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# **PHYSICAL EDUCATION, SPORTS AND HEALTH IN MODERN SOCIETY**

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Scientific works on separate regulations of physical culture, physical education of different groups of people, preparation of specialists are gathered in the digest. It was characterized methods, means of training, peculiarities of sportsmen's training, adjustment of human bodies of different age in the process of physical training, adequacy of which is strengthened by pedagogical, psychological, methodological and biological experiments.

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# *Historical, Philosophical, Legal and Staff Problems of Physical Culture and Sports*

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## **Upbringing of a Healthy child in Ukrainian Ethnopedagogics**

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### **Abstract:**

Topicality. In conditions of building of democratic Ukraine with market economy, the priority tasks of the educational system is upbringing of child's attitude towards own health and health of the others as the highest individual and social value with the use of national heritage in the sphere of physical education. The objective of the study is to conduct the scientific analysis and systematization of the principles of Ukrainian ethnopedagogics on physical education of children and revealing its perspective use in conditions of development of the system of national education and upbringing in modern Ukraine. Methods and methodology of the study. In the study it was applied comparative-historical and systematic-structural methods which let us completely analyze and understand the notion, forms, means of physical education and providing health to children in ethnopedagogics; prognostic methods of analysis of historical-pedagogical literature were applied for understanding and describing the perspectives of realization of ideas of treasury of Ukrainian folk education in modern national educational practice. Results of the work. It was revealed the ideas of healthy lifestyle and experience of physical education of a child in Ukrainian ethnopedagogics. It was examined the national heritage that contains centuries-old system of physical education which is based on the system of human values. It was generalized the possibilities of this treasury in formation of recreational world view, basics of health culture, active health-improving life position of the growing generation. Conclusions. In Ukraine already for many centuries it has formed a very effective system of health-improvement which is closely connected with customs, traditions, world view of our ancestors. Usage of this treasury has great meaning among the growing generation for formation of health-improving world view, basics of health culture, active health-improving life position that foresees physical improvement, mental enrichment, moral growth and rules of behavior in the society.

### **Key words:**

*ethnopedagogics, health, healthy child, healthy lifestyle.*

**Introduction.** One of the most important areas identified by the National doctrine of development of physical culture and sports, Laws of Ukraine «Education in Ukraine», «On General Secondary Education», «On Physical Culture and Sports» Concept of social development programs of physical culture and sports for 2012–2016, is a physical education as a basis for public health. Today's priority of education – the education child's responsible attitude to their own health and the health of others as the highest individual and social values.

Among the priorities that are set by the National Doctrine of Education of Ukraine, is the dominant principle of organic communication education history, culture, national traditions, Ukrainian ethno-pedagogy that ensure the creation and use of educational system adequate to the needs of the Ukrainian state and the formation of highly rich spiritually and mentally stable individuals, citizens of their country, that can enrich modern pedagogy samples patriotic upbringing physically healthy individuals.

To the urgent tasks of physical education belongs the identity formation with a view to ensuring the required level of vital motor skills and physical qualities; instilling human values, health, physical, social and mental well-being; education interest and habit of independent physical training and sports, the acquisition of healthy lifestyles [5].

The solution to these objectives in the practice of modern national education is to encourage teachers, scientists, workers education practitioners to creative use of pedagogical heritage.

The issue of physical education in schools as an important scientific and educational component of modern research is reflected in the works of E. Vilchkovskoho, A. Dubogay, N. Zavydivskoyi, T. Krutsevych, L. A. Matveeva, B. Shiyan. Theoretical and practical aspects of the technology of a healthy personality in the teaching of national education of the younger generation are presented in scientific works of A. Vishnevsky, J. Rudenko I. Smolyuka M. Stelmahovycha [4; 7; 9; 10].

Effective implementation of the educational process of folk games is devoted to a number of modern researches: E. Vilchkovskoho A. Volchynskoho, H. Sparrow, Lutsan N., N. Lysenko, M. Melnychuk, E. Seizures, N. Khymych, A. Tsosya and others. [3; 6; 7; 13].

The theoretical justification of ethno-pedagogy health contained in the works of E. Pristupa where are described, educational, philosophical and historical aspects of the formation and development of the Ukrainian people's physical education [7]. Scientists discover structural factors of educational laws and its functioning as a system on the background of the living conditions of Ukrainian features of ancient times, using the categories of «lifestyle». Considering people's physical education as a part of physical culture and ethno-pedagogy, E. Pristupa notes that «people's physical training, functioning in the social psyche and social life, carries a certain social task: creates the kind of individual that is necessary for its successful national life» [7; 12].

The researcher notes that national specificity and originality of the content of education of national physical culture phenomenon is complex and multifaceted. He offers to consider national specificity of national physical culture is not constant, and «derivative of the people's lifestyle, adaptive variable depending on the historical circumstances, spiritual and economic needs and aesthetic preferences, features links to other cultures, etc». [7, p. 212]. Considering the educational patterns of functioning as a system of physical training, the author lists the key factors that influence the content and form of national physical culture [7, p. 214]. Based on the theoretical and methodological provisions on the nature and structure of national and physical culture this allows greater use of the idea of national health experience in the practice of physical education of children and adolescents.

**Objective of the study.** The purpose of research is to implement the scientific analysis and systematization of provisions of Ukrainian ethno-pedagogy about the physical education of children and discovering its promising use in the development of the national education and training in modern Ukraine.

**Methods:** comparative – historical and systemic-structural methods allowed us to analyze and find out the nature, forms, means of physical education and the health of children in ethno-pedagogy; prognostic methods of analysis of historical and pedagogical literature used for understanding and defining prospects of Ukrainian treasury ideas of public education in contemporary national education and educational practice.

**Research results. Discussion.** In terms of recreational opportunities the leading role of ethno-pedagogy in this structure belongs to traditional educational practice in which «family education», «parental education» is the core of the educational experience [8, p. 40]. Ideal Ukrainian education has always been «healthy, cultural, happy person with knowledge of multifaceted, high spiritual and moral and intellectual qualities, work ethic and patriotic feelings, national and human dignity» [11, p. 52]. The family, including parents, have always cared about the health and physical development of children, create proper atmosphere in the family communication. However, the community also gave an importance to the tasks of physical education and health, including health promotion in various ways, contributed to the proper development of the body adapt to the environment, hardening of the body, preparing for labor and defense of their native land, strengthening optimism and a healthy lifestyle, compliance with sanitary standards of conduct, etc. [12, p. 41].

In folk pedagogy from the treasury of popular practical philosophy – proverbs and sayings – were used most generalized examples of relationship to physical health and its assessment: «Health is the greatest wealth in the world», «Health is happiness», «Health is the head of everything». The human's welfare depends on health : «To head healthy, and then is likely to be», «To the health and life will be», «To health, and the money will be», «Wealth is nothing without health».

Apparently, Ukrainian always appreciated the health that was put up by wealth, because «everything can be bought but health – no», it is – «the most precious treasure». The people were convinced that a

healthy person can always earn for living, so optimistically suggested: «As we live, and we fed». Respecting the health not only as material well-being, but also as a source of cheerful mood, beautiful person claimed that «A sound mind in a sound body», «While health is, the man does not grieve». All people want to be healthy and happy, so they believe that «Without health there is no happiness», «Who is healthy, he is rich and who is weak, he is poor». Healthy man likes everything: «When I am healthy, I like horseradish as sugar» and «For sick – honey is bitter», and all – «the patient is dissatisfied». Sick people do not feel the full joy of life («What are we in life, if we are not healthy»), and healthy – cheerful, («Everyone knows that a sound mind in a sound body»).

In these and similar folk aphorisms as the quintessence of wisdom reflected folk customs and traditions of the physical and health education of youth. Ethno-pedagogy consider it as a powerful means of transmission and of the progressive national experience and ensure the unity, continuity and succession of generations, a reliable barrier to spirituality, an important factor in parenting. «Folk traditions solve educational problem through regulation of individual spiritual qualities needed to correct person behavior. Custom displays the behavior of each growing up personality on the life path that is inserted in the older generation, through detailed regulation of action in each situation without motivation or any religious orders, as the rules of human behavior do not need it, because performed automatically and later become a habit» [11, p. 54].

Increased interest teachers and the general public is the revitalization of local scientists to revive people's ideas education, putting into practice the principles of physical and health culture of the Ukrainian Cossacks, formation of a national system of physical education. The theoretical rationale for the use of people's ideas for education with a view to impart to students healthy lifestyle is an important task of ethnopedagogy. It focused on the formation of physical and health culture of modern students as part of their healthy lifestyle based on accumulated socio-cultural experience of people of different nature, content, complexity health impacts. The researchers of this area offer a general view of a healthy lifestyle in their connections with the essence and the basic components of physical and health culture as a constructive activity of the individual to preserve and strengthen their health. So, special attention is paid to the problems of formation of physical culture and health of pupils by means of Ukrainian ethnology.

Every nation, every people, even each social group, including family, have their traditions, customs, rituals, culture, spiritual and moral experience and their own history. National legacy includes centuries-old system of education based on national values and is able to form a national character, national habits and specific way of life inherent in a particular local community. Man is like a tree can not live without roots, so the study of national heritage, history, spiritual national culture is a fundamental principle for education mentality and spirituality in the youngest generation [1].

Folk traditions retain people experience that formed thousands of years and reflect the specific outlook Ukrainian nation, its spiritual, moral and ethical society.

Numerous studies on the spiritual heritage of the Ukrainian people – E. Pristupa, S. Marynychak, S. Mudryka, A. Tsosya, G. Macovei, A. Voropay, L. Kaluska – demonstrate care and providing the preservation of their health. Health was necessary for a person full and active work process («To work, You must have strength to work») and to fight with enemies. The need to preserve the health, its formation from an early age are described in a proverb: «Take care of health from an early age, and after – in his old age», «Take care of your clothes – until it is new, and health – when is young. In congratulations and songs people wished each other happiness and health. During painting eggs for Easter take into account the symbolic significance of colors. For children – red colors are used to be happy and healthy, for adult boys and girls added more green to have more power.

For physical health it is necessary to follow a certain lifestyle. Our ancestors had a stronger health than the current generation. First of all, this is due to the way of life they had: living among nature, spending a lot of time outdoors, working physically, fully feeding, using the useful and healthy food.

In the system of people's knowledge, we have found various means of physical education, in particular the forces of nature. Man always aware of the power of the sun, water and air. The water was at a premium, this is confirmed by many fairy tales, legends, sayings, proverbs of «live» and «dead» water. Water is called the «blood of the earth», it was considered the vivifying power of healing, the basis of all life – mentioned in the researches of Lubomir Kalush.

The people appreciated the healing power of the sun, it carried a seriously ill that they could recover. Hippocrates argued that the sun's rays are very useful, they improve metabolism, circulation, breathing, tone the nervous system. Proverb underscore the importance of sun: «The sun warms, the sun is shining, all nature rises», «When the sun is shining, then the spring is coming». From hot summer sun people protected with light clothing, scarves, men wore hat [2].

Our ancestors endued land with health-giving force. Walking barefoot in the summer both for adults and children were commonplace, because it was believed that the ground gives the body energy and great strength: «Earth provides health». It was flatfoot and feet disease prevention, as walking barefoot on the ground, stubble, sand, small stones, water, trees develop foot, strengthens the leg muscles: it is acupressure, which increases muscle tone of the foot, leg, whole body. Besides this, at the foot receptors are «pleasure», not without reason since ancient times in our area every night laborers scratched Messrs's five. Modern physiological researches note that the feet are the most reflex zone of human body, here are thousands of nerve endings, that can affect different parts of the body. Tempering effect of walking barefoot on the ground is explained by the fact that the sole of the foot, compared with any other parts of the body is much more thermal receptors that that reflexively related to nose throat. In addition, walking barefoot helps the absorption of underground electric charges that accumulate in our body [2].

An important factor of the recovery is fresh air. Adults worked whole day outdoors, and children played or helped adults and felt the positive health effects. Especially effective is cold air, which contributes to hardening of the body. On the feast of the Presentation of Jesus at the Temple was the custom: the children made from straw an effigy of winter, and with than naked and barefoot ran out of the house and sang, then burned «winter» and only ran into the house to warm.

The considerable impact on human health have a hygiene factors (personal hygiene, diet). Personal hygiene was one of the Ukrainian conditions for maintaining health and that are showed in the songs, carols, congratulations, folk proverbs, tales, that handed down to us. Here we can see how is respected «cleanliness», neatness, and the cult traditionally formed in Ukraine. People criticized the carelessness: «The unkempt man every cloth is bad». Before the holidays everything had to be washed, you can not wear unclean clothes, you can not go to the street not washed, «not to meet a witch», no one can not wipe with a same towel, «not to quarrel». On Green week the table had to be precise, and with clean napkin. These folk customs, rituals contained the components of hygiene [2].

Proper attention was paid to observance of work and recreation. The ban to work on Sunday gave people an opportunity to relax, gather strength for the week. Saturday dedicated for the house – a woman bathed the children, cleaned, washed clothes. Working day always began at dawn. These are some customs: the feast of the first furrow George, it was necessary to meet the sunrise at home («The early bird gets the worm»).

Food wasn't left without any attention. People's morality has always condemned excess in the diet, alcohol consumption («Extra food – stomach trouble»). To ensure the healthy lifestyle people kept fasts to cleanse body and soul.

We know that a sedentary lifestyle is detrimental, especially for a child who has a natural need for movement and a reduction in motor activity leads to a number of problems in health. It also noted in the proverb: «If a child running and playing, and the health also smiles». For the full physical development exercise performed. Among them E. Pristupa provides games, fun and entertainment (running, jumping, throwing, climbing, swimming, skiing, sledge, various competitions) fight, (comic struggle, which was attended girls), folk dances, which were commonplace, and accompanied by a variety of traditional and customary actions, their content reflects national psychology of Ukrainian people. Youth competed in jumping across streams on the Green Week, Kupala Night – through fire, who then something toggles through the tree, climb a tree and so on.

Studying the Ukrainian traditions, it is impossible not to mention his spirituality, which was an essential part of a healthy lifestyle. This is something that we must now return, and take into account the centuries-old experience of our people. Coordination of human existence with nature and the universe was primordial of spiritual worship. Our ancestors believed that every tree, every blade of grass, and even water – are alive. They didn't brake branches (even on pasture took twig – a dead branch of dry tree) without tearing flowers, because they also want to live.

Extremely emotional are folk games, among which distinguish two groups. The first group – a spontaneous game, they arose spontaneously or as imitation of adult actions. The second group – highly entertaining game with a set of rules [13].

Games created by people for many centuries, they contribute to the development of physical qualities of the child: agility, speed, duration and strength of independence, determination, organization, intelligence, honesty, caring and friendly attitude to each other. Traditional mobile games are an effective means of comprehensive education of children, they contribute to the expansion of ideas about the world, full mental development, speed up mental processes, provide aesthetic pleasure from the performance of motor actions, combined with jokes, songs, create conditions for consolidation of motor skills and development of physical

qualities. As an active kind of leisure game promotes intelligence, logical thinking, tempering liberty exposure. Game play a social and pedagogical phenomenon, seen as a source of joy and pleasure [14].

Traditional games – a history of the people, because they reflect the social life of each era while remaining effective means of physical education of children.

**Conclusions and recommendations for further research.** The great achievement of a nation that was enriched for centuries, is considered as widely used in the education of children, attracting them to the sources of national culture and spirituality. The study of folk traditions shows that for centuries in Ukraine evolved highly effective system of recovery, which is closely related with the customs, rituals, outlook of our ancestors. This treasury have a great importance in the formation of health worldview foundations health culture and active life position of the younger generation, providing and improving physical and spiritual enrichment and moral growth, and rules of behavior in society. All the wisdom of the national heritage lies in its multi-vector that caught the attention of the people, no aspect of the phenomenon of human health, identified comfortable, humane and life-giving existence of the human community.

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## **Folk play in Presenting Traditions and Representing Cultural Code**

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### **Abstract:**

Traditional kinds of sport and games are currently enough demanded course in domestic and foreign scientific studies; UNESCO claims they are a part of our intangible heritage and a symbol of the cultural diversity of our society. The value of the study of folk games and entertainment is conditioned by novelty of potential discoveries or interpretation of cultural stereotypes of a nation. Ukrainian traditions are transfused with movements, motor activity which are the basis of physical culture and, therefore, through the motor component we may learn the culture of own people. The objective of the work was defining the notion of «folk play» in the contexts of presentation of traditions and representation of the cultural code. It was established that the notion «folk play» due to collision in practice should be understood in its broad and narrow senses. Folk play in its broad sense is the reproduction in the form of game action (games) of the major events, iconic pages of life of the people, the tragic moments and joyful accomplishments and victories for the purpose to remember and pay tribute to them as such which contributed to the formation of outlook, mentality, hardening of the whole nation.

### **Key words:**

*folk play, physical culture, tradition, cultural code.*

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**Introduction.** Despite globalization transformations aimed at unification and standardization of virtually all spheres of human life in every corner of the Earth for certain models and rules more and more noticeable is resistance of various ethnic groups, the nations of the globalization which is so happily supported recently. It is harder and harder for globalists to mask the plans of only economic interrelations and benefits which she allegedly bears in itself. In globalization are latent expansion (enslavement) which encroaches on everything and dictates (ostentatiously imposes) the standards, behavior, even heroes, thereby approaching the sphere of culture, traditions, sacral which to each people there, and this fortress isn't always simple for overcoming.

Not incidentally in the world, traditional actions (games, entertainments, carnivals, etc.) don't lose their popularity by which are found, and sometimes «invented traditions» (E. Hobsbaum, T. Reyndzher) which first of all are directed to solve a problem of identification of people, to rally them around the general idea.

UNESCO Convention for saving of the intangible cultural heritage sets out the fundamental right to cultural recognition, including through traditional sports and games: «Traditional sports and games are part of our intangible heritage and the symbol of cultural diversity of our societies» [7]. At the end of September, 2015 organizers of traditional games of radical entertainments, representatives of different national and international non-governmental organizations participating in the TOCATI festival (the Tocati festival – the International festival of street games that occurs at ancient center of Verona and is unique according to the characteristics in Italy and Europe), decided to move to an additional level of relations and prepared «The Veronese Declaration» for the world advancing. Relying on the fundamental principles of UNESCO concerning national strategy of development, «The Veronese Declaration» does an appeal to persistently recommend introduction of traditional sports and games to school programs. This Declaration aims to address the following objectives: 1) to combine all of the companions (of the protagonists) that takes creativity, self-development, the environment and the rights and responsibilities of citizens; 2) to divide the value of cultural diversity; 3) to create structures which appreciate the welfare and social health connected to information exchange and interact between different generations, and promote a cross-cultural dialog in general; 4) to deepen knowledge of local customs as memory of civilizations; 5) to set correlation between transmission of non-material cultural heritage and a sustainable development [8].

Thus, traditional sports and games recognized by UNESCO is an effective mean of transmitting the values of solidarity, variety, openness and cultural consciousness that promotes a pride for own cultural roots. Therefore it is desirable that the invariable requirement concerning their passing was assigned to folk games in the program of physical training for youth (school children and students) of Ukraine (for example, in the form of the mandatory module). Experience of successful embodiment of traditional game culture in the school program is rather frequent. In particular, E. Velichkovsky, V. Pasechnik in his researching physical education at



schools of Greece, mark that the system of physical training of children and youth in this country tries to support over 2800 years of historical traditions. About 10–15% of program material on school discipline «physical culture» are planned for the Greek folk dances [1]. Russian scientists E. N. Pristupa, V. I. Levkiv, A. V. Slimakovskiy [4], A. V. Tsos, N. A. Dedelyuk [6] have made a lot of work in this direction.

Now the Ukrainian younger generation has a request for knowledge of their traditional culture. In the annual report to the President of Ukraine, to the Verkhovna Rada of Ukraine (following the results of 2013) scientists write that: «Today we are witnessing not only the growth of respect of the younger generation to the religious traditions of its people, but also the desire of a considerable part of young people to broadcast awareness of the value of religion and faith to future generations» [5, p. 81]. In the system of values of the modern Ukrainian youth notice the growing influence of a factor of ethnic self-identification: «The modern youth in general is very patriotic, they trust in future of Ukraine, communicate in Ukrainian and strengthen the Ukrainian cultural traditions. So, according to polls conducted by the Kyiv Institute of management problems in 2012, among urban youth aged from 16 till 21 years (that is those born in the independent Ukraine) 65 % are proud to be citizens of their country» [5, p. 86]. The physical culture is capable to an explication of game culture from which it separated, has valuable potential not only perfecting of motor abilities of a person, but also able to affect the spiritual potency. However, physical and spiritual (complete) influence on person's opportunities of physical culture is feasible only on condition that the physical culture as the phenomenon will lean more widely on its basis – game.

**Objectives:** to give definition to the concept «folk game» in the context of the presentation of traditions and representation of a cultural code.

**The main material and justification of the results of the study.** The modern person is depending not only on biological (genetic) code, but also on cultural. History shows that humanity was moved in the same direction – accumulation of cultural memory (experience) and, at last, formation of a cultural code.

In the XXI century a cultural code of mankind it is categorical and, apparently, irrevocably became dominating in human behavior. The person is guided by values, norms, ideals that reflect not a biological code, namely cultural. The consciousness and self-consciousness to which a person has evolved (or which allocated a person unlike other living beings by God) made revolution in behavior from biological to cultural. All other entities which are not allocated with consciousness and self-consciousness therefore are guided by exclusive biological markers. Such are the rules of life.

Therefore, a biological (genetic) code out of management of human consciousness and uniqueness of a cultural code is that it is generated by exclusively human consciousness. The cultural code allows understanding substance of cultural phenomena. There is the cultural code in folk game which stores knowledge, experience and even mysteries of the people. There is a legend that the Egyptian priests, looking for a way to preserve and impart knowledge to the next generations, came to a conclusion that nothing else as a game is the safest means of achievement of this purpose. The most powerful argument in favor of a game was the fact that unlike record, which enemies, circumstances or time can destroy, the game will keep everything precisely and will transfer important information through the ages. The game was supposed to transfer a cultural code and it coped with this task perfectly well.

Therefore the folk game is a quite non-trivial phenomenon not only in human life, but also in pedagogy, as it carries memory of the people (information or the same code), it sheds light on what tribe/family there are people of concrete ethnos. So, the whole series of games which were called panelinsky (Olympic, Istmiysky, Delphic, Nemeysky) were folk games of ancient Greeks. Each people have games which originate from their beliefs, of a way of life and only confirm valuable orientations, temper, morals, eventually, substance of these people. In folk games everything is accumulated: permissions and taboos. Cruel gladiatorial games were alien for the people of Greece, the Greek chants, games and agons were perceived romans as female joys. Where is the fight against death in the Greek games which was necessary to romans for contemplation, like a breath of fresh air? The Roman was ready to enjoy at least thousand, and at least one million killed in one day, without feeling at the same time anything silly. The Greek was inclined more towards contemplation of beauty of a body, its grace at the moment of tension during the competition. The Greek competed in everything and everywhere, he sought to find harmony, he threw down a challenge to gods he challenged the gods, and it was the challenge of a worthy person. Death or its threat was not necessarily attended in a fight – and that is a feature of the Greek game. The baron Pierre de Coubertin who was keen by the Greek culture, tried to revive Ancient Greek approach to competitions in the modern Olympic Games. The modern Olympic Games weren't organized according to the ancient principle, their basis was on internationality, and each nation has its cultural code and distinctions in the gaming behavior.

The Ukrainian people also have thousand-year history and those games which have come to us as folk, carry in themselves a cultural trace, a code. The Ukrainian national games are a combination of culture polytheistic and monotheistic, this unique phenomenon in the world culture which is accurately evident in the folk activities (celebrations, games). The majority of the Ukrainian folk games have a legible imprint of dual culture/dual faith.

Ivan Ohienko (Metropolitan Hilarion), analyzing ancient folk festivals, speaks about a special Slavic religious calendar which was quite large and widely developed, with the characteristic feature – strong communication with the nature and with the agricultural cycle: «Our ancient Holidays are our agricultural ceremonies which always were many by us, and here they made our annual calendar of Holidays. A precisely settled day of any holiday in the ancient time was not yet because it was agricultural Holidays: the rites were carried out depending on weather and time of agricultural occupations, depending on a sun turn and solar force, and only the Christianity later tied them by certain days. Usually the celebration lasted several days or even weeks and more that remained to our time. All Holidays were connected by one general idea: honoring of the sun and solar gods, fight of summer against winter, heat with cold, and it is what forms the basis of agriculture» [3, p. 265]. Evidence of breadth and wealth of ancient festive rite are vesnyanka, gaivka, Kupala songs, Christmas carols, shchedrivka, etc. They reveal full game actions and explain outlook of the people. Imitation in dance and games of agricultural movements at a plowed land, sowing, cultivation of a young plant (round dances «Millet», «Poppy», «Cucumbers», «Pear», «Flax», etc.) aimed to promote to the workers and to help growth of the harvest [2, p. 18].

Thus, folk game is a heritage, non-material cultural spiritual heritage that passes from generation to generation where a condition of acquisition of ownership rights is only one requirement – participation or identifications to people.

Folk game in the system of physical training of the younger generation (school, higher education institution) should be chosen and implemented deliberately. It is connected with the fact that unlike other types of games, especially sports with which the youth are well familiar, a folk game demands explanations and clarification. This should be done so that the children did not have a prejudiced impression that folk game is a primitive physical activity of previous generations, and now they are forced to reproduce all this. Such phenomenon is quite probable if to approach business not professionally, deliberately, but in an amateurish way. Actually, a folk game must be felt, not split people's understanding of the game, but *increase the status* where culture, traditions, customs, and, eventually, respect for the past by his contemporaries. Therefore, a folk game is necessary **to subordinate** *with big «care»* to the purposes which were never peculiar to it. In physical culture like to abuse it, using some game for learning of a certain physical quality or the acquisition of motor skills which will be useful in learning motor actions. There is «pulling out of context» and a folk game appears as something simple and often not logical. It doesn't mean at all that you shouldn't use folk games for learning physical qualities at a lesson, just you shouldn't represent it as such that the appointment has learning of some quality. Thus, the form of carrying out a folk game is extremely important. Variations in the forms of carrying out (reproduction) of folk game can be many, but generally they are reduced to two basic.

The first form is expanded independent, self-sufficient game action. Folk games are a complex of specific national action with many games, dances and etc., thereby recreating historical tradition. This form is best solved in extracurricular classes without strict regulation time.

The second form is short when some games in total or separately as an element of traditional activities or for the solution some tasks and goals are used, for example, at the lesson of physical education. Thus, having considered folk game as representation of traditions and representative of a cultural code, definition of the concept «folk game», apparently, will be the best when it is given in wide and narrow values. It is caused by the fact that beliefs, a defining point, radical layer of worldview Ukrainian people are taken into account (the cultural code) or not.

***In a broad sense the folk game*** is a reproduction in the form of a game action (game) important events, significant pages of peoples life, the tragic moments or victories with the purpose to remember and pay tribute to them as such, which contributed formation of the worldview, mentality, hardening of the whole people.

***In narrow sense the folk game*** is a process in which is not necessarily the amendment on beliefs, ritual, the myth and etc., and all events (actions) are based on repetition in particular game which entered into repertoire (children, youth, and adults) of the previous generations.

**Conclusions.** 1) Folk game is the universal phenomenon, because there are no people who would not have games. The game shows «genealogy» of the people as far as the culture of the people is self-sufficient or

borrowed. Folk game is a historical product, sometimes evolutionary, but usually static, it must reflect cultural heritage and bear in itself concrete information (code). 2) UNESCO accepted a number of documents which at first indirectly, and then directly concerned traditional sport and games: a) 1989 – definition and recognition of popular and traditional culture; b) 2001 – the Universal Declaration on Cultural Diversity, stating the measures that should be adopted; c) 2006 – promotion and development of traditional sports and games (TSGs). All these actions of the international organization are directed at deciphering of a cultural code of different people of the world and deepening of knowledge of them through folk games.

**The prospects for further research** are to find out the general regularities and mechanisms of formation of folk games.

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## **Legal Aspects of work Regulation of Professional Athletes in Ukraine**

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### **Abstract:**

Topicality of the scientific study is grounded by existing faults in regulation of professional sport, in particular, in regulation of work of professional athletes. We should mention that in the Law of Ukraine «About physical culture and sport» there is only one article devoted to such course of activity in sport as professional sport. The objective of this article is generalization of scientific studies and formation of proposals concerning improvement of legal regulation of work of athletes-professionals. It is conducted the generalization of results of scientific researches of native and foreign scientists which are dedicated to regulation of work of professional athletes. It is established that for today there is no unity of thoughts of scientists on the questions of regulation of work of athletes-professionals, in particular, if activity of athletes-professionals in professional sport should be regulated under the ground of norms of civil law or on the ground of labor law. It is indicated that due to regulations of the effective legislation an athlete obtains the status of professional athlete from the moment of concluding an employment agreement (contract) with the corresponding subjects of the sphere of physical culture and sport about participation in competitions among athletes-professionals. So, obtaining by an athlete of the status of a professional is connected with the moment of contract signing with the corresponding subjects of the sphere of physical culture and sport. It is indicated that the content of a labor agreement (contract) includes conditions which determined rights and obligations of its parties. It was analyzed the main rights and obligations of parties of the labor agreement (contract), a professional athlete – from one side and an employer (subject of the sphere of physical culture and sport) – from the other side. According to the results of the scientific research it was formed the proposals concerning improvement of legal regulation of work of professional athletes. To our mind, it is possible under the grounds of systematization of norms that regulate work of professional athletes, in particular, by means of fixing of such norms in the new Labor Code.

### **Key words:**

*professional sport, professional athlete, labor agreement (contract).*

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**The formulation of the problem.** Today professional sport is one of the active areas in sport. According to ch. 1, Article 38 of the Law of Ukraine «On Physical Culture and Sports» (hereinafter – the Law) Professional Sport is the commercial direction of sport associated with preparation and conduction of spectacular sporting events on high organizational level for profit [1]. The distinctive feature of professional sport is its commercial character and, accordingly, the main goal – profit. It is common knowledge, that Professional Sport brings considerable profit, which is acquired primarily for its high level of audience interest, caused by participation in sports activities the most skilled athletes, who are able to demonstrate the highest achievements. According to ch. 2, Article 38 of the Law, activity of athletes, coaches and other professionals in professional sport that consists in preparation and participation in sport events among professional athletes, is the main source of their income, and is realized according to this Law, the Labour Code of Ukraine and other legal acts, statutory and regulatory documents of relevant subjects in the sphere of physical culture and sports as well as international sports organizations [1].

Despite the fact that in Ukraine the legislation governing activities in the field of physical culture and sport are generally framed, but the shortcomings in the legal regulation of professional sport can be observed, including the labour regulations of professional athletes. It should be emphasized that in general the law contains only one article that is directly devoted to such activities in sport as professional sport.

**The analysis of the recent researches and separation of unsolved problems.** The works of domestic and foreign scientists are devoted to problems of legal regulations in the sphere of professional sport, including labour regulations of professional athletes, namely: S. V. Alekseyev, V. P. Vaskevych, A. O. Polyansky, M. O. Tkalych, O. O. Shevchenko etc. At the same time, the important fact is that nowadays there is no consensus of scientists on the questions concerning Labour Regulation of professional athletes, and, in

particular, whether the professional athletes activity in professional sport should be regulated on the basis of civil or labour law?

The aim of the article is generalization of scientific investigations results and formulation of the proposals for implementation of legal regulation of professional athletes labour.

**Presentation of the basic research material.** Starting the consideration of the peculiarities of legal regulation of labour of a professional athlete, we should refer to ch. 2, Article 38 of the Law, stating that the activity of athletes in professional sport, is realized according to this Law, the Labour Code of Ukraine and other legal acts, statutory and regulatory documents of relevant subjects in the sphere of physical culture and sports as well as international sports organizations. Thus, for the purpose of discussion we should subdivide the regulation of athletes' activity in professional sport into the following levels:

a) separate Laws (for example, the Law of Ukraine «On Physical Culture and Sports»);

b) subordinate normative legal acts (for example, Handbook of qualifying trades workers characteristics «Sports activities» approved by the State Committee of Ukraine for Physical Culture and Sport of 17 October 2002, № 2264);

c) acts of domestic and international sports organizations (for example, Rules of the Football Federation of Ukraine concerning status and transfer of football players of 03 July 2014).

Questions connected to regulation of professional athletes' activity in Ukraine are resolved, in most cases on the basis of labour legislature. It should be borne in mind that according to ch. 2, Article 2 of Labour Code of Ukraine (hereinafter – the LCU) workers implement the right to work through concluding an employment agreement [2]. At the same time, professional athletes conclude fixed-term employment agreements (contracts) proceeding from the provisions of ch.3, Article 38 of the Law.

From the point of view of some scholars, the work of professional athletes must be ensured by means of civil legal regulation. For example scholar M. O. Tkalych believes that the basis for relations between the sports club and a professional athlete is not an employment agreement, but civil contract works, according to which one party (the executor) is obliged to carry out training activities for skills that allow to reach high results in sports, and the other party (employer) takes responsibility to pay for this work, to obtain the right to use athlete's achieved results. Thus, contracting relationships in sports require regulation instruments of civil law [3, p. 332].

However, another position concerning the professional athletes' labour regulation is substantiated in some scientific works. For example O. O. Shevchenko believes that labour relations of professional athlete should be governed by rules of labour law and a special law on professional sport, which will regulate the whole complex of relations between the state and members of professional sports. Special legal regulation is objectively needed in the emerging relationship, because of the special nature of professional athletes' work, which is possible within the differentiation of labour legislation [4, p. 6].

In some works the authors proposed to resolve the dispute on the legal nature of sports contract by the reference to the statute and regulations of the sports organizations and associations where the notion of sport contract is defined.

Thus, in accordance with Regulation of Nationwide competition for football among club teams of the Association of Professional Football Clubs of Ukraine «Premier League» season 2013/2014 biennium, contract should be understood as a form of labour agreement between the football club and the athlete with all applications, changes and amendments concluded in accordance with the legislation of Ukraine and FFU Regulation on the status and transfer of football players as well as other documents of PL, FFU, FIFA and UEFA [5].

In our opinion, quite reasonable is the position of those scientists who find it necessary to regulate the work of professional athletes by means of labour law. Indeed, as it is pointed out by M. Konini, professional sport as an activity, is the work of a certain kind, performed regularly, has a specific purpose (participation in competitions), at the expense of the employer and liability to follow the rules laid down by «labour routine» (meetings, training, daily routine, injunction on the use of alcohol drinks, etc.), and for the above mentioned, the athlete receives pecuniary recompense, preconditioned by labour agreement, and it is hired labour with its specificity, caused by the peculiarities of ongoing activities. That is why, professional sports as hired labour, is the subject of labour law and, therefore, public relations, resulting from the usage of the athletes' abilities to participate in the competitions, should be the subject of labour legislature regulation [6, p. 428].

However, the disadvantage of labour legislation of Ukraine is, in our opinion, lack of consistently and systematically settled provisions for regulation of professional athletes labour. The same problem, but with the labour legislature of the Russian Federation, is pointed out by O. O. Shevchenko. The scientist notes that unfortunately there are no separate articles in the Labour Code of the Russian Federation especially devoted to regulation of labour relationships with professional athletes. However, in this Code, in contrast to the pre-

existing Labour Code of the RF (adopted in 1971), several issues related to the peculiarities of the legal regulation of working hours and rest periods as well as remuneration of such persons to some extent have found their reflection [4, p. 12].

It should be noted that the project of LCU, which is posted on the official website of the Ministry of Social Policy of Ukraine for public discussion, contains any separate article devoted to regulation of professional athletes' labour. Taking into an account the fact that, a professional athlete, unlike other workers, performs very specific working functions, that's why, we consider, it would be reasonable to foresee peculiarities of the legal regulation of professional athletes work within a particular section (chapter) of the LCU.

The labour agreement (contract) plays very important role in the regulation of labour relations between employer and professional athletes. According to ch. 3, Article 38 of the Law athlete acquires the status of professional athlete since the contract is concluded with the relevant subjects within the sphere of physical culture and sports to participate in the competition among professional athletes [1]. Consequently, the acquisition of a professional athlete status is linked with the moment of the contract conclusion with the relevant subjects within the sphere of physical culture and sports, which may primarily be represented by sports clubs. For example, according to ch. 4 Article 4 of the FFU Regulation on the status and transfer of football players (hereinafter – the Regulation) football player acquire the professional athlete status as well as the respective rights and obligations since the conclusion of a contract with a professional club to participate in the competition [7]. And in accordance with ch. 2 Article 8 of the Regulation the contract defines the conditions of labour relationships between club and football player. Thus, the contract, which due to ch. 3, Article 21 of LCU is considered as a special form of labour agreement [2], and the basis for emergence of labour relationships. Since the contract is signed the football player acquires the status of an employee, whom the labour legislation is extended to.

It should be noted that the contractual form of labour agreement for athletes' labour regulation is not limited to football, but it is used in general for the other highest achievements in sports. An example is the ch. 1.2. of the Contract with a regular team employee of the national teams of Ukraine, which states that this contract is a fixed-term employment agreement.

Taking into an account the crucial role of labour agreements (contracts) in the regulation of professional athletes work, it seems appropriate to pay more attention to the legal characterization of the instrument for the relationships between the employer and athlete.

According to ch. 3, Article 21 of the LCU the contract is defined as a peculiar form of labour agreement, in which its validity, rights, duties and responsibilities of the parties (including financial), conditions of provided material support and organization of employees, termination of the contract conditions, including pre-term, may be established by the agreement of the parties [2]. As every complex phenomenon, the contract is a unity of form and content. According to Article 24 of the LCU the contract must be concluded in a writing form [2]. Also amendments to the contract must be only in writing.

Content of the labour agreement (contract) is specified by the provided conditions, due to which the rights and obligations of the parties are defined. The provisions of regulatory acts of some sports organizations demanding compliance with mandatory contract content requirements.

For example, according to ch. 2 Article 8 of the FFU Regulation the contract must necessarily meet «the minimum requirements for a standard contract of a professional football player, by agreement between UEFA, EPFL, ECA and FIFPro Division EU of 19 April 2012», include provisions of template contract form and clear fixed amount of salary [7].

In general, the main responsibilities of a professional athlete are participation in the training process and competitions. More detailed obligations of a professional athlete are in the contract, and may consist of the following:

- together with the coaches schedule the training and competition tasks under the individual preparation plan;
- during training sessions and competitions observe the daily routine, general and individual training and rest regime;
- to take part in educational training camps and sports competitions.

It should be noted that the liability of the professional athletes to achieve concrete results in certain competitions may be provided by the contract. This provision is detailed by the instructions on the name of the competition, the year of conduct and sports results (which are expressed in meters, seconds etc. or a reference to get a place in the competition);

- to take care of their health, personal hygiene, observe safety regulations;
- not to self-medicate and use drugs only with the permission of a doctor of the sport, in case of an injury or disease carefully observe the treatment regime and rehabilitation;

- to know and obey the laws of Ukraine, anti-doping legislature, provisions of international regulatory acts in the field of sport, the statutes of international and national sports federations, league / association or organization regulations that holds competitions, as well as the rules of the sport competitions;
- to take personal responsibility for violation of the World Anti-Doping Agency concerning the usage of illegal pharmacological drugs and the use of prohibited methods of recovery and treatment;
- to use sportswear (outfit) of the Sports Club (organization) during participation in an official sports competition;
- to take care for sports facilities, sports equipment, sports gear and sportswear and be liable for the damage. To report for usage of a given equipment, inventory and sportswear etc., in the terms established by law.

The main duties of the employer (as employers may be relevant subjects within the sphere of physical culture and sports) are to ensure working conditions for professional athletes provided by legislation, collective agreement and labour agreement (contract) as well as salary payments.

Insurance of working conditions for professional athletes consists of the training process under the supervision of qualified specialists (trainers) in training facilities (rooms, on the floors and training bases), with appropriate sports gear and equipment for safe the effective training, high-quality outfit, club clothing of the established sample, quality accommodation and food supply during the period of training sessions and participation in competitions.

Salary payments are carried out due to the established procedure of approved sportsman payment conditions. In case, if the employer is the subject within the sphere of physical culture and sport, funded by the state or local budgets, the athlete salary payment conditions are determined by the norms of existing legislation.

To the legislation, that contain the norms of the professional athletes salary payment belong: resolution of the Cabinet of Ministers of Ukraine of 30 August 2002 № 1298 «On the payment of workers on the basis of the skilled categories and salary levels unified rate schedule of workers labour payment of institutions, establishments and individual industries organizations of budget sphere»; order of the Ministry of Family, Youth and Sports of Ukraine of 4 August 2006 № 2681 «On approval of procedure for awarding regular teams employees of Ukraine»; order of the Ministry of Family, Youth and Sports of Ukraine of August 4, 2006 № 2680 «On approval of procedure for awarding certain categories of regular national teams athletes-instructors of Ukraine» etc.

If the employers are the subjects within the sphere of physical culture and sports financed by private sources (for example, professional football clubs), the salary payments of professional athletes are settled not only by centralized acts of labour legislation, but also by collective agreements, agreements, local regulatory acts of sporting organizations (team, club) [8, p. 61].

In addition to provision of necessary labour conditions and salary payments the employers – the subjects within the sphere of physical culture and sport, – are entrusted the following responsibilities:

- to follow the labour legislation of Ukraine and labour protection rights;
- to reimburse the professional athlete travel expenses (travel, accommodation, meals and other expenses during the trip);
- to provide life insurance of professional athletes, insurance for the period of temporary disability and medical insurance in accordance with the current legislation of Ukraine;
- to organize health care during professional athlete training, the diagnosis, treatment, provision of medicines and vitamins, as well as bear the cost of treatment (including the operation).

The other responsibilities, provided by the labour agreement (contract), may also be entrusted on the employers – the subjects within the sphere of physical culture and sport.

However, rather often in practice, the situation of improper performance of the Parties' obligations due to the labour agreement (contract) can be observed. In the role of offenders increasingly appear the employers, due to several factors, including the deteriorating economic situation in the country. As a result – non-payment of salaries, unjustified early termination of the agreement (contract) initiated by the employer, the refusal to bear the costs of treating athlete and others.

Of course, to protect the violated rights of the athlete, like any other citizen, there are the police, the judicial system, based on the possibility of wide application of state coercion. There are also other, purely professional bodies, such as: sports arbitration courts of various levels, bodies of dispute resolution that are created by sports federations, as well as other specific bodies. However, the effectiveness of their ongoing protection depends not only on the ability to create adverse consequences for offenders, but also responsiveness and maximum proximity, involvement and awareness of the athletes' problems [9, p. 64].

Therefore, more active support begins to get the idea of the necessity of professional athletes' unification in the trade unions, the purpose of which, according to the Law of Ukraine «On Trade Unions, their Rights and Guarantees» is the representation and protection of labour, social and economic rights and the interests of union members. The experience of many countries (England, USA, Italy, France and others.) showed the effectiveness of the trade unions, which are able to use different means to protect the rights of athletes (including as a last resort – strike).

**The conclusions.** On the basis of the research it has been revealed that professional athletes labour regulations in Ukraine are carried out at both the normative and contractual levels. However, professional athletes' labour regulations are not marked by systematicity and consistency of provisions. In our view, it is possible to improve further on the basis of systematization the norms, regulating the professional athletes' labour, particularly by consolidating such provisions in the new Labour Code.

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# *Technologies of Education in Physical Training*

UDC 796.615.825.

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## **Integration of Technological Means for Testing Control of Flexibility in Students' Joints Among Students of Special Medical Groups**

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### **Abstract:**

The question of technological provision of the test control in physical education of students of special medical groups of higher educational establishments. The topicality of the study is predetermined by objective necessity of qualitative modernization of the way of flexibility monitoring on the basis of innovative approaches. The objective of the work is to create a way of monitoring of general mobility of joints in which owing to new action it would be possible to maintain prompt thorough defining of flexibility index. It was work out the technology of test control with the usage of instrumental system created on the basis of synthesis of modern electronic techniques and software. The presented methodology ensures elimination of a range of problematic factors of the valid methodology of flexibility control on the basis of integrating technology of multiple functions into a single automated system.

### **Key words:**

*flexibility, testing, control, monitoring, electronic system.*

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**Formulation of the problem.** In terms of pedagogical physical education practice objective assessment of physical capacity by testing students control is regarded as one of the actual problems. The formed control organization in special medical groups (SMG) is based on the results of monitoring test [5]. Test control as a dominant factor is the integral part of physical education and functions as regulatory supply. The realization of this function ensures its efficacy [1]. The choice of authentic and practical use of tests that reflect the dynamics of the studied parameters at different stages of physical education taking into account the conclusions importance of the control is extremely relevant.

The problem of quality control system in students physical education in SMG today is considered quite discrete in the available literature. However, there are some inconsistencies in this matter of concerning the specific monitoring of these groups. Current extensive theoretical analysis of researchers existing works [1; 2–5] investigated by topic shows that the majority of them concentrated on questions of testing students of major medical groups. Meanwhile, experts ignored aspects of test control of SMG which prompted us to conduct experimental research in this direction.

One of the most informative parameters according to which the state of physical fitness of students is measured is an indicator of the mobility level in the joints – flexibility. As one of the determinants that insures dynamics of physical fitness, the question of monitoring flexibility over time is the subject of the discourse of specialists in different research centers. According to the researchers [1–4] it is an important physiological factor in the physical training and determines its dynamics necessary to obtain quantitative knowledge that will help to evaluate the growth components of physical fitness and to determine the nature of the problems related to its low level.

Today there are many ways of monitoring flexibility – from simple, using the normal line, to complex, using various devices. Monitoring provides flexibility dimension range of motion in joints such as the muscles ability to lengthen within their structural constraints [2; 4]. Sophisticated measurement techniques are more developed and most of thematic interest than practical application and therefore are not used in the physical education practice of SMG.

The most common method of flexibility control in the physical education practice of SMG is a way of monitoring the over all joint mobility index by which the flexibility of musculoskeletal systemis determined.

This technique is performed by specialized test exercises [5]. The feasibility of using this test due to the fact that from a practical point of view the most important is the flexibility of the spine and it is believed that the results of this exercise can draw conclusions about the «joint flexibility of the body». In addition, it is easy and accessible for measurements during mass surveys and it does not require special realization conditions.

We point out that to ensure the procedures standardization in this technique is almost impossible. This method of flexibility testing is characterized by a certain subjective evaluation dependence of compliance on all the requirements of the test teaching exercises set during visual monitoring. In addition, along with the temporal loss (5 minutes per student) a significant probability of error tabulation exercise and complicates it is impossible to obtain reliable objective monitoring results and definitions. Also it is difficult to obtain informative monitoring results through a large number of uncontrolled variables and lack of registration for certain test results. In fact, authenticity test to determine the flexibility index addicts from the many external factors effects which eliminate the limited possibilities. Therefore, there is a need for a fundamentally new approach to this issue.

We note that in the theory and practice of SMG students physical education issues related to the testing procedures of informative mobility in joints are developed enough and it is recognized by industry experts [1; 3; 5]. Research industry researchers [1; 2–5] suggest that one of the challenges facing researchers of students physical education with health disabilities is a fundamental need for conversion test control, which involves the integration of modern technologies in monitoring process.

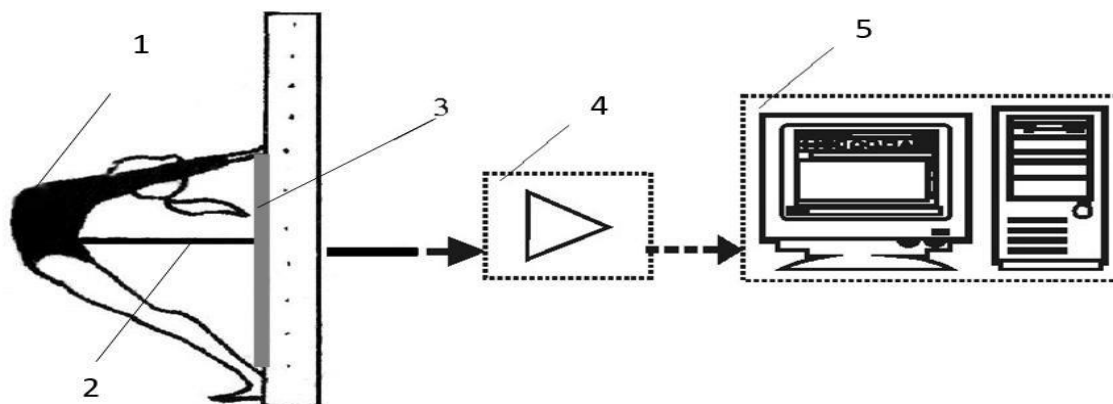
Finding ways to improve methods of the mobility level determining in the joints led to the choice of topic and research direction. Analysis of existing publications on this issue [1; 2–5] indicates that one of the most promising ways to improve test control is the development and practical implementation of new highly efficient tools, methods and technologies to monitor. In this respect, we note that the technical basis of this question in the field of physical education students in need of academic SMG refinement [1; 3–5]. Today the approach to implement automated joint mobility of SMG students is not implemented in the existing scientific literature. Therefore, further study is relevant for efficient methodology of testing flexibility in the context of modern electronic devices.

**The aim of the research** is the argumentation and implementation of modern electronic technology tools to improve flexibility testing of SMG students.

**The task of the research** is to create a way of monitoring the overall joint mobility, which through new actions could be efficient to perform thorough determination of the flexibility index.

**Methods and research organization.** For the purpose achievement methods of analysis and synthesis, abstraction, formalization and modeling are used. The study was conducted at the Department of Physical Education and «Electronic Devices» of National University «Lviv Polytechnic» during the 2014–2015 academic year.

**The results of the research.** Specificity of technical equipment in the field of physical culture, focused on information provision control and informed management decisions, provides methodological support test process in the form of diagnostic systems. Using the capabilities of modern electronic equipment, for the insurance of time loss, provision monitoring accuracy and elimination of the human factor influence on the inspection results, we developed a testing method using software electronic system of monitoring the overall joints mobility (Fig. 1) which provides automated operational thorough definition of the flexibility index of the musculoskeletal system.



**Fig. 1.** Block diagram of monitoring overall joint mobility:  
1 – monitoring subject (student); 2 – rubber band with LED;  
3 – lineup photodiodes; 4 – amplification block based on operational amplifier;  
5 – electronic computing device

In the elaborated system for fixing the deformation value fixed reflector – LED with a wide spectrum that covers the spectrum of visible light is fixed on the rubber band. The feasibility of using LEDs in the proposed system is that a sensor has several advantages that significantly distinguish it from others. Among them are high precision, minimalism in size, high speed performance and high resolution, lack of sensitivity to external influences (vibration, etc.) [7].

The line of photodiodes – photodetectors, which registers a falling signal on a photodiode, is located on the gymnastic wall. When performing the test task the rubber band, which is fixed on a student, stretched. However, due to its deformation reflector shifts, and thus the position of the reflected beam changes, which is fixed on the photodiodes line. The value of strain on rubber band corresponds to received signal from the respective photodiode in the line, on which the radiation is done. The signal is enhanced by the photodiode amplification using block that is based on operational amplifier. Then the signal channels wireless infrared comes to electronic computing device. Later using software infrastructure visual information on the outcome of the exercise is formed (flexibility index) in the clear for a teacher way.

Testing flexibility index of musculoskeletal system using electronic monitoring system eliminates the subjective specialist determination of compliance of all methodological test exercise conditions by students: position maintenance of the student's heel from the floor, and the probability of the maximum distance determination at which he is able to bend and keep a stable position for two seconds.

Monitoring the overall joint mobility using electronic monitoring system in which exercise testing flexibility index of the musculoskeletal system is that the student with fixed led adopted rubber band takes standardized starting position near gymnastic wall on which a line of photodetectors is placed. When performing the test task, the signal from the tape (LED) is registered by the line. The last fixes the process of the exercise and its outcome, which promptly blocks reinforcement from the operational amplifier. Then digital signal is transmitted to the electronic computing device via infrared channels. This signal is «electronically converted» by software and teacher receives a logical representation of the flexibility index on the screen [6].

It is known that the maximum effect of automation is achieved with an integrated approach where different information systems interact. This is the approach we use in our development of software infrastructure. The software is developed to automate the process of doing information registration, flexibility monitoring and automated processing of summary information at various stages of SMG physical education. The function of this software is to create an integrated database of flexibility test control, which establishes its replication, processing and interactive analysis using statistical and mathematical methods and algorithms. In this way, storage, update, adjust and use of large multidimensional array of information control during the course of physical training of SMG students is provided. Used for this interface provides high ergonomic properties of the electronic system and the possibility of efficient professionals with data test control. Further, their archiving is done in the infrastructure of the storage centers and data processing in personal text format for each student and is available for them.

The advantages offered by electronic flexibility monitoring system in comparison to existing assessment methods of the musculoskeletal system mobility is simplified and automated monitoring; the testing accuracy insurance; ease of use and compact device; monitoring urgency consists of receiving information (usually within 60 seconds) data time view and analysis results; lasting observations during the course of SMG physical training with updating processing results; high monitoring accuracy; automatization of the multiple tests results as an electronic protocol; rapid computation of complex results representation in digital or graphical form; user experience patterns of the results and their dynamics; test control results save in the database in hypertext arrays format that forms information space in SMG physical education to a new level and provides implementation-centered approach to control.

**Conclusions.** Resolving the insurance test control problem of students with health disabilities represents the theoretical and practical significance for improving methods of complex testing in SMG physical education.

Automated electronic measuring structure is developed through the modern electronic technology and software use, that is offered for the first time and has significant advantages over existing methods of monitoring and controlling the dynamics of the musculoskeletal system joint mobility development. System integration of technological means for test control of SMG students provides its metrological accuracy and timely receipt of orderly systematic information monitoring.

The main methodological result of the study is that the use of the proposed system allows to intensify the process of test control during the physical training of students. In turn, this allows to solve the current

monitoring issue for timely corrective training program according to the results. The latter is the overriding factor in improving the management of students physical education with health disabilities in the limited period of the course.

**Prospects for further developments** are seen in the other test samples reorganization through the advanced information technologies use for the strict controls organization in the area of SMG physical education.

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## **Organization of Volunteer Health-saving Activity of Future Specialists in Physical Education and Sport**

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### **Abstract:**

Processes of reforming of educational field of a country are defined by new priority courses of professional preparation of future specialists in physical education and sport. Special meaning has orientation of their professional preparation at activity aimed at health-saving, its component is volunteer activity. It is revealed various forms of health-saving volunteer activity in the sphere of physical culture and sport: one-time events or continued programs aimed at saving health of different sections of population by means of providing rehabilitation, health-improving, mental, emotional, everyday aid to those who need it. It was analyzed the peculiarities of curative work of students-volunteers: proposed for children of preschool and junior school age – health-improving events «Game festival for children with special needs», «Fun starts: be healthy»; children of middle and senior school age – psychological game «Friends over the phone: tell about your problems», round table «Modern understanding of healthy lifestyle», health-improving program «Summer recreational games»; for the youth – health-improving project «Summer gathers friends», sports event «Regional recreational games of Volyn region». It is established that about readiness of future specialists in physical education and sport to volunteer health-saving activity it is proved availability of abilities and skills of organization of healthy lifestyle and formation of health culture of a human, organization of activity aimed at health-saving. It was analyzed the results of questioning of 981 students of higher educational establishments that witness that about 50 % of students own skills of healthy lifestyle and formation of health culture of a person taking into account national, age, sex and individual peculiarities; 1/3 of students own skills of organization and realization of activity aimed at preventive measures and health-saving that reflects their readiness to planning and realization of volunteer health-saving activity. Attraction of students to new spheres and recreational forms of volunteer activity contributes to organization of their personal development, gaining of professional knowledge and skills, formation of active public position.

### **Key words:**

*volunteer activity, health-saving, specialists in physical education and sport.*

**Setting of the scientific problem and its meaning.** Modern life and high rate of development of society demand a great deal for human health. But a person and society don't pay enough attention to this problem. Innovative models of health-saving activity and specialists who are able to realize them in professional activity are required now. All these influence the process of reforming of educational field of a country, defining new priority courses of professional preparation of future specialists in physical education and sport. Special meaning has orientation of their professional preparation on health-saving activity.

Necessity of development and introduction of specific measures of educational character which are aimed at improvement of health of teenagers and the youth, actualization of educational abilities of volunteer movement that we reveal on the example of volunteer health-saving activity of students who obtain education in the field of physical education and sport are topical question nowadays. All these lead to the conclusion that the issue of organization of volunteer health-saving activity of future specialists in physical education and sport is rather topical, multi-aspect and requires new scientific developments and studies.

**Analysis of the latest studies on this problem.** Some aspects of volunteer activity are revealed in works of native scientists. In works of I. Zvyeryeva, H. Laktionova, S. Savchenko and S. Kharchenko it is grounded the role of volunteer work as a component of socio-pedagogical work with the youth. In researches of O. Bezpalko, R. Vaynola, N. Zaveryko, A. Kapska, N. Komarova it is revealed technologies of attraction and preparation of the youth to volunteer activity. In our studies, we observe volunteer health-saving activity as one of conditions of readiness of future specialists in physical rehabilitation to professional activity [1].

At the same time, in professional literature it is not enough reflected peculiarities of volunteer activity of future specialists in physical education and sport aimed at health-saving.

### **Objectives of the study:**

1. Reveal various forms of health-saving volunteer activity in the sphere of physical culture and sport; acquaint with peculiarities of recreational work of students-volunteers.

2. Examine availability of necessary abilities and skills for realization of volunteer health-saving activity of future specialists in physical education and sport.

**Methods of the study:** polling-diagnostic (questioning, interview); observational (direct and indirect observation, self-estimation); praxeometric (studying and generalization of pedagogical experience).

**Introduction of the main material and grounding of the obtained results of the study.** The main regulatory document that regulates volunteer activity in Ukraine is the Law «About volunteer activity» (2011) in which it is stated that «volunteer activity is voluntary, disinterested, socially oriented, nonprofit activity which is realized by volunteers and volunteer organizations by means of providing volunteer aid». In this document it is noted that one of the tasks of volunteer work is promotion of conducting of events of national and international meaning which are connected with organization of mass sports, cultural and other performance and public measures [3].

On the other hand we may speak about the forms of volunteer activity: volunteers may be organizers of events connected with strengthening or saving health of population. They may organize competitions or sports festivals [2]. Their main difference is sports-recreational and sports-mass course of activity that belong to direct professional competence of future specialists in physical education and sport.

Volunteer health-saving activity is a part independent and individual work of students which, in their turn, are an obligatory form of educational process of preparation of future specialists in physical education and sport. The result of such activity is increasing of the level of knowledge of students, formation of skills to think independently and make decisions which is important for formation of their readiness to realization of professional health-saving activity.

Along with that, as it is noted in the Law of Ukraine «About volunteer activity», volunteer has right to «include time of performing of volunteer activity into educational-production practice in case of its undergoing in the field that corresponds with the obtained specialty by agreement of an educational establishment» [3] which is a positive motivator for students for its realization.

Volunteer health-saving activity is a professionally meaningful stage in the system of practical preparation of a future specialist in physical education and sport as it is a primary link of approbation of his readiness to professionally-curative activity, promotes formation of the foundation of professional worldview.

The process of formation of settings, positive motivations and valuable orientations on mastering of professional activity aimed at health-saving goes before volunteer health-saving activity. In this case it is foreseen consecutive formation of two kinds of motivation among students:

a) personal motivation which we see as an individual motivation for saving and strengthening of own health of a student. This kind of motivation foresees the degree of subjective and personal formation of health culture among students (personal-valuable attitude to own health, change of relation to own health or, in another words, health as «personal meaning»);

b) professional motivation which is observed by us as formation of motives which stimulate a student to professional realization of health-saving activity.

Organization of educational work with students is aimed at increasing of students' motivation to realization of health-saving activity. Teachers should aim their efforts at conducting of organizational-educational events which popularize standards of healthy lifestyle among student youth, for example, showing personal example of the world known athletes; by means of attraction of specialists of regional Health Center and AIDS Fight, regional narcological clinic, graduates who work at health-rehabilitation institutions of a town of region, etc. Students should actively participate in trainings aimed at preparation of meaningful creation of healthy full family and birth of healthy children in the future.

Volunteer health-saving activity foresees participation of students in one-time events or continuous programs aimed at saving of different layers of population by means of providing of rehabilitation, curative, psychological, emotional, everyday aid to those who need it. Such kinds of activity increases internal and social activity of students, level of their knowledge on the problem of health-saving which influences on motivational, professional systems and system of life values of students.

Practice of volunteering in the field of health-saving allows increasing the level of readiness of future specialists in physical education and sport for future professional activity, as during volunteer activity the foundation of professionally meaningful qualities of personality of a future specialist, his attitude towards profession are established.

In Lutsk volunteer health-saving activity may be realized by students on the basis of Volyn educational-rehabilitation center, Volyn regional association of disabled children, Volyn regional association of children-

invalids «Special child», Volyn center of social rehabilitation of children-invalids, Lutsk preschool educational establishment of a compensative type for children with hearing problems, rehabilitation center of sanatorium of Dachne (Kivertsi district), Volyn regional youth Center of rehabilitation of invalids since childhood «Source of life».

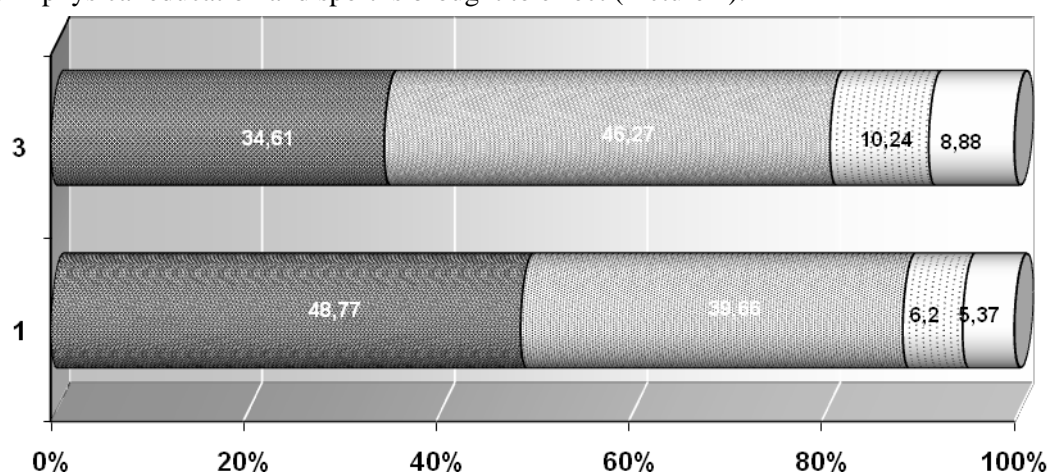
Students-volunteers may take part in organization and conducting recreational events and programs aimed at organization of meaningful rest, formation of healthy lifestyle and general rehabilitation of children and the youth with special needs or weak health.

Among them are the following: for children of preschool and junior school age – rehabilitation events «Game festival for children with special needs», «Fun starts: be healthy»; for children of middle and senior school age – psychological game «Friends over the phone: tell about your problems», round table «Modern understanding of healthy lifestyle», health-improving program «Summer recreational games»; for the youth – health-improving project «Summer gathers friends», sports event «Regional recreational games of Volyn region».

Students-volunteers may represent Volyn regional organization of Red Cross Society of Ukraine and take part in the initiated by the society health-improving events aimed at prophylaxis of AIDS, drug addiction, tuberculosis, healthy lifestyle propaganda among population of different age.

It is worth noticing that this kind of activity requires from students not only desire and free time, but also deep knowledge from the cycle of psychological-pedagogical, medico-biological and sports-recreational disciplines.

Readiness of future specialists in physical education and sport for volunteer health-saving activity is indicated by availability of abilities and skills of organization of healthy lifestyle and formation of health culture of a person, organization of health-saving activity. In order to identify such abilities and skills it was questioned 981 students of higher educational establishments of Ukraine in which preparation of future specialists in physical education and sport is brought to effect (Picture 1).



1 – mastering skills of organization of healthy lifestyle and formation of health culture of a person taking into account national, age, sex and individual peculiarities

2 – mastering skills of organization and realization of activity aimed at health prophylaxis and health-saving

**Picture 1.** Distribution of answers of the questioned students about their abilities and skills of organization of healthy lifestyle and formation of health culture of a person, organization of activity aimed at health-saving (%)

Answers of the questioned students let us state that about 48,77 % of students own skills of organization of healthy lifestyle and formation of health culture of a person taking into account national, age, sex and individual peculiarities; own skills insufficiently – 39,66 %, don't own skills – 6,2 %; hard to give an answer – 5,37 % of students.

Answers of the questioned students let us state that 34,61 % of them own skills of organization and realization of activity aimed at health prophylaxis and health-saving; own skills insufficiently – 46,27 %;

don't won – 10,24 %; it was hard to answer – 8,88% of students. So, great number of students (34,61 and 48,77 %) own abilities and skills of organization of healthy lifestyle and formation of health culture of a person, organization activity aimed at health-saving which is the basis while planning and realization of volunteer health-saving activity.

**Conclusions and perspectives of further studies.** Thus, involvement of students into new spheres and health-preserving forms of volunteer activity promotes organization of their personal development, mastering of professional abilities and skills, formation of active public position. As the practice of volunteering in the field of health-saving shows, the level of readiness of future specialists in physical education and sport for voluntary health-saving activity is close to a professional.

In the perspective it is planned to study the peculiarities of formation of motivational component of readiness of future specialists in physical education and sport for health-saving activity.

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# *Physical Education of Different Groups*

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## **Program of Applied Physical Preparation of Officers Mobilized from the Reserve**

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### **Abstract:**

In the article it is presented the program of applied physical preparation which, to our minds, is aimed at more effective professional activity of officers who were call up for military service after finishing the department of preparation of reserve officers. The objective of the work is to ground the program of applied physical preparation for officers during adaptation to military service. It was developed the author program with logical stage-by-stage structure of its realization which allows by means of physical preparation which are close by their dynamics to professional action to provide adaptation of officers call up for military service (after finishing the department of preparation of reserve officers). For today the author program is introduced into the system of physical preparation of 184 educational centers for the purpose of effectiveness control.

### **Key words:**

*officer, preparedness, load, physical preparation, recovery, adaptation.*

**Introduction.** Officers' professional conduct is difficult and has its own peculiarities. It encompasses absorbing a great deal of material, undertaking physical strain, working with personnel in difficult conditions. Due to this the officers are held to a higher standard in regard to professional military readiness [1]. The level of the difficulty of this problem lies in the lack of universal methodological approaches and technical means for learning different factors that influence the progress of professional conduct (work and rest schedules, physical activity, physical condition, individual physiological characteristics of the body, health condition and so on) [8].

The urgency of forming of military staff subdivisions requires the leadership of Ukrainian Armed Forces to fill the officer positions by utilizing reserve officers, and those who graduated from Higher Military Institutions. Today up to 40 % of the military personnel, who graduated from the department of reserve officers called up for military service in the various security forces [6; 7]. According to unit commanders, reserved officers' level of professional, physical, psychological readiness does not allow to fully perform their duties [10; 11], and is also significantly different from the level of readiness of graduates from higher military institutions, who entails additional time to adapt to military life and to improve their qualities necessary for effective professional conduct.

So, today, it is necessary to look for ways to improve physical and professional training of graduate officers, especially those who have been called up for military service after graduating from the department of reserve officers.

The research article is performed in accordance with the theme «Justification of criteria and indicators for determining the psychophysiological capabilities of military personal conducting military warfare», code «Opportunity» consolidated plan of research of Ukrainian Armed Forces Physical Education Office (0101U001767).

**Analysis of recent researches and publications.** The following scientific works of O. M. Olhovi (2005), V. M. Krasota (2007), S. V. Romanchuk (2012), S. S. Fedak (2015), Yu. V. Verenka (2015), I. L. Shliamar (2015) and others highlight the question of adaptation of troops to the conditions of professional conduct. They also study categories such as students of higher military institutions,

conscripts, the officers in the new climatic conditions, etc. [1 ; 2; 5; 8; 9; 10; 11]. Despite the considerable number of research in this field, there are still many unsolved problems concerning adaptation of officers to military service, who did not complete quality training and are taking up responsibilities which they never had any experience with.

Analysis of physical training guidance documents, individual training programs for officers, the content of these classes found that officers who were called up for military service after completing the program of the department of reserve officers are involved in the general group of officers who graduated from higher military educational institutions. The results of the final examinations show that this category of officers unable to master the subject of combat training and they need to develop specific programs. This fact also led to the choice of research topic, namely the justification of the study program applied physical training for this category of officers.

**The main purpose of the research** is to justify the program of applied physical training during adaptation of officers to military service.

**Materials and methods of the research.** To accomplish the main purpose of the research we have used general scientific methods: analysis, comparison, systematization and generalization. It was previously analyzed the organization of physical training concerning the adaption of military personnel to completing their duties in the Armed Forces of Ukraine and leading countries of the NATO, compared the results of physical fitness, indicators of physiological health of the officers at rest and after exercise, and the level of psychological qualities. After systematizing data, it was identified the need for justification of the applied physical training for officers who came to military service after the department of reserve officers. The investigation has proved the main elements of the author's program.

**Results of the research.** Our analysis shows that the level of physical fitness correlates with anthropometric indices, functional status, level of mental qualities, etc. It is therefore extremely important that the phenomenon of low physical fitness of man considered holistically, in conjunction with indicators that reflect different levels of personality functioning: morpho – functional, psychological and behavioral. Perhaps only in this case, the development of author's program is possible.

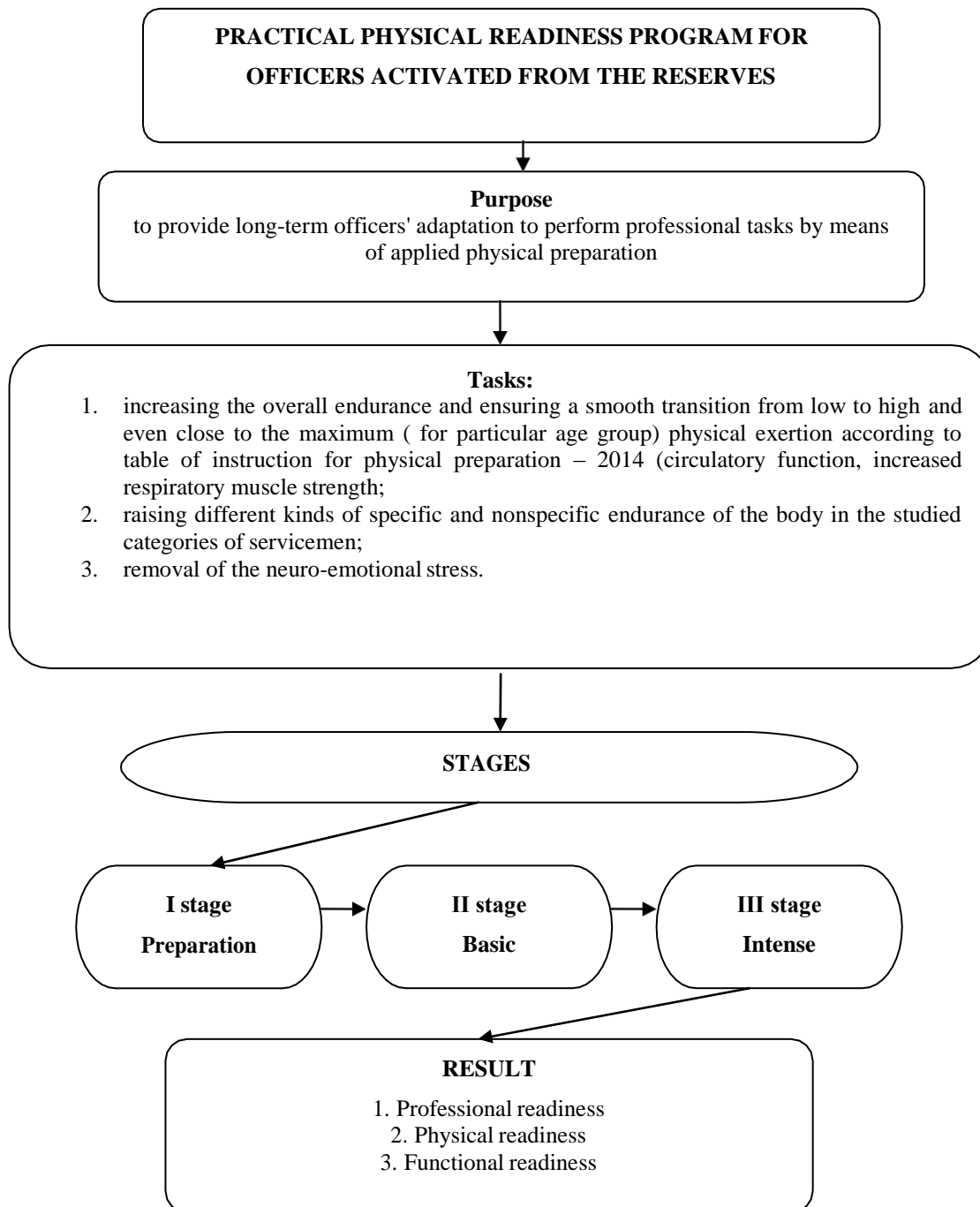
The practice of physical training on military installations shows that there is a certain percentage of officers who have not finished higher military education, it is the officers called up from the reserve. In this case, there are two approaches: the first – involves completing a certain group of these soldiers, and the second – includes guidelines for leaders to provide periods of instruction for officers called up from the reserve which are engaged in the general group. Increasing of physical fitness includes: rest schedule, the right combination of physical fitness which is directed at optimizing of the operational readiness of military personnel.

Therefore, the choice of physical training in the period of adaptation to military service for officers involves the following tasks:

- increasing the overall endurance and ensuring a smooth transition from low to high and even close to the maximum (for particular age group) physical exertion according to the table of instruction for physical preparation – 2014 circulatory function, increased respiratory muscle strength;
- raising different kinds of specific and nonspecific endurance of the body in the studied categories of servicemen;
- removal of the neuro-emotional stress.

Based on the objectives from the author's program it is appropriate and logical to pursue the phased implementation of its structure and formation. The first stage is a preparing the body of the service member to accept further physical exertion with overwhelming focus on exercises to improve aerobic capacity. The second stage is an enhancing the function of the body by increasing the amount of stress applied, which should positively affect physical performance and a reserve military background adaptation to physical stress, similar to the level of stress specific to the profession. The third stage is the stabilization of the volume and the increase of intensity of stress, contributing to a high level of physical fitness (Fig. 1).

One of the important features of the author's program is the use of different means for physical training, which causes interest among service members, and also a creation of a positive emotional growth. These means of physical training should closely simulate the actions in their respective field of work. At the same time physical training should be adequate to the level of physical fitness of soldiers, not overloading them, promoting normalization or improvement of body functions. Periods of instruction need to be held utilizing the principle of group individualization.



**Fig. 1.** Chart of author's program

Its essence lies in the fact that the preparatory and final parts are the same for everyone, but the basic training is conducted in groups of soldiers that have approximately the same level of physical fitness. Thus, the exercise is presented and regulated based on the fact that the value of physical activity can be shown by soldiers in accordance with the table of instruction for physical preparation – 2014 ( for all 7-aged groups).

The main forms of physical training, which introduced author's program are: educational and training sessions, and moral support activities. These forms of physical training organized and conducted on the basis of the overall health of military personnel. The duration and intensity of the exercises, their quantity, that determines the total physical workload plans based on age and type of physical activity and functional capacity of the organism. In that case, it is necessary to follow the principle of gradual increase in physical activity. Training sessions are held twice in the first week, lasting 50 minutes each. The basic exercises included in the following periods of instruction are: walking, jogging, floor exercise, sports and outdoor games, exercises with weights, exercises on gymnastic apparatus. All classes are held in accordance with the complex method (Table 1).

Table 1

**The main elements of author's program**

	I stage	II stage	III stage
Task of the stage	preparing the body of the service member to accept further physical exertion with overwhelming focus on exercise to improve aerobic capacity	enhancing the function of the body by increasing the amount of stress applied, which should positively affect physical performance and a reserve military background adaptation to physical stress, similar in size to the level of stress specific to the profession	the stabilization of the volume and the increase of intensity of stress, contributing to a high level of physical fitness
Duration	1 <sup>st</sup> week	2 <sup>nd</sup> -14 <sup>th</sup> weeks	15 <sup>th</sup> -52 <sup>nd</sup> weeks
Number of sessions per week (hours)	2 physical training sessions each lasting 2 hours 1 physical training session (MSA) – 2 hours.	2 physical training sessions each lasting 2 hours 1 physical training session (MSA) – 2 hours.	2 physical training sessions each lasting 2 hours 1 physical training session (MSA) – 2 hours.
Purpose	Training sessions are held twice in the first week, lasting 50 minutes each. The basic exercises that are included in the following periods of instruction are: walking, jogging, floor exercise, sports and outdoor games, exercises with weights, exercises on gymnastic apparatus. All classes are held in accordance with the complex method.	Training sessions are held twice in the first week, lasting 50 minutes each. The basic exercises that are included in the following periods of instruction are: walking, jogging, floor exercise, sports and outdoor games, exercises with weights, exercises on gymnastic apparatus. All classes are held in accordance with the complex method in military uniform with proper gear	Exercises closely simulate the action in professional work environment combined with exercises of discipline in combat training.
Method of organisation	complex	complex	circular
Physical workload	up to 130 bpm	up to 150 bpm	up to 180 bpm

The structure and content of classes depends on the operational readiness of military personnel. In the initial period it is recommended the training sessions should be conducted as follows: general developmental exercises in motion and in place for 10–15 minutes, strength exercises on the bar and parallel bars for 5–7 minutes, running 5 minutes, two-way game of volleyball 30–40 minutes. In order to adapt one's body to physical exercise, it is advisable in the early sessions to use low and medium difficulty exercises with a gradual approach to high level of difficulty, while taking into account the age and physical fitness standards according to the table of instruction for physical preparation – 2014. General developing exercises are performed with the same number of repetitions and with the equal amount of rest periods between them, over three sessions. The pace of the run and the distance is determined by the following procedure: at the first session military members are offered the optimal pace for them to overcome the distance of 1 km. At the end of the run, the speed of the military personnel and the average score of the group is calculated and is used as a training standard for the first three sessions. The unnecessary acceleration during the run can result in military personnel stopping or losing their pace during the run that is why the run is conducted with at a constant speed. Especially important during the run of the investigated contingent is the breathing. In order to run properly, you must correctly and rhythmically breathe. In order to run in an optimal pace the uniformity of breathing and its regulation is very important.

If you periodically control heart beat it would give an opportunity to calculate the exact pulse pressure at the given run speed. Practical experience shows that during first sessions the most difficult exercises are the ones that target coordination and the muscles of the whole body. While conducting exercises in order to improve coordination it is necessary to perform the exercises slow and with the supervisor.

During the exercises targeting the muscles of the whole body it is important to increase rest breaks between movements and repetitions. Conducting the same exercise for the first three sessions provides a stable adaptation period for the service member to the proposed work load.

The most prominent feature of the successful adaptation is confidence and the precision in movements and relatively quick recovery of the heart rate during the rest pause. In addition, after the third lesson all military personnel subjectively marks their improvement in operational readiness and efficiency. Starting after the fourth session, physical activity increases due to additional exercises with gear and longer duration of the run at a set pace, which is determined again by the method described above and is standard to stabilize the pulse for about 12–14 sessions.

The method for increasing the work load in this case is a standard second – nature. Allowable target zone for intensity in the first week for the first group is heart beat – 130 bpm, run 1000 meters in 4.30–5.00 min. Intensity level 2<sup>nd</sup>–14<sup>th</sup> weeks for first group is working heart beat 130–135 bpm; acceptable – 150 bpm. During the initial sessions of physical training for officers rest intervals are utilized, providing a full recovery before the start of the next exercise. It should be emphasized that the number of repetitions per given exercise intensity, duration and magnitude of the rest intervals effects the direction of changes in the body. This should take into account the required number of repetitions.

**Conclusions.** As a result of our research we presented author's vision of the program study applied in physical training of officers who were mobilized from the reserve (called up for military service after completing the program of the department of reserve officers) with a low level of physical fitness. Author's program with a phased and logical structure should allow its implementation by means of physical training, simulated by its dynamic professional actions in order to provide a quick and long-term adaptation of officers to the conditions of military service. Today author's program is implemented into the system of 184 physical fitness training centers in order to verify its effectiveness.

**The directions for the future research** caused by introducing the program of physical training for officers who are called up for military service after completing the program from the department of reserve officers. The main purpose is to adapt them to professional work and to military service conditions as soon as possible.

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## Scientific and Methodological Bases of Adolescents' Physical Activity in Extracurricular Activity

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### Abstract:

Management of adolescents' physical activity in extracurricular activity provides a set of goals, tasks, functions, principles, educational learning environments and adaptive training programs and performance criteria of health and sports consequences. Considering the motivational value factors and morphological-functional characteristics of adolescents various thrust physical activity was developed. General physical orientation of physical activity included the system of exercises aimed at comprehensive approach combining various load for the development of physical skills and improving the state of health. Physical activity of recreation and health orientation included the use of physical exercises, games, entertainment, and natural and hygienic factors for recreation, improve mental and physical abilities, recovery and health promotion. Physical activity of correctional orientation provided the prevention and correction of students' posture. Physical activity of sport orientation involves the preparation of athletes- switches and above all provides activities of children and youth in sport schools.

### Key words:

*physical activity, extracurricular activities, adolescents, direction of motor activity.*

**Formulation of scientific problem and its significance. Analysis of problem research.** Results of research [2; 4; 5; 7; 8] showed that the level of physical fitness and health status of schoolchildren depend on the lifestyle that characterizes the condition and characteristics of daily life. Lifestyle is covering different areas: work, education, life, social life, culture, behavior and their spiritual value s. One of the most important indicators of lifestyle is the amount of physical activity that combines a variety of motor actions performed in daily life, training and studying activities [6; 9; 10]. In this regard, the scientific and methodological literature [11] uses the term «active lifestyle» that makes possible to cope with the physiological demands of everyday life without additional fatigue. This term includes active rest, getting the most satisfaction; overcome extreme physical effort under extreme situations and more stress with which one is confronted in life; eliminate certain organism dysfunctions; control weight if there is threat of overweight, and slow down the aging process of organism; quickly restore oneself.

Motor activity is not implemented in terms of achieving a clearly defined goal, but for respect of the activities which create for a person opportunity to demonstrate his physical, mental and creative opportunities. The results of these activities occur in health promotion, disease prevention and retroaction, correction of body and weight structure [1; 3; 6; 9].

In the process of human vital activity physical activity is defined by the system of values on such components as socio-cultural (personal values that are important to society), individual and psychological (values resulting from physical activity are the benchmark of a healthy lifestyle and good health).

Effectiveness of physical activity is determined by the influence on such areas of human activity:

– cognitive – through understanding the role and importance of harmonious development of a man and satisfaction of biological needs to move;

- emotional – through creating positive attitude to physical activity and its significance in the system of human values;
- physical (psychomotor) – through formation of motor skills, physical development, mental and physical qualities, preservation and promotion of health.

Implementing physical activity, a person satisfies a number of vital needs [11], namely:

- rest and relaxation that can be satisfied by changing variety of activities;
- psycho and physical activity by satisfying which a man compensates natural hypodynamics;
- changing the way of life or environment which is extremely important in urban society;
- emotional pleasure, pleasantness that produces positive emotions;
- reduction of self-control level over their actions during relaxation, recreation;
- inhibition of aggression which is possible in the course of physical activity that promotes positive motivation and makes possible to conquer negative emotions;
- meeting ambitions (such as need for prestige, recognition, power, etc.) which are by their natural form the driving force;
- cognition (such as the need for acquisition, preservation and transferring of information);
- self-improvement and self-realization, which cannot always be met in professional, educational, social and other activities and do not create opportunities for harmonic personal development;
- satisfaction of ethical requirements is achieved through direct contact with nature (natural beauty), cultural environment;
- social (need in belonging to a group, social contacts).

From the medical and biological point of view, physical activity is the main stimulator of virtually all body functions, guarantee of optimal physical improvement of a person. Physical activity contributes to development of the musculoskeletal system, central nervous system and internal organs, enhance health.

**Research objectives** are scientifically and methodically to justify management model of the motor activity of teenagers in extracurricular activities.

**The main material and justification of the results of the study.** Considering scientific works in the field of medical and biological bases of physical education, psychology, pedagogy, theory and methodology of physical education, a management model of physical activity of adolescents was developed (Fig. 1).

Objective of physical activity is to form a sufficient level of adolescent physical activity that will provide optimal functional activity.

Sufficient driving mode gives desired level of responses of a child to the influence of external and internal environments factors.

Implementation of this objective was carried out by using the solution of the main and auxiliary **tasks**: mastering the system of knowledge and skills in the field of physical activity; formation of a positive motivational attitude to physical exercise; implementation of differentiated, depending on the characteristics of adolescents, physical activity programs.

Auxiliary tasks are the formation of interest to regular exercise; forming beliefs in the necessity of physical activity; mastering modern methods of physical activity; formation of skills of motor activity, skills of self-esteem and self-control.

Only a rational system of (optimal) motor mode can overcome the negative effects caused by the decline in physical activity. Individually for normal development and functioning of the body, it is required to maintain the health of each person at a certain range of physical activity. Minimum level allows you to maintain functional status of the human body; maximum limits lead to fatigue, a sharp decrease in efficiency. Optimal motor mode is understood as regulated on the intensity of exercise that fully satisfies biological need to move, meets functionality of a body, takes into account the specific specialty and professional activities and thus contributes to education of healthy lifestyles and health promotion [6; 10; 11].

To develop the optimum parameters of physical activity we need full information about the interests and motivation of adolescents to physical activity, peculiarities of physical condition (physical development, physical readiness, functionality, health). Basing on these figures we can identify effective types of physical activity, develop options of physical activity normalization.



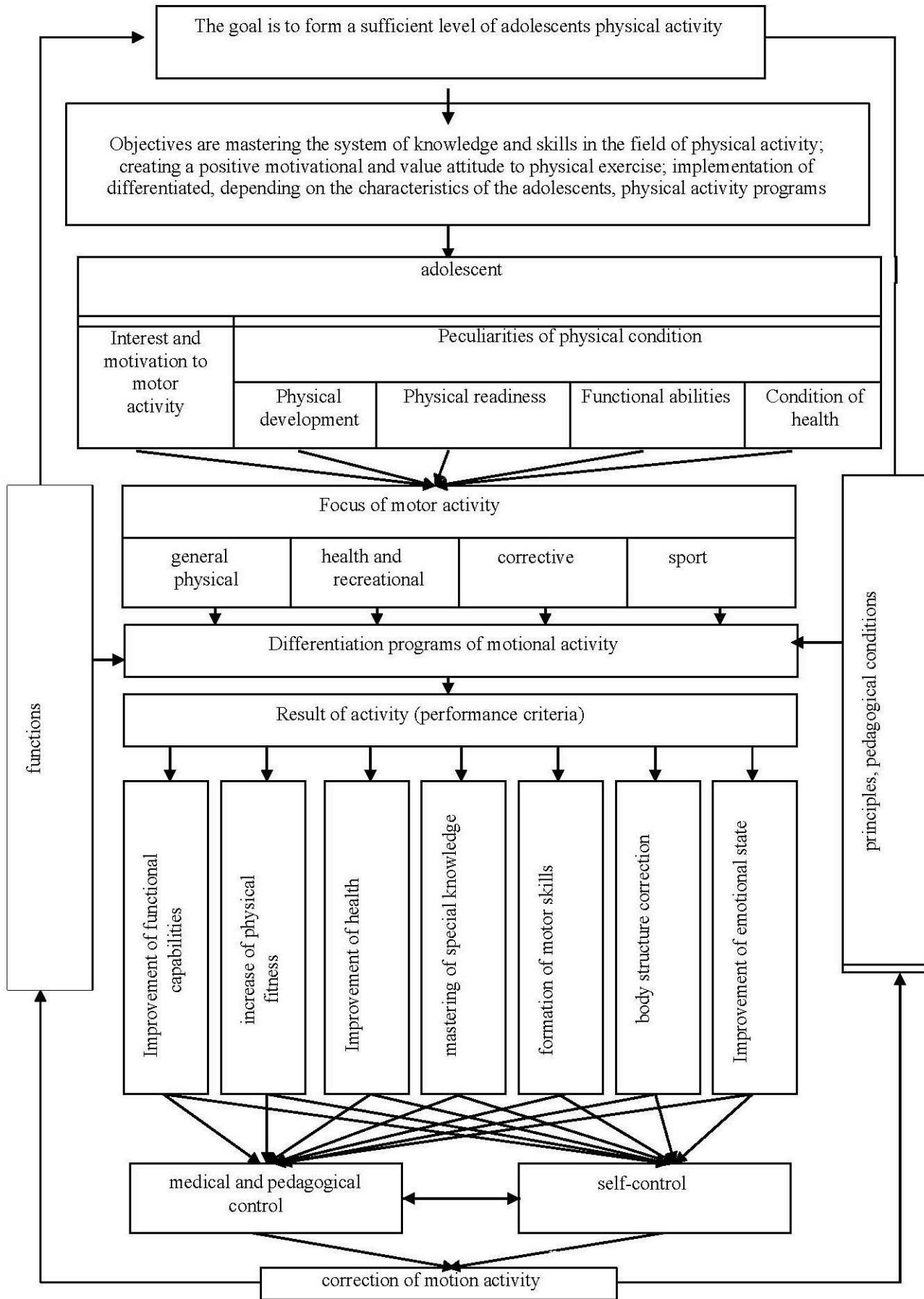


Fig. 1. Model of management of adolescent physical activity

Basing on the research results of value and motivational factors and morphological characteristics of adolescents various focus of motor activity (total physical, recreational and wellness, sports and correctional) was developed (Fig. 2).

General physical orientation of physical activity included the system of physical exercises, aimed at an integrated approach, combining a variety of loads on agility, flexibility, strength, speed and endurance. Because the content of physical education in the all educational institutions is governed by the state program, the experimental technique exercises included gymnastics, athletics, sports, cross training, swimming. Along with the formation of motor skills, much attention paid to the development of physical qualities, the level of which largely determines the health of schoolchildren. The main purpose of motor activity of the general physical orientation was in the content of the school curriculum, development of the leading and lagging physical qualities, improving defenses and resistance to adverse environmental factors. Such arrangement of work makes possible to eliminate the deficit of physical activity, give impetus to improving of the health preservation motivation by means of physical training, development of physical qualities.

Motor activity of recreational and health focus included the use of physical exercises, games, entertainment, as well as natural and hygienic factors for recreation, change of activity, restoring own efforts, improvement of mental and physical abilities, restoration and promotion of health. During physical exercise, there was the gradual increase of functional opportunities of adolescents. Particular attention paid to the cardiovascular and respiratory systems. Exercises of health and medical physical culture were widely used. The attention paid to the formation of adolescent hygiene and self-control skills. Contents of exercises was directed at students interested in physical exercise, optimistic mood in the classroom was create, which greatly increased the effectiveness of physical activity. Implementation of health and recreational physical activity contributed to the expansion of children's outlook through the formation of ideas about healthy lifestyles, physical culture and sports, creating a stable motivation to maintain and improve health, formation knowledge about healthy lifestyles and positive effects of exercise on the body of the child; promote health, improve physical performance.

Physical activity of corrective focus provided prevention and correction of students' fault in posture. Primary education of good posture condition is balanced development children of all muscles of children, especially the muscles that hold the spine, considering the peculiarities of physical development, the impact of exercise on different biomechanical spatial orientation of organization of the body. A great deal of physical exercises aimed at developing skills of static correct posture, ensuring optimal functioning of the musculoskeletal system. To do this properly the skills formed to keep body correctly, to perform, lying on the back, side and chest on a bench, balancing exercises with load on the head.

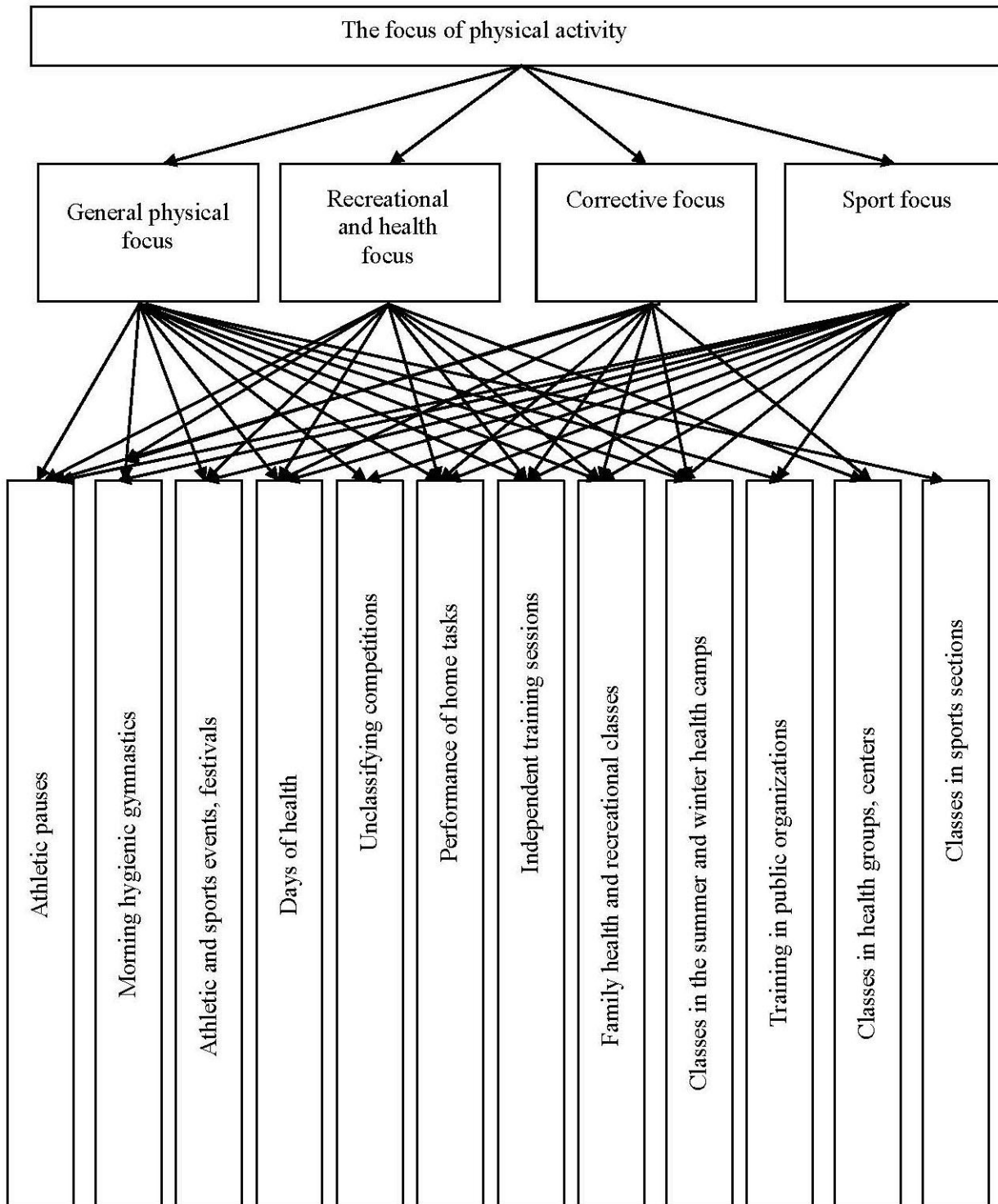
When developing complex of exercises for prevention and correction of posture the following factors were taken into account:

- selection of exercises was carried out according to age, gender of children and heterochrony of structures of the musculoskeletal system development;
  - regularity and consistency of physical exercises;
  - precise dosage of physical exercise according to physical condition of adolescents;
  - formation of «muscle corset» of teenagers (development of force);
  - increasing the range of motion in the joints (flexible development);
- formation of memory of correct spatial organization of the body.

Corrective orientation of physical activity promotes skills of hygiene, methods of use of psychohygienic and physical health, tempering and corrective tools in the process of implementation with optimal amount of stress.

Physical activity and sports orientation involves preparation of athletes of different levels and is provided by primarily activities of youth sports schools. Precondition of this work is taking into account the system of knowledge about long-term training of an athlete. This organization provides availability of basic training in a sports school to any student, progressive evaluating the effectiveness of training results.

Prior tasks of initial sports training of teenagers are building motivation to physical activity, laying the foundations motor preparedness, development of systematic training. Therefore, the system of sports competitions of students primarily solves the problem of diversified student evaluation in terms of his genetic, physical, technical and personal predisposition to a particular sport. The further sports training of adolescents is more profound, so that they form a system of knowledge, skills, a certain level of physical fitness and functional readiness, providing the highest level of readiness for sports achievements.



**Fig. 2.** Differentiation of extracurricular forms of physical education of adolescents according to the course of their motor activity.

**Conclusions and further research recommendations.** Model of management of adolescents' physical activity in extracurricular activity provides a set of goals, objectives, functions, principles pedagogical environments and adaptive training programs and performance criteria of health and sports results. Considering motivational value factors and morphological functional characteristics of adolescents, we have developed motor activity of various focuses. General physical orientation of physical activity included the system of physical exercises aimed at an integrated approach, combining various load for development of

physical qualities and improving health. Motor activity of recreational and health focus included the use of physical exercises, games, entertainment, as well as natural and hygienic factors for recreation, improving mental and physical abilities, restore, and promote health. Physical activity of correction direction provided prevention and correction of students' posture disorders. Physical activity of sports orientation provides training of sportsmen of different level, above all, by the activities of youth sports schools.

In the future the effective means to attract teenagers to the various forms and contents of physical extracurricular activity should be developed.

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## Ukrainian National kinds of fight in the System of Physical Education

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### Abstract:

The article deals with questions of national kinds of fight in the system of physical education of children and students. Availability of national kinds of fight is characteristic to every nation. From ancient times fight was used as some kind of physical training of cossacks-warriors for conducting of combat operations in close combat. By now, in many countries ancient traditions of national kinds of fight were saved and methods of trainings that are used by specialists in other kinds of fights. People keep their identity due to the peculiarities of traditional culture. Ukrainian national kinds of fight are preserved in the modern system of physical education and sport as special and various exercises, as well as the range of developmental and outdoor games. Broad use of elements of Ukrainian fight in the national system of physical education and sports can give a new impetus to popularizing types of martial arts and also diversity of training process in other sports.

### Key words:

*national fight, hand-to-hand fight «Spas», physical education.*

**Problem establishment.** National and cultural identification is an essential element of civil-patriotic education and preservation of national identity. Today a variety of national types of wrestling is actively revived and developed in Ukraine. Some of them have already gained popularity and thousands of children practice them. Others are at the initial stage of their development, gradually gaining the attention of their supporters. Thus, today the national types of wrestling should be an important component of formation and development of physical culture and sports in Ukraine.

Today, with the aim of improving the system of mass physical culture and sports in the state it makes sense to implement the national kinds of wrestling, which have old traditions and take into account geographical, national and cultural peculiarities of regions. Especially this issue is popularized at the present time when education has opened great prospects for the development of physical culture, based on the national-regional component. It is necessary to consider regional features and national traditions that affect health and physical development, physical activity of children and adolescents, which allows to retain the traditions and culture of people [2; 6].

It is known that introducing the student to the culture of their people is made through the process of education and physical culture, respectively through physical education. The process of physical education has an active effect not only on physical abilities, but primarily on feelings and consciousness, the psyche and intellect, which in turn ensures the formation of stable socio-psychological and patriotic qualities. [3; 4; 9].

The analysis of researches and publications. The life of Ukrainians is inextricably linked to their culture, their values and traditions. It develops continuously, and also will continue its development under the influence of high and new technologies, which will have a big impact on different aspects of the cultural life of people. But we need to teach our generation to preserve and continue our cultural heritage and develop it. The key to the development of people is the preservation of traditions. Tradition is experience, customs, views, tastes, norms of behaviour, which have been developed historically and are inherited on from generation to generation.

The history of martial arts of Ukraine is rooted in the depths of millennia. The Ukrainian people have defended their land from enemies. In turn, this forced our ancestors to improve their body and sharpen their skills in various competitions. It is important to stress that when talking about martial arts, it refers to two related to each other national kinds of wrestling – «Spas» and «Boyovyiy Hopak». For this reason there are good reasons to include these national types of wrestling to the origins of all existing martial arts in Ukraine that preserved the basic foundation of the modern combat experience of mankind [8].

Wrestling has developed at the time of Cossacks in the culture of Ukrainians. In addition to fighting with fists, Cossacks practiced boyovyiy (combat) hopak, spas, wrestling on belts, sticks, cross-on-cross, etc. [1; 5]. Folk remedies of physical education as a manifestation of folk art are very close and understandable to all. Therefore, the use of national kinds of wrestling, games and dances in physical education enhances the culture of the students. In our country wrestling has got a considerable development thanks to the work of

supporters of the national martial arts of the Ukrainian. Traditional martial arts are designed to return the physical culture of Ukraine to the national roots.

**Objective of the study.** The aim of the study is to describe the national struggle of the Ukrainian meleé «Savior» and its place in the system of physical education of children and students.

**Materials and research methods** – theoretical analysis and generalization of literary sources.

**The main material of the study.** Every nation has its martial culture, the tradition, as the peoples of the East and the West. Every nation is repeatedly passed through the test of war, being in a state of «survival». During those days battle morals were formed those to bring up not just good, but a true warrior with a pure soul and a sincere heart that was able to defend their homeland at any moment. Martial arts and traditions and beliefs have been forbidden and persecuted until recently. Ukrainians were taught to survive in any extreme conditions. This meant that our people were not afraid of any famine, nor war, nor the repression. Folk tradition passed from mouth to mouth, from father to son, from grandfather to grandson. Ukrainian traditional national martial arts are taught not only to wave fists and feet, but above all to temper the spirit of a warrior. It is not surprising that the study and promotion of martial arts enthusiasts became possible only after the proclamation of Independence of Ukraine. Ukrainian national types of wrestling has survived in modern system of physical education and sport as a variety of special and developing exercises, as well as educational and outdoor games. The widespread use of elements of the Ukrainian struggle in the national system of physical education and sports, could give a new impetus to the promotion of martial arts, as well as to diversify the training process of other sports [7].

Since ancient times a variety of types of struggle were distributed in Ukraine. Fight as one of the effective means of physical education has many varieties. The tradition of «Spas» is designed to return the system of patriotic education in Ukraine to the national roots. All the preparation at school of martial arts «Spas» is oriented on the formation of the youth certain advantages, based on history, in the positivism of the Ukrainian national and through this on love to Ukraine, people, Ukrainian national culture.

Training sessions on the Ukrainian close-handed «Spas» are purely of national and Patriotic character as the exercises are accompanied with historical stories of the skills and achievements of the Ukrainian Cossacks. The main task of Ukrainian national martial arts is to training Cossack warriors and athletes of high qualification of native Ukrainian national martial Custom of «Spas», the persistent patriots and defenders of Ukraine [9; 10].

The main features and differentiate «Spas» as a sport are:

- widespread use of boxing elements, in particular elbows, feet and elements of the struggle;
- permission to use suffocating and painful attacks;
- duration of fight – up to 3 minutes;
- high intensity, emotional and technical during the fight;
- large playground, and therefore more opportunity for maneuvers;
- stimulation of the judging system, evaluation of technically complex elements such as: kicks while in jump with a turn around of 360 degrees, capture the foot shell and the head of the enemy in the jump, high-amplitude jumps;
- lack of capacity to implement the capture of the enemy, using the fingers;
- permission for the fight with music;
- obligatory application in clothing the elements of Ukrainian national costume;
- wide application of the elements of the Cossack military ritual in training and competitive practice.

Thus, the «Spas» as a sport, is speed-strength, difficult-coordination and acyclic in nature. Conditions of carrying out of competition of the match call for serious tactical training, the ability to apply all the positive aspects of self-preparedness, identify the weaknesses in the enemy's defenses, quickly analyze his physical and technical capabilities and to effectively resist the unfamiliar manner of struggle.

Special attention at the training of wrestlers in «Spas» should be devoted to the ability to harmoniously combine the elements of striking techniques and wrestling techniques, the ability to switch quickly from one mode of motion on another, as well as the ability to fight in adverse conditions. This applies particularly to the preparation of athletes on the primary level, because at the initial stage with no experience of competition, only when the basis are learnt, a fighter often gets into situations that cannot be addressed during the preparation for a competition.

Such features of the Ukrainian close-handed «Spas» involve extensive use in the training of young athletes special gaming learning tools that can model a variety of typical and atypical situations that arise during the conduct of the match, to find proper and sometimes creative solutions to maintain and develop the

athlete's interest in competitive practice. National types of wrestling are a sustainable element of traditional culture and perform a fundamentally important function in society and in the life of each of its members. Today, the national types of wrestling should be an important component of formation and development of physical culture and sports in Ukraine.

**Conclusions.** Ukrainian melee «Spas»:

- contributes to the development of Ukrainian culture;
- preserves national traditions;
- contributes to the patriotic education of children and students, which today is one of the main tasks of modern society.

**Prospects for future research** are to develop a pilot training program of physical education with elements of Ukrainian melee «Spas» for graduates of bachelor degree of all areas of training of Zaporizhzhya national University.

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## **Reorganization of the System of Physical Education of Students of High School: Problems and Perspectives**

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### **Abstract:**

In the article it is described the perspective directions of reorganization of the system of physical education in modern conditions. The content of modern organizational, psychological and pedagogical conditions of physical improvement of students is grounded. The condition and prospects of development of physical education system in higher educational establishments are analyzed; it is defined the priorities and principles of physical education system in terms of reorganization. Organizational technology of physical education of student youth which is a special example of the using of content, organizational aspects and physical education activities with specific training and specialty features, is presented. The methodology of physical improvement of students, which contributes to their prevention initiative, ability to rehabilitation and recreational preferences about their health care, is outlined. The communicative environment of physical education that encourages students to retrospective information retrieval, systematization, analysis and synthesis, accumulation of personal information bank for the preservation of their health is presented.

### **Key words:**

*physical education, students, organizational psychological and pedagogical conditions, health, principles, priorities.*

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**Introduction.** During the last decade there was an alarming trend of deterioration in health and physical status of the population of Ukraine. This is not only due to the economic and environmental problems, but also due to underestimation of the role of physical education in the formation of healthy lifestyle of students in society and in higher education institutions.

Physical education is one of the most important components of the formation of future active citizens of independent Ukraine during their education. According to the historical, international and national experience, physical education and sport in higher school are an integral part of formation of general and professional culture of personality in accordance with time. It should provide a healthy lifestyle, improve efficiency, maintain and strengthen health, promote continuation of active human longevity [4; 5].

In our opinion, there is a problem situation in higher school. The problem is in the contradiction between the level of social demands and efficiency of physical education concerning formation of students healthy lifestyle. Obviously, the content of now available curriculum [10] and the whole system of physical education are exhausted and needed to be updated through the introduction of modern, integrative forms of this process organization.

An addition to the letter of MES of Ukraine from 25.09.2015 №1 / 9-454 contained recommendations and suggested basic models of organization of physical education in higher education institutions. From the contents of this document it is clear that the heads of universities have the opportunity to choose forms of sports and recreational activities of students [1]. The absence of common approaches to the organization of physical education system of students gives the opportunity to choose forms of sports and recreational activities. That helped to activate the processes of finding the most optimal ways of involving young people to healthy lifestyle in higher school.

The scientific researches of V. Kremen [3], M. Styopka [3], J. Bolyubash [3], B. Shynkaruk [3], V. Pasechnik [8], etc. were devoted to problems of modernization of modern education; means of improving educational activities and psycho-pedagogical influences were disclosed in the publications of J. Beha [2], S. Omelchenko [7], S. Kuryland [9], R. Hmelyuk [9], A. Semenov [9]; issues of health preservation based on the theory and methodology of physical education were studied in the works of M. Noska [6], A. Dubogay [4], N. Zavydivskoyi [5], M. Khoroshukha [11] and others. The problem of improving of the system of physical education of students is the subject of numerous studies. However, the versatility of the system of physical education, on the one hand and the reorganization of the system on the other, determine necessity of finding innovative organizational approaches to create health of oriented environment in higher school.



**The aim of investigation** is to justify the status and prospects of development of physical education system in higher education institutions. The objectives of our research are to analyze the content of modern organizational psychological and pedagogical conditions of physical improvement of students; prioritize the principles of physical education in terms of reorganization; outline the methodology of physical improvement of students, which contributes to formation of their prevention initiative, rehabilitation capacity and recreational preferences concerning their health.

**Materials and methods.** The research was conducted during 2014–2015 years at the SHEI «UB» Lviv Educational and Scientific Institute. To achieve the objectives, the following methods were used: theoretical analysis and synthesis of philosophical, psychological and educational, educational and methodological, scientific literature, regulatory legal documents in the field of education and healthcare, Internet resources, pedagogical observation.

**Research results. Discussion.** An important part of the system of physical education of students is the introduction to the everyday life of scientifically based recommendations concerning a rational mode of work, rest, nutrition, physical activity in order to develop healthy lifestyles. For today we observe increased risk of developing of cardiovascular diseases, deterioration of functional reserves of the body, reduction of physical efficiency and status, deterioration of morphological status according to the reduction of the physical state [4].

In terms of the present circumstances there is a change of target orientation of physical education, which requires the determination of interests and needs in the sphere of corporal and spiritual development of students. The priority of wellness orientation professional qualification formation of personality determines the applied significance of physical culture and sports and require the systematic study of the intentions and behavior of students and teachers in order to optimize the process of formation of a healthy lifestyle. It is clear that the main purpose of sports and recreation activities of students is the appropriate level of physical health through physical activity and physical status.

The sense of modern physical education is in a systemic reproduction of optimal conditions for development among young people a morphogenetic foundation to support a viable «form» gained in practice through appropriate training and experience functional qualities among adults. The ultimate goal of modern physical education is to achieve the formation of the skills for a healthy lifestyle among students. It is necessary to solve two interrelated tasks.

The first one is the necessity to get rid of the negative consequences of atrophy of the spiritual foundations of industrial civilization in the field of education. This means students refusal of self - realization according to the standards and norms of technocratic thinking, of formation of human function, perfectly adapted to the technology of conveyor production.

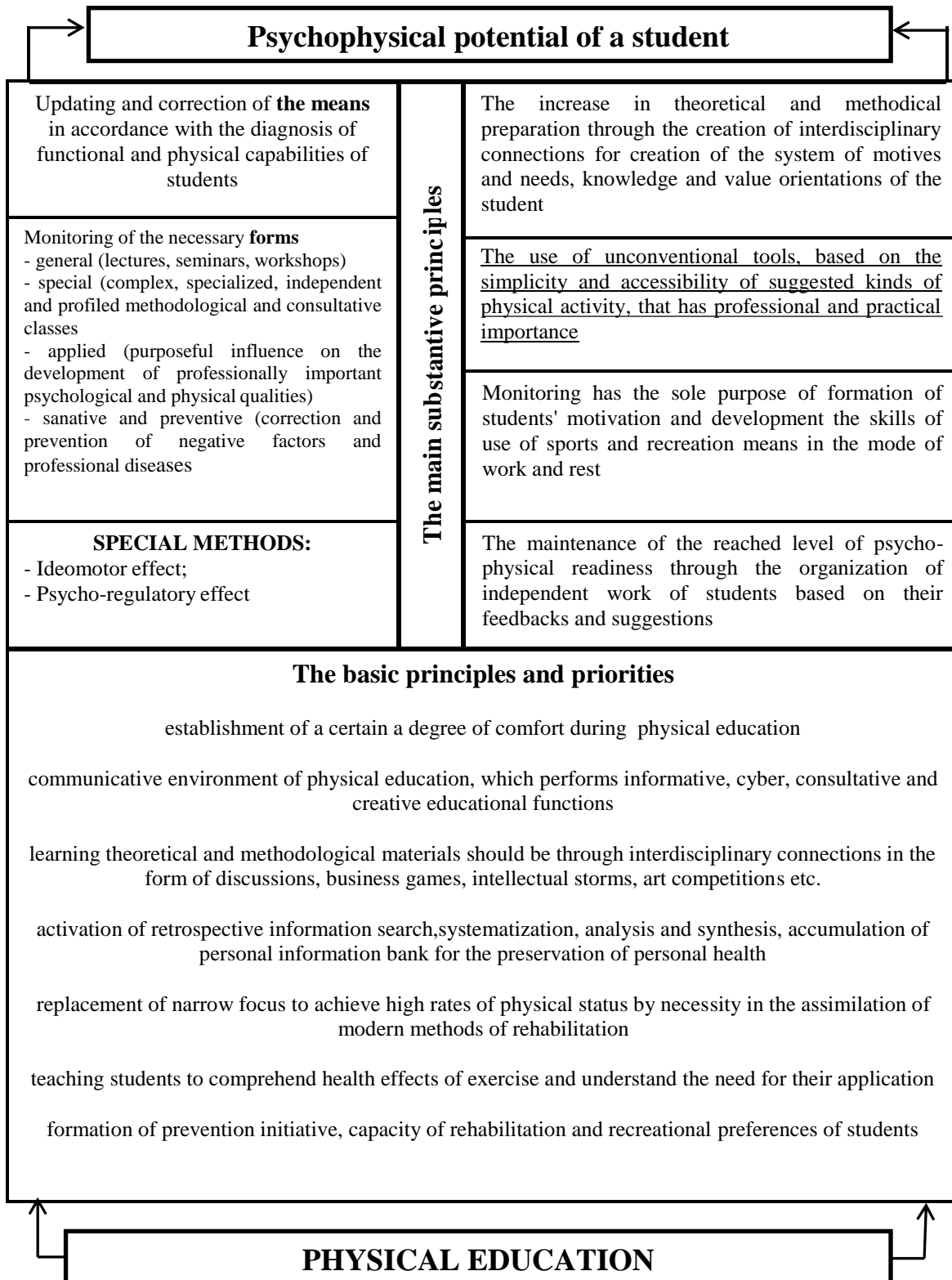
The second is the transition to the informational or post-industrial civilization as a distinct stage of historical development. Its characteristic feature is the output of functional qualities of a person. Education in the system of physical education acquires anthropogenic, «homocentric» character. This is due to the process of humanization of science and technology, its frontal turning to a man [6]. The purpose of process is to ensure that students need to free their creativity from the dictates of technology, reveal their creative mind. According to the morphogenetic factor, the maintenance of the body is in the same good condition at a time when intelligent load increases significantly.

Modern organizational psychological and pedagogical conditions is a kind of communicative environment of physical education, performing informative, cyber, consulting and creative and educational functions and learning of theoretical and methodological materials should be done through interdisciplinary connections in the form of discussions, business games, intellectual storms, open creative competitions, etc. (Fig. 1). The content of the educational material of physical education requires the use of integrative methods, technologies and innovative health systems, whose energy intensity, training and health orientation would be adequate to the needs of students.

Suggested means should help students adapt to the conditions of future professional activity, correction of adverse physiological state via environmental influence.

The youth of today treats and implementing their tasks in a special way, that is why individual orientation of differentiated and competence oriented approach in physical education should not only improve their physical health, but also contribute to the development of professional opportunities. In the forefront appears to be the necessity to arouse aspiration among students to improve their career image and their own «I» through the physical self-improvement; to support professionally important motor skills due to

«fashionable» motional techniques; to provide during the physical education timely support to creative, emotional balance through the development of an adequate level of general endurance of the body and a high level of intellectual and physical performance.



**Fig. 1.** Structural elements of modern organizational psychological and pedagogical conditions of physical improvement of students

Development of the skills of motional activity should be started from the study of its impact on vital body functions, comparing parameters of health of physically active people with those who lead a sedentary lifestyle. Physical education becomes a condition of preserving and strengthening health of students, their physical condition and status, in carrying out given conditions, taking into account suggested ways of

improving physical activity. The basic concept of physical improvement of students becomes a valeological orientation of the whole process. Valeological concept of formation and diagnosing of physical status of students includes those components that have a significant impact on the process of strengthening, preservation or reproduction of health and may be improved during a specially organized physical activity [11; 12]. In addition, physical training should be considered along with social and mental preparedness as an important component of students health. In our opinion, the optimization of the process of formation of physical status of such content is a source and precondition of complete life activity of university graduates in their future.

**Conclusions and prospects for further research.** Organizational technology of physical education of students in essence should be a special example of the use of content, organizational aspects and activities of physical education taking into account specificity of education and peculiarities of specialty. That allows to shift the accentuation of attention from improving physical status toward methodology, which contributes to the formation of the students initiative, rehabilitative capacity, and recreational preferences about their health. Communicative environment of physical education motivates students to retrospective information search, systematization, analysis and synthesis, accumulation of personal information bank concerning preservation of their health.

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## Special Military Training of Reconnaissance Officers

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### Abstract:

Enhancement of the professional training of military personnel has always been a primary goal of military specialists training. The increased attention to the problems of the professional and physical training of the military personnel for combat missions is considered due to the need to practice combat actions of the well-trained soldiers, capable of solving military tasks, as well as insufficient developed technology, which are forming a certain level of readiness. The objective of the factual research is to find ways of increasing the special physical preparation of military intelligence using unconventional means of training. The results of scientific researches as well as the military training experience indicate the most important and effective means of solving problems of special physical training of the military personnel, is the application of exercise and sports, the closest in structure and motions to professional activities of the servicemen. Military Pentathlon differs not only in the content of the exercises, but the organization and the conducting of the training and competitive process. Analysis of the literature resources has identified some shortcomings in the physical preparation of military intelligence, such as insufficient use of the potential tools and techniques to enhance military pentathlon for physical fitness of the soldiers. Author program of special physical training improvement of military intelligence using military pentathlon exercises was applied in the research. The experimental research has shown the benefits of including the military pentathlon exercises in the training programs. The achievements of the pedagogical experiment demonstrate the high efficiency of the developed technology of professional and physical training of the military personnel for effective actions in terms of local armed conflicts. Objective indicators of high efficiency of the developed technology of professional and physical training is proved by an accomplishment of the comprehensive professional simulation tasks in a variety of combat situations during special operations.

### Key words:

*military intelligence, physical training, military pentathlon.*

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**Introduction.** Successful combat missions in terms of local conflicts depend on the physical fitness and professional level of soldiers. The success of the counter-terrorist operation in the «ATO» areas largely determined by the level of preparedness of the intelligence services.

The modern battle has high maneuverability, speed and sudden changes of scenery. The spatial scope of combat increased significantly. The number of important objects of intelligence and their mobility also increased dramatically. Because of the increase of the amount of intelligence tasks and the time needed to perform those tasks, continuous improvement of the army scouts is needed [10].

The army scout must meet the requirements defined by the features of modern warfare in terms of local conflicts. There are some distinctive features: physical endurance, strength, speed, accuracy, reliability action in terms of time shortage and lack of supporting information. However, the study of military practice in the performance of combat missions in local conflicts found insufficient level of physical and professional training of army scouts [11].

The increased attention to the problems of improving the level of professional and physical training of soldiers for combat missions is connected with the need to resolve some contradictions. That is need of battle practice in well-trained soldiers, capable of solving military tasks, and insufficient level of technology development that forms a level of preparedness.

The research was conducted of Management of physical training the Armed Forces of Ukraine as part of research on the theme: «The model of physical training in the Armed Forces of Ukraine as a sample of 2017 and prospects of its development» Code «Perspective AF».

Issues related to the study and development of modern methods of formation of professional readiness of army scouts for effective combat missions in armed conflicts and study tools needed to improve their professional and physical fitness, those issues are not sufficiently covered yet [5; 6; 8].

In the course of the research have been singled out a number of conceptual positions, which are considered as a set of teaching fundamentals that increase the efficiency of professional military and physical training level for combat missions in armed conflicts. The most important of these include the following:

- solving combat missions by army scouts in the process of carrying out long marches;
- Conducting reconnaissance operations, mainly at night;
- Combat missions with the high physical activity on the background;
- The capacity for rapid response to extreme conditions;
- The development of motor skills, professional work motivation in army intelligence;
- Consideration of climatic and geographical conditions (chopped hard terrain, the possibility of sudden and abrupt changes in weather and water regime of rivers, the formation of mountain snow and debris avalanches, and flooding that reinforces negative impact on the work of army scouts) and others.

The experience of combat training and research results indicate that an important and most effective means of solving problems of special physical training of military personnel is the use of exercises and sports, the closest in structure movements and the nature of physical activity to military-professional work of soldiers [1; 2; 3].

These sports include military-applied all-round. Military pentathlon is very popular among the troops of the Armed Forces and universities. Because that can adequately develop the necessary physical and special qualities, form important military applications skills, improve professional techniques and actions to educate moral and mental qualities of soldiers.

Military Pentathlon is comparatively young sport for our Armed Forces, which differs not only in the content of the exercises included in it, but also in the organization and the supplement of the training and competitive process [1; 4; 12].

The needs of a modern system of professional and physical training of army require improved methods for the integrated development of their professional and motor abilities. However, there are a lot of issues that need to be singled out in the theory of the current problem. There is one more problem that need to be studied. That is problem of the training process with elements of the military pentathlon in terms of the military, its features and links with the educational process, army intelligence unit's profession, as well as its impact on quality of educational assimilation program of discipline «Physical training».

An important distinguishing feature of military-applied-around is that competitions are held in military uniform on a variety of terrain and under different conditions, which promotes good field training and improvement of military-professional skills of soldiers in terms of huge physical exertion and mental stress [1; 6; 7].

The professional activity of soldiers and the intensity of muscle tension as mastery of military skill and accumulation of experience, to some extent stabilized at a certain level, providing the required efficiency and quality of work. But in the process of physical training that did not happen. Competitive nature of military-applied all-round makes soldiers to the manifestation of intense muscular stress, achieving a new higher level in mastering of professional skill.

The features of the training process with elements of the military pentathlon is the development of general and special endurance, forming military-applied motor skills, based on a high level of special physical qualities.

Thus, the urgency of the problem is due to:

1. Insufficient capacity of using tools and methods of Military Pentathlon to improve physical fitness of soldiers;
2. Lack of modern scientifically based guidance on organization and provision of training process with elements of the military pentathlon in terms of the military unit;
3. The need to use means of special physical training rationally in order to improve the training process of army scouts.

Taking into account all mentioned above we have developed a special program of physical preparation of army scouts, including specific exercises of military pentathlon.

**The purpose of research** is to find ways of improving special physical training of military intelligence using unconventional means of training.

**Material and methods of research.** The effectiveness of the elaborated pedagogical technology of professional and physical training of military intelligence for caring out combat missions, was tested during the pedagogical experiment, which was attended by 28 soldiers between the ages of 20 and 25 from the experimental group (EG). These soldiers were engaged in the program developed by us.

The control group (CG) consisted of 27 soldiers who had usual combat training classes. Age and experience were identical with the experimental group (EG). The pedagogical experiment was being conducted at the HF A0284 base for one year.

The experiment results assessment was made on a set of physical training tests (Interim Guidelines on Physical Training in the Armed Forces of Ukraine 2014), as well as the implementation of special military and professional scouts' tasks (control exercises).

**Research results. Discussion.** Military professional preparedness characterizes the degree of the soldier's mastery of his profession, shows the presence of his abilities to solve combat missions, the ability to adapt quickly to constantly changing conditions of the combat situation, confidence in his actions.

The bases of the professional military training of a military specialist are being taught during the training classes. They are provided with purposeful relationship of physical, psychological, vocational and general technical soldiers training, strengthening of military-professional orientation, improved methods of learning, connected with the preparation for the effective performance of combat missions [4; 9].

Development of soldiers' knowledge and skills that are necessary for combat tasks performing is expected as a result of their professional and physical training. The elaborated technology of soldiers' professional and physical training was aimed on the solving of such tasks (Fig. 1)

The main peculiarity of the elaborated program was including of military pentathlon into physical training classes as a separate mean of special physical quality enhancing of military intelligence.

Indeed, all kinds of military pentathlon contribute to the development of scouts' competencies and skills. Thus, the cross-country on 8 km develops the necessary stamina and ability to withstand prolonged exercise during raids behind enemy lines. Overcoming obstacles and swimming promote elaboration of necessary skills of spy moving around terrain with various artificial and natural barriers. Two kinds of military pentathlon, shooting and grenade throwing help to shoot wittily and to throw grenades skillfully.

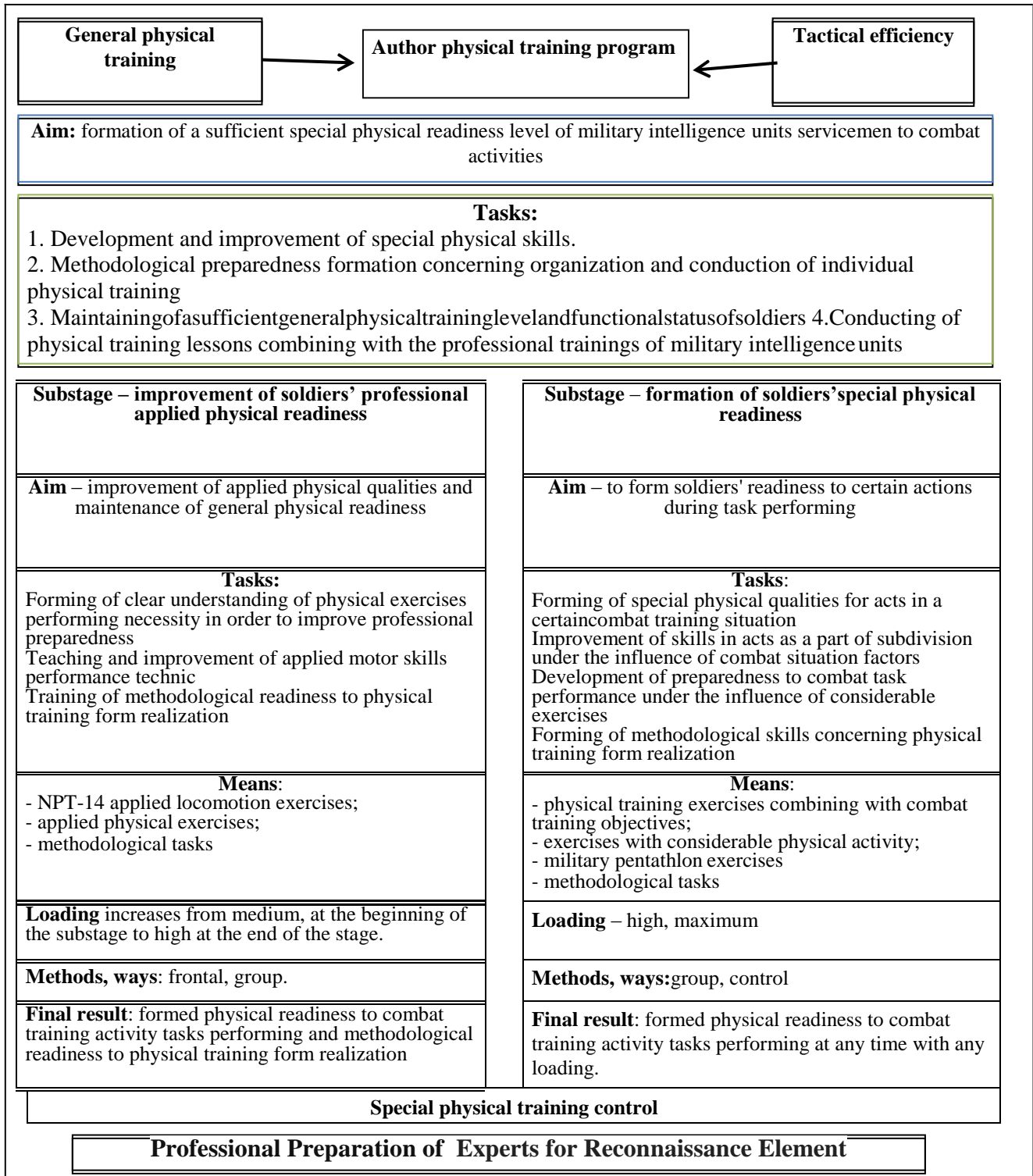


Fig. 1. Block scheme of the author program

Certain differences in the content of the ordinary and the author program, that were used at the physical training lessons during the experiment, are given in the Table 1.

Table 1

**Differences of the author's and ordinary program of military intelligence unit soldiers' special physical training**

	<b>Valid PT program</b>	<b>Author PT program</b>
<b>Amount of hours</b>	6 hours per week	6 hours per week
<b>Aim of PT</b>	To provide soldiers' physical readiness to combat training activity	Formation of the sufficient level of soldiers' special physical readiness to combat training and combat activity
<b>Focus of PT</b>	Development of general and special physical qualities	Development of special physical qualities, taking into account peculiarities of military intelligence units professional activity
<b>Content of PT</b>	Improvement: endurance – 40 %; speed and other physical qualities – 25 %; strength – 20 %; Hand-to-hand fighting – 15 %	Improvement: – endurance – 30 %; – speed and agility – 15 %; – strength – 10%; – diving and swimming – 20 %; – shooting after running – 10 %; – Hand-to-handfighting – 15 %
<b>Means of PT</b>	Exercises that belong to NPT-2014	Exercises that belong to NPT–2014; Special complexes and exercises: – a complex of special exercises with grenade throwing for distance and accuracy; – running through decussate territory – 8 km; – overcoming of a general military obstacle course; – jumping in water with outfit and weapon; – swimming in outfit for distance 50 m, 100 m; – preparatory exercises for shooting

During the year the number of conducted lessons in both groups (EG and CG) was the same and no conduction of lessons depended exclusively on organization of certain event in the whole military unit.

The results of the pedagogical experiment point high effectiveness of the elaborated technology of soldiers' professional and physical training or effective acts in terms of located armed conflicts (table 2).

Table 2

**Development level of qualities and skills, that characterize the level professional and physical preparedness of controlled and experimental group members during the pedagogical experiment (5 point system)  $M \pm m$**

<b>Indicators</b>	<b>At the beginning</b>		<b>R =</b>	<b>At the end</b>		<b>R =</b>
	<b>CG</b>	<b>EG</b>		<b>CG</b>	<b>EG</b>	
Pulling-up on a horizontal bar	3,47±0,14	3,45±0,17	>0,05	4,01±0,16	4,28±0,15	>0,05
Cross-country on the territory, 8 km	3,08±0,17	3,07±0,19	>0,05	3,32±0,16	4,51±0,17	<0,05
Shooting AKM after a long-distance march, 10 shots	3,23±0,14	3,21±0,15	>0,05	3,37±0,15	4,18±0,14	<0,05
Overcoming obstacles	3,37±0,11	3,33±0,14	>0,05	4,05±0,12	4,70±0,10	<0,05
Grenade throwing for accuracy	3,89±0,21	3,81±0,19	>0,05	4,12±0,17	4,43±0,18	>0,05
Swimming in the uniform 50 m	3,27±0,11	3,31±0,10	>0,05	4,01±0,12	4,68±0,11	<0,05
Territory orientation (professional test)	3,03±0,09	2,93±0,12	>0,05	3,71±0,14	4,44±0,18	<0,05
Long-distance march on 10 km	3,04±0,11	3,02±0,12	>0,05	3,81±0,14	4,57±0,12	<0,05

Level in crease dynamics of professional and physical preparedness of soldiers from the experimental group was more positive in comparison with the control group. By the end of the pedagogical experiment the number of soldiers, that achieved a high level of professional and physical qualities development, was bigger in the EG, than in the CG, in 25–28 %. The number of soldiers that had a low development level of that skills, was smaller in 45–48 % in the EG, in comparison with the CG.

The results of complex professional tasks performance, that model activity in any combat situation during special operations, served as an objective indicator of high effectiveness of the elaborated technology. In the EG that results were higher in average in 18–21 %, than in the CG.

**Conclusion.** Therefore, the results of the pedagogical experiment indicate the effectiveness of the elaborated special physical training program to achieve the maximum applied influence of physical training means and methods in purpose of the best combat tasks performing. The next investigation stage will be to investigate the influence of preparedness level of pentathletes on their professional scout preparedness.

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## Characteristics of Distances of Competitions in Sports Tourism

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### Abstract:

In the article it is carried out the analysis and applied the method of generalization of legislative documents, scientific-research and scientific-methodological literature, presented points of view of specialists on organization of the process of preparation and building distances of sports tourism competitions. While planning distances it is necessary to take into account aims and tasks which are set before a specific competition. At the mass level – it is, first of all, propaganda of tourism and education, change of experience, and at the highest level – testing of preparedness and revealing the strongest participants and teams. In tourist competitions, during many years, there were established traditions, defined a set of stages and methodology of their undergoing, moreover, the question of participants' safety should be put on the first place. While planning a distance it is necessary to take into account its complexity and accordance with readiness of participants to goals and tasks which are set by organizers of competitions. If less than half of the teams pass technically and tactically complicated distance, this means that efficiency of such competitions is insignificant. Here an important role is played by a competition inspector who should estimate accordance of the class of a distance with the level of preparedness of participant, and if necessary, recommend to chiefs of a distance to simplify it and abase its class. This is reached, first of all, not by change of a distance scheme, its length, but simplifying of technically complicated stages. Requirements for distances and stages – dynamism and spectacular component. While planning a distance for competitions it is necessary to take into account such factors as season, natural peculiarities of a region, natural conditions which should be taken into account depending of a kind of tourism. The most important thing while planning a distance is saving of lives and health of participants. The objective of our study is to analyze peculiarities of competition distances and technical stages in hiking. Accumulated knowledge, correctly organized competitions and planned distances would allow to define the strongest competitors, highlight the effectiveness of the training process, improve the results of performances at competitions.

### Key words:

*obstacle course, cross-hiking, rescue works, competition distance, technical stages, sports tourism.*

**Introduction.** Sports tourism is an integral component of physical culture and sport in Ukraine, patriotic and spiritual education of youth, health promotion, development of physical, moral, intellectual and volitional qualities of personality by means of participation in sports tourism treks and competitions.

The main factor in sports tourism is to overcome the obstacles of natural relief: rocks, snow, ice, water obstacles and various types and forms of macro- and micro-relief. There is a diverse system of obstacles and conditions: climatic, meteorological, highlands, etc. [2], that requires of participants a maximum concentration on the route, situation assessment and rapid decision-making.

During competitions various techniques and tactics, transport facilities and safety measures are used [7]. Overcoming obstacles requires different in time and intensity work of athletes who are engaged in sports tourism.

**The objective of the research** is to analyze competition distances in hiking according to competition rules and other normative legal documents.

**Results of the research.** Competitions in sports tourism techniques are conducted to improve technical and tactical skills of participants, the security of sports tourism treks and events, and to identify the strongest teams and participants. According to the Rules of sports tourism competitions, there are some peculiarities in the distances, obstacles, and tasks depending on the type of tourism. Competitions in hiking are held on the following distances: «Obstacle course», «Cross-hiking» and «Rescue works»; as well as using special tasks [1; 6].

«Obstacle course» is a short distance, full of technical stages that are installed on natural or artificial obstacles (ravines, slopes, rivers, swamps, barriers and shrubs), the amount of which is determined by the category of competition. It can include specific tasks. The distance is recommended to plan in an open or partially open area taking into account the spectacular component regarding spectators, coaches and other participants of the competition.

«Cross-hiking» is a long distance, that involves passing a certain route and overcoming stages and (or) accomplishment of specific tasks installed on natural or artificial obstacles. The route is passed using map orientation or is given otherwise (descriptions, azimuth, marking, etc.). Cross-hiking may take many days in sport trek conditions.

«Rescue works» is a short or long distance, that involves transporting the so-called victim by the team in certain areas of the distance or by steps and (or) special tasks. As an independent distance «Rescue works» are held at distances of III–V categories [6].

Distances can be passed in a given by judges order, by the choice of a team, in a relay race, etc., being defined by the terms and conditions of the competition. The order of competition is determined by the choice of appropriate guidelines [5; 6].

Distance in the hiking competitions is a route that goes through natural and artificial obstacles, planned in time, laid in the area, and passed under certain conditions defined by the board of judges of the competition [7]. The distance has a definite structure. It consists of certain elements, movement corridors, has start, finish, etc. There are following elements of the distance: stages, special tasks, techniques, checkpoints.

Checkpoints on the distance are route points on the distance compulsory for passing by the participants in determined by the jury order.

The distance may have linear, circular or relay race scheme. Teams can choose the order of passing the distance.

Competition in hiking techniques is a sport event, being held according to the rules and normative acts for sports tourism [4; 5; 6], certain regulations, on the distances for hiking with arbitration. Competitions can take one day or many days. One-day competitions are conducted within one day, or on one distance. Multi-day competitions are held during two or more days. The area for competitions is considered to be closed in 3 months before the event for national and regional level, in 1 month for district and city level.

Competitions may be team, personal-team, personal. The category of the distance is determined depending on the preparedness of participants and teams. There are five categories of distances. Parameters of different categories are given in Table 1 [6].

Table 1

Distance parameters

Category	Quantity of technical stages (from-to)	Length		Quantity of stages with homing (not less than)	Quantity of stages with the transportation of a victim on the distance «Rescue works» (not less than)	Assessment of the distance (scores)	
		Obstacle course (not more than), Rescue works	Cross-hiking (not less than)			Total score (not less than)	Total score for technical stages p.1–19 p.2.1.7 (not less than)
V	6-12	2,0	8,0	5	4	100	80
IV	6-10	1,5	7,0	4	3	70	50
III	4-10	1,0	5,0	3	2	50	30
II	4-8	1,0	4,0	2	-	35	25
I	2-6	0,5	3,0	0	-	20	15

**Note:**

1) The length of the distance «Rescue works» may be reduced if the transportation of the victim is not only through the stages, but also on the part of the distance route.

2) It is recommended to reduce distance length in cross-hiking to 1 km for every 200 m over the first 200 meters.

3) The higher is the distance category, the more there are complex stages [6].

Distance categories (I–V) are characterized by their complexity and specific for each type of tourism additional requirements [5; 6]. Competition rank is determined by the classification of teams (participants), which took the first six places in these competitions, and is counted in points, according to sports categories and titles. [10]

According to the rules of tourist events [6], in hiking competitions technical stages are included to the «Obstacle course» or «Cross-hiking».

Stage is a clearly defined on the ground area, located near natural or artificial territory, that has a certain structure and terms of overcoming.

Special method is a technical action that involves the use of equipment or demonstration of the general tourism training skills for staying in the field, solving problems related to topography, providing first aid, etc.

The list of stages and special methods:

Technical stages: mounted passage across the river; mounted passage across the ravine (rock); steeply inclined passage; rock or slope climbing; climbing on vertical rails; rock or hill areas traverse; slope traverse; vertical descent on the railing; slope down the hill; crossing the river on a log; crossing of a ravine on the deck; crossing with a cord; ford crossing the river using railings; ford crossing the river; crossing in boats; transportation of a «victim»; overcoming obstacles using suspended ropes (pendulum); movement on the poles; movement over bumps.

Special methods: orientation; knotting; providing first aid; credit in topography and / or geodesy; determining the distance and / or height; pitching a tent; setting fire; packing a backpack; equipment production.

Checkpoints on the distance are route points on the distance compulsory for passing by the participants in determined by the jury order.

Special task is a defined purpose or measure participants have to reach while passing a route with accomplishment of certain conditions stated by the jury.

The documents regulating the competitions in sports tourism, in addition to the Rules of competitions on sports tourism are: Instructions on organization and conducting of tourist sports events with pupils and student youth [3], Qualification standards and requirements of the United sports classification of Ukraine on non-Olympic kinds of sport [4], Instructions on conducting hiking competitions [5].

Regulation on competitions in tourism, as in other kinds of sports is an essential document. Regulation is drawn up in advance and is sent to the participants within 3 months before the international and national competitions and within 1 month before other competitions. Organizers also develop the Terms of competitions, where procedures of passing distances; stages of a distance; scheme of a distance; the number and characteristics of the allowed equipment, requirements for the safety of others are explained.

Organization of competitions in tourism begins with the creation of the organizational committee on preparation and conducting of competitions, that provides the following kinds of work: judging, informational support, transportation, medical care, food and accommodation for participants and judges.

An important and responsible thing is to choose the place for competitions and equipment for the distances.

A place that has been selected for competitions must meet various requirements [9], be agreed with local authorities, forestry, sanitation centers, be located near water bodies (or provided with drinking water), be properly prepared.

While scheduling competitions, it is obligatory be sure to consider the time of year, weather conditions, especially in the region. While planning competitions, it is necessary to take into account such factors as season, natural conditions, peculiarities of a region. In winter competitions can be held indoors.

If there is any threat to the security of participants or conditions under which the competitions are not possible, they should be postponed or interrupted.

**Conclusions and prospects of further research.** Competition in sport tourism is passing the distance, that contains natural and artificial obstacles, performing special tasks using equipment that facilitates and accelerates the movement, ensures safety and performance of technical and tactical tasks.

In sports tourism, there are special requirements for technical means and equipment, but there are also common requirements for all types. Security, compliance and performance of them by the organizers of the competition, jury, representatives and coaches of teams are necessary for saving health of participants (especially of children).

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## Physical Condition Markers of Men of Mature Age in High Intensity Physical Activity During the Summer Season

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### Abstract:

**Topicality.** Physical activity of average and high intensity is an important component of health and longevity of men of mature age. Physical activity of average intensity may be provided in the process of everyday, social activities. For physical activity of high intensity it is required physical readiness of an organism which is reflected in physical conditions of a human. And it may change under the influence of seasonal factors. **Objective.** To identify peculiarities of physical condition of men of mature age on the eve of high intensity physical activity in summer which may be used as informative markers for individual operational planning of high intensity physical activity. **Methods.** It was investigated the body mass index, physical condition according to the method of Baevsky among men aged 35–50 who lead a healthy lifestyle. The study was conducted every day in the morning and evening. Results were compared: the day before, the day of high intensity physical activity and with an average index per month. Physical activity was studied by the IPAQ method. **Results.** It was found significant ( $p < 0,05$ ) differences in the physical condition of men the day before and the day of physical activity of high intensity. Found changes were: body weight, heart rate, physical condition of men according to the estimation of adaptive potential by Baevsky. The most significant indices were identified as a marker. For testing its effectiveness men were offered during a month to plan individual physical activity of high intensity according to this marker. The result was the significant ( $p < 0,05$ ) increase of the number and duration of high intensity physical activity, better physical condition to 5,66 % in the complex test by Baevsky. **Conclusions.** The important role in planning of high intensity physical activity plays the physical condition of mature men. Informative marker in the summer season may be deteriorating of physical condition of men according to estimation of the Baevsky potential to 3,29 % for prompt planning of physical activity of high intensity for this day.

### Key words:

*physical activity of high intensity, physical condition, individual planning of physical activity.*

**Introduction.** Physical activity (PA) is one of the most important functions of human existence, the foundation of health, longevity, physical and mental condition, in adolescence and in adulthood period. Aerobic physical activity of medium and high intensity is especially effective for maintaining men's optimal functional state of mature age. (PAMH) [4; 10; 17]. Which include: running, swimming, cycling, sports and others. According to the study [7], number of such classes of PAMH can range from 3–4 to 2–3 a week for a month. At that most men prefer independent training [1] guided only by habit of training of previous years, health and free time. The desire to do PAMH and its realization in people of middle age is associated with excellent physical condition (FC) and the desire to receive pleasure from it [11; 19]. Consistency of trainings, among other factors, is related to the physical condition of the person. Favourable environmental conditions and modern sports facilities provide the opportunity to do PA at any time, so it is decisive in taking the decisions just before training.

Thus, we know the recommendations of the World Health Organization (WHO) on PAMH is limited to the total number of minutes per week recommended – at least 75, and the number of classes – at least two [13; 18], or 20 min., three times a week [14]. In recent guidelines of PA for the European Region for 2016–2025 increasing time employment PAMH as additional health benefits for all segments of the population [12; 17]. At the same time, seasonal recommendations for PC man are not given, although the studies [9; 15] convince us of the need to take account of them. It should be noted that the current study [3; 5] in the examining assessment PC rights in the individualization of physical activity did not disclose the problem of operational planning PAMH men of mature age.

**The aim of the study.** Identify the features of men's PC before PAMH classes that can be used as informative markers for individual operational planning PAMH in the summer season.

**Material and methods.** The study contains two parts, laboratory and formative experiment. We selected 27 men, 35–50 years old, without chronic diseases who keep a healthy lifestyle and self-dealing PAMH as jogging, swimming, playing in the gym. PC are investigated, using adaptive capacity of Baevsky (ACB) does not exceed

monthly average rate of 1.80 absolute units (AU) [2]. The study was conducted in southern Ukraine in the summer at the Kherson State University in 2014.

To study the physical development (PD) of men [8] we studied body mass index (BMI) (kg / m<sup>2</sup>). PC is estimated according to the index ACB, whose value is calculated using the formula:

$$ACB = 0.011 + 0.014 \cdot HR \cdot PBX \cdot s \cdot DBP + 0.008 + 0.014 \cdot e \cdot Age \cdot BW - 0.009 + \cdot BL - 0.009 \cdot 0.273,$$

where HR – heart rate (beats / min) PBX – systolic blood pressure (mmHg) DBP – diastolic blood pressure (mm Hg. c) BW – body weight (kg) BL – body length (cm) Age – the age of the subject (years). Body weight was measured with an accuracy of electronic scales to 50g. BP was measured with automatic blood pressure monitor Contec 08A. ACB was calculated in every morning after a night's sleep and every night before sleep and in compliance with the necessary recommendations WHO and the Russian Scientific Society of Cardiology (2001), [6].

PAMH is investigated in accordance with international questionnaire IPAQ (International Physical Activity Questionnaire) [8, 20]. We have studied number of classes per week and their duration. The results were recorded, in individual diaries.

Laboratory experiment included a comparison of average daily indicators men's PC with indicators before and the day of PAMH. Men's PC compared indicators were measured in the morning (M), evening (E) and the difference between day (M–E) and night (E–M). Also, the difference between the rates of PC is calculated in percentage using the formula:

$$x = (b-a) : a * 100\%$$

where, x – the value of interest; a – previous figure, b – next figure comparable pairs.

The PAMH was recorded during several days, the percentage was calculated just before the first day.

In a laboratory experiment men did PAMH in usual schedule. In forming experiment to men were offered to plan PAMH according to the information on their PC. The results of forming experiment were processed on weekly data.

Statistical calculation was conducted using nonparametric statistics, because some results did not respond to the normal distribution. Determination: interquartile scope (IS), median (Me). Comparisons between groups were made using performance criterion Wilcoxon sign ranks. Used programs EXCEL and Statgraphics16.

Results of the study .Discussion. To search the differences men's PC we compared the results of PC in ordinary days and the day with PAMH (Table 1). We have used PC results of 684 men in ordinary days and 138 results in days with PAMH. We have found that significant differences exist in most of the studied parameters PC of men. In the days of PAMH men's body weight (P) were significantly higher at 0,27 %. HR (R) was higher 0,8 %. ACB (R) was at 1,29 % higher and ACB (B) – at 1,21 %. Significant differences were found in the change of men's ACB during day and night.

Table 1

Comparison of men's PC in ordinary days and days of high-intensity physical activity

№	Indicators	Usual days (n=684)	PAMH (n=138)	difference (%)	W (p)
		Me (95%IP)	Me (95%IP)		
1.	Body weight M (кг)	84,46 (81,32;87,6)	84,69 (81,85;87,53)	0,27	76735 <0,05
2.	Heart Rate M (beats/min)	49,02 (46,17;51,87)	49,41 (46,12;52,7)	0,8	84158 <0,05
3.	ACB M	1,55 (1,54;1,57)	1,57 (1,54;1,6)	1,29	84721,5 <0,05
4.	ACB E	1,65 (1,64;1,67)	1,67 (1,64;1,7)	1,21	84684 <0,05
5.	Difference ACB M-E	-0,11 (-0,13;-0,09)	-0,12 (-0,16;-0,08)	-	62158,5 >0,05
6.	Difference ACB E-M	0,13 (0,07;0,19)	0,14 (0,05;0,24)	-	63451 >0,05

During the search for informative indicators of men's PC we paid attention on differences between the previous days and the day of PAMH (Table 2). In comparison we have used PC results of 106 men before the PAMH days and 138 days results in PAMH days. Body weight (M) was higher in the days of PAMH to 0,34 %. HR (M), as more than 0,84 %. ACB (M) 3,29 %. ACB (B) at 1,83 %. The differences were between indicators ACB in day (M-E) and in night (E-M).

Table 2

**Comparison of men's PC before and in the days of high-intensity physical activity**

№	Indicators	on the eve (n=106)	PAMH (n=138)	Difference (%)	W (p)
		<i>Me</i> (95%IP)	<i>Me</i> (95%IP)		
1.	Body weight M (kg)	84,4 (81,75;8;87,05)	84,69 (81,85;87,53)	0,34	22057 <0,05
2.	Heart Rate M (beats/min)	49,16 (46,22;52,1)	49,41 (46,12;52,7)	0,84	28641 <0,05
3.	ACB M	1,52 (1,48;1,55)	1,57 (1,54;1,6)	3,29	29455 <0,05
4.	ACB E	1,64 (1,6;1,69)	1,67 (1,64;1,7)	1,83	26217 <0,05
5.	Difference ACB M-E	-0,12 (-0,16;-0,08)	-0,12 (-0,16;-0,08)	-	11476 >0,05
6.	Difference ACB E-M	0,14 (0,09;0,19)	0,14 (0,05;0,24)	-	12382 >0,05

Exploring the men's PC results PAMH on the eve and on ordinary days (Table 3). In comparison we have used PC results of 106 men on the eve of PAMH days and 684 results in ordinary days. We have found that the body weight (M), heart rate (M) ACB (E), the difference ACB, daytime (M-E) and night (E-M) had no significant differences ( $p > 0,05$ ). But, ACB (M) was significantly lower than in the normal day, 1,97 %.

Table 3

**Comparison of men's PC on the eve of physical activity of high intensity with ordinary days**

№	Indicators	on the eve (n=106)	Days (n=684)	difference (%)	W (p)
		<i>Me</i> (95%IP)	<i>Me</i> (95%IP)		
1.	Body weight M (kg)	84,4 (81,75;8;87,05)	84,46 (81,32;87,6)	-	53299 >0,05
2.	Heart Rate M (beats/min)	49,16 (46,22;52,1)	49,02 (46,17;51,87)	-	42984 >0,05
3.	ACB M	1,52 (1,48;1,55)	1,55 (1,54;1,57)	1,97	63410,5 <0,05
4.	ACB E	1,64 (1,6;1,69)	1,65 (1,64;1,67)	-	42634 >0,05
5.	Difference ACB M-E	-0,12 (-0,16;-0,08)	-0,11 (-0,13;-0,09)	-	42275 >0,05
6.	Difference ACB E-M	0,14 (0,09;0,19)	0,13 (0,07;0,19)	-	31677 >0,05

As a result, the comparative analysis of men's PC in days of PAMH, the days before, and on ordinary days contain some differences, that we decided to use as informative markers for operational planning PAMH. During the experiment men were asked to plan PAMH in the day when ACB (M) increased by more than 3,29 % in comparison to the previous day.

As a result, men have positive changes in their PC as well as in their PC (Table 4). Men's BMI decreased to 1,91 %. Number of classes PAMH increased to almost twice a week, 46,62 %, and the classes increased to 26,44 minutes a week, or to 78,89 %. ACB (M) also improved to 5,66 %.

Table 4

**Comparison of physical activity and physical condition of men and formative laboratory experiment**

№	Indicators	Before the experiment (n=95)	After the experiment (n=90)	Difference (%)	W (p)
		<i>Me</i> (95 % IP)	<i>Me</i> (95 % IP)		
1.	BMI ( $kg/m^2$ )	27,23 (25,12;29,34)	26,71 (28,64;28,79)	1,91	1935 <0,05
2.	PAMH	1,33 (0,02;2,64)	1,95 (0,57;3,33)	46,62	1447 <0,05
3.	PAHM (min/week)	14,78 (7,93;21,63)	26,44 (9,34;43,54)	78,89	2916 <0,05
4.	Heart Rate (beats/min)	49,45 (46,87;52,03)	48,86 (46,35;51,38)	-	896 >0,05
5.	ACB M	1,59 (1,47;1,71)	1,50 (1,38;1,62)	5,66	1506 <0,05

Exploring changes in men's PC in ordinary days and days PAMH has made it possible to estimate what impact has the PC (in ACB E) on the body of men, and prerequisites to employment PAMH. Differences in men's PC were available for all tests carried out in the morning (body weight, heart rate, ACB E). Significant increase in body weight, heart rate, and ACB before PAMH training can be explained by various factors of life. And gaining weight of men in the morning, and the deterioration of their heart rate, and ACB indicates the immediate effect of increasing nutrition, or reducing the PC before. That, perhaps, stimulate men's desire to do PAMH.

Comparison of men's PC in the days before and in days of PAMH confirmed our assumptions about gaining weight and the relative deterioration of PC at the bottom PAMH. Percentage of changes for PC tests were higher than in comparison with normal days. Thus, the test ACB (R) had the highest percentage – 3,29, which is appropriate for its use as a marker of individual PC for operational planning PAMH.

Comparison of men PC with PAMH with normal days showed that, on the eve of PAMH men's PC was the best not only at the days of PAMH, but better than routinely, indicating the importance of the PC in this day.

We haven't found significant differences in ACB morning-evening (M–E) between the comparable day, which may indicate on relatively adequate physical activity at the days of PAMH physical condition of men, and rapid restoration of their body.ACB researches at the evening the day before and the morning (M–E) showed a steady recovery process during sleep in different comparative days.

As a result of forming experiment we can say that consideration ACB (M), particularly its difference with previous day depends on weekly amount and duration men's PAMH, which in turn optimally affects men's PC, expressed in the reduction of ACB, which is confirmed by previous studies [3].

**Conclusions.** The physical condition of men is very important in individual planning of PAMH. Informative marker in the summer may be deteriorating of physical condition of men to assess adaptive capacity of Baevsky to 3,29 % for operational planning physical activity of high intensity on this day.

**Prospects for further research** are studied in the impact of lifestyle on men's PC stimulating PAMH.

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## **Characteristics of Spatial Organization of Bodies of Junior Pupils with Visual Deprivation in the Process of Physical Education**

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### **Abstract:**

The article contains the characteristics of spatial organization of bodies of junior pupils with visual deprivation. Heavy eye defect in the early life period causes secondary deviations and related diseases, reduces the development of all areas of activity of a child with visual deprivation. Accordingly it forms lagging of these children in mental development and physical preparedness, causes peculiarities of physical development which may show up in various disorders of the musculoskeletal apparatus and posture of visually impaired pupils, change of spatial organization of a body comparing to their healthy peers. Research objective is to reveal the peculiarities of spatial organization of bodies of junior pupils with visual deprivation in the process of physical education. Identification and correction of the spatial organization of bodies of junior pupils with sensory deprivation in the process of physical education is an important factor of formation of vital motor skills. A small number of works on this direction determine study of the spatial organization of a body as timely and important and which requires detailed study for the purpose of further correction of the parameters of motor areas of a child and development of the technologies correcting the spatial organization of bodies of pupils with deprivation of view in physical education which will be the topic of our next research.

### **Key words:**

*junior pupil, deprivation, vision, physical development, education, spatial organization.*

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**Formulation of the problem.** Changes take place in all spheres of our society, they caused a number of problems, one of which is the tendency to increase the number of children with visual disabilities that actualizes prevention and correction of not only visual impairment, but correcting their physical development [1; 3; 6; 7; 10]. Among visually impaired students lag observed in the psychophysical and motor development, is violation of spatial organization of a body compared to their healthy peers [2; 5; 8]. However, in our time a certain amount of features studied, training and education of visually impaired children mostly preschool, and insufficiently conducted studies of junior pupils with visual deprivation in the process of physical education in terms of special educational institution [8–10 etc.].

Modern approach to research problems of physical development of children of primary school age with deprivation of vision is presented as a multifaceted, versatile and historically conditioned need of society in renewed vision of targeted bases and installations on the physical perfection of the individual, which today faced with the need to be sustainable, physically hardened, social adapted to rapidly changing conditions of life. However, studying the state of the spatial organization of the body and the process of its correction among visually impaired pupils of primary school age in special institutions requires attention of teachers and scientists.

In this connection there is a need of reorientation on the formation and development of all functional systems of a child in its natural motor acts. While in special schools for children with deprivation of vision there is still a tendency of assessing the physical parameters of a healthy child. This practice, of course, is unacceptable. There are enough displays of «general pedagogical» approach to the analysis of physical education in special school institutions which can be found in practice. But it is illegal to children with deprivation of vision, because here we see a slightly different purpose and objective aimed at overcoming illness and correcting the spatial organization of a body. This is particularly s thought on when looking at the physiological mechanisms of motion of children who manifested a systematic relationship and hierarchy as regulatory and performing structures of the human body.

Thus, there is a contradiction between the need for implementation in the process of physical education of visually impaired pupils of primary school age in terms of special education traditional and non-traditional means of physical education, suggesting corrective and health impact, and insufficient theoretical and methodological elaborated through integrated use of these tools on this group, fragmented their use in physical education of visually impaired students.

**Analysis of recent research and publications.** The analysis of literature indicates that the levels of physical development and physical readiness of younger pupils with visual deprivation significantly behind similar indicators of healthy children (R. N. Azarian, L. I. Plaksina, B. V. Sermyeyev, L. N. Solntseva, L. N. Rostomashvili, etc.). In violation of vision there is a restriction of motor activity of a child, causing

a number of secondary abnormalities in physical development of visually impaired pupils (R. Schindele, L. H. Rostomashvili, G. G. Demyrchohlyan, A. G. Demyrchohlyan etc.).

Analyzing the available published data about the features of physical development of children with disorders of vision, we can say that this defect complicates the whole course of mental and physical development of children with visual impairment [2; 3; 4; 8]. Several researchers of various activities such as training (M. I. Zyemtsova, A. I. Caplan, M. S. Pevzner, A. G. Litvak, E. P. Synyavyj, Remazhevskaya V. M.), labor (V. P. Ermakov, T. P. Sviridyuk etc.), games (L. I. Solntseva), physical education (V. Z. Deniskina, V. A. Kruchinin, D. M. Mallyayev, L. S. Sekovets, B. V. Sermyeyev, B. G. Sheremet etc.) showed that in violation of vision the motor function is successfully developing on the poly-sensory basis when self-control and self-regulation of movements are involved, along with vision auditory, tactile and muscular sensitivity. In this regard, the general system of educational work undertaken with pupils with deviations in the visual analyzer invariably increases the role and importance of physical education.

Weakening of motor activity among visually impaired children leads to lower levels of cognitive processes. At a primary school children with visual disorders by fear of space there are limited in mobility and cognitive activities. Sometimes they lack elementary skills of walking and running, spatial orientation and basic self-service. Poses of children while reading and writing with lowered head and residual vision, monocular, violation of binocular vision negatively affects the development of the respiratory system, musculoskeletal system, leading to torticollis, scoliosis, osteochondrosis of cervical and other irregularities. Therefore, children with disorders of vision need more muscle activity than children with normal vision. There is no doubt the fact that the effectiveness of treatment of visual pathology is the highest among children with increased physical activity (D. M. Mallyayev, N. L. Litosh, L. V. Shapkova, A. A. Nesterov, T. A. Ovchinnikov, S. A. Filippova).

Nowadays efforts of specialists are focused on finding the most effective ways that reveal the role of different types of muscle activity in perfection of all human systems and correction of existing shortcomings in it [1; 4; 7]. Thus, the analysis of scientific and methodological literature has showed that the characteristics of the study of physical education of primary school children with disorders of vision dedicated works of many researchers (B. V. Sermyeyev, A. P. Pavlov, E. S. Avetisov, E. I. Livado, R. N. Azarian, L. N. Rostomashvili, E. V. Chernobylska, G. G. Demyrchohlyan, A. G. Demyrchohlyan, V. P. Ermakov, G. A. Yakunin, L. I. Plaksina, etc.). However, studies aimed at correction of spatial organization of bodies of primary school children with deprivation of vision by means of physical education, are very little.

**Research objectives:** to reveal spatial features of bodies of primary school children with deprivation of vision in the process of physical education in special boarding schools.

**Methods:** analysis and synthesis of literature, analysis of experience of the leading industry experts.

**Results and discussion. The main material research.** The analysis of the literature has shown that violation of visual function leads to secondary violations in spatial organization of bodies of children with deprivation of vision: posture, working posture, coordination and accuracy of movements, rhythm (G. G. Demyrchohlyan, M. I. Zemtsova, A. I. Kaplan, B. V. Sermyeyev, V. P. Filatov, V. V. Skorodynska, etc.). As we know from publications of M. I. Zemtsova, L. I. Solntseva, L. A. Semenova (1990) and other authors, severe visual defect in the early period of life reduces not only informative, but also physical activity, leads to the fact that a child much later than its healthy peers, keeps vertical position while walking, while natural rack often marked incorrect position of feet.

According to G. G. Demyrchohlyan, S. I. Shkarlovoyi, G. V. Nykulinoi, C. Roberto, L. N. Rostomashvili and other authors, for primary school children are those most characteristic visual impairments: myopia, hyperopia, astigmatism, amblyopia, nystagmus, strabismus. V. P. Ermakov, G. A. Yakunin, L. V. Shapkova and other authors note that the observed visually impaired children lag behind in length, body weight, lung capacity, volume of a chest and other anthropometric indicators. Many visually impaired pupils experiencing difficulties in orientation in space. They have greatly reduced motor functions and qualities, namely: coordination, endurance, speed and rhythm of movement (lag from the norm is 53 %). To a lesser extent (by 8–12 %) pronounced lag in terms of muscle strength and power-speed (S. N. Popov).

Scientists-pathologists T. A. Vlasova, V. P. Ermakov, M. I. Zyemtsova, L. F. Kasatkina, A. G. Lytvak, I. S. Morgulis, M. S. Pevzner, B. V. Sermyeyev, L. I. Solntseva, B. G. Sheremet and others note that the examined children with visual impairments lag in physical development due to limited physical activity. A. P. Pavlov showed that the specific features of physical development can manifest in various disorders of the musculoskeletal system and posture. Violation of posture and degree of its severity stipulate by the condition of vision of children with visual deprivation. Prevalence of disorders of posture among children with visual impairment is 60–65 %, depending on the nature of visual disorders.

In strabismus, myopia child is forced to tilt his head in a comfortable position to provide the best vision of the subject, tilted his head low during movement (walking, running, etc.). In addition, according to T. V. Popova, N. B. Pyastovalova, A. A. Udalova, incorrect posture among children is the result of residual effects of birth traumas, rickets, various muscle paresis, easing muscular system from frequent prolonged sitting in the wrong position: tilted to the side of the body, lowered head. Violations of posture are also caused because of incorrect organization of ophthalmia hygienic conditions of educational process, violation of motor mode, the absence of specific corrective exercises that would improve the formation of correct posture and intensified their motor activity.

It should be noted that violation of posture among blind and visually impaired children occurs much more frequently than among healthy people. According to B. P. Ermakova (1990), violation of posture is observed among 59,2 % of visually impaired boys and 58 % girls, while among healthy children respectively 40 % and 45 %. According to L. V. Shapkova, children with visual impairments come to school already with stable violations of posture with rounded backs, increased thoracic kyphosis and flattening the lumbar lordosis, scoliosis, flat feet and so on. According to G. G. Demyrchohlyan among 87 % of visually impaired students there is kyphotic deformity of the spine [6].

Along with violation of posture among children, there occur deformations of the lower limbs, resulting in distortions feet (I. D. Loveyko, M. I. Fonarev). Flatfeet among children with deprivation of vision arises as a result of constant static overload of lower extremity, because muscle weakness of the feet and as a result of partial paralysis. A flatfoot dramatically reduces the supporting function of the legs and creates a greater threat to flattening. Improperly formed skills in walking, running and other movements, lack of physical activity of children also produce danger to greater manifestations of these disorders (Brukart E.).

Children with visual impairment lag behind in all indicators of movements from their peers (T. V. Popova, N. B. Pyastovalova, A. A. Udalova). When walking and running in them there is a large muscle tension, head lowered, movements of the arms and legs are not approved, the feet are wide, uneven pace, because of the imbalance they have to stop while walking, herewith lost direction. N. A. Fomin, Y. N. Vavilov affirm that posture defects and visual disturbances have been reported among students the more, the less time they take away physical exercise, activity outdoors.

Physical education not only solved the common problem – the development, training and education, but also specific tasks that have corrective, compensatory, preventive and restorative therapeutic orientation. According to B. G. Sheremet, among children with visual impairment because of the lack of visual monitoring and analysis of the movement it is observed a decrease of physical activity, which leads to difficulties in formation of the basic parameters of walk and especially in maintaining the straightness of motion. According to L. S. Sekovets, violations of the straightness while walking are associated with narrowing field of vision because one eye shuts down of the act during occlusion with strabismus, decreased visual acuity visually impaired. Even greater difficulties children experience while walking in small spaces (M. I. Zemtsova, L. I. Plaksina). Feeling visual limitations, children still rely on visual orientation, so walking characterize as more undulatory, and the line of the movement which is close to one side of the constraints, in some areas comes for them, then moves closer to the original. All this gives the impression of walking «from side to side». This is due to the fact that violations of the stereoscopic vision at monocular vision difficult the spatial orientation, create flat perception of space.

Violation of the walk in a confined space is caused by a decrease in visual acuity, because child with the visual deprivation cannot trace and reproduce the movement without mistakes, which manifest in poor coordination of hands and feet, lack of coordination between the left and right hands. This also explains the fact that the hand is pressed to the body or pulled forward for determining the direction of motion while walking. In all kinds of walking in children is revealed an incorrect statement of the feet. More than 20 % of children have staged parallel setting of the feet, 40 % of children put feet toes inward, whereas in healthy peer rejection in feet setting observed in 15 % of the cases. The peculiarity of walking in children is sometimes caused by a violation of the uniformity of walking. Uniformity while walking is determined by length of a step. It has established that from the start of walking step of children is more even than on the next segments. Reduction of straightness, impaired balance and coordination, visual fatigue cause a decrease of step length. Among children with visual impairment step length while walking in all age groups is below the norm by 4–5 cm.

In the area of AFV most significant components of the spatial organization of bodies of children with reduced vision of primary school age study was conducted by A. A. Dyachenko which allowed determining the state of the physical development of primary school children with weak eyesight. It has been received by

the scientist entirely new quantitative of biogeometric profile of the children with weakened eyesight. Based on the data it was identified scoliotic posture among 22 % of the examined, round-concave back – among 16 %, flat – 6 % and concave – 2 % of children with reduced vision [7].

**Conclusions.** The analysis of the literature showed that among children with visual deprivation it is observed lagging in psychophysical development; specific features of physical development can become apparent in various disorders of the musculoskeletal system and posture that is in violation of the spatial organization of the body compared to their healthy peers. Noting that determine the characteristics of the spatial organization of the body of primary school children with deprivation of sensory systems is an important factor for the formation of motor skills and abilities, and given the small number of works on this direction among the studied contingent, the study of spatial organization of the body in the process of physical education is timely and important and requires detailed study to further correction of the parameters of motor areas of child and development of the technologies of correction of its violations that will be the prospect of further researches.

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## Teenagers' Motivation to Sports Practicing

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### Abstract:

Nowadays teenagers' motivation to physical culture and sports practicing is one of the most topical socio-pedagogical problems. Educational system requires qualitative and innovative approach to human needs, formation of stable motivation to sports-recreational activity as an important component of healthy lifestyle and positive social behavior. Objective of the research is to study the motives that prompt teenagers to physical culture and sports practicing. In the study we have applied the methods of theoretical analysis of scientific, methodological, special literature, generalization of practical experience on the topic and questioning. Teenagers aged 12–16 (56 girls and 43 boys) who practice various kinds of sport took part in the study. We have found out that one of the most important components in the process of organization of educational activity is motivation. Teenagers are led by various motives, among them the most important one is increasing the level of physical preparedness among 88,37 % and 62,50 % of the questioned (for boys and girls accordingly); health condition improvement – 88,37 % and 69,64 %; physical qualities development – 86,05 % and 62,50 %; finding pleasure in motor activity – 74,42 % and 46,43 %; obtaining of body built harmony – 67,44 % and 35,71 %. The questioned teenagers have pretty high level of sports motivation which is proved by desire to participate in competitions – 67,44 % and 55,36 % (for boys and girls accordingly); reaching high results in sport – 62,79 % and 60,71 %; becoming a champion of a region – 60,47 % and 33,93 %; becoming a champion of Ukraine – 62,79 % and 57,14 %; becoming a world champion, the Olympic Games champion – 60,4 % and 58,93 %; learn will qualities training – 65,12 % and 60,71 % which are a necessary precondition of self-affirmation and reaching the set aim.

### Key words:

*teenagers, motivation, physical culture, sport, prior basic preparation.*

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**Scientific problem formulation.** In recent years teenagers' attitude to physical training and sports is one of the most topical social and educational problems. Numerous studies show that physical activity is a necessity for teenagers. This is due to a sharp increase in technological advances, modern living conditions, increase of study load, intensive growth of information content and insufficient information about healthy lifestyles and personal state of health [2; 3; 6]. The education system needs a high-quality and innovative approach to human needs and developing durable motivation to sports, which is an important component of a healthy lifestyle and positive social behavior [1; 4; 5]. Therefore, the study of teenagers' motivational sphere to physical training and sports is important.

**Analysis of recent research and publications.** The study of the motives which activate the desire of teenagers to systematic physical training and sport is one of the important educational problems in physical education because motives are crucial in behavior and stimulate activity.

Motivation is the process of developing and foundation of intentions to do something or not to do. Motive is the internal state of the individual, which determines and directs its actions each time. Motives are usually divided into socially relevant, personally relevant and professionally relevant; positive and negative, which are defined by knowledge, beliefs, attitudes, interests and needs [1; 3; 6; 8].

The structure of motivation in education is a hierarchical model of motives classification that is frequently used and introduced by American psychologist Maslow, A. [4]: physiological needs, safety needs, need for social relations, need for self-esteem and self-actualization needs. Above-mentioned types of motives in various combinations may be present in sports activities and contribute to conscious and effective teenagers' personal development with skilful creative approach of the teacher or coach to this activity.

Motivation to physical activity is a special state of the individual, which aims to reach an optimal level of physical fitness and efficiency [8].

The process of developing the interest in physical training and sports is not one but multi-stage process: from the first basic hygiene skills (in childhood) to profound psycho-physiological knowledge of the theory and methodology of physical education and intensive sport activity [9].

In theory and methodology of physical education, pedagogy and educational psychology there are many scientific works dedicated to the motivation in the educational process, external and internal factors are defined that influence the development teenagers' motivation to sports activities [1; 3; 5].

Boyko, O. [1] studied the aspects of impact of motivational component on the improvement of the efficiency of physical training sessions, including the distinguished by the author interest as the main component of motivation, and the development of which, especially in teen-age, lies down in the transition from the natural need to move to the conscious need to exercise.

Any motive is a conscious need and arises based on it. In connection with that it is necessary to consider in detail the basic needs which result from the motives to physical activity. Puni, A. Ts. distinguish three groups of these motives: the need for movement; the need for student performance of duties; and the need for doing sports activities [7].

Syrvacheva, I. S. [9] distinguishes internal (active interest in physical exercising) and external (with respect to the student) motivation to activities, including sports. External motivation arises under the condition of correspondence of the goals and motives to the capabilities of students. Internal motivation arises in the successful implementation of the motives and objectives, in teenagers' inspiration, desire to exercise, interest in independent studying, and when they enjoy the process in the classroom, conditions of the lesson (relationship) with a teacher, coach, and fellows in the group.

However, there is, unfortunately, not enough available research materials for us, that have the relation to the development of motivation and teenagers' motivational priorities to doing sports.

The **aim** of the study is to investigate the motives that encourage teenagers to do sports.

The **methods** of theoretical analysis of scientific, methodological and special literature and synthesis of practical experience on the subject were applied. In order to identify the main reasons that motivate teenagers to do sports, the survey was conducted (based on the study of Grygorenko, V. G., Ilyin, Ye. P.) [2; 3; 5]. The questionnaire included 18 questions.

The students aged 13–16 took part in the study (56 girls and 43 boys) – students of the Children's sport school in Lutsk who do various sports (volleyball – 15 boys and 22 girls, boxing and kickboxing – 10 boys and 9 girls, athletics – 8 boys and 10 girls, karate – 10 boys, and gymnastics – 15 girls) during the preliminary basic training stage (2–3 years of experience).

**The main part and justification of the results of the study.** Analysis of modern scientific research has allowed us to identify the main reasons why teenagers do physical training and sports [2; 6; 7; 9].

1. Health improvement and disease prevention. The strongest motivation for self-exercise, of course, is the opportunity to improve health and prevent the diseases. The favorable impact of the exercising on the body is known for a long time and there is no doubt in that, and now it can be seen in two related areas: promoting healthy lifestyles and reducing the likelihood of disease; and therapeutic effect of exercise on many types of diseases.

2. Increased efficiency. Ongoing psychological study of human behavior in the performance of work showed that the decline in productivity is due to its monotony and uniformity. Continued implementation of mental activity reduces the rate of perception to a greater number of professional errors. Short perform of specific exercise on the muscles of the body and visual apparatus increases to a great extent the effectiveness of relaxation than passive recreation.

3. Pleasure of the process of exercising. During the exercising the changes of all systems in human body occur, especially of the cardiovascular and respiratory system. Certain types of exercise are an indispensable tool to relax and neutralize negative emotions. The pleasure of training is associated with the release of adrenal gland hormones: adrenaline and noradrenaline.

4. Sports motivation. This type of motivation is based on the human desire to improve their athletic performance. The whole history of humanity, the evolution was built on the spirit of competition and the competitive spirit of the relationship. The desire to reach a certain level, to overtake his rival with sporting achievements is one of the powerful regulators.

5. Aesthetic motivation. The essence of aesthetic motivation is subject to health fashion and harmonious human body. It is often present where the aerobics, athletic gymnastics, yoga and other systems are involved. Typically, aesthetic motivation has a long-term focus on specific areas and sports.

6. The desire to communicate. Independent physical exercise with a group, for example, in interests clubs (jogging, hiking, cycling), was one of the main motivations in our country more than a dozen years ago and it was massive. At present, the situation has changed somewhat, and now this motivation is not so effective.

7. The desire to know your body, its capabilities. This motivation is largely similar to sports motivation, but not absolutely similar to it. If sports motivation is a competition between sportsmen, then this type of motivation is based on the desire to overtake themselves and their laziness. This motivation is the desire to maximize the physical abilities of your body, improve your physical condition, and increase physical fitness.

8. Motivation of creativity, education and family strengthening. The next part of self-exercise is a group of motivations. Physical exercises allow virtually unlimited opportunities for improvement in various areas, including family strengthening. They play an important role in the education of children: in fact they transfer the experience from generation to generation.

9. Random motivation. All the other motivations that have a narrow specific orientation belong to this group. Most common example of random motivation to do physical exercises is a desire to lose weight.

Along with the positive, the sports activities may also be based on «negative» motivation. The main factors are being busy at home, personality traits, professional activity, the lack of group for exercising and place close to home, poor health, and others [9].

The results of the study of teenagers' motives to do sports showed that the most important thing for them, especially for young people, is to improve the physical fitness: 88,37 and 62,50 % of those who were questioned (for boys and girls, respectively); to improve their health: 88,37 and 69,64 %; to develop physical qualities: 86,05 and 62,50 %; to enjoy motor activity: 74,42 and 46,43 %; to get body harmony: 67,44 and 35,71 %; to normalize the body weight: 46,51 and 33,93 %; to relax after mental stress 58,14 and 33,93 %; this shows a desire to meet the needs of increasing the efficiency and physical fitness, health improvement and disease prevention, enjoying the process of exercise (Table 1).

Table 1

The results of the study of teenagers' motivation to do sports

Motives	Kind of sport									
	volleyball		boxing, kickboxing		track and field athletics		karate	Gymnastics	total	
	boys n=15	girls n=22	boys n=10	girls n=9	boys n=8	girls n=10	boys n=10	girls n=15	boys n=43	girls n=56
To pass a test, get a good mark	2	0	3	0	2	3	9	1	16	4
To improve the level of physical fitness	12	13	10	7	6	7	10	8	38	35
To enjoy the process physical training	13	12	3	4	7	9	9	1	32	26
To improve the health	13	10	9	8	8	9	8	12	38	39
To attain the body harmony	8	6	5	3	6	8	10	3	29	20
To normalize body weight	6	1	4	3	3	9	7	6	20	19
To learn new exercises	4	3	6	5	2	4	5	4	17	16
To get a advice for an independent exercising	1	1	0	0	1	1	4	0	6	2
To relax after mental stress	9	3	1	2	7	9	8	5	25	19
To develop physical qualities	11	15	9	7	8	10	9	3	37	35
To take part in the competitions	11	11	6	8	7	9	5	2	29	31
To achieve high results in sport	12	19	7	6	6	8	2	1	27	34
To become the champion of the region	10	5	7	4	7	9	2	1	26	19
To become the champion of Ukraine	14	18	8	5	6	8	1	1	27	32
To become the champion of the world, Olympic Games	12	18	9	5	5	7	0	3	26	33
To get financial reward	7	1	2	2	3	5	0	1	12	9
To improve the financial status	6	2	1	0	4	7	0	1	11	10
To learn how to develop strong-will	7	13	5	9	7	8	9	4	28	34



The surveyed teenagers have quite high level of motivation in sport, as we see the desire to take part in competitions: 67,44 and 55,36 % (for boys and girls, respectively); to achieve high results in sport: 62,79 and 60,71 %; to become the champion of the region: 60,47 and 33,93 %; to become the champion of Ukraine: 62,79 and 57,14 %; to become the champion of the world, and Olympic Games: 60,4 and 58,93 %; to learn how to develop strong-will: 65,12 and 60,71%, which is a necessary precondition to self-realization and reaching the goal. Girls have strongest sports motivation, which may be explained with earlier puberty and the formation of character, single-mindedness and the need for self-realization.

Significantly lower levels of motivation, especially for girls, is associated with cognitive activity and receiving reward and profit, namely to learn new exercises: 39,53 and 28,57 %; to get advice for the independent exercise: 13,95 and 3,57 %; to pass a test, get a good mark: 32,21 and 7,14 % to receive financial reward: 27,91 and 16,07 %; to improve the financial state: 25,58 and 17,86 % respectively.

Our study confirms the results of several authors [1; 3; 5] on motivating teenagers to physical training and sports, among which is health improvement, development of physical qualities, improvement of body fitness and achievement of high sports results. However, we have identified a significantly higher level of teenagers' motivation to do sports, which, in our opinion, is related to the training experience of 2–3 years that corresponds to the previous stage of basic training.

**Conclusions.** Motivation is one of the most important components in the process of education. Teenagers are guided by different motives, among which the most important is to increase the level of physical fitness: 88,37 and 62,50 % of those who were questioned (for boys and girls, respectively); to improve health conditions: 88,37 and 69,64 %; to develop physical quality: 86,05 and 62,50 %; to enjoy motor activity: 74,42 and 46,43 %; to attain body harmony: 67,44 and 35,71 %.

The surveyed teenagers have quite high level of motivation in sport, as we see the desire to take part in competitions: 67,44 and 55,36 % (for boys and girls, respectively); to achieve high results in sport: 62,79 and 60,71 %; to become the champion of the region: 60,47 and 33,93 %; to become the champion of Ukraine: 62,79 and 57,14 %; to become the champion of the world, and Olympic Games: 60,4 and 58,93 %; to learn how to develop strong-will: 65,12 and 60,71 %, which is a necessary precondition to self-realization and reaching the goal.

Thus, at the preliminary basic training stage teenagers have strong interest in the chosen sport, which is typical for students in sports schools. The aim of the training is not only to enjoy the process, but achieve high results. Teenagers aged 13–16 have motives to exercise systematically due to the formation of character and self-realization in society. They have the prevalence of two main reasons to do sports: a desire to improve their physical abilities and achieve high sports results.

**Prospects for further research.** The process of teenagers' motivation development is inseparably linked to specific psychological characteristics, level of physical fitness and athletic performance that will be the object of our further research in the future.

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# *Therapeutic Physical Training, Sport Medicine and Physical Rehabilitation*

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## **Fundamental Aspects of Complex Rehabilitation of Middle-aged Women in Overweight and i Degree Obesity**

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### **Abstract:**

This article presents the results of bio-impedance study of body composition of middle-aged women with problems of obesity and excess weight, the efficacy of a complex of actions with elements of physical rehabilitation, health-improving physical training, ergotherapy aimed at improving the functional status of women. Tasks of work: to assess the functional status and the level of motivation to cure women of middle age with overweight and obesity of the first degree. Based on these results to develop a comprehensive rehabilitation program for women based on the use of measures of improving physical training, physical rehabilitation and ergotherapeutic events and evaluate the effectiveness of the impact of the developed program. It was found that the use of a set of measures of physical rehabilitation is effective for middle-aged women in overweight and obesity of the first degree.

### **Key words:**

*obesity, overweight, bio-impedance analysis, comprehensive rehabilitation, middle-aged women, body composition component.*

Increase in the number of people in the world suffering from obesity and excess body weight. Studies conducted by the Organisation for economic cooperation and development in 30 developed nations in the world [1] indicate that the problem of obesity and overweight become very serious and requires an immediate solution. According to research of The World Health Organization about 60 % of obese people live till the age of 60, up to 70 years – only 30 %, and a further 10 years can barely survive 10 %. In most EU countries over the past 20 years, the number of people suffering of overweight has increased by 50 % [6]. Among those people aged 50 to 59 years body weight which exceeded the 15–24 %, the mortality rate was 17 % higher average, and those exceeding the weight of the body on 24–34 %, increased mortality at 41 % [1;2].

Therefore, **research aimed** at finding the best solutions to this problem must be comprehensive and particularly they become relevant for middle-aged women with excess weight body and obese degree I.

The purpose of the study was to improve the functional status and level of motivation to recover for middle-aged women. When excess body weight and obesity of I degree, through complex events, incorporating elements of physical rehabilitation, physical culture and occupational therapy.

### **Research objectives:**

1. Assess functional status and level of motivation to recover of middle-aged women with excess body weight and obesity degree I.
2. Develop a comprehensive rehabilitation programme for women of middle age in excess body weight and obesity degree I, based on the use of health-enhancing physical activities culture, physical rehabilitation and other activities.
3. Evaluate the effectiveness of the programme integrated rehabilitation on functional status and level of motivation to recover for middle-aged women with excess body weight and obesity grade I.

In the work of the research the following **methods** were used: an analysis scientific-methodical literature, pedagogical experiment, methods of centered research [4], the method of assessing the level of motivation to recover which carried out using a questionnaire «restoration of locus control» (RLC) (Rotter, 1966) [3] hardware complex «Neurosoft-Psihotest», the method of mathematical statistics and medico-biological methods study (study of body composition method bioimpedansnym hardware complex «FAA-01 «MEDASS» balance assessment Analyzer of water sectors of the body with the software») [5]. In the Protocol bioimpedance studies of body composition assessment were reflected the following options:

- primaryexchange (PE);
- specificexchange (SE);
- the body mass index (BMI);
- indexwaist-hip (IWH);
- fatbodymass (FBM);
- leanmass (LM);
- sharedwaterbody (SWB).

Experimental work was carried out from September 2013 to September 2015, based on physical culture and sports Centre EE «Polesky State University», involving women at the age from 38 till 56 years. The average age of the subjects in the control group (CG) was  $44 \pm 1,1$  year, in the experimental group (eg) –  $45 \pm 1,1$  years. The control group undertook a range of activities total physical training (group health), which provided for the dance aerobics, exercise, etc., with primaryfocusing on figure correction.

In classes of EG we have developed a set of measures which included: step aerobics, therapeutic physical culture mechanotherapy (classes at the gym), hatha yoga, music therapy, classes on abilities, applied sciences (decoupage) and entertaining-cognitive activities (movie therapy). Organized classes were held three times a week. Packages on step aerobics, exercise therapy, mechanotherapy and gardenotherapy, have helped reduce body weight and improve the functionality of the organism. And classes of the decoupage, musictherapy and kinotherapy were directly aimed at improving the level of motivation of women to recover.

The research results and their discussion. To determine the impact of a set of measures that includes physical elements rehabilitation, occupational therapy and physical culture of recuperation, the functional state of an organism of middle-aged women, as in experimental and control groups assessed body composition method before and after the study. Also in the study in order to assess the level of motivation to recovery questionnaire «restoration of the locus of control» was used.

Women of control and experimental groups, were participating in the pedagogical experiment, attended overweight and obesity grade I. Analysis of the average BMI for women who were under test with the experimental group the indicator registered as  $29,27 \pm 4,42$  kg/m<sup>2</sup>, in the control group it was  $28,2 \pm 4,23$  kg/m<sup>2</sup>. Index average waist-hips of surveyed women exceeded the norm (who norm are indicators of 0,60 – 0,85 cm), EG has index  $0,87 \pm 0,000,4$  cm<sup>3</sup> KG –  $0,86 \pm 0,005$  cm. The average body of fat for women exceeded the normal, in EG it amounted to  $31,3 \pm 7,84$  kg KG– $30,7 \pm 7,69$  kg (who are the norm indicators, ranging from 25 to 30 kg). The average lean body weight in women uder surveyed both groups exceeded the norm, particularly in EG, it amounted to  $55,8 \pm 3,9$  kg and KG –  $54,7 \pm 4,15$  kg (norm are indicators of 34,6–54,6 kg). The overall average level of water body in women under pedagogical research of CG amounted to  $35,2 \pm 3,06$  kg, and EG –  $35,0 \pm 2,97$  kg.

Thus, in the experimental group 40% of women were overweight, 60% of women had I the degree of obesity. In a control group of 50% of women have excess weight, other 50% of women had the I degree of obesity. Level of motivation to recover according to the questionnaire averaged  $15,8 \pm 4,98$  points, while it has been established that at the beginning of the pedagogical experiment, 50% of women had a low level of motivation, and the remaining 50 % – the average level of motivation to recovery. Level averaged to  $16,4 \pm 4,25$  points, while 30 % of women of CG had a low level of motivation, 70 % of women-the average level of motivation to recover.

To determine the impact of this on functional status and level of manifestations of motivation to recover at the end of the study, women in the experimental and control group retesting was conducted and the results are in the table below (table 1).

Women who participated in the experiment, was observed positive dynamics of the results, as in the control and experimental groups.

The average BMI of women in experimental group amounted to  $25,9 \pm 3,4$  kg/m<sup>2</sup>, with an increase of  $3,9$  kg/m<sup>2</sup>. In the control group that index gain was  $0,7$  kg/m<sup>2</sup>, the average BMI amounted  $27,5 \pm 2,78$  kg/m<sup>2</sup>. A comparative analysis of the ITB had found credible differences ( $p > 0,05$ ) between women and EG and CG. The average index of waist-hips amounted to  $0,83 \pm 0,03$  cm., EG- $0,82 \pm 0,05$  cm consistent with the norm.

Comparative analysis of TMT was significantly better. Women of EG had  $4 \pm 3,16$  kg and became conform to the norm, at CG, this figure averaged  $47,9 \pm 3,95$  kg and they would be normal.

**Indicators of body composition studies and bioimpedance  
of the level of motivation of middle-aged women**

Indicators	The mean values of bioimpedance analysis of body composition and level of motivation					
	at the beginning of the experiment			at the end of the experiment		
	EG (x±m)	CG (x±m)	Reliability of differences	EG (x±m)	CG (x±m)	Reliability of differences
Bodyweight (kg)	76,6±10,31	74,9±10,0	p>0,05	71,3±9,11	74,9±8,95	p<0,05
Waistcircumference (cm)	90,1±8,41	89,2±9,3	p>0,05	85,4±7,95	89,4±8,3	p>0,05
Hipcircumference (cm)	108,9±7,71	103,6±11,2	p>0,05	99,5±8,74	107,1±7,03	p>0,05
Body mass index (kg/m <sup>2</sup> )	29,3±4,42	28,2±4,23	p>0,05	25,9±3,4	27,5±2,78	p<0,05
Basalmetabolism (kcal)	1467,5±58,05	1466±55,31	p>0,05	1580±46,7	1467±58,05	p<0,05
The share Exchange (kcal)	830±31,6	831±32,7	p>0,05	828,7±31,6	830±31,6	p<0,05
bodymass (kg)	31,3±7,84	30,7±7,69	p>0,05	25,8±7,04	26,8±6,23	p<0,05
(skinny) bodyweight (kg)	55,8±3,9	54,7±4,15	p>0,05	52,4±3,16	47,9±3,95	p<0,05
Totalbodywater (kg)	35,0±2,97	35,2±3,06	p>0,05	33,2±3,4	39±2,53	p<0,05
Level of motivation to recover	15,8±4,98	16,4±4,25	p>0,05	27,1±2,05	23,9±3,3	p<0,05

The PSBS have improved reliably indicators among women of EG, they would be able to rate and amounted to  $33,19 \pm 3,4$  kg, in CG the average totaled  $39 \text{ PSB} \pm 2,53$  kg. EG women occurred reliable improve motivation to recover and their average score became  $27,1 \pm 2,05$  points, in CG the level of motivation to recover was recorded as  $23,9 \pm 3,3$  points.

**Conclusions.** Effectiveness of comprehensive rehabilitation on functional status and level of motivation to recover for women of middle-aged with obesity of I degree and overweight confirmed the benefits of our range of activities, includes the elements of physical rehabilitation, recreational physical culture and occupational therapy. During the period of the experiment for women of EG body mass indices was significantly reduced. PE, SE, BMI, IWH, FBM, LM significantly increased level of motivation and recovered indicators, except for the result of waist and the results of the hips, where differences are not reliable as a result of research in the experimental group. The level of motivation to recovery rose to «high» among 60 % of women who had normal body weight, and level of motivation to recover became above average among 40 % of women who were are overweight in the control group and 30 % of women with an overweight, and 30 % of women who had I degree of obesity in experimental group.

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## **Effectiveness of physical education for students of special medical groups with osteochondrosis of the cervical spine**

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### **Abstract:**

The *relevance of the study* is that the number of patients with osteochondrosis increases every year. The disease causes severe neurological and orthopedic disorders that lead to losing workability and disability. *Objective of the work:* to study the effectiveness of physical exercises applying due to the results of orthopedic research methods and talks with students of special medical groups who suffer from cervical spinal osteochondrosis. While organizing medical gymnastics trainings we should take into account etiopathogenetical processes of course of the disease and practice exercises aimed at muscles relaxation, increasing of stability of vestibular system, coordination, dynamic exercises for all muscle groups, special respiratory exercises, exercises on strengthening of muscles of neck and trunk. After the experiment students noticed that pain in neck disappeared, general state has improved; indices of movements in cervical spine have increased. All these facts prove the positive influence of medical gymnastics on organism and its functional abilities.

### **Key words:**

*medical gymnastics, range of motion, osteochondrosis of spine, general state, students, physical exercises, cervical spine.*

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**Problem formation.** In the structure of the spine diseases osteochondrosis has a special place. Multiple data from both domestic and foreign authors indicate that the number of patients with osteochondrosis increases every year. Osteochondrosis often causes severe neurological and orthopedic disorders that lead to losing efficiency and sometimes disabling, that is why the problem of its adequate treatment and prevention is of great medical and social importance. According to R. Gatchel more than 80% of the world's adult population is experiencing back pain. He has personal experience of treatment of neurological symptoms[6].

In most cases spine osteochondrosis is the result of muscle overstrains that occur while making similar type of physical movement. It mainly develops among individuals with weakened muscular system. Restoring of elastic properties of cartilaginous tissue promotes the use of special physical exercises that stretch intervertebral cartilages that improves their nutrition and oxygen supply.

**Analysis of the recent research and publications.** According to A. Knapic, E. Saulicz, M. Kuszewski, R. Plinta [7], various moderate physical activities favorably affect the spine and joints. Special exercises not only help to strengthen muscles, but also develop compensatory mechanisms aimed at restoring the broken condition of physiological balance of vertebral motor segments. Physical exercises are the primary means of healthful gymnastics.

Muscle relaxation exercises are important for treatment of patients with spinal osteochondrosis. They help to reduce compression of spinal cord roots, relieve fatigue, and improve blood and lymph circulation in overstrained muscles. Muscle relaxation in spinal osteochondrosis is being carried by reducing tension of the muscles that keep the head and torso upright; easy shaking of the relaxed part of the body; free wing movements of the upper limbs. Relaxing muscles of the shoulder girdle promote: starting position is lying down or sitting with support for the head, back and arms; static breathing exercises provided with no hands weight (put them on resistance); slight shake of the shoulder girdle area on the upper third of the shoulder; slight shaking hands in the slope; free lowering raised shoulder girdle fixation with hands on resistance. Free upper limb muscle relaxation can be achieved by slight shaking of hands; lowering the designated free hand; free fly motion with hands. According to R. Carney, K. Freedland, one of the key aspects of rehabilitation is dosed vertebrogenic kinesiotherapy [5].

Special coordination-based exercises help to improve blood supply to the roots throughout their length. Thus, simultaneous movements of joints of the limbs, and the movements can be performed either in one direction or in different directions both same and oppositely limbs.

Special breathing exercises play an important role in treatment of patients with spinal osteochondrosis as significant part of the respiratory muscles are in a state of fatigue, because of their prolonged overstrain. As the pain fades away diaphragmatic breathing should be included. Thus, the use of special breathing exercises in spinal osteochondrosis helps to reduce strain and improves blood circulation conditions to muscles of the neck, shoulder girdle and lower back. They are usually involved in the pathological process.

Exercises aimed to strengthen muscles of the neck and torso help to restore functioning of the spine, rehabilitation and prevent relapses. As for controlling muscle groups there are used mostly static exercises, their use is appropriate only after elimination of clinical case of the disease. Earlier application of the exercises in static muscle tension can cause exacerbation of the disease [1]. Strengthening muscles of the neck and torso should be performed in a standing position. Prolonged tension in the muscles lead to deteriorating terms of circulation and metabolism and that is why desired effect could not be achieved.

The work had the following **objective**: studying effectiveness of the developed techniques of normalization of motion in the cervical spine region is based on the results of orthopedic research methods for students with cervical spinal osteochondrosis enrolled in a special medical group.

To achieve the objectives it was applied the following **research methods**: analysis of scientific and technical literature; pedagogical supervision; orthopedic methods (determination of motion in the cervical spine, determine range of motion of the head and neck).

**Presentation of the main material of the research.** Experimental work was carried out during 2014–2015 at LesyaUkrainka Eastern European National University. In the experiment took part students aged 19–20 (16 boys and 20 girls), who for health reasons were attributed to a special medical group with the diagnosis — first degree of cervical osteochondrosis, characterized the beginning of destruction of the intervertebral discs, appearance of aching pain. There were no pain in some of the investigated, but the disease proceeded with noticeable discomfort in the neck.

Investigated were divided into two groups: control (8 boys and 10 girls) and experimental (8 boys and 10 girls). The control group was engaged in the studying according to traditional methods. Young boys and girls performed same exercises that were focused on strengthening the muscle corset, correcting posture, increasing flexibility copula-muscular system, increasing the stereotype of correct movements. Massage and self-massage were recommended to strengthen the muscles and to relieve tension in the neck area.

The methodology of the studies in the experimental group was based on the development of I. Kosheteva, M. Repnevskaya, D. Yakovenko. The feature of the developed technique was that a set of exercises for boys and girls was different. Exercises to strengthen side and front neck muscles, massage exercises that improve blood flow to the brain and exercises for formation of the correct posture while lying, standing, walking and sitting at a desk were to be carried out for students of both sexes. Exercises to stretch the spine, such as hang on the crossbar and exercises from the yoga arsenal did only the girls. Guys did exercises that develop muscles and support the spine, pull-ups, push-ups, and training on simulators. Along with traditional massage and self-massage was proposed to do an anesthetic honey massage-compress: put a little bit of honey on the heated neck and shoulder area, squeeze a hand to the sore spot, and then pick up sharply, wrap the sore spot and leave for an hour.

During the experimental work it was aimed to determine the efficacy of traditional and proposed methods, students were evaluated in the control and experimental groups: range of motion in the cervical spine (during the inspection was indicated the direction with a limited range of motion of head and neck).

The soil survey of students with spinal osteochondrosis requires thorough study methods of treatment based on the results of research of other experts. I. Kosheteva [2] gives conclusion on health and functional status of the organism of those under investigation and determines tolerance to physical activity according to evaluation of physical condition and physical performance. Her recommendations include adequate to health status types of physical activity and individual exercises. To reduce pain and improve overall health she recommends simple in performance exercises, therapeutic posture and massage techniques.

M. Repnevskaya et al [3] show that in cervical osteochondrosis spine extension is effective as well as compliance of general methodological principles. Working with students with spinal osteochondrosis in the initial and main periods of treatment active movement in the cervical spine are eliminated; all gymnastic exercises are alternating with relaxation exercises; introduce exercises to strengthen the neck muscles using resistance exercises and for maintenance of the head. Self-massage of the neck is recommended. These exercises helped to improve mobility of the neck and reduce pain when students bended and turned their heads.

The results of our study are related in many ways to research provided by I. Kotesheva, M. Repnevskaya et al. Mobility of the cervical spine in the experimental group is presented in Table 1.



Table 1

**The results of the measurements of motion in the cervical spine of the students in the control group corresponding to a rate (%)**

<i>Range of motion (normal)</i>	<i>Sex</i>	<i>At the beginning of the experiment</i>	<i>After the experiment</i>
Bending (60°)	B	37,5	50,0
	G	30,0	60,0
Extension (70°)	B	62,5	75,0
	G	50,0	70,0
Incline toward (45°)	B	50,0	75,0
	G	50,0	70,0
Maximum rotation	B	37,5	62,5
	G	30,0	50,0

In the experimental group of students during visual studies of motion in the cervical spine at the beginning of an experiment indicated that bending is normal (chin touched sternum) among 30,0 % of girls and 37,5 % of boys; extension (horizontal position of nape) – among 50,0 % of girls and 62,5 % of boys; incline toward (auricle touched shoulder) – among 50,0 % of girls and 50,0 % boys. The maximum rotation of chin touched the acromion only among 30,0 % of girls and 37,5 % boys. Summarizing the results of measuring the range of motion in the cervical spine at the beginning of the experiment, we can say that the majority of students had serious deviation from the generally recognized rules of motion in the cervical spine.

After the experiment, 50,0 % of boys were able to touch chest by the chin and take chin to the horizontal position of the neck (75,0 %), which is an evidence of normal function of flexion and extension. Bending among 60,0 % of girls and extension among 70,0 % of girls of the cervical spine in the neck were normal; at maximum rotation chin touched the acromion among 62,5 % of boys and 50,0 % of girls.

Range of motion in the cervical spine in the control group is presented in Table 2.

Table 2

**The results of the measurements of motion in the cervical spine of the students in the control group corresponding to a rate (%)**

<i>Range of motion (normal)</i>	<i>Sex</i>	<i>At the beginning of the experiment</i>	<i>After the experiment</i>
Bending (60°)	B	37,5	50,0
	G	30,0	40,0
Extension (70°)	B	62,5	62,5
	G	50,0	60,0
Incline toward (45°)	B	50,0	62,5
	G	50,0	60,0
Maximum rotation	B	37,5	50,0
	G	30,0	40,0

In the control group after the experiment the normal function of bending was recorded among 50,0 %, extension among 62,5 % of boys; respectively, girls – 40,0 % and 60,0 %. Head tilt was normal among 62,5 % of boys and 60,0 % of girls; maximum rotation among 62,5 % of boys and 50,0 % of girls. As you can see, according to the results of the research after the experiment better performance of motion in the cervical spine was observed in the experimental group of students.

Studying the method of complex effects in osteochondrosis D. Yakovenko [4] recommended organizing exercises that depend on the goals in a way that included general developmental exercises; special strength exercises for strengthening of back muscles, abdominal and leg press. He paid special attention to the development of flexibility and mobility in shoulder joints. To determine the effectiveness of the proposed method was carried out a pedagogical experiment in which were involved students in the special medical group. According to the study students noted increased mobility of in all parts of the spine. While organizing exercises in spinal osteochondrosis it is necessary to use relaxation exercises muscles to improve stability of the vestibular apparatus, coordination, dynamic exercises for all muscle groups, special breathing exercises,

exercises to strengthen the muscles of the neck and torso. Analyzing results of the research I. Kotesheva, M. Repnevskaya, D. Yakovenko and our own research we can see that special set of exercises in combination with massage – compress are more effective than traditional methods, which are used in cases of cervical spinal osteochondrosis.

**Conclusions.** The use of orthopedic research methods and interviews showed greater efficiency in normalization of motion in the cervical spine among students who did exercises according to our methodology, based on sets of exercises performed individually selected for girls and boys, along with using classical techniques of massage and self-massage anesthetic honey massage-compress in the neck region.

**Prospects for further research** are in developing a comprehensive program of physical education for students with cervical spinal first and second osteochondrosis degree.

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## Problem-oriented Program of Physical Rehabilitation of Women with Postmastectomy Syndrome at the Hospital Stage of Rehabilitation

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### Abstract:

The most frequent consequence of treatment of breast cancer is postmastectomy syndrome that combines abnormalities of physical, functional and psycho-emotional state. Postmastectomy syndrome is characterized by considerable variability in symptoms which occur in different time periods of treatment of breast cancer. *Objective:* to develop and ground the problem-oriented program of physical rehabilitation of women with postmastectomy syndrome at the stationary stage of rehabilitation. *Materials and methods of the study* – theoretical analysis and generalization of scientific and methodical literature and internet sources. The study involved 50 women with early signs of postmastectomy syndrome who underwent radical mastectomy by Madden for breast cancer at the hospital stage of rehabilitation. *Results:* The developed problem-oriented program of physical rehabilitation included using of static and dynamic breathing exercises, lymphatic massage and self-massage, correction of posture, stretching exercises, medical provisions, post-isometric relaxation, elements of ergotherapy, manipulative interventions (breathing through pursed lips, controlled coughing, autologous drainage, manual pressure, manual vibration) and auto-training. The goals and selection of physical rehabilitation depended on individual characteristics of women, the nature of postoperative period, taking into account concomitant diseases. Correction of the mental condition of women and related psychosomatic disorders at a hospital stage of rehabilitation is carried out by means of training of the basic elements of autogenous training, visualization, muscle relaxation, and self-regulation of breathing. *Conclusions:* The developed program can be used in conditions of therapy and rehabilitation establishments when dealing with women of this nosology.

### Key words:

*postmastectomy syndrome, rehabilitation, women, program.*

**Introduction.** Postmastectomy syndrome (PMS) is characterized by considerable variability in symptoms, which occur in a different time period of treatment of breast cancer: early signs have post-traumatic nature and occur after surgery [2], later – due to the use of complex or combination therapy and characterized by plexites, contracture of shoulder joint, lymphostasis, pain, reduced muscle strength, cerebrovascular disorders [1].

Advanced researches prove purposefulness of early diagnosis and correction of complications from side of muscular skeletal apparatus, cardio-vascular and nervous systems for their removal in due time and improvement of women's life quality [3; 4; 5; 6]. However, prevailing orientation on medical component of rehabilitation, development of modern schemas of medical provisioning, implementation of reconstructive-plastic operations do not pay sufficient attention to physical rehabilitation of patients with postmastectomy syndrome.

The above said undoubtedly witnesses about importance of working out, conduct and determination of usefulness of timely rehabilitation measures among women with postmastectomy syndrome.

**Communication of the work with scientific programs, plans, subjects.** The research corresponds to the topic of research Lviv State University of Physical Culture «Fundamentals of physical rehabilitation of women with postmastectomy syndrome» (state registration 0115U007008).

**Objective:** to develop and validate the problem-oriented program of physical rehabilitation of women with postmastectomy syndrome at the stationary stage of rehabilitation.

**Material and methods of the research:** theoretical analysis of scientific-methodic literature data, the Internet, induction, comparison. The research was carried out on the base of Zaporizhzhya regional cancer center. In experiment participated 50 women with early symptoms of postmastectomy syndrome who underwent a radical mastectomy by Madden. The average age of women was  $55,44 \pm 1,26$  years.

**Results of the research and their discussion.** Stationary phase involved the individual classes and divided into preoperative (from receipt of the patient in the hospital), early and late postoperative stages, according to which were allocated tasks, means and methods of rehabilitation, taking into account contraindications and warnings, which mainly related to range of motion, strength and functional loads.

Preoperative period was focused on setting up women for future treatment, to learn the exercises of early postoperative period, to improve the functional state of the cardiovascular and respiratory systems, to create optimum psychophysiological status of women.

The objectives of early postoperative phase were: prevention of stagnation in the lungs; improvement of emotional state; prevention of early postmastectomy complications; self-learning techniques and movements; learning of self-massage lymph techniques.

The tasks of the late postoperative phase were: prevention of abnormal postures; preparation for everyday loads; increase muscle strength of upper limbs, back, abdomen; improvement of emotional state; improving endurance; motivation for self-employment.

Main means were general and special physical exercises; static and dynamic breathing exercises; breathing through preloaded lips, controlled coughing, autogenic drainage, manual pressing, manual vibration; post-isometric relaxation; elements of labor therapy; lymphatic drainage massage and self-massage; topical talks; consultations; auto training. For every patient of main group means, forms and methods of physical rehabilitation, which would reach the target in the most effective way, were selected individually. The trainings were conducted individually 2–3 times a day; 20–30 minutes every session. The patients' independent trainings included: fulfillment of therapeutic positions, self-massage, relaxation exercises and auto-training.

Manipulation intervention used to improve lung ventilation, prevention hypostatic phenomenon and reduction of breathlessness. For the treatment and prevention of early upper limb edema on the operation side was applied therapeutic massage by paravertebral zones Th<sub>7-1</sub>, S<sub>7-3</sub>, which leads to improve tonic reflex and vasomotor function of lymphatic vessels. This type of massage started on 2nd day after surgery in a sitting position. At the end of the massage women wore compression glove for 3–4 hours.

Contra-indications for therapeutic exercises and massages for women in the postoperative period were common grave condition, fever, presence of metastases, postoperative complications, acute pain, erysipelas.

In the first hours after awakening from anesthesia a patient's upper limb was raised on the elevator pillow to position the shoulder abduction 30–40 degrees from the chest and performed active movements of the wrist and metacarpophalangeal joints to prevent edema and stimulating the formation of collateral pathways of lymph. Performing these exercises necessarily alternated with light oscillating movement of the upper extremity for relaxation and relieving muscle tension. Each exercise was repeated 8–10 repetitions 4–6 times a day at a slow pace.

Postisometric relaxation was conducted to reduce muscle spasm, pain and increase range of motion in joints, particularly in the shoulder. Application sets of exercises with sticks were aimed to increase the range of motion in the shoulder joint, improving posture and simultaneously served as aggravating means to increase muscle strength.

We used exercises with burdening weight of own body, with isometric tension and general development to increase muscle strength. After the strength training was required to perform stretching the working muscles to relieve tension, as well as attracted to the muscle-antagonists, allowing symmetric load a single part of the body. Using stretching exercises muscles, guided by the principle of the impact on the muscles' «contraction-relaxation-stretching», the essence of which is that the muscles are subjected to pre-small static voltage for 3–4 seconds, then they relax and static stretch for 10–15 seconds and after cycle motions is repeated.

At this rehabilitation stage it is advisable to use active exercises and rocking exercises using healthy limb to increase the range of motion in the shoulder joint. Exercises with rocking in the shoulder joint are held in gradually increasing volume, to achieve recovery of the limb operations to horizontal level. Using medical provisions for the upper limbs promoted simultaneously reducing muscle tone shoulder girdle and prevention of edema on the operated side. We use a pillow elevating and lifting height, which is adjusted depending on the individual characteristics of the patient. This home position is taken after exercise, self-massage or a manual lymphatic drainage.

**Conclusions.** Problem-oriented program of physical rehabilitation was developed to successfully overcome early signs of postmastectomy syndrome, which included static and dynamic breathing exercises, lymphatic massage and self-massage, correction of the position, stretching exercises, medical provisions, post-isometric relaxation, elements of occupational therapy, manipulative interventions (breathing through pursed lips, controlled coughing, autologous drainage, manual pressure, manual vibration) and auto-training.

**Prospects for further research** include the development of personality-oriented programs of physical rehabilitation at clinical rehabilitation stage.

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# *Olympic and Professional Sport*

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## **Study of Changes in Level of Physical Capacity and Physical Preparedness of Female Athletes of High Qualification in Sports Aerobics in an Annual Cycle of Preparation**

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### **Abstract:**

*Topicality of the work.* It is studied the current state of the problem of increasing the efficiency of training process of female athletes of high qualification in sports aerobics at the stage of implementation of the individual maximum capacity; peculiarities of changing the level of physical performance, aerobic capacity and physical fitness of highly skilled female athletes in sports aerobics in a year cycle of preparation. It was found out that development of new programs of building of the training process of highly qualified athletes that would meet the requirements of sport of high achievements is topical nowadays. *Results of the work.* It was found out that at the beginning of the preparatory period of a year cycle of preparation it was observed average values of indicators of physical performance and aerobic capacity, as well as average, below average or above average performance of special physical readiness of the surveyed. The absence of significant changes in these indicators at the end of the preparatory period was shown. It was testified that at the end of the competition period there was a significant, compared with the end of the preparatory period, the decline in physical performance to 13,87 – 14,06 %. Similar changes were observed with indicators of aerobic capacity of an organism. We have analyzed the performance of special physical fitness of female athletes at the end of the preparatory and competitive periods. The end of the preparatory period was marked by increasing the rates from 2,46 to 5,19 %, and at the end of the competitive period – significant decline. At the end of the competition period the results dropped by between 1,87 to 9,58 %. It is proved that the use of the current program of construction of the training process did not contribute to increase of the level of physical performance, aerobic capacity and physical fitness to the completion of the preparatory period, as well as the optimal level of these indicators during the competition period. *Conclusions.* It was established experimentally that the use in the training process of highly skilled female athletes of the current program does not contribute to considerable improvement of their level of physical capacity and aerobic capacity and physical fitness.

### **Key words:**

*sports aerobics, working capacity, preparedness, qualification, period of preparation.*

**Stating the problem.** Improvement of long-term sports training system in different kinds of sports activities still remains one of the most topical problems of the sports theory and methodology [5; 7; 8].

Various aspects of a problem which examines the training process construction and separate component's perfection of sportsmen's general preparedness of different age and specializations were investigated by a great number of authors [1; 2; 9]. It allowed us to obtain information about high efficiency of sportsmen preparation in accordance with the modern requirements of sports of high achievements.

Special attention, according to many experts, has to be devoted to maximal implementation of individual possibilities, which envisages the achievement of the highest sporting scores by sportsmen in the selected type of sport. This is due to the decline of sporting achievements of native sportsmen and sportswomen in the international arena for the last 5–10 years in many kinds of sports [3; 4].

Thus, the study of efficiency of the training programs construction of highly qualified sportswomen, who specialize in sports aerobics, for optimization of level their physical capacity and physical preparedness determine topicality and practical meaning of the study.

Work is an integral part of the scientific programs of the Faculty of Physical Education and the Department of Olympic and Professional Sport of Zaporizhzhya National University and is executed within the framework of the theme of «Study of adaptive possibilities of sportsmen's organisms on different stages of educational-training process» (the number of national registration 0110U000683) of the Erected plan of Science and Research Work by Department of Education and Science of Ukraine in 2010–2015 years.

**The aim, methods and organization of the research.** The main aim of the current study was to evaluate the efficiency of the existing building program of the training process of highly-skilled sports aerobics athletes in the annual cycle of preparation in order to fully increase and implement maximum individual potential.

Tasks of the research were solved with the help of the following methods: analysis and generalization of scientifically-methodical literature; generalization of sports-pedagogical experience; pedagogical supervision; pedagogical experiment; pedagogical testing of physical capacity, aerobic possibilities and special physical preparedness, methods of mathematical statistics.

The experimental study was conducted with two stages. The first stage examined the current state of the problem of improvement of the efficiency of highly qualified athletes within the training process, who specialize in sports aerobics, up to the stage of realization of individual potential.

Pedagogical experiment was held in the second stage. It studied the dynamics of physical features of operability, aerobic capacity and physical fitness of qualified athletes as part of the annual training cycle.

Research was conducted on the base of sports club of Zaporizhzhya National University from 2013 to 2014. The research involved 20 sportswomen of high qualification, aged from 18 to 24 years, specializing in sports aerobics and the ones, who have the title of master of sports of Ukraine. All athletes were part of the mixed team of Zaporizhzhya National University.

**Research results.** Pedagogical experiment was conducted in accordance with the current program of training process of construction of highly-qualified sportsmen and calendar events. The training process in the annual cycle had a classical two-phase scheme. It included preparatory, competitive and transition periods that contained inverted, basic, control and preparation, pre-competition and competitive meso-cycle, but only if they had all types of micro-cycles.

It is proven that at the beginning of the experiment which was linked to the beginning of the annual cycle preparatory period, it was observed that athletes showed the average physical performance operability, aerobic capacity and average, below average and above-average performances of their special physical preparedness (Table 1).

Second testing of athletes which was held at the end of the preparatory period did not allow to record significant ( $p > 0,05$ ) changes in these indicators, although improvement in quality evaluation tests for speed-strength and coordination abilities should be noted.

Table 1

**Indicators of physical operability, aerobic performance and special physical preparedness of highly qualified athletes (n = 20) at different stages of the annual cycle of preparation ( $\bar{X} \pm S$ )**

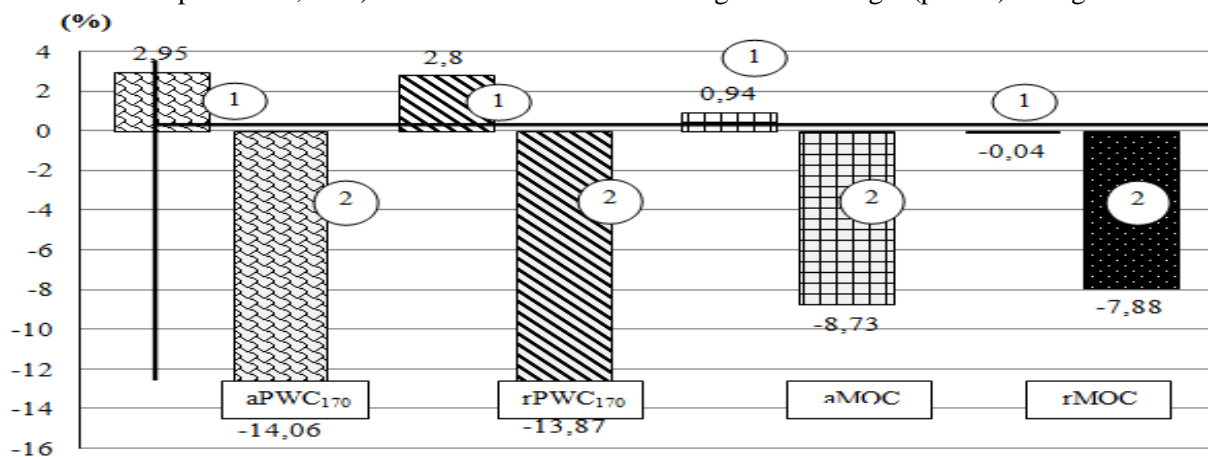
Indicators	Start of the preparatory period	End of the preparatory period	End of the competition period
BPWC <sub>170</sub> , kgm•min <sup>-1</sup> •kg <sup>-1</sup>	20,76±1,11 average	21,36±1,00 average	17,88±1,09* below average
BMSK, ml•min <sup>-1</sup> •kg <sup>-1</sup>	55,73±2,76 average	55,71±1,94 average	51,32±1,81 average
Amplitude leg swings, amount	144,20±1,30 above average	147,75±1,50 above average	141,48±1,17** above average
List of flexibility tests, points	8,13±0,14 average	8,38±0,14 average	7,79±0,11** average
Angle emphasis, s.	21,40±1,85 below average	22,45±1,56 below average	19,35±1,47 below average
Straight legs lift, amount	9,90±0,47 average	10,35±0,39 average	9,43±0,38 below average
Arm's push-ups, amount	19,25±0,58 average	20,25±0,56 average	18,02±0,41** below average
Long jump, cm	196,10±2,36 average	201,05±2,31 average	192,34±1,98** Below average
Squatting on one leg, amount	46,80±1,30 above average	48,15±1,32 above average	44,12±1,27* average

Notes: \* –  $p < 0,05$ ; \*\* –  $p < 0,01$  compared with the index's value in the middle of stated experiment. Levels on «below average», «average», «above average» – M. V. Malikov (2006).

Analysis of physical operability and aerobic capacity of the athletes testified reduced levels of physical operability and aerobic capacity by the end of the competition period. There was a significant change ( $p < 0,05$ ) compared to the middle of the experiment (completion of the preparatory period) and following

decline in physical operability:  $aPWC_{170}$  to 14,06 % and 1,87 % for  $rPWC_{170}$  (Fig. 1). Moreover, in the second phase, the indicator's quality level went down from «average» to «below average». Similar changes were observed with another couple of the body's aerobic capacity indicators of athletes with the only one difference – transition values tested in different quality levels were not observed.

According to the results on the beginning of the preparatory period, the absolute and relative levels of importance MOCs, based on the results of testing at the end of the preparatory period, changed to 8,73 % (difference between the middle and the end of the experiment) and from 7,79 % to 7,84 % (difference between the middle and the end of the experiment 7,84 %). None of the indices showed significant changes ( $p > 0.05$ ) during the test.



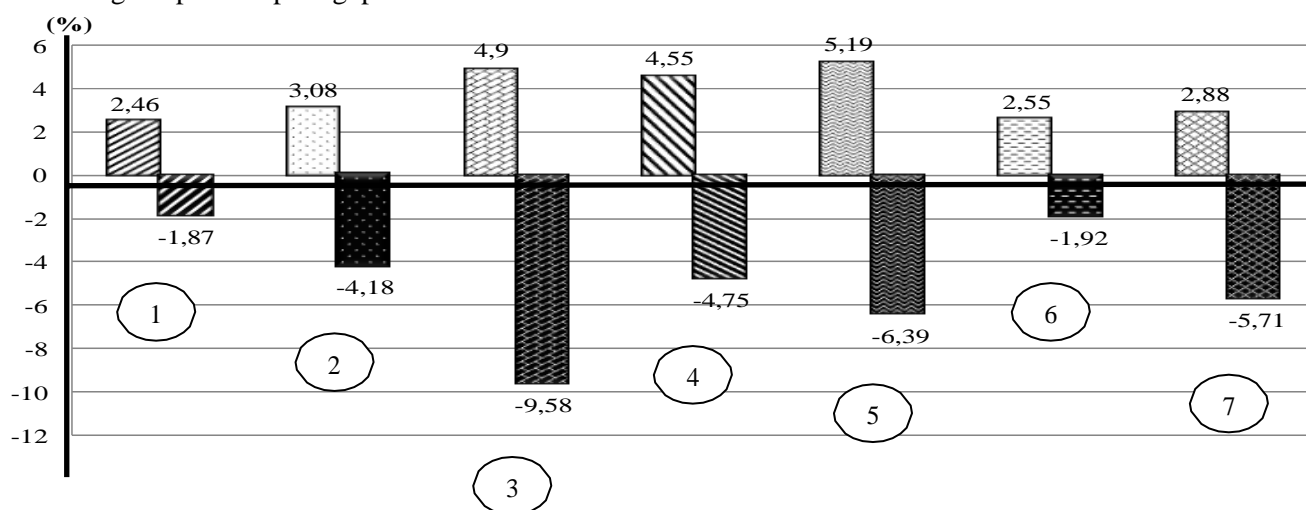
**Fig. 1.** Changes in physical operability and aerobic capacity of highly-skilled athletes' qualifications in sports aerobics during the end of preparatory training cycle and the whole competition cycle (in % from baseline).

Notes: (1) –end of preparatory period; (2) –end of competition period;

Evaluation of athletes' special physical training has shown that (Fig. 2) at the end of the preparatory training period has showed some growth from 2,46 % to 5,19 % ( $p > 0.05$ ).

The end of competitive season was characterized with significant ( $p < 0.05$ ;  $p < 0.01$ ) decrease of results in most of special physical fitness tests compared to the beginning and end of the experiment (completion of the annual preparatory period). All tests of general and special physical fitness competition period showed a relative decline in value results from 1,87 % to 9,58 %.

Listed results lead into a conclusion that the use of current training-process building program does not contribute to increase of the level of physical, technical, artistic, choreographic and compositional training during the pre-competing phase.



**Fig. 2.** Changes in physical fitness of highly-qualified sports aerobics athletes' qualifications during the annual training cycle (in % from the baseline).

Notes: 1 – «Amplitude leg kicks»; 2 – «Listofflexibility tests»; 3 – «The angle's emphasis»; 4 – «Lifting straight legs from climbing wall to touch toes for 30 seconds»; 5 – «Two arm push-ups»; 6 – «Long jump»; 7 – «Squatting on the right/left foot, left/right ahead or known as «gun»».



As well as the optimal level of these indicators do not help to win during the competitive period in the preparation of highly skilled athletes in sports aerobics. As a result there were relatively low places in competitions at various levels (4–7 places).

**Conclusions and recommendations for further research.** After analyzing the results the following can be stated:

1. Analysis of scientific and methodical literature suggests that the problem of improving the training process of sports-aerobic athletes requires further investigation on stage to realize individual potential. One of the promising ways to improve the various components of the overall preparedness of qualified sport-aerobic athletes is to develop new programs build training process in the annual cycle of training.

2. The results of the experiment revealed that the use of the training process of highly-skilled sports aerobics athletes does not promote substantial optimization of their physical capacity and aerobic capacity and physical fitness while using the current building program. The following should be pointed:

- Only average physical capacity, maximal oxygen consumption and average and below average physical fitness values were typical for athletes at the beginning of the experiment;

- At the end of the preparatory period of sportsmen were no significant ( $p > 0,05$ ) changes in indicators of general fitness. It was confirmed that small size relative values increased in overall physical operability (at  $2,89 \pm 1,35$  % compared to baseline), aerobic performance (at  $0,17 \pm 1,22$  %), high-speed and power-speed (at  $2,46 \pm 1,53 - 5,19 \pm 1,39$  %), static strength endurance (at  $4,91 \pm 1,31$  %), speed-strength endurance (at  $2,88 \pm 1,4$  3%), the level of flexibility (to  $3,08 \pm 1,41$  %), explosive strength (at  $4,04 \pm 1,29$  %);

- Athletes observed a significant deterioration after the competition period, compared with the results of testing at the end of the preparatory period. Most indicators of overall fitness showed, namely to  $16,29 \pm 1,48$  % of physical performance, to  $7,88 \pm 1,37$  % aerobic performance to  $4,24 \pm 1,27$  % –  $13,87 \pm 1,37$  % specific indicators of physical fitness.

The prospect of further research is to develop and implement the construction of the training process of sports-aerobics athletes in order to increase their maximal individual potential.

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## **Concentration and Distribution of Attention in Sports Swimming, Competitive and Rhythmic Gymnastics**

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### **Abstract:**

Swimming in conditions of training and competition is considered as a specific sports activity that creates conditions for the appearance and development of diverse mental features of a person, including for such property as attention. In our work attention is considered as one of the properties of an individual athlete which ensures the implementation of its sports activity, it is one of the mechanisms of its control and regulation. Tasks of the work are to assess the level of concentration and distribution of attention among swimmers and gymnasts, and to compare the obtained data from athletes with different levels of mastery and the same level of mastery. It is shown that with the growth of sports mastery of swimmers there is the tendency of growth of quantitative indicators of concentration and distribution of attention. It was found out that the role of attention as a mechanism of control and regulation of activity varies in different kinds of sports activities. In gymnastics (competitive and rhythmic) concentration of attention and especially its stability play a more prominent role than in swimming.

### **Key words:**

*attention, swimmers, gymnasts, indicators, level of sports mastery*

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**Description of the problem under consideration and its significance.** Attention is the most studied mental function. Attention studies began at the stage of scientific psychology formation, and in a way even preceded it and was its main contents.

At the same time, both in native and foreign psychology attention content and its role in human mental activity are regarded ambiguously. The main problem, which is sharply debated, is the following: is attention an independent process, or is it the party, the aspect of any mental activity. In native psychology this dilemma is presented by two concepts of attention «attention is the direction and focus of any activity» and «attention is a special control activity» [2, p. 543].

However, supporters of a wide variety of views on the nature of attention recognize the fact that the result of the attention is to improve all activities to which it is attached. The famous psychologist P. Ya. Halperin has developed the concept attention in which this mental function acts as an activity of mental control based on this provision [1]. The improving of the results, when the attention joins, Halperin explains that mental control is carried out using the criterion, the measures, the sample, «in psychology it has been known for a long time that the presence of the sample «prevenient image», creating the possibility of clearer comparison and distinction, leading to a better recognition of events (and therefore to other positive changes, peculiar to attention)» [1, p. 538]. Based on the concept of attention, proposed by P. Ya. Halperin, we consider this mental function as the physiological mechanism that provides control of sporting activity and, consequently, and provides the quality of the activity, its success.

Person's behaviour in sports is governed by the same laws as in any other activity (work, study, play, creative). The level of athletes' performance of sports activities, their acquisition speed depends on a range of mental functions, which in this case act as personal qualities that are important for a particular athletic activity. Attention is no exception. R. M. Naydiffer analyzed the features of the attention in the sport, and said that «many of highly skilled athletes have the ability to an arbitrary attention concentration, which most of us can only dream about» [3, p. 761]. However, the display of attention in various kinds of sports activities is a problem that has been intensively studied in sports psychology and is important for such applications issues as improving efficiency of athletes and organization of the training process.

**The relevance** of the study is that it considers properties of attention (concentration and distribution) as regulators of the behaviour of swimmers, observed the dynamics of these properties in the process of sports skills formation, compares the role of these properties in various types of sports activities.

**Objects** of the research are the concentration and distribution of attention of athletes, swimmers and gymnasts.

**Subject** of the research is the identification of the attention concentration and distribution relationship to the level of swimmers sportsmanship, as well as a comparison the concentration and distribution of attention among athletes in different kinds of sports activities.

**Hypotheses** of the study:

- if the concentration and distribution of attention is professionally important qualities of a swimmer, so their quantitative indicators should increase of sportsmanship under investigation;
- Display of concentration and distribution of attention in various sports should have its own specifics.

**Research objectives:**

1. to diagnose the level of concentration and distribution of attention of swimmers and athletes involved in other kinds of sports;
2. to compare the concentration and distribution of attention of swimmers and athletes of different level of sportsmanship;
3. to compare the concentration and distribution of attention of swimmers and athletes at the same level of sportsmanship.

**The organization and methods.** As the base of research were taken the Volhograd Academy of Physical Culture and Sports (VAPCS) and swimming center «Volha», Russian national swimming team.

The volume of people under investigation was 118. The study involved 18 swimmers (VSAPC students), 18 representatives of gymnastics (VSAPC students), 15 representatives of artistic gymnastics (students VSAPC), 24 young swimmers in the experimental group, 23 swimmer of the swimming center «Volga», 20 swimmers, members of the Russian national swimming team. Swimmers were represented by 4 groups, which differ in the level of sports skills (level of sports skill of young swimmers is low; students-swimmers, mostly stroke swimmers and rarely CMS; swimmers of the center «Volha» and members of the Russian national swimming team, mainly CMS and MS).

The main organizational method of attention studying of swimmers with different skills ranks and representatives of different sports activities was the comparative study. Peculiarities of attention of swimmers with different levels of sportsmanship, the representatives of artistic gymnastics and free calisthenics were investigated. Moreover, in order to observe the development of attention of swimmers, we studied its indexes among young swimmers, swimmers-students, masters-swimmers and swimmers of the Russian national team.

Psychodiagnostic method of correction task was used as the empirical research method. [7, p. 4–7]. The reliability of the results of the research was provided by a representation of people under test, using standardized diagnostic methods of concentration and distribution of attention, as well as the use of statistical processing methods of empirical material.

The testing occurred in the individual form across two stages. On the first stage the concentration of sportsmen's attention was studied. To conduct the research we used a standard test form «correction task» and a stopwatch. On the form letters of the Russian alphabet were typed randomly, altogether 2000 signs, 50 letters in each line. The people under testing were proposed to cross out required letters for 5 minutes. They started to work due to experimentator's command. At the end of each minute of work people under testing put vertical line into the test form due to experimentator's command, and after 5 minutes they noted the last seen letter.

On the second research stage the distribution of sportsmen's attention was studied. They received the standard test form «correction task», but they were proposed to cross out the required letters in odd and even lines of the correction table in variety of ways.

In test form of the «correction task» processing number of indicators was calculated: the total number of letters scanned for 5 minutes and each minute of work; the number of letters correctly crossed for 5 minutes and each minute of work; the number of letters that was necessary to cross out.

Then, due to the corresponding formulas quantitative indicators of concentration and distribution of attention for the whole time and every minute of the work were calculated. These indicators allow to quantify the level of concentration and distribution of attention of sportsmen and to observe the dynamics of these attention features in the process of testing.

Statistical analysis of these data included the computation of the standard (root mean square) deviation. Standard deviation (St. dev.) is one of the variance (dispersion, scatter) characteristic of experimental variable significance around the mean value. It is equal to the square root of the sum of all deviations from the arithmetic average variant raised to the square and divided into the number of all variants minus one. We consider the indexes of the standard deviation as a stability characteristic of the concentration and distribution.

**Basic materials and argumentation of investigation.** For ease of analysis of the data all results for each group of swimmers were add to the Table 1, which shows the average values of concentration (C) and distribution (D) of attention, the standard deviation (St. dev.) of these values.

Table 1

**Quantitative indicators of attention concentration, distribution and their stability of sportsmen-swimmers with different levels of sportsmanship**

№	Groups of people under testing	Indicators of attention concentration (C) and distribution (D)							Indicators of stability (St. dev.)
		C/D	Gen.	1 min.	2 min.	3 min.	4 min.	5 min.	
1.	Experimental group	C	85,7	83,4	83,1	85,8	88,8	87,6	2,18
		D	74,7	76,9	73,6	74,4	75,7	73,1	1,52
2.	Swimmers (students of VSAPC)	C	90	93,3	90,3	88,2	89,4	89	1,97
		D	83,8	82,2	83,9	85,2	87	80,5	2,53
3.	Swimmers of the center «Volha»	C	83,4	84,2	85,6	87	82	78	3,57
		D	73,2	76,2	84,6	68	69	68	4,16
4.	Swimmers of the Russian national team	C	93	96	93	93	89	94	2,3
		D	82,6	81	84	79	83	86	2,8

Comparing the general indexes of attention concentration of swimmers from four groups that differ in their qualifications, indicate the increasing tendency with the growth of sports skill of swimmers (the exception is a general index of attention concentration of swimmers from the swimming center «Volha»).

So, the swimmers-beginners (experimental group) have the lowest general index of attention concentration ( $C_{gen}=85,7$ ). The skilled swimmers have much higher general attention concentration ( $C_{gen}=90$ ). And the swimmers from Russian national team showed the highest index ( $C_{gen}=93$ ).

Comparing the general indexes of attention distribution of swimmers in four groups suggests that there is a evident difference between the level of attention distribution of sportsmen who are at the stage of initial specialization and athletes with higher qualifications. There has been no significant differences overall performance of the distribution of attention in swimmers of primary level and those who are at a stage of sports perfection ( $D_{gen}=83,8$ ) and masters athletes ( $D_{gen}=82,6$ ). At the same time, general index of attention distribution of swimmers from the swimming center «Volha» ( $D_{gen}=73,2$ ) is lower than the one of young swimmers from the experimental group ( $D_{gen}=74,7$ ).

Attention is drawn to the fact that the general indexes of attention concentration of the sportsmen from four groups are higher than the general index of attention distribution. This fact indicates that the simultaneous concentration of consciousness on several subjects is more difficult internal activity than keeping of consciousness at one subject.

The indexes of concentration's stability and attention concentration of the sportsmen with various level of classification do not significantly differ, except the indexes of swimmers from the swimming center «Volha». This fact may indicate that the ability of swimmers under testing to keep the concentration and attention distribution at the appropriate level.

Dynamics of attention concentration and distribution indexes during the testing also shows that swimmers of all four groups can cope well with the task of keeping attention concentration and distribution at the optimal level for five minutes.

The attention is also drawn to the fact that quantitative indexes of attention concentration and distribution and indexes of concentration stability and distribution of the swimmers from the swimming center «Volha» are lower than the young swimmers' from the experimental group. At first sight this fact contradicts our hypothesis. However, the results, on the contrary, can confirm it. Low results of attention concentration and distribution diagnostics of high-skilled sportsmen from the swimming center «Volha» may indicate that the age of the sportsmen is not a significant factor in determining the level of attention concentration and distribution. Rather, the results of attention diagnostics of swimmers from the center «Volha» have been affected by some unaccounted factor (current emotional or physical condition of sportsmen, psychological climate in the testing group, some previous events, etc.). Consequently, general dynamics of quantitative indexes of attention concentration and distribution in all four groups is not determined by age differences, but the role that attention plays in the regulation of their activities and, above all, sporting activity.

In order to identify the features of attention concentration and distribution in various kinds of sports activity, we compared the quantitative indexes of these attention features of swimmers and gymnasts.

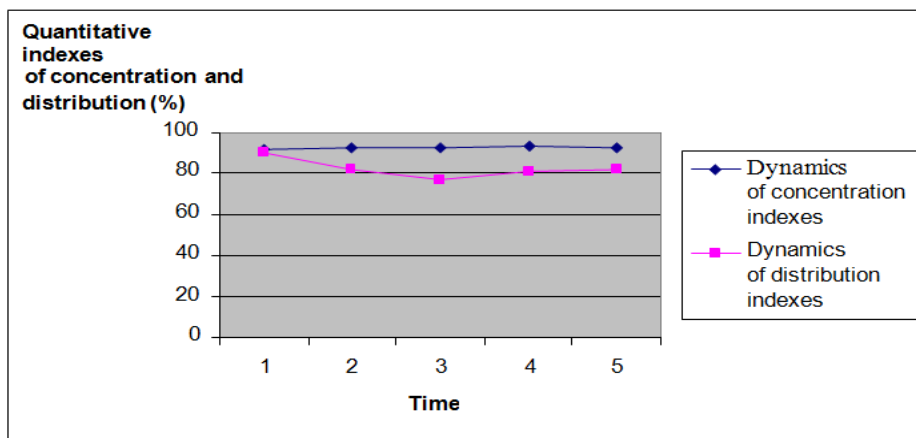
For comparative analysis we took a group of students-swimmers from VSAPC, as the members of this group are the closest in age and their level of sportsmanship to sportsmen-gymnasts. The statistics is presented in the Table 2.

Table 2

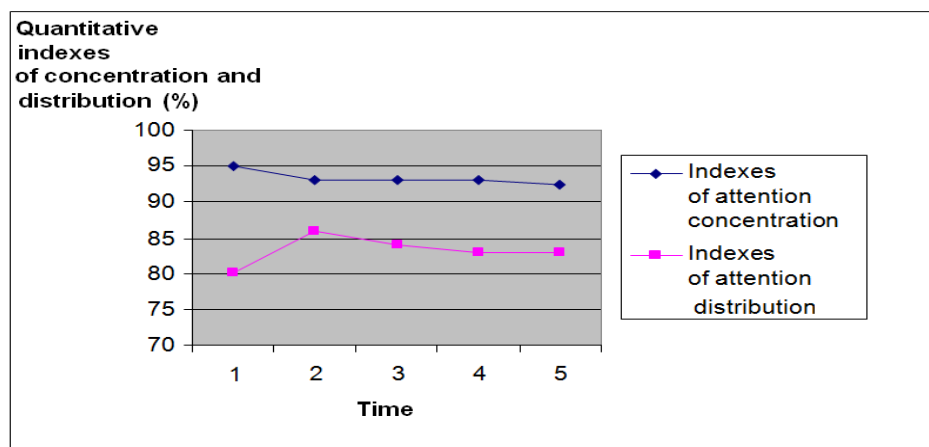
**Indexes of attention concentration and distribution of sportsmen-swimmers and sportsmen-gymnasts**

№	Groups under testing	Indicators of attention concentration (C) and distribution (D)							Indicators of stability (St. dev.)
		C/D	Gen.	1 min.	2 min.	3 min.	4 min.	5 min.	
1.	Swimmers (students of VSAPC)	C	90	93,3	90,3	88,2	89,4	89	1,97
		D	83,8	82,2	83,9	85,2	87	80,5	2,53
2.	Representers of free calisthenics (students of VSAPC)	C	92,6	92,2	92,7	92,5	93,1	92,5	0,57
		D	82,2	90	82,1	76,8	81	81,8	4,78
3.	Representers of artistic gymnastics (students of VSAPC)	C	93,3	95	93	93	93	92,4	1,0
		D	83,2	80,1	86	84	83	83	2,1

For the convenience of monitoring the dynamics of the attention concentration and distribution in sportsmen-gymnasts we have presented them in pictures 1–2.



**Pic. 1.** Dynamics of attention features of free calisthenics' representatives.



**Pic. 2.** Dynamics of attention features of artistic gymnastics' representatives

As it is shown in the table 2, general indexes of attention distribution of the sportsmen-swimmers (Dgen.=83,8) and sportsmen-gymnasts (Dgen.= 82,2 (free calisthenics); Dgen. = 83,2 (artistic gymnastics)) are almost equal.

General index of attention concentration of the swimmers (Cgen.=90) is slightly lower, than of free calisthenics' (Cgen.=92,6) and artistic gymnastics' (Cgen.=93,3) representatives.

However, attention is drawn to the fact that the index of stability attention concentration of free calisthenics' (St. dev.=0,57) and artistic gymnastics' (St. dev.=1.0) representatives significantly higher than of swimmers (St. dev.=1,97).

The difference between the stability of attention distribution between the free calisthenics' (St. dev.=4,78) and artistic gymnastics' (St. dev.=2,1) representatives is explained by the fact that sporting activity takes place in the past more difficult and more hazardous conditions. To keep under control the various aspects of the complex and hazardous activity conditions in gymnastics the sportsman needs a high level of attention distribution.

Comparison of attention features indexes of swimmers and gymnasts indicates that the characteristics of such kinds of sports activities as swimming, free calisthenics and artistic gymnastics have different requirements to the attention concentration of athletes:

1. free calisthenics and artistic gymnastics require the highest level of attention concentration of sportsmen on their actions than on the swimming activity;
2. free calisthenics and artistic gymnastics require the higher level of attention concentration of the sportsmen than swimming.

**Conclusions and perspectives for further investigation.** These data received from the research confirm our hypothesis that the abilities to concentrate and distribute attention are professionally important qualities of sportsmen-swimmers, as a tendency of quantitative indicators of attention concentration and distribution with the development of swimmers' sportsmanship grows. Especially bright this tendency appears in the quantitative attention concentration indexes.

Operational and technical features of swimming demand the high level of attention concentration of sportsmen. Therefore, the ability to concentrate the attention can be regarded as the relative professional important feature of sportsman-swimmer, so it defines an opportunity to achieve a high index of sporting activity.

The ability to distribute attention by swimmer should be considered as absolute professionally important qualities that determines the ability to perform sporting activities in the given regulatory (middle) level, but does not affect the ability to achieve high results in swimming.

The role of attention concentration and distribution as the mechanisms of control and regulation of the activities differs in various kinds of sporting activities. The features of sports activities and the conditions of its realization determine the type of attention sportsman and the place of the specific attention features in the control and regulation of activity.

So, in gymnastics (artistic gymnastics and free calisthenics) attention concentration and especially its stability play a more prominent role in the control and regulation of sports activity than in swimming.

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## The Structure of the Training Process of Concentration and Distribution of Attention in Sports Swimming, Competitive and Rhythmic Gymnastics

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### Abstract:

In preparation for the Olympic Games, world and Europe championships it is important to properly plan the training process. Modern sports preparation in running kinds of track and field athletics of the leading Ukrainian athletes, especially at the stage of maximal realization of individual possibilities requires formation of the optimal system of building of the training process within structural elements of an annual macro-cycle. Objective of the study: to ground the conception of formation of the training process of female athletes of high qualification in sprint in an annual cycle of preparation. Six female athletes who had sports qualification of Sport's Master of International Class, Sport's Master took part in the research. It was analyzed the structure of the training process in pre-Olympic annual cycle of preparation of female athletes of high class. It is defined that formation of structural components of the training process were based in the basic principles of the periodization system. Two-cycle system of formation of an annual micro-cycle with finishing of a micro-cycle with winter European Championship, Team European Championship and World Championship were put in the basis of the model of preparation of female athletes of high qualification in sprint.

### Key words:

*training process, sprints, periodization, macro-cycle.*

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**Formulation of the scientific problem and its significance.** Preparation of qualified sportsmen is aimed at achieving the highest sports results at the Olympic Games, World Championships and Europe. We have the confirmation to that from the previous practical experience of the strongest athletes [8; 9]. Achievements of high sport results at present track-and-field athletics' development have a certain reason: increasing the efficiency of the training process. It is achieved by optimizing the total volume and intensity of different orientation training influences in the annual cycle of preparation and also by the formation of an effective structured training process within the scope of structural elements of macrocycle [6; 10].

**Research analysis of this problem.** Information from specialized scientific and methodical literature on the subject of our study indicates following fact: the objective growth and the intensity of modern training and competitive pressures are required to achieve high sports results. It is the basis for comprehensive and thorough scientific and methodological research on improving training process of highly skilled athletes [1; 2; 4]. Leading experts in the field of sports training theory point out: to achieve high sports results by highly skilled athletes, especially at the stage of maximum individual potential's realization, annual training structure is more complex and provided by many specific factors. These factors are: availability of objective information about different aspects of athlete's preparedness, optimization of specific individual organism's adaptation, planning training workload in the annual cycle, etc. [3; 5; 7].

It should be mentioned that for qualified athletes, for which culminating competition of their sports career is the Olympics, planning of the training accomplished within the framework in the Olympic cycle.

At the present time the urgent questions are about the effective management of the training process, search for rational planning forms of the main structural elements during the training process and the distribution volume of training workloads in the structures of annual macrocycle.

Actuality and practical importance of the problem were the prerequisite for this study. Work performed under the state budget theme «Development of modern approaches for system's improvement of reconditioning activities among athletes», № state registration – 1/15, IP 0115U000819 on 2015–2016.

**The aim of the research** is to prove the concept of training process' construction by qualified sportswomen, which specializing in sprint during the annual cycle of training.

**The object of the research** is to identify and prove the concept of construction of the training process in the training's annual cycle by sportswomen who specializing in sprint.

**Results of the research.** In the framework within the research, the studying of the training process' structure in the pre-Olympic year cycle of training for qualified sportswomen was conducted. These sportswomen were specializing in sprint. Training plans of six sportswomen with sports qualifications MSIC, MS (aged 21–23 years) were analyzed. Three sportswomen were members of the Ukraine's national team in track-and-field athletics.

A survey of leading coaches was conducted and the analysis of sportswomen's diaries was made to obtain the experimental data.



Based on the objectives of the research, we have examined in detail, the structure of the pre-Olympic year cycle training of sportswomen. Analysis of the structural elements revealed that the structure of the annual cycle training of the third year was distinguished two relatively independent macrocycle: the first autumn-winter macrocycle – 131 days and the second spring-summer macrocycle – 157 days. In the structure of each macrocycle three periods was selected: preparatory, competitive and transition. The main criterion of each macrocycle was the sportswomen’s performances in major international competitions. The main competitions of the first macrocycle were – winter Europe championship, (Paris, 2011), the second – team Europe championship, (Stockholm, 2011) and the World Cup (Daegu, 2011). Analysis of planning structural elements during the training process in the first macrocycle allowed to state that this macrocycle consisted of 22 weekly microcycles of different types that were integrated into three periods: autumn-winter preparatory period (13 microcycles), competitive winter period (8 microcycles) and transition (1 microcycle). A more detailed analysis of the structural components during the training process revealed that the autumn-winter preparatory period consisted of two basic mesocycles, control and preparatory mesocycle and pre-competition mesocycle (Table 1).

Table 1

**The structure of the construction during the training process by qualified sportswomen in autumn-winter preparatory period of the first macrocycle**

Cycle	The first autumn-winter microcycle							
Period	Autumn-winter preparatory							
Stages	Basic and Preparatory				Specialized-preparatory			
Mesocycles	Basic 1		Basic 2		Control-preparatory		Pre-competitive	
Microcycles	Two retractive	Recovering	Three intensive	Recovering	Intensive	Two preparation	Two pre-competitive	Recovering

The first winter-competition period of macrocycle included two competitive mesocycle (Table 2). In the first competitive mesocycle were planned control and preparatory starts. In the structure of the second competitive mesocycle, the sportswomen performed in the main start of the first macrocycle – Winter Europe Championship (Paris, 2011).

Table 2

**The structure of the training process’ construction of qualified sportswomen in winter – competitive period of the first macrocycle**

Cycle	The first autumn-winter macrocycle									
Period	Winter competitive									
Stages	Competitive (control and preparatory competitions)					Competitive (basic competitions)				
Mesocycles	Competitive 1					Competitive 2				
Macrocycles	Pre-competitive	Pre-competitive	Competitive	Competitive	Competitive	Recovering	Pre-competitive	Competitive	Competitive	Recovering

The transition period was presented as one of recovering microcycle. The total rest was planned during this stage.

In the same way the analysis was made in spring-summer macrocycle of the pre-Olympic annual cycle. The second macrocycle consisted of 30 weekly microcycles of different types, which were integrated

in 3 periods: spring-summer preparatory period (12 microcycles), summer competitive period (15 microcycles) and transition period (3 microcycles).

Spring-summer preparatory period consisted of two basic mesocycles: control and preparative mesocycle and pre-competitive mesocycle (Table 3).

Table 3

**The structure of the training process' construction of qualified sportswomen in spring-summer preparatory period of the second macrocycle**

Cycle	The second spring-summer macrocycle								
Period	Spring-summer preparative								
Stages	General preparative					Specialized preparative			
Mesocycles	Basic 1		Basic 2			Control-preparative		Pre-competitive	
Microcycles	Two intensive	Recovering	Recovering	Two intensive	Recovering	Two preparative	Competitive	Preparative	Competitive

In the frame of control-preparative mesocycle (competitive mesocycle), the control competitions were planned. Also in pre-competitive mesocycle (competitive microcycle), the sportswomen took part in starts on the preparatory competition.

Summer competitive period included the first competitive mesocycle, pre-competitive mesocycle, second competitive mesocycle, pre-competitive mesocycle and the third competitive mesocycle (Table 4).

Table 4

**The structure of the training process' construction of qualified sportswomen in summer competitive period of the second macrocycle**

Cycle	The second spring-summer macrocycle						
Period	Summer competitive						
Stages	Competitive (preparatory and basic competitions)				Competitive (basic competitions)		
Mesocycles	Competitive 1	Pre-competitive		Competitive 2	Pre-competitive		Competitive 3
Microcycles	4 competitive	Preparatory	Preparatory	2 competitive	2 preparatory	Recovering	4 competitive

**Conclusions.** The analysis was made on the basis of structure annual macrocycle for qualified sportswomen. The athletes specialized in sprint. The concept of the training process was proved. The concept based on the main principles of the system's periodization.

The conducted analysis of the main structural elements of the training process for qualified sportswomen allowed to state that the national and international competitions' calendar and also the regularities of round into form were the main factors, which determined the structure and sense in the training process, especially in the pre-Olympic macrocycle preparation. Taking into account these factors in the third year season of preparation we can state about the model. The model of planning training process based on the two-cycle structured system of annual macrocycle for qualified sportswomen who specialized in sprint. In the end of macrocycle the main competitions were conducted.

**The perspectives of further research** in a given direction lies in further studying of the structure and content in the training process for sportswomen in Olympic macrocycle.

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## *Reviews, Chronicles and Personals*

SCIENTIST. PEDAGOGUE. CHIEF

*(Dedicated to the 50-th Anniversary of Anatolii Tsos)*

*Science is a sport, brain gymnastics,  
which brings me pleasure.*

A. Einstein



**Anatolii Vasyliovych Tsos** – the first rector, vice-rector of administration and development of Lesya Ukrainka Eastern European National University, Doctor of Science in Physical Education and Sports, Professor.

The multifaceted activity of Anatolii Vasyliovych has many bright sides, but the most remarkable is that one which is associated with the role of a talented scientist and teacher, manager of Science and Higher Education, attentive and caring teacher.

Future scientist was born on January 2, 1966 in the village Lyubohyny Starovyzhivskiy district, Volyn region in the family of Vasyl Hryhorovych and Eugenia Mykytivna Tsos. From the early childhood his parents have laid such traits of his character as diligence and persistency. His dream was to become a teacher of physical education, so he entered the Lutsk State

Pedagogical Institute named after Lesya Ukrainka, the faculty of physical culture, and successfully completed in 1989.

Teaching and the organization of educational process in higher educational institutions are significant points of life of A.V. Tsos. During 1989–1994 he worked as a lecturer, senior lecturer, associate professor of theoretical foundations of physical education Lutsk State Institute of Lesya Ukrainka. He worked as an assistant professor, head of department of health and physical education Volyn National University of Lesya Ukrainka (1994–2002); Head of Department, Professor, Vice-Rector of the scientific and technical work Lutsk Institute of Human Development University «Ukraine» (2002–2004); professor of theory and methodology of physical education Volyn National University of Lesya Ukrainka (2005–2007); Vice-Rector of Research (2007–2012); First Vice-Rector of the University (2013–2015). From September 2015 holds the position of Vice Rector, Vice Rector for Administration and Development of Lesya Ukrainka Eastern European National University.

Anatolii Vasyliovych was interested in problems of optimization of future experts training of physical education and sport, he examined them in his thesis «Differentiated approach in the process of preparing of a future physical training teacher» in 1994 in the Dragomanov National Pedagogical University, obtaining the scientific degree of candidate of pedagogical sciences.

The most important milestones in scientific research were title of professor of physical education and rehabilitation in 2004 and the degree of Doctor of Science in Physical Education and Sport – the result doctoral thesis «The development of Physical Education in Ukraine from ancient times till the beginning of XVIII century» at Kharkiv State Physical Culture Academy (2005). Anatolii Vasyliovych studies historical tendencies of formation and development of physical culture in Ukraine from ancient times to the early nineteenth century; develops instruments and methods of optimization means and methods of optimization of physical education in schools and higher educational establishments institutions of higher education; modes of physical activity in improving physical training. Research results allow to develop not only adapted content and dosage of physical activity according to individual, but the form of measures to attract people to regular exercise.

Summary of significant scientific experience is reflected in 180 scientific publications, including 12 monographs devoted to the above-mentioned problems. Among the most significant are «Physical education in Ukrainian kalendarly rites», «Traditions of physical education in Kievan Rus», «Optimization of physical education of the child in the national education system», «Pedagogical diagnostics in system of physical education of students of secondary education institutions», «System of physical education of students of secondary schools in Poland and Ukraine (XVI – the beginning of XXI century): a comparative analysis» and so on.

Under the guidance of scientist 20 postgraduate students defended dissertations. Today, along with the management and administration a significant part of professional activity of A.V. Tsos holds educational work (teaching courses, students and postgraduate students). He provides technical assistance to teachers of physical culture of Lutsk and Volyn region, cooperates with Volyn Institute for Postgraduate Education and participates in the State examination boards of higher educational establishments of Ukraine.

About scientific authority of Professor A.V. Tsos evidenced the following fact, he is a member of the expert committee on education of the State Accreditation Commission of Ukraine Expert Council of Physical Education and Sport of Higher Attestation Commission of Ukraine, and later - the Ministry of Education and Science of Ukraine (2007) and the Section of physical education and sports department of higher education of the National Academy of pedagogical Sciences of Ukraine.

During 1998–2000 he was Scientific Secretary of the Academic Council of the defense of dissertations for candidate degree in physical education and sport of Lesya Ukrainka Volyn National University. Member of the academic councils of Lviv State University of Physical Culture (from 2001); of Kharkiv State Academy of Physical Culture (from 2006), Lesya Ukrainka Eastern European National University (13.00.02 – theory and methods of teaching (physical education, healthy lifestyle basics). Anatolii Tsos carries out recreational and educational activities, organizes already traditional International scientific conference «Physical education, sport and health culture in modern society», where the most pressing issues in physical education, sports and health are discussing.

A. Tsos – editor of the collection of scientific works «Physical education, sport and health culture in modern society» – scientific specialized edition of Ukraine («Teaching Science», «Physical education and sport»), which comes out in 1999 and displayed in databases Index Copernicus; Polska Bibliografia Naukowa; Ulrich's Periodicals Directory; Directory of Research Journal Indexing; Directory Indexing of International Research Journals; International Committee of Medical Journal Editors; Research Bible and others.

Long-term scientific and organizational activity of Anatolii Vasilyovych Tsos is widely recognized. He has many titles and awards, namely diplomas of Ministry of Education and Science of Ukraine, Volyn State Administration and Volyn regional council, he has an award «Outstanding worker of Education of Ukraine».

Reflecting on the origin of deserved respect of Anatolii Vasilyovych and his unquestioning respect among all scientific and pedagogical community of Ukraine is very popular not only in our country but also abroad, we conclude that they are, first of all, of his human qualities as high integrity and exceptional kindness, tremendous performance and self-exactingness. Being harmonious, he combines deep scientific understanding and strong organizational skills, working as the first rector of Lesya Ukrainka Eastern European National University. Always open to dialogue, has readiness to support in a difficult moment in word and in deed.

Few people in the life path and professional growth can come to true wisdom, and especially – to live and work, perfectly owning it. However, these words can be said about Anatolii Vasilyovich that his personal life, professional activity and fruitful scientific work proves that dreams about profession come true, and success comes to those who are working hard and constantly self-realising. Being a model of intelligence and high standards of culture, Anatolii Vasilyovych inspires talented student and teaching youth by his own example to devotion to science.

*Rector of Lesya Ukrainka Eastern European National University,  
Professor Kotsan Igor Yaroslavovych*

**Review of the monograph**  
**«System of Physical Education of Pupils of secondary Comprehensive Schools**  
**of Poland and Ukraine**  
**(XVI – beginning of XXI Century): Comparative Analysis»**  
**(E. S. Vilchkovskyy, B. M. Shiyan, A. V. Tsos, V. R. Pasechnik)\***



Physical education as part of education for a long developed in terms of depending on the social, cultural and economic factors in the region. So key point in understanding of modern system of physical education of students is to analyze historical aspects of its formation, the comparison with the experience of other countries, especially those coming to Ukraine for traditions, mentality, long history and geography.

In the monograph «The system of physical education of students of secondary schools in Poland and Ukraine» (XVI – the beginning of XXI century): a comparative analysis characteristics, trends and directions of evolution of the physical education of children and youth in Poland and Ukraine from the sixteenth century to this day are defined. Such a holistic analysis, synthesis and comparison in historical terms of formation and development of physical education – is an important and urgent task.

Authors of monograph are leading scientists of Ukraine and Poland in the field of physical education, sport pedagogy. Among them are – a member of the National Academy of Pedagogical Sciences of Ukraine, Doctor of Education, Professor Eduard Stanislavovych Vilchkovskyy (Lesya Ukraika Eastern European National University, Jan Kochanowski Keltsynskyy University), Honored Worker of Physical Culture and Sports of Ukraine, Doctor of Pedagogy Professor Bogdan Myhailovych Shiyan (Ternopil National Pedagogical University named after Volodymyr Gnatyuk), Doctor of Science in physical education and sport, Professor Anatoly Vasylovych Tsos (Lesya Ukrainka Eastern European National University) and Doctor of Pedagogics, Professor Volodymyr Romanovych Pasichnyk (Jan Kochanowski Keltsynskyy University). Authors from different but unidirectional scientific interests, accumulated efforts and scientific achievements, were able to carry out a systematic comparative analysis of physical education of students in Poland and Ukraine. This approach in studying definite problem provides an opportunity to better understand patterns of gradual development of physical education of children and youth, their dependance on social,

economic, socio-cultural and other factors, to identify the links between them and objectively assess the current state of teaching process on this subject and directions of further evolution. Reviewed work consists of introduction, six chapters that cover different facets of test questions and a list of sources, which has 543 names.

The material of the first chapter «The formation and development of physical education of students in Poland and Ukraine in the XVI – the beginning of the twentieth century» – is an analysis of achievements of Polish and Ukrainian authors of that time. Physical education is regarded as an important educational component and a way to improve the health of schoolchildren. Through the prism of physical education the following prominent figures are considered, including Tadeusz Chatsky, who was the organizer of education in Volyn, Kyiv and Podolsk areas; Olexandr Duhnovich, which developed a system of exercise; Myhailo Demkov who put in the basis of physical education age periodization of child development. Material about Cossack traditions of children physical education, physical education in the calendar and family rituals of Ukrainian people discovering Ukrainian roots of the modern family, national physical education.

In the second chapter «The state of physical education of students in Polish and Ukrainian schools in the first half of the twentieth century» multidimensional analysis of physical education students in Poland and Ukraine in the interwar period is conducted. The policy of the former government to concepts of physical education, encouragement of young people to the sport, leading scientists contribute to the formation of physical education in Poland are considered. At the same time it is given the information about the physical education of Ukrainian schoolchildren, existing training programs and schemes of physical culture lessons, the importance of taking into account the health of children and their division into groups depending on physical development and health.

The third chapter of the monograph «Development of physical education of students in Poland and Ukraine in 40–60 years of the twentieth century» contains results of the investigations in respect of a system of physical education of children and young people after World War II, where the leading role of the state has state and educational bodies. The main trends of development of physical training of Ukrainian students in 1945–1960, prominent investments of educators and scholars are considered.

The fourth section «Peculiarities of physical education of the younger generation in Poland and Ukraine in 70–90 years of the twentieth century» the influence of socioeconomic status on the state of physical education of children and youth is regarded, the impact of governmental institutions on the development of physical education students is considered, current school programs in physical training are characterised.

The fifth section «Reform of school education in Poland and Ukraine at the end of the XX–XXI century» has information about the current state of physical education system in Poland and physical education of children and youth at the present stage of development of school education in Ukraine. The description of the principal positions in the education of children and youth in Poland, which states that discipline «Physical Education» is compulsory in schools of all types, and for students who have a talent for sports, created appropriate classes. Considered basic tenets of modern Polish and Ukrainian school curriculums, Ukrainian State requirements for physical tasks of preschool children and students the basic principles of the Regulation on the organization of physical education and sports.

The logical continuation of the above mentioned historical aspects of the formation of modern physical education in Ukraine and Poland is the sixth chapter of the monograph «The physical development and motor preparedness of students of secondary schools in Poland and Ukraine». Aptly noted that the physical development of children and youth is the most objective indicator that reflects the level of their health. The data on the results of anthropometric measurements of pupils of secondary schools in Poland and Ukraine are shown.

Presented monograph is a fundamental work. Authors skillfully applied the selection of information, its analysis and interpretation to fill the gaps in the history of physical education. It should be noted that monograph is well illustrated, material is shown in an accessible form for a wide range of readers and at the same time has scientific and practical value to students, researchers and educators.

*Reviewer – Kuts Olexander Sergiyovych, Doctor of Education, Professor of Theory and Methodology of Physical Education of Kherson State University.*



## **Information on Meeting of Section of Physical Culture and Sport of the Department of Higher Education of the National Academy of Pedagogical Sciences of Ukraine**

December 16, 2014, pursuant to the Agreement on Cooperation between the National University of Physical Education and Sport of Ukraine and the National Academy of Pedagogical Sciences of Ukraine, Section on Physical Culture and Sports of higher education National Academy of Pedagogical Sciences of Ukraine was created.

According to the provision Section is established to coordinate the activities of higher education institutions, research institutions and other organizations in solving scientific problems in the field of physical culture and sports, increasing the efficiency of academic training and implementation of research results into practice.

The work of section is aimed at solving the following tasks:

- Research of theoretical and methodological foundations of modernization of professional training of future specialists in physical education and sport, searching determinants of economic and administrative development of higher education in the knowledge of physical culture and sports;
- Analysis of organizational conditions and educational factors improve the quality of professional training and postgraduate education management and teaching staff in the field of physical culture and sports;
- Definition of psycho-pedagogical foundations of improving the educational process of specialists of Physical Education and Sport in higher education;
- Determination of how to improve software and normative foundations of physical education in schools; foundations of physical education of different population groups, sport for everyone, health;
- Determination of subject areas and key scientific problems in the field of knowledge of physical training and sports, participation in the drafting of the consolidated plan of research work in the field of physical culture and sports;
- Coordination of fundamental and applied research on problems of physical culture and sports;
- Research of historical, organizational, methodological and legal bases of realization of Olympic education of children and youth;
- Research on problems of healthy lifestyle and motor activity of different groups;
- Scientific substantiation of methodological and organizational and methodological foundations of rational preparing of national teams of sports;
- Study of theoretical and methodological foundations and practical physical rehabilitation and sport medicine, biomedical maintenance training athletes;
- Identifying promising areas and implementation of publishing (issue of scientific, educational and instructional materials) and creating electronic publications in the field of knowledge of physical culture and sports;
- Scientific expertise of educational innovation and educational literature study of scientific achievements in the field of physical culture and sport, to promote their implementation in practice.

To the section on physical culture and sport department of higher education of the National Academy of Pedagogical Sciences of Ukraine enclose:

IMAS Eugen Victorovych – Doctor of economic sciences, professor, rector of National University of Physical Education and Sport of Ukraine, Head of the Section;

DUTCHAK Myroslav Vasylovych – Doctor of physical education and sport, professor, vice-rector for scientific and pedagogical work of the National University of Physical Education and Sports of Ukraine, deputy head of section;

SHYNKARUK Oksana Anatoliivna – Doctor of Science in Physical Education and Sports, Professor, Director of the Research Institute of the National University of Physical Education and Sports of Ukraine, scientific secretary;

AZHYPPO Olexander Yuriyovych – Doctor of pedagogical sciences, professor, rector of Kharkiv State Academy of Physical Culture;

KASZUBA Vitaly Olexandrovych – Doctor of physical education and sport, professor, vice-rector of National University of Physical Education and Sport of Ukraine;

KRUTSEVYCH Tetiana Yuriiivna – Doctor of Science in Physical Education and Sports, Professor, Head of Department of Theory and Methodology of Physical Education National University of Physical Education and Sport of Ukraine;



LYANNOY Yurii Olehovych – Ph.D., Professor, Rector of Sumy State Pedagogical University named after A.S.Makarenko;

MICHUDA Yurii Petrovich – Doctor of Physical Education and Sports, Professor, Head of Department of Management and Economics of Sports National University of Physical Education and Sport of Ukraine;

NOSKO Mykola Olexiyovych – Doctor of Education, Professor, Rector of the Chernihiv National Pedagogical University named after Taras Shevchenko;

PRYSTUPA Eugen Nykodymovych – doctor of pedagogical sciences, professor, rector of Lviv State University of Physical Education;

SAVCHENKO Viktor Hryhorovych – Doctor of pedagogical sciences, professor, rector Dnipro State Institute of Physical Culture and Sports;

SUSHCHENKO Lyudmila Petrivna – Doctor of Education, professor, chairman of the Physical Rehabilitation of Dragomanov National Pedagogical University;

TYMOSHENKO Olexii Valeriyovych – Doctor of Education, Professor, Director of the Institute of Physical Education and Sport of Dragomanov National Pedagogical University;

TSOS Anatoly Vasiliovich – Doctor of Science in Physical Education and Sports, Professor, Vice-rector of Lesya Ukrainka Eastern European National University.

To discuss the burning issues of physical culture and decision-making quarterly meetings Section are held. Regular meeting of the Section of Physical Education and Sports department of higher education of the National Academy of Pedagogical Sciences of Ukraine was held March 31, 2016 in Sumy State Pedagogical University named after A.S. Makarenko.

Deputy Head of the Section of Physical Education and Sports department of Higher Education NAPS Professor M.V. Dutchak reported on the National Strategy of improving motor activity in Ukraine for the period till 2025 «Motor Activity – Healthy Living – Healthy Nation», which was approved 9 February 2016.

LSUPT Rector and member Section of Physical Education and Sports department of Higher Education NAPS Professor E.N. Pristupa and member of the working group on the draft Law of Ukraine «On disability prevention and rehabilitation system in Ukraine», Doctor of Physical Education Professor O.B. Lazaryeva reported on the work on the bill, noted the importance of training of specialists in physical rehabilitation and development of a comprehensive rehabilitation system in the country. Speakers presented proposals for inclusion into the bill.

Section decided to dedicate the Draft Law of Ukraine «On disability prevention and rehabilitation system in Ukraine» separate meeting April 11, 2016 in Kyiv in National University of Physical Education and Sport, participated Deputy Chairman of the Verkhovna Rada of Ukraine I.V. Sysoyenko and specialists in physical rehabilitation.

Director of the Research Institute NUFVSU, scientific secretary of the Section of Physical Education and Sports department of Higher Education NAPS, Professor O.A. Shynkaruk reported on 017 «Physical Culture and Sports» at which trains candidates Higher Education III (education and research) and scientific levels.

Also the proposal to form the Consolidated Plan of research in the field of physical culture and sports in 2016–2020.

Rector of Sumy State Pedagogical University named after Makarenko, Professor Y.A. Lyannyi presented a book of Honored Journalist of Ukraine Mikhailo Ostashevskiyi «Sumy sports smithery is 35». Participants included members present section (E.V. Imass, O. YU. Azhyppo, M.V. Dutchak, V.A. Kashuba, T. Yu. Krutsevych, O.B. Lazarev, Y.O. Lyannyi, E.N. Pristupa, L.P. Sushchenko, A.V. Tsos, O.A. Shynkaruk) and teachers of higher educational establishments from Sumy.

Section members had the opportunity to read the sports achievements of Sumy region, visited the new museum of sports glory Sumy, sports specialized school football «Barca» and so on. April 11, 2016 in Kyiv at the National University of Physical Education and Sport an extraordinary meeting of the Section for Physical Culture and Sports department of higher education of the National Academy of Pedagogical Sciences of Ukraine was held. It was held by the participation of Deputy Chairman of the Verkhovna Rada of Ukraine Sysoyenko I.V., chief specialist of physiotherapy Department of health Kyiv S.N. Buchynskiyi, head of the Center for Restorative Medicine and rehabilitation Clinical hospital «Feofania» V.A. Stukalin, head of the physical rehabilitation of the public discussion of the draft Law Ukraine «On prevention of disability and rehabilitation system in Ukraine».

During the discussion of the Law of Ukraine «On prevention of disability and rehabilitation system in Ukraine», proposals to clarify the definitions of rehabilitation are explained. Section members drew attention on the implementation of the Decree of the President of Ukraine on introduction in Ukraine classification of professions positions such occupations as «erhothapist» and «physical therapist».

According to the approval of 227 new specialties – «Physical rehabilitation» and 017 – «Physical education and sport» – was suggested for the recognition that new professions scientific degree professionals – doctors and candidates of sciences, specialty 24.00.03 «Physical rehabilitation».

*Scientific Secretary O. A. Shynkaruk*

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## INFORMATION IS FOR AUTHORS

**The edition “Physical education, sport and health culture in modern society” contains the following headings:**

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- ✓ Physical culture educational technologies.
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- ✓ all references are presented at the beginning of the article; its main content contains presentation of own opinions;
- ✓ the article should have simple structure (without division into sections and subsections!).

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In the text of the annotation simple sentences, syntactic constructions peculiar to scientific style should be used. There should be no acronyms, abbreviations, general phrases and repetitions of the article title. At the beginning of sentences the following phrases are desirable to be used: *it is examined, it is established, it is displayed, it is analyzed, it is carried out, it is proven, etc.*

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Margins: left – 3 cm, right – 1 cm, top and bottom – 2 cm, alignment – horizontal.

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With other questions and for more detailed information, please, contact the executive secretary Indyka Svitlana (work phone +380332-24-21-78; mobile phone +38066-48-30-600).

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Наукове видання

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