Ministry of Education and Science of Ukraine
Lesya Ukrainka Eastern European National University

PHYSICAL EDUCATION, SPORTS AND HEALTH CULTURE IN MODERN SOCIETY

Collected Research Papers

of Lesya Ukrainka Eastern European National University

№ 3 (43)

Lutsk
Lesya Ukrainka Eastern European
National University
2018

УДК 796(Д82)
Ф 50
Recommended for publication by the Academic Council of Lesya Ukrainka Eastern European National University (Proceedings record № 6, 29.05. 2018)

Ф 50 **Physical** Education, Sports and Health Culture in Modern Society : Collected Research Papers of Lesya Ukrainka Eastern European National University / compiled by A. V. Tsos, S. J. Indyka. – Lutsk : Lesya Ukrainka Eastern European National University, 2018. – № 3 (43). – 144 p.

Scientific works on various topics of physical culture, the physical education of various groups of people, and the training of professionals have been assembled in this digest. A description is given of methods and means of training, specifics of athletic training, and the adaptation of the bodies of individuals of various ages to the process of physical training, the suitability of which is enhanced by pedagogical, psychological, methodological and biological experiments.

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This journal is available in the following scientometric databases: Index Copernicus International (Impact Factor ICV 2014 – 46,23; 2015 – 57,07), eLIBRARY (Russian Science Citation Index) (license agreement №128-03/2015, of 12.03.2015); ERIH PLUS ; Polska Bibliografia Naukowa; Українika наукова; Ulrich's Periodicals Directory; repositories and search engines: OpenAIRE, BASE, Google Scholar, International Committee of Medical Journal Editors, Research Bible, Information Matrix for the Analysis of Journals, Ukraine Scientific Periodicals

УДК 796 (Д 82)

Web site of the digest of scientific works:
www.sport.eenu.edu.ua

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

UDC 378.016:796.5

RECREATIONAL TOURISM IN THE PROCESS OF FUTURE SPECIALISTS EDUCATION IN THE FIELD OF PHYSICAL CULTURE AND HEALTH

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https://doi.org/10.29038/2220-7481-2018-03-03-11

Abstracts

The topicality of the research is due to the contradiction between the need for competent specialists in the field of Physical Culture, Tourism and Recreation and insufficient models for its education, in particular for the discipline «Recreational Tourism». ***The aim of the research*** is to develop a model of the optimal educational process of Recreational Tourism for the students of Physical Culture faculties in the field of Recreational Tourism. ***The methods of research:*** questionnaires, theoretical modeling, analysis and generalization of literary sources, pedagogical observation, method of mathematical statistics. ***The Results of the Work.*** It is established that the professional training of future specialists in recreational tourism is defined as a process that reflects scientifically and methodically substantiated educational measures of a higher educational institution that are of a theoretical and practical nature. These studies have testified that in studying of the educational "Recreational Tourism" discipline, students prefer practical classes, informational lectures (26,9 %), lectures-visualizations (26,9 %), lecture-discussions (22,6 %), meetings with practices in the field of recreational tourism, meetings with practitioners in the field of recreation tourism, excursions, touristic attractions andtravel agencies, etc. The researchers also recommend to the supplement the education system by the following education methods: problem situations, business games, online trainings, conferences, and create theinterdisciplinaryrelations with foreign languages, economics and management. With regard to the disciplines that students would like to learn firstly on a practical level, the most interest is noted in active types of tourism, such as sports, in particular pedestrian, tourist services, ethnographic studies and tourist animation. ***Conclusions.*** Thus, the formation of an effective model of profile training of students of the Physical Culture and Health faculties, in particular the complexity in organizing of the educational process for Recreational Tourism, taking into account the views of students, colleagues and the theorists and practitioners work on the selection of content, methods and forms of classes, methods of knowledge assessment, will allow to raise the level of knowledge and motivationto study this discipline.

Key words: Recreational Tourism, students of Physical CultureFaculties, classes, efficiency, specialist.

Ірина Войтович, Василь Войтович, Нінель Мацкевич.Рекреаційний туризм у процесі підготовки майбутніх фахівців галузі фізичної культури та здоров'я. ***Актуальність*** дослідження зумовлена суперечністю між потребою в компетентних спеціалістах у сфері фізичної культури, туризму та рекреації й недостатніми моделями їх підготовки, зокрема з дисципліни «Рекреаційний туризм». ***Мета дослідження*** – розробити модель оптимального освітнього процесу навчання рекреаційному туризму студентів факультетів фізичної культури з напряму рекреаційного туризму. ***Методи дослідження*** – анкетування, теоретичне моделювання, аналіз й узагальнення літературних джерел, педагогічне спостереження, метод математичної статистики. ***Результати роботи.*** Установлено, що професійна підготовка майбутніх фахівців рекреаційного

туризму визначається як процес, що відображає науково та методично обґрунтовані освітньо-виховні заходи вищого закладу освіти, які мають теоретичний і практичний характер. Дані дослідження засвідчили, що під час вивчення навчального предмету «Рекреаційний туризм» студенти надають перевагу практичним заняттям, інформаційним лекціям (26,9 %), лекціям-візуалізаціям (26,9 %), лекціям-дискусіям (22,6 %), зустрічам із практиками в галузі рекреаційного туризму, відвідуванню екскурсій, туристичних об'єктів, турагентств тощо. Науковці також рекомендують доповнювати систему освіти підготовки таких фахівців такими методами навчання, як проблемні ситуації, ділові ігри, Інтернет-тренінги, конференції, та створювати міжпредметні зв'язки з іноземними мовами, економікою й менеджментом. Щодо розділів дисципліни, які б студенти хотіли опанувати передусім на практичному рівні, то найбільшу зацікавленість відзначено в активних видах туризму, таких як спортивний, зокрема пішохідний, туристичних послугах, краєзнавстві та туристичній анімації. ***Висновки.*** Отже, формування ефективної моделі профільної підготовки студентів факультетів фізичної культури й здоров'я, саме комплексність в організації навчального процесу з рекреаційного туризму, урахування думки студентів, колег і напрацювання теоретиків та практиків щодо підбору змісту, методів і форм занять, способів оцінки знань, дасть змогу підвищити рівень знань та мотивацію до вивчення цієї дисципліни.

Ключові слова*:* рекреаційний туризм, студенти факультетів фізичної культури, заняття, ефективність, фахівець.

Ирина Войтович, Василий Войтович, Нинель Мацкевич. Рекреационный туризм в процессе подготовки будущих специалистов отрасли физической культуры и здоровья. ***Актуальность*** исследования обусловлена противоречием между потребностью в компетентных специалистах в сфере физической культуры, туризма и рекреации и недостаточными моделями их подготовки, в частности по дисциплине «Рекреационный туризм». ***Цель исследования*** – разработать модель оптимального образовательного процесса обучения рекреационном туризма студентов факультетов физической культуры по направлению рекреационного туризма. ***Методы исследования*** – анкетирование, теоретического моделирования, анализ и обобщение литературных источников, педагогическое наблюдение, метод математической статистики. ***Результаты работы***. Установлено, что профессиональная подготовка будущих специалистов рекреационного туризма определяется как процесс, отражающий научно и методически обоснованные образовательно-воспитательные мероприятия высшего учебного заведения, имеющие теоретический и практический характер. Данные исследования показали, что при изучении учебного предмета «Рекреационный туризм» студенты предпочитают практическим занятиям, информационным лекциям (26,9 %), лекциям визуализации (26,9 %), лекциям-дискуссиям (22,6 %), встречам с практиками в области рекреационного туризма, посещению экскурсий, туристических объектов, турагентств и т. п. Ученые также рекомендуют дополнять систему образования подготовки таких специалистов такими методами обучения, как проблемные ситуации, деловые игры, интернет-тренинги, конференции, – и создавать межпредметные связи с иностранными языками, экономикой и менеджментом. По разделам дисциплины, которые студенты хотели овладеть прежде всего на практическом уровне, наибольший интерес отмечается в активных видах туризма, таких как спортивный, в частности пешеходный, туристических услугах, краеведении и туристической анимации. ***Выводы.*** Таким образом, формирование эффективной модели профильной подготовки студентов факультетов физической культуры и здоровья, именно комплексность в организации учебного процесса по рекреационному туризму, учета мнения студентов, коллег и наработки теоретиков и практиков по подбору содержания, методов и форм занятий, способов оценки знаний, позволит повысить уровень знаний и мотивацию к изучению данной дисциплины.

Ключевые слова: рекреационный туризм, студенты факультетов физической культуры, занятия, эффективность, специалист.

Formulation of a research problem and its significance. The physical recreation, its promotion and implementation are significant for the creation and the development of the healthy society. It is an active way of the physical education implementation [10; 12; 13; 14]. It promotes the overfatigue prevention, refreshment and it also can prevent some of the negative factors which badly affect health and performance. In their works such scholars as Oded Bar-Or, Thomas W. Roland, Olha Zhdanova, Tetiana Krutsevych and Serhiy Futorniy claim about the importance of forming for students and young adults the habit of the outdoor activities and healthy life. It is also connected with the environmental and patriotism education.

It's true that tourism is one of the main parts of the recreation activity. In case it's combined with the natural factors and in a good amount, tourism suits for everyone, no matter the age, gender or the occupation.

Recreational tourism meets such requirements as the all-round development, development of the physical qualities, health promotion, disease prevention, rest, refreshment, switching attention, keeping good performance, educational and cognitive functions [4; 10; 15].

Svitlana Kobzova, Volodymyr Fedorchenko, Tetiana Dyorova and Iryna Filonenko claim that there is a disparity in the need for experts in different fields of tourism and supply of the highly-skilled workers, in particular in recreational tourism. Joining to the global tourism requires skilled staff assistance.

We agree with the Iryna Filonenko»s idea that «... the level of servicing depends on the staff training and it»s the peculiarity of this field» [16, C. 60]. In their study Olena Andreyeva and Oleksandra Blahiy mentioned the updating of the staff training system in the recreation field. In its turn it will improve the competitive ability of the graduates and «... will help to secure them against the rivalry of the unskilled labour on the job market» [1, C. 6].

The issue of the education of the tourism and recreational fields in the higher education institutions was also studied by such scholars as Olena Andreyeva and Oleksandra Blahiy [1], Olha Zhdanova [12], Anatoliy Konoh [9], Tetiana Krutsevych [10], Liudmyla Sushchenko [14], H. Shchuka [19]. However, the issue of the specialist training in some subjects isn»t covered enough.

Analysis of the research into this problem.

The goal of the article – to create a model of the recreational tourism study for the students of the Physical Education and Health faculties.

The specific tasks of the article: 1. To define the factors of better course content learning for the students of Physical Education and Physical Education and Sport.

2. To create a model of the students training of the Physical Education and Health faculties with the specialist area in the recreational tourism «Tourism Work Methodology».

Methods of the study. During the study such methods were used: *analysis and collation of literature data*; *questionnaire* (the questionnaire was designed according to the guidance of Viktor Hladush [7], Oleksiy Nestulia [11] and Mykhailo Fitsula [17]. It included some questions which defined the opinion of student who already learn this subject and the students who are going to learn it); *theoretical and practical lessons observation*; t*he theoretical modeling method* was used to create a model of the suitable recreational tourism study for the students of the Physical Education faculties with the specialist area «Tourism Work Methodology»; the results were analysed by *the Mathematics Statistics method* with the help of the Excel app for Windows 2007. The average value and percentage were calculated. The study was hosted by Lesya Ukrainka Eastern European National University and Rivne State University of Humanities. it was conducted among the 80 students (n=80) 2nd-4th years of studying of the specialist areas 017 «Physical Education and Sport» and 014.11 «Secondary education (Physical Education)», 6.010201 «Physical Education».

Research results. According to the global experience of the recreational tourism development and functioning, this branch requires the training of the experts in 5 main areas: tourism managers who develop recreational and entertainment tours and the servicing; economist manager who perform business planning and activities in touristic firms; experts in the development and management of the leisure, recreational and rehabilitation activities in a particular groups or places (entertainment officers); experts responsible for special tourist and recreational classes (coordinators, coaches etc.); experts in cultural tourism (tour guides, museum guides) [16].

Before the problem study, the observations about the students determination and leadership in the «Recreational tourism», «Tourism», «Sport tourism», «Theoretical basics of the children and youth tourism», «Theory and methodology of the tourist work» classes were conducted.

The main attention is dedicated to the improvements of the «Recreational tourism» educational process as it includes the wide number of the directions. Planning, organisation and the direct execution of this tourism type requires the sport tourism knowledge and skills, trail orienteering, physical recreation, rehabilitation, theory and methodology of the physical education, regional study, touristic service creation and providing, eco-tourism, management, ecology, medicine, etc.

That is why the main goal of this subject is to give the students some basics about the main recreational needs of a human and the place of tourism in recreology of different social groups, its management and development. The main tasks of the subject study are: to learn the set of theoretical, methodological,

practical, legislative and standard basics of the recreational tourism and the related subjects; the ability to use the knowledge for the solving the educational and recreational tasks; to plan, prepare and manage different kinds of the recreational tourism; utilisation of the knowledge for the management the tourism and regional study and cognitive activities during the revitalization.

In general, a student of the Physical Education faculty is viewed as a personality and a prospective expert, who is getting the skills according to its academic degree and specialisation during the educational process, which includes sport, recreation, leisure aspect and encourages the patriotism education. It also positively affect the bodily and mental development, healthy living and work life.

The professional command of the prospective experts in recreational tourism is defined as a process, which reflects scientifically and methodologically based activities of higher education institution. During the whole period of studying, they have to be aimed at the training professional skills good enough to manage sport and recreational tourism in the educational institutions, among different age groups, successful work life in different areas of the recreational tourism including the requirements of the labor-market.

To meet the requirements it is necessary to be done:

– the thorough educational material selection;
– the creation of the up-to-date teaching environment;
– the utilization of the innovative teaching methods;
– include the content of the «Recreational study» into the education and further professional activity.
– manage the practical classes of the prospective experts using reasonable principles, methods and types of tasks and technology.
– to create the understanding that it is necessary to master the knowledge and skills.

In order to improve the educational process and increase the students motivation for «Recreational tourism» learning, the questionnaire among the students 2nd-4th years of study was conducted.

It will adjust the content and the form of the educational activity. In addition, it will also improve the current methods and technologies and allow to find some new of them.

80 students participated in the survey, only 30,0 % of them studied «Recreational tourism». We were interested in the opinions of both students groups with the further average value calculation.

The importance of this subject for specialist area «Tourism Work Methodology» mentioned 75,0 % of students, 10% of the answers were negative and 15,0 % of the responses are «It's difficult to give the answer».The next question was about the areas of knowledge offered for the «Recreational tourism» learning. The most important topics for both groups were «Backpacking» and «Sport tourism», the third place was given to the «Tourism services». The next important areas mentioned were «Regional study» and «Eco-tourism». The least important topics were «Entertainment officers work» and «Marketing in tourism». However, it's worth to mention that some students haven't learned the subject yet that's why they might be unaware of the significance of the entertainment officers work in the recreational tourism.

The responses to the question «What is the most interesting way of introducing new material (choose at most 3 ways)» show that the results for both groups and the average value are different. The average value shows that most of respondents prefer lectures (26,9 %), the same results are in the second group which didn't learn «Recreational tourism» (28,4 %). The same percentage is in the general data (26,9 %) for the viewing lectures (the direct example approach is in its basics). This way of presenting material is on the first place for the students who have already studied the subject and on the second for the students who haven't studied the subject yet. Another interesting way of getting new knowledge is the interactive lectures which presupposes the discussion between the parts of the lecture. It makes the studying process enliven, activates the cognitive work, gives the teacher an opportunity to control the collective thought (more than 26,9% of students who have already learned the subject, up to 20,9 % – students who haven't learned the subject yet; the average value – 22,6 %).

The other lecture types which students would like to have during the «Recreational tourism» course were the problem-solving lectures (12,9 %), binary lectures (5,4 %) and lection-briefings (5,4 %). It's worth to mention, that each of these lectures is quite interesting in form, but the problem-solving lectures are clearer to the students compared with the lection-briefings. Speaking about the binary lectures, they are

difficult to organise but they are good for the interdisciplinary relationships at the same time, as one issue becomes common for two lecturers of the connected subjects.

The most common response to the question «Sort by the importance the ways of the material presenting which can enlarge your knowledge and skills in the the recreational tourism sphere is the meeting with the practicing tourists. It is the most appropriate way of receiving new information in this field. It is interesting to note that this way is the most convenient to organise as it requires only one person to move to the final destination, not the whole group i.e. the expenses are fewer.

Other ways of getting new information about the recreational tourism chosen by student are places of interest with the excursions, visiting the museums, travel companies and tour operators. The least responses were given to the option «visiting a tourist shop» (figure1).

In order to answer the question about the testing methods students were expected to choose three they like the most out of six offered on the list.

Thus, the students chose the practical tasks (28,7 %) and tests (27,7 %). Due to the average value the recitation is on the third place (20,2 %)

Written assignments were chosen as the most sufficient for the «Recreational Tourism» by 13,8 % of students. The least known and used during the educational process is the self-estimate method and the peer assessment (7,4 %)

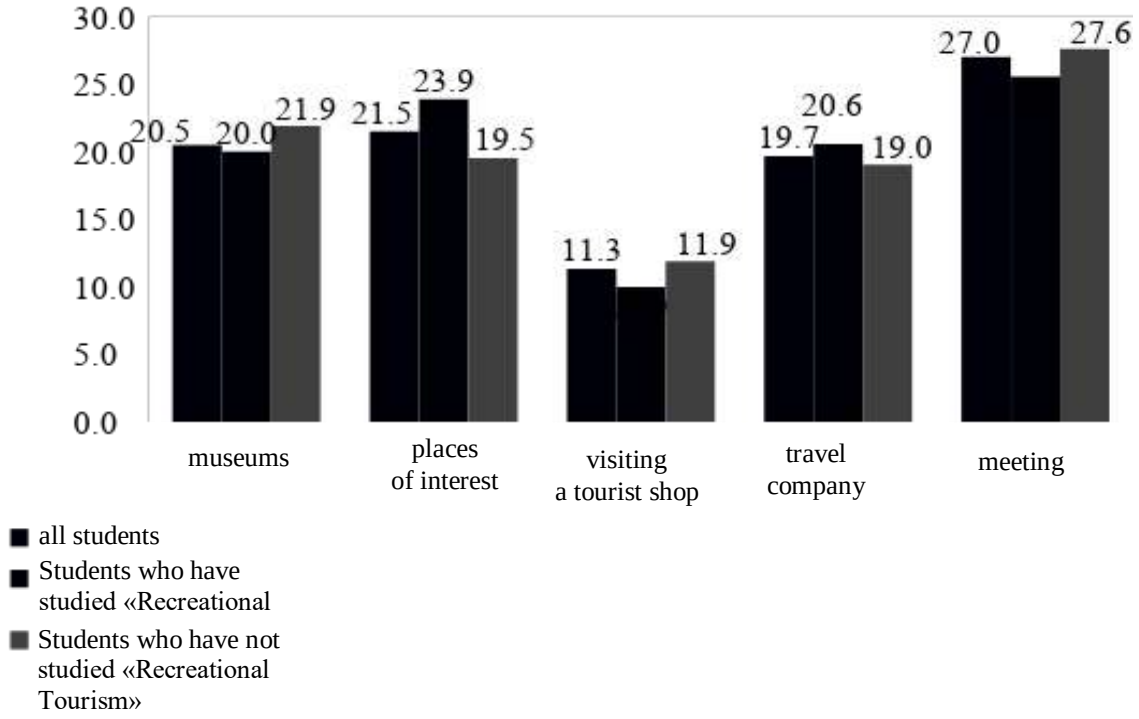

Figure 1. *The data on the students opinion about the alternative ways getting the information on the «Recreational tourism» classes*

It's worth to mention as a positive fact that the students offered their own testing method i.e. a project (2,1 %).

The last question was open, it was related to the topics of the content that students want to learn on the «Recreational tourism» classes. The most common answers were managing the backpacking and journeys, planning the tours, work of the guides, actions to be taken under the extreme conditions, types of the specialised tourist equipment, safety of a tourist, first aid, the little-known natural, historical and architectural recreational places of interest, the peculiarities of the marketing in tourism, work of the tour operators, health and medical tourism. In addition, the students wanted to learn the recreational tourism on the practical classes. It happened because the students have free access to the information, but not to the practical skills.

Based on the questionnaire, the theoretical works on the issue and the pedagogical experience, the model of the specific training for the students with the specialist area «Physical Education and Tourism» was created (figure 2).

Thus, the educational process management of the specialist area «Tourism Work Methodology» presupposes the motivation for learning new skills by the example of a teacher, the development of the cognitive work and creativity (resolving the issues and non-routine tasks), explaining the significance of the education for the future job and further self-development by travelling, backpacking, assistance with the leisure time managing for relatives and friends by organising the unusual classes.

Speaking about the course contents, we offer such as: «Sport tourism», «Backpacking», «Eco-tourism», «Tourist services», «Regional study», «Entertainment officer»s work», «Marketing in the recreational tourism». Before the creation of the course content, the analysis of the related subjects and collation of literature data, the investigating the academicians and experts experience in tourism were done.

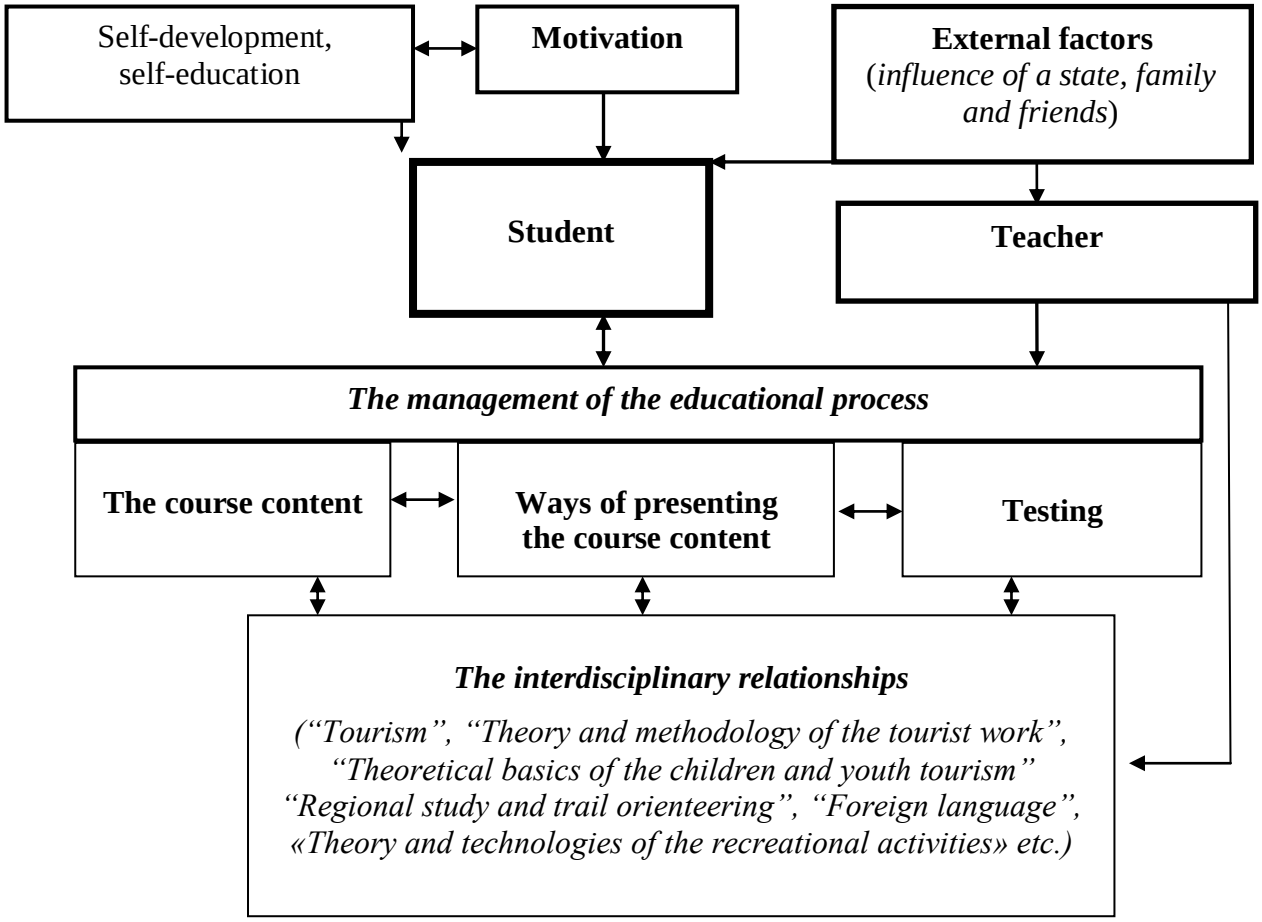

Figure 2. *Model of the «Recreational Tourism» study management for the students of the Physical Education and Health faculties with the specialist area «Tourism Work Methodology»*

Definitely, the content of the class is an important part of the educational process, however we support other scholars idea, that the most important factors of the students involving into learning are the methodologies. Their forms are different, such as classical lectures, interactive lectures, viewing lectures, meeting with the practicing tourists, using the knowledge and skills to solve the real-life issues, creating positive atmosphere by sharing personal experience and so on. It»s knows that the learning shouldpresuppose using the principles of the scientificity, availability, and have systematic and logical nature.

Testing is the process and the result of the defining the amount of learnt knowledge and skills in comparison with the perfect representation which is shown in the curricula.

Testing the knowledge and skills in «Recreational tourism», we recommend to stick to the principles of objectiveness, comprehensiveness, inspiration and effectiveness; take into the consideration the growth of the competence of the students and use different forms of testing: oral, written, tests and projects.

It's important to support students with verbal or non-verbal approval, allow them to estimate themselves or each other. All the above-mentioned will allow to create the positive feeling during the classes and the trust-based relations. In addition it will raise self-esteem of the shy students.

During the «Recreational Tourism» learning it's necessary to build the interdisciplinary relationships between the allied subjects. The most important of them are «Theoretical basics of the children and youth tourism», «Theory and technologies of the recreational activities», «Theory and methodology of the tourist work» and «Tourism». In addition, it is important to build the inter-disciplinary relationships between the noncontiguous subjects such as the foreign languages study and management. It will allow to adjust the education process easily, promote deeper understanding of the main data, enlarge the learned facts and improve the skills, improve the giving definitions in particular areas and better understanding of the cross-curricula terminology i.e. it can't be clearly explained within one subject.

Thus the creation of a model of the recreational tourism study for the students of the Physical Education and Health faculties, complex approach to the education managing, students point of view, the academicians and experts experience in the methods, types of lessons and testing techniques will improve the learning and motivation.

There were found no research regarding the classroom management for the students of the Physical Education and Health faculty. However, there are research dedicated to the tourism specialists training. Halyna Harbar suggests three ways of the organising education: basics learning (studying according to the curriculum); practical learning (how to do) to get the skills vital for the work; personal traits of a prospective expert [6]. She defines such subsystems of the tourism specialists training as the pre-professional education, professional education at the institutions of higher education and the postgraduate education. The model of the recreational tourism study for the students of the Physical Education faculties was created. It consists of content, forms and methods of the educational process management, students assessment, interdisciplinary relationships, motivation, self-culture, teachers traits of character and environment. The other scholars» research on the Tourism educational process management were extended. In her works, A. Anishchenko [2, C. 42] offers to take into account the employers» requests before creation of the educational process content. Y. Voyevoda [5], A. Anishchenko and M. Zaytseva [2] recommend to build the interdisciplinary relationships between the noncontiguous subjects such as the Foreign languages learning, Management, Psychology and Economics. They are not connected to the Tourism, but will give an opportunity to teach the highly-skilled Recreational Tourism experts. S.Kobzova advices to use such types of lessons and methods as lectures with the use of multimedia, seminars, themed tours with the videos, projects, testing and conferences [8, C. 58]. O. Andreyeva and O. Blahiy [1] recommend to use the problem-based situations, business games and process capabilities (for developing the research interest) and webinars.

The significance of the study is the creation of an integrated model of the Recreational Tourism study for the students of the Physical Education and Tourism faculties in Ukraine.

Conclusions and prospects for further research. The research shows that students consider Recreational Tourism necessary to study. They prefer to get the knowledge and skills during the lectures, viewing lectures, interactive lectures, seminars, the meetings with the practicing tourists, taking excursions, visiting travel companies, tour operators and tourist shop. Speaking about the skills students would like to practice, they are interested in sport tourism, backpacking, tourism services, regional study and entertainment officers work.

Thus, all components of the educational process for the specialist area «Tourism Work Methodology» should cover the training of prospective experts in Physical Education, Tourism and Recreation according to the academic degree and specialisation. In order to study «Recreational tourism», the learning activity should

include motivation, content and practical components, testing, interdisciplinary relationships, new approached for introducing new material and knowledge evaluation.

The created model requires testing and thorough organization of the educational process of other Tourism related subjects for the students of the Physical Education and Health faculties.

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Received: 07.06.2018.

UDC 373.5.015.31:316.46

THE FORMATION OF SOCIAL MATURITY OF SENIOR PUPILS (IN THE CONTEXT OF THE ACTIVITY OF THE TEACHER OF PHYSICAL CULTURE)

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https://doi.org/10.29038/2220-7481-2018-03-12-19

Abstracts

Topicality. Social maturity – a complex socio- psychological phenomenon, which includes a number of components: self-awareness, worldview, moral maturity, social feelings. Formation of social maturity and its components takes place under the influence of external and internal factors. Of particular importance is the upbringing and consolidation of the complex of personal qualities, moral consciousness and social feelings – the basis of social maturity. Social feeling is called to educate and teacher of physical education, which forms not only physical but also moral health, social activity, sense of responsibility, group intellectual, volitional, emotional and organizational unity and other important personal qualities of pupils. Therefore, we aim to identify the ways and factors of the formation of social maturity in schoolchildren under the influence of physical education classes, during which, in addition to physical, moral health, social activity, feeling of belonging to the team, feeling of a group are formed. ***Methods of research*** – analysis of scientific literature, observation, individual and group discussions, questionnaires, testing, methods of statistical processing of research results. ***Results of Work.*** We show that classes in physical education and sports allow senior students to realize the existence of many forms of socially useful activity, where they can reveal themselves, their potential opportunities, find a place for their application both professionally and in society. ***Conclusions.*** An analysis of empirical research confirms the important role of physical education and sports classes in the formation of components of the social maturity of senior pupils: self- organization, self-knowledge, volitional and moral-social qualities, group feelings, mutual help, attentiveness, communication culture, etc. The dissonance between the requirements of senior pupils about the personality of the physical education teacher of a modern school and the requirements of future teachers is revealed: students place more serious requirements than future teachers, which can affect the attitude of students to the classes themselves and the results of the work of the teacher.

Key words: pupils' youth, physical education, physical health, moral norms, social activity.

Оксана Киселиця, Юрій Мосейчук, Олена Мороз. Становлення соціальної зрілості старшокласників (у контексті діяльності вчителя фізичної культури). ***Актуальність.*** Соціальна зрілість – складне соціально-психологічне явище, яке включає низку компонентів: самосвідомість, світогляд, моральну зрілість, соціальні почуття. Формування соціальної зрілості та її компонентів відбувається під впливом зовнішніх і внутрішніх факторів. Особливого значення набуває виховання й закріплення комплексу особистісних якостей, моральної самосвідомості та соціальних почуттів – основи соціальної зрілості. Соціальні почуття покликаний виховувати і вчитель фізкультури, який формує не лише фізичне, але й моральне здоров'я, соціальну активність, почуття відповідальності, групової інтелектуальної, вольової, емоційної й організаторської єдності та інші важливі особистісні якості вихованців. Тому ставимо за ***мету*** виявити шляхи та фактори становлення соціальної зрілості в учнівської молоді під впливом фізкультурних занять, під час яких, окрім фізичного, формується моральне здоров'я, соціальна активність, почуття належності до команди, почуття групи. ***Методи дослідження*** **–** аналіз наукової літератури, спостереження, індивідуальні та групові бесіди, анкетування, тестування, методи статистичного опрацювання результатів дослідження. ***Результати роботи.*** Доводимо, що заняття з фізкультури й спорту дають змогу старшокласникам усвідомити існування багатьох форм суспільно корисної діяльності, де вони можуть розкрити себе, свої потенційні можливості, знайти місце їх застосування як у професійному плані, так і в суспільстві. ***Висновки.*** Аналіз емпіричних досліджень засвідчує важливу роль занять із фізкультури й спорту у формуванні компонентів соціальної зрілості старшокласників: самоорганізації, самопізнання, вольових та морально-соціальних якостей, почуття групи, взаємодопомоги, уважності, культури спілкування тощо. Виявлено дисонанс між вимогами старшокласників щодо особистості вчителя фізкультури сучасної школи й вимогами майбутніх учителів: учні ставлять більше серйозних вимог, ніж майбутні вчителі, що може вплинути на ставлення учнів до самих занять та на результати роботи вчителя.

Ключові слова: учнівська молодь, фізкультурні заняття, фізичне здоров'я, моральні норми, соціальна активність.

Оксана Киселица, Юрий Мосейчук, Елена Мороз. Становление социальной зрелости старшеклассников (в контексте деятельности учителя физической культуры). ***Актуальность.*** Социальная зрелость – сложное социально-психологическое явление, которое включает целый ряд компонентов: самосознание, мировоззрение, нравственную зрелость, социальные чувства. Формирование социальной зрелости и ее компонентов происходит под влиянием внешних и внутренних факторов. Особое значение приобретают воспитание и закрепление комплекса личностных качеств, нравственного самосознания и социальных чувств – основы социальной зрелости. Социальные чувства призван воспитывать и учитель физкультуры, который формирует не только физическое, но и нравственное здоровье, социальную активность, чувство ответственности, групповой интеллектуального, волевого, эмоционального и организаторского единства и другие важные личностные качества воспитанников. ***Цель исследования*** – выявить пути и факторы становления социальной зрелости у старшеклассников под влиянием физкультурных занятий, во время которых, кроме физического, формируется нравственное здоровье, социальная активность, чувство принадлежности к команде, чувство группы. ***Методы исследования*** – анализ научной литературы, наблюдение, индивидуальные и групповые беседы, анкетирование, тестирование, методы статистической обработки результатов исследования. ***Результаты работы.*** Доказываем, что занятия по физкультуре и спорту позволяют старшеклассникам осознать существование многих форм общественно полезной деятельности, где они могут раскрыть себя, свои потенциальные возможности, найти место их применению как в профес- сиональном плане, так и в обществе. ***Выводы.*** Анализ эмпирических исследований свидетельствует о важной роли занятий по физкультуре и спорту в формировании компонентов социальной зрелости старшеклассников: самоорганизации, самопознания, волевых и морально-социальных качеств, чувства группы, взаимопомощи, внимательности, культуры общения и др. Выявлено диссонанс между требованиями старшеклассников относительно личности учителя физкультуры современной школы и требованиями будущих учителей: ученики ставят больше серьезных требований, чем будущие учителя, которые могут повлиять на отношение учащихся к самим занятиям и результаты работы учителя.

Ключевые слова: учащаяся молодежь, физкультурные занятия, физическое здоровье, моральные нормы, социальная активность.

Introduction. Nowadays there is a sharp contradiction between the accelerated social development of modern children and the limited possibilities of social functioning. The level of opportunities for boys and girls in this period, the conditions and speed of their social development are related to the awareness of themselves and their belonging to society, the need to determine their place in society, the choice of profession, the construction of their future image, the possibility of studying in higher education institutions, the family creation, etc.

The concept of «social maturity» is relatively new in psychological and pedagogical science and there is no clear definition to date, although there are a number of publications that address this problem [1; 3; 4; 5]. The problem of the development and upbringing of social maturity is considered in the writings of native and foreign psychologists (Yu. Bardin, I. Bech, G. Hartmann, E. Golovakh, R. Gurov, K. Levin, S. Polischuk, M. Savchyn, E. Slobodsky, L. Philips, R. Khmelyuk, K. Hall, P. Jakobson); philosophers (Yu. Bardina, L. Rostova, T. Starchenko); sociologists (I. Polovynky, L. Sokhan, O. Kharcheva, V. Yadov); teachers (O. Kamenyeva, L. Kanisevska, T. Malkovska, O. Mykhailov, V. Radula).

Most researchers believe that social maturity is not a function of only one age. In many ways, its formation and manifestations depend on the conditions in which the child grows and is brought up. Therefore, adolescents and senior pupils are in sufficient social maturity, while some adults in their views and attitudes toward important aspects of human relationships remain children. We believe that social maturity is a qualitative criterion of mental development and a psychological state of self-understanding in society, an indicator of the formation of norms, rules of relations of personality with reality.

For the teacher of Physical Education, as well as for other teachers, it is extremely important to identify the social and psychological factors of forming the components of social maturity in students of the senior school age, which will enable to determine the directions and methods of psychological and pedagogical influence on this process. The relationships with others in the process of the Physical Education and in competitions of different levels, communication with them, help boys and girls to better understand their lives, their life experiences, as well as the peculiarities and achievements of their own life, to try to evaluate their own possibilities and to answer the questions of meaning of life, self-perception and self-determination.

The purpose of the research: to identify ways and factors of becoming social maturity in senior pupils under the influence of Physical Education lessons.

Material and methods of the research. To identify ways and factors of becoming a social maturity in students of the senior school age, we used a variety of methods and specific techniques: analysis of scientific literature, observation, individual and group interviews, questionnaires, testing, and methods of statistical processing of the results of the study.

Observations were conducted on the behavior of students during Physical Education classes. The subjects of observation were: the nature of relationships, communication, the attitude to the requirements of the teacher and achievements of classmates, etc. Observations helped to identify the individual properties of students, especially their behavior, the nature of the relationship to each other, individual personality traits, etc. In group and individual conversations there was an exchange of views on the following issues: sport and personality formation; sport and a healthy lifestyle; sport and physical and moral health of individual in general and in particular; potential capabilities of personality and sport; the influence of sport on boys' and girls` mental outlook; sport as a condition for the development of communicative and organizational skills and abilities of students, etc. To achieve the goal of the teacher, an atmosphere of openness, trust, discussion was created and which allowed identifying the attitude of students to physical education and sport as a subject, the importance of physical education for each of them, the impact on the development of individual qualities, emotional-sensory sphere, moral qualities and considerations, etc.

To clarify the results of observations and conversations we have developed questionnaires that contain 8 questions. The questionnaire for the polling of senior pupils will allow to reveal the influence of Physical Education and Sports classes on the formation of a social position, moral norms and qualities, outlook, on the emotional sphere, etc., the questionnaire for students (the future teachers) is aimed at revealing their thoughts about the possibilities of forming components of social maturity and social feelings, about ways and conditions for activating self-knowledge and self-improvement of students, the formation of a worldview, etc.

All participants received a mixed-form questionnaire with an instruction in which they were asked to read the questions carefully and to express their opinion in writing on each question. The questionnaire was conducted anonymously in a group form. The analysis of the results of the questionnaire was conducted on each issue separately, the group's typical answers were revealed, statistical results were presented. The participants were pupils of the 11th form of general secondary schools in Chernivtsi. The research includes 60 pupils and 40 future teachers.

The results of the research. Discussion. A poll of 11th form students (40 participants) gave us the following results:

Respondents identified several groups of character traits to the question «What personality traits do you develop at your Physical Education lessons?». The first group, called students, reflects the volitional features of the character: 70% of respondents called rivalry, 65 % – willpower, 55 % – purposeful, each second calls persistence; the second group of personality qualities contained moral and social qualities: 40 % of students call a sociability, a group feeling, an attentiveness to others, and a hard-working; every third person receives from physical activity and sports a feeling of mutual aid and reciprocity, and a fourth part of the respondents learn the rules of the culture of communication.

We received 65 % positive answers, 10 % of the answers «no» and every fourth student answered «I don't know» to the question «Do gymnastic and sports help in self-organization and self-knowledge? ».

We also found out that Physical Education and Sports lessons don't help students to know about events taking place in the country and in the world (70 % of negative responses and 15 % positive); 55 % of respondents refer positively to Physical Education and Sports lessons (like and bring benefits), 35 % of the answers are «indifferent»; 65 % believe that Physical Education and Sports are needed at upper grades, and 20 % do not «know» whether it is needed. Quantitative indicators also confirm that Physical Education and Sports indifferent form the feeling of «group»: 65 % of respondents are experiencing joy with team success, and 10 % are indifferent regard the success or failure of the class.

Describing the teacher of Physical Education and Sports, which is needed for a modern school, the respondents distinguish several groups of desirable qualities. The first group contained professional qualities: he should be a «master», be aware of various sports, to be a Sports Master or a Champion of Ukraine for some kind of sports, a highly skilled professional. To the second group they attributed physical qualities: the teacher of Physical Education and Sports should be physically healthy, hardened, and strong. The third group included moral and social qualities: good nature, honesty, justice, benevolence, compassion, being a good

person. In the fourth group, respondents included qualities that characterize the level of universal human culture: the teacher should be educated, cultural, and able to communicate, persuade in the process of communication, and have a sense of humor. The fifth group included external characteristics: it should be young, attractive, and slim. The data also indicate that Physical Education and Sports, successes and failures affect the self-replication of the respondents: 70% of the students wrote that achievements in sports or failures had a positive effect on self-knowledge and self-actualization, but 20% of answers were negative.

In parallel with the survey of senior pupils, we conducted a survey of students of 4-5 courses of different faculties (40 persons) – future teachers who are preparing not only to teach their subject, but also to conduct educational work with students at their lessons, and in the role of a class manager.

Future teachers believe that physical education lessons contribute the developing of the personal qualities of students (80%): the will, the feeling of rivalry, self-confidence, feeling of group, enrichment of knowledge. In order to help students to learn about themselves, the necessary conditions are: an individual approach (75%), support for competitive spirit, encouragement of the weak and development of their physical training level (70%), direct participation in competitions (60%). The future teachers also believe that Physical Education lessons contribute to the formation and development of students' outlooks and their own position (76%). The rest of the answers are «I do not know». Respondents also distinguish four main social feelings that, in their opinion, are formed in the students during Physical Education lessons: friendship, respect for people/for yourself, and mutual help. The future teachers believe that the teacher of Physical Education in modern school should be: physically and mentally healthy; to be an example for students, to lead a healthy lifestyle; have a sufficient level of physical readiness.

The comparison of the characteristics of a teacher of Physical Education in a modern school offered by future teachers, with those called senior pupils, suggests a significant discrepancy between the expectations of pupils and the way students see their college – future teachers. We think that this dissonance exists in reality and affects the attitude of students to physical education and the teacher, to the state of health, to the behavior of students in the lessons.

To study the influence of the most native environment on the social development of senior school students and the emergence of social maturity and its components, we studied their real and desired personal relationships, which are most actively manifested during leisure time. The results are presented in Table 1.

Table 1

Real and desirable partnership in leisure-time, %

Environment	oneself	with parents	with friends	with classmates	with teachers	with interesting people
With whom is spent free time	15,7	22,3	70,1	10,3	0	0
With whom would like to spend free time	4,9	19,6	61,9	19,3	2	26,7

The data show that the majority part of respondents prefer both real and desired communication in their free time with friends, pushing communication with their parents to second place, significantly reducing the influence of the family on the formation of the individual and his sociality. A lot of the senior pupils spend their free time alone, which is typical for this age. Pupils at senior school age are experiencing the need to stay alone for a variety of reasons. Such can be creativity, the desire to determine the meaning of life, to think about relationship, experiencing the first feeling of love, creating an image of the future, etc. In fact, a little more than a fifth part of the respondents spend their free time with their parents and even less would like to spend their free time with them. Every fourth student would like to spend his free time with interesting adults, which should pay attention to the teachers. This desire is conditioned by the fact that such communication is absent, and students experience a lack of interesting new information, which negatively affects the formation of their social maturity.

Unfortunately, such important factor as the teacher, who should direct, correct the process of development of social maturity, realization in practice of life of its formed levels, self-education, self-improvement of social orientation of the person, fell from an area of influence on social formation of pupils of senior school age. This can be explained by the fact that students talk more with teachers in the official

environment and perceive them as mostly business people and do not know the good personal qualities of their teachers, and therefore do not see them as their partners in different situations.

Communicating with peers gives them a possibility to receive support, the possibility of self-expression and recognition of their social significance. There is the need for social recognition to be the basis for the creation of a diverse range of adolescent and youth informal groups (from positive to criminal), where they can show themselves, meet the need for communication, declare themselves and their opportunities, self-realization. The study of the motivation to create different companies is presented in Table 2.

Table 2

Motivation to create the informal groups, %

№	Motives	%
1.	Possibility to communicate	51,5
2.	The same interests	26,7
3.	Possibility to spend time	11,7
4.	An attempt to create an own group	9,4
5.	Possibility to experience the sex, taste alcohol, drugs	9,3
6.	Possibility to escape from family disagreements	8,1
7.	Desire to throw off the adult burns	5,1

It is known that not all street groups spend their free time doing content-cognitive or social-valuable affairs, which would form positive personal qualities in their members, social orientation, social feelings and social maturity as a holistic psychological phenomenon. Practice shows that street companies characterize by behavioral deviations, social and even anti-social orientation, offending and criminal behavior of adolescents, attempt on alcohol and drugs.

Consequently, a Physical Education teacher, preparing his pupils to master Physical Culture in the process of sports, should pay attention to the cultivation of universal culture, which cannot exist without the developed skills of the communication culture and relationships. The use of obscene words has become a problem of current students, not only adolescents and older people. Each teacher should direct his pedagogical influence on the cleansing of speech from these words. Communicating with modern students, the teacher puts the foundation of the culture of the relationship of future generations of Ukrainians. The Physical Education and Sports lessons allow increasing the level of control and development of skills to adhere to rules of culture of relations and interpersonal communication, as there is an opportunity to expand direct personal communication in the system «teacher – students».

A socially mature person represents the social feelings of humanity, honesty, decency, responsibility for their actions to the family, collectives, parents, oneself, patriotism, and others like that. Answering the question: «What can cause you to commit a crime? », the students gave the following answers (See Table 3).

Table 3

Determination of the motivation for committing a crime, %

№	Motives	%
1.	Nothing can force to commit a crime	63,5
2.	The desire to protect yourself	17,4
3.	The desire to take revenge on the offense	13,7
4.	Unwillingness to lose authority in the company	3,8
5.	Constant conflicts with parents	2,5
6.	The desire to get some money	1,5
7.	Nescience of punishment	1,0

Based on the Table data, it can be noted that about 40% of our researched people are ready to commit a crime under certain conditions that is very alarming and disturbing. The main motives for committing a crime are the assertion of oneself as a personality, a human dignity (to defend themselves, to take revenge for insults), recognition of own adulthood, that is, the reaction of behavior to the negative attitude of others to the student, as to the personality. But more than 60% of high school students said that nobody and nothing could force them to commit a crime.

The social maturity of the senior pupil depends on the formation of his morality: moral values, beliefs, deeds, experience of moral behavior, which are formed (as well as the person as a whole) under the influence of family education, educational process in school, social organizations, the closest social environment, and sources of information. That's why we used a special diagnostic questionnaire aimed at identifying the meaning of moral behavior and the level of expression of the desire to commit moral actions.

The obtained results of the study allowed distinguishing two features of the valuable attitude of high school students to moral values and four levels of the formation of the desire to exercise moral behavior.

In order to identify the level of senior students` judgments, they were asked the question: «What does moral behavior mean for you?». According to the content of the test questionnaire, it is proposed five answer variants: 1) the desire for moral behavior, the recognition of the self-worth of the personality and the equality of all people in achieving happiness and dignity of life; 2) the desire to develop the quality of moral behavior in order to be able to establish humane relations between people; 3) the importance of possessing norms and rules of moral behavior for the achievement of a vital goal; 4) a respectful attitude towards others; when people are reciprocal courteous ; 5) it doesn't matter.

The analysis of judgments about the personal meaning of moral behavior enabled to reveal different types of interest in it. The results are presented in Table 4.

Table 4

Manifestation of interest in the meaning of moral behavior, %

№	Meaning of moral behavior	11th form pupils
1.	Lack of interest	4,8
2.	Direct interest	0
3.	Practical (pragmatic) interest	14,3
4.	Practical (socially significant) interest	33,3
5.	Practical (moral) interest	47,6

The choice of criteria characterizing the aspiration for moral behavior has made it possible to reveal two levels of the formation of this desire in our respondents – medium and low. The results presented in Table 5 show that the majority of our respondents are characterized by an average level of formation of a desire for moral behavior, and in the rest – a low level, which, of course, negatively affects the formation of social maturity of senior pupils as a holistic psychological phenomenon.

Table 5

Levels of formation of desire for moral behavior, %

№	Levels of desire for moral behavior	11th form pupils
1.	High	0
2.	Medium	80,9
3.	Low	14,3
4.	Extra low	4,8
5.	Null	0

Consequently, during the period of senior pupils` studying, social maturity and its components don't reach its level of development that would meet the requirements of a society that relates to early adolescence.

The emotional and sensory realm plays an important role in forming of social maturity and social feelings of the personality as its components.

In literature, lower emotional states (fatigue, positive emotions from satisfying natural needs, etc.) and higher experiences at a conscious level are distinguished. To the second group we refer empathy, which is an important component of the social feelings of the individual. It's very difficult to study and to show all components of social feelings in one study. Therefore, we took for the study only empathy as a complex psychic (moral-emotional) phenomenon, which is a compulsory component of social feelings and social maturity.

Psychologists explain empathy as an understanding and feelings of the emotional state of another person, penetration into her experiences. We studied the formation of senior pupils' empathy levels. The sampling was formed in the light of the fact that during this period, the higher feelings, including empathy,

are mainly formed, clearly manifest in relation to the social environment and are perceived by their owners. But their development can reach different levels.

In order to detect the formation of empathy in our sampling, we used the Test Method of Tendencies of Empathy (according to I.M. Yusupov). The tests passed pupils of grades 11-A and 11-B (for 20 people in each group).

The test includes 36 questions. In the instruction for the test, it was suggested that you carefully read each question and respond to them by choosing one option from the following: «Do not know» (0 points), «No, never» (1 p.), «Sometimes» (2 p.), «Often» (3 p.), «Almost always» (4 p.), «Yes, always». The results were calculated according to the key: the number of points is an indicator of the formation of a certain level of empathy tendencies. Data that characterize the peculiarities of the formation of the empathy of senior pupils are given in Table 6.

Table 6

Age characteristics of the empathy manifestation in senior pupils, %

Level of empathy	Form	
	11-A	11-B
Extra high	40	10
High	10	10
Normal	20	10
Low	10	30
Extra low	20	40

The table's data represent an extremely colorful picture of the empathy manifestation in senior pupils. The characteristic of levels of the 11-th form pupils` empathy is distinguished by its contrast. Indicators of the levels of the formation of empathy in our respondents differ in the way in which collective of the class students learn. The levels of empathy in senior pupils from different classes are extremely varied. While half of the 11-A class students are characterized by extra high and high levels of empathy, these levels are characterized by only one in every fifth student from grade 11-B. There are particularly different indicators of an extra high level of empathy. In the same class, there are 2 times fewer students with normal levels of empathy and more than 2 times higher rates of low and extra low levels of the formation of compassion and sympathize, compared with the students of the 11-A grade.

The majority of people have a normal level of empathy. The results of the study indicate that this pattern does not work for the students of the senior school age. This is explained by the fact that the senior pupil is not yet fully formed personality. A lot of its structural components continue to emerge, including the emotional realm.

Consequently, the formation and manifestation of the social maturity of the senior pupil, his attitude to the outside world, in particular the social environment [2], depends to a large extent on the level of formation of the personality traits of the student, his propensity to empathy.

Conclusions. The formation of social maturity and its components is influenced by many different factors: education in the family, relationships with others, communication, education and upbringing at school, political, economic, ideological and other changes in society. One of the most important factors in the development of the senior pupils` social orientation, their moral maturity and social feelings, is physical education and sports, in which, apart from physical, moral health, social activity, feeling of belonging to a team, feeling of a group (intellectual, volitional, emotional, organizational unity), there are optimal conditions for the disclosure of abilities that are not disclosed in the study of other academic disciplines, organizational and communicative skills and abilities, moral norms and values and empathy are formed. Sports competitions of pupils at different levels instill a sense of patriotism, pride for the successes of their classmates, a sense of honor and dignity. Physical Education and Sports classes allow senior students to realize the existence of many forms of socially useful activity, where they can reveal themselves, their potential opportunities, find a place for their application, both professionally and in society in general.

Prospects for further research. Further research may be aimed at the question of shaping the social maturity of future professionals for Physical Culture and Sports.

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Received: 08.05.2018.

UDC 796:032:37.015.311

INFLUENCE OF OLYMPIC EDUCATION IS ON PERSONALITY OF SCHOOLCHILDREN

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https://doi.org/10.29038/2220-7481-2018-03-20-25

Abstracts

Education is defined as an educational level, the achievement of which involves systematic and purposeful learning of the content of learning, then according to the current law, education is, first of all, a set of systematized competences, knowledge, skills, practical skills, ways of thinking (competences), professional, ideological, civic qualities and moral and ethical values acquired in institutions of secondary education. This fully corresponds to the European trends in the development of education based on a competent approach. Accordingly, educational activity is consider more broadly (not only as providing educational services with the issuance of the relevant document, but also focusing on satisfying the educational needs of the student). The quality of educational activities is considered not only as a set of characteristics of the education system and its components, but also the level of organization of the educational process, oriented both to ensure the acquisition of individuals qualitative education, and the creation of new knowledge. Conceptually, a model of a modern dynamic system is introduced, which should ensure the development of education with a wide involvement in the educational and organizational-managerial processes of scientific and pedagogical workers and youth. One of the main directions of the concept of educational development is the reformation of the content of education, which will allow the implementation of the ideas of Olympism in future activities; to ensure the distribution of Olympic education among different sections of the population. Innovative nature of the basic provisions of the law follows from the analysis of his thesaurus. Thus, the following categories of the main categories that are clearly defined and regulated by law include: education, educational institution, educational activity, quality of education, quality of educational activity, etc.

Key words: olympic education, technology of education, olympism, olympic sport, educational institution, education, education.

Катерина Кострікова. Вплив олімпійської освіти на особистість школярів. Проаналізовано освіту з погляду освітнього рівня, здобуття якого передбачає системне та цілеспрямоване оволодіння змістом навчання. То, згідно з чинним законом, освіта – це, передусім, сукупність систематизованих компетентностей, знань, умінь, практичних навичок, способів мислення (компетентностей), професійних, світоглядних, громадянських якостей та морально-етичних цінностей, що набуваються в закладах середньої освіти. Це цілком відповідає європейським тенденціям розвитку освіти на засадах компетентнісного підходу. Відповідно, й освітню діяльність розглядаємо ширше (не лише як надання освітніх послуг із видачою відповідного документа, а й орієнтація на задоволення освітніх потреб школяра). Якість освітньої діяльності трактуємо не тільки як сукупність характеристик системи освіти та її складників, а й рівень організації освітнього процесу, орієнтованого як на забезпечення здобуття особами якісної освіти, так і на створення нових знань. Концептуально закладається модель сучасної динамічної системи, яка має забезпечити розвиток освіти із широким залученням до навчального та організаційно-управлінського процесів науково-педагогічних працівників та молоді. Одним з основних напрямів концепції розвитку освіти є реформування змісту освіти. Це дасть змогу впровадити ідеї олімпізму в майбутню діяльність; забезпечити поширення олімпійської освіти серед різних верств населення. Інноваційний характер основних положень закону випливає з аналізу його тезаурусу. Так, до кола основних категорій, що чітко визначаються й регулюються законом, віднесено такі, як освіта, заклад освіти, освітня діяльність, якість освіти, якість освітньої діяльності та ін. Аналіз спеціальної літератури дав підставу виділити основні етапи формування системи олімпійської освіти як потужного фактора виховання підростаючого покоління: витоки ідеї олімпійської освіти; формування основ олімпійської освіти; становлення й розвиток олімпійської освіти. Проведене емпіричне дослідження дає змогу зробити висновок, що після впровадження олімпійської освіти в загальноосвітні заклади Херсонської області довело її позитивний вплив на комплекс основних показників навчально-виховного процесу, які мають бути предметом суспільного консенсусу, розуміння того, що освіта – це один з основних важелів цивілізаційного поступу й значною мірою характеризують соціальне замовлення держави на формування та розвиток фізично, психічно, духовно й соціально здорової дитини.

Ключові слова: олімпійська освіта, технології освіти, олімпізм, олімпійський спорт, заклад освіти, освіта, виховання.

Катерина Кострикова. Влияние олимпийского образования на личность школьников. Анализируется образование с позиции образовательного уровня, получение которого предусматривает системное и целенаправленное овладение содержанием обучения согласно действующему закону. Образование – это, в первую очередь, совокупность систематизированных компетенций, знаний, умений, практических навыков, способов мышления (компетентностей), профессиональных, мировоззренческих, гражданских качеств и морально-этических ценностей, приобретаемых в учреждениях среднего образования. Это вполне соответствует европейским тенденциям развития образования на основе компетентностного подхода. Соответственно, и образовательная деятельность рассматривается шире (не только как предоставление образовательных услуг по выдаче соответствующего документа, а й ориентация на удовлетворение образовательных потребностей школьника). Качество образовательной деятельности рассматривается не только как совокупность характеристик системы образования и ее составляющих, но и как уровень организации образовательного процесса, ориентированного как на обеспечение получения лицами качественного образования, так и на создание новых знаний. Концептуально закладывается модель современной динамической системы, которая должна обеспечить развитие образования с широким привлечением к учебному и организационно-управленческому процессу научно-педагогических работников и молодежи. Одним из основных направлений концепции развития образования является реформирование содержания образования, это позволит внедрить идеи олимпизма в будущей деятельности; обеспечить распространение олимпийского образования среди различных слоев населения. Инновационный характер основных положений закона следует из анализа его тезауруса. Так, в круг основных категорий, четко определяются и регулируются законом, отнесены такие, как: образование, учебное заведение, образовательная деятельность, качество образования, качество образовательной деятельности и др.

Ключевые слова: олимпийское образование, технологии образования, олимпизм, олимпийский спорт, учебное заведение, образование, воспитание.

Introduction. Development and deepening of processes of democratization and humanizing in life of society are organically related with recognition in quality of higher value of human in the individuals, their individuality and spiritual forces [2; 4]. Reformation of the education system, sending to become a part of European educational space, is related with the search of educational models, that allow to form spiritually-moral, cultural and historical traditions of the state education, where personality of child is a key value. Thus, development exactly of potencies and possibilities, and also a process of creative self-actualization is the absolute aim of community development.

An issue of introduction in the process of studies and education of elements of Olympic education as a positive factor that assists of humanizing of society, found a reflection in works of state researchers: N.V. Moskalenko, O. M. Vatseba, S. F. Matveev, Polikarpova G. M., O. A. Tomenko, V. M., Yermolova, M. M. Bulatova and others [1; 4; 7].

A considerable amount of scientific researches is devoted to the development of the content of the Olympic education, as a factor in the humanization of physical culture of student youth. The most developed are the conceptual approaches of the Olympic education in general educational institutions of Ukraine. However, the search for ways of introduction of Olympic education into the education system remains a problem. An important step in the development of the domestic educational field was the adoption by the Verkhovna Rada of Ukraine of the Law «On Education». The new law came into force in September 2017, and its implementation links qualitative changes in the system of schoolchildren preparation and the introduction of European standards of education. The law establishes the legal, organizational, financial principles of the functioning of the education system in Ukraine, creates conditions for strengthening cooperation between state and educational institutions, an organic combination of education with scientific activity, modern technologies in order to prepare competitive human capital for high-tech and innovative development of the country, self-realization of the individual, meeting the needs of society and the state. The process of implementation of the new law implies the implementation of a system of concrete measures for the development and implementation of educational mechanisms for its realozation. Therefore, the analysis of the main directions of this socially important and determinant for the development of the domestic education is an **urgent problem**.

The purpose of the research is to consider the influence of the Olympic education on personality of schoolchildren.

The research objectives:

1. To analyze the possibilities of using the elements of Olympic education in educational institutions.

2. To determine the main technologies of the influence of Olympic education on personality of schoolchildren.

The methods of the research. During the research, the following methods, like the theoretical method (analysis of scientific and methodological literature on the research problem, generalization of theoretical and empirical data); and the empirical one (pedagogical observation) were used.

The scientific novelty of the research is in the comprehensive study of the specifics of the introduction of Olympic education in the educational process of schoolchildren.

The discussion. Education still seems to be the social institution, where it is still possible to educate new generations of citizens capable of assimilating the democratic values, to understand the need for law-abiding behavior, ready for the manifestation of civil activity in solving socially significant problems [5].

Despite the recent development and implementation of Olympic education programs all over the world, various aspects of its impact on the formation of the younger generation are being explored, the role of the Olympic education in shaping humanistic values in the younger generation is not properly studied. In the center of attention of modern theoretical and practical human studies, problems of self-determination and creative self-realization of personality in the process of life are revealed [2].

Today's reality requires a person continuously improving and studying, so these skills and abilities need to be developed already during school education. Promotion of lifelong learning and awareness of the fact that education does not finish at school, and continues in adult life, should become a priority for the introduction of the Olympic education into the educational process [6].

Education is defined as an educational level, the achievement of which involves systematic and purposeful learning of the content of study [5], then, according to the current law, education is, first of all, a set of systematized competences, knowledge, practical skills, ways of thinking (competencies), professional, ideological and civic qualities and moral and ethical values acquired in a general educational institution [5]. This fully corresponds to the European trends in the development of education based on a competent approach. Accordingly, educational activity is considered more broadly (not only as the provision of educational services with the issuance of the relevant document, but the orientation to meet the educational needs of the student). The quality of educational activities is considered not only as a set of characteristics of the education system and its components, but also the level of organization of the educational process, oriented both to ensure the acquisition of individuals qualitative education, and the creation of new knowledge.

The technologies of the «New Ukrainian School», based on which the Political Proposal is being formed, correlates not only with the best world practices but also with the needs of the international labor market, which were announced at the beginning of 2016 at the World Economic Forum. It is anticipated that in 2020, successful skills will require skills such as the ability to solve complex tasks, critical thinking, creativity, emotional intelligence, self-affirmation, self-expression, self-development, self-knowledge, education, etc. It may be not that most scholars [2] have, in essence, the same point of view in defining the purpose of the Olympic education. The ultimate goal and the result of the implementation of the Olympic education is the formation of the personality, which in their actions and thoughts within the framework of professional activities and in everyday life is guided by humanistic rules of conduct cultivated by Olympism and the principles of the Olympic Charter [10].

The purpose of modern Ukrainian education is the development of an educated personality, which combines creative potential in learning, initiative in self-development and self-education in the context of global change and challenges, the ability to identify itself as an important and responsible component of Ukrainian society, which is ready to change and defend the national values of the Ukrainian people [1].

In the last decade, in the context of the issues of the Olympic sport, a new promising direction of the theory and philosophy of sporting activities – Olympic education has emerged and is actively developing. Its formation, both abroad and in Ukraine, was the result of many years of activity of the International Olympic Academy and the Olympic Academy of Ukraine [1].

The multifaceted aspects of Olympic education-the dissemination of knowledge about the values of Olympism, the history of the Olympic Games, the principles and ideals of the Olympic sport - are designed to help students make the right choice to improve their personality, which will promote personal development [1,4].

Given the vast majority of studies on the topic of Olympic education, the characteristics of the Olympic education are usually accepted and do not cause objections to two provisions.

The first position: Olympic education as a kind of education is a certain pedagogical activity. Sometimes, however, there are wording in which the Olympic education is actually identified with scientific research, for example: «In the conceptual plan, the Olympic education can be defined as a purposeful process of knowledge of the emergence of the Olympic movement, its influence on the satisfaction of various cultural and educational inquiries of the individual and society» [Pechersky, Samchuk, 1995, p. 49; Pechersky, Suchilin, 1994, p. 85; Suchilin, 1994, p. 74]. However, this is an exception to the rule, which contradicts the usual understanding of education as a pedagogical process.

The second generally accepted position: Olympic education – pedagogical activity, carried out within the framework of the Olympic movement and related to its goals and objectives; this activity is based on the ideas of Olympic philosophy, ideals and values of Olympism [2].

Among the main tasks of the Olympic education, V. Stolyarov highlights a certain system, which involves the formation and improvement of children and youth

1) Knowledge;

2) Motivations (interests, needs, values orientations, guidelines, etc.);

3) Abilities and skills that manifest themselves in certain activities (behavior).

Moreover, researcher considers the main task to be the formation of a real behavior, a mode (style) of life that corresponds to these ideals and values [5; 7].

According to L. Lubysheva, the main tasks of pedagogical activity within the framework of the Olympic education are the formation and development of the Olympic culture of the personality through:

– Formation of knowledge in the field of Olympism, the Olympic Games;

– Education in the spirit of Olympism and the principles of Fair Play;

– Involving children in active sports [5].

Using the technology of eternal Olympic education and upbringing is the Olympic education and upbringing of graduates of secondary schools, higher educational institutions of physical education and sports, teachers and educators of children's and youth educational institutions. It was found that the main factors contributing to the formation of the Olympic education and education of the individual is increasing the level of knowledge, the development of motivation, skills in the field of Olympic education [8].

Polikarpova G.M. describes the following stages of the technology of Olympic education:

1. Organizational-managerial stage, which includes:

– Organization and holding of the Olympic Week;

– Olympic education in general and Olympic education in the narrow pedagogical comprehension.

2. Practical stage:

– Conducting Olympic lessons by students of final grades for pupils from 5-8th and 10th forms;

– Preparation of school students for participation at the Olympic Week.

3. Motivational stage:

– Work with the Olympic education and upbringing during the holidays;

– Contest for the best Olympic Lesson;

– Publishing of the collection, notes of the Olympic Lessons;

– Holding conferences on the Olympic theme;

– Organization of independent work on Olympic education and trainings [8].

Carrying out the experimental work in obedience to the project of Conception of education development and influence of Olympic education on personality of schoolchildren in 2016 and 2017 in Kozachelaherska and Chornobayivska establishments of secondary education of the Kherson Regional Council, attention was concentrated on the role of student's self-government in introduction of Olympic education in educational-process and context form of teaching the Olympic subjects.

Schools worked after the model of innovative educational institution, were based on the basis of creation healthcare and health forming environment at school, family, microregion; forming for pupils of common moral forms, conscious attitude toward the realization of role of active participant of public life on the basis of ethic, cultural and educator values of Olympism [5].

For realization of the aim it was envisaged to start the corresponding changes to educational content; mode of functioning of educational institution (teaching of the Special course of »Basis of Olympic

Knowledge»; realization of individual and optional classes, implementation of health-hygienic regime, and others like that). The unity standards indicators of

knowledge, abilities and skills in industry of informative-computer technologies for schoolchildren and teachers (consistent with international indexes: PISA in computer skills, industrial international tests of Microsoft Certified Educator etc.) have been worked in practice [5].

After introduction of the program, in order to determinate of the awareness in the issue of Olympic education of schoolchildren, the questionnaire of schoolchildren of foregoing institutions of the Kherson region was carried out.

36 students (15 girls and 21 boys) of Kazachelaherska secondary school and 33 schoolchildren (16 girls and 15 boys) of Chornobayivska secondary school (16 girls and 15 boys) participated in the questionnaire.

In order to Olympic education`s influence on the healthy way of life, it was suggested for the schoolchildren to fill a questionnaire.

The analysis of student's questionnaires gives an opportunity to mark, that approximately of 78 % schoolchildren correctly perceive and support one of the fundamental principles of

Olympism, like a harmonious unit of body qualities, will and mind, thus the highest index was observed among girls.

Today the problem of threat to the health is considered by world community as one of the urgent problems in planetary scale.

Its significance and topicality caused the necessityof propaganda of healthy way of life. One of effective facilities of health maintenance, continuation of period of people active longevity and lifespan is the systematic engaging in a physical culture and sport.

A questionnaire gave an opportunity to define that 62% of schoolchildren considered a physical culture and sport like the inalienable constituent of their healthy life style.

However the analysis of respondents` answers testify that only 77,25% have been engaged to a physical culture and sport, thus among boys this index is considerably higher, than among girls.

Analyzing the situation regarding the activity of educational institutions of Ukraine, it is right to point out the well-established process of the introduction of Olympic education in the preparation of schoolchildren. It allows you to share practical experience, gain knowledge, and implement the ideas of Olympism in future professional activities; provides positive changes in the work on the dissemination of Olympic education among different sections of the population. However, in introducing the ideas of Olympism among schoolchildren, it should be noted that the problems hindering the implementation of the Olympic education in the process of learning:

– «The problems of Olympic education in scientific studies conducted by institutions of higher education in physical education and sports have not received sufficient dissemination: a few publications, methodological recommendations, scientific conferences testify to the absence of a well-established system, the chaotic nature of the organization of scientific researches» [6];

– Informational computer technologies are rarely used to accompany lectures and seminars on issues of Olympic sports and Olympic education;

– Open resistance to the introduction of some rules of the new law by the groups of influence existing in education;

– The reluctance of pupils and teachers to do something for improvement of the state of education;

– Unfortunately is very slow updating of the regulatory framework for education.

Conclusions and prospects for further research.

Thus, carrying out a theoretical analysis allowed to draw conclusion, that Olympic education is harmoniously included to the educational process and allows to decide basic tasks:

– To increase the level of knowledge in Physical Culture and Sport field;

– To develop the general culture and erudition; a harmonious and versatile personality;

– To form the significance of healthy lifestyle.

The model of educator space, based on ideas of Olympism for educational institution of any level, is examined like a result of creative integral of teachers` activity, student's youth, children and their parents

and is the substantial factor of personality`s development.

Empiric researches, give an opportunity to conclude, that after introduction of Olympic education to the secondary level institutions of the Kherson region, have been proved the positive influence on the complex of basic indexes of educational process, that must be the subject of public consensus, also understanding

that education, is one of basic levers of civilization advancement and largely characterizes the social order of the state on forming and development physical, mental, spiritual and social healthy of children.

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Received: 25.06.2018.

UDC 796.011.1:316.346.32-05.3.2

GENDER DIFFERENCES OF THE HIERARCHICAL STRUCTURE VALUE FINDINGS OF DIFFERENT AGE PUPILS

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https://doi.org/10.29038/2220-7481-2018-03-26-35

Abstracts

Actuality: This article contains reviews of various aspects of gender-related problems and gender-related approach to physical education of pupils. ***Tasks of the Article.*** The learning of the differences of hierarchical structure value findings of the different age youth. ***Methods:*** For examining the hierarchical structure value findings the method of M. Rockicha and questionnaires of S.Bem were used. Pupils of 5–10 forms took part in a researching.

Results of the Study. It is proved that age-related aspect between male and female as common foreground value findings does exist at the same time there are significant differences in selection of terminal and instrumental values. Thus, it is evidenced about age-related changes of foreground qualities thanks to which pupils are able to achieve their goals. Phycological connection of sex in terminal and instrumental values hierarchy is also studied (femininity, masculinity, androgyny). Differences in selection of own foreground values between boys and girls are detected. ***Conclusions.*** Interests, reasons, value findings in the sphere of physical culture, pupils' attitude to motor-related activity should be studied, in order to shape strategy of attraction of youth to regular physical activity. Orientation to single mark of biological activity or psychosocial system can't be the only thing in creation early mentioned system. That is why accounting of physiological and motor-functional peculiarities of pupils beside the complex of biosocial attribute is needed. Thus, it is so important that the physical education process of pupils should include gender approach.

Key words: pupils, gender-related differences, physical culture, sport, girls,guys, value findings.

Тетяна Круцевич, Євгеній Імас, Оксана Марченко. Гендерні відмінності ієрархічної структури ціннісних орієнтацій школярів різних вікових груп. ***Актуальність.*** У статті розглянуто різноманітні аспекти гендерної проблематики та гендерного підходу у фізичному вихованні школярів. ***Завдання роботи.*** Вивчення гендерних відмінностей у структурі ціннісних орієнтацій юнаків і дівчат різного віку та вплив психологічної статі на формування ієрархії ціннісних орієнтацій школярів. ***Методи.*** Для вивчення ієрархії ціннісних орієнтацій школярів та їх психологічного типу були використані методика М. Рокича, та тест-опитувальник Сандри Бем. У дослідженні взяли участь школярі 5–11 класів (564 особи). ***Результати роботи.*** Доведено, що у віковому аспекті між юнаками та дівчатами існують як спільні пріоритетні ціннісні орієнтації, так і досить суттєві розходження у виборі термінальних та інструментальних цінностей, що свідчить про вікову зміну пріоритетних якостей завдяки яким школярі досягають власної життєвої мети. Досліджено взаємозв'язок ієрархії термінальних та інструментальних цінностей з психологічною статтю школярів (фемінність, маскулінність і андрогінність). Виявлено суттєі відмінності у виборі власних пріоритетних цінностей між юнаками та дівчатами одного статеворольового типу. ***Висновки.*** Для формування стратегії залучення учнівської молоді до систематичних занять фізичною культурою, вивчаючи інтереси, мотиви, ціннісні орієнтації у сфері фізичної культури, їх ставлення до рухової активності, не можна орієнтуватися тільки на один з показників біологічної чи психосоціальної системи, необхідно врахування не тільки фізіологічних, та морфо-функціональних особливостей школярів, але і весь комплекс біосоціальних ознак особистості, впроваджуючи гендерний підхід у процес шкільного фізичного виховання.

Ключові слова: школярі, юнаки, дівчата, гендерні відмінності, фізична культура, спорт, ціннісні орієнтації.

Татьяна Круцевич, Евгений Имас, Оксана Марченко. Гендерные различия иерархической структуры ценностных ориентаций школьников разных возрастных групп, которые занимаются и не занимаются спортом. ***Актуальность.*** В статье рассмотрены различные аспекты гендерной проблематики и гендерного подхода в физическом воспитании школьников. ***Задачи работы.*** Изучение гендерных различий в структуре ценностных ориентаций юношей и девушек разного возраста. ***Методы.*** Для изучения иерархии ценностных ориентаций школьников была использована методика М. Рокича, тест-просник С. Бем. В

исследовании приняли участие школьники 5–11 классов. ***Результаты работы.*** Доказано, что в возрастном аспекте между юношами и девушками существуют как общие приоритетные ценностные ориентации, так и довольно существенные различия в выборе терминальных и инструментальных ценностей, что свидетельствует о возрастной смену приоритетных качеств благодаря которым школьники достигают своей жизненной цели. Исследована взаимосвязь психологического пола с иерархию терминальных и инструментальных ценностей школьников (феминность, маскулинность и андрогинность). Выявлено различия в выборе собственных приоритетных ценностей между юношами и девушками одного полоролевого типа. ***Выводы.*** Для формирования стратегии привлечения молодежи к систематическим занятиям физической культурой, изучая интересы, мотивы, ценностные ориентации в сфере физической культуры, их отношение к двигательной активности, нельзя ориентироваться только на один из показателей биологической или психосоциальной системы, необходим учет не только физиологических, и морфо-функциональных особенностей школьников, но и весь комплекс биосоциальных признаков личности, внедряя гендерный подход в процесс школьного физического воспитания.

Ключевые слова: школьники, гендерные отличия, физическая культура, спорт, юноши, девушки, ценностные ориентации.

Introduction. Physical education as a discipline in general education institutions, aims to solve tasks that are related not only to enlightenment, health and education, but also to form an important attitude towards health, a healthy life, and to take interest in active lifestyle. But, unfortunately, physical culture significantly loses its value among among today's youth. Children and teenagers prefer television and the internet. Despite the fact that the school is an educational institution which directs its function for the harmonious development of children, T.Y. Krusevich [8], A. G. Sukharev [11] and other scientists indicate reduction of motor activity of schoolchildren and as a result - decrease in physical state and increase the level of diseases. First of all, formation of value relation in the field of physical education is possible when the student is intended to realize the most important personal needs. If this is done, then the value relation can be formed and also further humanistic and cultural value orientations in the study are [4].

Despite the fact that gender issues relate to a new area of scientific knowledge and cover the academic environment very slowly, there is a big amount of scientific and pedagogical literature which can be used by us as the scientific foundation of modern research in a problem that is studied. Men differ from women not only in physiological characteristics, but also in a number of psychological features of the character. It is well known for a long time. Today there are more than 50,000 works in which the authors attest to the existence of sexual differences in various areas of human ontogenesis. [5]. Thus, during the analysis of scientific and pedagogical literature, in our scientific research we rely on the achievements in the field of physical culture, pedagogy and psychology in the context of organizing education and upbringing children, adolescents and young people in the process of their gender socialization. Also, on modern gender theories that reveal a whole range of problems. They are related to the implementation of gender equality in society and among youth.

Gender is the social sex of a person. Gender involves social and cultural norms which, in the society, are prescribed to be performed by people according with their gender due to power and dominance[3]. The term «gender» (gender) is used in modern domestic and Western humanitarian studies to determine the gender as a social phenomenon and the term as opposed to biological sex (sex). Sex is a biological definition and gender are the cultural and symbolic definition of sex. [3].

Numerous studies in the field of sports focus on the sexual dimorphism, studying the characteristics of the manifestations of women in sports and the differences in evaluating the sporting achievements of men and women, as representatives of various psychological sex. (M. Messner, 2000; L. Shakhlina, 2006, 2010). Gender studies of foreign scientists in the field of physical culture and sports designed to address gender equality issues and study how sports contribute to the formation of gender personality traits. [13; 14; 15; 16]. However, we found no fundamental works that have studied gender features of physical development of self–esteem and relationship between students belonging to their psychological type of personality that proves the relevance of our research.

The scientific work is carried out under the theme adopted by the Ministry of Education and Science of Ukraine, cipher 1.2 F. «Historical and organizational – methodical principles of forming gender approach in

physical education of children, adolescents and young people» 0117U002386 number UDC 796.011.3 – 053.2 / – 53.7: 159.922 .7.

Tasks of the article: The learning of the differences of hierarchical structure value findings of the different age youth.

Material and methods of article. Analysis of scientific and methodological literature, a modified version of M. Rokich's method for evaluating value orientations, questionnaires of S.Bem, mathematical statistics methods. Pupils of 5-10 forms took part in a researching. The results of the research were stratified according to the age-related periods of children's physiological development and the biological sex. Certainty of the difference between the individual results was determined at the level of reliability $p < 0.05$ to $p < 0.1$, which indicates the possibility of taking into account the development of practical recommendations for physical training teachers and further interpretation.

Results of the study. Discussion. In accordance with the psychology understanding of the nature and features of the functioning of human value orientations, which make up their structure and content are divided into two main groups from the point of view of the goals and objectives that serve one or another value. The first group consists of goal values (terminal values), the second - values-tools (instrumental values) [4]. In our study, the concept of «value orientation» is understood as the choice of certain values done by boys and girls. The values mean their important life position and due to evaluation of which there is an opportunity to design and influence the motivational sphere of respondents.

Summarizing the hierarchy of values for schoolchildren of all age groups, namely defining a common average category, we analyzed the terminal values (table 1).

Table 1

The general rating of the students' terminal value orientations

№	Values	Boys, n = 282		Girls, n = 282	
		Rating	$\bar{x}$	Rating	$\bar{x}$
1	Self-sufficiency (independence in judgments and assessments)	9	4,09	12	4,16
2	Self-confidence (freedom from internal contradictions, doubts)	4	4,45	5	4,52
3	Wealth (no material problems in life)	15	3,90	16	3,78
4	Health (physical and mental)	2	4,60	3	4,58
5	Pleasure (life full of pleasures, pleasant pastime, lots of fun)	8	4,17	6	4,29
6	Interesting job	7	4,18	8	4,22
7	Love (spiritual and physical intimacy with your beloved person)	5	4,44	4	4,56
8	Freedom as independence in actions	12	3,99	13	4,04
9	Beauty (the experience of beauty in nature and art)	13	3,96	6	4,29
10	Good and loyal friends	3	4,58	1	4,75
11	Cognition (the possibility of expanding your education, outlook, intellectual development)	10	4,06	9	4,21
12	Happy family life	1	4,65	2	4,62
13	Creativity (possibility of creative activity)	16	3,67	15	3,88
14	Social recognition (respect for others, team, friends)	10	4,06	11	4,18
15	Active life	6	4,27	10	4,20
16	Equality (brotherhood, equal opportunities for all)	14	3,91	14	3,99

The most important terminal values for boys were: «happy family life» (average score for all sample 4.65), «health» (4.60) and «good and faithful friends» (4.58). All selected values are the main universal values. Preference was given to the following values: «self-confidence» (average score 4.45), «love» (4.44) and «active, essential life» (4.27).

«Indifferent values», which ranked 6th to 11th place: «interesting job» (4.18), «pleasure» (4.17), «independence» (4.09), «knowledge» (4.06).

The «rejected» values in boys of all age groups were: «beauty» (3.96), «equality» (3.91), «wealth» (3.90), «creativity» (3.67).

Girls priority values are the same, but in a different hierarchical order: «good and faithful friends» (4.75), «happy family life» (4.62), «health» (4.58). That is, for boys and girls these values have the main focus on one or another purpose of the activity. This allows us to characterize the personality orientation in detail. Values located at the bottom of the hierarchical structure («rejected») showed the insignificance of the goal for our respondents. The boys have the following values: «creativity» (3.67), «wealth» (3.90), «equality» (3.91). In the overall ranking, girls have the following values: «wealth» took 16th place, «the opportunity of creative activity» - 15th place, «brotherhood, equal opportunities for all» - 14th place. Thus, the hierarchical system of the basic values of boys and girls is similar in the overall ranking. An analysis of the terminal values of boys and girls has shown that each age group has its own peculiarities, among which there are some differences. At the same time, there are values that are equally important for boys of all ages.

We conducted an analysis of instrumental values in a similar logical sequence that was applied to terminal values. That is, how boys and girls will achieve their goals and what personal qualities they will use. Each goal has its own characteristics, among which there are some differences. At the same time, there are values that are equally important for boys of all ages. For example, «cheerfulness» has been a priority for boys regardless of age. Coherence in the proclamation of honesty and self-control is manifested in senior and junior pupils as a priority value.“Rationality” (the quality of making decisions based on clear thought and reason) takes the third position among young guys, but with age it goes to the values that are in the middle of the hierarchical system of values. Such values for boys are very significant, but they seem to be non-essential in comparison with the main goals of life.

Table 2

The general rating of schoolchildren's instrumental value orientations

№	Values	Boys, n =282		Girls, n = 282	
		Rating	$\bar{x}$	Rating	$\bar{x}$
1	High demands (high claims)	16	3,17	16	3,03
2	Sensitivity (solicitude)	13	4,02	8	4,25
3	Upbringing (good manners, politeness)	4	4,36	1	4,56
4	Cheerfulness (sense of humor)	1	4,58	2	4,53
5	Efficiency in affairs (hard work, productivity at work)	6	4,32	7	4,28
6	Courage in defending your thoughts and views	9	4,23	6	4,33
7	Diligence (discipline)	10	4,12	14	4,03
8	Intransigence to the disadvantages of yourself and others	15	3,22	15	3,17
9	Broad-minded (the ability to understand another's point of view, respect other tastes, habits)	11	4,06	10	4,24
10	Honesty (truthfulness, sincerity)	2	4,47	4	4,49
11	Education (breadth of knowledge, high culture)	12	4,05	8	4,25
12	Self-control (restraint, self-discipline)	5	4,33	10	4,24
13	Tolerance (to the views and opinions of others, the ability to forgive their mistakes and delusions)	14	3,96	13	4,22
14	Strong will (the ability to insist and do not give up when there are certain difficulties)	7	4,31	12	4,23
15	Rationality (the quality of making decisions based on clear thought and reason)	8	4,26	5	4,34
16	Responsibility (sense of duty, ability to keep a word)	3	4,41	3	4,50

Comparing the ability to differentiate the values of students who are engaged and not engaged in sports, we can say that differentiation of such a value-system (the choice of the most important and insignificant self-values) better formed in those who related to sports. So, while studying the hierarchical system of schoolchildren's value orientations we found peculiarities and differences in determining the terminal and instrumental values of boys and girls by age and gender.

It is major importance of having two sexes. The first category in which a child comprehends itself is a sexual differentiation. L. Feuerbach pointed out that an individual's awareness of gender is a essential for successful personality development. He wrote «the personality is nothing without sexual development» [12]

It is now assumed that the entire complex of sexual differences (physical, mental, social) is a biosocial process. Sexual differentiation is not a function of an organism or an environment, but a cause of their interaction. Scientists suggests the opinion that the essence of the activity approach to the problem of sexual differentiation consists in determining place and role of activity in psychological sex formation [6]. This can have a significant impact on the formation of students motivational priorities for physical education and sports.

Therefore, in order to idenify the influence of the psychological gender on the hierarchy of students value system, the next stage of the scientific experiment was to study the psychological type of respondents' gender identity (femininity, masculinity, androgyny) with the help of Sandra Bem's test. [3]. The Bem Sex-Role Inventory (BSRI) is one of the most widely used tools in research on gender roles. Masculinity and femininity (from latin «masculinus» -- male and femininus -- female) is a set of attributes, behaviors, and roles generally associated with men and women. (Psychological Dictionary, 1990). After determining the psychological type of gender identity, the next step in the study was to conduct clustering of the IS Sandra Bem's test. Based on the results of the cluster analysis, 3 clusters were obtained which fully reflect the value of the IS investigated parameter.

Thus, the first cluster included all respondents, androgynous psychological type (IS from - 0.40 to 0.50). The proportion of the total number of respondents was 51,02 %. The second cluster includes masculine respondents (IS <–1) and psycho androgynous features of masculinity (from -2 to -0,50). The proportion of the total number of respondents was 15,72 %. The third cluster includes respondents of feminine psycho (IS> 1) and androgynous psycho with signs of femininity (from 0.60 to 2). The proportion of the total number of respondents was 33,26 %.

Thus, for the first time, we were the first to modify the system of evaluation by the index of the psycho-personality of the IS Sandra Bem's method.

The hierarchy of respondents' terminal and instrumental values with different types of gender identity is presented in tables №3,4.

Boys of the androgynous and feminine psychological type determined by those important terminal values: health, happy family life and loyal friends. Boys with masculine psychotype have a bit different hierarchy of values: happy family life and friends are also the most important, but the third position on the rating takes value - «self-confidence». Attention is drawn to the ranking of the individual value «independence». For feminine boys, it did not become meaningful and took the last place in the hierarchy of terminal values. Instead, for masculine boys, the value of «independence» is important and takes the middle of the hierarchical system. "Active life" is more typical for androgynous and feminine boys. For boys with masculine psychotypes, this remains on the last rating positions. «Interesting job» for feminine boys took the last place in the rating. Instead, for boys with masculine psychotypes this value is in the middle of the hierarchical system of their values-goals (5th place).

Summing up, the girls' terminal values with the manifestation of signs from different psychological sex, we did not find any significant differences between them. However, attention is drawn to the place, which took the value of «happy family life». This value was the most important only for girls with the feminine psychotype. Masculine girls prefer «loyal friends».

In the hierarchy of boys' instrumental values with masculine psychological type the most important are the values of interpersonal communication: «cheerfulness» and emotional attitude: «honesty». The third position was taken by «strong will» and «rationality». «Responsibility» (9th place) refers to the values of self-affirmation, but it was more important for boys androgynous psychotype (2nd place). We studied the peculiarities of boys' instrumental values with feminine psychotype. It turned out that they prefer the values of interpersonal communication - this is «honesty» and « upbringing», but the value of «strong will» is not essential at all for them and takes the 13th place. It can be traced back to a lack of masculinity in life. «Efficiency in affairs» -- ranked by 10th. Instead, boys with feminine psychological gender-role type it takes the 4th place.

Summing up the value range of instrumental goals for girls, it turned out that for all girls the most important value was «good manners» (1 place). Then the hierarchy of values has a number of specific differences. Girls with masculine characteristics have a hierarchy of values that they consider to be equally important and necessary for them: «breadth of knowledge», «honesty», «strong will», «responsibility».

Instead, for girls with feminine psychotypes these values are not important. In the hierarchy of their instrumental values, «strong will» takes 10th place, « breadth of knowledge» – 13th.

Table 3

The rating of students' terminal value orientations with different types of gender identity

№	Values	Androgynous psychotype				Masculine psychotype				Feminine psychotype			
		boys		girls		boys		girls		boys		girls	
		Rating	$\bar{x}$, points	Rating	$\bar{x}$, points	Rating	$\bar{x}$, points	Rating	$\bar{x}$, points	Rating	$\bar{x}$, points	Rating	$\bar{x}$, points
1	Self-sufficiency (independence in judgments and assessments)	9	4,14	10-11	4,26	8	4,14	12	4,11	15	3,76	11	4,09
2	Self-confidence (freedom from internal contradictions, doubts)	4	4,51	4-5	4,53	3	4,40	7	4,33	6	4,29	4	4,53
3	Wealth (no material problems in life)	15	3,92	16	3,89	13-14	3,83	16	3,67	11-12	3,90	16	3,69
4	Health (physical and mental)	1	4,70	2	4,64	4	4,38	2	4,78	2	4,62	5	4,51
5	Pleasure (life full of pleasures, pleasant pastime, lots of fun)	8	4,15	8	4,30	7	4,21	7	4,33	7	4,19	6	4,28
6	Interesting job	7	4,21	6	4,37	5	4,29	7	4,33	13-14	3,81	12	4,07
7	Love (spiritual and physical intimacy with your beloved person)	5	4,49	3	4,54	6	4,26	3	4,67	4	4,52	3	4,57
8	Freedom as independence in actions	13	4,01	13	4,07	12	3,93	3	4,67	9-10	4,00	13	3,95
9	Beauty (the experience of beauty in nature and art)	14	4,00	7	4,31	13-14	3,83	10	4,22	9-10	4,00	6	4,28
10	Good and loyal friends	3	4,57	1	4,83	2	4,52	1	4,89	1	4,76	2	4,67
11	Cognition (the possibility of expanding your education, outlook, intellectual development)	10	4,07	10-11	4,26	9	4,10	6	4,44	11-12	3,90	9	4,14
12	Happy family life	2	4,65	4-5	4,53	1	4,67	3	4,67	2	4,62	1	4,69
13	Creativity (possibility of creative activity)	16	3,66	15	3,97	15	3,76	15	3,78	16	3,57	15	3,81
14	Social recognition (respect for others, team, friends)	11	4,05	12	4,17	10	4,05	10	4,22	8	4,10	8	4,17
15	Active life	6	4,36	9	4,29	11	4,00	12	4,11	5	4,38	9	4,14
16	Equality (brotherhood, equal opportunities for all)	12	4,03	14	4,04	16	3,69	14	3,89	13-14	3,81	13	3,95

Table 4

The rating of students' instrumental value orientations with different types of gender identity

№	Values	Androgynous psychotype				Masculine psychotype				Feminine psychotype			
		boys		girls		boys		boys		girls		boys	
		Rating	$\bar{x}$, points	Rating	Rating	$\bar{x}$, points	Rating	Rating	$\bar{x}$, points	Rating	Rating	Рейтинг	$\bar{x}$, бали
1	High demands (high claims)	16	3,14	16	3,04	16	3,17	16	3,00	16	3,35	16	3,02
2	Sensitivity (solicitude)	11	4,08	8	4,31	14	3,79	7	4,22	7	4,19	12	4,20
3	Upbringing (good manners, politeness)	7	4,31	1	4,54	3	4,33	1	4,44	2	4,62	1	4,58
4	Cheerfulness (sense of humor)	1	4,60	1	4,54	1	4,55	8	4,11	3	4,57	2	4,57
5	Efficiency in affairs (hard work, productivity at work)	4	4,39	11	4,24	6	4,31	6	4,33	10	4,00	6	4,30
6	Courage in defending your thoughts and views	8	4,24	5	4,41	7	4,26	8	4,11	8	4,10	7	4,28
7	Diligence (discipline)	10	4,17	14	4,06	12	4,07	8	4,11	10	4,00	14	3,99
8	Intransigence to the disadvantages of yourself and others	15	3,16	15	3,13	15	3,19	15	3,56	15	3,57	15	3,16
9	Broad-minded (the ability to understand another's point of view, respect other tastes, habits)	12	4,05	7	4,36	11	4,12	1	4,44	10	4,00	13	4,12
10	Honesty (truthfulness, sincerity)	3	4,43	4	4,47	2	4,45	1	4,44	1	4,67	4	4,51
11	Education (breadth of knowledge, high culture)	14	3,98	9	4,29	8	4,21	14	3,78	9	4,05	8	4,27
12	Self-control (restraint, self-discipline)	6	4,38	9	4,29	9	4,19	12	4,00	4	4,38	9	4,23
13	Tolerance (to the views and opinions of others, the ability to forgive their mistakes and delusions)	13	3,99	12	4,23	13	3,95	8	4,11	14	3,86	10	4,22
14	Strong will (the ability to insist and do not give up when there are certain difficulties)	4	4,39	13	4,20	3	4,33	1	4,44	13	3,90	10	4,22
15	Rationality (the quality of making decisions based on clear thought and reason)	9	4,23	5	4,41	3	4,33	12	4,00	6	4,24	5	4,32
16	Responsibility (sense of duty, ability to keep a word)	2	4,52	3	4,49	9	4,19	1	4,44	5	4,33	3	4,52

After analyzing various scientific positions we can conclude that the constitutional and socio-cultural aspects should be distinguished in science. This applies to the separation of men and women in connection

with the concept of gender. As for the distinction between «sex» and «gender», it is worth to mention that the first concept - it is a biological difference between men and women, while "gender" is social. [7]. The terms 'sex' and 'gender' mean different things, because it is individual's set of traits and characteristics. Recognition of femininity and masculinity, as personal characteristics of independence and the possibility of combining both in one person and allowed to depart from biological male and female opposition and switch to gender-role types. [1]

Based on the arguments of the scientists we decided to compare the hierarchy of respondents' terminal and instrumental values with different gender-types. It turned out that for masculine boys, the main value is «happy family life» and for masculine girls, «good and faithful friends». In the second place girls have "health", and boys – "friends". Significant differences are observed in relation to active goal-values. The value «active life» in masculine boys takes the middle of the hierarchical structure and is on the 5th place, for girls this value takes 12th place.

"Self-confidence" (freedom from internal contradictions) was also more significant for masculine boys rather than girls (3rd place vs. 7th place). Instead, «freedom as independence in actions» for masculine girls is quite important (3rd place), for boys - insignificant (12th place).

The most important goal-values were not the same for feminine boys and girls. «Happy family life» is the main value for feminine girls (1 place), for boys it is in the 2nd place. «Active life» was more significant for boys (5th place) than for girls (9th place). For feminine young men, «self-sufficiency (independence in judgments and assessments)» is not important, and it takes the last place in the hierarchy of terminal values, but for feminine girls this value is in the 11th place. Boys and girls with androgynous psychological type do not have a significant difference in the hierarchy of goal-values, except the attitude towards values like: «love» and «beauty (the experience of beauty in nature and art)». For girls they were more significant rather than for boys.

We analyzed the hierarchy of pupils' instrumental values and identified some differences in the choice of means-values between boys and girls of one gender-role type. Masculine girls want to achieve their life goals through responsibility, strong will, breadth of knowledge, honesty and upbringing (all of these qualities have become priority and turned out to be on the first place). Boys with masculine psychotype planning to achieve their goals with the help of different qualities. These are the following values: «cheerfulness» (1st place), «honesty» (2nd place) and «rationality» (3rd place). Feminine boys, in contrast to feminine girls, were more diligent, responsive, with self-control and discipline. They want to achieve their goals due to these values. Girls have somewhat different values. They planning to achieve their goals through diligence and productivity at work, with the help of their own ability to forgive mistakes and misconceptions. The results of our study showed that girls and boys of androgynous gender-role type differ in their choices. Androgynous socialization of girls associated with the manifestation of upbringing, education, sensitivity and broadmindedness. While for boys the most important a bit different. They want to be more efficient and effective in business due to self-control, diligence.

Summarizing the hierarchical structure of students' terminal and instrumental values, it was found that boys and girls with same gender-role types have big amount of differences in the hierarchical system of value orientations. We have made the assumption that the biological and psychological components can not be considered separately, because they depend on each other. Thus, we can say that the interaction of socio-psychological and biological personality features forms the gender characteristics of boys and girls. That's why we can assume that along with a number of factors which influence the values' formation of physical culture and motivation to motor activity, there is also a factor of individual' gender features. This is the gender-role type.

Socialization helps in the process of personality formation. The personality traits reflect the stereotypes of masculinity - femininity (gender characteristics of the personality). The formation of gender characteristics is influenced by a number of social institutions. It can be a family, a kindergarten, a school, a media, a society that affects the formation of individual's personality. They have a significant impact on gender stereotypes. We believe that physical culture, of course, can be one of the means of students' gender socialization. Individuals' gender formation takes place through methods of physical education and sports activities, orientation on types of motor activity that they prefer. We fully agree with the opinion of scientists that in the process of physical education and sports it is necessary to take into account, first of all, sexual

dimorphism (the use of appropriate physical activity for girls and boys). Therefore, we agree with scientists who believe that sex is a biological concept, and gender is a construct of culture, which allows to establish the peculiarities of human biological data in the system of social relations [7].

Conclusions and prospects for further research. Thus, after the theoretical analysis of sociological and psychological-pedagogical literature, based on the results of our research about age and gender peculiarities of the hierarchical system of pupils' value orientations, we identified the gender issues related to the students' value orientations in physical culture and sports.

It has been proved that boys and girls of the different age have both the same essential values and significant differences in the choice of terminal and instrumental values. It shows the changes of the priority qualities through which students achieve their own vital goals. Revealed he correlation of terminal and instrumental values and its hierarchy with the students' psychological sex (femininity, masculinity and androgyny). Received common and different choices of respondents' terminal and instrumental values with the same gender-types. Their choice of priority values is quite different.

The results of scientific experiments give us the right to assert that a biological sex can not provide complete information on the hierarchical priorities of pupils' value orientations, both in the socio-cultural aspect and in the field of physical culture and sports. In order to attract and involve young people in systematic physical culture, it is necessary to study the interests, motives, value orientations in the field of physical culture, their attitude to motor activity. It's not appropriate to focus on just one of the indicators of the biological or psychosocial system in order to formulate this strategy. It is necessary to take into account not only physiological and morpho-functional features of schoolchildren. It is important to consider all individual's biosocial characteristics, involving a gender approach in the process of physical education.

The next step of our study will be the development of a basic personal physical culture formation process model for pupils of all age groups and genders.

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Received: 19.06.2018.

UDC 394.3 (477)

UKRAINIAN FOLK GAMES AS EVIDENCE OF ANCIENTNESS OF PAGAN RITUAL CEREMONIES

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https://doi.org/10.29038/2220-7481-2018-03-36-40

Abstracts

In ***raising of the problem*** the question about the unexplored side of the transformation of active games from ritual and ceremonial actions into folk games is put. As exactly in a folk game the hidden ceremonial actions were saved from the ancient times on the Ukrainian territory. As exactly the man of the past tried to influence on forces of the nature by means of playing active actions. As in the ancient times a man, being the object of the influence of the environment, began to build himself and his playing history. Why the folk games, that have remained till now, contain magic motions of ceremonial actions of the ancient Ukrainians, where myths, legends, narrations, relations, labour and military events are traced. ***The aim of the work*** consisted in finding out of the pre- conditions of the origin of the folk game and clarification of the vision of the world of ancient slavs by means of active actions. In the ***summary of the main material*** it is said with the transformation of ritual and ceremonial game show into folk games as phenomenon of holistic and universal product, as the centre of constructing relations of the collective with nature. The outlook of the ancient slavs is outlined, namely how by means of movement in the game the man of the past wanted to influence the powers of nature; how movement combined myths, legends and tales in ritual- game shows; in what modern games mythical ritual ceremonies are concealed, which with the passage of time were rebuild into folk games and entertainment. The game is regarded as the means of regulation, preservation, reproduction and development of human relationships and values in social and cultural area. ***In the conclusion*** the relationship of the ritual and ceremonial active actions of the ancient Ukrainians and of forces of the nature and also transformation of those actions (over historical time) into folk games is stated, and which are the remains of the mythical vision of the world of the ancient Ukrainians.

Key words: myth, vision of the world, faith, game, ritual, action, motion.

Сергій Мудрик, Ірина Кліш, Едуард Навроцький, Андрій Гаврилюк. Українські народні ігри як свідчення давності язичницьких обрядових дійств. Щодо ***проблеми*** ставиться питання про недосліджену сторону трансформації рухливих ігор із ритуально- обрядових дійств в народні ігри. Як саме у народній грі збереглися приховані обрядові дійства з прадавніх часів на українських землях. Як саме людина минулого за допомогою ігрових рухових дій намагалася вплинути на сили природи. Як у прадавні часи людина, будучи об'єктом впливу навколишнього середовища, розпочала будувати себе й свою ігрову історію. Чому в народних іграх, що збереглися до наших днів, приховуються магічні рухи обрядових дійств давніх українців, у яких простежуємо міфи, легенди, перекази, стосунки, працю, військові події. ***Мета роботи*** – з'ясування передумов походження народної гри та спроба зрозуміти бачення світу давніх слов'ян за допомогою рухових дій. У ***викладі основного матеріалу*** розглядаємо трансформацію ритуально-обрядового ігрового дійства в народні ігри як явища цілісного й універсального продукту, як центру конструювання відносин колективу з природою. Викладено світобачення давніх слов'ян, а саме: як за допомогою руху в грі людина минулого бажала вплинути на сили природи; яким чином рух поєднував міфи, легенди, перекази в ритуально-ігрових дійствах; у яких теперішніх іграх приховано міфічні ритуально- обрядові дійства, що з плином часу перебудувалися в народні ігри та забави. Подано гру як засіб регулювання, збереження, відтворення й розвитку загальнолюдських стосунків і цінностей у соціокультурному просторі. У ***висновку*** констатуємо взаємозв'язок ритуально-обрядових рухових дій давніх українців із силами природи та трансформацію цих дій (із плином історичного часу) у народні ігри, що є залишками міфічного бачення світу давніх українців.

Ключові слова: міф, світобачення, віра, гра, ритуал, дійство, рух.

Сергей Мудрик, Ирина Клиш, Эдуард Навроцький, Андрей Гаврилюк. Украинские народные игры как свидетельство давности языческих обрядовых действий. ***Относительно проблемы*** ставится вопрос о неисследованной стороне трансформации подвижных игр с ритуально-обрядовых действ в народные игры. Как в народной игре сохранились скрытые обрядовые действа с древнейших времен на украинских землях. Как человек прошлого с помощью игровых двигательных действий пытался повлиять на

силы природы. Как в древние времена человек, будучи объектом воздействия окружающей среды, начал строить себя и свою игровую историю. Почему в этот играх, сохранившихся до наших дней, скрываются магические движения обрядовых действий древних украинцев, в которых прослеживаются мифы, легенды, предания, отношения, труд, военные события. ***Цель работы*** – выяснить предпосылки происхождения народной игры и понять видение мира древних славян с помощью двигательных действий. ***В изложении основного материала*** рассматривается трансформация ритуально-обрядового игрового действа в народные игры как явления целостного и универсального продукта, как центра конструирования отношений коллектива с природой. Изложены мировоззрения древних славян, а именно: как с помощью движения в игре человек прошлого хотел повлиять на силы природы; каким образом движение совмещало мифы, легенды, предания в ритуально-игровых действах; в каких нынешних играх скрытые мифические ритуально-обрядовые действа, которые с течением времени перестроились в народные игры и забавы. Подается игра как средство регулирования, сохранения, воспроизводства и развития общечеловеческих отношений и ценностей в социокультурном пространстве. В ***заключении*** констатируется взаимосвязь ритуально-обрядовых двигательных действий древних украинский с силами природы и трансформация этих действий (с течением исторического времени) в народные игры, являются остатками мифического видения мира древних украинский.

Ключевые слова: миф, мировоззрение, вера, игра, ритуал, действо, движение.

Formulating the research problem. Each social group, ethnic group, nation has its own spiritual game world, which accumulates a centuries-long history.

Folk games derive from the times of ancient mythology. In that time, they were not cognitive-theoretical, but social-practical, aimed at ensuring the unity of the social group. Any mythology subdued and shaped the forces of nature through the imagination [1, p. 43-59]. The form of such reality exploration can be called ritual game ceremonies.

The game is explored by scientists from many disciplines. But the folk mobile game, its origins, world view in it and the reality exploration are not studied at all. It is mainly considered as a factor of health and mental development, as a need to enrich the motor experience of the younger generation. Some aspects of the folk game are mentioned in the writings of O. Voropaj (1993), AV Tsos (1994), GV Vorobey (1997), VF Davidyuk (1997), VI Levkiv (1998) , O. L. Ivanovskaya (2002), V. Skuratovsky (1987, 1992, 1993, 1994, 2003), T. Vakulenko (2003), S.P. Pavlyuk, M.G. Zhulinsky, G. M. Storcheva, O. Kulik (2006), L. Voloshko (2007), O. Cheryomukhina (2008). They describe ritual games with the help of which the process of involvement in the cultural heritage of the Ukrainian people is described. It is aimed at defining human desires and organizing group actions and suggests both a sense of unity between the members of the group as well as a sense of harmony with the world as a whole [1 , p. 44].

By this time, the history of the emergence, development, formation and preservation of popular mobile games in the socio-cultural space, thir transformation from ritual game activities into outdoor action games was not studied. How exactly the person of the past, with the help of motor action moves, tried to influence the forces of nature.

Therefore, the study of the folk games origin history will enable us to understand the vision of the world by ancient Slavic tribes that populated the Ukrainian territory. It will help to understand how the movement activities combined myths, legends, stories in ritual-action games to transformed them into folk games and why the most important feature of mythological thinking, which was reflected in motor action, included objective and subjective [2].

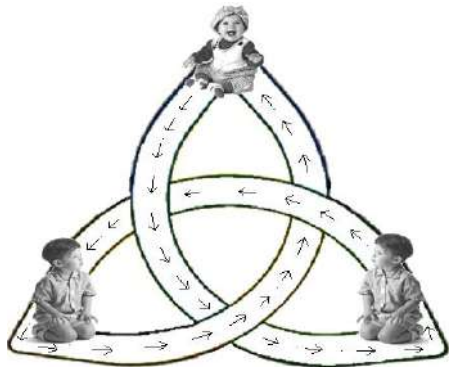

Fig. 1. *Ritual game action*

The goal and the specific task of the article. To determine the origin of the folk games on the basis of the scientific and methodological literature analysis, psychological and pedagogical observations of action and folk games.

Presentation of the main material. Each ethnic group had it`s own vision of the nature phenomena and human place in it. The evidence are archaeological excavations, folklore material, myths, legends of beliefs preserved to our times. The faith of the Slavs consisted of the deification of nature, recognition of the human thinking power as being connected to objects and

phenomena of the external nature, sun, water, earth, trees, birds, animals, stones, heaven worshiping, various beliefs, holidays created on the basis of nature deification.

Switching to agriculture, a primitive society falls depends on the on the forces and elements of nature. Soil, precipitation, change of seasons, etc., everything has a significant value, since it determines the results of the activities. Therefore, the central images in the mythology of this period and in games composition are figures of anthropomorphic gods, who embody different forces and elements of nature. Human, influenced by various mythical forces, create themselves and their own history. Many folk games reflect the archaic ritual action games, especially during the spring cycle, which consist of the magic movements with the combination of mythological images. In the past, almost all ritual games consisted of magical movements. The so-called «Kryvii Tanetsj» game almost always starts the spring games. In our opinion, this may indicate the ancient origin of this game, as it underlines a deep primitivity in moves. But, in the very act lies the understanding of the worldview.

Participants of the game - the girls, hand in hand, run around one by one between three poles in the ground or between three sitting children (Fig.1), showing an unusual body movements, sing a simple song (all the participants of the game are singing). The game is repeated without changes.

The original meaning lies, apparently, not in the text or the song, but in the movement and participants of the action. The main task - to raise the mood, to awaken the vital energy, to influence the natural forces, to direct strength into life. The secondery tasks are connected with the myth, the demonstration of feelings, desires, experiences, hopes and the connection with the whole world. These are unique beliefs of the ancient Slavs about the surrounding reality, where the reality connects with the imagination. A distinctive feature of Ukrainian mythology is pantheism, where god is associated with the nature.

In most folk games, the faith and the worldview of the ancient Slavs is reflected. Thus, the location in the game « Kryviy Tanetsj» of three people, at a certain distance from each other and the sitting children points to the three-componential divine principle of the world unity:

- indicates the presence of the main gods of the Great Tryglav (Fig. 2) - Svarog (the mighty lord of the world, god of fire, taught people to use metal), Perun (the most powerful force of heaven and earth, lightning and thunder), Svitovyd (Svyatovyt, Sventovyt - god of the sky and heaven light) [5; 8; 9]. «The Boyanov Hymn» tells about the main gods of ancient Ukrainians.

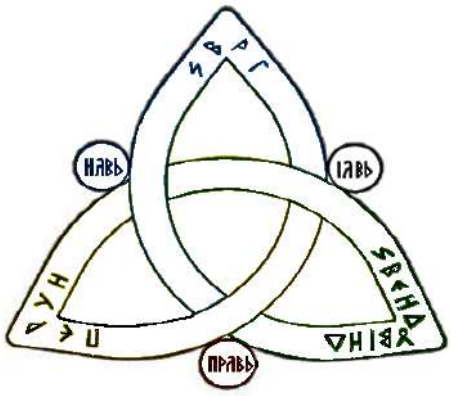

Fig. 2. *The scheme was recreated Yu. V. Gnatiuk, V. S. Gnatiuk*

The essence of the Great Tryglav is in the interaction of the substances of Iav, Prav and Nav (Iav - the world of people and living beings, Prav - the world of gods, Nav - the world of spirits and demons) [7].

Therefore, the children sitting places (doing nothing, just sitting in a triangle and watching the dancing ovements of girls) in the ritual game is the symbolism of the ancient Slavs imagination and their gods worshipping. The image of young girls, running around one by one between children, recreats the flow of the river. Water was deified by our ancestors, because it is a healing, purifying, fertile power of nature, a vital energy. People are calling it «Living Water». Therefore, with this movement, the girls honored Dun (Goddess of Water, a virgin and a mother of all living nature, the Goddess of fertility [5; 8]):

- points to the honoring of the Goddess Mokosha (mentioned in the the «Primary Chronicle» list by Prince Volodymyr), who deals with needlework - spinning a thread which uses later to make a cloth. According to a legend, it is Mokosha who is spinning a thread of life. Therefore sitting children, or the poles in the ground symbolize the spindle (Fig. 3) and the girls, running around between them, are spinning a thread of life. As being the only female divine, Mokosh, probably, was also a patron of other women activities. She was honored because of that. In the ancient cult of the Great Mother who was also considered the Goddess of fate was reflected the image of Mokosha [11]. Among the Ukrainian women, the Mokosha cult was kept as a tradition for centuries;

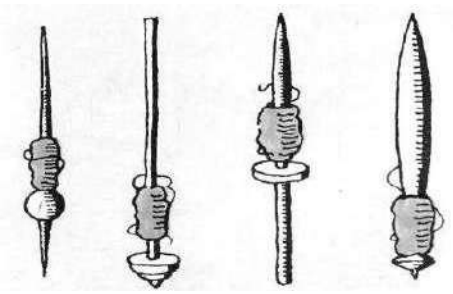

Fig. 3. *Spindle in ancient times in Russia*

- indicates the annual calendar of the ancient Ukrainians, who connect certain periods of the year - Spring, Autumn, Winter, with the Great Time Tryglav (Rod, Rozhanytia, Lada). Children symbolize the seasons, while girls, moving between them, ask for beauty, feeling, love, passion by addressing Lada (the mother of all months of the year, the Slavic goddess of beauty and love). The gods Rod and the Rozhanytia are asked of fertility and the continuation of the family line [5; 8].

The text appeared with the acceptance of Christianity. Christian faith gradually displaced the pagan gods of our ancestors. Therefore, over time, rituals transformed into a folk game (covering up one's tracks from enemies).

Nature was a religions cult, amoung Slavs in particular. A distinctive feature of Slavic beliefs was the connection to the earth. Slavs paid special attention to water, rivers, wells, fields, forests, animals. Each settlement had its own gods, each outskirt was believed to be surrounded by mermaids, foresters, etc. A series of games, the names of which preserved history and traditions prove this assumption.

A prominent Ukrainian folklorist V.Davidyuk «organized and conducted expeditions to the villages in Volyn, Rivne, Ternopil, Khmelnytsky, Zhytomyr, Zakarpattia, Ivano-Frankivsk regions of Ukraine, Brest in Belarus, and the Białystok Voivodeship in Poland»[13]. He gathered an information about the customs and traditions of the people, which were transmitted from generation to generation for many centuries.

The folk-dialect collection «Polisska Doma» (V.Davidovuk, G. Arkushin [12]) tells about the folk customs and traditions of the Polissia region in Volyn. In particular, it describes the Rusal Week, when ritual games fully reflect the vision of the universe, showing the combination of reality with the imagination. The image of the mermaid was associated with the souls of the dead, as well as with water and vegetation, which combine the water spirits features.

Ritual mermaid games wires on the polissya were in the active use at the end of the 19th century. On the last day of the holiday 2-3 most beautiful girls (mermaids - deities of the Slavic mythology [5, 9]) were chosen, they let their hair down and decorated them with fragranted herbs and flowers. Afterwards they hided near a river or lake in the bushes or in a reed and lied in wait to catch those who would find them near the water. Within 50 m from them a rope with a length of at least 30 m and an altitude of up to 40 cm was stretched above the ground. Other ritual players are walking near the water. The «mermaids» show themselves and start to catch the players. A final element of the game was to reach the rope and cross it [12]. Those who are caught were out of the game (according to the mythology the caught players were pulled into the water). In ancient times, the caught players did not have the right to approach the water all year round, because they were considered to be under the threat of having great troubles (the mermaids will tickle them to death or pull into the water).

The games «Mara», «Vidjma», «Tanetsj gorbatogo dida», «Didukh», «Lelya» and many others, reflected mythological images, which were displayed in the past through a system of ceremonial movements, which connected a human with the nature as closely as possible.

The games «Ogirotchky», «Goroshock», «Proso», «Siyannia maku», «Petrushka», «Zhnyva», «U konopelj», «Gorishock» simulate an act of agricultural work, which occurred a very tight connection with the magical movements performed by the elder ones before moving on to teenager`s games. In the past, such ceremonial events were held with the beginning of the sunny year and through the entire agricultural season. With the help of the games a human of the past tried to awaken, strengthen and develop themselves, to influence the required natural phenomena, as well as to neutralize hostile and harmful ones.

Mythological images of the ancient Slavs in ritual games reflect an unusual vision of the world, where the reality interconnects with fantasy.

Conclusions and prospects for further research. Life, being close to nature, initiated the original and unique folk games. The games accompanied our ancestors everywhere - labor, family holidays, religious rituals, during military campaigns and victories.

In the age of paganism, ritual games were an integral part of human life. Many antiquities in motor activity have survived in folk games, leading us to the beginnings of the folk game arts. The game ritual was a bright form of collective human existence, which served as a means of adapting the requirements of life

with the environment. Due to the historical time, ritual games were gradually converted into folk games, a large part of which contains in the hidden form a mythological worldview of ancient Slavs.

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Received: 12.04.2018.

Technologies of Education in Physical Training

UDC [796.015.576+797.217]:796.015.15-053.67

THE INFLUENCE OF SWIMMING WITH APPLICATION OF AQUA FITNESS ELEMENTS AND INTERMEDIATE HYPOXIC TRAINING ON THE PHYSICAL PREPAREDNESS OF GIRLS 11–12 YEARS

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https://doi.org/10.29038/2220-7481-2018-03-41-48

Abstracts

The aim is to establish the integrated influence of training sessions, which used the elements of aqua fitness and interval hypoxic training, on the special physical training of girls 11–12 years old. ***Material*:** 64 athletes aged of 11–12 years, with a sports experience of 2–3 years took place in the research. ***Results.*** During 24 weeks at the different stages of studying (after 8, 16 and 24 weeks) the efficiency of the anaerobic alactated and lactate energy supply zones, as well as in the aerobic energy supply zone was studied. It has been established that training sessions of swimming with using of elements of aqua-fitness and interval hypoxic training with the device «Endogenic-01» to improve the indicators in the area of anaerobic alactatious and anaerobic lactate energy supply, efficiency in the zone of aerobic energy supply and power of anaerobic alactat system of girls 11–12 years old. For the first time, the elements of aqua fitness and interval hypoxic training were used in the training process of young swimmers. The expediency of such an innovation is explained by minimizing the negative impact on the children's body of exercises on the development of force in conditions of the aquatic environment while improving the functional capabilities of the organism. The effectiveness of the complex application in the training process of the swimmers of the aqua fitness and the interval hypoxic training with the girls of 11–12 years is confirmed by the probable difference between the performance indicators in the aerobic energy supply zone (by 2,43 %), efficiency in the anaerobic lactate energy supply zone (6,67 %) and the power of anaerobic power supply systems (by 21,69 %) for representatives of groups of KG and BG2 and indicators of efficiency in the aerobic energy supply zone (by 2,31 %) and the capacity of anaerobic systems energy supply (to 15,00 %) in the group of representatives BG1 and BG2 in favor of the last after 24 weeks of employment for our proposed applications**.** ***Conclusions*.** The efficiency of complex application in swimming classes of aqua fitness elements and interval hypoxic training has been proved. The feasibility of such combination is proved by the growth of performance indicators in areas of aerobic, anaerobic alactatic and lactate energy supply.

Key words: anaerobic alactatic and lactate energy supply zone, aerobic energy supply zone, hypoxia, aqua fitness, swimming.

Вікторія Головкіна. Вплив занять плаванням із застосуванням елементів аквафітнесу й інтервального гіпоксичного тренування на фізичну підготовленість дівчат 11–12 років. ***Мета дослідження*** – встановити комплексний вплив тренувальних занять, у яких використано елементи аквафітнесу й інтервальне гіпоксичне тренування, на спеціальну фізичну підготовленість дівчат-плавчинь 11– 12 років. ***Матеріал.*** У дослідженні брали участь 64 спортсменки віком 11–12 років, спортивний стаж яких – 2– 3 роки. ***Результати*.** Протягом 24 тижнів на різних етапах дослідження (через 8, 16 і 24 тижні) вивчено працездатність у зонах анаеробного алактатного й лактатного енергозабезпечень, а також у зоні аеробного енергозабезпечення.

Уперше комплексно застосовано елементи аквафітнесу й інтервальне гіпоксичне тренування в тренувальному процесі юних плавців. Доцільність такого нововведення пояснюємо мінімізацією негативного впливу на організм дітей вправ із розвитку сили в умовах водного середовища з одночасним покращенням функціональних можливостей організму. Ефективність комплексного застосування в тренувальному процесі плавців елементів аквафітнесу й інтервального гіпоксичного тренування з дівчатами 11–12 років підтверджується вірогідною різницею між показниками працездатності в зоні аеробного енергозабезпечення (на 2,43 %), працездатності в зоні анаеробного лактатного енергозабезпечення (на 6,67 %) і потужності анаеробних систем енергозабезпечення (на 21,69 %) у представниць груп КГ та ОГ2 та показниками працездатності в зоні аеробного енергозабезпечення (на 2,31 %) і потужності анаеробних систем енергозабезпечення (на 15,00 %) у представниць груп ОГ1 та ОГ2 на користь останніх через 24 тижні занять за запропонованими нами програмами. Установлено, що тренувальні заняття плаванням із застосуванням елементів аквафітнесу й інтервального гіпоксичного тренування за допомогою апарату «Ендогенік-01» сприяють покращенню показників працездатності в зоні анаеробного алактатного й анаеробного лактатного енергозабезпечення, працездатності в зоні аеробного енергозабезпечення й потужності анаеробної алактатної системи дівчат 11–12 років. ***Висновки.*** Доведено ефективність комплексного застосування в заняттях плаванням елементів аквафітнесу й інтервального гіпоксичного тренування. Доцільність такого поєднання доведено зростанням показників працездатності в зонах аеробного, анаеробного алактатного й лактатного енергозабезпечення.

Ключові слова: зона анаеробного алактатного й лактатного енергозабезпечення, зона аеробного енергозабезпечення, гіпоксія, аквафітнес, плавання.

Виктория Головкина. Влияние занятий плаванием с применением элементов аквафитнеса и интервальной гипоксической тренировки на физическую подготовленность девушек 11–12 лет. ***Цель исследования*** – установить комплексное воздействие тренировочных занятий, в которых использовались элементы аквафитнеса и интервальные гипоксические тренировки, на специальную физическую подготовленность девушек-плавчих 11–12 лет. ***Материалы.*** В исследовании принимали участие 64 спортсмена в возрасте 11–12 лет, спортивный стаж которых – 2–3 года. ***Результаты.*** В течение 24 недель на разных этапах исследования (через 8, 16 и 24 недели) изучена работоспособность в зонах анаэробного алактатного и лактатного энергообеспечений, а также в зоне аэробного энергообеспечения. Впервые комплексно применены элементы аквафитнеса и интервальные гипоксические и тренировки в тренировочном процессе юных пловцов. Целесообразность такого нововведения мы объясняем минимизацией негативного воздействия на организм детей упражнений по развитию силы в условиях водной среды с одновременным улучшением функциональных возможностей организма. Эффективность комплексного применения в тренировочном процессе пловцов элементов аквафитнеса и интервальных гипоксических тренировок с девушками 11–12 лет подтверждается достоверной разницей между показателями работоспособности в зоне аэробного энергообеспечения (на 2,43 %), работоспособности в зоне анаэробного лактатного энергообеспечения (на 6,67 %) и мощности анаэробных систем энергообеспечения (на 21,69 %) у представительниц групп КГ и ОГ2 и показателями работоспособности в зоне аэробного энергообеспечения (на 2,31 %) и мощности анаэробных систем енергообезпечения (на 15,00 %) у представительниц групп ОГ1 и ОГ2 в пользу последних через 24 недели занятий по предложенным нами программам. Установлено, что тренировочные занятия плаванием с применением элементов аквафитнеса и интервальных гипоксических тренировок с помощью аппарата «Эндогеник-01» способствуют улучшению показателей работоспособности в зоне анаэробного алактатного и анаэробного лактатного энергообеспечения, работоспособности в зоне аэробного энергообеспечения и мощности анаэробной алактатной системы девушек 11–12 лет. ***Выводы.*** Доказана эффективность комплексного применения в занятиях плаванием элементов аквафитнеса и интервальных гипоксических тренировок. Целесообразность такого сочетания доказана ростом показателей работоспособности в зонах аэробного, анаэробного алактатного и лактатного энергообеспечения.

Ключевые слова: зона анаэробного алактатного и лактатного энергообеспечения, зона аэробного энергообеспечения, гипоксия, аквафитнес, плавание.

The formulation of the problem. The analysis of the protocols of the Olympic Games, the World Championships and other competitions testifies to the dynamics of the growth of results from various kinds of sport. This phenomenon is conditioned by an increase of the efficiency of training sessions by introducing new technologies into the multi-year training of athletes [4].

The improving of the strength qualities plays an essential role in the training of young swimmers [2]. Force training [17], working with swimmers is carried out in the gym of dry-swimming. However, performing force exercises under such conditions can adversely effect on the physical [13] and functional [12] preparedness of young swimmers. Therefore, we propose a part of the time allocated to the Youth Sports School for force training in the dry-swimming area to be replaced by aqua fitness [19].

The analysis of recent sources and publications. There is evidence that doing the physical exercises in water has a positive effect on various functional systems of the body [8]. Such an effect of physical exercises in water is due to the phenomenon of body discharge gravity [14], positive influence on the function of the cardiovascular [3] and respiratory systems [6], as well as the vestibular apparatus [15].

Recently, in the practice of physical education working with people of different ages, auxiliary means are used; they increase the effectiveness of physical exercisees, such as: massage [18], dietary supplements [11] et [16]. In particular, it has been proved that the using of endogenous-hypoxic breathing techniques with the Endogeneic-01 apparatus for young cyclists [10] and swimmers [9] has positively influence for the dynamics of physical training in the preparatory period of the annual macro cycle. The evidence of the effectiveness of endogenous-hypoxic respiration working with qualified hockey players on the grass is the results of the investigations by Yu. Furman and A. Sulyma [7]. The researchers conducted by Yu. Furman and S. Salnikova [6; 8] have proved the effectiveness of the complex application of aqua fitness and the method of endogenous-hypoxic respiration when working with women of mature age, which is confirmed by the improvement of their physical condition [19].

Therefore, we propose to integrate the elements of aqua fitness and the method of interval hypoxic training (IHT) in the program of training young swimmers, using the apparatus «Endogenic-01» [10].

Scientific data on the possibility of applying the IHT method in conjunction with aqua fitness in the training process of 11-12-year old girls are absent.

Hypothesis. Taking into account the experience of the previous researchers, we predicted that the integrated application of the EHB method and the elements of aqua fitness in the training process of young swimmers would enhance their functional, general and special physical training.

The purpose of the research is to establish the comprehensive impact of training sessions using the elements of aqua fitness and the method of interval hypoxic training, on the special physical training of 11–12-year old girls.

To achieve this goal, we solved the following **tasks**:

- We studied the state of the problem on the topic of research.
- We investigated the functional training of 11-12-year old girls.

The methods and organization of the research:

- the theoretical analysis and generalization of the scientific sources data;
- the pedagogical experiment;
- the testing of special physical training;
- the methods of mathematical statistics.

Participants. The experiment was attended by pupils of Children's and Youth Sports Schools, the 11–12- year old girls, sports experience of which was 2-3 years. The total number of athletes was 62. Three groups were completed before the beginning of the experiment: the control group (COG, n = 20), the first basic (BG1, n = 21) and the second main (BG2, n = 21).

The organization of the research. To study the influence of swimming exercises with elements of aqua fitness and interval hypoxic training on the special physical training of female swimmers, swimming tests were used: «swimming with free style at a distance of 25 meters», «swimming with free style at distances of 4 × 50 m at intervals of rest 15 s», «swimming with free style at a distance of 800 m». A test was also applied to record the number of twists of 25 meters in intervals with the highest possible speed in the anaerobic mode of power supply. The number of iterations was limited to an excess of heart rate that was 170 beats per minute (bpm) [9].

Studying of swimmers was carried out in stages: before the experiment, and later in 8, 16 and 24 weeks.

Frequency of trainings in all groups was 6 times a week. The content of the trainings in the main groups was different from the control. Female athletes of the first main group on each training session at the beginning of the preparatory part used interval hypoxic training (IHT) under the program of special «route maps»[10]. For this purpose the «Endogenic-01» device was used.

Strength training for female athletes of the second main group was carried out in water using elements of the aqua fitness of power direction [19]. In the process of training used such aids, such as water bands, gloves, small and large dumbbells, nudls, boots, rubber shock absorbers, swimming boards [20].

Statistical analysis. It was summing up numerical indices that reflect the position of the center of empirical distributions and their scattering: the arithmetic mean (x); arithmetic mean error (m); mean square (standard) deviation (S); dispersion (S2); coefficient of variation (V).

The values of the sample from the general population were subject to the law of normal distribution, which was verified using the Pearson criterion. Given the fact that the distribution of all the studying indicators was normal, in order to determine the validity of the difference between the mean values, the t-criterion of the Student was used [5]. The difference was considered probable with a difference of 5 % ($p < 0.05$).

The results of the research and their discussion.

There were not any of the indicators of special physical training for the girls of all groups (KG, BG1, BG2) swimming lessons for 8 weeks.

According to the following data in Table 1, the girls of the OG1 group under the influence of sixteen-week swimming exercises using interval hypoxic training had a probable improvement (4.16%) of the result of the first section swimming during the 4x50m Freestyle on 15 sec. rest interval.

Table 1

Indicators of special physical training of 11–12 year old girls at different stages of studying

Indicators		**Groups**	**Average values, x±S**			
			Before training	**After 8 weeks**	**After 16 weeks**	**After 24 weeks**
Freestyle 800m/s		CG	818,50±8,06	806,85±7,07	798,45±5,90	791,70±6,09*
		BG1	819,38±5,62	803,10±6,39	797,81±7,93*	790,67±7,75*
		BG2	821,24±7,69	802,33±6,68	794,71±7,22*	772,43±4,44*
Freestyle 4x50m with interval for a rest 15 s	1 section	CG	38,54±0,87	38,41±0,92	37,66±0,87	36,44±0,89
		BG1	38,42±0,45	38,30±0,44	36,82±0,53*	36,25±0,38*
	2 section	BG2	38,69±0,67	38,56±0,67	36,59±0,68*	35,15±0,75*
		CG	41,50±0,88	41,41±0,86	40,77±0,86	40,20±0,88
	3 section	BG1	41,54±0,44	41,49±0,44	40,76±0,45	39,99±0,54*
		BG2	41,51±0,63	41,42±0,64	39,63±0,71	39,57±0,67*
	4 section	CG	44,20±0,88	44,06±0,90	43,84±0,91	43,52±0,97
		BG1	44,37±0,43	44,26±0,44	44,15±0,45	43,37±0,40
		BG2	44,42±0,64	44,28±0,66	43,93±0,67	42,52±0,71
		CG	47,28±0,87	47,15±0,87	46,94±0,88	46,67±1,07
		BG1	47,17±0,50	47,11±0,49	47,02±0,49	46,45±0,50
		BG2	47,25±0,70	47,11±0,67	46,86±0,68	44,67±1,01*
25m/s Freestyle		CG	17,43±0,32	17,17±0,27	16,97±0,26	16,69±0,29
		BG1	17,52±0,25	17,06±0,22	16,80±0,26	15,75±0,25*
		BG2	17,50±0,30	16,99±0,28	16,70±0,26*	15,58±0,18*

End of the Table 1

Swimming at distances of 25 m under 150/170 bits per minute	CG	2,30±0,18	2,45±0,12	2,50±0,06	2,70±0,12
	BG1	2,29±0,12	2,52±0,06	2,57±0,12	2,86±0,12*
	BG2	2,29±0,18	2,71±0,12	3,05±0,12*	3,29±0,12*

The girls of the BG1 group at this stage of the study also had a probable decrease of the time to overcome the 800 m free style (2.63%), which indicates an improvement in work capacity in the aerobic energy supply zone.

As shown in Table 1, the complex application swimming and the elements of aqua fitness and the technique of interval hypoxic training during 16 weeks contributed to the decrease in the time to overcome the distance for girls of BG2 doing the tests « 800 m free style» by 3, 23% ($p<0, 05$) and «swimming distances of 4 × 50 m free style on 15 seconds of rest» (first segment) by 5.43% ($p <0.05$).

In addition, under the influence of such trainings, representatives of the BG2 group, within 16 weeks after their start, showed a probable improvement in the results of the test «25 m free style with the highest possible speed» by 4.58%, as well as the number of swimming at distances of 25 m under 150/170 bits per minute – by 33.33% (see Table 1).

The results of the researchers of special physical training of 11-12 year-old girls, 24 weeks after the beginning of trainings, showed that swimming activities in the proposed programs generally contributed to improving the efficiency in the area of aerobic energy supply, work capacity in the zone of anaerobic alactate and anaerobic lactate energy supply and the capacity of anaerobic alactate system of young female swimmers.

However, the girls who used interval hypoxic training in Swim lessons, as well as integrated elements of aqua fitness and the method of moderate hypoxia and severe hypercapnia formation in the body showed such more improvement, comparing with the representatives of the control group.

Thus, upon the forming experiment in female athletes of KG group, a significant increase of the test result of «800 m freestyle» by 3.27% was registered and was evidence of improved work capacity in the aerobic energy supply zone. Other special physical training indicators of this group swimmers remained without significant changes.

Twenty-four-week swimming classes with the technique of interval hypoxic training for the BG1 studying group facilitated the probable increasing in the results of «800 m free style», «swimming distances of 4 × 50 m free style on 15 seconds of rest» (first segment) and «25 m free style with the highest possible speed» by 3.50%, 5.63% and 10.11% tests respectively. The number of swimming at distances of 25 m under 150/170 bits per minute for the representatives of this group over 24 weeks after the beginning has been increased by 25,00% ($p <0,05$).

The results of tests` performance by female athletes of the BG2 group at the end of the molding experiment testified that under the influence of swimming exercises with the using of the elements of aqua fitness and interval hypoxic training, the results of the tests « 800 m free style» (by 5.94%), «swimming distances of 4 × 50 m free style on 15 seconds of rest» (first, second and fourth segments - by 9,16%, 4,66% and 5,46%),»25 m free style with the highest possible speed» (by 10.97%) and the number of swimming at distances of 25 m under 150/170 bits per minute (by 43.75%).

The results of control competitive testing on swimming confirm the results of research by scientists [9; 14] about limiting the ability of teenage swimmers to perform work under conditions of anaerobic metabolism.

The information of scientists [1; 7; 9; 14; 20] about the efficiency of interval hypoxic training in the systemic training of athletes has been confirmed and supplemented.

According to the results of Yu. Furman [9] and I. Hruzevych [14] there was a probable increase of work capacity in the aerobic and anaerobic lactate energy supply zone for 13-14 year-old swimmers under the influence of 16-week training sessions using the technique of interval hypoxic training.

The results of our own research have testified that the using of IHT in the training process of 11–12 year-old swimmers contributes to the improvement of work capacity in areas of aerobic, anaerobic alactate and lactic energy supply.

The increase in the capacity of anaerobic alactate energy supply system for the research girls is indicated the expediency of using our proposed program of training sessions with 11-12 year-old swimmers.

For the first time, the elements of aqua fitness and interval hypoxic training were used in the training process of young swimmers. The expediency of such an innovation is explained by minimizing the negative impact on the children's body of exercises on the development of force in conditions of the aquatic environment while improving the functional capabilities of the organism.

The effectiveness of the complex application in the training process of the swimmers of the aqua fitness and the interval hypoxic training with 11-12 year old girls is confirmed by the probable difference between the work capacity indicators in the aerobic energy supply zone (by 2.43%), work capacity in the anaerobic lactate energy supply zone (6.67%) and the power of anaerobic power supply systems (by 21.69%) for representatives of KG and BG2 groups and indicators of work capacity in the aerobic energy supply zone (by 2.31%) and the capacity of anaerobic systems energy supply (by 15.00%) for the representatives BG1 and BG2 group in favor of the last after 24 weeks of training sessions for our proposed programs.

The scientific researches of Yu. Furman, S. Salnikova [8], V. Golovkina [3], S. Fedorenko [13] and G. Zhuk [20] about the effectiveness of aqua fitness in training sessions with the purpose of improving the physical condition are supplemented by the results of control test execution by swimmers of BG2.

Conclusion. The results of the researches have testified that swimming training activities with the elements of aqua fitness and interval hypoxic training affect the improvement of swimmers` work capacity at the age of 11-12 in the zone of aerobic, anaerobic alactate and anaerobic lactate energy supply.

The effectiveness of the complex application in the training process of the swimmers of the aqua fitness and the interval hypoxic training with 11-12 year old girls is confirmed by the probable difference between the indicators of work capacity in the aerobic energy supply zone (by 2.43%), efficiency in the anaerobic lactate energy supply zone (6.67%), the capacity of anaerobic energy supply systems (by 21.69%) for representatives of KG and BG2 groups and indicators of efficiency in the aerobic energy supply zone (by 2.31%) and the capacity of anaerobic systems energy supply (by 15.00%) for representatives of BG1 and BG2 groups in favor of the last after 24 weeks of training sessions for our proposed applications.

Further research prospects. Further researches will focus on the studying of the effects of swimming activities using the elements of aqua fitness and interval hypoxic training on the function of external respiration of 11-12 year old swimmers.

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Received: 25.04.2018.

UDC: 616.22-008.5+616.28-008.13

THE IMPORTANCE OF THE DEVELOPMENT OF VESTIBULAR APPARATUS FOR THE FORMATION OF ORAL SPEECH FOR HEARING-IMPAIRED CHILDREN USING VERBOTONAL METHOD

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https://doi.org/10.29038/2220-7481-2018-03-49-55

Abstracts

Topicality. Today there are many different approaches to upbring and educate hearing-impaired children in the world. The verbotonal method is one of the alternative systems for rehabilitation of hearing-impaired children, what is fundamentally different from traditional approaches. This method provides for a simultaneous development of all sense organs, does not offer to isolate a specific kind of perception, nor exaggerating the role of a particular stimulus or replacement with other linguistic code. The main task of the method is a harmonious development of the child, his preparation for social adaptation and integration, taking into account individual abilities. ***The purpose of the research*** was to highlight the developmental characteristics of the vestibular apparatus for the formation of oral speech in hearing-impaired children using verbotonal method. ***Materials*** 40 preschool-age children were examined. Main group 1 (MG1) included 21 children aged 5,2±0,1 years old (10 boys, 11 girls), control group (CG1) included 19 children. ***Results.*** The results of children rehabilitation based on the results of valuation of psychomotor development are presented. The method is complex and includes the following elements: status of hand-eye coordination, speed and precision in movements, development of perception, visual memory, assessment of auditory development and coordination. ***Conclusions.*** It is determined that development of vestibular apparatus plays an important role in the development of oral speech and is aimed at restoring audiolingual skills for normal functioning of individual. It is recommended that in the rehabilitation process it is necessary to pay special attention to integral and harmonious development of personality, restoration of intellectual development, physical, mental and verbal growth of the child based on his potential abilities. Timely and well-organized rehabilitation work ensures the proper development of the individual and promotes rapid socialization of the child.

Key words: hearing impairment, vestibular apparatus, oral speech, rehabilitation.

Ольга Заставна. Значення розвитку вестибулярного апарату для формування усного мовлення в дітей із порушенням слуху за верботональною методикою. ***Актуальність дослідження.*** На сьогодні у світі існує багато різних підходів до виховання й навчання дітей із порушеннями слуху. Однією з альтернативних систем реабілітації дітей із порушеннями слуху, що принципово відрізняється від традиційних підходів, є верботональна методика. Вона передбачає одночасний розвиток усіх органів чуття, не пропонує ізолювати окремий вид сприйняття, не перебільшує роль певного стимулу або заміну іншим лінгвістичним кодом. Основним завданням методики є гармонійний розвиток дитини, її підготовка до соціальної адаптації та інтеграції, ураховуючи індивідуальні здібності. ***Мета дослідження*** – висвітлення особливостей розвитку вестибулярного апарату для формування усного мовлення в дітей вз порушенням слуху за верботональною методикою**.** ***Матеріали методи дослідження.*** Аналіз наукових джерел, зорово-моторної координації, швидкості й точності рухів, розвитку сприйняття, зорової пам'яті, оцінки слухового розвитку, координації. Обстежено 40 дітей дошкільного віку. Основну групу 1 (ОГ1) склала 21 дитина віком 5,2±0,1 роки (10 хлопчиків, 11 дівчат), контрольну (КГ1) – 19 дітей. Критеріями виключення було пацієнти з аутичним спектором та розумовую відсталістю. ***Результати.*** Представлено результати реабілітації дітей на основі результатів оцінки психомоторного розвитку. Методика має комплексний характер і включає такі елементи, як стан зорово-моторної координації, швидкість і точністю рухів, розвиток сприйняття, зорової пам'яті, оцінка слухового розвитку, координації. ***Висновки.*** Визначено, що розвиток вестибулярного апарату відіграє важливу роль у розвитку усного мовлення й спрямований на відновлення слухомовних навиків для нормального функціонування індивіда. Показано, що в процесі реабілітації потрібно приділяти особливу увагу цілісному гармонійному розвитку особистості, відновленню інтелектуального розвитку, фізичного, духовного та мовного зростання дитини на основі її потенційних здібностей. Своєчасна та правильно організована реабілітаційна робота забезпечує належний розвиток індивіда й сприяє швидкій соціалізації дитини. Перспективу подальших

досліджень убачаємо в розробці реабілітаційних заходів для цього контингенту хворих з використанням верботональної методики.

Ключові слова: порушення слуху, вестибулярний апарат, усне мовлення, реабілітація.

Ольга Заставна. Значение развития вестибулярного аппарата для формирования устной речи у детей с нарушением слуха по верботональной методике. ***Актуальность исследования.*** На сегодняшний день в мире существует много различных подходов к воспитанию и обучению детей с нарушениями слуха. Одной из альтернативных систем реабилитации детей с нарушениями слуха, принципиально отличающейся от традиционных подходов, является верботональная методика. Данная методика предполагает одновременное развитие всех органов чувств, не предлагает изолировать отдельный вид восприятия, не превышает роль определенного стимула или замену другим лингвистическим кодом. Основной задачей методики является гармоничное развитие ребенка, ее подготовка к социальной адаптации и интеграции, учитывая индивидуальные способности. ***Цель*** исследования – освещение особенностей развития вестибулярного аппарата для формирования устной речи у детей с нарушением слуха по верботональной методике. ***Материалы методы исследования*** – анализ научных источников, зрительно-моторной координации, скорости и точности движений, развития восприятия, зрительной памяти, оценки слухового развития, координации. Обследовано 40 детей дошкольного возраста. Основную группу 1 (ОГ1) составил 21 ребенок в возрасте 5,2 ± 0,1 года (10 мальчиков, 11 девочек), контрольную (кг1) – 19 детей. Критериями исключения были пациенты с аутичным спектором и умственной отсталостью. ***Результаты.*** Представленны результаты реабилитации детей на основе результатов оценки психомоторного развития. Методика имеет комплексный характер и включает следующие элементы: по состоянию зрительно-моторной координации, скорости и точности движений, развитию восприятия, зрительной памяти, оценки слухового развития, координации. ***Выводы.*** Определено, что развитие вестибулярного аппарата играет важную роль в развитии устной речи и направлено на восстановление слухо-языковых навыков для нормального функционирования индивида. Показано, что в процессе реабилитации нужно уделять особое внимание целостному гармоничному развитию личности, восстановлению интеллектуального развития, физического, духовного и языкового роста ребенка на основе его потенциальных способностей. Своевременная и правильно организованная реабилитационная работа обеспечивает надлежащее развитие индивида и способствует быстрой социализации ребенка. Перспективой дальнейших исследований видим разработку реабилитационных мероприятий для данного контингента больных с использованием верботональной методики.

Ключевые слова: нарушение слуха, вестибулярный аппарат, устная речь, реабилитация.

The purpose of the research was to highlight the developmental characteristics of the vestibular apparatus for the formation of oral speech in hearing-impaired children using the Verbo-Tonal method.

Today there are many different approaches to upbring and educate hearing-impaired children in the world. The Verbo-Tonal method is one of the alternative systems for rehabilitation of hearing-impaired children, what is fundamentally different from traditional approaches. This method provides for a simultaneous development of all sense organs, does not offer to isolate a specific kind of perception, nor exaggerating the role of a particular stimulus or replacement with other linguistic code. The main task of the method is a harmonious development of the child, his preparation for social adaptation and integration, taking into account individual abilities.

Materials 40 preschool-age children were examined. Main group 1 (MG1) included 21 children aged 5.2±0.1 years old (10 boys, 11 girls), control group (CG1) included 19 children.

Results. The results of children rehabilitation based on the results of valuation of psychomotor development are presented. The method is complex and includes the following elements: status of hand-eye coordination, speed and precision in movements, development of perception, visual memory, assessment of auditory development and coordination.

Conclusions. It is determined that development of vestibular apparatus plays an important role in the development of oral speech and is aimed at restoring audiolingual skills for normal functioning of individual. It is recommended that in the rehabilitation process it is necessary to pay special attention to integral and harmonious development of personality, restoration of intellectual development, physical, mental and verbal growth of the child based on his potential abilities. Timely and well-organized rehabilitation work ensures the proper development of the individual and promotes rapid socialization of the child.

Key words: hearing impairment, vestibular apparatus, oral speech, rehabilitation.

Introduction. One of the most serious health and social problems is diseases leading to hearing decrease or loss. Given that acoustic analyzer is one of the most informative in respect of receipt of

information from the outside world, decrease of hearing, not to speak about its loss, significantly affects the quality of life, violating a person's position in society, restricts his/her choice of profession, and often leads to exclusion from society. Hearing is also important for the overall development and personality formation, in particular, for child's speech development, which has a decisive influence on his mental development (N.G. Baykina, A.V. Mutiev, Y.V. Kret, 2003; L.S. Vygotsky, 2003) [7].

In Ukraine, upon the results of epidemiological studies, 1 child is born with total deafness per 1,000 normal births; deafness develops in 2-3 children during the first 2 years of life. There are about 300 thousand children and 1 million adults with hearing impairment in the state, who require a hearing aid, including with deafness — 11 million children and 100 thousand adults (B.S. Moroz, A.T. Rostunov, 2013; V.M. Shevchenko, 2013) [9; 10].

Today there are many different approaches to upbring and educate hearing-impaired children in the world. The Verbo-Tonal method is one of the alternative systems for rehabilitation of hearing-impaired children, what is fundamentally different from traditional approaches. This method provides for the simultaneous development of all sense organs, does not offer to isolate a specific kind of perception, nor exaggerating the role of a particular stimulus or replacement with other linguistic code. The main task of method is the harmonious development of the child, his preparation for social adaptation and integration, taking into account individual abilities.

At present, no one denies the importance of early diagnosis and rehabilitation of hearing-impaired children. It is important to begin rehabilitation immediately after establishing diagnosis for a child.

As the whole children's organism, their body and musculoskeletal and vestibular apparatus play an enormous role in rehabilitation, it is necessary to conduct a precise examination of vestibular organ. It is important to check the function of vestibular apparatus before the rehabilitation beginning. There is a special apparatus for this, but if it is not possible to use such devices, you can refer to the fairly simple well-known methods.

Coordination of movements is investigated by using the tests corresponding to the age at which the child can perform them:

- finger-nose test: children with their index finger touch a nose tip in turn, by different hands with visual, and then without visual control, spreading arms out to the sides. The researcher notes mistouches;
- heel-knee test: the heel of one foot slides down along the low leg from the knee to the foot of another leg, and then up to the knee. The heel slides off the lower leg in pathology;
- test for mistouche: the child under test must hit with the finger the immovable finger of the researcher (with visual and without visual control in horizontal and vertical planes). The mistouche is recorded on the side of defect;
- diadochocinesia: the opposite (supination and pronation) movements are performed by stretched out hands with splayed fingers at a fast pace. The movements` symmetry is disordered in pathology, they become clumsy;
- studying the walking, the rocking, the steadiness of steps and the symmetry in movements of the whole body are observed. Coordination of movements is also studied using coordinamometre of different types. [5]

The principal pathology can cause a chain of consequences, which, having arisen, become causes of new disorders. It was revealed that hearing loss in children is accompanied by disharmonious physical development in 62% of cases, in 43.6% - by defects of musculoskeletal apparatus (scoliosis, flatfoot etc.), in 80% of cases - by delay in motor development. Comorbidities are observed in 70% of deaf children. Hearing-impaired children have retardation development of locomotor static functions, which, in turn, affects the formation of inter-analyzer connections. Retardation development of "straight standing" (mastery of sitting, walking, etc.) leads to disorientation in space and in the objective world.

The Verbo-Tonal Method (VTM) attaches great importance to the development of the vestibular apparatus, the body movements and orientation in space for the formation of oral speech in hearing-impaired children. The principle of the Verbo-Tonal Method is the following: "An auditory nerve of a deaf child is damaged, the auditory center in the cerebral cortex is not damaged, and however, it never receives auditory signals. The task of the Verbo-Tonal Method is to make the auditory center to work".

The purpose of the research was to highlight the developmental characteristics of the vestibular apparatus for the formation of oral speech in hearing-impaired children in the rehabilitation center for children with hearing and speech disorders using Verb-Tonal method.

The methods of the research.

40 preschool-age children were examined. Main group 1 (MG1) included 21 children at the age of 5.2±0.1 (10 boys, 11 girls), who were registered with the rehabilitation center for children with hearing and speech disorders of Ivano-Frankivsk Regional Children's Consultative Clinic. The control group (CG1) involved 19 children, who were registered with the pediatrician of Ivano-Frankivsk Regional Children's Consultative Clinic.

Table 1

The development of hand-eye coordination of hard-of-hearing children (M±m)

Indicator	CG (n=19)	MG1 (n=21)
The level of hand-eye coordination		
High	30±7.25	
Normal	70±7.25	42.86±10.8*
Low		57.14±10.8*
The level of motor skills development		
Indicator	CG (n=19)	MG1 (=21)
High	45±7.87	
Medium	55±7.87	33.33±10.3*
Low		66.67±10.3*
Picking up a pyramid, s	8.46±14	12.15±0.45*
Tapping test, number of dots	28.42±0.79	19.57±1.25*

Table 2

The development of Visual Memory of hard-of-hearing children(M±m)

Indicator	CG (n=19)	MG1 (n=21)
Performed	87.5±5.23	28.57±9.86*
Not performed	12.5±5.23	71.43±9.86*
Auditory sense		
Performed	100	
Not performed		100*

Table 3

The level of functional state of hard-of-hearing children(M±m)

Indicator	CG (n=19)	MG1 (n=21)
String Test		
Boys	10.84±0.74	5.34±0.35*
Girls	11.32±0.88	5.69±0.41*
Tree Test, s		
Boys	7.33±0.27	3.37±0.12*
Girls	7.15±0.74	3.15±0.09*

Notes: * – statistically significant difference in comparison with the corresponding indicator of CG ($p<0.05$);
○ - statistically significant difference in comparison with the appropriate indicator of MG1 ($p<0.05$)

The results of the research. As the whole child's organism, his body, movements and vestibular apparatus play a great role in rehabilitation, it is necessary to conduct a precise examination of vestibular organ. The vestibular apparatus is the organ perceiving changes in head and body positions in space and in directions of human body movements. It is a part of the inner ear and is a complex receptor of the vestibular analyzer.

The signals of two types are transferred from receptors, namely: static and dynamic. They both appear in the course of mechanical stimulus of hairs sensitivity as a result of otoliths or endolymph displacement. When changing body position, the direction of the force is changed, that acts from the otolith side on the hairs sensitivity. Utricle plays a leading role in perceiving a body position and probably is involved in rotation perception. Saccule complements the utricle and is required for perception of vibration.

Inner ear parts innervate with eighth cranial nerve processes of which end either in the auditory or in the vestibular nuclei of the brain, where the received information is analyzed. The vestibular nucleus is a nerve cell cluster in the brain stem; they have a wide range of connection with skeletal apparatus, eye muscles and cerebral cortex. Nerve impulses are transmitted from the vestibular nucleus to the temporal part of the cerebral cortex, where the center of balance and the sense of control consciousness over the head and body positions are located. The balance is determined and maintained by the center of the brain, which receives information from the organs of equilibrium located in the inner ear and other sense organs. Thus, the brain receives the signals coming from the vestibular apparatus with information perceived by eyes and other sense organs [2; 4].

Embryonic vestibular organ appeared as a result of thickening of the exodermis, meanwhile, specific sensory cells (mechanoreceptors) were developed. The vestibular organ has otolithic and cupular sense organs. Sensitive cells of otolithic organ perform the following functions: 1 – perception of gravitational field; 2 – perception of linear acceleration; 3 – perception of angular acceleration; 4 – response to the sound. The cupular organ contributes to angular acceleration. Neurophysiological studies have proved that otolith organ responds to tones of 1,000 Hz and can replace cochlear activity. While the inner ear contains both the vestibular apparatus and cochlear, we can talk about vestibulocochlear hearing. [4]

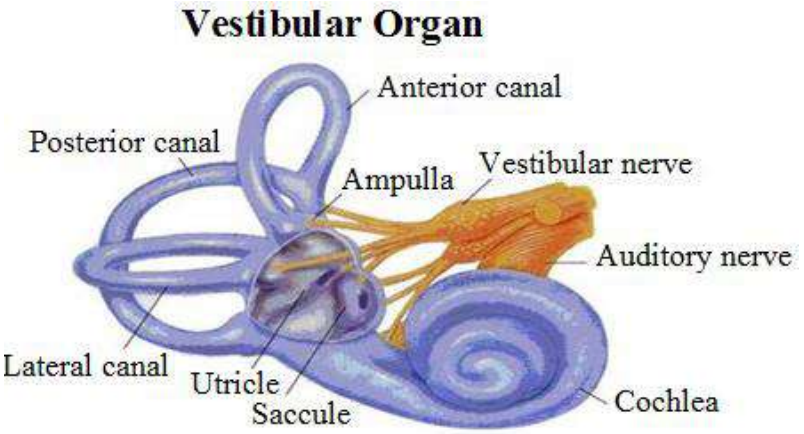

Fig. 1. *The vestibular organ is composed of otoconia apparatus, formed by the utricle and the saccule, nd three semicircular canals*

The vestibular sense improves speech understanding, as the changes in intonation, rhythm, pace and values of oral speech are perceived by it (Fig.1) through low frequencies. Vestibular perception coincides with the auditory at frequencies from 16 Hz to 1,000 Hz. Frequencies below 16 Hz are perceived only by the vestibular apparatus. The thresholds of the vestibular organ are unknown, because it is difficult to separate auditory perception from vestibular one. Sensory perception of information in the vestibular nucleus is also transferred to the reticular formation, the cerebellum and the lateral auditory pathway [1].

When the hearing is impaired, perception depends on other biological mechanisms, such as sense in space. The brain regulates the magnitude and precision of movements. If there are disorders in the vestibular organ, other organs (vision, hearing, and tactile feelings) assume its functions and vice versa. Recovery of vestibular apparatus function is very important for the rehabilitation. It is required for orientation in space. It is necessary to teach hearing-impaired children movements, the ability to control their body, that is to strain and relax. If the child only lost hearing, without accompanying disorders of the vestibular apparatus and motor skills of the body, rehabilitation is carried out easier and more successful.

The in hereditary deaf children usually have vestibular apparatus in the normal condition. But, along with it, most of hearing-impaired children have vestibular function disorders. This is especially common in children, who suffered through purulent meningitis, as a result, the labyrinth can be damaged and vestibular function can be affected. It was found that the damaged labyrinth is more common in people with acquired deafnes [3].

Disorders of coordination, movements when walking, symptoms of body sway and walk extending the foot on the surface is observed in deaf people with disordered vestibular apparatus. But the balance in respect

of them is gradually formed due to visual perception of the environment, and the feeling of their own body, their movements, and kinetic senses when moving. The role of vestibular senses is great not only for preserving a balance but also for orientation in space. And for hearing-impaired children the vestibular apparatus plays an important role in rehabilitation for full socialization.

The great importance in rehabilitation of children using the Verbo-Tonal method is paid to the development of vestibular function. It provides for exercises, namely: jumping on one and two legs, jumping over certain hurdles or the cord, walking along the line or on the gymnastic bench, swinging, counting rhymes with hand movements, etc. Educators and parents who are walking with a child, must encourage him to physical activity, as well as to a variety of play-based tasks aimed at the formation of vestibular sense.

The following exercises are used by the rehabilitation center for children with hearing and speech disorders for the development of vestibular function when working with children of different age groups.

Exercises for young children (1-3 years old):

– walking with things in hands;

– rolling on the floor on a mat;

– walking along the gymnastic bench (hands behind head), by sidesteps alternately by the left, the right side, dismount into the hoop.

Exercises for infants and pre-school children:

– walking along a narrow rail of gymnastic bench (hands to the sides), dismount into the hoop. Walking along a narrow rail of gymnastic bench (hands behind head) squats in the center, then continuing in movement (with the use of audio signal - by ear);

– jumping on the fitball in a sitting position, holding the balance.

Exercises for older pre-school-age children:

– jumps on both feet through the gymnastic bench with the leaning upon hands (three sets);

– walking on a brick (tambourine beating with every step), then "the beating frequency is changed, increasing the speed of steps;

– a cotton ball tossing and catching (10 times in a row);

– raising the body from a facedown position on a fitball, first hands behind head, then to the sides (10 times, count 1-2).

Exercises for school-age children:

– perform arabesque on the floor, then on the gymnastic bench;

P. P.: standing on the floor with eyes closed, lift your right leg, bending its knee, and touching with your left hand the nose tip; repeat with the other leg;

– keep balance sitting on a fitball (hands to the sides, legs pressed to the ball).

The results of the research. Therefore, the Verbo-Tonal method opens new opportunities for the person. This work is carried out in a specific sequence and consists of the following three stages: diagnosis, rehabilitation and integration. This method gives the opportunity to develop hearing in deaf children using the bodily conductivity of low frequencies, to which every living organism is sensitive, as well as residual of auditory senses.

Definition of psychomotor development of hard-of-hearing children found that they slow down behind their healthy children of the same age in terms of hand-eye coordination, speed and precision of movements, development of perception, visual memory, assessment of auditory development and coordination (See Tables 1, 2, 3).

In determining the state of hand-eye coordination using Seguin Form Board Test, it is found that during initial examination of hard-of-hearing children no individuals with its high level were identified (compared to one third in CG) ($p<0.05$). The normal level was determined only in 30±7.25% of CG children and 42.11±11.33% of MG1, low – 57.14±10.8% ($p>0.05$), respectively.

The children with a high level of manual fine motor skills were not identified among hard-of-hearing children in both groups, while in the group of children with normal hearing there were nearly half of them. The average level of development of motor skills was detected only in one-third of hard-of-hearing children, most of which has its low level (See Table 1).

In order to determine the level of finger coordination development, the test ‘pick up the pyramid’ was carried out. The test time in CG was 8.46±0.14 s, i.e. it was on average by 42.7% less than in the main group, which indicates the deterioration of fine motor skills in hard-of-hearing children.

The results of the tapping test became the proof of the latter fact: number of dots in CG was, on average, by 32.4% more than in the main group, indicating a poor state of visual-motor coordination of deaf children (See Table 1).

The definition of visual memory by means of putting together the cut picture in 30 s showed that only one third of hard-of-hearing children coped with this task, what significantly differed from the indicator of children with preserved hearing (87.5±5.23) ($p<0.05$).

The level of development of auditory perception was determined as unconditional reflex audiometry. Under this option the children of main groups were also retarded from the children of the same age. ($p<0.05$) (See Table 3).

The results of carrying out String Test, which, together with Tree Test determine the level of functional state of central nervous and musculoskeletal systems, showed that both boys and girls of main groups kept a balance approximately twice less time compared to CG indicator ($p<0.05$). A similar trend was determined in carrying out the Tree Test (steadiness to hold the body on one leg) (See Table 4).

Conclusions and prospects for further research. The Verbo-Tonal method is rehabilitation of child's harmonious development, primarily rehabilitation of residual hearing perception with activation of all preserved analyzers, potential capacities of children. The fundamental in the Verbo-Tonal teaching method is that the patient's speech develops on the basis of residual auditory perception. A basic and fundamentally important in the Verbo-Tonal method of teaching and upbringing children with hearing and speech disorders is what primarily directly affect the brain through auditory analyzer. The brain will function better if it gets first auditory stimulus, for which ear is the most sensitive, and, secondly, through vision and other analyzers. The brain will recover its functions. Therefore, it is important to train hearing, to develop auditory sense through the vestibular apparatus. This is because the development of vestibular apparatus is of great importance in the formation of oral speech in hearing-impaired children using the Verbo-Tonal method.

The main goal of Verbo-Tonal method is hearing and speech rehabilitation, development of all abilities of the child and preparation for social adaptation and integration, taking into account individual characteristics of the child.

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Received: 16.04.2018.

UDC [37.09:797.21/.22]:711.455.8-053.5

PECULIARITIES OF FORMATION SMIMMING TRAINING PROCESS OF JUNIOR SCHOOLCHILDREN IN A SUMMER CAMP

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https://doi.org/10.29038/2220-7481-2018-56-62

Abstracts

Analysis of scientific researches show the importance of finding and developing new methodological approaches to initial swimming training that would take into account all the features and possibilities of modern camp shifts, would significantly improve the quality and effectiveness of swimming training in summer health camps. The article analyzes main requirements that need to be taken into account in initial swimming training. Reasons which complicate the process of swimming of junior schoolchildren, cause discomfort, fear and stressful situation are determined. Structure and content of swimming training in a summer health camp for junior schoolchildren are developed in the article. Swimming technique with the use of respiratory gymnastics by A.N. Strelnikova was developed on the basis of analysis of scientific literature, generalization of practical experience of leading experts and obtained data with elements of aqua aerobics, exercises with snorkeling and rescue exercises. Organizational and methodological conditions of teaching swimming of junior schoolchildren in the summer health camp «Lastochka» in an open water bodies are given in comparison with classical technique by Nabatnikova M. Experimental methodology of swimming training contains teaching material, methods and tools, including technical devices: a series of lessons «Swimming as the most important human skill», lessons with elements of training (fighting phobia related to open water bodies), the game program «I am a lifeguard». The study reveals results of ability to swim of junior schoolchildren age who took part in training swimming sessions on the basis of the summer camp «Lastochka» in Skadovsk in 2016 during the month of August. The results of introduction of experimental method in the swimming training of the summer health camp positively influenced the ability to swim. Comprehensive study of swimming exercises gave children the opportunity to gain new skills and knowledge in rescuing drowning men, which, to a large extent, contribute to safety of children on the water.

Key words: swimming, summer camp, mass swimming.

Ольга Ображей. Особливості побудови процесу навчання плавання молодших школярів у літньому оздоровчому таборі. Аналіз наукових досліджень свідчать про важливість пошуку та розробки нових методичних підходів до початкового навчання плавання, які б враховували всі особливості та можливості сучасної табірної зміни, давали змогу суттєво підвищити якість й ефективність навчання плавання в літніх оздоровчих таборах. У статті проаналізовано основні вимоги, які потрібно враховувати під час початкового навчання плавання. Визначено причини, які ускладнюють процес навчання плавання дітей молодшого шкільного віку, викликають дискомфорт, страх і стресову ситуацію. Також удосконалено структуру та зміст програми циклу зміни занять оздоровчим плаванням дітей молодшого шкільного віку в оздоровчому таборі. На підставі аналізу наукової літератури, узагальнення досвіду практичної роботи провідних фахівців, а також отриманих даних у ході дослідження розроблено та впроваджено методику занять плаванням із використанням дихальної гімнастики А. Н. Стрельнікової, елементами аквааеробіки, вправ із снорклинг і рятувальних вправ. Наведено організаційно-методичні умови навчання плавання молодших школярів у літньому оздоровчому таборі «Ластівка» на відкритій водоймі, порівняно з класичною методикою за М. Набатніковою. Експериментальна методика навчання плавання містить навчальний матеріал, методи й засоби, уключаючи технічні пристосування: цикл занять «Плавання – як найважливіша навичка людини», заняття з елементами тренінгу (боротьба з фобіями, що пов'язані з відкритими водоймами), ігрова програма «Я-рятувальник». У роботі наведено результати рівня вміння плавати дітей молодшого шкільного віку, які перебували на навчально-тренувальних заняттях із плавання на базі літнього оздоровчого табору «Ластівка» у м. Скадовськ у 2016 р. протягом серпня-місяця. Упровадження експериментальної методики в навчальний процес літнього оздоровчого табору позитивно вплинула на вміння плавати. Усебічне вивчення плавальних вправ дало можливість дітям отримати нові вміння, навички й знання з порятунок потопаючих, які значною мірою сприяють безпеці перебування дітей на воді.

Ключові слова: плавання, літній оздоровчий табір, масове навчання плаванню.

Ольга Ображей. Особенности построения процесса обучения плаванию младших школьников в летнем оздоровительном лагере. Анализ научных исследований свидетельствуют о важности поиска и разработки новых методических подходов к начальному обучению плаванию, которые бы учитывали все особенности и возможности современной лагерной смены, позволяли существенно повысить качество и эффективность обучения плаванию в летних оздоровительных лагерях. В статье проанализированы основные требования, которые необходимо учитывать при начальном обучении плаванию. Определены причины, которые затрудняют процесс обучения плаванию детей младшего школьного возраста, вызывают дискомфорт, страх и стрессовую ситуацию. Также усовершенствованы структура и содержание программы цикла смены занятий оздоровительным плаванием детей младшего школьного возраста в оздоровительном лагере. На основании анализа научной литературы, обобщение опыта практической работы ведущих специалистов, а также полученных данных в ходе исследования, была разработана и внедрена методика занятий плаванием с использованием дыхательной гимнастики А. Н. Стрельникова, элементами аквааэробики, упражнений с снорклинг и спасательных упражнений. Приведены организационно-методические условия обучения плаванию младших школьников в летнем оздоровительном лагере «Ласточка» на открытом водоеме, по сравнению с классической методикой по М. Набатникова. Экспериментальная методика обучения плаванию содержит учебный материал, методы и средства, включая технические приспособления: цикл занятий «Плавание – как самый важный навык человека», занятия с элементами тренинга (борьба с фобиями, связанными с открытыми водоемами), игровая программа «Я-спасатель». В работе приведены результаты уровня умения плавать детей младшего школьного возраста, находившихся на учебно-тренировочных занятиях по плаванию на базе летнего оздоровительного лагеря «Ласточка» в г. Скадовск в 2016 г. в течение августа месяца. Внедрение экспериментальной методики в учебный процесс летнего оздоровительного лагеря положительно повлияла на умение плавать. Всестороннее изучение плавательных упражнений дало возможность детям получить новые умения, навыки и знания спасения утопающих, которые в значительной степени способствуют безопасности пребывания детей на воде.

Ключевые слова: плавание, летний оздоровительный лагерь, массовое обучение плаванию.

Topicality. Under conditions of dynamics of modern economic and social processes there is more workload on junior schoolchildren, who need complete rest. Problem of health improvement and recreation of children is effectively solved by children's health camps. However, in this period it is important not only organization of children's leisure, but also organization of swimming training of junior schoolchildren at a camp [1].

The problems of organization of classes and methods of teaching swimming at summer health camps are devoted many works of such scientists as S.V. Belits-Geitman, N. Zh. Bulhakova, S. M. Voitsekhovsky, V. S. Vasiliev, S. M. Gordon , T. I. Osokina, Z. P. Firsov, V. N. Pyzhov, S. M. Klimakova and others.

However, despite this, it is not possible to solve the problem of teaching children to swim fully. Research data in certain regions of Ukraine shows the number of students who cannot swim at the age of 8–10 years old – 40-50%, high school students – 40-42%, young men of military age – over 50%. There are more than 90% of children of younger age who cannot swim.

The main reasons of inability to swim experts call lack of stationary basins, lack of funds, lack of swimming coaching specialists, etc [1; 3; 6].

Today, it is important to organize swimming training of children using as efficiently as possible the time they spend in a summer health camp [2; 4; 6; 7].

Equally important is search and development of new methodological approaches to initial swimming training that would take into account all features and possibilities of modern camp shifts, would allow to improve significantly the quality and effectiveness of swimming training in summer health camps. With that in mind, our research is relevant.

The purpose of the study is to develop structure and content of swimming training in a summer health camp and to investigate the impact of experimental techniques on ability to swim of junior schoolchildren.

Materials and methods. The study was carried out in educational and training sessions in swimming at a summer camp «Lastochka» in Skadovsk in 2016 during the month of August. The shift lasted 21 days. The study involved 24 people who could not swim aged 8-9 years, of which 13 girls and 11 boys. In order to determine individual characteristics, testing of physical state indicators of children was used.

Preliminary analysis allowed revealing insignificant differences between boys and girls at this age by level of physical qualities and level of swimming readiness. That allowed uniting all children into one group. Swimming sessions were conducted daily except day of children's arrival and the last day of stay in the «Lastochka» health camp since 10.00 to 12.00 in the Black Sea. Particular attention was paid to issues of

safety and prevention of children injuries. Medical control was carried out by medical workers of the summer camp.

To determine the assessment of skill swimming level, children's readiness at the beginning and at the end of the experiment, we have developed a system of control exercises and a five-point assessment system:

- **Fear of water**: 1-a child refuses to enter the water; 2-enters the water after a long conversation; 3- enters the water with a coach; 4- independently enters, but holds on a side; 5- not afraid of water, bravely enters the water, playing.

- **Water face immersion:** 1- do not immerse the face (refuses); 2 - immerses after the explanation and persuasion of a coach; 3- immerses only the face (eyes are closed); 4-immerses the head (eyes are closed); 5 - immerses the head deep, dives, eyes are open;

- **Water Squats:** 1- refuses; 2- squats with the coach (water level to the chest); 3- squats alone (water level around the neck); 4- squats with full immersion of the head; eyes are closed; 5- self-crouches, dives;

- **Jumping into water:** 1-refuses to make a «downturn from the side»; 2- does a downturn from the side without letting go off hands; 3- makes a downturn with the coach; 4-independently makes a downturn from the side; 5- jumps independently with repulsion from the side;

- **Breathing delay in water:** 1-delayed breathing only on land (up to 10 seconds); 2-delayed breathing only on land (up to 15-20 sec.); 3- delayed breathing in water (up to 5 sec.); 4- delayed breathing up to 10 seconds; 5- delayed breathing more than 15 seconds;

- **Ability to perform an exercise** 1- refuse to perform; 2- the exercise fulfillment is «uncoordinated»; 3- the exercise «Asterisk» with lowered legs (up to 5 seconds); 4- the exercise is done correctly (up to 10 seconds); 5- the exercise is done correctly for more than 15 seconds;

- **Ability to push off and slip:** 1- inability grouping together at the turning wall; there is no slip; 2- a bad grouping; there is weakly non-directed repulsion; 3- slip after repulsion to 2 m; 4 - slip with correct position of trunk after proper repulsion, repulsion to 4 m.; 5- sliding with correct position of trunk after correct repulsion of more than 5m;

- **Ability to slip and footwork:** 1. slipping without work of legs; 2- sliding with footwork as crawl stroke with fluctuations of trunk; 3- proper sliding with footwork as crawl stroke on chest up to 5 m; 4- proper sliding with footwork of legs as crawl stroke on chest up to 8m; 5- proper sliding to 12 m;

- **Ability to slip and work with hands:** 1- slipping without hands; 2- slipping with hands as crawl stroke, with excessive body vibrations; 3- proper execution of slides with work of hands as crawl stroke on chest up to 5 m; 4- proper sliding with hands up to 8m; 5- proper sliding with work of hands up to 12 m;

- **Ability to swim in coordination:** 1- refusal to perform an exercise; 2 - inability to swim in coordination; 3 – indistinct implementation of swimming in coordination and with stops; 4 - swimming in coordination up to 15 m; 5- swimming in coordination of more than 15 m.

Obtained results were included into individual protocols and processed using methods of mathematical statistics.

The results of the study. The realization of physical culture and recreation activities potential of a summer camp is possible only on basis of its accumulated experience, knowledge, interesting ideas, skills and abilities to identify and apply innovative forms and methods, and thus improve approaches to swimming training children [1].

We analyzed main requirements that need to be considered during the initial training of swimming, which are shown in table 1.

Methods of initial swimming training for children by Bulgakova M. Zh., Gurfinkel A.I., Klimakova S.M., Nabatnikova M.V. and others indicate special requirements for carrying out swimming lessons in open water bodies [1; 2; 4; 5; 6; 7; 8].

It is recommended to have swimming baths and swimming training, as well as improvement techniques between 10 a.m. and 12 at noon and from 5 p.m. to 7 p.m. in summer camps. General and special exercises are included in the morning gymnastics of the camp beforehand. This leads to basics of mastering swimming techniques. Subsequently, complexes of physical exercises on the land are performed by children at lessons before exercises in water. It is advisable to use auxiliary equipment: wooden or foam plastic boards, rubber inflatable floats and toys, swimming supporting belts, rubber balls, a whistle.[5]. The best temperature is 23 °C (see Table 1). If children begin to freeze, you should stop the lessons immediately and take a break.

Table 1

Basic requirements that must be fulfilled during initial swimming training

Authors	Number of children in the group	Depth of water (cm)	Flow rate m / min	Area for swimming	t° of water in reser-voirs (° C)	Air t° (°C)	Duration of classes	
							At the beginning (min.)	At the end (min)
Bulgakova N.	10	120	10	25m x15m	20-25	22-26	5	30-35
Vasilev V.S.	10	90-130	≤10	6m x15m	21-23	23-25	5-7	25-30
Nabatnikova M.	10-12	90-100	≤10	25m x15m	20 i >	25	3	30
Davydov V. Yu	10-15	90 i >	10	3m x 12m	22-25	23-25	5	30
Kryvodud T. Ye	≤10	≤130	10	25m x10m	20-22	20 i >	3-5	25
Zhelezny D. V.		90	10	4m x12m	20-24	22 i >	3-5	30
Gurfinkel A.	8-10	100	10	12mx15m	21-25	25	3	25

Most scientists, like Nabatnikova M.V., Bulgakova N. Z., Gurfinkel A.I., Klimakova S. M. and others declare that during 21 day of staying in a summer camp, children of 10-12 years old and 13-15 years old who cannot swim, should learn how to swim crawl without overarm swimming, and children who are able to swim – the crawl stroke. As a result of swimming lessons, children aged 8-9 should learn to enter into the water without fear and feel confident in the water, do exercises in the water and learn to crawl stroke without overarm swimming [1; 4; 8].

Learning swimming in open water bodies has both positive and negative aspects. It is impossible not to pay attention to a large percentage of children who expect danger during swimming training in open water bodies due to the increased fear of water (often after the occurrence in the past of a critical situation in water with independent attempts to learn to swim). As you know, danger is interconnection or threat of something dangerous. Reaction to danger, according to special literature is manifested in anxiety and increased activity of the nervous system [3].

It is necessary to predict the reasons that complicate the learning process, cause discomfort, fear and stressful situation: - open environment (can cause insecurity); - lack of ability to securely fix; - uncomfortable weather conditions (cool temperature of reservoir, strong wind, precipitation, excitement); - uncomfortable bottom for entering the water barefoot (mud, algae, pebbles, coral deposits, contamination by household and other garbage); - large number of strangers on the shore and in the water; - a fairly sharp lowering of the bottom, lack of shallow water; - possible undesirable underwater inhabitants; - strong flow; - lack of comfortable place for changing clothes, toilet; - unclear water, pollution; - strong noise (motor boats, loud music, etc.) [3].

A program was made up based on the analysis of scientific literature, generalization of practical experience and approval of the camp administration.

Table 2 shows Structure and content of swimming lessons for junior schoolchildren is demonstrated in Table 2.

Table 2

Program structure and content of cycle swimming training for junior schoolchildren in a children's recreation camp

Purpose of event	Name of event	Number of classes and their duration
Organizational period		
Education of persistent interest for systematic swimming activities. Talk about the benefits of swimming, and get acquainted with the professions that require the ability to swim. Educating children with special knowledge in the field of competitive swimming.	Series of conversations on the theme «Swimming – as the most important skill of man»	3 lessons (45min)

End of the Table 2

Basic period		
Learn to manage own emotions in crisis situations. Learn to prepare properly for situations of high emotional pressure. Increase level of confidence in own abilities. Learn to overcome fears though special exercises. Form an individual system of work with fears based on the proposed training techniques.	Lessons with elements of training (fight against phobias associated with open water bodies.)	8 lessons (45min)
Final period		
Check the effectiveness of the training method.	Game program «I am a lifeguard».	1 lesson (1 hour 30 min)

Swimming technique with the use of respiratory gymnastics by A. N. Strelnikova was developed on the basis of analysis of scientific literature, generalization of practical experience of leading experts and obtained data. Feature and important advantage of respiratory exercises of A. N. Strelnikova is the use of forced inhalation and involvement in the process of breathing respiratory muscles –

diaphragm. Respiratory gymnastics was to practice short, sharp, noisy breath through the nose at a rate of approximately 3 breaths in 2 seconds followed by a completely passive exhalation through the mouth. Movements that caused compression of the chest were performed simultaneously with the inhalation. Gymnastics was carried out in the preparatory part of swimming lessons and included simple breathing exercises. Respiratory gymnastics began with three basic exercises: «Palms»; «Epaulettes»; «Pump». Every day one exercise was added: «Cat», «Embrace your shoulders», «Big pendulum», «Turns of the head», «Ears», «Hover» [9].

Elements of aqua aerobics also were included in the preparatory part of the lesson. Aqua aerobics included running and walking in water, various kinds of dancing, jumping, special stretching exercises, games and many other types of exercises and motor activities in the aquatic environment.

Main movements in aqua aerobics were used from different starting positions: standing, semi-squat, with a movable and stationary support, on a small (30 cm) depth, with unsupported position in a deep place (60 cm), with equipment (objects, technical means) and without them, with support and without partner's support.

Snorkeling exercises have been used in the main part of the lesson which contributed to faster and better performance of breathing exercises, respiratory depression, movements of the legs crawl and dolphin, diving, etc.

Familiarization with rescue exercises was in the final part. When performing rescue exercises, children received various applied skills that may be useful to them in later life. Comprehensive study of swimming skills enables children to acquire new skills and knowledge in salvation. These skills affect the safety of children's staying in the water. Rescue equipment (lifebuoys, balls, hooks, «cats», throwing ropes, life belts, life jackets, bibs, etc.) was used for more effective learning of rescue skills. [4; 8].

Exercises of a different nature were used adequate to the level of preparedness of those who are engaged. Workload dosed due to changes in the amplitude of movements, tempo, rhythm, coordination complexity and number of repetitions. The experimental method is designed for 18 lessons, every day for 45 minutes.

Table 3 presents the organizational and methodological conditions for teaching swimming junior schoolchildren in the summer recreation camp «Lastochka» in an open water compared with the classical (according to Nabatnikova M.).

It is known that the quality of mastering swimming skills in most children remains rather low (Antropova M.V., Kuznetsova Z.I., Salnikova G.N.), this is due to a large number of factors that influence the effectiveness of learning (Afanasyev V. Z.; Bakuniyene K. F.; Belokovsky V. V.; Yevtushova L. F.). One of the most important factors that ensure the success of swimming training is age characteristics of children of junior school age, a leading activity (game). Methodology of swimming training should contain teaching material, methods and tools, including technical devices that will allow them to find new forms of employment, to increase their emotions and to raise children's interest to them. In addition, it will solve the

problem of comprehensive development of personality junior schoolchild (good physical qualities, healthy mental life and development) [7]. In connection with this, a series of lessons was devised «Swimming as the most important human skill», lessons with elements of training (fighting phobia related to open water bodies), the game program «I am a lifeguard». High emotionality, musical support, a large variety of interesting exercises and elements contribute to the development of swimming readiness, development of physical qualities, creative and mental abilities of junior schoolchildren [5; 6; 7].

Table 3

Conditions for carrying out lessons and swimming training for junior schoolchildren

Conditions for conducting swimming training lessons	**Methodology**	
	Experimental technique	by Nabatnikova M.
Total number of lessons (days)	18	15
Number of lessons per week (days)	7	7
Duration of the lesson at the beginning of the training (min)	45	5
Duration at the end (min)		35-40
Innovation	Use of breathing gymnastics by Strelnikova and elements of aqua aerobics in the preparatory part of the lesson. Snorkeling exercises in the main part. Familiarization with rescue exercises in the final part.	Application of a game method

The study has shown that introduction of experimental method in lessons of junior schoolchildren has a positive impact on their ability to swim.

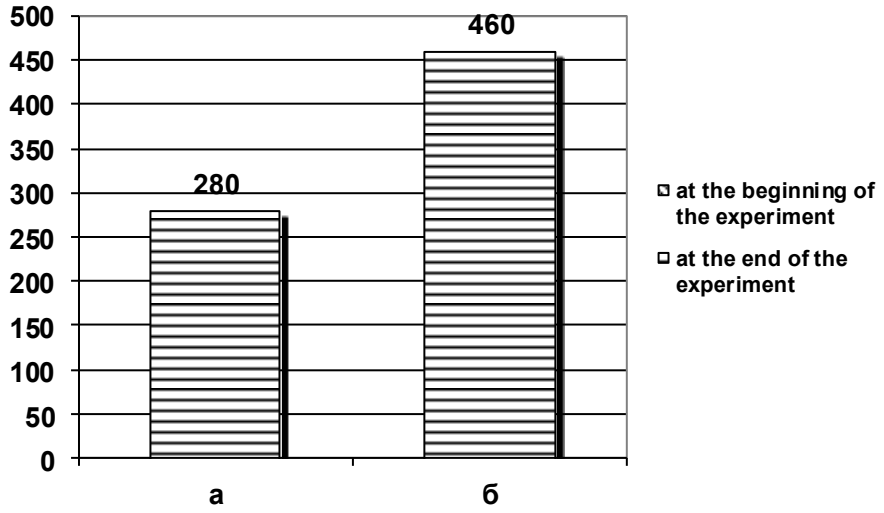

Fig. 1. *Total indicator characterizing the ability of children to swim at the beginning and at the end of the experiment*

At the beginning of the experiment, the group coped up to 280 points, and after a series of lessons we have conducted a similar test which was a part of the game program «I am a lifeguard». The results proved the possibility of teaching children in open water bodies. All children performed tests with a positive result. The best performances of control exercises which children managed to handle were: overcoming fear of water – 46 points, and the ability to swim in coordination – 48 points.

Conclusions and prospects for further research: The results of introduction of experimental method in the swimming training of the summer health camp positively influenced the ability to swim. Comprehensive study of swimming exercises gave children the opportunity to gain new skills and knowledge in rescuing drowning men, which, to a large extent, contribute to safety of children on the water.

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Received: 06.07.2018.

Physical Education of Different Groups

UDC 796.011.1-057.87

THE PECULIARITIES OF PHYSICAL PREPAREDNESS OF 5TH-6TH FORM PUPILS IN THE CONTEXT OF THE PRIVATE NORMS OF EVALUATION

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https://doi.org/10.29038/2220-7481-2018-03-63-72

Abstracts

The article is devoted to the topic of the study of the peculiarities of the preparedness of the students of 5–6 grades of the secondary school and the modern approaches to its evaluation. ***Relevance of the Research Topic.*** Physical preparedness is one of the factors that characterizes the ability to work, the state of both physical and mental health. The low level of physical preparedness of the growing-up generation is a problem that is inherent in most European countries, including Ukraine. According to the Academy of Medical Sciences of Ukraine, a significant number of students in secondary schools have a low level of health, which to a certain extent is due to insufficient level of their physical fitness. The state of health undergoes appropriate changes in this regard. Leading Ukrainian scientists advise to consider physical preparedness more widely, not limited only to the level of development of motor qualities and the mastery of certain motor activities. They insist on the mandatory consideration of the morpho-functional capabilities of organs and systems of the body, which will allow holistic and projective approach to the somatic formation of personality. ***The purpose of the study*** is to determine the level of physical preparedness of students of 5–6 grades. ***Research Methodology.*** The experiment was attended by 194 children, aged 10–12, of which 90 boys and 104 girls. The research was conducted on the basis of a specialized school № 269 in Kyiv with a profound study of the French language. The following motor tests were used to study the physical preparedness of schoolchildren of grades 5–6: «standing long jump» (speed-power qualities); «Push-up exercises» (strength of the muscles of the arms) for the girl; «Pull-up exercises» for the boys (strength of the muscles of the arms); «Shuttle run 9m x 4» (agility); «Run 30m» (speed quality); «Running 1000 m» (endurance); «Bending forward from sitting position» (flexibility). The strength of the muscles of the hand was measured with the help of a children's hand dynamometer. The data of the researches were subjected to mathematical and statistical processing in order to interpret the results of pedagogical experiments, as it required by similar studies in the field of physical culture and sports. ***Results of Work and Key Conclusions.*** The testing data analysis allows to conclude that the results of the students correspond to sufficient and high levels of competence in accordance with the school program «Physical Culture». (Grades 5–9), as well as the State Testing System of Ukraine. However, in our opinion, certain positions of the State Tests need to be revised, since they are slightly understated. Taking into account the fact that the level of physical fitness is interrelated with the level of somatic health of children, we believe that such «correction» of norms will not promote optimization of physical culture and health work in secondary schools.

Key words: physical preparedness, state of health, 10–12 years old students.

Софія Власова. Особливості фізичної підготовленості учнів 5–6 класів у контексті сучасних норм оцінювання. У статті розкрито тему питання вивчення особливості підготовленості

учнів 5–6 класів загальноосвітньої школи й сучасних підходів до її оцінки. ***Актуальність теми дослідження.*** Фізична підготовленість є одним із чинників, що характеризують працездатність, стан як фізичного, так і психічного здоров'я. Низький рівень фізичної підготовленості підростаючого покоління є проблемою, що притаманна більшості країн Європи, у тому числі Україні. За даними Академії медичних наук України, значна кількість учнів загальноосвітніх шкіл мають низький рівень здоров'я, що певною мірою зумовлене недостатнім рівнем їхньої фізичної підготовленості. Відповідних змін у зв'язку з цим зазнає стан здоров'я. Провідні українські науковці фізичну підготовленість радять розглядати ширше, не обмежуючись лише рівнем розвитку рухових якостей та опануванням певних рухових дій. Вони наполягають на обов'язковому врахуванні морфофункціональних можливостей органів і систем організму, що дасть змогу цілісно й проекційно підходити до соматичного формування особистості. ***Мета дослідження*** – визначити рівень фізичної підготовленості учнів 5–6 класів ЗОШ м. Києва. ***Методологія дослідження.*** В експерименті взяли участь 194 дитини, 10–12-річного віку, із них 90 – хлопчики і 104 – дівчаток. Дослідження проводили на базі спеціалізованої школи № 269 м. Києва з поглибленим вивченням французької мови. Для дослідження фізичної підготовленості школярів 5–6 класів застосовано такі рухові тести, як «стрибок у довжину з місця» (швидкісно-силові якості); «згинання-розгинання рук в упорі лежачи» (сила м'язів рук) дівчата; «підтягування у висі» хлопці (сила м'язів рук); «човниковий біг 4х9 м» (спритність); «біг 30 м» (швидкісні якості); «біг 1000 м» (витривалість); «нахил тулуба вперед із положення сидячи» (гнучкість). Силу м'язів кисті вимірювали за допомогою дитячого кистьового динамометра. Результати досліджень піддано математично-статистичній обробці з метою інтерпретації результатів педагогічних експериментів, як того вимагають подібні дослідження в галузі фізичної культури й спорту. ***Результати роботи та ключові висновки.*** Аналіз отриманих результатів тестування дав підставу зробити висновки про те, що результати учнів відповідають достатньому й високому рівням компетентності згідно з навчальною програмою «Фізична культура. (5–9 клас)», а також Державною системою тестів України. Проте, на нашу думку, певні позиції Державних тестів потребують перегляду, оскільки є дещо заниженими. Ураховуючи той факт, що рівень фізичної підготовленості взаємопов'язаний із рівнем соматичного здоров'я дітей, уважаємо, що така «корекція» нормативів не буде сприяти оптимізації фізкультурно-оздоровчої роботи у ЗОШ.

Ключові слова: фізична підготовленість, стан здоров'я, учні 10–12 років.

София Власова. Особенности физической подготовленности учащихся 5–6 классов в контексте современных норм оценивания. В статье раскрывается тема вопроса изучения особенностей подготовленности учеников 5–6 классов общеобразовательной школы и современных подходов к ее оценке. ***Актуальность темы исследования.*** Физическая подготовленность является одним из факторов, характеризующих работоспособность, состояние как физического, так и психического здоровья. Низкий уровень физической подготовленности подрастающего поколения является проблемой, присущей большинству стран Европы, в том числе Украине. По данным Академии медицинских наук Украины, значительное количество учеников общеобразовательных школ имеют низкий уровень здоровья, в определенной мере, это обусловлено недостаточным уровнем их физической подготовленности. Соответствующие изменения в связи с этим испытывает состояние здоровья. Ведущие украинские ученые физическую подготовленность советуют рассматривать шире, не ограничиваясь только уровнем развития двигательных качеств и овладением определенными двигательными действиями. Они настаивают на обязательном учете морфо-функциональных возможностей органов и систем организма, что позволит целостно и проекционно подходить к соматическому формированию личности. ***Цель исследования*** – определить уровень физической подготовленности учеников 5–6 классов ООШ г. Киева. ***Методология исследования.*** В эксперименте приняли участие 194 человека, 10–12-летнего возраста, из них 90 мальчики и 104 – девочки. Исследование проводилось на базе школы № 269 г. Киева с углубленным изучением французского языка. Для исследования физической подготовленности школьников 5–6 классов использованы следующие двигательные тесты: «прыжок в длину с места» (скоростно-силовые качества); «сгибание-разгибание рук в упоре лежа» (сила мышц рук) девушки; «подтягивание в висе» ребята (сила мышц рук) «челночный бег 4х9 м» (ловкость)

«бег 30 м» (скоростные качества); «бег 1000 м» (выносливость) «наклон туловища вперед из положения сидя» (гибкость). Силу мышц кисти измеряли при помощи детского кистевого динамометра. Результаты исследований подвергнуты математически-статистической обработке с целью интерпретации результатов педагогических экспериментов, как того требуют подобные исследования в области физической культуры и спорта. ***Результаты работы и ключевые выводы.*** Анализ полученных результатов тестирования позволил сделать выводы о том, что результаты учащихся соответствуют достаточному и высокому уровням компетентности соответственно учебной программе «Физическая культура (5–9 класс)», а также Государственной системе тестов Украины. Однако, по нашему мнению, определенные позиции государственных тестов требуют пересмотра, поскольку они несколько занижены. Учитывая тот факт, что уровень физической подготовленности взаимосвязан с уровнем соматического здоровья детей, считаем, что такая «коррекция» норматив не будет способствовать оптимизации физкультурно-оздоровительной работы в ООШ.

Ключевые слова: физическая подготовленность, состояние здоровья, ученики 10–12 лет.

Introduction. Physical preparedness is one of the factors that is the result of human motor activity, its integral indicator that characterizes the state of both physical and mental health [2; 4; 7; 11].

The low level of physical preparedness of the growing up generation is a problem that is widely spread in most European countries, including Ukraine. According to the Simple Random Sampling, conducted by the Ukrainian Academy of Medical Sciences, 36.4% secondary school students have a very low level of physical preparedness, 33.5% have below average level of preparedness, 22.6% - average level, 6.7% – above average level and only 0.8% have the high level of preparedness [14].

In the works of many authors (V. Kashuba, 2016; N. Moskalenko, 2014, N. Pangelev, 2017, etc.) the causes of low level of health and physical preparedness of young generation are studied. Thereby, the studies show that people's health is more than 50% dependent on the lifestyle, 20% – on the environment, 20% – on the inheritance and 10% – on the health system [10; 14; 17].

The negative effect of children's health and socio-psychological factors are: tobacco addiction in 71% of families, where the father smokes and in 6.1% of families, where the mother smokes; bad living conditions; medical and social factors of demography; irresponsible parental attitudes towards children [14; 21].

The motor activity investigations conducted by O. Yaremenko Ukrainian Institute of Sociological Studies show that more than 50% of children practiced physical activity only up to 30 or 60 minutes within a week. Besides, the physical activity of girls is 2-4 times lower than the physical activity of boys. Although it is known that the adaptive changes of children`s organism happen in conditions of at least 15-16-hour special oriented activity per week [9]. Such an approach and the children`s attitude to motor activity worsens their health and causes some of chronic pathologies.

Foreign experts claim that for today's children and teenagers there is a steady negative tendency in their level of physical preparedness. It is influenced by an era, external factors of the modern life-style (informatization, addiction to gadgets, computer games, etc.). O. Bar-Or, T. Rowland state that «the low level of physical preparedness also leads to hypoactivity, and that becomes a part of a closed circle» [1; 25].

Ukrainian scholars T. Krutsevych [12], Y. Prystupa [18] suggest that the physical preparedness should be investigated more broadly, not just limiting by the level of the motor qualities development and the mastery of certain motor actions. They insist on the consideration of the morpho-functional capabilities of organs and systems of the body, which will allow in a holistic and an projective way observe the formation of the physical health of the individual.

The statements given above provided by the expediency of the physical preparedness studying in of 5-6 grades students. For this purpose pedagogical testing was used, the results of which testified the level of the physical qualities development.

Physical preparedness of the 5-6 grades students was determined by the results of pedagogical testing, which state the level of the basic physical abilities development – speed, strength, dexterity, flexibility and endurance.

Physical preparedness, basically, is evaluated on the basis of absolute indicators, the percentage of compliance with the requirements, norms or by setting differentiated assessments for the implementation of educational norms or scored points.

The purpose of the research is to set the level of physical preparedness of the 5-6 grades students in Kyiv.

Materials and methods of research:

Participants: 194 10-11 years old students of 5-6 grades, including 90 boys and 104 girls participated in the experiment. An approval to participation in this experiment was agreed with the students beforehand.

The research organisation: the study was conducted on the basis of a specialized school № 269 with a profound study of the French language in Kyiv. The following motor tests (traditional control exercises) that met the regulatory requirements and testing conditions were used to study the physical preparedness of the 5-6 grades students: The standing broad jump (speed power qualities); Flexion extension arms in emphasis lying (the strength of the arm muscles) for girls; The front lever (the strength of the arm muscles) for boys; Shuttle run 9 x 4m (agility); 30-m running speed test (speed quality); 1000m running test (endurance); A *forward tilted sitting position* (flexibility). The strength of the hand muscles was measured with the help of a hand dynamometer.

Statistical analysis. The results of the research were subjected to the mathematical and statistical processing in order to interpret the results of pedagogical experiments, as required by the similar studies in the field of physical culture and sports [8; 24]. The following mathematical procedures were carried out:

– estimation and characteristics of the various parameter series of different age and gender groups, control and experimental representatives, namely – an arithmetic sequence ($\overline{x}$),the root-mean-square deviation (S). The rates of an increment of the result were calculated according to the Brody index:

$IB = \frac{100(V2-V1)}{0,5(V1+V2)}$ in which:

V1 is the initial result,

V2 is the end result.

The method of mathematical and statistical processing of the obtained research results was carried out with the help of MS Excel and «Statistica 6.0», which allowed to conduct a measurement analysis and the calculation of baseline values.

The justification of the results obtained: The level of physical preparedness of 5-6 grades students was determined by the comparison of the testing results with the normative indicators, which are presented in the curriculum «Physical Education (for 5-9 grades students)» (approved by the decree of the Ministry of Education and Science of Ukraine dated by 23.10.2017 № 1407), as well as by the Ukraine State test system [15; 23].

Table 1

The statics indicator of 5–6 grades students` physical preparedness

Motor test	Statistical characteristics	The value of statistical indicators			
		boys		girls	
		The 5–th grade n = 46	The 6–th grade n = 44	The 5–th grade n = 51	The 6–th grade n = 53
30–m running speed test, sec	$\overline{X}$	5,70	5,53	6.23	6.25
	min	5,0	4,9	5.5	5,4
	max	6,9	6,9	7.2	7,4
	S	0,39	0,50	4.58	0,45

End of the Table 1

1000–m running speed test, min,sec	$\bar{X}$	4,92	4,93	5.78	5,59
	min	4,3	4,2	5.1	4,5
	max	5,5	5,4	7.2	7,1
	S	0,41	0,40	0.56	0,64
Shuttle run 4x9, sec	$\bar{X}$	10,8	10,6	10.9	10,9
	min	9,8	9,7	10.3	10,0
	max	11,8	11,6	12.3	12,1
	S	0,46	0,50	0.47	0,54
The standing long jump, m	$\bar{X}$	169,61	172,64	148.47	151,68
	min	140,0	150,0	132	135,0
	max	200,0	210,0	171	175,0
	S	11,87	13,66	10.53	11,23
Flexion–extension arms in emphasis lying, the number of times	$\bar{X}$	15,30	17,18	5.55	8,13
	min	8,0	10,0	2	3,0
	max	25,0	27,0	12	18,0
	S	4,56	3,65	2.17	3,39
The front lever, the number of times	$\bar{X}$	4,98	5,59	11.8	16,38
	min	0	2,0	4	6,0
	max	15,0	15,0	18	30,0
	S	3,38	2,85	3.87	6,13
Torso forward from the sitting position, cm	$\bar{X}$	4,02	4,86	9.88	10,92
	min	2,0	2,0	5	5,0
	max	8,0	9,0	15	16,0
	S	1,39	1,79	2.36	3,64

End of the Table 1

Hand grip strength (right hand), kg	$\bar{X}$	15,75	18,58	13.45	16,85
	min	13,1	14,2	9.8	10,7
	max	19,5	23,1	18	24,1
	S	1,62	2,29	2.26	2,84
Hand grip strength (left hand), kg	$\bar{X}$	14,87	17,65	12.57	15,89
	min	12,0	13,0	8.7	10,0
	max	18,1	22,1	17.1	23,6
	S	1,69	2,27	2.25	2,87

Test results correspond to the speed of a sufficient level of competence and suggest that boys have the slight growth rate (3%). Due to the beginning of the puberty period of girls, which is characterized by an imbalance in the functioning of the organism, the result desire to be much better (–0,3%) (Table 2).

Table 2

The growth rates indicators of physical fitness in 5–6 grades students

Motor test	**Competence**	**An increment, %**	
		boys	**girls**
		5–th— 6–th grade	**5–th— 6–th grade**
Running 30 m	The speed development	3	–0,3
Running 1000 m	An endurance development	–0,2	3,3
Shuttle run 4x9 m	Agility	1,3	0,3
Standing long jump, cm	The speed–strenghts development	1,8	2,14
Flexion–extension arms in emphasis lying, the number of times	The strengths development	11,6	37,7
The front lever, the number of times	The strengths development	11,5	32,5
Torso forward from the sitting position, cm	The flexibility development	18,9	10
Hand grip strength (right hand), kg	The strength of the hand muscles	16,5	22,4
Hand grip strength (left hand), kg	The strength of the hand muscles	17	23,3

The pace of growth in the level of endurance in girls is better than that of boys (3.3% – girls and 0.2 – boys). According to the curriculum of «Physical Education (in 5-9 grades)», this test carries out without any quantitative measurement. The opportunity to overcome the distance is estimated.

Analyzing the results of studies of physical preparedness of schoolchildren in grades 5–6, it should be noted that all indicators showed positive changes in the experimental and control groups, both in girls and boys, but with different rates of their growth.

The indicators of the two endurance tests correspond to a sufficient and high level of competence. The results of the study show that the indicators of the flexion extension arms in emphasis lying and the front lever tests have a significantly higher rate of development in both sex groups, especially in girls (boys – 11.6% and 11.5%, girls – 37.7 % and 32.5%).

The level of the development of the flexibility meets the average and sufficient level according to the Ukrainian State system of tests. Annual growth rate in boys was 18.9%; in girls 10% respectively.

The results of the research indicate a high rate of growth of the right hand muscle strength indicators(boys – 16.5%, girls – 22.4%), as well as the left hand muscle strength (boys – 17%; girls – 23.3%).

Our data do not correspond to the research of L.V. Volkova [4] (Table 3).

Table 3

Age pace of the growth of the physical abilities in schoolchildren of younger age (L.V. Volkova, 2002)

Age	Sex	Physical competences, %			
		The speed–strenghts	Speed	Flexibility	Agility
10 –11	boys	18	7	4	–8
	girls	18	3	3	9

We are curious about comparing our data with the results of professionals, who studied the problem of physical preparedness of pupils of secondary school in various aspects.

N. Hrabyk compares the physical preparedness of modern students of 10-12 years old rural schoolchildren of 10 to 12 years of age with a similar research in 1985. Comparative analysis of the physical preparedness of 10-12 year old students of the village school of the present and their peers in 1985 in the Ternopil region revealed the common tendencies, namely: 1) according to the speed, agility, speed-power capabilities criteria, modern generation students dominate their peers in 1985. This advantage varies in the range of 3.8 – 15.2%; 2) in boys–schoolchildren of the age of 10-12 years in 1985, the strength dynamometers are on the highest level (4,5 – 20,8%); 3) 10-12-year schoolgirls in 1985 dominate modern generation girls by the results of the « standing long jump « test. The advantage rural students today of their peers in 1985 in physical preparedness in most tests may be due to the fact that the students of previous generation started school from the age of 7, and now they start it from the age of 6. Therefore, nowadays, the purposeful process of physical education at school is one year longer [5].

The study of S. Hrytsyliak [6], which was devoted to the study of the dynamics of physical fitness during one year, showed that the level of physical preparedness of younger teens (10-11 years) at the beginning of the school year is lower, compared to the end of the year. That fact indicates a lack of motor activity in the summer. The questionnaire showed that children spent most of their time during the summer holidays playing computer games – 45%. About 22% of children who had spent the time in summer camps, where the planned program for children with diverse entertainments was conducted, received positive emotions and energy from active recreation. 20% of the students were actively involved with the nature by playing sport games with their family and friends. Only 13% of children who did not go to rest at all were left without attention and active rest in the summer.

The research of A. Napadiy [16] also showed that during the summer holidays the level of physical fitness, physical health and well being decreased, which necessitates to look up the physical education curriculum in September to create some favorable conditions for adaptation children`s body to the learning

process and workability. According to the experiment made by V. Pustovalov, Y. Petrenko, O.Menshykh [19], the lowest level indicators of the of development of physical abilities were determined in 11-year old students. Posivive results were obtained during the performance of strengths, speed strenghts activities, that were completed by boys and during the flexibility and endurance activities, made by girls.

Discussion. The results of the students` physical preparedness tests correspond to sufficient and a high level of competence. However, if we compare it with the norms and with the results obtained by the scientists in previous years [4; 13; 14], we will receive a low and average level of preparedness of students.

O. Sainchuk suggested revising the test on flexibility as well as other tests, because the requirements of the same tests abroad are twice simplified [20]. The endurance test does not take into account the time spent on it, therefore it is difficult to assess this ability in students.

V. Pustovalov, Y. Petrenko, O.Menshykh [19] claim that there is a need to improve the modern system of student`s testing and assessing the success of learning. According to experts, the idea of recommending a number of innovative pedagogical control technologies in Ukrainian schools is justified. By the same time that could improve the quality and objectivity of assessing the physical preparedness of students and would increase the motivation to take classes both at physical education lessons and at the free time.

M.V. Stefanyshyn [22] notes that the current assessing system of the physical preparedness of students contradicts the modern and declared requirements of the normative foundations of the physical education system. The contradictions are: 1) the purpose of the pedagogical process and the system of students` achievements assessment; 2) the curriculum inconsistency with the level of physical development; 3) the prevalence of the traditional assessment system of physical abilities and the current need for the application of innovative assessment methods; and other.

Conclusions and prospects of further research. The analysis of the results of the test, made it possible to conclude that the results correspond to sufficient and high levels of competence in accordance with the curriculum «Physical Education» (grades 5-9)», as well as the State Testing System of Ukraine. However, in our opinion, certain positions of the State tests need to be revised, since they are somewhat underestimated. Taking into account the fact that the level of physical preparedness is interrelated with the level of somatic health of children, we believe that such «correction» of norms will not promote optimization of physical culture and health work in secondary schools.

The results obtained are the basis for the development of the innovative project, called «Roller skates: an innovative an innovative health forming branch in physical education».

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Received: 15.05.2018.

UDC 796.015.572:378

IMPROVEMENT OF PHYSICAL FITNESS OF TRANSPORT COLLEGE STUDENTS THROUGH RUNNING

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https://doi.org/10.29038/2220-7481-2018-03-73-77

Abstracts

Aim of the research was to study the influence of running exercises in the aerobic regime of energy supply on the indicators of transport college students' physical preparedness. ***Methods.*** In the course of research, theoretical analysis and generalization of data of scientific and methodological literature, physical fitness tests, methods of mathematical statistics were used. The research was conducted in September 2015 – April 2016, based on the Vinnytsia State Pedagogical University named after Mikhail Kotsiubynsky. The study involved 44 students of the Vinnitsa Transport College of the male sex. Students were divided into two groups of control and main groups. Influence of a 24-week program with running exercises in the aerobic regime of energy supply was studied. Effectiveness of exercises using aerobic exercise in aerobic exercise was studied by their ability to influence the physical fitness of students at the Transport College. It was established that «The curriculum for physical education for higher education institutions of I-II accreditation level» does not lead to the likely positive changes in the physical preparedness of the students of the transport college. ***Conclusions.*** Introduction of running exercises in the aerobic regime of energy supply in the classes of transport college students three times a week improves their general endurance, speed endurance and speed-strength endurance; strength dynamic endurance of lower limb muscles as well as strength static endurance of back muscles, gluteus muscles and posterior thigh. After 24 weeks of classes with running exercises in the aerobic regime of energy supply the students showed a possible increase in the values of general endurance (by 4,35 %), speed endurance (by 3,73 %), strength dynamic endurance of lower limb muscles (by 8,27 %) and static endurance of back muscles, gluteus muscles and posterior thigh (by 5,39 %) ($p<0,05$).

Key words: students, physical preparedness, transport college.

Станіслав Галандзовський, Алла Сулима, Анатолій Корольчук. Покращення показників фізичної підготовленості в студентів транспортного коледжу шляхом використання бігових навантажень. ***Мета роботи*** – дослідження впливу бігових навантажень в аеробному режимі енергозабезпечення на показники фізичної підготовленості студентів транспортного коледжу. ***Методи дослідження.*** У праці використовували теоретичний аналіз й узагальнення даних науково-методичної літератури, тестування фізичної підготовленості, методи математичної статистики. Дослідження проводили у вересні 2015 – квітні 2016 р. на базі Вінницького державного педагогічного університету імені Михайла Коцюбинського. У дослідженні брали участь 44 студенти Вінницького транспортного коледжу чоловічої статі. Студентів розділили на дві групи – контрольну та основну. Досліджено вплив 24-тижневої програми з використанням бігових навантажень в аеробному режимі енергозабезпечення. Ефективність занять із використанням бігових навантажень в аеробному режимі енергозабезпечення вивчали за їх здатністю впливати на фізичну підготовленість студентів транспортного коледжу. Установлено, що «Навчальна програма з фізичного виховання для вищих навчальних закладів I–II рівня акредитації» не спричиняє вірогідних позитивних змін фізичної підготовленості студентів транспортного коледжу. ***Висновки.*** Застосування у фізичному вихованні студентів транспортного коледжу занять періодичністю три рази на тиждень, які включають бігові навантаження в аеробному режимі енергозабезпечення, покращують показники загальної, швидкісної й швидкісно-силової витривалості; силової динамічної витривалості м'язів ніг; силової статичної витривалості м'язів спини, сідничних м'язів і м'язів задньої поверхні стегна. Під впливом занять, у яких використовували бігові навантаження в аеробному режимі енергозабезпечення, через 24 тижні у студентів достовірно зросли загальна витривалість (на 4,35 %), швидкісна витривалість (на 3,73 %), силова динамічна витривалість м'язів ніг (на 8,27 %) і статична витривалість м'язів спини, сідничних м'язів та м'язів задньої поверхні стегна (на 5,39 %) ($p<0,05$).

Ключові слова: студенти, фізична підготовленість, транспортний коледж.

Станислав Галандзовський, Алла Сулима, Анатолий Корольчук. Улучшение показателей физической подготовленности студентов транспортного колледжа путем использования беговых нагрузок. ***Цель работы*** – исследование влияния беговых нагрузок в аэробном режиме энергообеспечения на показатели физической подготовленности студентов транспортного колледжа. ***Методы исследования.*** В научной разведке

использовали теоретический анализ и обобщение данных научно-методической литературы, тестирование физической подготовленности, методы математической статистики. Исследование проводили в сентябре 2015 – апреле 2016 на базе Винницкого государственного педагогического университета имени Михаила Коцюбинского. В исследовании участвовали 44 студента мужского пола Винницкого транспортного колледжа. Студентов разделили на две группы – контрольную и основную. Исследовали влияние 24-недельной программы с использованием беговых нагрузок в аэробном режиме энергообеспечения. Эффективность занятий с использованием беговых нагрузок в аэробном режиме энергообеспечения изучали по их способности влиять на физическую подготовленность студентов транспортного колледжа. Установлено, что «Учебная программа по физическому воспитанию для высших учебных заведений I–II уровней аккредитации» не вызывает достоверных положительных изменений физической подготовленности студентов транспортного колледжа. ***Выводи.*** Применение в физическом воспитании студентов транспортного колледжа занятий периодичностью три раза в неделю, включающих беговые нагрузки в аэробном режиме энергообеспечения, улучшают показатели общей, скоростной и скоростно-силовой выносливости; силовой динамической выносливости мышц ног; силовой статической выносливости мышц спины, ягодичных мышц и мышц задней поверхности бедра. Под влиянием занятий, в которых использовались беговые нагрузки в аэробном режиме энергообеспечения, через 24 недели у студентов достоверно увеличились общая выносливость (на 4,35 %), скоростная выносливость (на 3,73 %), силовая динамическая выносливость мышц ног (на 8,27 %) и статическая выносливость мышц спины, ягодичных мышц и мышц задней поверхности бедра (на 5,39 %) ($p < 0,05$).

Ключевые слова: студенты, физическая подготовленность, транспортный колледж.

A problem statement. Analysis of recent research and publications. Much attention to addressing different problems in physical education of students of working specialties is paid in both domestic and foreign literature. It is explained by the fact that there are some disagreements between the aims of physical education, physical fitness of youth and real needs of students of working specialties [1].

Particularly, traditional methods and means of physical education have a special place in educational programs of physical training for students of different professional training directions. In addition, real students' needs connected with entering their future profession are not taken into consideration [1; 2]

Analysis of students' physical indicators over the last years demonstrates insufficient level of adaptive abilities, which is blamed on the lack of motor activity. High schools of I-II accreditation studying is getting more difficult in content as well as form; at the beginning of studies most students experience social problems, among which adaptation to the studying process plays a significant role [1; 3]. Intensification of academic process as well as financial need to combine studying and work has a negative influence on adaptive abilities. Therefore, there must be reforms through introduction of new studying models and technologies, improvement of educational plans as well as programs, evaluation criteria in the educational system of high schools, which prepare different working specialists [4].

Analysis of scientific methodical literature points out that the problem of adaptation of students in high schools of I-II accreditation to the studying process is hugely highlighted, in addition, the number of scientific publications on this topic is limited, and the existing facts are controversial [1; 4]

A special feature of transport college students' adaptation to the studying process is that a student needs to learn both humanitarian subjects and special subjects of vocational orientation [4; 5].

Adaptation to the special subjects of vocational orientation requires of students to increase their level of physical and functional preparedness in the process of studying, performing hard physical work in the aerobic and anaerobic regimes of energy supply. In order to enhance aerobic processes of energy supply, physical exercises different in content and form, as well as methodologies encouraging improvement of adaptation are used. The results of scientific researches show that doing running exercises positively influences on physical and functional preparedness of different age groups [6; 7; 8; 9].

Ways of developing adaptive abilities of transport college students in the course of studying are not examined enough. Thus, this research is topical aiming at improving the effectiveness of transport college students' physical preparedness.

Aim of the research is to study the influence of running exercises in the aerobic regime of energy supply on the indicators of transport college students' physical preparedness.

Task objects are:

1. To study general transport college students' physical preparedness according to the test results;
2. To evaluate the results of influence of running exercise program on the indicators of physical preparedness.

Research organization. The research was conducted in September 2015-April 2016 in the Vinnytsia State Pedagogical University named after Mykhailo Kotsiubynskii. It involved 44 male students of the Vinnytsia transport college. The students were divided into 2 groups – a control group (CG) and a main group (MG), including 22 boys each.

Research methods: theoretical analysis and generalisation of scientific-methodical literature, examination of physical preparedness, methods of mathematic statistics.

In order to ensure comprehensive examination of physical preparedness we studied: speed based on the results of 30-metre dash after walking; speed endurance based on the results of 100-metre dash; general endurance based on the results of 3000-meter run; strength static endurance of back muscles, gluteus muscles, and posterior thigh through holding until refusing while lying on the belly (parachutist position); strength dynamic endurance of shoulder girdle muscles and lower limbs while pulling up on a pull-up bar and squatting without a rack; speed-strength endurance through bent-knee sit-ups in 1 min from the position of lying on the back arms behind the head ; bending muscle strength of fingers through hand-held dynamometry; explosion power through standing long jumps; agility through 4x9 m shuttle-run test; active flexibility through ability to do seated forward bends. For this purpose we used tests on «Studying Program of Physical Education For High Schools Of I-II Accreditation» [10], supplemented with tests to define speed, bending muscle strength of fingers, gluteus muscles and posterior thigh, strength dynamic endurance of lower limbs.

Research results: The effectiveness of running exercises in the aerobic regime of energy supply was studied in terms of their ability to influence on transport college students' physical preparedness.

Mean values of physical preparedness recorded before exercising in CG and MG students didn't differ significantly ($p>0,05$).

Classes conducted according to the typical program of physical education during the whole forming experiment (24 weeks) didn't cause significant changes in general physical preparedness of CG students. (See Table 1).

Table 1

Influence of classes with running exercises in the aerobic regime of energy supply on physical preparedness of CG students aged 15-16 (n=22)

Tests	Mean value, $\bar{x}\pm S$			
	before exercising	after 8 weeks	after 16 weeks	after 24 weeks
30 m run with standing start, sec	5,05±0,09	5,01±0,09	4,95±0,09	4,9±0,09
100 m run, sec	16,08±0,25	15,96±0,25	15,9±0,25	15,85±0,25
3000 m run, min	15,36±0,11	15,35±0,11	15,34±0,11	15,35±0,11
4x9 shuttle run test m, sec	10,36±0,09	10,31±0,1	10,29±0,1	10,27±0,1
Hand-held dynamometry, kg	44,41±1,66	45,00±1,43	45,41±1,37	45,45±1,14
Standing long jump, cm	202,73±3,83	202,91±3,71	203,23±3,66	203,55±3,77
Bent-knee sit-ups in 1 min from the position of lying on the back arms behind the head, times	35,68±1,49	35,68±1,54	35,91±1,54	36,00±1,66
Active flexibility, cm	7,64±0,74	7,73±0,74	7,73±0,86	7,68±0,86
Pull-ups, times	8±0,69	8,27±0,69	8,36±0,8	8,55±0,86
Squats, times	73,82±2,17	74,05±1,94	74,41±2	74,36±1,94
Holding until refusing while lying on the belly (parachutist position), sec	55,55±1,03	56,41±1,03	56,41±1,09	56,86±1,09

No significant changes were noticed in the general physical preparedness of MG students after 16 weeks of doing running exercises in the aerobic regime of energy supply. But there was a clear tendency for improvement of speed endurance, general endurance and speed-strength endurance, that was absent at MG students (See Table 2).

Table 2

Influence of classes with running exercises in the aerobic regime of energy supply on physical preparedness of MG students aged 15–16 (n=22)

Tests	Mean value, $\bar{x}$±S			
	before exercising	after 8 weeks	after 16 weeks	after 24 weeks
30 m run with standing start, sec	5,28±0,02	5,25±0,02	5,24±0,02	5,23±0,02
100 m run, sec	15,58±0,16	15,34±0,19	15,14±0,19	15,02±0,19*
3000 m run, min	15,23±0,13	15,14±0,13	14,57±0,14	14,44±0,14*
4x9 shuttle run test m, sec	10,45±0,1	10,43±0,1	10,43±0,1	10,21±0,16
Hand-held dynamometry, kg	49,59±1,2	50,82±1,14	50,59±1,03	50,09±0,91
Standing long jump, cm	207±3,66	207,27±3,71	207,55±3,71	207,82±3,77
Bent-knee sit-ups in 1 min from the position of lying on the back arms behind the head, times	33,64±1,54	34,55±1,43	36,41±1,37	38,45±1,43*
Active flexibility, cm	7,77±0,74	8,18±0,8	7,82±0,86	7,82±0,86
Pull-ups, times	7,95±0,46	8,32±0,46	8,55±0,46	8,36±0,46
Squats, times	75,55±2,46	77±2,4	78,64±2,34	82,36±2,29*
Holding until refusing while lying on the belly (parachutist position), sec	57,41±0,97	58,05±1,03	58,59±1,03	60,68±0,97*

Notes. *Possible difference in the value compared to the value recorded at the beginning of the forming experiment: * – $p<0,05$.*

The research showed that MG students' time of 100 m run after 24 weeks of doing running exercises in the aerobic regime of energy supply decreased by 3,73% ($p<0,05$). After 24 weeks of running exercises in the aerobic regime of energy supply general endurance of MG students possibly increased by 4,35%. In addition, after the forming research, strength dynamic endurance of leg muscles and strength static endurance of back muscles, gluteus muscles and posterior thigh possibly increased by 8,27% and 5,39 % ($p<0,05$) accordingly (See Table 1.2).

Conclusions.

1. Analysis of scientific-methodical literature proves introduction of new technologies in the process of practical-professional physical preparedness of transport college students with the purpose of improving professionally significant physical traits, working skills as well as skills of future railway specialists to be relevant.

2. Usage of running exercises in the aerobic regime of energy supply during the training session of transport college students encourages improving their effectiveness which is shown through the possible increase in the values of general endurance, strength dynamic endurance of lower limb muscles as well as strength static endurance of back muscles, gluteus muscles and posterior thigh.

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Received: 06.05.2018.

UDC 796.015:612.017-053.5

IMPACT OF SYSTEMATIC PHYSICAL EXERTION ON MORPHO-FUNCTIONAL DEVELOPMENT OF SCHOOLCHILDREN

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https://doi.org/10.29038/2220-7481-2018-03-78-85

Abstracts

Topicality. The problem of children health retention and enhancement attracts more and more attention of experts from different spheres. Significant negative changes in the health state and morpho-functional development of schoolchildren that were observed during the recent years, on the one hand, are connected with the growth of studying exertion on the background of considerable breach of study and educational process organization conditions, on the other hand, with the decline in children organism functional reserves, on which the level of children organism adaptive resources depends. Among the chain of reasons causing increase in functional disorders and diseases of schoolchildren the insufficient movement activity takes the leading place. ***The objective of the research*** – to study the impact of systematic physical exertion on the morpho-functional development of senior schoolchidren.132 pupils of the 10–11 forms took part in the investigation (age group from 16 to 18 years old) participated in the research, including boys – 65 pupils, girls – 67 pupils. The whole contingent of the teenagers was divided by their age, gender and amount of movement regime. The first group included the pupils with low movement activity, who attended 2 Physical Training lessons at a comprehensive school. The second group (high movement regime) comprised teenager sportsmen, who played sports (basketball) 10–12 hours a week, with the prevailing development of organism aerobic resources. The pupils referred to the 1st and 2nd health groups and those who do not have chronic diseases as well as those who had not been ill for two weeks before the investigation were examined. ***Results.*** It was determined that the level of physical development, functional state of teenager organism are influenced by the amount of movement regime. It was revealed that boys and girls who go in for sport are characterized by a higher level of physical development and functional reserves. The teenagers that attend only Physical Training classes at a comprehensive school turned out to have a low level of physical development. The results of the research make it possible to predict the stages of the ultimate formation of children organism somatic and physiological rates, to facilitate more objective assessment of the functional state of organism vital systems.

Key words: morphofunctional development, schoolchildren, physical exertion, sportsmen.

Евеліна Жигульова, Іван Стасюк. Вплив систематичних фізичних навантажень на морфо-функціональний розвиток школярів. ***Актуальність.*** Проблема збереження й зміцнення здоров'я дітей привертає до себе все більше уваги фахівців різних галузей. Значні негативні зрушення в стані здоров'я та морфофункціонального розвитку школярів, які спостерігаються протягом останніх років, з одного боку, пов'язані зі зростанням навчального навантаження на фоні значних порушень умов навчання та організації навчально-виховного процесу, а з іншого – зниженням функціональних резервів організму дітей, від яких залежить рівень адаптаційних можливостей організму дитини. Серед низки причин підвищення функціональних розладів та захворюваності дітей шкільного віку недостатня рухова активність посідає чільне місце. ***Мета дослідження –*** вивчити вплив систематичних фізичних навантажень на морфофункціональний розвиток дітей старшого шкільного віку. У дослідженні взяли участь 132 учня 10–11 класів (вікова група від 16 до 18 років), у тому числі 65 хлопців, 67 дівчат. Весь контингент підлітків розподілили за віком, статтю та об'ємом рухового режиму. До першої групи увійшли учні з низькою руховою активністю, які відвідували два уроки фізичної культури в загальноосвітній школі. Другу групу (високий руховий режим) склали підлітки-спортсмени, які займалися 10–12 годин на тиждень ігровими видами спорту (баскетбол) із переважним розвитком аеробних можливостей організму. Обстежувались учні, віднесені до 1- та 2-ї груп здоров'я, які не мають хронічних хвороб та які в останні два тижня перед дослідженням не хворіли. ***Результати роботи.*** Установлено, що на рівень фізичного розвитку, функціонального стану організму підлітків впливає величина рухового режиму. Виявлено, що в юнаків і дівчат, котрі займаються спортом, спостерігали найвищий рівень фізичного розвитку та функціональних резервів. У підлітків, які відвідують лише уроки фізичної культури в загальноосвітній школі, виявлено низький рівень фізичного розвитку. Результати дослідження дають змогу прогнозувати етапи кінцевого становлення сомато-фізіологічних показників організму дітей, сприяють більш об'єктивній оцінці функціонального стану життєво важливих систем організму.

Ключові слова: морфофункціональний розвиток, школярі, фізичні навантаження, спортсмени.

Эвелина Жигулѐва, Иван Стасюк. Влияние систематических физических нагрузок на морфо-функциональное развитие школьников. ***Актуальность.*** Проблема сохранения и укрепления здоровья детей привлекает к себе все больше внимания специалистов различных отраслей. Значительные негативные сдвиги в состоянии здоровья и морфофункциональном развитии школьников, наблюдаемых в последние годы, с одной стороны, связаны с ростом учебной нагрузки на фоне значительных нарушений условий обучения и организации учебно-воспитательного процесса, а с другой – снижением функциональных резервов организма детей, от которых зависит уровень адаптационных возможностей организма ребенка. Среди ряда причин повышения функциональных расстройств и заболеваемости детей школьного возраста недостаточная двигательная активность занимает ведущее место. ***Цель исследования*** – изучить влияние систематических физических нагрузок на морфофункциональное развитие детей старшего школьного возраста. В исследовании приняли участие 132 ученика 10–11 классов (возрастная группа – от 16 до 18 лет), в том числе 65 юношей, 67 девушек. Весь контингент подростков распределили по возрасту, полу и объему двигательного режима. В первую группу вошли ученики с низкой двигательной активностью, которые посещали два урока физической культуры в общеобразовательной школе. Вторую группу (высокий двигательный режим) составили подростки-спортсмены, которые занимались 10–12 часов в неделю игровыми видами спорта (баскетбол) с преимущественным развитием аэробных возможностей организма. Иследовались ученики, отнесенные к 1- и 2-й группам здоровья, которые не имеют хронических болезней и которые в последние две недели перед исследованием не болели. ***Результаты работы.*** Установлено, что на уровень физического развития, функционального состояния организма подростков влияет величина двигательного режима. Выявлено, что у юношей и девушек, которые занимаются спортом, наблюдается высокий уровень физического развития и функциональных резервов. У подростков, посещающих только уроки физической культуры в общеобразовательной школе, выявлен низкий уровень физического развития. Результаты исследования позволяют прогнозировать этапы конечного становления сомато-физиологических показателей организма детей, способствуют более объективной оценке функционального состояния жизненно важных систем организма.

Ключевые слова: морфофункциональное развитие, школьники, физические нагрузки, спортсмены.

Introduction. Human health is a leading priority of modern society, its retention is one of the basic functions of such society institutions as medicine, sport, recreation and leisure. The strategy of health retention is reflected in regulatory legal and methodological documents that regulate the development of education, physical education, sport and health care in Ukraine. However, the practical realization of such strategy is complicated by the whole system of social economic, organizational governing and cultural factors [1; 3; 4].

The statistics and sociological study data of the state of population health, life and health culture in Ukraine excite serious anxiety of experts. The increase in death rate due to the rise in disease incidence and disability, low birth rates, depopulation, extension of deviant forms of behavior with health risks become destructive manifestations and consequences of those social transformations which the Ukrainian society has endured during the recent decades [4].

The biggest anxiety is caused by the abrupt worsening of children health characteristics, which have been noted during the recent years. Thus the problem of children and adolescents` health retention and enhancement attracts more and more attention of doctors, educators, sociologists. Herewith chronic pathology growth paces among adolescents at the age of 15-18 are 1.5-2 times higher as those of the children before 14 years old. Such negative peculiarities of the modern educational process as increase of static exertion, restriction of pupils` locomotion on the background of educational activity intensification lead to the development of untimely tiredness and stressful states for schoolchildren, tension of their organism adaptive mechanisms and, as a result, to the worsening of children health state [5;6].

There are such negative tendencies noted in children morpho-functional development as the inhibition of growth and puberty of 1/3 boys and girls, decrease of lung capacity (by 15%), hand muscle strength (by 18%) [4]. It is indicated that significant negative changes in the health state and morphofunctional development of schoolchildren that were observed during the recent years, on the one hand, are connected with the growth of studying exertion on the background of considerable breach of study and educational process organization conditions, on the other hand, with the decline of functional reserves in children organism, on which the level of children organism adaptive resources depends [2; 3; 5; 7].

It is generally recognized that one of the most important factors of disease risk is hypokinesia which causes health level decline and a whole range of pre-pathologic states [1; 3; 5]. Among the reasons for the increase of functional disorders and disease incidence of schoolchildren insufficient movement activity

occupies the leading place. The extension of hypokinesia among the pupils of comprehensive schools reaches 60-80% [3].

In childhood and adolescence and in the period of physical and psychic formation hypokinesia plays a considerably negative role, because at such stage of development the biological significance of locomotion is enormous. With the efficient movement regime the child individual development shifts to a higher level within its genetic program [5; 6]. Therefore, the natural stimulation of growth and development processes takes place, studying of which has not only theoretical importance for the age physiology but exclusively practical – health retention of rising generation as the reserve of the most important component of manufacturing forces – working population.

In the presence of a large number of publications on the regularities of organism growth at different ontogenesis age stages the problem of formation, retention and assessment of individual health still remains also urgent today.

The research aim is to study the impact of systematic physical exertions on morpho-functional development of senior schoolchildren.

The materials and methods of the research. 132 pupils of the 10-11 forms (age group of 16-18 years) participated in the research, including 65 male and 67 female pupils. All the contingent of adolescents was divided by age, gender and amount of movement regime. The first group included the pupils with low movement activity, who attended 2 Physical Training lessons at a comprehensive school. The second group (high movement regime) comprised adolescent athletes, who did sports (basketball) 10-12 hours a week, with the prevailing development of organism aerobic resources. The pupils referred to the 1st and 2nd health groups and those who doesn`t have chronic diseases as well as those who had not been ill for two weeks before the investigation were examined.

The methods of the research. Theoretical methods: synthesis and generalization of literature sources. While investigating the peculiarities of senior schoolchildren morpho-functional development were evaluated on the basis of measuring somatic and physiological rates. The reaction of children organism physiological systems in the conditions of life activity was determined by means of functional tests; statistical methods of analysis.

The results of the research. Discussion. Taking into consideration the fact that one of the most sensitive and objective evidences of children population health state is physical development, and the processes of child growth and development are closely related to an individual way of life, we carried out the morphological and functional evaluation of the 16-18-year-olds' organism adaptation to different movement regimes.

It was determined that the morpho-functional indices within one age and gender group were quite variable. The basis of somatometric methods of human physical development is comprised by the body morphological parameters: height, body weight, chest girth. Our study of anthropometric indices of boy and girl bodies found out age and intergroup differences, which are represented bellow (See Table 1). The received data determined that at the age of 16-18 years the boys' body height of both groups increases by more than 7 cm and the girls' – by 5-7 cm.

Table 1

Anthropometric indices of boys and girls with different levels of locomotion

Age, years	Boys (n=31)		Male athletes (n=34)	
	M±m	δ	M±m	δ
Body height, cm				
16	165.23 ±0.49	3.62	168.36 ±0.51*	3.86
17	169.48 ±0.54	3.84	172.28 ±0.62*	4.11
18	172.52 ±0.68	4.12	175.41 ±0.74*	4.38
Body weight, kg				
16	61.41 ±0.36	2.11	64.32 ±0.41*	2.34
17	64.36 ±0.45	2.38	67.18 ±0.52*	2.46
18	67.51 ±0.64	2.61	70.45 ±0.68*	2.72
Chest girth, cm				
16	82.16 ±0.44	2.58	84.24 ±0.38	2.81
17	84.31 ±0.61	2.66	87.31 ±0.46*	2.94
18	87.45 ±0.65	2.71	90.52 ±0.58*	3.22

End of the Table 1

Age, years	Girls (n =35)		Female athletes (n =32)	
	M±m	δ	M±m	δ
Body height, cm				
16	164.31 ±0.47	3.61	165.61 ±0.49	3.75
17	167.26 ±0.52	3.88	168.32 ±0.54	3.96
18	169.15 ±0.63	4.11	172.18 ±0.66**	4.25
Body weight, kg				
16	58.42 ±0.35	2.06	60.22 ±0.42**	2.42
17	61.31 ±0.43	2.41	64.38 ±0.51**	2.57
18	64.16 ±0.61	2.56	68.17 ±0.62**	2.62
Chest girth, cm				
16	79.26 ±0.65	2.51	81.26 ±0.72	2.67
17	82.45 ±0.76	2.68	84.38 ±0.79	2.78
18	84.37 ±0.81	2.76	87.25 ±0.88**	2.85

Notes: **– the relevance of the differences in comparison with the results of the boys group (p<0,05); ** – the relevance of the differences in comparison with the results of the girls group (p<0,05).*

It should be noted that the male athletes' body height is characterized by higher indices in all age groups. So, if the body height of the boys who do not go in for sport is 172.52±0.68 cm, then of those from the group of the male athletes it is 175.41±0.74 cm ($p<0.05$). In general, body height is an integral index that changes during life and depends on the rate of growth and development of certain bones.

The body weight is quite a labile index of physical development which quickly responds to exo- and endogenous factors, directly depends on the height but its increase occurs unevenly with age. We determined that adolescents' body weight indices in the period of 16-18 years continuously increase, and body weight gain of the boys from both groups is more than 6 kg, and for the girls – 6-8 kg. The highest indices of body weight are determined in the adolescents` athletes of all age groups, and the discrepancy is more than 3-4 kg. For instance, the body weight of the boys that do not go in for sport is 67.51±0.64 kg at the age of 18, and in the group of the male athletes – 70.45±0.68 kg ($p<0.05$).

The investigation of chest girth also discovered age changeability and group differences of the examined. The highest rates of chest girth gain in a year were found out in the group of adolescents going in for sport.

So, while at the age of 16 the chest girth indices of the male athletes are 84.24±0.38 cm, by the age of 18 the given index rises up to 90.52±0.58 cm. The peculiarity discovered by us consists in reliably larger ($p<0.05$) chest girth of adolescent athletes in comparison with the group of children with low movement regime.

Thus, the study of anthropometric indices of adolescents' body total parameters discovered age and group differences. The determined growth activity of physical development indices allows us to characterize objectively age changeability in the body structure at the final stage of the somatic type formation. The adolescent athletes total body sizes are characterized by the maximum value, while those with the low movement regime are distinguished by the minimum figures of the studied indices. It may be stated that doing sports has stimulating impact on the growth of the body total sizes.

While anthropometric investigations characterize organism structural changes, physiometric indices, to a considerable extent, reflect functional state of certain organs and organs systems.

The investigation of heart rate (HR) discovered the following peculiarity: in the period of 16-18 years the decline of the given index by 5-6 bpm is observed in all groups of the examined boys, and 5-8 bpm in the groups of the girls. (See Table 2, Table 3).

It was determined that the heart rate of the adolescent athletes was relevantly lower than the one of the children with the low movement regime. The reduction of the heart rate under the influence of systematic trainings is connected with the enhancement of parasympathetic impacts on the heart automatism function which reflects the efficiency of cardiovascular system functioning.

Table 2

Physiometric indices of boys' organism with low level of locomotion

Age, years	Boys (n=31)		Female athletes (n=34)	
	M±m	δ	M±m	δ
HR, bpm				
16	81.25±0.48	2.61	68.21±0.42**	2.45
17	78.41±0.42	2.56	65.36±0.39**	2.41
18	76.38±0.38	2.49	62.42±0.35**	2.36
BPc, mm Hg				
16	119.24±0.96	4.21	118.61±0.92	4.16
17	122.15±0.92	4.33	120.18±0.88	4.22
18	124.28±0.86	4.39	121.45±0.84*	4.28
BPd, mm Hg				
16	75.31±0.65	2.46	84.34 ±0.63	2.41
17	77.26±0.62	2.44	75.16±0.61*	2.36
18	79.30±0.59	2.39	76.14±0.57*	2.32
LC, l				
16	2.75±0.09	0.36	3.62±0.15*	0.51
17	2.98±0.11	0.41	4.15±0.17**	0.58
18	3.24±0.13	0.49	4.46±0.19*	0.63
Hand dynamometry, kg				
16	28.31±0.31	1.46	34.18±0.36**	1.61
17	31.15±0.34	1.52	39.26±0.39**	1.69
18	34.2±0.37	1.62	42.35±0.41**	1.75
Spinal dynamometry, kg				
16	86.35±0.81	2.62	98.65±0.92**	2.91
17	90.24±0.85	2.75	115.24±0.96**	3.08
18	94.16±0.91	2.88	125.31±0.99**	3.16

Notes: **– the relevance of the differences in comparison with the results of the boys group ($p<0.05$); ** – the relevance of the differences in comparison with the results of the boys group ($p<0.01$).*

Table 3

Physiometric indices of girl organism with different level of locomotion

Age, years	Girls (n=35)		Female athletes (n=32)	
	M±m	δ	M±m	δ
HR, bpm				
16	85,36±0,49	2.65	67.61±0.44#	2.41
17	79.45±0.41	2.51	64.45±0.41#	2.37
18	77.18±0.39	2.46	62.28±0.35#	2.31
BPs, mm Hg				
16	116.15±0.95	4.25	115.34±0.89	4.04
17	118.42±0.91	4.21	117.18±0.82	3.92
18	119.62±0.88	4.15	118.45±0.76	3.84
BPd, mm Hg				
16	73.65±0.64	2.49	72.48 ±0.62	2.31
17	75.34±0.61	2.41	73.32±0.59**	2.26
18	76.18±0.58	2.35	74.15±0.56**	2.22
LC, l				
16	2.46±0.09	0.32	3.46±0.14**	0.49
17	2.78±0.11	0.36	3.81±0.16**	0.54
18	3.06±0.13	0.41	4.15±0.18**	0.58

End of the Table 3

Hand dynamometry,kg				
16	24.15±0.29	1.35	29.65±0.33**	1.44
17	28.26±0.32	1.42	34.28±0.36**	1.56
18	31.35±0.35	1.54	37.15±0.39**	1.64
Spinal dynamometry, kg				
16	72.18±0.69	2.61	82.65±0.75#	2.81
17	78.26±0.73	2.75	94.15±0.81#	2.87
18	84.36±0.78	2.82	106.48±0.88#	2.94

Notes: ***– the relevance of the differences in comparison with the results of the girls group (p<0.05); # – the relevance of the differences in comparison with the results of the girls group (p<.01).*

The indices of the systolic blood pressure (BPs) and diastolic blood pressure (BPd) are also characterized by age changeability and group differences. In the period of 16-18 years old the index of systolic blood pressure in all the boys groups increases by 3-5 mm Hg, in the girls groups – by 3-4 mm Hg; the indices of diastolic blood pressure – by 2-4 mm Hg and 2-3 mm Hg respectively.

In all age periods involved in the experiment the indices of adolescent athletes' blood pressure are characterized by lower figures which is explained by the considerable reconstruction of hemodynamics under the influence of high physical exertion.

In the period of 16-18 years old the index of lung capacity (LC), hand and backbone strength of all the examined girls and boys continuously is growing. The increase of the mentioned indices in the group of adolescent athletes is characterized by the highest rate.

For the integral evaluation of the blood circulation state we calculated certain hemodynamic indices (See Table 4, Table 5). The pulse pressure of the boys and girls groups tends to increase and by the age of 18 it reaches the highest rates.

Table 4

Hemodynamics indices of boys' organism with different level of locomotion

Age, years	Boys (n=31)		Male athletes (n=34)	
	M±m	δ	M±m	δ
Pulse pressure, mm Hg.				
16	43.93±0.45	2.38	44.27±0.41	2.16
17	44.89±0.43	2.25	45.02±0.39	2.04
18	44.98±0.41	2.17	45.31±0.37	1.91
Systolic output, mL				
16	61.25±0.56	2.56	63.18±0.58	2.61
17	65.46±0.59	2.65	66.35±0.62	2.75
18	68.15±0.62	2.75	71.12±0.65*	2.82
Cardiac output, L/min				
16	4.81±0.12	0.48	6.84±0.16*	0.62
17	5.06±0.14	0.54	7.26±0.18*	0.69
18	5.26±0.15	0.59	7.68±0.19*	0.75
Cardiac index, L/min/m^2				
16	3.12±0.13	0.37	3.61±0.17*	0.48
17	3.35±0.15	0.42	3.82±0.19*	0.52
18	3.56±0.17	0.47	4.12±0.21*	0.58

Notes: **– the relevance of the differences in comparison with the results of the boys group (p<0.05);*

In the group of adolescent athletes the pulse pressure indices are characterized by the highest rates during all the investigated age period, although the relevant differences were not discovered.

Table 5

Haemodynamics indices of girls organism with different level of locomotion

Age, years	Girls (n=35)		Female athletes (n=32)	
	M±m	δ	M±m	δ
Pulse pressure, mm Hg				
16	42.50±0.48	2.21	42.86±0.45	2.19
17	43.08±0.49	2.19	43.86±0.43	2.23
18	43.44±0.51	2.15	44.30±0.44	2.14
Systolic output, mL				
16	61.45±0.57	2.54	62.48±0.59	2.57
17	63.26±0.59	2.65	65.31±0.61**	2.65
18	65.15±0.62	2.71	69.18±0.65**	2.78
Cardiac output, L/min				
16	4.68±0.12	0.46	5.64 ±0.17**	0.58
17	4.85±0.14	0.52	5.98±0.19**	0.62
18	5.06±0.16	0.57	6.24±0.21**	0.65
Cardiac index, L/min/m^2				
16	3.06±0.09	0.35	3.41±0.12	0.43
17	3.21±0.11	0.39	3.65±0.14	0.49
18	3.36±0.12	0.42	3.88±0.16**	0.56

Notes: *** – the relevance of the differences in comparison with the results of the girls group (p<0,05).*

The calculations of the systolic output allowed us to discover age and group differences among the examined adolescents. We determined that systolic output in the period of 16-18 years old increased by 4-7 mL both for boys and girls. The given index is much higher for the adolescent athletes than for those children that did not go in for sport ($p<0.05$).

In order to level the possible impact of individual anthropometric characteristics of the hemodynamic indices of the examined children we calculated cardiac index. It was determined that cardiac index in all experimental groups reached the highest rates by 18 years old. In the group of adolescent athletes the cardiac index of all age groups is characterized by the highest rates.

Thereby, the received data allowed us to discover age changeability and group differences in the formation of hemodynamic indices. By the age of 18 practically all boys and girls are characterized by stabilizing the cardiovascular system functional maturity. However, the change rate of these indices for better was revealed in those children who go in for sport. Regular physical exertion considerably increases functional power and efficiency of cardiovascular system activity of adolescent athletes' organism.

Conclusions. The carried out investigation shows that regular physical exercises facilitate increase of the function level of children`s organs and organism system. In the process of muscle activity as a result of systematic physical trainings children increase functional resources of cardiovascular, respiratory and other systems, develop the complex of structural functional changes directed upon optimizing the activity of both certain systems and the entire organism. Such changes comprise the foundation of enhancement and disease prevention in the process of healthy physical exercising; here with the resistance of organism to unfavorable environmental conditions increases.

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Received: 26.06.2018.

UDC 612.7-056.353

FUNCTIONAL STATE OF THE MUSCULOSKELETAL SYSTEM OF THE MIDDLE SCHOOL AGE CHILDREN WITHHEARING LOSS

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https://doi.org/10.29038/2220-7481-2018-03-86-90

Abstracts

The topicality of the research. The human musculoskeletalsystem plays an important role in the formation and harmonious development of it. The functional state of the musculoskeletal system is a unique indicator of health. The analysis of literary resources testifythat children with hearing loss have the indicators of the musculoskeletal system functional state differ from those in healthy children. ***The aim of the research*** is to determine and analyze the age-related changes in the indicators of the functional state of the musculoskeletal system for the children of middle school age with hearing loss. In the process of research we used the following methods: analysis of literary resources, videometry (Torso Program) for determining the angles of the torso and head inclination, pedagogical testing for the definition of the static endurance of the front torso and legs muscles and the back torso and legs muscles also methods of mathematical statistics. ***The results of the work.*** The results of the work. In the research it was found that in the age of 11-14 years, boys and girls research indicators are growing, also this process is ambiguous. So in the research period, the indicator of static endurance of the front part of the torso and legs is statistically significantly ($p < 0,05$) in creases for boys to 9,2s,for girls only to 5,2 s; the indicator of static endurance of the back part of the torso and legs is statistically significant ($p < 0,05$) increases for boys to 9,2 s, for girls to 6,2 s. The angle of inclination of the head ($\square_1$) in the period of 11-14 years as boys as girls is statistically significant ($p < 0,05$) in creasing to 0,6 degree. The angle of in clination of the torso ($\square_1$) is statistically significant ($p < 0,05$) in creases for boys 0.18 degrees and for girls – 0,2 degrees. Growth of the research indicators is different for boys and girls. ***Conclusions.*** The obtained results indicate that boys and girls have statistically significant ($p<0.05$) growth of the research parameters in the age aspect. In this case, the boys and girls have rather low indicators of static endurance of front part of the torso and legs, somewhat better, but still low indicators of static endurance of the back of the torso and legs. Indicators of the angles of inclination of the head and torso are also lower than the standard ones.

Key words*:* musculoskeletal system, the middle school age children with hearing loss, angle of inclination of the head, angle of inclination of the torso, static endurance.

Роман Іваніцький, Алла Альошина. Функціональний стан опорно-рухового апарату дітей середнього шкільного віку з вадами слуху. ***Актуальність.*** Опорно-руховий апарат людини відіграє важливу роль у формуванні й гармонійному її розвитку. Функціональний стан опорно-рухового апарату людини є своєрідним індикатором здоров'я. Аналіз літературних джерел засвідчує, що в дітей із вадами слуху показники функціонального стану опорно-рухового апарату відрізняються від аналогічних даних у здорових дітей. ***Мета дослідження –*** визначити та проаналізувати вікові зміни показників функціонального стану опорно-рухового апарату дітей середнього шкільного віку з вадами слуху. У процесі дослідження ми використовували ***такі методи:*** аналіз літературних джерел, відеометрія (програма «Torso») для визначення кутів нахилу тулуба й голови, педагогічне тестування для визначення статичної витривалості м'язів передньої частини тулуба та ніг і м'язів задньої частини тулуба й ніг, методи математичної статистики. ***Результати дослідження.*** У процесі досліджень установлено, що в період із 11 до 14 років у хлопчиків та дівчаток відбувається зростання досліджуваних показників та здійснюється цей процес неоднозначно. Так, у досліджуваний період показник статичної витривалості передньої частини тулуба й ніг статистично достовірно ($p<0,05$) зростає в хлопчиків на 9,2 с, у дівчаток – лише на 5,2 с; показник статичної витривалості задньої частини тулуба й ніг статистично достовірно ($p<0,05$) зростає, у хлопчиків – на 9,2 с, у дівчаток – на 6,2 с. Кут нахилу голови ($\square_6$) у період 11–14 років у хлопців і дівчат статистично достовірно ($p<0,05$) зростає на 0,6 град. Кут нахилу тулуба ($\square_1$) статистично достовірно ($p<0,05$) зростає в хлопців 0,18 град., у дівчат – 0,2 с. Приріст досліджуваних показників різний у хлопців і дівчат. ***Висновки.*** Отримані результати засвідчують, що в хлопців і дівчат відбувається статистично достовірно ($p<0,05$) зростання досліджуваних показників у віковому аспекті. При цьому у хлопців та дівчат досить низькі показники статичної витривалості передньої частини тулуба й ніг, дещо кращі, але все ж низькі показники статичної витривалості задньої частини тулуба та ніг. Показники кутів нахилу голови й тулуба також нижчі від нормативних.

Ключові слова: опорно-руховий апарат, діти середнього шкільного віку з вадами слуху, кут нахилу голови, кут нахилу тулуба, статична витривалість м'язів.

Роман Иваницкий, Алла Алѐшина. Функциональное состояние опорно-двигательного аппарата детей среднего школьного возраста с нарушениями слуха. ***Актуальность.*** Опорно-двигательный аппарат человека играет важную роль в формировании и гармоничном его развитии. Функциональное состояние опорно-двигательного апарата человека является своеобразным индикатором здоровья. Анализ литературных источников свидетельствует, что у детей нарушениями слуха показатели функционального состояния опорно-двигательного аппарата отличаются от аналогичных показателей у здоровых детей. ***Цель исследования*** – определить и проанализировать возрастные изменения показателей функционального состояния опорно-двигательного аппарата детей среднего школьного возраста с нарушениями слуха. В процессе исследования мы использовали такие ***методы:*** анализ литературных источников, видеометрия (программа «Torso») для определения углов наклона туловища и головы, педагогическое тестирование для определения статичной выносливости мышц передней части туловища и ног, и мышц задней части туловища и ног, методы математической статистики. ***Результаты исследования.*** В процессе исследований установлено, что в период с 11 до 14 лет у мальчиков и девочек происходит рост исследуемых показателей, но происходит этот процесс неоднозначно. Так, в исследуемый период показатель статической выносливости передней части туловища и ног статистически достоверно ($p<0,05$) растет у мальчиков на 9,2 с, у девочек – только на 5,2 с; показатель статической выносливости задней части туловища и ног статистически достоверно ($p<0,05$) растет у мальчиков на 9,2 с, у девочек – на 6,2 с. Угол наклона головы ($\square_6$) в период 11–14 лет у мальчиков и девочек статистически достоверно ($p<0,05$) растет на 0,6 град. Угол наклона туловища ($\square_1$) статистически достоверно ($p<0,05$) растет у мальчиков на 0,18 град., у девочек – на 0,2 с. Прирост исследуемых показателей разный у мальчиков и девочек. **Выводы.** Полученные результаты свидетельствуют, что у мальчиков и девочек происходит статистически достоверно ($p<0,05$) рост исследуемых показателей в возрастном аспекте. При этом у мальчиков и девочек достаточно низкие показатели статической выносливости передней части туловища и ног, несколько лучшие, но все же низкие показатели статической выносливости задней части туловища и ног. Показатели углов наклона головы и туловища также ниже от нормативных.

Ключевые слова*:* опорно-двигательный аппарат, дети среднего школьного возраста с изъянами слуха, угол наклона председателя, угол наклона туловища, статичная выносливость мышц.

Introduction. Analysis of literary sources [2; 3; 6] shows that the musculoskeletal system performs several major functions. It protects the internal organs, supports and gives shape to the body and allows for movement. Functional disorders of the musculoskeletal system might hinder or retard normal physical development of human bein and can lead to health diseases [3; 6; 7].

Numerous studies have examined and proved the close connection between the musculoskeletal system and health condition [1; 3; 4].

Standard assessment findings of the musculoskeletal system include determination of the spine, foot support-spring properties, body's muscle corset, and also the basic physical qualities (flexibility, speed, strength, agility, speed-strength qualities) related to the physical development. [2; 5; 7].

Therefore, it is worth using the technology of computer diagnostics "Torso" to assess the posture of schoolchildren, which was developed by V.O. Kashuba [5,6]. He proposes to evaluate posture based on the linear and angular characteristics of spinal column structures in the sagittal profile.

Analysis of literary sources [4; 6; 7] shows low-strength development of rectus abdominis and abdominal internal oblique muscles, muscles that used to straighten the back is noticeable in most of the deaf children of the junior school age. All this can lead to further serious posture problems.

Everything mentioned above suggests that middle school age children also have certain features of the musculoskeletal system's primary functions. The study of these features will influence the child's body by means of physical education. This is necessary for the harmonious development of the child in the future.

Communication with the Scientific Programs, Plans, Themes. Work is done by according to the Consolidated Plan of the research work in the field of physical culture and sports for 2011–2015 3.7 «Improvement of biomechanical technology in physical education and rehabilitation to an individual motor skills man», the state registration number 0111U001734.

The goal of the article is to determine and analyze the age-related changes in the indicators of the functional state of the musculoskeletal system for the children of middle school age with hearing loss.

In the process of research we used the following methods: analysis of literary resources, videometry (Torso Program) for determining the angles of the torso and head inclination, pedagogical testing for the

definition of the static endurance of the front torso and legs muscles and the back torso and legs muscles also methods of mathematical statistics.

The results of the work. The human musculoskeletal system's results of the study and their analysis [3; 5; 6] shows that on the results of videometry among the characteristics of the sagital profile posture, which reflect the features of its type, the most informative is the angle α_1 – formed by a vertical line that connects a spinous process of the seventh cervical vertebrae C7 and head's center of mass. Spinous process of C7 has a large spinous process that protrudes posteriorly toward the skin on the border of cervical vertebra and thoracic vertebra, head's center of mass in the sagittal profile projected onto the area of the ear. The angle α_6 – formed by a vertical line that connects a spinous process of the seventh cervical vertebrae C7 - protrudes posteriorly toward the skin on the border of cervical vertebra and thoracic vertebra and the spinous process of the fifth lumbar vertebra (L_5) – lordosis peak location (center of the somatic nervous system coordinates). We used videometry to determine these angles («Torso» Program). The obtained results were processed by methods of mathematical statistics and presented in the table 1.

Table 1

Angular characteristics of the sagittal profile of posture in for the children of middle school age with hearing loss. (n=58)

№	Age / Number of persons	The angle of the body (α_1) X±S (degree)	The coefficient of variation V (%)	The angle of head inclination (α_6) X±S (degree)	The coefficient of variation V (%)
Girls (n=28)					
1	11 (n=8)	3,30±0,01	0,31	24,8±0,10	0,42
2	12 (n=8)	3,35±0,01	0,23	25,0±0,10	0,40
3	13 (n=6)	3,45±0,03	0,89	25,2±0,05	0,21
4	14 (n=6)	3,50±0,01	0,35	25,4±0,15	0,59
Boys (n=30)					
1	11 (n=8)	3,42±0,02	0,46	25,2±0,08	0,33
2	12 (n=8)	3,47±0,02	0,43	25,4±0,13	0,52
3	13 (n=8)	3,53±0,01	0,36	25,6±0,08	0,33
4	14 (n=6)	3,60±0,02	0,42	25,8±0,14	0,54

According to the results, boys and girls have the angle α_1 formed by a vertical line and a line connecting a spinous process of the seventh cervical vertebra C_7 and head's center of mass. Spinous process of C7 has a large spinous process that protrudes posteriorly toward the skin on the border of cervical vertebra and thoracic vertebra, head's center of mass in the sagittal profile projected onto the area of the ear. With increasing age a spinous process statistically significant increases ($p<0,05$). Boys have higher indicator than girls.

If we look at Table 1, we will see that the angle of the cluster of the torso (α_1) for girls from 11 to 14 years increases 0.2 degrees, but this process is uneven and wavy. Growth of the research indicators in the period from 11 to 12 years – 1.5%, from 12 to 13 years - 2.9%, from 13 to 14 years only 1.4%. Growth of the research for boys is completely different. The angle of the cluster of the torso (α_1) for boys from 11 to 14 years increases 0.18 degrees. Growth of the research indicators are progressive and straight: from 11 to 12 years – 1.5%, from 12 to 13 years – 1.7%, from 13 to 14 years – 2.0%.

Children of middle school age with hearing loss the angle α_6 - a large spinous process that protrudes posteriorly toward the skin on the border of cervical vertebra and thoracic vertebra and the spinous process of the fifth lumbar vertebra (L_5) – lordosis peak location. With increasing age a spinous process statistically significant increases ($p<0,05$). Boys have higher indicator than girls.

The angle of inclination of the head (α_6) in the period of 11-14 years in boys and girls is statistically significant ($p <0,05$) increasing to 0,6 degree. It is interesting that growth of the research indicators is 0.8 % in every age, both in boys and girls.

In order to analyze the static muscle endurance of trunk and legs, we used the tests proposed by V.O. Kashuba [6] which provide information about posture. The obtained results were processed by methods of mathematical statistics and presented in the table 2.

Table 2

The indicators of static endurance of the back of the torso and legs in for the children of middle school age with hearing loss. (n=58)

№	Age / Number of persons	Static endurance of the back of front part of the torso and legs X±S (c)	The coefficient of variation V (%)	Static endurance of the back of the torso and legs X±S (c)	The coefficient of variation V (%)
Girls (n=28)					
1	11 (n=8)	122,5±0,93	0,76	123,8±0,71	0,57
2	12 (n=8)	124,8±1,04	0,83	126,6±1,06	0,84
3	13 (n=6)	125,7±1,21	0,96	128,2±1,47	1,15
4	14 (n=6)	127,7±1,03	0,81	130,0±1,41	1,09
Boys (n=30)					
1	11 (n=8)	134,5±0,93	0,69	137,8±1,04	0,75
2	12 (n=8)	138,8±1,28	0,92	141,9±1,25	0,88
3	13 (n=8)	141,6±1,30	0,92	144,9±1,36	0,94
4	14 (n=6)	143,7±1,03	0,72	147,0±1,10	0,75

Indicators of static endurance of front part of the torso and legs statistically significant increases ($p<0,05$) both in boys and girls. Boys have higher indicator than girls. The growth rate at different ages: boys - 9.2 s, girls - 5.2 s. Growth of the research indicators are different in boys and girls. Growth of the research indicators for girls are uneven and wavy. In the period from 11 to 12 years – 1.5%, from 12 to 13 years – 0.7%, from 13 to 14 years – 1.6%. Growth of the research indicators for boys decreases with age: in the period from 11 to 12 years the maximum increment is 3.1%, from 12 to 13 years – 2.0 %, from 13 to 14 years only 1.5%.

The obtained results indicate that static endurance of the back of the torso and legs statistically significant ($p<0.05$) growth of the research parameters in the age aspect. Boys have higher indicator than girls, what is worth to notice. Growth of the research indicators statistically significant increases by 9.2 s for boys and 6.2 s for girls in the period from 11 to 14 years. Growth of the research indicators for boys: in the period from 11 to 12 years – 2,9 %, from 12 to 13 years – 2.1%, from 13 to 14 years only 1.4%. Growth of the research indicators for girls are different. In the period from 11 to 12 years – 2,2 %, from 12 to 13 years – 1.3%, from 13 to 14 years – 1.4%.

It is worth to mention that indicators of static endurance of the back of the torso and legs are higher than indicators of back part of the torso and legs both boys and girls.

Conclusions. The obtained results indicate that boys and girls have statistically significant ($p<0.05$) growth of the research parameters in the age aspect. In this case, the boys and girls have rather low indicators of static endurance of front part of the torso and legs, somewhat better, but still low indicators of static endurance of the back of the torso and legs. Indicators of the angles of inclination of the head and torso are also lower than the standard ones.

Prospects for further research. Investigating the tone of the muscles that hold the human body upright and development of physical exercises which ones will contribute the formation of the correct posture and harmonious development of children.

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Received: 06.08.2018.

UDC 373.016:796(477)

PHYSICAL FITNESS AND MORPHO-FUNCTIONAL STATE OF ADOLESCENTS WITH DIFFERENT AEROBIC PRODUCTIVITY LEVEL

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https://doi.org/10.29038/2220-7481-2018-03-91-98

Abstracts

Introduction. Insufficient level of schoolchildren physical fitness and physical health determines the relevance of studying of physical qualities development in relation to adolescents' body aerobic productivity and physical development. The ***purpose*** of the study is to investigate the relationship between the components of physical fitness and physical development of adolescents with different levels of aerobic productivity. ***Materials and Methods.*** Assessment of schoolchildren physical fitness (L. P. Sergienko, 2010); aerobic productivity determination step-ergometry method (V. L. Karpman, 1988). Physical development assessment was carried out on the basis of the power indexes definition, body mass index and Pinie's index. Muscle mass value for power indexes calculation was determined by Matejko method. The study involved 423 adolescents, 211 of them were females and 212 were males. ***Results.*** Aerobic productivity level reducing is accompanied by body mass index increasing and Pinie's index reducing, which reflects the important role of physical development somatometric features in determining organism functional capabilities. Aerobic productivity level increasing is connected with muscle strength increasing that is testified by power indexes dynamics, determined by ratio indicators of hand and static dynamometry to the muscular mass in both girls and boys bodies, as well as hands flexion- extension in lying position to body mass in male adolescents. ***Conclusions.*** With the reducing in aerobic productivity level there is an increasing in the proportion of children with below average physical preparedness level and reducing in above average physical preparedness level. The presence of respondents with above average physical preparedness level in each experimental group indicates the opportunities to improve the physical qualities development level. The obtained results can be used to develop differentiated approaches in physical education of students with different aerobic productivity levels.

Key words: physical fitness, physical development, aerobic productivity, adolescents.

Олександр Лемак, Ірина Султанова, Ірина Іванишин, Родіон Арламовський. Фізична підготовленість та морфофункціональний стан підлітків із різним рівнем аеробної продуктивності. ***Актуальність.*** Недостатній рівень фізичної підготовленості та соматичного здоров'я школярів обумовлює актуальність вивчення розвитку фізичних якостей у взаємозв'язку з аеробною продуктивністю та фізичним розвитком організму підлітків. ***Завдання дослідження*** – виявити взаємозв'язок складників фізичної підготовленості й фізичного розвитку підлітків із різним рівнем аеробної продуктивності. ***Матеріал і методи дослідження*** – оцінка фізичної підготовленості школярів (Сергієнко Л.П., 2010); визначення аеробної продуктивності методом степ-ергометрії (Карпман В. Л., 1988). Оцінку фізичного розвитку проводили на підставі визначення силових індексів, індекса маси тіла та індекса Пін'є. Кількість м'язової маси для розрахунку силових індексів визначали за методом Матейка. У дослідженні взяло участь 423 підлітки, 211 – із них жіночої та 212 – чоловічої статі. ***Результати дослідження.*** Зниження рівня аеробної продуктивності супроводжується збільшенням індексу маси тіла та зниженням індексу Пін'є, що відображає важливу роль соматометричних ознак фізичного розвитку в детермінуванні функціональних можливостей організму. Підвищення рівня аеробної продуктивності пов'язано зі збільшенням м'язової сили, про що свідчить динаміка силових індексів, визначених за даними співвідношення показників кистьової та станової динамометрії до м'язової маси тіла в дівчат і хлопців, а також згинання-розгинання рук в упорі лежачи до маси тіла в підлітків чоловічої статі. ***Висновки.*** Зі зниженням аеробної продуктивності зростає частка дітей із нижчим від середнього рівнем фізичної підготовленості та зменшується частка дітей із вищем від середнього рівнем фізичної підготовленості. Наявність респондентів із вищим від середнього рівнем фізичної підготовленості в кожній дослідній групі свідчить про наявні можливості до підвищення рівня розвитку фізичних якостей. Отримані результати можна використати для розробки диференційованих підходів у фізичному вихованні школярів із різним рівнем аеробної продуктивності.

Ключові слова: фізична підготовленість, фізичний розвиток, аеробна продуктивність, підлітки

Александр Лемак, Ирина Султанова, Ирина Иванышин, Родион Арламовский. Физическая подготовленность и морфофункциональное состояние подростков с разным уровнем аэробной продуктивности. ***Актуальность.*** Недостаточный уровень физической подготовленности и соматического здоровья школьников обуславливает актуальность изучения развития физических качеств во взаимосвязи с аэробной производительностью и физическим развитием подростков. ***Задачи исследования*** – выявить взаимосвязь составляющих физической подготовленности и физического развития подростков с разным уровнем аэробной производительности. ***Материал и методы исследования:*** оценка физической подготовленности (Сергиенко Л. П., 2010), определение аэробной продуктивности методом степ-эргометрии (Карпман В. Л., 1988). Оценку физического развития проводили путем определения силовых индексов, индекса массы тела, индекса Пинье. Количество мышечной массы для расчета силовых индексов определяли по формуле Матейка. В исследовании приняло участие 423 подростка,

211 – из них женского и 212 – мужского пола. ***Результаты исследования.*** Снижение уровня аэробной производительности сопровождается увеличением индекса массы тела и уменьшением индекса Пинье, что отражает важный вклад соматометрических признаков физического развития в функциональное состояние организма. Повышение уровня аэробной производительности связано с увеличением мышечной силы, о чем свидетельствует динамика силовых индексов, рассчитанных путем определения соотношения показателей кистевой и становой динамометрии к количеству мышечной массы тела у подростков женского и мужского пола, а также сгибания-разгибания рук в упоре лежа к массе тела у подростков мужского пола. ***Выводы.*** Со снижением уровня аэробной производительности увеличивается количество детей с ниже среднего уровнем физической подготовленности в каждой исследуемой группе и уменьшается количество детей с выше среднего уровнем физической подготовленности. Наличие в каждой группе детей с выше среднего уровнем физической подготовленности свидетельствует о возможности повышения уровня развития физических качеств. Полученные результаты можно использовать для разработки дифференцированных подходов в физическом воспитании школьников с разным уровнем аэробной производительности.

Ключевые слова: физическая подготовленность, физическое развитие, аэробная производительность, подростки.

Introduction. Modern scientific researches show insufficient level of schoolchildren physical fitness [4; 6] and somatic health [7; 8; 12].

One of physical education tasks is the health formation and the promotion of younger generation harmonious physical development [1; 4], the above facts predetermine the need to develop and implement effective approaches aimed at improving the physical qualities development and health care reserves of children in all ages.

It is known that an objective criterion that both quantitatively characterizes human health and reflects aerobic productivity level is the value of maximum oxygen consumption ($VO_{2\ max}$). At the same time, this indicator regulates physical activity intensity. However, information about the degree of physical qualities development in adolescents versus the body aerobic capacity level and physical development indicators is insufficient. Therefore, the study of physical qualities development in connection with the body aerobic capacity level and physical development of children in all ages is an actual issue of nowadays.

The Purpose of the Research is to investigate the distinctions between physical fitness and physical development components of adolescents with different aerobic productivity levels.

Materials and Methods of the Research. To achieve the goal there were used the following research methods: scientific and methodological literature analysis and synthesis, schoolchildren physical fitness assessment [9]; aerobic endurance determination by V.L. Karpmans' step-ergometry method [3]. Physical development evaluation was carried out on the basis of the strength indexes, body mass index (BMI) and Pignet index [5]. Muscle component of body weight for strength indexes calculation was determined by Matejko's method [10].

In order to leveling anthropometric parameters influence on somatomotoric qualities development there were determined physical fitness indices [9] (upper limb muscles strength index (SI_{UB}) as ratios: pull-up test results to the hand length (SI_{prhl}), flexed-arm hang test results to the body weight (SI_{fhbw}) and push up test results to body weight (SI_{prbw}) and standing long jump test to the body height (SI_{ljbw})). The study involved 423 adolescents, 211 of them were females and 212 were males. The results of the study were statistically analyzed using descriptive statistics method and statistical hypothesis testing.

Results of the Research. The obtained results of physical fitness testing of female adolescents with different aerobic endurance level are presented in Tabl. 1.

Table 1

Physical fitness of female adolescents with different aerobic endurance level

Indicator	Aerobic Endurance level (VO_{2max}/kg, ml/kg/min)		
	high (n = 54) 56,88±0,56	**average (n = 100) 46,96±0,28**	**low (n = 57) 38,36±0,37**
Push-Ups test, times	11,44±0,84	11,06±0,74♦	8,40±0,70*
Standing Long Jump , sm	146,89±2,72	149,35±1,96♦	140,26±2,66
Pull-Ups, times	11,82±0,95	12,07±0,58♦	9,61±0,79
Sit-Ups in 30 s, times	20,93±0,49#	19,74±0,34	18,53±0,53*
Flexed-Arm Hang test, s	9,15±1,26	10,42±1,06♦	7,38+0,96
Sit and Reach test, sm	4,46±0,93	6,73±0,98	4,48±1,03
Physical fitness, points	22,22±0,72	21,15±0,56♦	17,42±0,60*

Notes. Significant differences (P < 0,05) are marked: * – between the indicators of high and low aerobic productivity groups; ♦ – between indicators of average and low aerobic endurance groups; # – between indicators of high and average aerobic endurance groups

The conducted studies have shown that aerobic endurance level reducing results in simultaneous indicators of Push-Up test, 30 s Sit-Ups test results and general physical fitness preparedness.

A similar tendency was observed in values of physical fitness indexes (See Tabl. 2).

Table 2

Physical fitness indexes of female adolescents with different aerobic productivity level

Indicator	Aerobic Endurance level (VO_{2max}/kg, ml/kg/min)		
	high (n = 54) 56,88±0,56	**average (n = 100) 46,96±0,28**	**low (n = 57) 38,36±0,37**
SI_{prhl}	0,25±0,04	0,23±0,02♦	0,13±0,02*
SI_{fhbw}	0,30±0,03#	0,24±0,02♦	0,15±0,01*
SI_{prbw}	0,97±0,02	0,95±0,01♦	0,89±0,02*
SI_{ljbw}	0,18±0,02	0,17±0,01♦	0,12±0,01*
SI_{UB}	13,02±0,98	13,16±0,62♦	10,39±0,81*

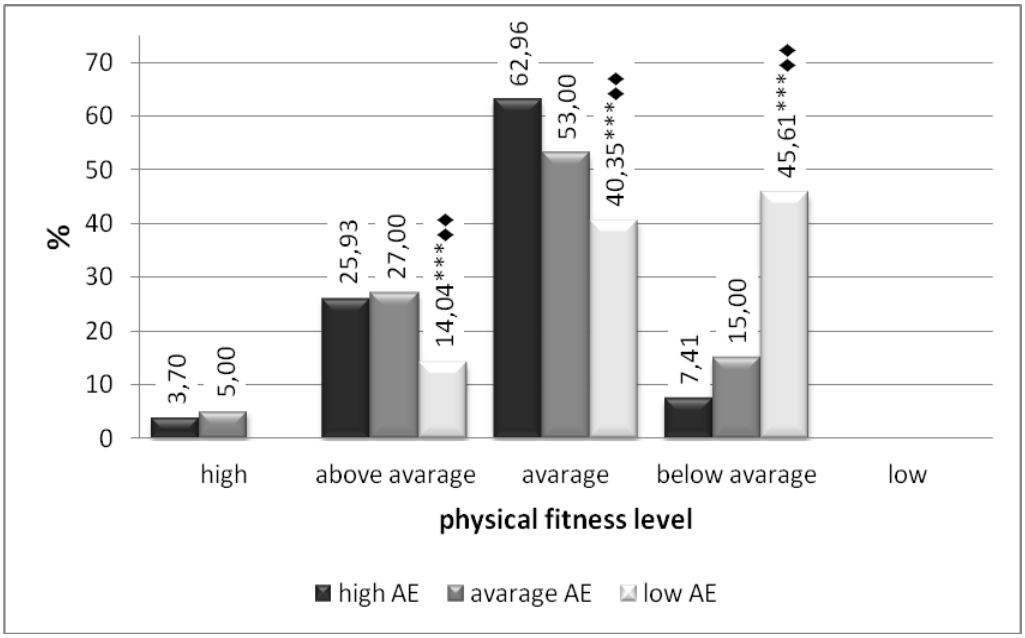
Notes. Significant differences (P < 0,05) are marked: * – between the indicators of high and low aerobic productivity groups; ♦ – between indicators of average and low aerobic endurance groups; # – between indicators of high and average aerobic endurance groups

General physical fitness of girls with a low aerobic endurance level was significantly lower than in other experimental groups, however, there was shown the average level of physical fitness in three experimental groups.

In the group of girls with high aerobic productivity level the average physical fitness level was pointed in 62,96 %, below average – 7,41 %, above average – 25,93 % and high – 3,70 % (See Fig. 1).

In female adolescents with an average aerobic productivity level the average level of physical fitness had 53,00 %, below average – 15,00 %, above average – in 27,00 % and high – 5,00 %.

In female adolescents with a low aerobic productivity level the above average physical fitness level had 14,04 %, average – 40,35%, below average – 45,61%.



Notes. Significant differences are marked: * – between the indicators of high and low aerobic endurance groups (*** – P < 0,001); ♦ – between indicators of average and low aerobic endurance groups (♦♦ – P < 0,01)

Fig. 1. *Distribution of physical fitness level of female adolescents depending on the different aerobic productivity level*

Consequently, with the reducing in aerobic productivity level there is the significant reducing in the quantity of children having average and above average physical fitness level and increasing the quantity of such with below average physical fitness level.

The results of physical fitness testing in male adolescents with different aerobic productivity level are presented in Tabl. 3.

Table 3

Physical fitness of male adolescents with different aerobic productivity level

Indicator	Aerobic productivity level (VO_{2max}/kg, ml/kg/min)		
	high (n = 41) 68,29±1,51	**average (n = 116) 50,59±0,36**	**low (n = 50) 40,09±0,56**
Push-Up test, times	36,46±2,11	32,97±1,12♦	27,34±1,77*
Standing Long Jump , sm	188,00±4,31	192,19±2,20	182,94±4,15
Pull-Ups, times	6,12±0,78	5,41±0,37	4,8±0,54
Sit-Ups in 30 s, times	24,71±0,79	24,60±0,35	23,84±0,70
Flexed-Arm Hang test, s	20,07±1,36	20,45±1,09♦	15,63±1,48*
Sit and Reach test, sm	0,44±1,29	2,13±0,75♦	2,13±0,75
Physical fitness, points	22,37±0,83	22,26±0,51	19,26±0,77*

Notes. Significant differences (P < 0,05) are marked: * – between the indicators of high and low aerobic productivity groups; ♦ – between indicators of average and low productivity aerobic groups; # – between indicators of high and average aerobic productivity groups

The obtained results showed that with the reducing of aerobic productivity level there is observed the reducing of results in Push-Up and Pull-Ups, 30 s Sit-Ups test, Flexed-Arm Hang test and general physical fitness level.

A similar tendency is also observed in physical fitness indexes of male adolescents (See Tabl. 4).

In male teenagers of low aerobic productivity group the general physical fitness was significantly lower than in group with high physical fitness level.

Table 4

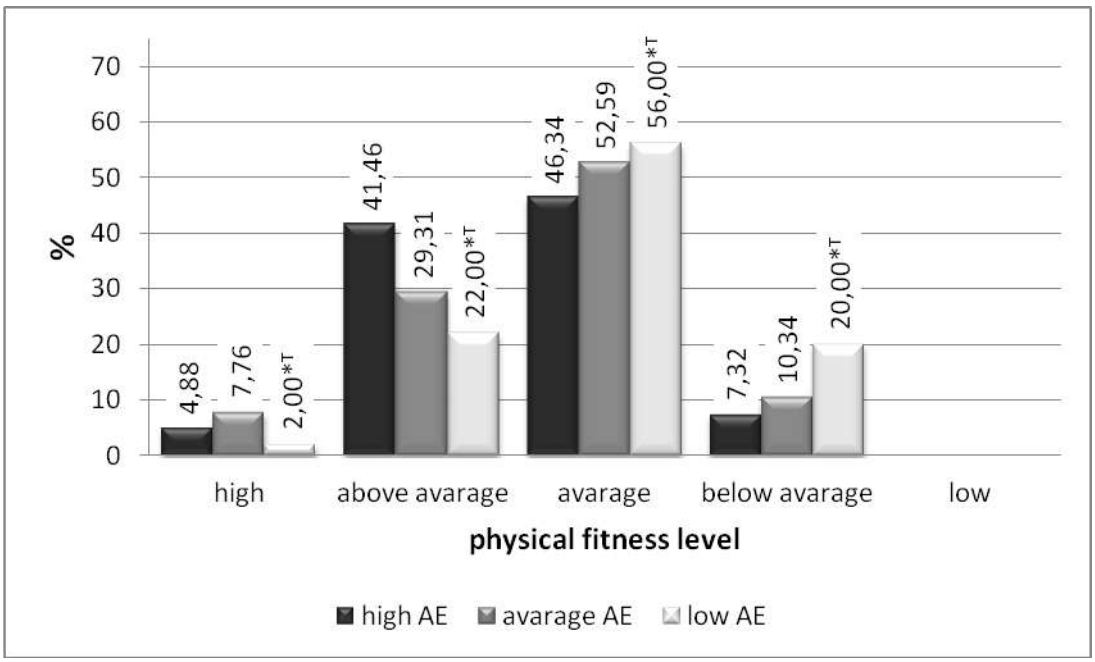
Physical preparedness indexes of male adolescents with different aerobic productivity level

Indicator	Aerobic Endurance level (VO_{2max}/kg, ml/kg/min)		
	high (n = 41) 68,29±1,51	**average (n = 116) 50,59±0,36**	**low (n = 50) 40,09±0,56**
SI_{prhl}	0,45±0,03	0,40±0,02♦	0,25±0,02*
SI_{fhbw}	0,84±0,05#	0,64±0,02♦	0,44±0,03*
SI_{prbw}	1,18±0,02	1,17±0,01♦	1,08±0,02*
SI_{ljbw}	0,08±0,01	0,07±0,004	0,06±0,007
SI_{UB}	9,65±0,89	8,43±0,42	7,15±0,62*

Notes. Significant differences (P < 0,05) are marked: * – between the indicators of high and low aerobic productivity groups; ♦ – between indicators of average and low aerobic productivity groups; # – between indicators of high and average aerobic productivity groups

Also both in girls and boys of all experimental groups physical fitness indicators were at the average level.

Thus, in a group with high aerobic productivity level there was observed 46,34 % of male adolescents with an average level of physical fitness, 7,32 % with below average and 41,46 % with above average and 4,88 % – with high level of physical fitness (See Fig. 2).



Notes. Significant differences are marked: * – significant differences between the indicators of high and low aerobic productivity groups (* – P < 0,05); ♦ – difference between indicators of average and low aerobic productivity groups on statistical tendency level (T – P < 0,1)

Fig. 2. *Distribution of physical fitness level of male adolescents depending on different aerobic productivity level*

In the group of male adolescents with an average aerobic productivity level there was observed 52,59 % of adolescents with an average physical fitness level, 10,34 % – below average level, 29,31 % – above average level and 7,76 % – with high physical fitness level.

In a group with a low aerobic endurance level there was observed 56,00 % of male adolescents with an average physical fitness level, 20,00 % – with below average, 22,00 % – with above average and 2,00 % with high physical fitness level, that were significant differ compare to group with high level of aerobic endurance ($\chi^2 = 6,28$; $P < 0,05$).

Consequently, in male teenagers with the reducing in aerobic endurance level there is reducing in quantity of respondents with above average physical fitness level and increasing with below average physical fitness level.

Studying physical development indicators there was pointed an increasing of BMI simultaneously with reducing of aerobic productivity level of female (See Tabl. 5) and male (See Tabl. 6) adolescents.

Table 5

Morpho-functional state of female adolescents with different aerobic productivity level

Indicator	Aerobic Endurance level (VO_{2max}/kg, ml/kg/min)		
	High (n = 54) 56,88±0,56	**Average (n = 100) 46,96±0,28**	**Low (n = 57) 38,36±0,37**
Body mass index (BMI), kg/m^2	17,10±0,27#	19,10±0,20♦	22,07±0,32*
Pignet index, equiv.un.	38,52±1,11#	30,51±0,84♦	18,78±1,45*
Handgrip Strength /Muscle Mass, equiv.un.	96,97±3,39#	86,69±1,89♦	75,16±2,08*
Deadlift / Muscle Mass, equiv.un.	230,44±9,97#	201,79±6,19♦	171,29±7,58*

Notes. Significant differences ($P < 0,05$) are marked: * – between the indicators of high and low aerobic productivity groups; ♦ – between indicators of average and low aerobic productivity groups; # – between indicators of high and average aerobic productivity groups

Table 6

Morpho-functional state of male adolescents with different aerobic productivity level

Indicator	Aerobic Endurance level (VO_{2max}/kg, ml/kg/min)		
	high (n = 41) 68,29±1,51	**average (n = 116) 50,59±0,36**	**low (n = 50) 40,09±0,56**
Body mass index (BMI), kg/m^2	17,10±0,27#	19,10±0,20♦	22,07±0,32*
Pignet index, equiv.un.	38,52±1,11#	30,51±0,84♦	18,78±1,45*
Handgrip Strength /Muscular Mass, equiv.un.	125,27±2,40	120,82±2,12♦	106,56±3,12*
Deadlift / Muscular Mass, equiv.un.	346,12±12,19	325,52±6,65♦	283,71±7,17*

Notes. Significant differences ($P < 0,05$) are marked: * – between the indicators of high and low aerobic productivity groups; ♦ – between indicators of average and low aerobic productivity groups; # – between indicators of high and average aerobic productivity groups

Similar changes are established in strength indexes, determined by ratio of Handgrip and Deadlift dynamometry to the muscular mass in girls. The inverse tendency has been found during studying the relation of Pignet's index with aerobic productivity.

It is known that the physical qualities development in ontogeny has a heterochronous character [1; 4; 11]. Certain physical qualities reach their natural maximal development at different ages due to different development rates of individual body tissues, organs and organism systems. At the same time, the rates of schoolchildren physical development [1; 14] and biological maturation [2] play a role in determining of sensitive periods limits. It is established that one of the informative criteria characterizing health reserves along with VO_{2max} is BMI [13]. Our research confirms the scientific data [13] that with the body weight increasing the adolescents' functional reserves are reducing and reflecting the importance of body structure type in the development of organism aerobic capacity. The results demonstrate that adolescents with a high aerobic productive level have the highest muscle strength level. All this testifies to the need of separate homogeneous schoolchildren`s groups creation in order to develop the effective programs aimed at increasing physical fitness level and health of children in all ages depends on their aerobic productivity level.

Conclusions Prospects for Further Research. Aerobic productivity level reducing is accompanied by body mass index increasing and Pignet`s index reducing, which reflects the important role of physical development somatometric features in determining of organism functional capabilities.

Aerobic productivity level increasing is connected with muscle strength increasing that is testified by strength indexes dynamics, determined by ratio indicators of Handgrip and Deadlift dynamometry to the muscular mass in both girls and boys, as well as push-ups test result to body weight in male adolescents.

With the reducing of aerobic productivity level there is an increasing in the percentage of children with below average physical fitness level and reducing in above average physical fitness level. The presence of respondents with above average physical fitness level in each experimental group indicates the opportunities to improve the level of physical qualities development.

The obtained results can be used to develop differentiated approaches in physical education of schoolchildren with different aerobic productivity level.

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Received: 11.05.2018.

UDC 796.093.46

THE STRUCTURE AND LEVEL OF PHYSICAL ACTIVITY OF STUDENTS OF HIGHER EDUCATION INSTITUTIONS

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https://doi.org/10.29038/2220-7481-2018-03-99-107

Abstracts

Relevance. The urgency of the research is determined by the contradiction between the positive effect of desirable physical activity on the effective functioning of organism and the low level of its formation in the students. ***The purpose*** of the study is to determine the structure and level of physical activity of students in higher education. ***Methods.*** An international enquire of physical activity methodology (IPAQ) was used. In general, 1,160 students (323 boys and 837 girls) participated in the pedagogical study of 1–4 courses of the in-person form of education of the Lesya Ukrainka Eastern European National University. ***Results.*** The majority of respondents (57 %) have a low level of physical activity. 30 % of teenagers have an average level of physical activity and only 13 % have a high level. It was found that the high level of physical activity is the lowest among freshmen. The level of physical activity practically does not change and does not significantly affect the number of students' locomotion, in the process of learning. The specialty, which was chosen, does not significantly affect the level of physical activity of young people. The factors, which exhibit a peculiar effect on the usual level of physical activity, belong to the place of birth and residence of students. The largest number of people with a high level of locomotor activity was indicated by a large city (16,4 %). The low level of physical activity is demonstrated by students from villages and small towns (65 % and 59,1 %, consequently). ***Conclusions.*** The established level of physical activity is inadequate and does not help maintain the proper functional state of the organism. The training effect has a high level of physical activity, which includes independent or specially organized physical exercises. This component of physical activity is only in the compulsory physical exercises. If there are no such activities, then there is no high level of physical activity.

Key words: physical activity, IPAQ, students, institutions of higher education.

Василь Пантік. Структура та рівень рухової активності студентів закладів вищої освіти. ***Актуальність.*** Актуальність дослідження визначається суперечностями між позитивним впливом оптимальної рухової активності на ефективне функціонування організму та низьким рівнем її сформованості в студентів. ***Мета дослідження*** полягає у визначенні структури та рівня рухової активності студентів вищих закладів освіти. ***Методи.*** Використано міжнародний опитувальник рухової активності методика (IPAQ). Усього в педагогічному досліджені брало участь 1160 студентів (323 хлопців та 837 дівчат) 1–4 курсів денної форми навчання Східноєвропейського національного університету імені Лесі Українки. ***Результати.*** У більшості респондентів (57 %) спостерігаємо низький рівень рухової активності. 30 % молоді мають середній рівень рухової активності й лише 13 % – високий. Установлено, що високий рівень рухової активності найнижчий у першокурсників. У процесі навчання рівень рухової активності практично не змінюється та суттєво не позначається на кількості локомоцій студентів. Обраний фах суттєво не впливає на рівень рухової активності молоді. До факторів, які проявляють своєрідний вплив на звичний рівень рухової активності, належать місце народження й проживання студентів. Найбільша кількість осіб із високим рівнем рухової активності місцем свого народження вказали велике місто (16,4 %). Низький рівень рухової активності найбільше виявляють студенти із сіл і невеликих міст (65 % і 59,1 % відповідно). ***Висновки.*** Установлений рівень рухової активності є недостатнім і не сприяє підтриманню належного функціонального стану організму. Тренувальний ефект має високий рівень рухової активності, до якого належать самостійні або спеціально організовані заняття фізичними вправами. Але цей компонент рухової активності перебуває переважно лише у вигляді обов'язкових навчальних занять фізичними вправами. Якщо таких занять немає, тоді відсутній високий рівень рухової активності.

Ключові слова: рухова активність, IPAQ, студенти, заклади вищої освіти.

Василий Пантик. Структура и уровень двигательной активности студентов высших учебных заведений. ***Актуальность.*** Актуальность исследования определяется противоречием между положительным влиянием оптимальной двигательной активности на эффективное функционирование организма и низким

уровнем ее сформированности у студентов. ***Цель исследования*** – определение структуры и уровня двигательной активности студентов высших учебных заведений. ***Методы.*** Использован международный опросник двигательной активности методика (IPAQ). Всего в педагогическом исследовании участвовало 1160 студентов (323 юношей и 837 девушек) 1–4 курсов дневной формы обучения Восточноевропейского национального университета имени Леси Украинки. ***Результаты.*** У большинства респондентов (57 %) наблюдается низкий уровень двигательной активности. 30 % молодежи имеют средний уровень двигательной активности и лишь 13 % – высокий. Установлено, что высокий уровень двигательной активности является самым низким у первокурсников. В процессе обучения уровень двигательной активности практически не меняется и существенно не сказывается на количестве локомоций студентов. Выбранной специальности существенно не влияет на уровень двигательной активности молодежи. К факторам, которые проявляют своеобразное влияние на привычный уровень двигательной активности, принадлежат местом рождения и проживания студентов. Наибольшее количество лиц с высоким уровнем двигательной активности место своего рождения указали большой город (16,4 %). Низкий уровень двигательной активности всего проявляют студенты из сел и небольших городов (65 и 59,1 % соответственно). ***Выводы.*** *У*становленный уровень двигательной активности является недостаточным и не способствует поддержанию надлежащего функционального состояния организма. Тренировочный эффект имеет высокий уровень двигательной активности, к которому относятся самостоятельные или специально организованные занятия физическими упражнениями. Но этот компонент двигательной активности находится преимущественно только в виде обязательных учебных занятий физическими упражнениями. Если таких занятий нет, тогда отсутствует высокий уровень двигательной активности.

Ключевые слова: двигательная активность, IPAQ, студенты, высшие учебные заведения.

Introduction. The results of the analysis of modern scientific researches testify that physical activity is an integral part of human behavior, which ensures the normal functioning of body systems and preservation of health [2; 12; 15; 19]. The physical activity of students consists of a system of movements, which is one of the necessary factors of their life [10; 18; 22].

The high dependence of physical health and functional state of the organism on the level of physical activity of students is proved [1; 4; 6; 9; 14; 17]. At the same time, in the minds of most young people, physical activity is not an important attribute of a healthy lifestyle [21; 23; 25]. This is due to a number of reasons like low motivation for exercises, non-compliance with a healthy lifestyle and lack of efficiency in the modern organization of physical education of students, etc. [3; 11; 13; 16; 24].

Lack of physical activity leads to hypokinesia and hypodynamia, a decrease in the lung capacity, respiratory depth, minute volume of breath and maximum pulmonary ventilation [5; 7; 8; 20; 26]. **Consequently**, it is important to find an effective approach for increasing students' physical activity, which would promote the development of positive motivation for exercises, form the knowledge of independent health-improving activity.

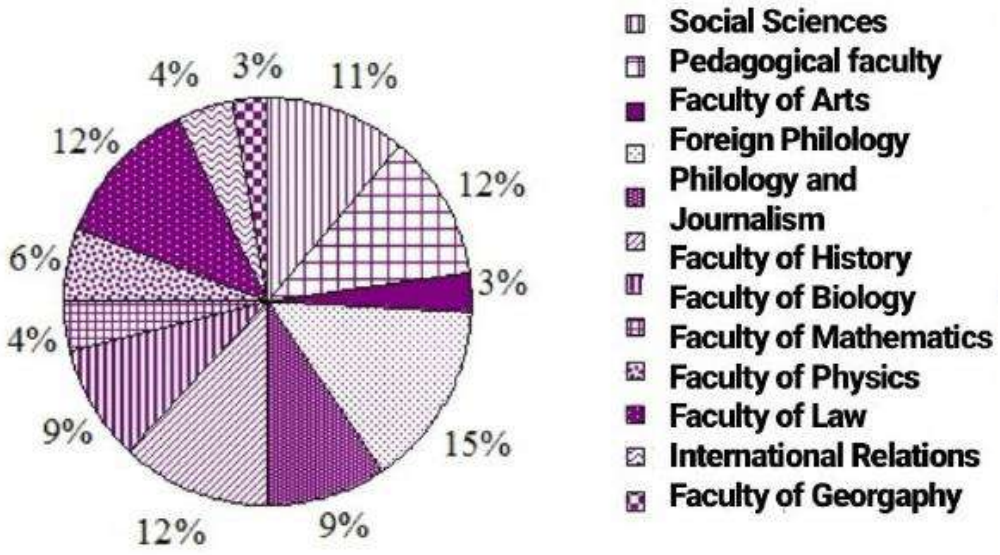
The purpose of the study is to determine the structure and level of physical activity of students of higher educational institutions.

Material and methods of the study. The standardized technique of the International Physical Activity Questionnaire (IPAQ) was used to determine the level of students' physical activity. It consists of 27 questions, which are divided into five parts. Each part covers a certain type of activity: physical activity related to work (farming, physical activity in the workplace, volunteer work, etc); physical activity linked with moving (moving from place to place, including moving to/from work, shops, suburban area, entertainment places, etc); housework, current work, caring for the family (physical activity, that is performed at home and outside the home, gardening, yard work, current household work), recreation, sport, physical activity in free time (specially organized physical activity), the time spent sitting or lying down (these questions relate to the time that respondent spent sitting at work, at home, while studying and in free time).

At the first stage, the energy consumption within each type of activity (in free time, during housework, at work) was calculated, taking into account the type of activity (low, medium, high) according to special formulas. The energy consumption for each type of activity is equal to product of the number of days in which the specified activity was performed, the time during it was lasted and the MET-value, which corresponds to the type of activity. In other words, the level of energy consumption of each type of activity

is equal to the sum of energy consumption of its type. At the second stage, the general level of physical activity was calculated in MET-minutes/ week. The respondents are divided into three categories on a categorical scale: low, medium, high, according to the results of processing the research data.

In general, 1160 students (323 boys and 873 girls) of 1-4 courses of full-time education of the Lesya Ukrainka Eastern European National University participated in the pedagogical study. The research participants were students of twelve faculties.



Pic. 1. *The distribution of students who took part in the research, according to the faculties*

The difference in the number of people who were involved in the research from various special fields is connected to uneven distribution of the number of students between the faculties. Also, significant number of female students who took part in the questionnaire is connected to the fact that mostly girls study at the university. At the same time, an essential number of involved people give grounds to assert that students of different faculties and both sexes were sufficiently represented.

Students are more evenly distributed according to the year of study in a sample of research participants. 386 students were involved to the research from the first course that is 33,3% , 283 (24,4%)- from the second course, 263 (22,7%)-from the third and 226 students (19,5%)- from the fourth course of study. This percentage distribution suggests that the research covers all age groups of students of both sexes (Pic. 2.).

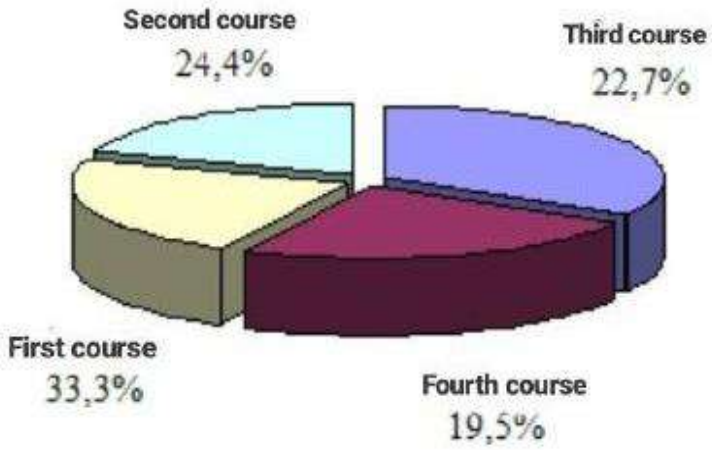
The standard statistical methods in the program Microsoft Excel were used for the analysis of the received data.

The result of the study. The analysis of the results of the research testified that only 13% (152 people) among students have a high level of physical activity. The majority of respondents (665 people or 57%) lead a sedentary lifestyle (pic.3).Consequently, the medium level of physical activity is almost in third of students (350 people or 30%).

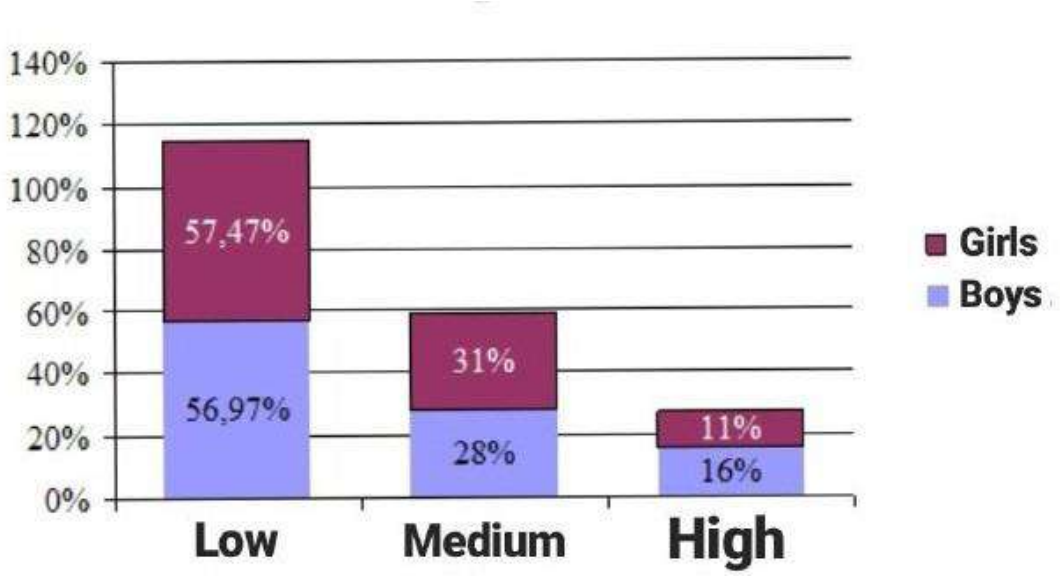
The distribution of students according to the faculties and level of physical activity is presented on the pic. 4.

The largest group of students with a high level of physical activity is in the faculty of biology (17,1%), the second position is occupied by students of the faculty of geography (16,1%), the last place with the significant difference belongs to the faculty of arts(7,9%). The largest group of students with a medium level of physical activity consists of the faculty of social sciences (42,6%), the faculty of foreign philology (40,5%) and faculty of law (32,4%). 20-30% of young people form a group with a medium level

of physical activity in other faculties. The smallest group is on the faculty of geography, the size of which is only 12,9%. The low level of physical activity prevails among the students of faculty of geography (71 %) and sociology (45 %).



Pic. 2. *The distribution of students who took part in the research, according to the course of study*



Pic. 3. *The distribution of students according to the level of physical activity, %*

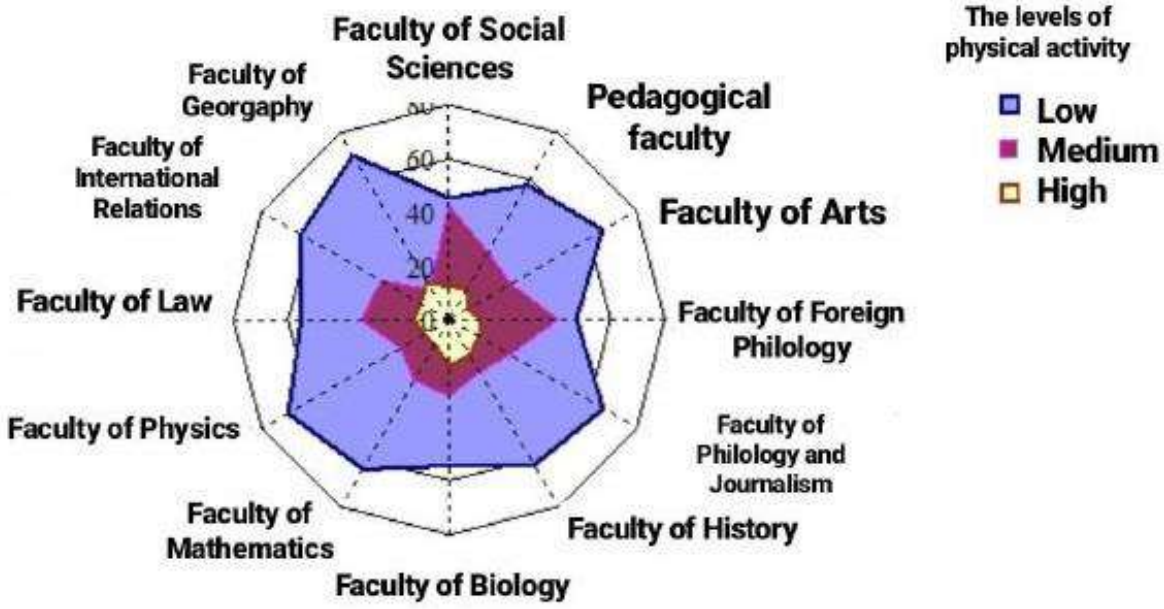
It is possible, according to the data of the course of study of students to research the influence of age factor on the formation of the level of physical activity. The detailed distribution of students by the level of physical activity and the courses of study is given in a table 1.

It was found that the high level of physical activity is the lowest among freshmen (16%). However, the part of students of this group is gradually reduced to 12% on the second course, 11% - on the third course and 9% - on the fourth course of study.

The number of participants who have the medium level of physical activity, varies in a narrow range – 24-29%. At the same time, the number of students with a low level of physical activity increased during the study at the university from 55%-52% on the first and second course to 62% on the third and fourth course of study.

The factors that exhibit a peculiar influence on the usual level of physical activity belong to a place of birth and a residence of students. The largest number of people with a high level of physical activity was indicated by a large city (16.4%).

The dependence on the level of the physical activity of students from the place of residence is presented in pic. 5.



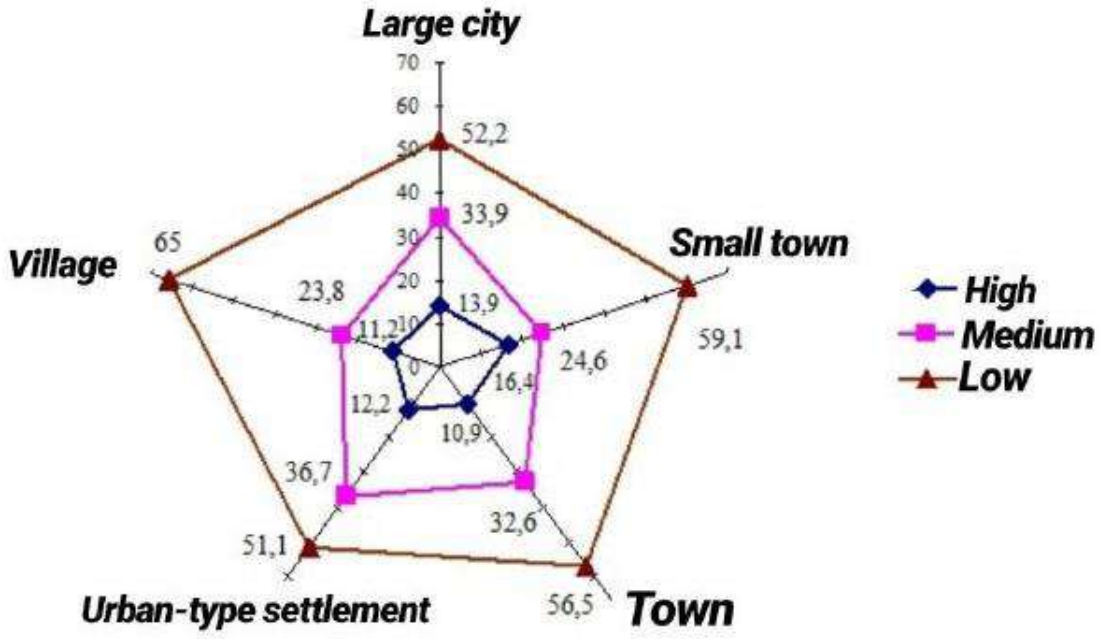
Pic. 4. *The distribution of students according to the level of physical activity, depending on faculties, %*

Table 1

The state of physical activity of students depending on the course of study, %

The level of physical activity	Sex	The course of study			
		1	2	3	4
Low	male	57	47	59	63
	female	54	53	63	62
	total	55	52	62	62
Medium	male	24	38	25	28
	female	31	36	28	30
	total	29	36	27	29
High	male	19	16	16	9
	female	14	12	9	9
	total	16	12	11	9
Total	male	33	20	26	30
	female	67	80	74	70

The smallest part of participants with a high level of physical activity is presented among students who were born in towns (10,9%). The highest percentage ratio with a medium level of physical activity is occupied by students from large cities (36,36%) and the least - students that are from villages (36,7%). The lowest level of physical activity is demonstrated by students from villages and small towns (65% and 59,1%), at the same time, fewer sedentary students are among those who were born in *urban-type settlements* (51,1%) and large cities (52,2%).



Pic. 5. *The distribution of students with different level of physical activity depending on their place of residence, %*

Discussion. The important role of the student's awareness of physical development and a healthy lifestyle plays both classmates and faculty which contributes to the formation of responsible attitude to their own health by their personal examples, agitation, which is carried out by university, media and the relevant authorities etc. Consequently, it is essential to analyze and identify the differences in the levels of physical activity of students who study at different faculties, according to the chosen specialty.

It was found that the highest rate of physical activity is shown by the faculties of foreign philology and social sciences, where more than half of students lead a lifestyle with a high and medium level of physical activity as well as the faculty of biology forming the largest group of students with a high level of physical activity.

Thus, the students have predominantly low level of physical activity (45–71 %) regardless of the chosen field of study. The medium level of physical activity is essentially represented by only two faculties of research (foreign philology and social sciences). The high level is rather insignificant and makes 8–17 % of the total number of students. In general, there was no fundamental difference between fields of study and levels of physical activity according to the research.

The changes in physical activity depending on the course of study show that the percentage of students with the high level of physical activity is the lowest and has a downward trend, while the medium and low levels differ in nonlinear dynamics. This trend testifies that two hours of physical education per week in the first and second course of study are not enough. In addition, the cancellation of classes in senior years exacerbates the problem of reducing the level of physical activity of students and proves a need to develop a comprehensive pedagogical methods to increase students' motivation for physical education and active lifestyle.

In general, students become conscious young people, listening to the advice of teachers on a healthy lifestyle and importance of physical education and begin to change their usual way of spending free time during a freshmen year, so the method of increasing the level of physical activity of students should be implemented systematically, starting from the first year.

Men are more physically active, as evidenced by the predominance of their share in group with high level of physical activity -16% against 11% of women. The percentage of students with low level of physical activity is almost the same and is, according to our research, about 57% for both sexes.

In comparison with academic achievements, the distribution of students by the level of physical activity is as follows: a high level prevails (19.5%) among excellent students, at the same time, the largest part of people with a low level of physical activity is presented by this group as well. The students who have good and average academic achievements are roughly equally divided into groups by levels of physical activity – about 58% are people with a low, 30 % - with a medium and 12-13% with a high level of physical activity.

The training effect has a high level of physical activity, which includes independent or specially organized physical exercises. This component of physical activity is presented only as the compulsory physical exercises. If there are no such activities, then there is no high level of physical activity.

In the future, it is necessary to develop adapted physical education programs, depending on the motivation of students.

Conclusion. The determination of the level of students' physical activity of higher educational institutions, using the international questionnaire of physical activity (IPAQ), testified that the majority of respondents (57 %) show a low level of physical activity. The medium level of physical activity is represented by 30% of young people and only 13% – high level.

It is established that the high level of physical activity is the lowest in freshmen. In the process of learning the level of physical activity does not change and does not significantly affect the number of students' locomotion. The specialty, which was chosen, does not significantly affect the level of physical activity of young people.

It can be argued that a certain level of physical activity is insufficient and does not contribute to the maintenance of proper functional state of the body taking into account the state of health and physical fitness of students who participated in research.

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Received: 20.08.2018.

UDC 796.012.62 - 057.875

STRENGTH INDICATORS OF SHOCK ACTIONS BY THE HANDS AND THE LEGS OF CADETS OF HIGHER EDUCATION INSTITUTIONS OF THE MINISTRY OF INTERNAL AFFAIRS OF UKRAINE

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https://doi.org/10.29038/2220-7481-2018-03-108-112

Abstracts

Relevance of Research Topic. It is important for the cadets to be able to perform high speed and strength attacks (taking into account vulnerable points on the human body), as it allows to effectively overcome the offender's actions and to negatively affect his ability to work if there is a direct threat to the life and health of a police officer or a citizen. ***Purpose and Methods of Research.*** The purpose of the work is to investigate the strengths of the shock actions by the hands and the legs of cadets at different stages of training. ***Methods:*** theoretical analysis and generalization of data of scientific-methodical literature and empirical materials of scientific research; control tests – testing, using the shock chronodynamometer «SPUDERG», which allows to measure the strength of shock actions; methods of statistical processing. ***Results of Work and Key Conclusions.*** The power indices of single shock actions were researched. A comparative analysis of the strength indices of individual types of shock actions by the hands and the legs of cadets at different stages of training was conducted. The obtained research results allowed to find reserves for the improvement of the level of special physical training of the cadets, as well as to increase the efficiency of the process of studying and improving the technique of shock actions in the educational process in the discipline «Special Physical Training».

Key words: special physical training, obtainers of higher education, manifestations of the strength in shock actions, stages of training, comparative analysis.

Марина Червоношапка, Галина Шутка, Оксана Чичкан. Силові показники ударів руками й ногами в курсантів закладів вищої освіти МВС України. ***Актуальність теми дослідження.*** Одним із важливих показників підготовленості курсантів є здатність виконувати удари з високою швидкістю та силою (з урахуванням вразливих точок на тілі людини), оскільки це дає змогу ефективно випереджати дії правопорушника та чинити негативний вплив на його працездатність за умови прямої загрози життю й здоров'ю працівника поліції або громадян. ***Мета й методи дослідження. Мета роботи*** – дослідити показники сили ударів руками та ногами в курсантів на різних етапах навчання. У роботі застосовували такі **методи**: теоретичний аналіз й узагальнення даних науково-методичної літератури та емпіричних матеріалів наукового дослідження; контрольні випробування – тестування з використанням ударного хронодинамометра «СПУДЕРГ», який дає змогу вимірювати силу ударів; методи статистичного опрацювання. ***Результати роботи та ключові висновки.*** Досліджено показники сили поодиноких видів ударів. Проведено порівняльний аналіз показників сили ударів у курсантів на різних етапах навчання. Отримані результати досліджень дали змогу виявити резерви для покращення рівня спеціальної фізичної підготовленості курсантів, а також підвищення ефективності процесу вивчення й удосконалення техніки ударних дій у навчальному процесі з дисципліни «Спеціальна фізична підготовка».

Ключові слова: «спеціальна фізична підготовка», здобувачі вищої освіти, прояви сили в ударних діях, етапи навчання, порівняльний аналіз.

Марина Червоношапка, Галина Шутка, Оксана Чичкан. Силовые показатели удары руками и ногами в курсантов высших учебных заведений МВД Украины. ***Актуальность темы исследования.*** Одним из важных показателей подготовленности курсантов является способность выполнять удары с высокой скоростью и силой (с учетом уязвимых точек на теле человека), поскольку это позволяет эффективно опережать действия правонарушителя и оказывать негативное влияние на его работоспособность при прямой угрозы жизни и здоровью работника полиции или граждан. **Цель и методы исследования**. Целью работы является исследовать показатели силы ударов руками и ногами у курсантов на разных этапах обучения. В работе применялись следующие методы: теоретический анализ и обобщение данных научно-методической литературы и эмпирических материалов научного исследования; контрольные испытания – тестирование с использованием ударного хронодинамометра «СПУДЕРГ», который позволяет измерять силу ударов; методы статистической

 ISSN 2410-2156 (Online), ISSN 2220-7481 (Print)

обработки. ***Результаты работы и ключевые выводы***. Исследована показатели силы отдельных видов ударов. Проведен сравнительный анализ показателей силы ударов у курсантов на разных этапах обучения. Полученные результаты исследований позволили выявить резервы для улучшения уровня специальной физической подготовленности курсантов, а также повышение эффективности процесса изучения и совершенствования техники ударных действий в учебном процессе по дисциплине «Специальная физическая подготовка».

Ключевые слова: «специальная физическая подготовка», соискатели высшего образования, проявления силы в ударных действиях, этапы обучения, сравнительный анализ.

Problem statement and its connection with important practical tasks. Future professional activity of cadets of higher education institutions of the Ministry of Internal Affairs of Ukraine is often associated with the arrest of an armed criminal, lack of information and time for decision-making, constant change of the situation, unexpected behavior of the detainee, etc. [9 etc.]. The educational discipline «Special Physical Training» at higher education institutions of the Ministry of Internal Affairs of Ukraine is aimed at training cadets with a high level of comprehensive physical preparedness, able to effectively solve operational service tasks, to permanently endure neuropsychiatric and muscle loadings without reducing their professional ability, while fully mastering techniques of physical impact and self-defense skills. One of the important components in the structure of special physical training of cadets is the possession of shock actions by the hands and the legs. In this case, it is important for the cadets to be able to perform kicks actions with high speed and strength (taking into account vulnerable points on the human body), since this allows to effectively prevent the offender's actions and to negatively affect his ability to work, when there is a direct threat to the police officer`s or the citizens` life and health. At the same time, scientific and methodological sources do not pay much attention to the issues of the strength of kicks and special methods of improving them in the educational course for cadets of the discipline «Special Physical Training».

Analysis of recent researches and publications. A list and description of the implementation of special techniques and actions [9 etc.] are given and the issues of general physical training [2 etc.] are mainly considered in the scientific and methodological developments on the problems of the cadets` preparedness of higher education institutions of the Ministry of Internal Affairs of Ukraine. A number of specialists consider the problem of studying the strength of hand and feet kicks as important indicators of preparedness: in boxing [4, 5 etc.], kickboxing [3, 10 etc.], in Thai boxing [1 etc.], in karate [7, 8 etc.] in the scientific and methodical literature on martial arts. In our opinion, it is relevant to carry out similar studies concerning cadets of higher education institutions of the Ministry of Internal Affairs of Ukraine at various stages of studying the discipline «Special Physical Training».

The purpose of the research is to investigate the strength indicators of hand and feet kicks of cadets at different educational stages.

The following methods were used in the work: theoretical analysis and generalization of data of scientific-methodical literature and empirical materials of scientific research; control tests – testing, using the shock chrono-dynamometer «SPUDERG» [6], which allows to measure the speed-power indicators of the performance of shock actions; the methods of statistical processing.

In order to research the strength indicators of single hands and feet hits, the control tests (testing) of cadets of the Lviv State University of Internal Affairs were conducted. The group of cadets that took part in the research included 33 people from I^{st}, II^{nd}, III^{rd}, IV^{th} year-studying students. Male cadets from approximate weight classes – from 60 to 75 kg were selected for the research.

Cadets that took part in the research performed the shock actions from the battle rack from a convenient distance in a boxing pear in the middle of which a recording sensor was contained. At the same time, the indicators of the strength of each shock action were registered in the conditional units (c.u.). For the research, the following types of shock actions by the feet were selected: a round kick, a front kick, a sidekick, and also types of shock actions by the hands: direct hit, side hit and hit from the bottom. Three attempts were made for each shock action, one of which was registered like the best. Duration of rest intervals between attempts was determined individually, according to the subjective feelings of cadets that took part in the research and regarding their readiness for the next performing.

Presentation of the main material of the research. The analysis of the results of the research of the strength of the feet kicks (See Table 1) showed that among the researched types of kicks, the highest strength

indicators were observed in frame of the round kicks («mawashi geri»), somewhat smaller – in sidekicks («yoko-geri») and even smaller – in front kicks («mae-geri»). This, in our opinion, is due to the fact that the technique of foot round kick assumes a combination of the movement of the impact limb with a powerful body torsion, which provides relatively high rates of strength of this type of hit, similar to the strength of the hands kicks of boxers [4].

Table 1

Strength indicators of feet kicks

Type of kick	Strength indicators of kicks by the legs of cadets			
	I course	II course	III course	IV course
	M ± m, conditional units	M ± m, conditional units	M ± m, conditional units	M ± m, conditional units
Left round kick	130,6 ± 8,1	158,3 ± 6,9	163,4 ± 10,2	166,3 ± 9,8
Right round kick	149,3 ± 5,1	187,4 ± 7,7	188,5 ± 9,9	190,3 ± 8,2
Left front kick	110,5 ± 5,4	122,7 ± 6,1	130,7 ± 5,1	131,9 ± 10,1
Right front kick	121,7 ± 8,9	130,3 ± 6,8	132,5 ± 7,1	134,1 ± 9,8
Left sidekick	126,3 ± 6,8	140,4 ± 7,7	142,3 ± 6,9	145,1 ± 10,1
Right sidekick	133,4 ± 7,9	152,4 ± 6,2	156,3 ± 8,2	159,7 ± 9,3

As a result of the research of strength indicators of the hands kicks , it was revealed (See Table 2) that among the three types of kicks being researched, the strongest are the sidekicks, somewhat weaker – front kicks, and the lowest strength indicators – the kicks from the bottom.

A comparison was made between the cadets` strength kicks indicators from the different courses. Cadets of the IInd year study have higher rates of impact ($p < 0,05$) compared with the cadets of the Ist year stydy. At the same time, the conducted studies did not reveal reliable significant improvements of strength indicators of single hits of the IIIrd and IVth year-study cadets.

Table 2

Strength indicators of hands kicks

Type of kick	Strength indicators of kicks by the hands of cadets			
	I course	II course	III course	IV course
	M ± m, conditional units	M ± m, conditional units	M ± m, conditional units	M ± m, conditional units
Front kick by the left hand	128,3 ± 5,6	149,8 ± 6,1	153,2 ± 5,6	155,8 ± 8,7
Front kick by the right hand	158,7 ± 6,7	182,3 ± 5,5	186,1 ± 8,4	189,2 ± 9,4
Kick from the bottom by the left hand	90,4 ± 5,4	109,4 ± 6,2	115,3 ± 7,9	119,6 ± 7,5
Kick from the bottom by the right hand	105,7 ± 6,1	130,7 ± 4,9	134,8 ± 7,1	139,4 ± 6,1
Kick from the side by the left hand	180,3 ± 6,8	197,6 ± 7,1	199,4 ± 10,5	200,6 ± 10,1
Kick from the side by the right hand	201,2 ± 5,9	224,9 ± 6,9	230,2 ± 9,5	231,1 ± 10,3

Discussion. The data obtained by us regarding the strength of the feet kicks differ from the data of similar studies conducted in Kyokushin Karate [8], where it was found out that athletes specializing in Kyokushin Karate, frontkicks («yoko-geri») are stronger than a round kick («mawashi geri»), which can be explained by the specific features of the technical training of athletes in this form of karate.

The results of the research of the strength of the hands kicks are consistent with the data of similar studies conducted in Kyokushin Karate [7]. At the same time, the receiving data are different from the results of studies of the strength of boxers' single hands kicks. So, the power of the hands kicks of boxers is greater than the kicks from the bottom, and the strength of kicks from the bottom, in turn, is greater than front kicks [5]. The results obtained by us confirm the phenomenon of functional asymmetry (that is

expressed in the fact that the indices of strength indicators of left hand and foot kicks are lower than the similar strength indicators of kicks with the right hand and foot).

The dynamics of the researched strength indicators of kicks in the different educational phases, in our opinion, can be explained by the structure and content of the teaching of the discipline «Special Physical Training» (program provides the study of kicks techniques for cadets of the Ist year-stydy, and their further improvement for cadets of the IInd year-stydy). It is obvious that in practical classes for cadets of the IIIrd–IVth year-stydy the main attention is paid to the improvement of other methods and actions, and special methods of improvement of kicks are used to a lesser extent. This may indicate obvious reserves for the improvement of the structure of special cadets' physical oreparedness, as well as the expediency of using a wide range of special tools and methods to improve the characteristics of the kicks technique at all stages of education.

The scientific novelty of the work is to expand and supplement scientific data on the strength indicators of certain types of the hands and feet kicks. For the first time, the dynamics of cadets` strength indicators of the hands and feet kicks at different stages of their education was researched.

Conclusions and prospecs of further researches. A comparative analysis of the strength indicators of individual types of cadets` strength indicators of the hands and feet kicks at different stages of their education was conducted. Among the studied types of kicks, the highest strength indicators are observed in the roundhouse kicks («mavashi-geri»), somewhat smaller – in the sidekicks («yoko geri»), and even lower – in the front kicks («mae-geri»). Among the types of the hands kicks the strongest were the cadets` kicks from the side, somewhat weaker – the front kicks, and the lowest strenghth indicators were marked in the kicks from the bottom. It was found that the strengths of individual types of the hands and the feet kicks of the IInd year-studying cadets were higher ($p < 0,05$) than those of the I year-studying cadets. At the same time, cadets of the IIIrd-IVth year study denonstrate a stabilization of the strength indicators of single hands and feet kicks.

In the future, it is envisaged to research the performance of other kicks actions (single and combined kicks), as well as the development of special tools and methods complexes for use in the educational process of the «Special Physical Training» discipline.

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Received: 20.08.2018.

UDC 616-089+616.13-004.6

STRUCTURE OF SURGICAL INTERVENTION AT OBLITERATING ATHEROSCLEROSIS OF LOWER EXTREMITIES AND ASPECTS OF REHABILITATION OF PATIENTS WITH THIS PATHOLOGY

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https://doi.org/10.29038/2220-7481-2018-03-113-120

Abstracts

The Relevance of the Topic*.** In most economically developed countries cardiovascular diseases occupy a leading position among the causes of morbidity, disability, and mortality. Mortality from diseases of the cardiovascular system prevails over mortality from all malignant neoplasms taken together, and, 25% of those who died of cardiovascular diseases are people of working age. Atherosclerosis (aterosclerosis) is a chronic disease, characterized by lipoid infiltration of the inner shell of the arteries of the elastic and mixed types with subsequent development of connective tissue in their wall, and clinically manifested by general and local disorders of blood circulation. Obliterating atherosclerosis is a type of atherosclerosis, characterized by a sharp narrowing or complete closure of the arterial lumen. As a rule, it is observed in the arteries of the lower extremities, heart, kidneys and the external sections of the brain blood vessels. ***The purpose of the study – to establish the structure of surgical interventions in the obliterating atherosclerosis of the lower extremities and to identify the main aspects that should be addressed for the rehabilitation of patients with this pathology. ***Methods of research –*** analysis and synthesis of scientific sources, analysis of medical records. The analysis of 59 medical records of patients after surgical interventions with obliterating atherosclerosis of the lower extremities has been performed. The structure of interventions and their complications for ten months of 2017 have been analysed. The exclusion criterion is patients with obliterative atherosclerosis of the lower extremities with diabetes. ***Results of the Research.*** Such patients need rehabilitation interventions, depending on the stage of the disease, on the type of surgical intervention in the early postoperative period and in ambulatory surveillance. Particular attention is needed for patients after amputation of phalanges of toes, the support part foot and amputations above the knee. After all, amputation of the lower extremities significantly disturbs the body's static, the center of gravity moves toward the retained limb. As a result, the slope of the pelvis, which leads to curvature of the spine and an increase in the load on the retained limb occurs, as well as the atrophy of the muscles of the box. The quality of life of patients significantly decreases. ***Conclusions.*** According to the results of the study it has been found out the percentage of women with this disease is lower than that of men, but it is significant, which does not completely coincide with previous studies, and obviously, it is necessary to investigate the causes of the growth of the disease in women. It has been found out that almost a quarter of patients with this diagnosis got into the surgery department at the stage of destructive changes with distinctive ulcers in the distal parts of the limbs and fingers, which led to their amputation.

Key words: obliterating atherosclerosis of the lower extremities, rehabilitation.

Наталія Голод. Структура оперативних утручань при облітеруючому атеросклерозі нижніх кінцівок та аспекти реабілітації хворих із цією патологією. ***Актуальність.*** Захворювання серцево-судинної системи в більшості економічно розвинених країн займають лідируючі позиції серед причин захворюваності, інвалідизації та смертності. Смертність від захворювань серцево-судинної системи переважає над смертністю від усіх злоякісних новоутворень, разом узятих, причому, 25 % померлих від серцево-судинних захворювань – це люди працездатного віку. Атеросклероз (atherosclerosis) – хронічна хвороба, яка характеризується ліпоїдною інфільтрацією внутрішньої оболонки артерій еластичного й змішаного типів із наступним розвитком у їх стінці сполучної тканини та клінічно проявляється загальними й місцевими розладами кровообігу. Атеросклероз облітеруючий – різновид атеросклерозу, що характеризується різким звуженням або повним закриттям просвіту

артерій. Він спостерігається, зазвичай, в артеріях нижніх кінцівок, серця, нирок і екстракраніальних відділах судин головного мозку. ***Мета дослідження*** – установити структуру оперативних утручань при облітеруючому атеросклерозі нижніх кінцівок та виявити головні аспекти, на які має бути спрямована реабілітація хворих із цією патологією. ***Методи дослідження*** – аналіз та синтез наукових джерел, аналіз медичних карт. Проведено аналіз 59 медичних карт хворих після оперативних втручань при облітеруючому атеросклерозі нижніх кінцівок. Проаналізовано структуру утручань і їх ускладнень протягом десяти місяців 2017 р. Критерій виключення – хворі з облітеруючим атеросклерозом нижніх кінцівок із цукровим діабетом. ***Результати дослідження.*** Такі хворі потребують реабілітаційного втручання залежно від стадії захворювання, типу оперативного втручання вже в ранньому післяопераційному періоді та в амбулаторних умовах. Особливої уваги потребують хворі після ампутації фаланг пальців, опорної частини стопи та ампутацій вище коліна. Адже при ампутації нижніх кінцівок значно порушується статика тіла, центр тяжіння переміщується в бік збереженої кінцівки. Як наслідок, нахил таза, що призводить до викривлення хребта й збільшення навантаження на збережену кінцівку, відбувається атрофія м'язів кукси. Значно знижується якість життя пацієнтів. ***Висновки.*** За результатами дослідження встановлено, що відсоток жінок із цим захворюванням є меншим, порівняно з чоловіками, проте він значний, що не зовсім збігається з попередніми дослідженнями та, очевидно, потребує вивчення причин росту цього захворювання серед жінок. Також установлено, що майже чверть пацієнтів із цим діагнозом поступили в хірургічне відділення в стадії деструктивних змін із характерними виразками в дистальних відділах кінцівки й пальцях, що призвело до їх ампутації.

Ключові слова: облітеруючий атеросклероз нижніх кінцівок, реабілітація.

Наталия Голод. Структура оперативных вмешательств при облитерирующем атеросклерозе нижних конечностей и аспекты реабилитации больных с данной патологией. ***Актуальность.*** Заболевания сердечно- сосудистой системы в большинстве экономически развитых стран занимают лидирующие позиции среди причин заболеваемости, инвалидизации и смертности. Смертность от заболеваний сердечно-сосудистой системы преобладает над смертностью от всех злокачественных новообразований, вместе взятых, причем, 25 % умерших от сердечно- сосудистых заболеваний – это люди трудоспособного возраста. Атеросклероз (atherosclerosis) – хроническая болезнь, которая характеризуется липоидный инфильтрацией внутренней оболочки артерий эластичного и смешанного типов с последующим развитием в их стенке соединительной ткани и клинически проявляется общими и местными расстройствами кровообращения. Атеросклероз облитерирующий – разновидность атеросклероза, характеризующаяся резким сужением или полным закрытием просвета артерий. Он наблюдается, как правило, в артериях нижних конечностей, сердца, почек и экстракраниальных отделах сосудов головного мозга. ***Цель исследования*** – установить структуру оперативных вмешательств при облитерирующем атеросклерозе нижних конечностей и выявить основные аспекты, на которые должна быть направлена реабилитация больных с данной патологией. ***Методы исследования*** – анализ и синтез научных источников, анализ медицинских карт. Проведен анализ 59 медицинских карт больных после оперативных вмешательств при облитерирующем атеросклерозе нижних конечностей. Проанализирована структура вмешательств и их осложнений в течение десяти месяцев 2017 г. Критерий исключения – больные с облитерирующим атеросклерозом нижних конечностей с сахарным диабетом. ***Результаты исследования.*** Такие больные нуждаются вреабилитационном вмешательстве в зависимости от стадии заболевания, типа оперативного вмешательства уже в раннем послеоперационном периоде и в амбулаторных условиях. Особого внимания требуют больные после ампутации фаланг пальцев, опорной части стопы и ампутаций выше колена, ведь при ампутации нижних конечностей значительно нарушается статика тела, центр тяжести перемещается в сторону сохранившейся конечности. Как следствие, наклон таза, что приводит к искривлению позвоночника и увеличения нагрузки на сохранившуюся конечность, происходит атрофия мышц культи. Значительно снижается качество жизни пациентов. ***Выводы.*** По результатам исследования установлено, что процент женщин с данным заболеванием является меньшим по сравнению с мужчинами, однако он значителен, что не совсем совпадает с предыдущими исследованиями и, очевидно, требует изучения причин роста данного заболевания среди женщин. Также установлено, что почти четверть пациентов с данным диагнозом поступили в хирургическое отделение в стадии деструктивных изменений с характерными язвами в дистальных отделах конечности и пальцах, что привело к ампутации.

Ключевые слова: облитерирующий атеросклероз нижних конечностей, реабилитация.

Introduction. Cardiovascular diseases in most economically developed countries are among the leading causes of illnesses, disability, and mortality. Mortality from diseases of the cardiovascular system prevails over mortality from all malignant neoplasms taken together, and, 25% of those who died of cardiovascular diseases are people of working age. Atherosclerosis (aterosclerosis) is a chronic disease, characterized by lipoid infiltration of the inner shell of the arteries of the elastic and mixed types with subsequent development of connective tissue in their wall, and clinically manifested by general and local disorders of

blood circulation. Obliterating atherosclerosis is a type of atherosclerosis, characterized by a sharp narrowing or complete closure of the arterial lumen. As a rule, it is observed in the arteries of the lower extremities, heart, kidneys and the external sections of the brain blood vessels [4].

The leg pain, which occurs when walking and disappears when resting, is evidence of the symptom of stenosis and occlusion of the arteries of legs or bifurcation of the aorta which is called 'intermittent lameness. Localization, intensity and nature of pain indicate the degree of blood circulation disorders, the degree of ischemia as well as the pace of the disease development. With acute occlusion of the arterial trunk, the pain is particularly intense. Thus, the authors P.Ya.Chumak, A.Ya.Kuznetsov, M.O Rudy, O. P.Kovalev noted that muscle weakness and paresis (feeling numbness, tingling, goosebumps) can be symptoms of a disruption of the blood circulation. They increase at the moment of functional loading.

At present, many rehabilitation programs for patients with intermittent lameness have been developed in the United States and Europe, however, the issue of rehabilitation of patients after surgical interventions at obliterating atherosclerosis of lower extremities remains open and complicated, since patients have many concomitant diseases and require a variety of physiotherapy as well as ergotherapeutic intervention.

The purpose of the study: to establish the structure of surgical interventions at the obliterating atherosclerosis of the lower extremities and to identify the main aspects that should be addressed for the rehabilitation of patients with this pathology.

The methods of the research: analysis and synthesis of scientific sources, analysis of medical records. The analysis of 59 medical records of patients after surgical interventions with obliterating atherosclerosis of the lower extremities has been performed. The structure of interventions and their complications for ten months of 2017 have been analysed. The exclusion criterion is patients with obliterative atherosclerosis of the lower extremities with diabetes.

The research was conducted on the basis of the Ivano-Frankivsk City Hospital No. 1, at the surgery department.

Results of the research. The main symptoms of obliterating atherosclerosis of the lower extremities are: pain or feeling of tiredness in the muscles of the legs when walking (usually in the calves muscles); this symptom is one of the earliest signs of atherosclerosis of the vessels of legs (intermittent lameness); unusual feeling of cold and numbness in the foot, which increases with physical activity (walking, climbing the stairs); the difference in skin temperature between the limbs (the suffering leg is colder than the healthy one); pain in the leg when resting, which deprives the patient of sleep; the presence of a wound that does not heal, or a trophic ulcer, usually located in the foot or the lower third of the shin; darkening of the skin, often in the form of dark brown or black necrosis of the fingers of the foot (gangrene); shrinkage of the area, covered with hair, pallor and dry skin, deformation of the nail plate, hyperkeratosis. [1; 4; 9].

Different methods are used to diagnose obliterative atherosclerosis of the lower extremities. The overview can reveal symptoms of trophic disorders of the tissues. By means of palpation, it is possible to detect changes in the temperature of different parts of the body and compare it with symmetrical areas, as well as to detect and compare the pulsation of arteries on symmetrical areas. Auscultation allows calculating the shoulder-shin index. The following functional tests are also applied: Opel (1911). Samuels (1929), Panchenko (1937), Goldflam (1985), Moshkovych, Shamova, Sittenko (1907, 1949, 1953), 'White Spot' test. Modern functional methods of research are also applied, namely, reovasography, ultrasound dopplerography, angiography, oscillography, thermometry (-grafy) of the skin, computer tomography, which are used to clarify the clinical diagnosis, the degree and the nature of vascular lesions, evaluation of the treatment effectiveness, and others. [4; 6].

Today foreign and domestic specialists for classification of the stages of obliterating atherosclerosis of the lower extremities use the classification by R.Fontain et.all. (1968):

I - leg pain appears only after prolonged (more than 1000 m) walking;

IIA - pains arise after walking the distance in the range of 200-1000 m;

IIB - painless walking on less than 200 m;

IIIA - occurrence of 'pains at rest', appearing in a horizontal position;

IIIB - frequent 'pains at rest', which force to lower the leg more 3-4 times per night;

IV A- the appearance of necrotic changes of the fingers of the foot;

IV B- gangrene of feet or legs. [2; 3; 6].

Also, according to the affected area, atherosclerosis is divided into the following forms:

Lerish syndrome (occlusion of the terminal department of the aorta and the iliac arteries); occlusion of the femoral artery, occlusion of the popliteal artery; Takayasi syndrome (occlusion of the arteries of the aorta arch); occlusion of mesenteric arteries; occlusion of the renal arteries; atherosclerosis of the brain arteries. [4; 5].

By the level of occlusion, the atherosclerosis of the lower extremities is divided into aortic bifurcation (Lerish syndrome); idiopathic-femoral segment; hip-popliteal segment; popliteal-spine segment (distal) (See Fig. 1).

It is believed that atherosclerosis is a disease, caused by a number of endogenous and exogenous factors that contribute to its clinical manifestations and progression.

Fig. 1. *Angiogram. Variants of atherosclerotic lesion of the femoral artery.*

According to the analysis of sources [1; 4; 6], at present it is believed that the following main factors lead to the development of atherosclerosis:

- Smoking;
- Male gender (in most cases);
- Hypercholesterolemia, hyperlipidemia;
- Increased arterial pressure (regardless of the cause of its growth);
- Hormonal factor (hypothyroidism, diabetes mellitus);
- Social factors (emotional strain, stress);
- Obesity, excess body weight;
- Low physical activity;
- Genetic, hereditary factors.

However, there is no evidence in scientific sources that exactly each of these factors alone leads to the development of the disease.

Surgical treatment is indicated for all patients with severe limb ischemia, the factor that determines the operability of individuals with severe ischemia is the state of vascular outflow, that is, distally the location of the occlusion. The vascular reconstruction is indicated for all patients, in which, according to angiography, the basal ways of outflow (superficial or deep thoracic artery) have been preserved in the aorta-iliac localization of the occlusion, or at least in one of the arteries of the shin with total lesions of the femoropopliteal and peripheral arterial segments. The defeat of the main outflow segments to a significant extent is a contraindication for vascular reconstruction. In determining the indications for the operation, along with local signs of operability, special attention is paid to the general condition of patients, the nature of the accompanying diseases, which determine the degree of surgery risk and are a general indicator of patients` operability [1; 4].

The restoration of the main blood flow during occlusal lesions of the abdominal aorta and major arteries is achieved by means of the main types of operations that have been widely used in surgical practice, such as:

1. Different types of endarterectomy, intimmetromectomy.
2. Bypass surgery of the occlusion segment of the artery.
3. Resection and replacement of the obliterable segment of the artery (prosthetics).

If segmental occlusion of arteries in patients does not exceed 7-9 cm, endarterectomy is indicated. The operation consists in removing the altered intima together with the atherosclerotic plaque and thrombus. It is performed by either open (longitudinal arteriotomy over the obliterated section of the artery) or closed (transverse arteriotomy) method.

Each of these methods has its advantages and disadvantages. Endarterectomy is rarely used since the occlusion process usually affects the vessels to a large extent. In such cases, bypass surgery or resection of the affected artery area is carried out with the replacement of its plastic material [4].

In occlusive lesions of the aorto-iliac segment, operations of bypass grafting by aloprosthesis or resection of the affected area of the vessel with its subsequent prosthetics are more widely used. Currently, for arterial plastics, two types of vascular grafts are used, mainly, autovein and synthetic prostheses (lavsan, fluorlon-lavsan, dacron, and teflon) [1; 4].

At an atherosclerotic lesion of the abdominal aorta and iliac arteries, aortic-femoral shunting with the usage of a synthetic transplant or resection in the bifurcation area of the aorta with prosthetics are performed. At obliteration of the artery in the femoral-popliteal segment, femoral-popliteal or femoral-tibial shunting by a segment of a large subcutaneous vein is performed. Preference is given to autoveins, because, as domestic experts note, synthetic dentures are throbbing soon after the operation [1; 4].

The ideal method for revascularization of the limb with accompanying occlusions of the aorto-iliac and femoral-popliteal segments is the double reconstruction of both segments. If it is impossible to perform reconstructive surgery in patients with severe limb ischemia, surgery on the sympathetic nervous system and adrenal glands is indicated. Despite the fact that the results of lumbar sympathectomy in patients with III and IV stages of the disease are worse than in patients with stage II, practically all patients are shown lumbar sympathectomy as an alternative to amputation. The effectiveness of this operation is higher when atherosclerotic lesions are mainly localized in the lower extremities, when young patients are ill, at the I and II stages of the disease and when carrying out reconstructive operations at the same time. After sympathectomy, a paresis of the arteries of the limb occurs, peripheral angiospasm is eliminated, and the development of collateral circulation is stimulated [2; 4].

With significant dystrophic changes in the tissues of the distal parts of the extremities with gangrene and extensive necrosis with severe pain syndrome, lymphangitis and inguinal lymphadenitis, the simultaneous execution of lumbar sympathectomy and intraarterial infusion of medications into one of the branches of the femoral or external iliac artery are indicated. Intraarterial infusion of medications allows to remove the pain syndrome, peripheral angiospasm, improves microcirculation and rheological properties of blood, reduces inflammation and swelling of tissues. [4: 5].

Large necrosectomy, exarticulation of the fingers or economical amputations on the foot or leg, or higher are carried out in approximately 50% of cases with patients who have gangrenous ulcerative-necrotic changes in tissue of distal parts of the extremity along with the performance of reconstructive surgery, the intervention on the sympathetic nervous system and adrenal glands or prolonged intraarterial infusion. Limb amputation at the level of the thigh is indicated with high occlusion of the major arteries, as well as significant, irreversible changes in the tissues of the distal limb parts. The general and local conservative treatment is pursued with a successful restoration operation and the presence of pulsed blood flow along the arteries of the legs and feet. During the postoperative period, the following complications may occur: thrombosis of auto- or allograft, requiring repeated extreme surgical intervention; bleeding from an operated wound: primary (in the first 3 days), secondary (after 5 days), eroded; hematuria (indicates the overdose of anticoagulants) [2; 4].

According to our research, conducted at the surgery department of the Ivano-Frankivsk Central City Hospital, the majority of patients with this diagnosis are men. The gender structure of patients, undergoing surgical interventions for atherosclerosis of the lower extremities, is shown in Figure 2.

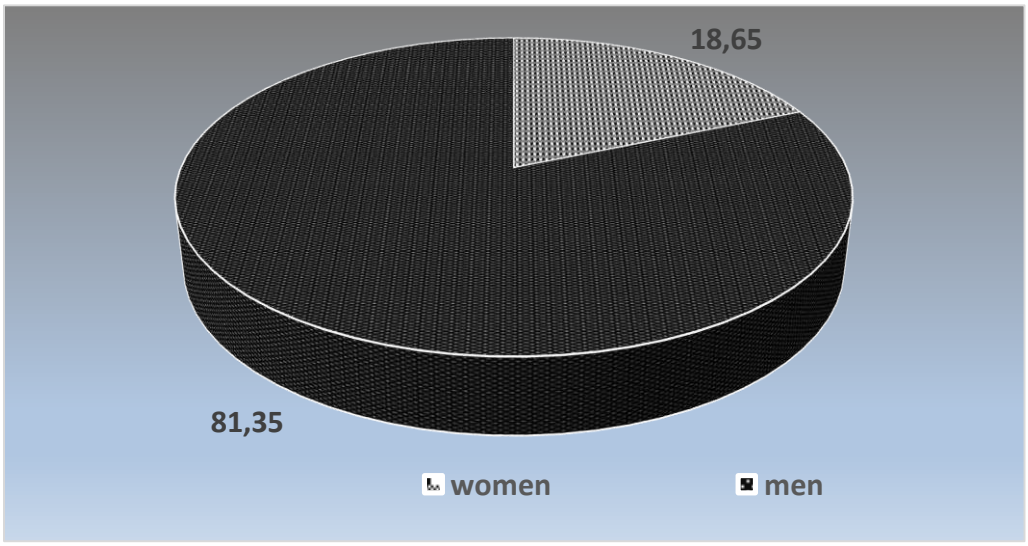

Fig. 2. *Gender structure of patients (%)*

The great problem of treatment and rehabilitation of these patients is that patients with this diagnosis usually come into hospital in the stage of destructive changes with characteristic ulcers in the distal parts of the extremities and fingers. The edges and bottom of these ulcers are 'stale', covered with dirty-gray bloom; there is no granulation, while inflammatory infiltration appears around. There is a swelling of the foot and shin. Pain in the foot and fingers becomes permanent and unbearable. A dry or wet gangrene of fingers and feet develops. In order to preserve the untapped part of the foot, in such cases, amputation of the fingers or parts of the foot is performed, and sometimes higher amputations are performed.

After analyzing the structure of patients who underwent surgical interventions for atherosclerosis of the lower extremities, it was found out that a significant percentage of patients had an amputation of phalanges, and a smaller percentage underwent amputation of the part of the foot (See Fig. 3).

Consequently, according to the analysis of the results of the study, it is clear that the percentage of women with this disease is less than that of men, but it is significant, which does not exactly coincide with the previous studies and obviously the causes of the growth of this disease among women need to be studied.

It was also found out that nearly a quarter of patients with this diagnosis entered the surgery department at the stage of destructive changes with characteristic ulcers in the distal extremities parts and fingers that led to their amputation.

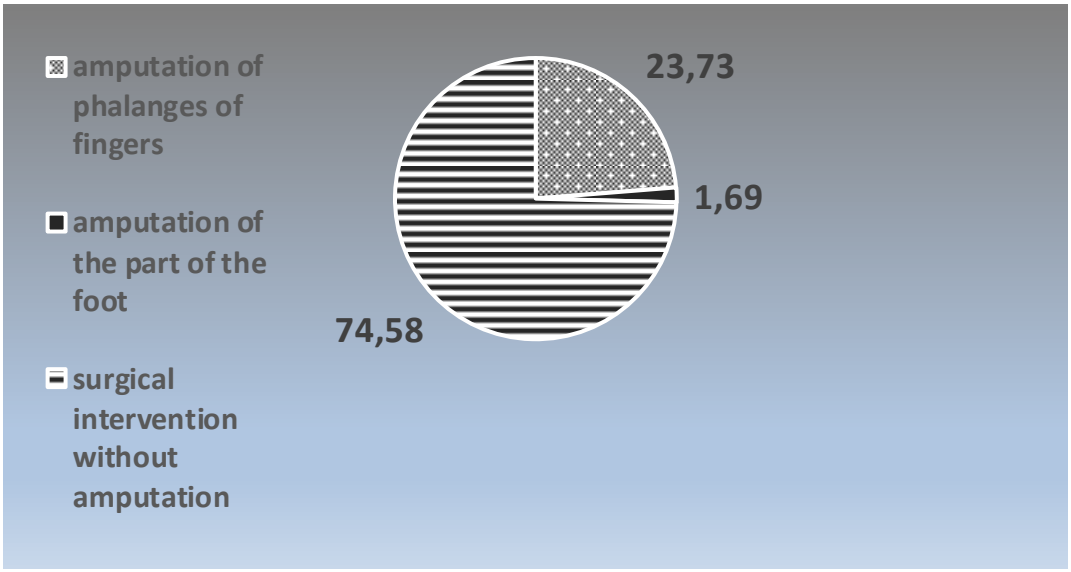

Figure 3. *Structure of surgical interventions (%)*

Discussion. The current health care system has rather low percentage of patients with this pathology who received rehabilitation care. After leaving the hospital, patients are subjected to clinical observation for a long time. This observation is usually of a formal nature. As a rule, for the prevention of exacerbation, the decision of the Medical Advisory Commission of the clinics provides restrictions on work, which does not lead to a decline in qualifications. People of manual labour are transferred to perform light work, and if this leads to a reduction their qualification, a disability of the group III is provided for the period of retraining.

In Phase II of the disease, only people of mental labor can work. People of unskilled physical work are assigned the disability of the group III. The disability of the group II is given to patients with one amputation (thighs, shins) and with a lesion in Phase II of the disease – with another limb. In Phase III of the disease, all are recognized as invalids of the group III, if necessary, they need to downscale the manufacturing activity. Frequent exacerbations of the disease provide the basis for the disability of the group II. In Phase IV of the disease, the group II is provided, and with the defeat of both legs, the disability of the group I is assigned [4]. However, these patients do not receive ergotherapeutic assistance, which could bring them back into society.

Treatment in Ukraine for such patients depends on the localization of lesions and the degree of limb ischemia. At the initial stages of circulatory disturbances, conservative treatment of the extremities is indicated. It is conducted 2-3 times a year, the course lasts 1-2 months. Vasodilators, antispasmodics, acting on cholinergic systems, are prescribed, as well as ganglion blocking agents, which are drugs that improve the rheological properties of blood and microcirculation. Anti-sclerotic drugs, that reduce the absorption of cholesterol, are also applied [1; 2; 4].

In convalescent hospitals of Ukraine physiotherapeutic treatment (referring to the use of natural and reorganized factors) is aimed at improving blood circulation, eliminating hypoxia in tissues, preventing the progression of the disease and normalizing the functional state of the central nervous system, namely, baro- and laser therapy, hyperbaric oxygenation. Among balneoprocedures different baths are often used (oxygen, radon, iodine-bromine, hydrogen sulfide, oxygen-radon, marine), as well as mud and ozocerite applications, impulse currents, UHF, electrophoresis of medications, microwave therapy, magnetotherapy. Exercise therapy is also used: walking, curative gymnastics, swimming in the pool (30-32 ° C), sports games and exercises, swimming and swimming in the sea (24-26 ° C). Massages in the back, lumbar area and segmental massage are carried out [4].

However, in the modern domestic health care system, there is no secondary prevention of this disease, and the importance of preventive measures aimed at eliminating the causes of the disease and preventing further complications are underestimated. There is no evaluation of the effectiveness of rehabilitation services provided, as a rule, all rehabilitation is limited to certain procedures.

An analysis of foreign sources has shown that abroad a great deal of attention is paid to increasing motor activity by applying aerobic loads to this group of patients. This, in turn, increases the duration and distance of stroke, and as a result, improves the lives of such patients and significantly reduces the percentage of patients with progression of obliterative atherosclerosis of the lower extremities. Also, rehabilitation measures are being developed to refuse patients from harmful habits, to correct a diet, aimed at normalizing body weight and lowering cholesterol level in the blood [6].

Such patients need rehabilitation interventions, depending on the phases of the disease, on the type of surgical intervention in the early postoperative period and in ambulatory surveillance. Patients after amputation of phalanges of toes, the support part foot and amputations above the knee need particular attention. After all, amputation of the lower extremities significantly disturbs the body's static, the center of gravity moves toward the retained limb. As a result, the slope of the pelvis, which leads to curvature of the spine and an increase in the load on the retained limb occurs, as well as the atrophy of the muscles of the box. The patients` quality of life significantly decreases.

Conclusions and prospecs of further researches. More than 5000 surgical interventions are performed annually in our country. They are aimed at restoring blood circulation in the abdominal basin of the aorta and lower extremities arteries in patients with atherosclerosis of the lower extremities vessels. The situation is complicated by the fact that the majority of patients with obliterative atherosclerosis call for help in later phases when occlusions take 'multistory' character and the risk of limb loss is very high.

Modern domestic surgical treatment of patients with chronic critical ischemia of the lower extremities is at a high level, however, the effectiveness of performing such operations depends on many factors: from the

phase of the disease, localization, and length of the occlusion, the degree of limb ischemia, concomitant diseases. However, in Ukraine, there are still very high rates of primary amputations of the lower extremities. Perhaps the reason for this is the almost complete lack of qualified and timely rehabilitation care for such patients, as well as the lack of educational and preventive work aimed at preventing the disease.

At present, rehab programs with an individual multidisciplinary approach aimed at restoring activities, as well as the programs that take into account risk factors, concomitant pathology and, above all, the causes of the disease have not been developed. Thus, in connection with an increase in the number of patients with atherosclerotic occlusions of the arteries of the thigh and legs and the dismal results of their treatment, we see the prospect of further researches in the development of rehabilitation measures for patients after surgical interventions and in theprevention of further complications from the main and concomitant diseases, as well as in improving the quality of life of this category of patients.

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Received: 08.05.2018.

UDC 615.825

EVALUATION OF QUALITY OF LIFE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE USING THE SF-36 QUESTIONNAIRE

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https://doi.org/10.29038/2220-7481-2018-03-121-125

Abstracts

The Relevance of Research. Chronic obstructive pulmonary disease today is one of the leading places in the structure of morbidity of the adult working-age population of Ukraine. The severity of the problem adds economic losses on a national scale, which are due to the cost of treatment and a significant deterioration in the quality of life of such persons. The need to improve the effectiveness of restorative treatment of such patients requires the selection of fast and informative methods for diagnosing their functional state. ***Objective and Methods –*** set the level of the quality of life of patients with COPD using the SF-36 questionnaire. The research method is a using the SF-36 questionnaire, which provides for the application of 8 blocks of questions to determine the level of quality of life of patients with COPD. ***The Results and Key Findings.*** 25 men aged 56–64 years with COPD were examined. To compare the results obtained, 17 practically healthy men of the same age were additionally examined. Conducting a survey to determine the effect of physical activity on the quality of life of patients with COPD has shown, that the mean value of scores in their scores was significantly less for such in healthy patients and gives grounds to state about the significant effect of the presence of the disease on their motor state.

Evaluation of responses concerning the role of physical problems in limiting their ability to live shows, that men with COPD do not consider the presence of the disease the reason that prevents them from doing their daily work.

As a conclusion, we have a certain inconsistency in relation to males with COPD to the content of their illness and its impact on their quality of life. The received results testify to necessity of inclusion in the rehabilitation program of such patients of the factors, which would allow them to realize the content of the disease and its effect on the body. One of these factors we consider psychological rehabilitation.

Key words: quality of life, lung disease, survey.

Роксолана Горбата. Оцінка якості життя хворих із хронічним обструктивним захворюванням легень із застосуванням опитувальника SF-36. ***Актуальність теми дослідження.*** Хронічне обструктивне захворювання легень сьогодні займає одне з перших місць у структурі захворюваності дорослого працездатного населення України. Гостроти проблемі додають економічні втрати в загальнодержавному масштабі, які зумовлені вартістю лікування та значним погіршенням якості життя таких осіб. Необхідність підвищення ефективності відновного лікування таких пацієнтів вимагає добору швидких й інформативних методів діагностики їхньою функціонального стану. ***Мета й методи дослідження –*** установити рівень якості життя пацієнтів із ХОЗЛ, застосовуючи опитувальник SF-36. ***Метод дослідження*** – анкетування за допомогою опитувальника SF-36, що передбачає застосування восьми блоків запитання для з'ясування рівня якості життя пацієнтів пульмонологічного профілю. ***Результати роботи та ключові висновки.*** Нами обстежено 25 чоловіків у віці 56–64 роки, яким діагностовано ХОЗЛ. Для порівняння отриманих результатів додатково обстежено 17 практично здорових чоловіків того ж віку. Проведення опитування для з'ясування впливу фізичної активності на якість життя пацієнтів із ХОЗЛ показало, що середнє значення оцінки в балах у них було достовірно меншим за таке в здорових пацієнтів, що дає підстави стверджувати про суттєвий вплив наявності хвороби на їх руховий режим.

Проте оцінка відповідей, що стосувалися ролі фізичних проблем в обмеженні їхньої життєдіяльності, засвідчила, що чоловіки з ХОЗЛ не вважають наявність хвороби тією причиною, що заважає їм виконувати повсякденну роботу.

Як висновок, маємо певну неузгодженість у ставленні осіб чоловічої статі з ХОЗЛ до змісту своєї хвороби та її впливу на їхню якість життя. Отримані результати свідчать про потребу включення до реабілітаційної програми таких пацієнтів факторів, які дали їм можливість усвідомити зміст хвороби і її вплив на організм. Одним із таких чинників ми розглядаємо психологічну реабілітацію.

Ключові слова: якість життя, захворювання легень, опитування.

Роксолана Горбатая. Оценка качества жизни больных с хроническим обструктивным заболеванием легких с применением опросника SF-36. ***Актуальность темы исследования.*** Хроническое обструктивное

заболевание легких сегодня занимает одно из первых мест в структуре заболеваемости взрослого трудоспособного населения Украины. Остроты проблеме добавляют экономические потери в общегосударственном масштабе, которые обусловлены стоимостью лечения и значительным ухудшением качества жизни таких лиц. Необходимость повышения эффективности восстановительного лечения таких пациентов требует подбора быстрых и информативных методов диагностики их функционального состояния. ***Цель исследования*** – установить уровень качества жизни пациентов с ХОБЛ с применением опросника SF-36. ***Метод исследования*** – анкетирование с помощью опросника SF-36, который предусматривает применение 8 блоков вопросов для выяснения уровня качества жизни пациентов пульмонологического профиля. ***Результаты работы и ключевые выводы.*** Нами обследовано 25 мужчин в возрасте 56–64 лет, которым диагностирован ХОБЛ. Для сравнения полученных результатов дополнительно обследовано 17 практически здоровых мужчин того же возраста. Проведение опроса по выяснению влияния физической активности на качество жизни пациентов с ХОБЛ показало, что среднее значение оценки в баллах у них было достоверно меньше за такое у здоровых лиц и дает основания утверждать о существенном влиянии наличия болезни на их двигательный режим.

Оценка ответов, касающихся роли физических проблем в ограничении их жизнедеятельности показала, что мужчины с ХОБЛ не считают наличие болезни той причиной, которая мешает им выполнять повседневную работу.

Как вывод имеем определенную несогласованность в отношении лиц мужского пола с ХОБЛ к содержанию своей болезни и ее влияния на качество их жизни. Полученные результаты свидетельствуют о необходимости включения в реабилитационную программу таких пациентов факторов, которые бы позволили им осознать содержание болезни и ее влияние на организм. Одним из таких факторов мы рассматриваем психологическую реабилитацию.

Ключевые слова: качество жизни, заболевания легких, опрос.

Formulation of a research problem and its significance. Today the chronic obstructive pulmonary disease is one of the most important problems of the health care. It’s associated with the keep steadily growing amount of people ill and died as a result of the lung diseases.

The COPD spreading among the population is about 1% and it is keep growing up to 10% among the people in their 40s and older. The late diagnostics and the effectiveness of the treatment lead to the loss of productivity and early disablement. [1; 2].

The chronic diseases are easy to progress and led to the significant limitations in all areas of the normal human life, which is more important for the patients than the symptoms themselves.

That is why the life quality is an important thing for the decision making in the area of the treatment modes and the recovery of the patients. It is worth to mention that this issue is beyond the scope of doctors and requires the supervision in pre-clinical setting. [4; 7].

Nowadays, the life quality is defined as the number of parameters which reflect the changes in the patient’s life during the disease progression and its treatment with the estimate of the body condition, psychological, social and spiritual wellness, including the social relationships and the functional performance [5].

According to the World Health Organization recommendations, the life quality is defined as a personal sense of person’s place in the social life in the connection with their own plans, needs and abilities.

The goal of the article - to define the level of the life quality of the people suffering from COPD with the help of the Short Form-36.

Statement regarding the basic material of the research and the justification of the results obtained. *The participants of the survey.* There were examined 25 men suffering from COPD aged 56–64. the duration of the illness is 5 years or more. All patients were examined and treated in the Ivano-Frankivsk Phthisiopulmonological Centre. For the result comparison there were additionally examined 17 almost healthy men the same age. all the participants were obtained the approval of the survey participation. The survey was conducted according to the ethical standards of commission on rights and the Declaration of Helsinki, 2008.

Study management. The evaluation of the life quality was conducted with the help of the Short Form-36.

The Short Form-36 designed in 1993 contains 36 questions grouped into 8 sections «vitality», «physical functioning», «bodily pain», «general health perceptions», «physical role functioning», «emotional role functioning», «social role functioning», «mental health».

Utilisation of the SF-36 allowed to get quantitative characteristics of the life quality in the sections mentioned above. The calculation of points was done with the help of computation table. the sections are

estimated from 0 to 100, i.e. 100 is the best of the possible results. The questionnaire was conducted with the patients suffering from COPD and almost recovered men the same age. The results were compared and analysed statistically.

Once the calculating the average number for each mean of a particular section had been done, the results were arranged into the table 1.

Statistical analysis. For the statistical testing hypothesis about the possibility of differences into the results of different groups the Student's t-test was used. Practically, the calculated Student's t-test values of parameters got during the selection were compared with their critical values, separated into a special table. In case the results got during the survey are higher than the actual outcome, the result is statistically significant. the significance level was defined according to the table ($p<0,05$; $p<0,01$ or $p<0,001$).

Nowadays, the chronic obstructive pulmonary disease is one of the most important issues of health care. It's associated with the keep steadily growing amount of people ill and died as a result of lung diseases.

The COPD spread among the population is about 1% and it is keep growing up to 10% among the people in their 40s and older. The late diagnostics and effectiveness of the treatment lead to loss of productivity and early disablement. [1; 2].

The chronic diseases are easy to progress and led to significant limitations in all areas of the normal human life, which is more important for the patient than the symptoms themselves.

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According to the World Health Organization recommendations, the life quality is defined as a personal sense of person's place in the solial life in the connection with their own plans, needs and abilities.

Taking into account all the above, the goal of the article is to define the level o the life quality of the patients suffering from chronic obstructive pulmonary disease with the help of the Short Form-36.

Table 1

The results of the patients suffering from the COPD survey conducted with the help of the Short Form-36

Sections of the SF-36	COPD, n =25	Healthy men, n =17
Vitality, points (M ±m)	73,1±1,13*	99,1±0,15
Physical role functioning points, (M ±m)	92,2±1,15	99±0,13
Bodily pain points, (M +m)	92,3±1,14	99±0,1
General health perceptions, points (M±m)	74,2±1,0*	97±0,15
Social role functioning, points (M ±m)	73±1,0*	99±0,05
Emotional role functioning, points (M ±m)	94±1,3	99±0,15
Mental health, points (M ±m)	87±1,12*	99±0,15

Footnote*-probability in the values differences in comparison to the health men , $p<0,05$

The survey about the the level o the life quality of the patients suffering from COPD showed that the average value in points of the patients is quite lower than the same value of the healthy men (73,1±1,13 points vs 99,1±0,15 points in healthy men; $p<0,05$). It gives ground for claiming that the disease badly influences on the people activity.

However the analysis of the responses regarding the physical problems in the living limitations showed that the men suffered from COPD don't mention the disease as the limitation for the everyday work (92,2±1,15 points vs 99±0,13 points for healthy men; $p>0,05$).

As a results, there is the incoherence in the male attitude to the COPD and its influence on their life quality. The results show the necessity of including the factors that gave the patients the opportunity to

realise the essence of the disease and its effect on the body. The psychological recovery is considered to be one of such factors.

The questions about the bodily pain and its influence on the life quality of the patients suffering from the COPD showed that the responses were negative. The patients either didn't feel pain or the amount of pain is so insufficient that it doesn't create negative attitude to the disease (92,3±1,14 points vs 99±0,1 points for healthy man; $p>0,05$)thus it doesn't affect their life quality.

However, the response analysis regarding the general health perceptions showed, that the men suffering from COPD estimates their health as poor, as the average value of the section was as half as lower comparing with the same section for the recovering men (74,2±1,0 points vs 97±0,15 points for the recovering men; $p<0,05$).

Analysing these values, the conclusion can be made: because of the bad general health perceptions men suffering from COPD neither complain about pain nor associate the health deterioration with this subjective value.

The estimate of the responses of the men suffering from COPD regarding their health (the questionnaire section «social role functioning') i.e. recreational activity and routine work showed the decrease in this part of their life quality compared with the healthy men (73±1,0 points vs 99±0,05 points for the healthy men; $p<0,05$). These results enlarge the data about the social role functioning responses. According to the estimates analysis the social role functioning of the patients suffering from the COPD is lowered in comparison with the healthy men.

To conclude, the patients suffering from the COPD have less willingness for the recreational activity in its turn this decrease their social activity and requires the rehabilitation. The psychological recovery is considered to be one of such factors.

The analysis of the responses regarding the emotional problems in the patient health showed that they do not consider the COPD as a emotional factor of the life quality i.e. these men don't have emotional suffering caused by the disease. The average value in points for the patients isn't statistically differ from the avagare value for the healthy men. (94±1,3 points vs 99±0,15 points for the healthy men; $p>0,05$)

However the analysis of the patients responses regarding their mental health showed the divergent results. The average value for the patients was definitely less that for the healthy men. This supports the idea about the mental health deterioration and the bad effect of the disease on the life quality (87±1,12 points vs 99±0,15 points for the healthy men; $p<0,05$).

These contradictory results related to the feeling about the disease and the mental health show that COPD worsens the life quality and requires the special treatment for the patients.

The results show the necessity of including the factors that gave the patients the opportunity to realise the essence of the disease and its effect on the body. The psychological recovery is considered to be one of such factors.

The significance of the study is the suggestion to use the results of the survey conducted with the help of the SF-36 for the further rehabilitation for the sake of the life quality improvement of the patients suffering from COPD.

Conclusions and prospects for further research. The research about the physical activity influence on the life quality of the patients suffering from the COPD showed that the average value is less that for the healthy men. It gives ground for claiming that the disease badly influences on the people activity.

However the analysis of the responses regarding the physical problems in the living limitations showed that the men suffering from COPD don't mention the disease as the limitation for the everyday work.

As a results, there is the incoherence in the male attitude to the COPD and its influence on their life quality. The results show the necessity of including the factors that gave the patients the opportunity to realise the essence of the disease and its effect on the body. The psychological recovery is considered to be one of such factors.

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Received: 27.07.2018.

UDC [615.8:616-004]-047.36

MONITORING OF THE PARAMETERS OF THE QUALITY OF LIFE IN PATIENTS WITH MULTIPLE SCLEROSIS WITH MIOFASCIAL PAIN SYNDROME IN IMPLEMENTATION OF PHYSICAL REHABILITATION PROGRAM

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https://doi.org/10.29038/2220-7481-2018-03-126-130

Abstracts

The Topicality of the Research. Multiple sclerosis is accompanied by significant deviations in the psycho-emotional, spiritual and social spheres. Cryotherapy is a new effective method that is used in programs for patients with myofascial pain syndrome. This publication presents the results of the study of the quality of life of patients with multiple sclerosis before and in different periods after local and complex cryotherapy, as well as a description of responses associated with quality of life after combined physical rehabilitation. ***The aIm of the Research****:*to substantiate the inclusion of cryotherapy in the basic programs of physical rehabilitation for patients with multiple sclerosis complicated by myofascial pain syndrome.***Themethods of the Research.*** The research included 105 patients at age 25–54 years with a verified diagnosis of multiple sclerosis complicated by myofascial pain syndrome. The general questionnaire SF-36 was used to assess the quality of life. ***Theresults of the Research.*** It was determined that the quality of life of patients with multiple sclerosis prior to implementation of physical rehabilitation program is significantly reduced by most scales of physical, mental and social functioning; the profile of quality of life of patients is characterized by compression and deformation. Carrying out of the cryotherapy with acupuncture is accompanied by a marked improvement in the quality of life of patients with multiple sclerosis. The answers are related to the quality of life, in the form of improvement or stabilization, recorded in most patients with complicated by myofascial pain syndrome after complex cryotherapy: in 96% of patients after combined physical rehabilitation and in 87 % of patients after local cryotherapy. ***Conclusions.*** A profile of the quality of life of patients with multiple sclerosis indicates its compression and deformity, which is due to a significant decrease in the indicators that characterize the physical, mental and social scale of functioning. Monitoring of such patients in the long term after the implementation of the author's program on physical rehabilitation indicates a stabilization of quality of life, which manifests itself as a marked improvement in the profile in 96% of patients after complex and in 87 % of patients after local procedures.

Key words: multiple sclerosis, quality of life, mio relaxation, cryotherapy, acupuncture.

Юрій Лисенко, Богдан Мицкан, Сергій Попель. Моніторинг параметрів якості життя у хворих на розсіяний склероз із міофасціальним больовим синдромом при впровадженні програми фізичної реабілітації. ***Актуальність теми дослідження.*** Розсіяний склероз супроводжується суттєвими відхиленнями психо- емоційної, духовної та соціальної сфери. Кріотерапія – новий ефективний метод, який застосовується в програмах для хворих із міофасціальним больовим синдромом. У цій публікації представлені результати вивчення якості життя хворих на розсіяний склероз до та в різні терміни після локальної й комплексної кріотерапії, а також дається характеристика відповідей, пов'язаних із якістю життя після комбінованої фізичної реабілітації. ***Мета статті*** – обгрунтувати включення кріотерапії в базові програми фізичної реабілітації для пацієнтів із розсіяним склерозом, ускладненого міофасціальним больовим синдромом. ***Методи дослідження.*** У дослідження включено 105 пацієнтів у віці від 25 до 54 років із верифікованим діагнозом «розсіяний склероз, ускладнений міофасціальним больовим синдромом». Для оцінки якості життя використано загальний опитувальник SF-36. ***Результати роботи.*** Установлено, що показники якості життя хворих на розсіяний склероз до впровадження програми фізичної реабілітації істотно знижені за більшістю шкал фізичного, психічного та соціального функціонування; профіль якості життя хворих характеризується компресією й деформацією. Проведення кріотерапії з голкотерапією супроводжується вираженим поліпшенням показників якості життя хворих на розсіяний склероз. Відповіді пов'язані з якістю життя, у вигляді поліпшення або стабілізації, зареєстровані в більшості хворих на ускладнений міофасціальний больовий синдром після комплексної кріотерапії – у 96 % хворих після комбінованої фізичної реабілітації і у 87% хворих після локальної кріотерапії. ***Висновки.*** Профіль якості життя хворих на розсіяний склероз указує на його компресією та деформацією, що зумовлено суттєвим зниженням показників, які характеризують фізичну, психічну й соціальну шкали функціонування. Моніторинг таких хворих у віддалені терміни після впровадження авторської

програми фізичної реабілітації вказує на стабілізацію якості життя, що проявляється вираженим поліпшенням профілю в 96 % хворих після комплексних й у 87 % хворих після локальних процедур.

Ключові слова: розсіяний склероз, якість життя, міорелаксація, кріотерапія, голкотерапія.

Юрий Лисенко, Богдан Мицкан, Сергей Попель. Мониторинг параметров качества жизни у больных рассеянным склерозом с миофасциальным болевым синдромов при внедрении программы физической реабилитации. ***Актуальность темы исследования.*** Рассеянный склероз сопровождается существенными отклонениями психо-эмоциональной, духовной и социальной сфер. Криотерапия – новый эффективный метод, который применяется в программах для больных с миофасциальным болевым синдромом. В данной публикации представлены результаты изучения качества жизни больных рассеянным склерозом до и в различные сроки после локальной и комплексной криотерапии, а также дается характеристика ответов, связанных с качеством жизни после комбинированной физической реабилитации. ***Цель статьи –*** обосновать включение криотерапии в базовые программы физической реабилитации для пациентов с рассеянным склерозом, осложненного миофасциальным болевым синдромом. ***Методы исследования.*** В исследование включено 105 пациентов в возрасте от 25 до 54 лет с верифицированным диагнозом «рассеянный склероз, затруднен миофасциальным болевым синдромом». Для оценки качества жизни использовали общий опросник SF-36. ***Результаты работы.*** Установлено, что показатели качества жизни больных рассеянным склерозом к внедрению программы физической реабилитации существенно снижены по большинству шкал физического, психического и социального функционирования; профиль качества жизни больных характеризуется компрессией и деформацией. Проведение криотерапии с иглотерапией сопровождается выраженным улучшением показателей качества жизни больных рассеянным склерозом. Ответы, связанные с качеством жизни, в виде улучшения или стабилизации, зарегистрированные у большинства больных осложненным миофасциальным болевым синдромом после комплексной криотерапии – у 96 % больных после комбинированной физической реабилитации и у 87 % больных после локальной криотерапии. ***Выводы.*** Профиль качества жизни больных рассеянным склерозом указывает на его компрессию и деформацию, что обусловлено существенным снижением показателей, характеризующих физическую, психическую и социальную шкалы функционирования. Мониторинг таких больных в отдаленные сроки после внедрения авторской программы физической реабилитации указывает на стабилизацию качества жизни, проявляется выраженным улучшением профиля у 96 % больных после комплексных и у 87 % больных – после локальных процедур.

Ключевые слова: рассеянный склероз, качество жизни, миорелаксация, криотерапия, иглотерапия.

Introduction. Multiple sclerosis as a chronic progressive disease of the central nervous system is often accompanied not only by physical disorders in the form of myofascial pain syndrome, but also deviations in the psycho-emotional, spiritual and social spheres. Such patients have a wide range of symptoms that significantly reduce the quality of their life [8; 12].

The main purpose of treatment of this condition is to increase integrated indicator LP (lipid peroxidation) and maintain a sufficient level of quality of patients' life and to control / reduce the severity of pathological symptoms that are typical for myofascial pain syndrome [5*;* 10].

Thus, an integral component of physical rehabilitation of patients with multiple sclerosis complicated by myofascial pain syndrome is the quality control of life, spectrum and severity of symptoms in the process of disease development [9*;* 11].

Cryotherapy is a new effective method of treatment of multiple sclerosis complicated by myofascial pain syndrome which allows to influence on certain components of pathogenesis of this disease on a regular basis [6; 7].

The quality control of life parameters during treatment and at the stage of physical rehabilitation is an important component of evaluating the effectiveness of various rehabilitation measures in patients with multiple sclerosis with myofascial pain syndrome along with traditional clinical and instrumental parameters (EDSS, MRI, EMG). The results of effectiveness of cryotherapy in combination with acupuncture and spasmodic muscle stretching exercises based on clinical and instrumental data are presented in our previous publications [6*;* 7].

This publication shows the analysis of the study of the quality of life of patients with multiple sclerosis complicated by myofascial pain in different periods after local and complex cryotherapy.

The aim of the study is to substantiate the inclusion of cryotherapy in the basic programs of physical rehabilitation for patients with multiple sclerosis complicated by myofascial pain syndrome.

Material and methods of the study. The research included 105 patients at age 25–54 years with a verified diagnosis of multiple sclerosis complicated by myofascial pain syndrome. Also, the inclusion criteria were local or complex cryotherapy, EDSS value from 1.5 to 8.5 units, the absence of cognitive impairment, the presence of concomitant myofascial pain syndrome. The patients were divided into two groups depending on the type of physical rehabilitation measures[1, 3]: complex cryotherapy was conducted(EDSS 3,5 – 8,5) in combination with acupuncture and physical exercises for stretching spasmodic muscles in first group of patients;only local cryotherapy was conducted in second group of patients (EDSS 1,5-3,0).

It should be noted that the protocol of physical rehabilitation programs in MS did not include different types of cryotherapy before, so this is the author's program, based on the mechanism of influence of cryotherapy on the immune system and general improvement of health, first used in this combination with other measures of physical rehabilitation and requires experimental verification of its effectiveness.

Furthermore, the measures of medical rehabilitation are more largely used in the modern system of physical rehabilitation, which in combination shows high efficiency for patients with various types of disorders of the musculoskeletal system.

The general questionnaire SF-36 was used to assess the quality of life[4]. It consists of 36 questions, that form eight scales like physical functioning, role physical functioning, pain, general health, viability, role emotional functioning and mental health.

The data obtained from the questionnaire is expressed in points from 0 to 100 on each of the eight scales. The higher score on the SF-36 scale indicates a better quality of life. Patients filled the questionnaire before and after 3, 6, 9 and 12 months after the introduction of the physical rehabilitation program.

An integral indicator of the quality of life for each patient was calculated, based on the data of the SF-36 and the characteristic of patients' distribution according to the gradations of the quality of life was given. Thus, we compared the quality of life of the patients by the value of the integral index of the population norm.

There were distinguished the following gradations of decrease of the integral indicator of quality of life: absence of decrease (there are no differences in the value of the integral indicator of the patient and the integral indicator of the population norm); a slight decrease in the integral indicator of quality of life (decrease in the integral indicator <25% of the integral indicator of the population norm); a moderate decrease in the integral indicator of quality of life (decrease in the integral indicator 25-50% of the integral indicator of the population norm); a significant decrease in the integral indicator of quality of life (decrease in the integral indicator 51-75% of the integral indicator of the population norm); a critical decrease in the integral indicator of quality of life (decrease in the integral indicator of life > 75%)of the integral index of population norm) [1; 2].

The evaluation of responses was determined by using the information indicator of quality of life by the method of integral profiles. There were three gradations of responses related to the quality of life: improvement, stabilization and deterioration.

The results of the study. The statistically essential differences were identified on all scales of the SF-36 questionnaire, except for the scale of «role emotional functioning», comparing the quality of life of patients with multiple sclerosis complicated by myofascial pain syndrome included in the study with the indicators of population norm (table 1).

The indicators of quality of life of patients before the program of physical rehabilitation is predominantly lower than in the population norm. There was improvement after the program of physical rehabilitation in the group of patients with multiple sclerosis complicated by myo-fascial pain syndrome while no statistically significant differences were revealed, comparing the indicators in 3 months with the population norm.

The following results were obtained by stratification of patients with multiple sclerosis complicated by myofascial pain syndrome before the introduction of the program of physical rehabilitation by the degree of reduction of the integral indicator of quality of life: with the absence of a decrease in the integral indicator of quality of life – 26% of patients; with a slight decrease in the integral indicator of quality of life – 8 %; with a moderate decrease in the integral indicator of quality of life – 20 %; with a significant decrease in the

integral indicator of quality of life – 22% and with a critical decrease in the integral indicator of quality of life – 24% patients. Thus, a significant or critical decrease in the integral indicator of quality of life was observed in almost half of the patients.

Table 1

The indicators of quality of life of patients with multiple sclerosis complicated by myofascial pain

Indicator	Population norm	The patients before the physical rehabilitation	The patients after the physical rehabilitation
The physical functioning	82,5±2,34	62,7±2,49	76,4±2,02
The role physical functioning	77,8±1,98	38,1±1,05	71,5±2,83
Pain	88,9±2,03	69,9±1,41	85,2±3,14
The general health	68,1±1,45	51,8±2,04	60,4±1,94
Viability	76,8±1,92	48,5±1,17	70,1±2,17
The social funtioning	82,3±2,61	54,1±1,83	78,9±2,33
The role emotional functioning	72,3±2,11	66,2±2,58	69,4±2,16
Mental health	80,2±2,56	55,9±1,81	72,1±2,17

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The quality of life of patients of each group is lower before transplantation than in the population norm. There was a great improvement of the quality of life after local cryotherapy as well as after cryotherapy in combination with acupuncture and physical exercises for stretching muscles after 12 months from the the introduction of the physical rehabilitation program.

It should be noted that in the first group of patients essential positive changes were observed on all scales of the questionnaire; patients' profile of the quality of life corresponded to the population norm 6 months after cryotherapy. These changes were preserved 9 months after local cryotherapy. There was an improvement of the quality of life on most scales of the questionnaire in the group of patients after cryotherapy in combination with acupuncture and physical exercises for stretching the muscles 6 months after using the physical rehabilitation program and these changes were more pronounced than in the first group.

Also, there was a further improvement of the quality of life on some scales of the questionnaire 12 months after complex cryotherapy; the profile of the quality of life was characterized by some deformation and compression in comparison with the profile, which corresponds to the population norm.

Thus, the effectiveness of cryotherapy in patients with multiple sclerosis complicated by myofascial pain syndrome is demonstrated not only on the basis of clinical and instrumental data, but also on the basis of monitoring the parameters of quality of life. The positive effect was observed predominantly in the group of patients after complex physical rehabilitation than in the group of patients only after local cryotherapy.

Conclusions. There is a significant or critical decrease of the integral indicator of quality of life in 46.3% of patients with multiple sclerosis complicated myofascial pain syndrome before the implementation of the physical rehabilitation program.

There is an improvement of quality of life in 96.0% of patients after complex cryotherapy and 87.0 % after local cryotherapy.

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Received: 10.05.2018 p.

UDC: 796.332-055.2

THE EFFECTIVENESS OF THE COACH'S ACTIVITY OF WOMEN'S MINI-FOOTBALL TEAM

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https://doi.org/10.29038/2220-7481-2018-03-131-136

Abstracts

Relevance of the Theme. Physical culture and sport on the modern stage are the mighty means of forming a personality. Besides, it is one of the ways of the development of the intensive trainers' creativity. As the rule women master such kinds of sports, which are traditionally considered to be «masculine» activities. One of them is mini-football. ***The main objective*** of the article is to show the demands to a personality of a professional trainer, describe the qualities, he or she needs to obtain in order to do training more effective. ***Methods –*** analysis of scientific literature. ***Results.*** The authors of this article emphasize that trainer should be a highly qualified personality, able to give his students deep knowledge and develop the necessary students' skills make it possible to achieve great results in sports they go in for, and finally to succeed in sport. Trainers must always be in search of new ways, methods of teaching, in the process of creation of new technique, tactics, methodology of training, taking into account physical ability of a woman. The aim of a professional trainer is to he develop students' creative thinking, fantasy, intuition and other characteristics of the creative person by means of sport. ***Conclusions.*** The creative trainer must be in search of decisions based on his ability to transform knowledge and methodical receptions, ability to apply the reliable criteria of estimation of sportswomen in concrete time.

Key words: mini-football, women, stages of preparation, activity of a trainer, decision, qualities, authority.

Олег Мазурчук, Олександр Панасюк,' Петро Герасимюк, Андрій Гаврилюк. Ефективність діяльності тренера жіночої команди з міні-футболу. ***Актуальність теми.*** Фізична культура й спорт на сучасному етапі є могутнім засобом формування особистості, галуззю інтенсивної творчості тренерів. Жінки активно освоюють ті види спорту, які традиційно вважаються «чоловічими». До них належить і міні-футбол. Його доступність, простота інвентарю й обладнання, величезна емоційність гри завоювали велику кількість прихильників й уболівальників. ***Мета роботи*** – визначення основних вимог до діяльності тренера з метою досягнення спортсменами високих спортивних результатів. ***Методи*** – аналіз наукових джерел. ***Результати.*** Автори наголошують на тому, що тренер із міні-футболу повинен вести пошук нових шляхів, способів, прийомів і показу навчального матеріалу. Основа цього процесу – створення нової техніки, тактики, методики тренування, прийняття правильних рішень під час гри. У своїй діяльності тренер повинен намагатися використовувати всі закономірності пізнавальних процесів спортсменок для глибокого засвоєння ними системи знань, вироблення творчих навичок та вмінь. У процесі спортивної підготовки жіночої команди з міні-футболу тренер повинен ураховувати ті особливості, які характерні лише для жінок, тобто відмінності протікання адаптаційних процесів в організмі. Велике значення в тренувальному процесі має індивідуальний підхід тренера до розв'язання поставлених завдань, формування взаємин у колективі. ***Висновки.*** Творчий підхід тренера з міні-футболу ґрунтується на його здібності формулювати основні гіпотези для розв'язання проблемної ситуації в процесі тренування, умінні трансформувати знання й методичні прийоми в грі, майстерності застосовувати в конкретний час надійні критерії оцінки спортсменок. Загалом тренер має бути і психологом, і педагогом, і адміністратором, і господарником, і дипломатом.

Ключові слова: міні-футбол, жінки, етапи підготовки, діяльність тренера, якості, авторитет.

Олег Мазурчук, Александр Панасюк, Петр Герасимюк, Андрей Гаврилюк. Эффективность деятельности тренера женской команды по мини-футболу. ***Актуальность темы.*** Физическая культура и спорт на современном этапе является мощным средством формирования личности, отраслью интенсивной творчества тренеров. Женщины активно осваивают виды спорта, которые традиционно считаются «мужскими». К таким относится и мини-футбол. Доступность мини-футбола, простота инвентаря и оборудования, огромная эмоциональность игры завоевали большое количество поклонников и болельщиков. ***Целью данной работы*** является определение основных требований к деятельности тренера для достижения спортсменами высоких спортивных результатов. ***Методы*** – анализ научных источников. ***Результаты.*** Авторы подчеркивают, что тренер по мини-футболу должен вести поиск новых путей, способов, приемов и показа учебного материала. Основой этого процесса является создание новой техники, тактики, методики тренировки, принятия правильных решений во время игры. В своей деятельности тренер должен пытаться использовать все закономерности познавательных процессов спортсменок для глубокого усвоения ими системы знаний, выработки творческих навыков и умений. В процессе спортивной подготовки женской команды по мини-футболу тренер должен учитывать те особенности, которые характерны только для женщин, то есть различия протекания адаптационных процессов в организме. Большое значение в тренировочном процессе имеет индивидуальный подход тренера к решению поставленных задач, формирования взаимоотношений в коллективе. ***Выводы.*** Творческий подход тренера по мини-футболу базируется на его способности формулировать основные гипотезы для решения проблемной ситуации в процессе тренировки, умении трансформировать знания и методические приемы в игре, мастерства применять в конкретное время надежные критерии оценки спортсменок. В общем тренер должен быть и психологом, и педагогом, и администратором, и хозяйственником, и дипломатом.

Ключевые слова: мини-футбол, женщины, этапы подготовки, деятельность тренера, качества, авторитет.

Introduction. The development and improvement of women's mini-football requires a constant increase of the physical fitness of athletes, the level of their technical and tactical skills, moral and volitional qualities. Coaches are encouraged to search for the most appropriate approaches to the training process of football players due to variety of game situations, high demands on the physical qualities, particularly speed, endurance, strength and agility of the athletes, along with the insufficiently studied influence of sports training of women's body [2].

Furthermore, not only football qualities of the players are evaluated, but also their psychological stability, discipline, ability to resist the aggression of the opponent in the modern mini-football. The success of a team largely depends on how disciplined its players are. The discipline on the pitch promotes the clear performance of duties of each athlete. The discipline out of the game is the key to friendly relations in the team and a positive mood. However, not every coach is able to lead a team in a proper way. Fortunately, there are several quite universal techniques that create a «healthy» microclimate in the team, in particular:

– the coach should let the players know that he is well-versed in a mini-football, knows the basic techniques;

– avoid conflicts within the team;

– showing firmness of decisions;

– be an example for his athletes [5].

The purpose of the study - is to study and analyze the issue of the effectiveness of the coach's activity of women's mini-football team.

The statement of basic material. The team is able to achieve a great sport result only when it consists of players who use a masterful technique, tactical actions during the game.

The best football coaches argue that there is no significant difference in the physical fitness of female and male footballers, however, there are certain features that must be taken into account in the development of training programs of sportswoman. The psychology is an important difference between men's and women's football. It should be borne in mind that men in physical terms are significantly stronger. At the same time, women are more flexible, they perceive the new information more quickly, but they are slow in making a decision [4].

The coach should pay considerable attention to the physiological characteristics of the female body, because the activity of the main body systems of female footballers changes cyclically under the influence of female sex hormones [2]. At the same time, it is necessary to take into account features and conditions of the training process of the players, regularities of improving physical qualities, the direction of the training

process, the volume and intensity of loads, the use of adequate means of recovery (psychological, pedagogical and medical-biological).

The coach must take into consideration the identified functionality of the players when he determines the volume and intensity of the load. There are several stages of preparation of athletes in the theory and practice of mini-football, including: general preparatory, special preparatory, precompetitive. The main tasks of the general preparatory stage are to increase the level of general physical fitness of players, increase the potential and reserve capabilities of their body, the formation of the necessary technical and tactical skills and the development of psychological qualities, increase the ability to overcome significant loads. The training sessions at this stage are aimed at comprehensive training. The coach should pay a lot of attention to the development of endurance, speed and strength, flexibility, coordination of movements [5].

The training at a special preparatory stage is aimed at ensuring a high level of competitive activity in the control games. A lot of attention is paid to the development of speed and strength, improvement of technical and tactical skills.

The main objectives of this stage are further increase of the level of body functionality, the improvement of the acquired technique of possession of the ball and mastering of new tactical options for interaction between players. The loads should be aimed primarily at improving the speed-strength qualities and speed endurance.

Precompetition stage of preparation is based on the specific of the upcoming competition. The main goals of this stage are to improve the special physical fitness and technical and tactical skills in the conditions that are similar to the game). In general, technical and tactical exercises with well-defined tasks (a limited number of touches during the pass of the ball, necessarily control the ball by feet, the use of elements of personal, zone and combined defense of opponents and etc.) are used.

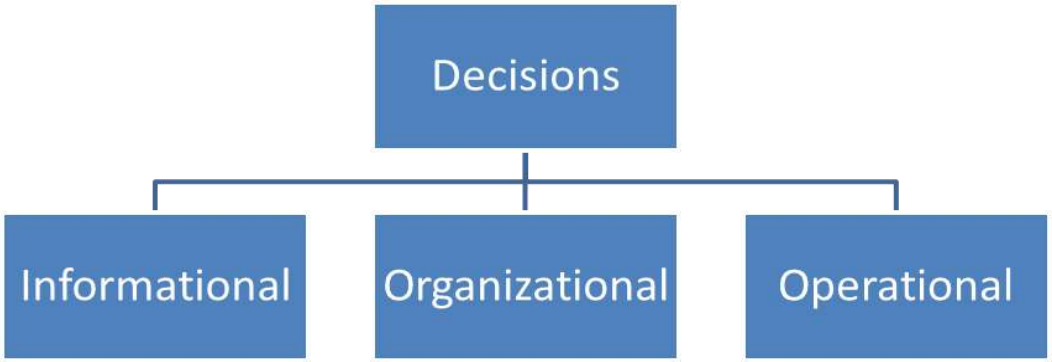
In general, training sessions of the players are held by taking into account the tasks of each stage. At the general preparatory stage, the part of non-specific means of training increases, the coordination complexity of exercises is high, the intensity of loads is moderate. At the special preparatory stage, the part of technical, tactical and specific means increases, while the duration of classes decreases. At the precompetetive stage, the use of specific, technical and tactical means of training significantly increase as well as the number of theoretical studies with elements of ideomotor training while the intensity of loads decreases. Thus, the coach must carefully make plans of training of athletes, in other words, do not focus on time-consuming exercises, in particular push-ups, pull-ups, jogging, etc., but use new and interesting exercises and vary every training session with the ball in order to skillfully conduct training sessions at each of these stages.

The coach should use a number of means and methods in order to ensure the optimal level of development of physical qualities of athletes. When the coach chooses exercises in order to improve the level of physical training, the intensity of loads has to be monitored using the data of heart rate, as it is the most objective indicator of the body's response to the loads that are performed. It is necessary, to teach athletes to count the heart rate after the exercises on the coach's command for 10, 12, 15 seconds on the first training session. When coach chooses games and exercises, their focus (on the development of speed, strength etc.) and intensity of load should be taken into account [4].

The effectiveness of coach’s activity depends on the combination in his person of the innate abilities and the professional and life experience, which generally consist of his emotional balance, stability and consistency of behavior, an objective assessment of the players ' activities, which form a sense of confidence and security in women. It is essential to make a right decision during the training sessions and competition for the effectiveness of coach’s activity and success of the team. The right one is that decision that in the best way provides performance of the pedagogical tasks within the shortest possible time. The successful solution of pedagogical tasks depends on certain coach’s experience, skills, abilities to use the whole number of methods (including logical) and means. The coach evaluates each element of the sports environment, in particular the opponent’s environment, his team, pitch, time, etc. - and then determines their interaction, creates a dynamic model of the following sports actions, which connects these elements into one and identifies to what changes can lead a particular decision.

We classified the coach' decision into informational, organizational and operational according to the researchers conducted by A. A. Derkach, A. A. Isaev [3] (Pic. 1).

The informational decision-is an evaluation of the situation, exposing the intention of the behavior of athletes, in other words, the synthesis and transformation of information into the most appropriate form of the specific task of managing a sports team. The informational decision is a source for making operational and organizational decisions. Consequently, the coach is considered as a specialist with the necessary knowledge in the field of sport and related disciplines: the theory and methodology of sports training, pedagogy, psychology, physiology and etc. It is essential for the coach to constantly monitor the latest achievements in the development of modern sports science.



Pic. 1. *The classification of decisions of pedagogical tasks in coach's activity*

The organizational decisions are related to the team members, its structure, time of action. Furthermore, the approval of training programs, the determination of the structure of the training process are included in the organizational decision. The peculiarity of these decisions is their focus on a relatively wide range of situations. The coach considers a number of aspects related to the process of creation and further functioning of the team when he makes an organizational decision.

The operational decisions are the culmination of the coach's activity, in other words, they contain all kinds of decisions related to the sport actions of the team, in particular: the definition of the purpose of sports actions, the establishment of the level of physical fitness, the determination of the team's tasks, the order of interaction and etc. Overall, operational decisions determine action, while organizational decisions are related to specific actions, their content and forms.

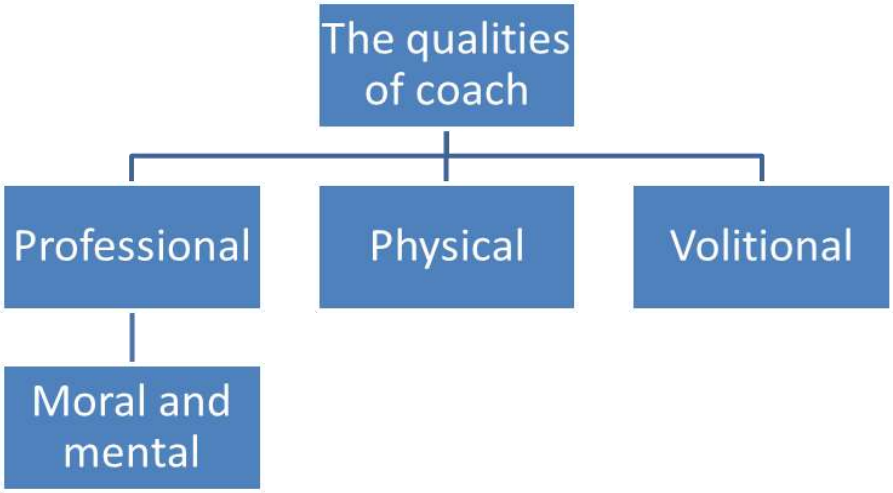
The coach of any sport, including the coach of the women's mini-football team, must possess a wide range of qualities, in particular: professional, physical, volitional, moral and mental (Pic. 2). The professional qualities of the coach are the ability to carry out activities at all stages of training process of athletes; the desire for self-improvement; the ability to generalize new achievements and the development of new means and methods of training.

The physical qualities are good health; endurance of neuro-mental sphere; sonorous voice. The volitional one are sense of purpose; ability to achieve goals; self-control; sober perception of criticism; observancy; willingness to bear the responsibility. The moral and mental qualities of coach are honesty; integrity; tact; poise, memory (accuracy and memory speed, preservation and recovery); thinking; imagination (the ability to quickly and accurately represent a particular object).

First of all, the coach must manage the team in such a way that the athletes feel themselves responsible for the implementation of their tasks, show independence and initiative to achieve a certain goal.

The necessary condition for the successful management of the team is the authority of the coach,which creates favorable conditions for fruitful cooperation «athlete-coach». It is largely based on the level of his professional skill, which should grow steadily, and on technical fitness, which mainly depends on the previous activity of the coach as an athlete. The famous football goalkeeper Lev Yashin said the following about the role of professional skills of the coach to maintain his authority: «Today's athletes study in different educational institutions, but most, of course, go to the institutes of physical education or the school of coaches''. Therefore, some of them can argue with the coach on certain issues, referring to a specific page of the manual or objecting to him something like: «in lectures on

physiology said otherwise». The coach has to find another approach, new methods of education for such athletes [1].



Pic. 2. *The classification of qualities of coach of mini-football*

The authority of the coach is caused by his high morality and, first of all, is gained by the objective attitude to the athletes, conscientious performance of the duties. In addition, the appearance of the coach, his politeness and tolerance are important for sportswomen. It is essential for the coach to have authority not only in his team, but also in his colleagues, executive staff and etc. Naturally, not every coach can immediately gain authority, but we must not forget that the authority of a specialist, even a young one, largely depends on how he behaves. The authority of the coach relates to his intellectual level, it should be higher than in his athletes. The coach should strive to gain the upper hand in any discussions with the athletes, but do not do it obsessively, without emphasizing his superiority [6].

Discussion. We fully agree with the views of the authors that the mini-football coach should pay great attention to improvement of the physical fitness and technical skills of his footballers, to have influence on the formation of the personality of each athlete. Additionally, the coach should develop a system of sports training of women's team and take into account the biological peculiarities of the female body, the most important of which is hormonal changes.

Conclusions and perspectives for further research. The modern stage of development of physical culture and sport requires an intensive creativity of trainers and athletes. The basis of this creativity is the creation of new techniques, tactics and methods of training. The educational, disciplinary and recreational activities of the sports game will be effective only when the game is conducted by a coach who is professionally ready to realize its potential. The inexhaustible source of his creativity allows to develop the original technique of sports training. The possession of professional, physical, volitional, mental and moral qualities will enable the coach to successfully manage the sports team, make the right decisions in a case of conflict situations during and after the game.

The further research will be aimed at search of ways of optimization of training process of women's mini-football team.

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Received: 18.05.2018

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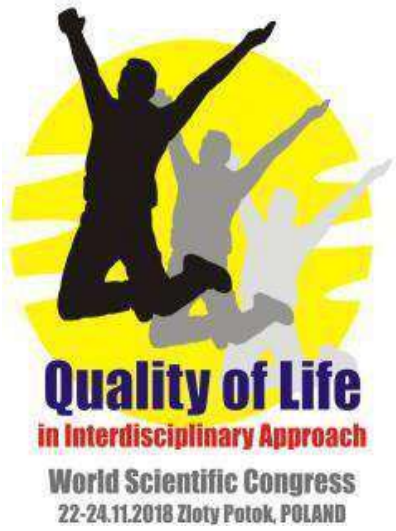

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✓ conclusions *(may be accompanied by recommendations, assessments, proposals, hypotheses that are described in the article);*

✓ key words: (5-6) *(reflect the main content of the article, scientific scope, topic are given in nominative case). (With the help of key words scientific articles are searched in databases).*

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Volume of the article — 8-12 pages with tables, schemes and pictures, A4, Word Editor 97-2003, in format *.doc. font 14 pt, Times New Roman, 1,5 line spacing (in tables 1 line spacing), portrait orientation, without hyphenation.

Annotations and key words – Times New Roman, font 12 pt.

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

You should differentiate dash (–) and hyphen (-).

Text elements that require highlighting are underlined; meaning of words are put in double quotes.

Amount of table material and illustrations should be appropriate. Figure material is presented in a table and has a sequence number, right-side alignment (for example, *Table 1*) and a name (printed over the table in the middle in bold, for example: **Division of students according to the level of their physical activity**). Text of the table is printed with Times New Roman font, 1 line spacing; portrait orientation.

The picture should be a single graphic object (grouped). For pictures made in Excel program, it is necessary also to send an Excel file (97-2003). Pictures should be numbered; they should have titles that are given outside a graphic object (for example, **Picture 1.** *Dynamics of physical working capacity*). Illustrative material must be contrasting black and white, way of filling in diagrams - dashed. Formulas (with standard numbering) are performed in Microsoft Equation Editor. Underlines of pictures and formulas should be available for editing. All graphic objects shouldn't be scanned.

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Збірник наукових праць
Східноєвропейського національного університету імені Лесі Українки
(англійською мовою)
№ 3 (43)

Верстка *І. С. Савицька*

Свідоцтво про державну реєстрацію КВ № 19773-9573ПР від 15.03.2013 р.
Сайт збірника наукових праць: http://sport.eenu.edu.ua

Засновник і видавець − Східноєвропейський національний університет імені Лесі Українки.
Формат 60×84 1/8. Папір офсетний. Гарн. Таймс. Друк цифровий.
Обсяг 16,74 ум. друк. арк., 16,31 обл.-вид. арк. Зам. 3138-А.
Виготовлювач – Вежа-Друк
(м. Луцьк, вул. Шопена, 12, тел. 29-90-65).
Свідоцтво Держ. комітету телебачення та радіомовлення України
ДК № 4607 від 30.08.2013 р.