrolled in KNUCA and ZSU. Among the students of the Law University weightiness of this factor depends significantly on the year of study, if the first course of its allocated 70.6% of the students, the second is only 48.5%.

4. The analysis showed, firstly, that the rating assessment of the importance of information about their physical condition, established by students NLU, KNUCA and ZSU, almost the same, and secondly, the results indicate a high enough percentage of students NLU (31.5%) and students KNUCA and ZSU (27.0%) are not interested in the information about the state of their physical health, their level of physical fitness and the harmony of the physique, the effects of exercise on their mental performance.

5. The analysis of theoretical and methodological topics and practical components of physical education that students interested NLU, KNUCA and ZSU, revealed the following priority topics in the first place topics related to the organization of a balanced diet; the second – to the control of body weight; the third – the organization activity regime during exams, the fourth – the method using simulators, the fifth – the method using musical and rhythmic exercises in the sixth – methods of hardening, the seventh – methods of self-control during the period of occupation, the eighth – method of jogging, on the ninth – the question of family physical education, the tenth – psycho-training methods.

6. The results indicate that the value of the theoretical and methodological and practical components of sports education students, who are interested in law school,

essentially depends on the year of study. A second-year students, as compared with freshmen, significantly higher interest in the following topics: the organization of a balanced diet (up 18.7%), control of body weight (up 14.1%), the method of using simulators (more by 18.4%), a technique of self-control during the occupation (26.5% more), questions of family physical education (up 31.9%), a psycho-training methods (22.9% more).

7. The results of a survey of students NLU, KNUCA and ZSU, show matches the rating chosen by them: a) the factors that lead them to sports activity; b) answers to questions regarding information about their physical condition; c) theoretical and methodological topics and practical components of physical education that interest them. The results obtained are objective and sufficiently general in nature, since the survey students from NLU, KNUCA and ZSU conducted independently.

Prospects for further research. In the future we plan to explore how to improve the organization of theoretical, methodological and practical classes with students who are assigned to study groups of physical education.

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INDICATORS CHEST RHEOGRAPHY AT SWIMMERS AT REST AND AFTER EXERCISE IN DIFFERENT BODY POSITIONS

Abstract. Purpose: Study of chest rheography for skilled swimmers when the dosage of physical activity in different body positions. **Materials and Methods:** the study involved 20 qualified swimmers for middle and long distance. **Results:** studies changes rheographic indicators from qualified swimmers in response to exercise in different positions of the body showed a clear dependence of the structure and functional hemodynamic changes the position of the body in which the exercise is carried out. **Conclusions:** found that when evaluating the success of readiness of swimmers and planning training loads must be based on indicators of physical performance obtained during exercise in a horizontal position of the body.

Keywords: cardiovascular system, central circulation, rheographic figures, sportsmen-swimmers, physical activity.

Introduction. The condition of cardiovascular system (CS) is one of the important criteria for an assessment of the influence of sports training on a human body [1; 2]. First of all it is predetermined by an extremely big role of the apparatus of blood circulation in adaptation of a human body to the continuous increase of physical activities in modern sport.

Sports activity in the conditions of water environment (swimming) has a number of physiologic features which distinguishes it from a physical activity in usual conditions of the air environment. These features are defined by the mechanical factors connected with the movement in water, horizontal position of a body and a big thermal capacity of water [3; 4].

Functional diagnostics of cardiovascular system has a primary value at a complex assessment of level of preparedness of athletes for loadings in modern sport at all stages of their professional activity [5–7]. A large number of researches is devoted to features of cardiodynamics, neurohumoral regulation of vegetative functions, and also the central blood circulation at representatives of different types of sport [5; 8–10].

At the same time the researches which are devoted as to features of reactions of system hemodynamics to a change of position of a body, and blood circulation reactions, on different actions (physical, psychoemotional, pharmacological and so on) depending on character of statics are quite few and they are insufficiently systematized.

Communication of the research with scientific programs, plans, subjects.

The scientific research is executed by plans of RW which are developed by

Zaporozhye national university.

The aim of the research: the research of indicators of a chest reography at qualified sportsmen-swimmers when performing the dosed physical activity in different provisions of a body.

Tasks of the research:

1. To define the influence of a gravitational (hydrostatic) factor on indicators of heart rates, power of heart rates, stroke and minute volumes of blood at sportsmen-swimmers.

2. To determine the main parameters of the central blood circulation at qualified sportsmen-swimmers when performing physical activity in horizontal and vertical provisions of a body.

Materials and methods of the research: researches were conducted on the basis of sports school "Motor Sich" on swimming during the period from January 2013 till February 2014.

Contingent: the qualified swimmers on averages and long distances (MSIC – 2, MS – 6, CMS – 6 and I category – 6 persons) in number of 20 male sportsmen from 18 till 25 years old. Registration of the main indicators of the central blood circulation was carried out by means of the diagnostic Cardio + complex. Indicators of the central blood circulation were registered in lying and sitting positions. Two-stage veloergometric loading of power which raises, is carried out in sitting and lying position on veloergometer. Reographic indicators were fixed in lying and sitting position (background inspection) and directly after the performance of the first and second stages of physical activity. Sizes of loading which is shown, decided on the help of the express – diagnostic program SHSM according to anthropometrical data [11].

The processing of results of the research was carried out by methods of mathematical statistics with the usage of packages of the statistical programs "Statistica 6.0" (Statsoft, the USA) and editor of tables "Excel 2000" (Microsoft, the USA). Reliability of changes by t-criterion of Styudent at the significance value $p=0,05$.

Results of the research and their discussion. The conducted researches of reographic indicators at the qualified sportsmen-swimmers in the condition of clinostatic rest gave the chance to analyze the influence of long physical activities and the gravitational (hydrostatic) factor on parameters of the central blood circulation at sportsmen.

In tab. 1 the provided data of indicators of average arterial pressure, heart rates, power of heart rates, stroke and minute volumes of blood and peripheral resistance of vessels, at sportsmen at rest.

The detailed analysis of reographic indicators allowed to find the directed adaptive changes of blood circulation in the course of long-term physical activities which consist in formation of functional sports bradycardia with the simultaneous increase in inotropic function of heart and volume indicators of blood circulation. These received data of the researches of reographic indicators at sportsmen-

swimmers allow to referee about economical work of CCS in a condition of clinostatic rest.

Table 1

Indicators of the central blood circulation at the qualified sportsmen-swimmers in a condition of clinostatic rest (n=20).

№	Indicators								
	APres, mm of mer.	HR, bpm ⁻¹	SFH, om·s ⁻¹	SVB, ml	SI, ml·m ⁻²	MVB, ml	CI, l·min· m ²	GPRV, dyn·s· sm ⁻⁵	SPRV, dyn·s·sm ⁻⁵ · m ⁻²
MSIC/MS									
1	98	68	2,83	67,36	40,09	4580	2,72	1711	2881
2	80	63	2,22	79,64	47,12	5017	2,96	1275	2161
3	76	60	2,13	72,53	43,17	4351	2,56	1397	2374
4	87	41	2,58	82,56	48,56	3384	1,99	2056	3496
5	96	68	2,84	67,16	39,73	4566	2,68	1681	2864
6	82	58	2,46	78,45	46,14	4550	2,69	1441	2438
7	87	39	2,51	79,59	46,81	3104	1,84	2241	3781
8	76	60	1,98	69,03	40,84	4141	2,43	1467	2501
\bar{X}	85,25	57,12	2,445	74,54	44,05	4211	2,48	1658	2812
σ	8,39	11,19	0,31	6,22	3,52	650	0,38	338	569
m	2,96	3,956	0,11	2,20	1,24	229	0,13	119	201
CMS/I category									
1	91	74	1,89	57,18	33,63	4231	2,48	1720	2934
2	75	70	1,67	50,90	30,11	3563	2,10	1683	2856
3	78	71	1,67	55,13	32,81	3914	2,32	1593	2688
4	73	70	1,89	62,34	36,67	4368	2,56	1336	2280
5	78	71	1,67	63,13	37,35	4481	2,65	1392	2354
6	75	70	1,67	50,90	30,39	3560	2,13	1684	2829
7	73	70	1,89	56,34	33,14	3943	2,19	1480	2666
8	80	63	1,72	47,64	28,19	3001	1,77	2132	3614
9	91	74	1,89	67,18	39,75	4971	2,95	1464	2467
10	90	70	2,43	60,89	35,81	4262	2,50	1688	2879
11	82	58	1,85	69,45	41,09	4028	2,38	1628	2755
12	90	70	2,43	60,89	36,24	4262	2,53	1689	2845
\bar{X}	81,33	69,25	1,88	58,49	34,59	4048	2,38	1624	2763
σ	7,26	4,47	0,27	6,70	3,92	510	0,30	205	342
m	2,09	1,29	0,07	1,93	1,13	147	0,08	59	98

The conducted researches of reographic indicators at the qualified sportsmen-swimmers when performing physical activity in different provisions of a body gave the chance to determine the main parameters of the central blood circulation and their change in a response to a physical activity (tab. 2).

So, when performing physical activity in sitting position the maximum gain of MVB was observed, and after the first loading both at the expense of the increase in HR, and as a result of the increase in SVB. Whereas during the second loading – generally at the expense of the increase in HR (tab. 2). When performing

veloergometry in sitting position the indicators of HR, both after the first, and after the second loadings, were authentically above – $p < 0,05$ and $< 0,01$ respectively (tab. 2).

The indicator of shorten function of heart (SFH) constantly grew as when performing loading, sitting and lying (tab. 2). But it should be noted that when performing physical activity in lying position after the second loading this indicator was authentically above, than at work in sitting position ($p < 0,05$).

Table 2

Indicators of the central blood circulation at sportsmen- swimmers when performing physical activity in sitting and lying positions, $\bar{X} \pm m$

Indicators		Loadings in sitting position (n=20)			Loadings in lying position (n=20)					
		Rest	1	2	Rest	p	1	p	2	p
APres, mm of mer.	\bar{X}	80,10	88,10	87,2	78,33	$>0,05$	86,00	$>0,05$	88,02	$>0,05$
	m	0,98	1,03	0,83	1,84		2,22		0,73	
HR, bpm ⁻¹	\bar{X}	77,9	99,2	130,6	61,67	$<0,00$	92,11	$<0,05$	106,54	$<0,01$
	m	2,61	2,54	3,46	2,74		2,95		3,19	
SFH, om·s ⁻¹	\bar{X}	1,74	2,06	2,12	2,05	$>0,05$	2,29	$<0,05$	2,80	$<0,05$
	m	0,08	0,30	0,26	0,26		0,38		0,31	
SVB, ml	\bar{X}	71,86	76,26	72,36	98,21	$<0,00$	99,78	$<0,001$	117,00	$<0,01$
	m	4,46	5,08	8,07	1,62		1,34		9,44	
SI, ml·m ⁻²	\bar{X}	37,75	35,63	42,86	54,01	$<0,00$	54,20	$<0,01$	63,26	$<0,01$
	m	2,49	2,57	4,22	1,66		4,93		4,46	
MVB, ml	\bar{X}	5546	7553	9450	6966	$<0,05$	10298	$<0,01$	12402	$<0,05$
	m	364	453	950	406		613		1312	
CI, l·min· m ²	\bar{X}	2,90	3,85	4,96	3,74	$<0,05$	5,54	$<0,001$	6,78	$<0,05$
	m	0,19	0,21	0,48	0,36		0,26		0,60	
GPRV, dyn·s· sm ⁻⁵	\bar{X}	1254	1056	893	908	$<0,00$	675	$<0,001$	568	$<0,05$
	m	84	76	85	31		25		111	
SPRV, dyn·s· sm ⁻⁵ ·m ⁻²	\bar{X}	2378	1986	1706	1683	$<0,01$	1254	$<0,001$	1038	$<0,05$
	m	141	137	156	46		54		146	

Note. p – the level of statistical reliability to the loading in sitting position.

In the comparative analysis of indicators of stroke (SVB) and minute volumes of blood (MVB) attracts attention rather essential differences in dynamics of changes of these indicators in response to the shown physical activities. So, SVB indicator practically didn't change concerning a condition of rest at loading in sitting position (SVB = $76,26 \pm 5,08$ ml and $72,36 \pm 8,07$ ml after the first and second loading respectively), even decreased a little after the second loading. Whereas in lying position this indicator significantly grew as after the first (SVB = $99,78 \pm 1,34$ ml), and after the second loading (SVB = $117,00 \pm 9,44$ ml), and was authentically above, than when performing physical activity in sitting position ($p < 0,001$ and $p < 0,01$ after the first and second loadings respectively).

The indicator of minute volume of blood was significantly growing as when performing loading, sitting and lying (tab. 2). But due to the significant reliable increase in shock volume of blood when performing physical activity in lying position a minute volume indicator was authentically big, as after the first ($p < 0,01$), and after the second stage veloergometry ($p < 0,05$).

Thus, we conducted the researches of changes of the reografhic indicators at the qualified sportsmen- swimmers in response to the dosed veloyergometric loadings in different provisions of a body showed the accurate dependence of size and functional structure of hemodynamic shifts on position of a body in which the physical activity is carried out.

So, adaptive changes in work of cardiovascular system in the conditions of horizontal position of a body at the qualified sportsmen- swimmers are optimum for a physical activity in lying position and functional are less optimum for the performance of physical activities in vertical situation.

Conclusions:

1. It is necessary to be guided by two physiologic norms – lying and standing at an assessment of a functional condition of cardiovascular system of swimmers.

2. First of all it should be guided by initial indicators in those provisions of a body in which this loading is realized, on the one hand, and features of their quantitative changes at loading, from another hand at an assessment of hemodynamic changes in response to the dosed physical activity.

3. It is offered to lean on the indicators of physical working capacity which are received when performing physical activity in horizontal position of a body At an assessment of measure and progress of preparedness of sportsmen- swimmers and planning of training loads.

4. It is necessary to pay special attention to that increase of volumes and increase in intensity of training loads was carried out taking into account the functional potential and the current preparedness of systems of an organism of swimmers for perception of concrete volume of physical activities at the organization of training process of the qualified sportsmen- swimmers.

Prospects of the subsequent researches consist in studying of features of the formation of pump function of heart at swimmers on marathon distances in the course of long-term physical activities in horizontal position of a body.

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PHYSIOTHERAPY PROGRAM OF PHYSICAL REHABILITATION OF PATIENTS WITH CONTRACTURE OF THE ELBOW

Abstract. Purpose: *To develop physical rehabilitation program for patients with contracture of the elbow joint, which includes early use of specific simulators. Materials and Methods:* *state of the upper extremity of patients was determined using anthropometric and functional methods. Were examined 60 en aged 35–45 ears with contracture of the elbow joint. Results:* *based on the results of the study was designed to include a comprehensive program of special simulators (vertical mill, RB-660V; horizontal grinder, RB-661G; Simulator 3 in 1 for the upper body, RB-662M; Multi Minibike, RB-665Z) in second period of physical rehabilitation. Conclusions:* *the proposed program during of physical rehabilitation contracture of the elbow joint in the second period of rehabilitation.*

Keywords: *contracture of the elbow joint, program, physical rehabilitation, men, special exercise equipment.*

Introduction. Analysis of special literature, which is dedicated to the restoration of mobility in the injured elbow joint showed that, despite the prevalence of this pathology, there are still many unsatisfactory and disabling consequences left [2]. In Ukraine disability due to injuries ranks third place after cardiovascular diseases and tumors. Injuries of the upper limb occupy the second place among all injuries of the musculoskeletal system and cause disability in 30% of cases. Preventing disability of the population is one of the most important activities of governments of all civilized countries, which is an integral part of the socio-economic development. In connection with this the problem of rehabilitation of patients after injuries of the upper limb has relevance [1; 2; 10].

Elbow joint is one of the most congruent joints of the body. For anatomical features – is a complicated trochlearis joint, innervation features which make them highly reactive and readily responsive to damage limitation motions. It is the most complex joint in the anatomical and functional terms [1; 5; 8].

Injuries to the elbow joint divided into hurt, fractures and dislocations. According to various researchers, the number of complications due to fractures and dislocations of the elbow joint is quite large and ranges from 12 to 50%. Contracture of the elbow joint makes hand almost motionless and greatly complicates the life of man, and it ineffective treatment can lead to complete immobility of the joint. In 81.4% of these damage occur in people of working age (35-45 years), indicating the great social importance of physical rehabilitation of patients with contracture of this joint [4; 7; 9].

Important role in the restored upper limb function in this condition divert therapeutic exercise. Physical exercises beneficial effect on the functional state of the elbow joint, reduces pain symptoms, decreases limitation of movement in the joint and improves tonus of earlier weakened muscles, improves trophism of joint tissue [3; 9].

Currently in the recovery of motor functions affected joints, along with therapeutic exercise and massage, are increasingly used mechanical therapy. Existing programs of physical rehabilitation mechanical therapy used in the III period of recovery for different injuries of the upper limb, including the contracture of the elbow joint. In this case use pendulous, block and other training device, but methodological and organizational basis for their use are underdeveloped and specifications need to be improved to enhance the effect of rehabilitation, that justifying the need to develop new and more sophisticated, rehabilitation programs with the use of mechanical therapy [6; 8].

Connection of the research with scientific programs, planes, themes.

Research carried out in accordance with the Consolidated Plan of scientific research in the field of physical education and sport in 2011-2015. Ministry of Education, Youth and Sports of Ukraine on the theme 4.3 "Rehabilitation of persons with limited physical capabilities based on their physical characteristics and compensatory and adaptive reactions on muscle activity ", state registration number № 0111U001170.

Goal of the research: development of program of physical rehabilitation of patients with contracture of the elbow joint, which includes early use of mechanical therapy.

Methods and organization of the research: analysis and generalization of scientific and methodological literature, pedagogical observations, anthropometric, functional methods and mathematical statistics methods.

The study was conducted on the basis of Public Institution "Ukrainian State Research Institute of Medical and Social Problems of Disability" Dnipropetrovsk city at the Department of Traumatology. There were examined 60 men (aged 35-45 years) with contracture of the elbow joint in the II period of rehabilitation, who were on stationary treatment.

Results of the research and its' discussion. At all patients were diagnosed with post-traumatic contracture of the elbow joint of II severity.

During the study, morphological characteristics were determined following indicators: neighborhood shoulder and forearm on the healthy and damaged limbs in patients with contracture of the elbow joint (Table. 1).

Table 1

Anthropometric indicators of upper limbs of patients with contracture of the elbow joint, $\bar{X} \pm S$; n=60

Indicators, sm	\bar{X}	σ	S
Circumference of the shoulder (injured limb)	32,07	4,52	0,58
Circumference of the shoulder (healthy limbs)	34,82	4,52	0,58
Circumference of the forearm (injured limb)	26,88	4,13	0,53
Circumference of the forearm (healthy limbs)	27,85	4,19	0,54

According to the table. 1, the average circumference of the shoulder and forearm of healthy and injured limbs are likely differences. At percentage

circumference of healthy limbs also exceeded injured (shoulder – 7.9%, forearm – 3.5%).

Assessment of the functional state of the injured limb was performed by: dynamometry, goniometry, Mayo scale (Table. 2) and indicators of the work on special training devices.

Table 2

The indicators of the functional state of the upper limb at patients with contracture of the elbow joint, $\bar{X} \pm S$; n=60

Indicators	\bar{X}	σ	S	V	Normative intervals
Carpal dynamometry (injured limb), kg	15,13	3,67	0,47	0,24	35–50
Carpal dynamometry (healthy limbs), kg	46,93	4,51	0,58	0,09	
The angle of bending in the elbow joint (injured limb), degrees	84,13	5,09	0,66	0,06	35–40
The angle of unbending in the elbow joint (injured limb), degrees	122,30	11,84	1,54	0,09	180
Pronation (injured limb), degrees	38,45	9,31	1,21	0,24	75–85
Supination (injured limb), degrees	41,73	8,78	1,14	0,21	
Mayo scale, points	25,16	9,52	1,24	0,37	90

Dynamometry was conducted to determine the strength of the injured and healthy limbs. According to data of Table 2, average indicators of healthy limb ($46,93 \pm 0,58$ kg) did not go beyond the normal range (35-50 kg), while the injured limb indicators were significantly below normal – $15,13 \pm 0,47$ kg. During individual examination at all patients, without exception, the results were below normal (100%) but strength of healthy hand meet normal at 83.3% of patients, and exceeded – 16.7%.

Goniometry showed dysfunction of the elbow joint, angle of bending an average of $84,13 \pm 0,66$ at a rate of 35-40 degrees. Unbending angle was an average of $122,30 \pm 1,54$, at a rate of 180 degrees. In considering individual indicators – none met the norm.

The average value of pronation was $38,45 \pm 1,21$, and supination $41,37 \pm 1,14$ at a rate of 75-85 degrees. In percentage – 100% of patients with contracture of the elbow joint had unsatisfactory results.

Indicators of *scale Mayo* average was $25,16 \pm 1,24$ at a rate of 90 points. Thus, 100% scored less than 60 points, corresponding to unsatisfactory condition of the injured limb.

Test results of the group of patients with special training devices are given in Table. 3.

According to the table. 3, the difference between the averages of healthy and damaged limbs during testing on all training devices showed a significant limitation functional capacity of injured limb. In percentage value difference of the average indicators on training device "vertical mill, RB-660V» in the number of revolutions per 60 seconds between healthy and injured limb was 56.7%, and the rate of the

amount of time spent on 1 revolution was higher by 57.3% (for 100% we took the average value of uninjured limb working on the training device).

Table 3

Indicators of patients with contracture of the elbow joint during testing on special training devices, $\bar{X} \pm S$; n=60

Training device	Number of revolutions per 60 seconds			Amount of time spent on 1 revolution, seconds		
	\bar{X}	V	S	\bar{X}	V	S
Vertical mill, RB-660V (injured limb)	15,51	0,1	0,22	3,91	0,11	0,05
Vertical mill, RB-660V (healthy limb)	35,81	0,06	0,28	1,67	0,06	0,01
Horizontal mill, RB-661G (injured limb)	20,75	0,08	0,21	2,9	0,07	0,02
Horizontal mill, RB-661G (healthy limb)	43	0,04	0,25	1,39	0,04	0,01
Training device 3 in 1 for the upper body, RB-662M (injured limb)	44,58	0,06	0,39	1,34	0,06	0,01
Training device 3 in 1 for the upper body, RB-662M (healthy limb)	92,86	0,02	0,24	0,64	0,01	0,001
Multifunctional Minibike, RB-665Z (injured limb)	15,8	0,09	0,2	3,83	0,1	0,05
Multifunctional Minibike, RB-665Z (healthy limb)	31,81	0,06	0,25	1,88	0,06	0,01

Working on a special training device "Horizontal mill, RB-661G» had the following percentages: number of revolutions of injured limb was at 51.75% less than healthy one, and spent time in 1 revolution over to 52.07% compared to the healthy limb.

On the training device "3 in 1 for the upper body, RB-662M» were recorded following parameters: the difference between revolutions per 60 seconds of injured limb relatively to a healthy was 52% loss of revolutions number, and loss of time of injured limb at 1 revolution was 52.24 % compared with uninjured.

"Multifunctional Minibike, RB-665Z» showed the following results: reducing the number of revolutions of injured limb at 50.04% as compared to uninjured and increasing loss of time at 1 revolution of injured limb – 50.92%.

Based on analysis of the survey results, we developed a program of physical rehabilitation, which schematically given in Table. 4, with contracture of the elbow joint with early use of special training devices (in the second period of rehabilitation), it aims to restore movement amplitude and prevent further development of the pathological process.

Table 4

Program of II period of physical rehabilitation with contracture of the elbow joint

Rehabilitation stage	Motor operation	Means of rehabilitation		
		Therapeutic exercises	Massage	Physiotherapy
Inpatient facility	Semi-strict (inpatient)	1. Therapeutic exercises: - Breathing exercises; - General developmental; - Special exercises for the upper limbs . 2. Mechanotherapy: - Vertical mill, RB-660V; - Horizontal mill, RB-661G; - Training devices 3 in 1 for the upper body, RB-662M; - Multifunctional Minibike, RB-665Z 3. Postisometric relaxation of muscles (shoulder, forearm) .	-- Neck-collar zone; - Back muscles; - Healthy limbs; - Injured limb above or below the joint.	– electrostimulation. (shoulder, forearm); - Ultrasound (shoulder) .

Mechanotherapy used as diagnosis and treatment, gradually increasing the exertion that allowed in pilot studies reach higher positive effect of rehabilitation.

Conclusions:

1. Generalized analysis of modern scientific and methodological literature shows that, despite the prevalence of upper limb injuries, they still lead to disability in 30% of cases. Most complications due to fractures and dislocations observed in the elbow joint and is between 12-50%, these injuries are very common at people of working age, which leads to advanced search rehabilitation and development of effective programs of physical rehabilitation.

2. The proposed program of physical rehabilitation of patients with contracture of the elbow joint in the II period is based on a combination of classical scheme (therapeutic exercises, massage, physiotherapy) with early modern rehabilitation training that will improve the trophic of tissue, reduce pain symptoms, improve muscular tonus, normalization of movements amplitude in this joint.

The prospect of further research. Further research will focus on the implementation of the proposed comprehensive program of physical rehabilitation of patients with contracture of the elbow joint and study its effectiveness.

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ANALYSIS OF THE PERFORMANCE OF NATIONAL TEAMS IN GRECO-ROMAN WRESTLING AT THE EUROPEAN NATIONS CUP 2014

Abstract. Purpose: to analyze the performance of national teams in Greco-Roman wrestling at the European Nations Cup in 2014. **Material and Methods:** the analysis of 69 wrestlers highly Greco-Roman style. **Results:** 10 basic technical actions that is most more often used by wrestlers. Analysis of competitive activity wrestlers Greco-Roman style on the KEN-2014 showed that more technical actions carried out in the front – 117 receptions than on the ground – 87 receptions. **Conclusions:** it was found that in the competitive technology dominated the offensive, the fight is ongoing at a fast pace, techniques are performed after prior training and if the athlete is confident that the reception will be executed.

Keywords: competitive action, national teams, effectiveness, Greco-Roman wrestling.

Introduction. Politics of international Olympic Committee is oriented to increase entertaining events, and sports unentertaining are excluded from the Olympic program.

So, after the 2012 Olympics in London, raised the issue of the exclusion of the Greco-Roman wrestling from the Olympic program as unentertaining sport. As a result, the International Wrestling Federation (UWW) in order to increase the entertainment of fights held a number of changes in the rules of the competition and in many countries held actions in support of wrestling as an Olympic sport.

In September 2013 at a meeting of the IOC was decided to leave the sport of wrestling in the Olympics in 2020, 2024.

Analyzing the trend of wrestling development in recent years, most experts agree that the development of wrestling, including as part of the program of the Olympic Games, it is necessary to take measures to improve the efficiency of wrestling matches, while maintaining high-intensity fight throughout the scrummage [2; 6; 9; 11].

Level of technical and tactical actions (TTA) of athlete mainly determines its success in the bout [3; 4; 7; 12]. At the same time relevant is the analysis of competitive activity of highly skilled fighters and the strongest national teams in the world [1; 5; 8; 10].

One of the most prestigious team competition in sport wrestling is the European Nations Cup (ENC), which brings together the strongest national teams in

Europe.

Connection of the research with scientific programs, plans, themes. The work is done according to plan SRW of Kharkiv State Academy of Physical Culture.

Goal of the research: to analyze performance of national teams in Greco-Roman wrestling at the European Nations Cup 2014.

Tasks of the research:

- determine the level of technical and tactical readiness of fighters of high qualification at the ENC-2014;
- establish differences at technical and tactical readiness of participating teams of ENC-2014.

Materials and methods of the research: analysis of scientific and methodical literature, pedagogical observation, analysis of fighters' competitive activity video, timing, mathematical statistics.

Results of the research and its' discussion. We carried out pedagogical observations of competitive activity athletes-wrestlers of high qualifications. The objects of observation were competitions in Greco-Roman wrestling – European Nations Cup (ENC) in 2014. 69 bouts of fighters were analyzed.

Table. 1 and 2 show the results of the performance of six teams. In comparative analysis of skill were taken into account: the quality of victories and defeats; variety of technical operations; figures (points, techniques and prevention, which took place in the scrummage).

Table 1

Distribution of competitive matches in accordance with the result of performance

Place ment	National teams	Amount of bouts	Number of wins				Number of defeats			
			F	PP	P	«P»	F	PP	P	«P»
1	Russia	23	–	8	11	1	–	–	3	–
2	Turkey	24	2	3	7	–	–	4	8	–
3	Azerbaijan	24	–	2	7	3	1	5	6	–
4	Hungary	24	–	1	9	–	2	3	8	1
5	Ukraine	22	1	3	4	–	1	2	10	1
6	Bulgaria	21	1	1	4	1	–	6	5	3

Note. F – «Fall», PP – purely on points, P – on points, «P» – due to the disqualification of the opponent for three warnings.

As can be seen from Table. 1, Russian national team has gained 20 wins from 23 fights held and occupied first place. Among the victories for "Fall" and purely on points there is a distinct advantage of Russian fighters (8 meetings). Azerbaijani, Bulgarian wrestlers more often than others lost on points and "Fall" (6 bouts). It should be noted that the Azerbaijani athletes more than others, declared the winner due to the removal of the enemy because of the passivity (3 bouts). Bulgarian

wrestlers comparatively a lot bouts lost on warnings (3), and the Ukrainian wrestlers – on points (10 bouts).

Analysis of the technical arsenal of competitive activity of highly skilled fighters at the ENC-2014 allowed to identify 10 key technical actions that are most often used: fall-overs with rolls – 42 times (21%), reverse belt fall-overs – 6 (3%), back belt throws – 24 (12%), counter-holds in the parterre – 15 (7%), transfers – 6 (3%), back arch throws – 4 (2%), token turn throws – 8 (3.8%), stretch by dislodging the body – 41 (20%), pushing out the mat – 55 (27%) in stance counter-hold – 9 times (4.2%) (Table. 2).

Table 2

Analysis of effectiveness of the technology applied fighters at the ENC-2014.

Technical actions	National teams						Σ	%
	RUS	TUR	AZE	HUN	UKR	BUL		
Parterre:								
1. Fall-overs with roll	18	11	1	4	4	4	42	21
2. Reverse belt fall-overs	1	1	–	–	4	–	6	3
3. Back belt throws	9	–	6	1	3	5	24	12
4. Counter-holds	3	3	1	3	3	2	15	7
Total in parterre:	31	15	8	8	14	11	87	43
Stance:								
5. Transfers	1	2	–	2	1	–	6	3
6. Back arch throws	2	–	–	–	2	–	4	2
7. Token turn throws	2	1	2	2	1	–	8	3,8
8. Stretch by dislodging	17	6	6	3	4	5	41	20
9. Pushing out the mat	12	10	18	11	3	1	55	27
10. Counter-holds	3	3	2	1	–	–	9	4,2
Total in stance:	36	20	28	17	10	6	117	57
Total in stance and parterre:	67	35	36	25	24	17	204	100
1-points TTA	24	20	33	26	10	15	128	52
2- points TTA	39	21	8	9	10	11	98	40
4- points TTA	8	–	4	–	7	–	19	7
5- points TTA	2	–	1	–	–	–	3	1

Note. RUS-Russia, TUR-Turkey, AZE-Azerbaijan, HUN-Hungary, UKR-Ukraine, BUL-Bulgaria.

Most of all technical actions carried out Russian fighters – 67 holds least of all Bulgarian wrestlers – 17 holds. Azerbaijani athletes to achieve victory more often

than others have used simple one-points TTA – pushing out the mat, and the Russian and Ukrainian wrestlers used complex (four-points and five-points) TTA – back arch and back belt throws with a large amplitude. Turkish, Hungarian and Bulgarian athletes have used in bouts only low efficiency (one-points, two-points) TTA – basically fall-overs with rolls and transfers in to parterre. It should also be noted, the lower place the team occupied, the less held counter-holds (Table. 2).

At the ENC-2014 was carried out a little of five-points (1% of all TTA) and a four-points (7%) holds. From the arsenal of fighters began to disappear so beautiful throws as the reverse belt.

By analyzing the competitive actions at the ENC-2014 was found that in the competitive technology dominate offensive actions, the bout is ongoing at a fast pace, holds are performed after prior training and if the athlete is confident, that hold will be carried out.

Wrestlers of high grade have high efficiency in performance of holds throughout the scrummage (for two periods).

Conclusions. Analysis of ENC-2014 shows that, among other factors, the advantage of the strongest wrestlers is successful and sustainable use of technical and tactical actions during the bout and the ability to impose opponent their style of the scrummage.

Great importance in conducting technical action has tactical training. During the scrummage is very important the ability to create or participate in complex, rapidly changing situation of wrestling match favorable dynamic situation for attacking and counterattacking actions.

Study of technology at the ENC-2014 allowed to determine the technical actions that effectively used in competitive bouts highly qualified fighters of Greco-Roman style: fall-overs with rolls and reverse belt; back belt throws; counter-hold in the stance and parterre; transfers; back arch and token turn throws; stretch by dislodging the body; pushing out the mat.

Analysis of competitive activity of Greco-Roman style wrestlers at the ENC-2014 showed that more technical actions carried out in stance – 117 holds (57%) than in the parterre – 87 holds (43%).

It has been established that the Azerbaijani wrestlers more often than others have used simple technical actions in the stance – pushing out the mat, and the Russian and Ukrainian athletes applied a complicated high-amplitude TTA – back arch and back belt throws. Turkish, Hungarian and Bulgarian athletes have used in bouts only low efficiency (one-points, two-points) TTA.

Further research will focus on the analysis of performance teams at the World Cup – 2015 in sport wrestling.

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ORGANIZATIONAL METHODS, CONDITIONS OF FORMATION AND MOTIVATION AT CORRESPONDING PEDAGOGICAL SKILLS TO PROFESSIONAL-APPLIED PHYSICAL TRAINING

Abstract. Purpose: to develop organizational and methodological conditions of formation and motivation of students to determine their effectiveness. **Materials and Methods:** the study was conducted by third year student of the correspondence department of the Faculty of Primary Education (53 people). We used the following methods: survey of theoretical knowledge, motor tests, evaluation methods of physical health (G. Apanasenko), psychological methods of training motivation (T. Ilyina), motivation to succeed (T. Elers), rapid diagnosis empathy (I. Yusupova), methods of mathematical statistics. **Results:** the factors that affect the state of professionally-applied physical fitness of students of the correspondence department of the Faculty of Primary Education. **Conclusions:** the proposed organizational and methodological conditions activation independent of external students is the basis for providing incentives for self-study educational materials, improving theoretical knowledge in the field of physical education, increased motor activity through various forms of regular exercise.

Keywords: students, teaching profession, empathy, professionally applied physical fitness, motivation.

Introduction: Nowadays, the process of learning the physical education of students in Ukraine is carried out under the following program-normative documents and regulations: the basic program of "Physical Education" for universities with

III-IV level of accreditation (its methodological basis are the current state documents which are governing the "Physical Education" as a oblige discipline), that was developed from the "State requires for learning programs of physical education in the educational system" [1; 7].

Universities, focusing on the curriculums and basic program of physical education, work up and approve their own working curriculum in physical education [1], which allows to build up the physical education of students, including: 1) students interests and concerns; 2) regional, linguistic, ethno-cultural, climatic and environmental features; 3) the level of logistics base of the university; 4) features of the higher education standards to the given speciality; 5) improve and supplement the content of non-special physical education.

The program recommends to organize trainings on physical education of about 4 hr. / a week, as an out-credit discipline. For students of I-II courses the physical education is planed in teaching load, which can not exceed 30 hours per week, and

for senior courses – in the form of sectional trainings. Other types of classes are determined in the manner prescribed by the physical education department of the university. Extracurricular classes in physical education are organized in the form of: trainings in sports clubs, fitness clubs; independent trainings, sports, tourism, health, fitness and physical activities [1; 7].

All that is said above were more concerned with the interests (devoid of proper motor activity) of the students with full-time form of education, but the situation with the part-time students is even worse.

O.V. Kovalev made a comparative analysis of types of activities on stationary and distance learning forms and found that the number of hours derived on trainings in curriculum and programs are the same, but on the distance learning department lectures dimension is less, they are mainly review lectures and some practical trainings. As for the value of different types of activities in permanent and part-time study, he found that independent and individual work of a student is the most important part of the educational process of universities. Their part in relation to the auditorial work in the full-time department is – 60.25%, and in the distance department – 89.4%. The difference between these forms of education is 29.15%, and the discipline "Physical Education" is completely absent from part-time department of education. It suggests that an independent and individual work in part-time education is in the priority [4].

According to the results of research by B.M. Shiyan, we know that the graduate of a distance form education in pedagogical universities have a low level of psychological and pedagogical preparation, and 50% of asked teachers in seven regions of Ukraine can't determine by themselves what are the content, methods and forms of physical education of pupils [8].

Some other researches of native scholars [6], specialists of CIS countries [2] and foreign experts of athletic field [9-11] also confirm that in a real teaching practice most of teachers have not enough generated personal physical culture, that appears into apathetic or even negative attitude to different forms of physical exercises and sports. In some case, these had lead to a lack of understanding of a professional-applied of physical trainings for students.

Many scientists involved into this problem (Yu.K. Demyanenko 1982; S.L. Boychenko, I.V. Velskiy, 2002; Yu.A. Voynar 2002; O.M. Kolumbet, N.Yu. Maksimovych, 2009; L.P. Matveiev, 2008) emphasize that for the professionally applied physical preparation of students of different specialities the compulsory condition must be the presence of a rather wide arsenal of physical exercises and the simplicity of their coordination structure. It becomes obvious that most of these problems are reduced to one – a superficial vision of the main point of physical culture for society development.

As school practice shows, only teachers of physical education unable to provide students healthy and active lifestyle, that is why it is necessary to made a consolidation of subject teachers. To do that, we need to form a focus on value potential of physical culture while the learning process at the university. The result of

these should be achievement of such level in the field of physical education, that can be characterized by its activity in body, spiritual, intellectual self-improvement [3].

Connection of the research with scientific programs, plans, themes. The research work is done in accordance with master plan of scientific-research work in the area of physical culture and sports in 2011-2015. Ministry of family affairs, youth and sport of Ukraine, by the topic 3.1. "Improving software and regulatory framework of physical education in schools" (state registration number 0111U001735).

Objective: to develop organizational and methodological conditions for motivation of students with part-time education department on the faculty of primary education to professionally-applied physical training and test their effectiveness.

Material and methods. The research work was conducted with students of III year with part-time education, faculty of primary education, Uman State Pedagogical University in the name of Pavlo Tychna (53 persons). We used the following methods: questionnaires, tests of theoretical knowledge, motor tests, evaluation methods of physical health (G.L. Apanasenko), psychological methods of training motivation (T.I. Ilyina), motivation to succeed (T. Ehlers), rapid diagnosis of empathy (I.M. Yusupov), methods of mathematical statistics.

Results and discussion. In the process of education, we selected factors that have a negative affect on the state of professionally-applied physical preparation of students in part-time education department on the faculty of primary education, including:

- absence of obligate trainings with the subject "physical education";
- low level of physical occupation in their free time;
- lack of knowledge about profession of elementary school teacher;
- low level of theoretical knowledge about methods of physical education, of primary school children;
- low level of physical preparation that does not fit the requirements of professional activity;
- absence of knowledge about the physical condition of self-control;
- lack of knowledge about physical fitness test standards of younger pupils;
- absence of knowledge that makes it possible to compose own individual program of fitness classes;
- low motivation level of education, that directed to graduation and getting a diploma, but not on the professional skills development;
- irregularity of students activity in different weeks and months of the year;
- absence of the action plan and visible final results;
- no completeness of case;
- lack of initiative while carrying out the task.

This has cheered to the development of organizational and methodological conditions for the formation of positive motivation of students with distance physical education.

Organizational and methodological conditions for the positive motivation of students from distance physical education department to professionally-applied

physical preparation. On the III course in V semester prescriptive session the department of theory and methodology of physical education released a set of orientations and objectives :

1. Students received copybooks for grades 1 to 4 "Together with fizkulturkin"(N.V.Moskalenko).

Objectives:

a) to write out a list of theoretical knowledge, which should have pupils in grades 1 to 4;

b) to distribute these knowledge into four groups: healthy lifestyle, self-control methods, Olympic education, safety rules in the classroom;

c) to make a list of motor skills that pupils in grades 1-4 must overwhelm;

d) to make a list and specifications for control exercises for pupils in grades 1-4 (boys and girls);

e) to make pedagogical control list of after school physical development and physical preparation for primary school children;

e)to make up questionnaire quiz for pupils in grades 1 to 4.

2. To make the structure and content of professionally-applied physical preparation of primary school teachers at the following sections: theoretical preparation; practical preparation(to know, to be able to know); the required level of physical qualities development: strength, speed, stamina, agility, flexibility.

3. Students received methodological materials and individual physical fitness test cards, where they record the test results for the month: September, December, April.

4. Choose a form of physical exercise (organized or independent) on the basis of one sport type or complex. Number of classes per week: 3-4 times a week not less than 30 minutes. While choosing a self-study classes, teachers of theory and methodology of physical education helps students to make individual training program.

5.Check out the first and the second task carried out in the VI semester while studying the discipline "Physical culture with teaching methods."

6. In May VI semester students evaluate the test results of their physical preparation according to the standards and determine the compliance or deviation from them.

7. In the VII semester it is estimated theoretical and practical preparation of students on the test results, measured by a test of discipline "Physical culture with teaching methods."

The experiment was conducted with students of III course with part-time education the faculty of primary education from september 2012 to may 2013. In the experimental group there were 28 persons, and in control group- 25. In both groups there were no obliged physical education classes, but was required compulsory discipline "Physical culture with teaching methods" in the amount of 90 hours (including 10 hours of auditorial classes).

The experimental group received tasks from the department of theory and methodology of physical education for independent work. Formation of the experimental group was carried out on a voluntary basis, taking into account the desire of students.

Efficiency criterias of developed organizational and methodological conditions of formation the motivation of students to professionally-applied physical preparation of primary school teachers were: involving into systematic physical exercising; visit motives of physical culture classes; motivation for success; empathy; theoretical knowledge level; level of physical health; level of physical fitness.

The results of the ascertaining experiment suggest the activation of independent practical activity of students with distance educational program. Thus, involvement into various forms of regular physical exercises in the experimental group increased to 75%. Appeared a new motive for physical preparation exercises – "to achieve a properly level of professionally-applied physical training" – 95%, increased motivation "better health" and "improving physical fitness." The biggest stimulation for students was periodic monitoring of their own indication of physical fitness standards compared with younger pupils.

Strengthening the motif associated with increasing of physical fitness, specified with awareness of importance of their physical fitness to perform their professional activity as a primary school teachers. This is reflected in students responses to the questionnaire "Do you think that physical preparation is required to master the teaching profession?". In the control group the same tendency is repeated that has been featured in ascertaining experiment. Only 50% of part-time education department students absentee understand the importance of physical fitness for prime school teachers. However, in the experimental group after the implementation of developed organizational and methodological conditions of independent activity 96% of students gave an affirmative answer for the asked question.

Increased self-estimation of health and physical fitness of students from the experimental group from 5.7 b. to 6.4 b. and from 5.7 b. to 8.2 b. ($p < 0,01$), that is confirmed by objective indicators. The results of all tests improved significantly (Table. 1). Thus, the strength of the hand have a gain 3.7 kg (from 18.0 kg to 21.7 kg, $p < 0,01$), while time of running 30 m decreased from 7.04 s to 5.7 s ($p < 0, 01$), long jump with a takeoff increased to 20.5 cm ($p < 0,01$), the number of torso lifts for 30 s increased from 15.6 times to 17.2 times ($p < 0,01$), assessment for complex strength training has almost doubled from 10.9 to. to 19.2. ($p < 0,001$). Increased results of shuttle run 4x9 m ($p < 0,05$) and verification of flexibility ($p < 0,05$) is negligible.

Table 1

Indicating physical fitness of students of control and experimental groups before and after the experiment

Results	Control group (n=25)					Experimental group (n=28)				
	Before exp.		After exp.		P	Before exp.		After exp.		P
	\bar{X}	δ	\bar{X}	δ		\bar{X}	δ	\bar{X}	δ	
Strength of the hand (kg)	18,1	0,5	18,5	0,5	<0,05	18,0	0,6	21,7	0,5	<0,01
Run 30 m (s)	7,01	0,1	6,8	0,2	>0,05	7,04	0,2	5,7	0,3	<0,01
Run 4x9 m (s)	11,7	0,1	11,5	0,1	<0,05	11,9	0,2	10,8	0,2	<0,05
Long jump (sm)	164,5	4,6	165,7	5,1	>0,05	165,7	6,4	186,2	7,7	<0,01
Flexibility (sm)	15,4	0,8	16,0	0,9	>0,05	16,0	0,7	17,3	0,9	<0,05
Torso lifts for 30s (n-ber of times)	15,8	0,6	16,1	0,7	>0,05	15,6	0,7	17,2	1,0	<0,01
Complex strength training(score)	11,0	1,3	12,3	1,2	<0,05	10,9	1,3	19,2	1,9	<0,001

However, it should be noted not only the increasing of results of motor tests in the experimental group, but also achievement of the standard indicators of physical fitness for girls 19-21 years to "average" levels in the Torso lifts for 30 s, in the long jump, the slope and running 4h9 m – up to the level "above average".

The study of motivational factors which are the development basis of professional skills, being evidenced by their positive dynamic in the experimental group.

Among the educational motives at the beginning of the academic year for III course students dominated the motive of "getting a diploma" (78%). Getting knowledge and development of professional skills attracted approximately 71-72% of students. At the end of the academic year the situation in the control group haven't changed. In the experimental group the focusation on "getting a diploma" remained the same (79%), but increased the motive of "getting knowledge" for 10%, and "development of the professional skills" for 14% (Table. 2).

Table 2

Students educational motivation before and after the experiment

Motive	Control group (n=25)		Experimental group (n=28)	
	Before exp.	After exp.	Before exp.	After exp.
	%	%	%	%
Getting knowledge	72	70	71	81
Development of the prof. skills	71	69	72	86
Getting a diploma	78	79	78	79

The intensity of motivation for success have changed (Table. 3).

Table 3

The level of certainty the motivation to success of students before and after the experiment

Level of motivation	Control group (n=25)				Experimental group (n=28)			
	Before exp.		After exp.		Before exp.		After exp.	
	n	%	n	%	n	%	n	%
Low	4	16	7	28	5	18	1	3
Average	20	80	18	72	23	82	19	68
High	1	4	0	0	0	0	8	29

Thus, if in the beginning of academic year with low motivation to succes in the control and experimental groups were 16 and 18% of students, in accordance, there were almost no student with high level of motivation, but in the end of the year, the situation have changed (Table. 3). In the control group increased the number of students with low motivation to succes for 12% in the experimental group – decreased for 15% and there were students who have a high level of motivation to succes-29%.

Positive changes have taken place and with empathy to children as the direct object of educational activity (Table. 4). At the beginning of the school year, it was noted as in control, as in experimental groups, about 12-18% of students have a low level of empathy to children.

Table 4

The level of students empathy to children before and after the experiment

Level of empathy	Control group (n=25)				Experimental group (n=28)			
	Before exp.		After exp.		Before exp.		After exp.	
	n	%	n	%	n	%	n	%
Very high	0	0	0	0	0	0	0	0
High	2	8	2	8	2	7	11	39
Average	20	80	18	72	21	75	17	61
Low	3	12	4	16	5	18	0	0
Very low	0	0	1	4	0	0	0	0

The majority of students (60-75%) showed empathy for the children at "average" level, "high" level had 7-8%, "very high" – had none.

After the experiment, in the control group quantitative structure of the empathy has not changed. In the experimental group most of students had the "average" level – 61%, but increased the number of students with "high" level – to 39%. Obviously, that is due to the fact that students began understand children better, become more sensitive to their needs and emotionally responsive.

An important part of the professionally-applied physical preparation are theoretical knowledge. During the experiment it was found that "sufficient" level of theoretical knowledge had no students either with full-time education nor with part-time education. The biggest problems were with the answers to the questions on general knowledge of the theory of physical education, methodical questions on use of physical exercises during self-study.

Most students who wish to know more about their own level of physical preparation were on the part-time department (9-10 points raised 67.7%). In addition, 86.6% of students of the IV course wanted to receive methodical materials on methods of self-monitoring of their own physical preparation.

As a result of the proposed experimental program, the level of theoretical knowledge of students in experimental group had changed (Table. 5). Before the experiment in control and experimental groups were no students with "sufficient" level of knowledge (above 61% of correct answers). Approximately the same number of students had a "low" level of knowledge (below 50% of correct answers) – 48% in the control group and 53% – in experimental, "average" level – 52% in the control group and 47% in the experimental groups. After the experiment, the level of knowledge in the experimental group was significantly changed and appeared 15 students (53%) who have "sufficient" level of knowledge. Almost in five times (11%) reduced the number of girls who have a "low" level of knowledge.

Table 5

Levels of students theoretical knowledge before and after the experiment

Levels of knowledge	Control group (n=25)				Experimental group (n=28)			
	Before exp.		After exp.		Before exp.		After exp.	
	n	%	n	%	n	%	n	%
Low	12	48	10	40	15	53	3	11
Average	13	52	15	60	13	47	10	36
Sufficient	0	0	0	0	0	0	15	53

The responses of students on theoretical questions has changed, too. The most increased correct answers to questions on general theoretical knowledge in physical education from 32 to 57%, on methodological questions – from 57 to 73%.

Conclusions. So, the proposed organizational and methodological conditions of activation an independent activity of students with part-time education, aimed at improving general and professional-applied physical preparation, get a positive result. The basis for these is the increase of the motivation to self-study of educational materials, improving the level of theoretical knowledge in the field of physical education, increasing motor activity with help of various forms of regular physical exercises.

In some way, it confirms the theory of Yu.V. Lyubimova about "inclusion" or "immersion" into the activity, during which began to form new motives, goals and value marks. This pointed out also by O.Y. Marchenko, during the formation of value categories of personal physical culture.

In the research, we were developing incentives for the inclusion into the systematic physical activity, aimed not only at improving of general physical preparation, but also to improve the efficiency of the relevant future (career) professional activity. And then with "immersion" into an independent theoretical, methodological and practical preparation for students of part-time education department marked with emergence of new motives for physical exercises, such as "to achieve an appropriate standard of professionally-applied physical fitness" and a new hierarchy of values with the priority "to get new knowledge".

Prospects for the further research will explore the values marks and motives of physical exercise training in and outside of the classroom, students of other pedagogical faculties.

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EVALUATION OF THE LEVEL OF DEVELOPMENT OF SPORT TOURISM CHINA AND EUROPE

Abstract. Purpose: to evaluate the level of development of sport tourism China and Europe. **Material and Methods:** analysis and generalization of literature and electronic sources, official web-sites. **Results:** a significant increase in the number of tourists in recent years. The level of development of sport tourism is constantly growing and shows mass popularity among the population. **Conclusions:** the development of sport tourism in Europe more than in China. Improvement of forms of organization and means of sport tourism will attract more people.

Keywords: sport, tourism, heritage, UNESCO, China, Europe.

Introduction. The tourism industry is a whole interdisciplinary complex and plays an increasingly prominent role in the socio-economic system of the world. Currently, outbound tourism is one of the most dynamically developing spheres of business. Rational means of the organization of people's free time at all socio-economic structures is a sports and Wellness tourism (WTO), the development of which is provided by various public associations, organizations and unions at the state and social basis [2; 5].

Youth SWT, unlike other sports is one of the most effective health technologies. Taking into account that young people are the future generation of the country, it is very important not to forget about their physical education. It is to increase the gene pool of the country and there is a SWT. Under sports tourism refers to travelling, Hiking and other recreational activities for spiritual and intellectual development of man and society.

Purpose. The purpose of the study is to evaluate the level of development of sport tourism China and Europe.

Objectives of the study:

1. Based on the analysis of literary sources to consider the objects of tourism China and Europe for the development of sport tourism among the youth and other segments of the population.

2. To determine the level of development and the role of sport tourism for the population of China and Europe.

Material and Methods: analysis and generalization of literature and electronic sources (books, articles, dissertations and abstracts of conference proceedings), analysis of official web-sites.

Research results and their discussion. Tourism is one of the most important

aspects of modern economy, aimed at meeting human needs and improving the quality of life of the population. In contrast to many other economic sectors, tourism does not lead to depletion of natural resources. Being export-oriented sector, tourism shows greater stability in comparison with other branches of the unstable situation on the world markets [6].

It was found that the most rational way of organising free time of youth is a SWT. A substantial core of education in SWT is the combination of physical and moral education. Here is the physical perfection of a person with a simultaneous improvement of its moral sphere: consciousness, behavior, feelings, attitudes. The research allowed to determine the conditions that increase the efficiency of the educational potential of SWT [1].

The world of SWT, being interesting, accessible and cheap school of survival and adaptation to stressful situations, at the same time creates the conditions for preparing the younger generation to serve in the army, to resolve questions and to vocational training, work-related rescue squads, and other human activities in extreme conditions. In addition, SWT is a source of creation of special intellectual product for the sphere of the theory of tourism, defining the strategy, tactics, technique of travel, the development of new tourist routes, the creation of modern equipment.

By definition of the World Tourism Organization (WTO), tourism is the aspect of the form of human recreation in their spare time, affecting the health, physical development of a person associated with movements outside the permanent place of residence. Tourism is a multifaceted phenomenon: it is a journey, leisure, pleasure, as well as activities aimed at the organization and implementation of tourist services [6].

The main content of sports tourism is overcoming the natural barriers natural terrain. These obstacles represent a great variety: rock, snow, ice, water hazards and many other types, types and forms of natural obstacles.

Technical progress and the monotony of life, the abundance of stress have a negative impact on the health and psyche. In recent years, interest in tourism has shifted from passive «beach» recreation for active types and forms of tourism, which is one of the effective means of stress relief (hiking, skiing, water, horse, mountain, and others). They include activities and travel, entertainment, sports, requiring considerable physical stress [9].

Sports tourism is becoming an increasingly popular sport. The experience shows, SWT occupies an important place in the life of modern society. Mankind throughout the centuries of history had a peculiar desire to know the world around us. This has always contributed temporary movement or the movement of a person in a different country, continent or place other than his usual place of residence.

While in 1950, the number of tourists worldwide was 25 million, according to WTO data, in 2006 there were registered 846 million tourists arrivals, and from 2012 this number has exceeded 1 billion tourists and is constantly increasing. This resulted in the creation of the world tourism market, which involves almost all countries [7].

China, with its ancient history and culture, natural attractions has rich tourist resources (historic sites, cultural traditions, national cuisine, martial arts, chinese

circus, opera and others). In different regions of China, there are substantial differences in the availability of historical, cultural and natural tourist resources. Most of them placed in the South-Eastern provinces of the country, which include Jiangsu province, where the city, the existing more than 2,5 thousand years – Suzhou, Yangzhou, Nanjing, Zhenjiang and other Attractions that attract tourists. The most interesting for tourists unique historical, cultural and natural values. For example, in Suzhou these objects are widely known ancient canals and the historic gardens – the world cultural heritage [10].

Most often, the China visit neighbors tourists from Japan, South Korea and countries in Southeast Asia. Lately, experts say the increasing number of tourists from Europe and North America [2].

China is the third area (9,6 million km²) country in the world after Russia (17,07 million km²) and Canada (9,98 million km²). Europe square is about 10 million km², with a population of over 730 million people, in contrast to China with a population of 1,3 billion people. In Europe a small area concentrated a large number of countries with open borders [3].

International tourism in the world is very uneven, which is explained primarily by the different levels of socio-economic development of countries and regions. The greatest development of international tourism has received in Western European countries. The share of this region accounts for about 60% of the world tourist market, more than 18% of the world tourism market accounted for the Asia-Pacific region, less than 17% of the market in America, and about 8% of the market to Africa and the middle East together [7]. Countries in East Asia and the Pacific, which includes China, evaluated in the long term score is higher than inbound tourism.

The world tourism organization published a report with data for 2013 on the most visited countries. The rating was headed by France, in second place – the USA, the third – Spain (tab. 1) [7].

Table 1
The most visited countries in the world (WTO report 2013)

Place	Country	Tourists, mln. hmn.	Place	Country	Tourists, mln. hmn.
1	France	84,7	6	Turkey	37,8
2	USA	69,8	7	Germany	31,5
3	Spain	60,7	8	United Kingdom of Great Britain	31,2
4	China	55,7	9	Russia	28,4
5	Italy	47,7	10	Thailand	26,5

Europe is the main tourist region of the world and will retain its leadership, despite the fact that its share in tourist arrivals has been steadily declining: 1970 – 68,2%; 2000 – 57,7%; 2020 (forecast) 44,8 percent. According to the forecast, China by 2020 will become the leading tourist destination in the world, ahead of the three leaders – France, USA and Spain [7].

Tourist resources are a national treasure. However, some of them of special importance attributed to objects and monuments of world importance. This list

establishes and annually updates UNESCO. Tourist resources is a combination of natural and artificially created person object, suitable for the creation of the tourist product, which represents the range of services provided by the tourism enterprise citizens. They are natural, historical, socio-cultural objects, other objects that can satisfy the spiritual needs of the consumers of tourism services, to assist in the reconstruction and development of their physical and moral forces. Thus, in the tourism industry organically combined natural and socio-economic factors.

According to the official source [10], in the list of UNESCO world heritage site (data for November 2014) includes 936 properties, of which 725 cultural, 183 natural and 28 mixed, that is, created with great skill by nature and man. China has 47 tourist objects – 33 cultural, 10 natural and 4 mixed, but still 47 objects on the commission to UNESCO.

As mentioned above, the area of Europe is approximately equal to the area of China, and the population is less than half. According to the same source [10], in the list of world heritage in Europe at the moment is 409 cultural, 53 natural and 10 mixed, and 540 of the objects under consideration. Quantitative potential of tourism resources in Europe according to the world heritage list of UNESCO listed in tab. 2.

European countries are conveniently located relative to each other – have a common border, which mainly take place in easy to overcome natural boundaries. Geographical proximity and a dense network of communication make the trip from one country to comfortable and affordable. On a relatively small area centered about 40 States, each of which has a distinctive history and culture. Tourist activity Europeans identifies significant urbanization and population density, ethnic and religious mosaic, excellent hotel and transport infrastructure, high level of education.

Tourism development in Europe are conducive to cultural and historical factors. The countries of this region have made a decisive contribution to the development of modern civilization. Nowhere in the world there is such a high saturation of architectural, historical and cultural monuments of various epochs. In Europe you can visit a variety of objects, ranging from the Neolithic sites of ancient people, to ultra structures of London and Paris. That is what determines popularity of tours in European countries. In Europe, widespread beach, recreational, educational, business, sports and adventure tourism.

Conclusions. It is established that the level of development of SWT in Europe is more developed than in China, which is justified by the geographical position, the quantitative potential of tourism resources and motivation of the population.

The process of attracting all age groups to different types of tourism requires improvement forms of organization and means of sport tourism.

In terms of improvement of sport tourism is quite promising is the formation of a recreation system of physical education, aimed at the realization of human potential, the formation of the harmony of the physical, spiritual and mental development of the individual throughout the life-work activities.

Table 2

Quantitative potential of tourism resources in Europe

№	Country	Cultural	Natural	Mixed	Considered
1.	China	33	10	4	47
2.	Austria	9	–	–	11
3.	Azerbaijan	2	–	–	10
4.	Albania	2	–	–	4
5.	Andorra	1	–	–	2
6.	Armenia	3	–	–	4
7.	Belarus	3	1	–	10
8.	Belgium	11	–	–	16
9.	Bulgaria	7	2	–	13
10.	Bosnia and Herzegovina	2	–	–	8
11.	United Kingdom of Great Britain and Northern Ireland	23	4	1	14
12.	Hungary	7	1	–	11
13.	Germany	36	3	–	9
14.	Greece	15	–	2	15
15.	Georgia	3	–	–	16
16.	Denmark	3	3	–	9
17.	Ireland	2	–	–	7
18.	Iceland	1	1	–	7
19.	Spain	39	3	2	27
20.	Italy	46	4	–	41
21.	Kazakhstan	3	1	–	13
22.	Cyprus	3	–	–	12
23.	Latvia	2	–	–	3
24.	Lithuania	4	–	–	1
25.	Luxembourg	1	–	–	–
26.	Malta	3	–	–	–
27.	Netherlands	9	1	–	9
28.	Norway	6	1	–	6
29.	Poland	13	1	–	4
30.	Portugal	14	1	–	11
31.	Republic of Macedonia	–	–	1	3
32.	Republic of Moldova	1	–	–	2
33.	Russian Federation	16	10	–	27
34.	Romania	6	1	–	14
35.	San Marino	1	–	–	–
36.	Serbia	4	–	–	11
37.	Slovakia	5	2	–	14
38.	Slovenia	2	1	–	3
39.	Tajikistan	1	1	–	16
40.	Turkey	11	–	2	52
41.	Ukraine	6	1	–	15
42.	Finland	6	1	–	6
43.	France	35	3	1	38
44.	Croatia	6	1	–	17
45.	Montenegro	1	1	–	6
46.	Czech Republic	12	–	–	18
47.	Switzerland	8	3	–	1
48.	Sweden	13	1	1	1
49.	Estonia	2	–	–	3
	Total	409	53	10	540

Prospects for further research. Increased recreational activity in the framework of sport tourism will improve physical fitness and vitality, which are the basis for improving the health of people. Further research will allow you to set the value of each type of tourism at any age.

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AUTHORS

A

Anatskyi R. 5

B

Batieieva N. P. 11
Boychenko N. 16
Brusentsev V. 154

D

Dyomin S. 128
Dzhym V. 21

F

Fishev Yu. 119

G

Gamaliy V. 37
Gradusov V. 45

K

Kemin O. 50
Klemenko O. 140
Kolokolov V. 56
Kolomiytseva O. 5
Kotelevsky V. 62
Kyzim P. 119

L

Leontieva F. 62
Lutsenko L. 119

M

Mameshina M. 72
Maslyak I. 72
Mikhnov A. 86
Mikhnov A. 77
Muzyka F. 45

P

Petrenko I. 97
Petrenko V. 97
Ponomaryov V. 140
Pylypko O. 104

R

Rybak O. 45
Rybalchenko T. 110

S

Shevchenko O. 115
Shlonska O. 37
Shuteev V. 119
Sinyugina M. 128
Sutula V. 119

T

Talova N. 134
Tropin Y. 140
Tsybul'ska V. 145
Tymoshenko O. 62

V

Vynogradskiy B. 45

W

Wu Linna 154

Y

Yermolayeva A. 29

Z

Zhuk V. 72

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