ISSN 2220-7481

ФІЗИЧНЕ ВИХОВАННЯ, СПОРТ І КУЛЬТУРА ЗДОРОВ'Я У СУЧАСНОМУ СУСПІЛЬСТВІ

№2 (38)
2017

http://sport.eenu.edu.ua

Міністерство освіти і науки України
Східноєвропейський національний університет імені Лесі Українки

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Збірник наукових праць
Східноєвропейського національного університету імені Лесі Українки
№ 2 (38)

Луцьк
Східноєвропейський національний університет
імені Лесі Українки
2017

УДК 796(Д82)
ББК 75Я 43
Ф 50
Рекомендовано до друку вченою радою Східноєвропейського національного університету імені Лесі Українки (протокол № 8 від 29.06.2017 р.)

Ф 50 **Фізичне** виховання, спорт і культура здоров'я у сучасному суспільстві : зб. наук. праць Східноєвроп. нац. ун-ту ім. Лесі Українки / уклад. А. В. Цьось, С. Я. Індика. – Луцьк : Східноєвроп. нац. ун-т ім. Лесі Українки, 2017. − № 2(38). – 223 с.

У збірнику наукових праць подано окремі положення розвитку фізичної культури, фізичного виховання різних груп населення, підготовки фахівців для галузі. Охарактеризовано методи, засоби тренування, особливості підготовки спортсменів, адаптації організму людей різного віку в процесі фізичного виховання, адекватність яких підкріплюється педагогічними, психологічними та медично-біологічними експериментами.

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УДК 796 (Д 82)
ББК 75 Я 43

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№ 2 (38)

Lutsk
Lesya Ukrainka Eastern European
National University
2017

УДК 796(Д82)
ББК 75Я 43
Ф 50

Recommended for publication by the Academic Council of Lesya Ukrainka Eastern European National University
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УДК 796 (Д 82)
ББК 75 Я 43

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Історичні, філософські, правові й кадрові проблеми фізичної культури та спорту

УДК 379.85 (477.82)

THE ORGANIZATION OF SPORT TOURISM OF THE VOLYN REGIONAL CENTRE OF TOURISM, SPORTS AND TRAVELLING TOURS

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Abstract

The article deals with an overall analysis of legislative documents, research and methodological literature, the reports of the regional Centre of Tourism, Sports an Travelling tours as well as the published materials related to the out-of-school activities in the Volyn Region. Under consideration are state-level regulatory aspects of the tourism ethnography job in out-of-school institutions of Ukraine. The job in the field of Sport Tourism of Ukraine is headed by the Ukrainian State Centre of Tourism and Ethnography. This company serves the interests of the schoolchildren And is subordinated to the Ministry of Education and Science. The Centre of Tourism, Sports and Travelling Tours (functioning in the framework of the Volyn State Administration) is the most important out-of-school institution and coordinator of the tourist-ethnographic work in Volyn Region and one of the most prominent agencies in the fields of tourism for Ukrainian children and adolescents. Of great importance for the development of sport tourism and ethnography in Volyn region is the interest clubs operating in the Regional Centre of Sports and Travelling Tours. The number of those interest clubs and hobby groups is fairly considerable. The replies of the respondents of a poll demonstrate the children's participation in different sport tourists clubs of Volyn Region with the emphasis on a specific variety of tourism. The article contains the analysis of the major professional fields of the Agency: sport orienteering; sport tourists; geographic ethnography; geological ethnography; project of sport orienteering; project «A Wandering Mr.Know-All»; the project of «Tourism for Everyone»; Young Tourists as Ethnographers; historical Ethnography. The natural environment and resources of the Volyn region are quite propitious for the development of the tourist-ethnographic and sport-tourist activity of the young people. The region offers very good opportunities for arranging walking and hiking tours, contests and just a recreation in the lap of nature. The contents of the activities of a typical interest club have been studied (the focus is on its resources and conditions). The task of our research is to analyze the peculiarities of the job of the tourist society as well as the problems it may face with. The accumulated knowledge, experience, the adequate organization and careful planning of the Centre's job will make it possible to upgrade the training the tourist staff, encourage the schoolchildren to participate in large-scale tourist events, contests, travelling tours.

Key words: tourist-sports work; Center for Tourism, Sports and Excursions (CTSE) tourist-friendly circles.

Олена Дем'янчук, Ірина Єрко, Нінель Мацкевич, Василь Войтович. Організація туристично-спортивної роботи при Волинському обласному центрі туризму, спорту та екскурсій. У статті здійснено аналіз і застосовано метод узагальнення законодавчих документів, науково-дослідної й науково-методичної літератури, звіти обласного Центру туризму, спорту та екскурсій, ознайомлення з позашкільною роботою області. Охарактеризовано державні регулювальні елементи туристсько-краєзнавчої роботи в позашкільних закладах України. Туристсько-спортивну роботу в країні очолює Український державний центр туризму і

краєзнавства учнівської молоді, безпосередньо підпорядкований Міністерству освіти і науки. Центр туризму, спорту та екскурсій Управління освіти і науки Волинської обласної державної адміністрації − навчально-виховний заклад, який є флагманом позашкільної освіти та координатором туристсько-краєзнавчої роботи у Волинській області, однією з провідних установ дитячо-юнацького туризму в Україні. Гурткова робота Обласного центру спорту та екскурсій має важливе значення для туристсько-спортивної й краєзнавчої діяльності Волині. При Обласному центрі туризму, спорту та екскурсій функціонує чимало гуртків і творчих об'єднань. Виявлено зайнятість респондентів у туристсько-спортивних гуртках області з різними видами туризму. Розглянуто основні напрями діяльності підприємства: спортивне орієнтування, спортивний туризм, географічне краєзнавство, геологічне краєзнавство, літературне краєзнавство, програма спортивного орієнтування, програми «Пізнайко-мандрівник», «Туризм для всіх, юні туристи краєзнавці, історичне краєзнавство». Природні умови та ресурси Волинської області є доволі сприятливими для розвитку туристсько-краєзнавчої та туристсько-спортивної роботи серед юнацтва; хороші можливості для проведення з дітьми піших екскурсій, туристичних походів, змагань і просто відпочинку на природі. Вивчено гурткову роботу, яка займає важливе місце в туристсько-краєзнавчій діяльності Волинської області, адже для цього є необхідні ресурси та умови.

Завдання нашого дослідження – проаналізувати особливості та проблеми роботи й розвитку туристичного підприємства. Накопичені знання, правильно організована та спланована робота Центру дасть змогу вдосконалити систему підготовки туристських кадрів, активізувати участь школярів області в масових заходах із туризму й краєзнавства, залучення більшої кількості дітей до участі в змаганнях, подорожах, екскурсіях, походах.

Ключові слова:туристсько-спортивна робота, Центр туризму, спорту та екскурсій (ЦТСЕ), туристсько-спортивні гуртки.

Елена Демьянчук, Ирина Ерко, Нинэль Мацкевич, Василий Войтович. Организация туристско-спортивной работы при Волынском областном центре туризма, спорта и экскурсий. В статье осуществлен анализ и применен метод обобщения законодательных документов, научно-исследовательской и научно-методической литературы, отчеты Областного центра туризма, спорта и экскурсий, знакомство с внешкольной работой области. Охарактеризовано государственные регулировочные элементы туристско-краеведческой работы во внешкольних учереждениях Украины. Туристско-спортивную роботу в государстве возглавляет Украинский государственный центр туризма и краеведчества ученической молодёжи, непосредственно подлежащий Министерству образования и науки. Центр туризма, спорта и экскурсий Управления образования и науки Волынской областной государственной администрации – научно-воспитательное заведение, которое является флагманом внешкольного образования и координатором туристско-краеведческой работы в Волынской области, одним из передовых заведений детско-юношеского туризма в Украине. Работа кружков Областного центра туризма, спорта и экскурсий имеет важное значение для туристско-спортивной и краеведческой деятельности Волыни. При Областном центре туризма, спорта и экскурсий функционирует множество кружков и творческих обединений. Выявлено занятость респондентов в туристско-спортивных кружках области с различными видами туризма. Рассмотрены главные направления деятельности предприятия: спортивное ориентирование, спортивный туризм, географическое краеведчество, геологическое краеведчество, литературное краеведчество, программы спортивного ориентирования, «Познайко-путишественник», «Туризм для всех, юные туристы-краеведы, историческое краеведчество». Природные условия и ресурсы Волынской области являются очень благоприятными для развития туристско-краеведческой и туристско-спортивной роботы среди юношества; хорошие возможности для проведения с детьми пеших экскурсий, туристических походов, соревнований и просто отдыха на природе. Изучается работа кружков, которая занимает важное место в туристско-спортивной деятельности Волынской области, потому что для этого имеются необходимые рессурсы и условия. Задача нашего исследования – проанализировать особенности и проблемы работы и развития туристического предприятия. Накопленные знания, правильно организованная и спланированная работа Центра позволит усовершенствовать систему подготовки туристских кадров, активизировать участие школьников области в массовых мероприятиях по туризму и краеведению, приобщению большего количества детей к участию в соревнованиях, путешествиях, экскурсиях, походах.

Ключевые слова: туристско-спортивная работа, Центр туризма, спорта и экскурсий (ЦТСЕ), туристические спортивные кружки.

Introduction. Being focused on a socially important category of our society – the younger generation, children and youth tourism occupies a special place in the system of tourist activity. Tourism as a form of active rest and extracurricular education is indispensable for self-development [5; 7].

According to statistical data provided by the Ukrainian State Centre of Tourism and Local History for Students (USCTLHS), currently on the tourist market of Ukraine there are 117 centres of tourism, including 23 Oblast Centres of Turism, Sports and Local History for Students [13].

Oblast Centre of Tourism, Sports and Excursions of the Department of Education and Science of Volyn State Administration, situated in the city of Lutsk at 12, Kopernik Street, was found in 1940 (it was initially called Oblast Station of Excursions and Tourism for Children, since 1977 – Oblast Station for Young Tourists, and since 1991 – Centre of Tourism, Sports and Excursions). The main objectives of the centre are to instill in children a love for their native land, for a healthy lifestyle through tourism and local history, to cultivate in them patriotism, responsibility, national consciousness as well as dignity [12].

The aim of the research is to analyze tourist and sports activities in Volyn Oblast to outline group activities of CTSE (the Centre of Tourism, Sports and Excursions), as well as to evaluate the activities of CTSE.

The Material for the Research and the Methods. The analysis of tourist and sports activities in Volyn Oblast Centre of Tourism, Sports and Excursions (CTSE); involvement of children in group tourist and sports activities of CTSE.

The Results of the Research. Discussion. Volyn Oblast Centre of Tourism, Sports and Excursions includes 7 stations for young tourists; 14 branch offices of CTSE; 3 tourist and local history departments in centres of extracurricular education and houses of children and youth creativity; 27 base middle schools of general education of the three levels of accreditation of general education; 16 supporting middle schools of general education of the two levels of accreditation; 2 tourist centres of CTSE – «Yunyi Turyst» («Young Tourist»), «tabir «Soniachnyi» («camp «Sunny») [12].

CTSE is a widely accessible extracurricular educational establishment, which meets the requirements of individuals in their creative self-actualizing, as well as in arranging meaningful leisure, acquiring knowledge, abilities and skills according to interests and wishes children have [6; 10].

The main form of teaching and educational activities in CTSE is a class in groups, sections and clubs. More than two thousand children are involved in these activities, the latter including 22 tourist and local history sections, such as hiking, nautical tourism, bicycle touring, ski touring, multisport race, orienteering, topography, young tourists, organizers of tourist and local history activities, as well as various local history and research, sports and recreational, military and patriotic sections [4; 11].

In 2009, 1005 group members (60 groups) were involved in group activities of CTSE in Volyn Oblast, 1008 group members (65 groups) in 2010, 1024 group members (65 groups) in 2011, 1063 group members (69 groups) in 2012, 1115 group members (71 groups) in 2013,1260 group members (72 groups) in 2014 [2; 3; 12].

«Tourist and sports» groups occupy the biggest niche in tourist and local history activities in Volyn Oblast, 5940 students being members of 371 groups. «Tourist and sports» groups include such sections as tourist and sports, hiking, ski touring, nautical tourism, mountaineering, bicycle touring, spelunking, sports tourism, orienteering, organizers of tourist and local history activities, school of safety (young rescuers), rock climbing, tourism and young tourists [8; 9].

«Tourist and sports» sections include 24 groups and 321 students.

These clubs operate at the basis of the Palaces, youth centers, schools, region and municipal centers of young tourists. 63 kinds of hiking trips are carried out, 9 of which operate at the District Centre of Tourism, Sport and Excursions; 54 kinds of hiking trips operate in other educational establishments. In total, 963 schoolchildren take part in outbound tourism, 162 of them attend the meetings in the Centre, and 801 schoolchildren attend other educational establishments [1]. «Ski tourism» is organized by 1 group, 16 people are engaged in it. The group functions on the basis of the Tourism, Sport and Excursion Centre. «Outdoor tourism» consists of 3 groups where 40 schoolchildren study. Of these, 2 clubs operate at the Tourism, Sport and Excursion Centre, 20 members study the technology in the field of tourism, 1 club operates at school, where 20 members study. «Mountain tourism» is given to 1 club, and it is attended by 15 children. This club operates at the District Center for Tourism, Sports and Local Studies. «Cyclotourism» is organized by 9 clubs and 270 members. 1 group operates at the Centre, 8 groups operate at other educational establishments.

15 members are being taught in the Centre, and 255 members attend other out-of-school educational clubs. «Potholing» has no clubs, as in Volyn region there are no recourses for this kind of tourism and local studies activities. Although our students participated in speleo-orientation competitions [2; 3]. «Sport tourism» has 59 clubs, 11 of them operate on the basis of Tourism Centre and 48 clubs operate on the basis of other educational establishments. The number of members is 946: 177 members study in the Centre, 769 members study in other establishments. «Orienteering» has 52 clubs: 6 clubs operate at the Tourism, Sport and Excursion Centre, 46 clubs operate at other educational establishments; the number of members is

79 and 792 respectively. The organizers of tourism and local studies activities work in 3 clubs, they have 72 students. All these clubs function on the basis of the District Center of Tourism, Sport and Excursions. Safety School (Young Rescuers) has 55 clubs and 723 members. The clubs operate at school and in centers of young tourists. «Alpinism» has no skills and resources available for the young tourists in Volyn region.

The «tourist» vector consists of 14 interest groups with 242 pupils in them. These interests groups work on the basis of different Halls, Youth centres and centers of young tourists. Centers of young tourists include 28 interest groups and 465 children. There are 6 main interest centers attended by 95 pupils. There are 22 interest groups with 370 pupils in them in other educational institutions.

Conclusions and Further. Research. The centre of tourism, sport and excursions has made a significant contribution into the development of tourist and country study sphere of the region for the period of more than 70 years.

Nowadays, it is one of the leading sectors for children and teenager tourism in Ukraine that refers to out-of–school institutions. The members of the Centre are the participants of different competitions, gatherings and conferences. This Centre organized many tours and excursions. Its members achieved high results.

Tourist and sport vectors are the most developed in the region with 371 interest groups and 5940 pupils in them. The development of children and teenager tourism in Ukraine has stabilized in recent years and there is some data showing the improvement of tourist work

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Стаття надійшла до редакції 23.05.2017 р.

УДК 61: 796: 616–036.83: 061.2: 614.253.4

PRE-CONDITIONS AND MODERN DEVELOPMENT OF SPECIALITIES IN PHYSICAL THERAPY AND ERGO-THERAPY IN UKRAINE

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Abstract

Topicality*.** The crisis situation of the state of Ukrainian population health lifts the level of rehabilitation of patients and persons with disability to the priority national problem. The state of rehabilitation services grant substantially depends on the skilled personnel providing. ***Research aim: on the basis of analysis of scientifically-methodical literature and normatively legal acts to investigate pre-conditions and modern trends of progress of physical therapy and occupational therapy specialities in Ukraine. ***Research results*.** The educational programs of specialists preparation on a physical rehabilitation have many defects, and preparation of specialists on occupational therapy is absent in our country absolutely. In accordance with normative acts physical therapy is the legal successor of physical rehabilitation in our country, but these concepts are not identical. The intensive process of forming of new specialities, criterias of accreditation, educational programs of retraining passes in Ukraine. ***Conclusions*.** Change of legal bases in the sphere of preparation and labour of physical therapeutists and ergotherapeutists, design of educational programs in accordance with international standards, is the first step on a way to quality development of these fields of knowledge and practice.

Key words: physical therapy, ergo-therapy (occupational therapy), staff training.

Євгеній Імас, Олена Лазарева. Передумови та сучасний стан розвитку спеціальностей «Фізична терапія» й «Ерготерапія» в Україні. ***Актуальність*.** Кризова ситуація стану здоров'я населення України піднімає рівень реабілітації хворих та осіб з інвалідністю до пріоритетної загальнодержавної проблеми. Стан надання реабілітаційних послуг суттєво залежить від кадрового забезпечення. ***Мета дослідження –*** на основі аналізу науково-методичної літератури та нормативно-правових актів дослідити передумови й сучасні тенденції розвитку спеціальностей «Фізична терапія» та «Ерготерапія» в Україні. ***Результати роботи*.** Установлено, що навчальні програми підготовки фахівців із фізичної реабілітації мають багато недоліків, а підготовка спеціалістів з ерготерапії відсутня в нашій країні. Відповідно до нормативних актів, фізична терапія – правонаступниця фізичної реабілітації в Україні, але ці поняття не є тотожними. У державі відбувається інтенсивний процес формування нових спеціальностей, критеріїв акредитації, навчальних програм перепідготовки. ***Висновки*.** Зміна юридичних основ у сфері підготовки й праці фізичних терапевтів та ерготерапевтів, розробка навчальних програм відповідно до міжнародних стандартів – перший крок на шляху до якісного розвитку цих галузей знань і практики.

Ключові слова: фізична терапія, ерготерапія, підготовка кадрів.

Евгений Имас, Елена Лазарева. Предпосылки и современное состояние развития специальностей «Физическая терапия» и «Эрготерапия» в Украине. ***Актуальность.*** Кризисная ситуация в состоянии здоровья населения Украины поднимает уровень реабилитации больных и лиц с инвалидностью на уровень приоритетной общегосударственной проблемы. Состояние предоставления реабилитационных услуг существенно зависит от кадрового обеспечения. ***Цель исследования –*** на основе анализа научно-методической литературы и нормативно-правовых актов исследовать предпосылки и современные тенденции развития специальностей «Физическая терапия» и «Эрготерапия» в Украине. ***Результаты работы.*** Установлено, что учебные программы подготовки специалистов по физической реабилитации имеют много недостатков, а подготовка специалистов по эрготерапии в нашей стране отсутствует. Согласно нормативным актам физическая терапия является правопреемником физической реабилитации в Украине, но эти понятия не есть тождественными. В государстве проходит интенсивный процесс формирования новых специальностей, критериев аккредитации, учебных программ переподготовки. ***Выводы.*** Изменение юридических основ в сфере подготовки и труда физических терапевтов и эрготерапевтов, разработка учебных программ соответственно международным стандартам является первым шагом на пути к качественному развитию этих отраслей знаний и практики.

Ключевые слова: физическая терапия, эрготерапия, подготовка кадров.

Introduction. In nowadays the rehabilitation of patients and persons with disability in Ukraine acquires the level of priority national problem in connection with a crisis situation that has consisted of health state of population and that gets worse as a result of distribution of chronic nonspecific diseases. Also there is an urgent requirement in rehabilitation measures for persons that suffered during realization of ATO [3].

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

The committee of experts of World Health Organization (WHO) (in 1980) gave determination to the rehabilitation as an active process the aim of that is an achievement of complete renewal of broken because of disease or trauma of functions, or, if it is impossible is optimal realization of physical, psychical and social potential of person with disability, it's the most adequate integration in society [1, 5].

Among other methods of restoration influence, a rehabilitation occupies the special place, because examines not only the state of organs and systems of organism, but also functional possibilities of person in her everyday life after an extract from medical establishment [5].

As one of leading principles of rehabilitation there is a complexity of influences, the rehabilitation establishments, which are only those establishments that provide a complex of medical and social, physical and professionally-pedagogical measures[5], also modern realized protocols and multi disciplinary brigades consist of the doctor of physical rehabilitation medicine, physical therapeutist, ergotherapeutist, logotherapeutist, psychotherapist and social worker and other, taking into account the necessities of patient [7]. For realization of all these directions, corresponding material and technical provision and staff provision of rehabilitation establishments have an important value [5].

At the analysis of the modern state of rehabilitation services in Ukraine it was specified the staff problem as the most important. Determination of basic tendencies of preparations of specialists, that render rehabilitation services is extremely actual and needs a wide discussion and unification.

Research aim is to investigate pre-conditions and modern tendencies development of specialties on physical therapy and occupational therapy in Ukraine on the basis of analysis of scientifically-methodical literature and normatively legal acts.

Results of the Study. Discussion. In Ukraine about 25 years on the base of institutes of physical culture and pedagogical universities have been done preparation of specialists on physical rehabilitation. For today in Ukraine there are more than 50 educational establishments that graduate bachelors and master's degrees in the field of physical rehabilitation. Unfortunately, in most of them, the training programs are extremely distant from world standards. Majority of establishments does not have bases of practical preparation. There are only a few institutions that have the educational program close to recommended WCPT and sufficient amount of hours of clinical practice. Without regard to knowledge of autopsy and physiologic peculiarities of human organism, insufficient study of biomechanics and kinesiology, the knowledge of that plays a leading role in testing of the muscles state of patient and construction of physical rehabilitation program and absence of practical experience with patients can not provide the sufficient level of preparation.

M. L. Ankin, physician-in-chief of KRCH «Kyiv Regional Clinical Hospital» establishes, that educational programs of specialists preparation have many defects, in particular, become antiquated and don't contain modern methodologies of such, as Proprioceptive Neuro Muscles Facilitation (PNF-therapy), Bobat-Treatment and others.

Absence of training establishments and centers of preparation does impossible further professional development. All specialized courses of preparation have only general character and in no way assist the increase of grant help in area of Rehabilitology. Except that, removed from the necessities of medical establishments, bad imagination about necessary for further labour of competence results in absolute unadapted of most graduate specialists of this sphere for work in the conditions of hospital, and doctors – uninformed in relation to possibility of collaboration with them.

In recent years, the higher medical educational establishments began interest in preparation of doctors in Physical Rehabilitation. So, the first set of students for education was carried out in I. Y. Horbachevskyi State Medical University in Ternopil in 2012 [4]. In 2015–2016 other medical institutions of Kharkiv, Kyiv joined to them. Unfortunately, the departments of Medical Physical Education and Sporting Medicine can not give an approximately those knowledge that world society demand in process of preparation of Physical Therapy specialists. Educational process in medical establishments for long years was based on out-of-date knowledge, informing character by a volume 60–80 hours.

Modern world educational programs for «Physical Therapy» envisage the study of biological, medical, pedagogical (inclusive with the theory of physical education) and special disciplines. A study of medical pathology is only part of preparation. At the same time, the presence of the so-called «medical» education for a doctor, medical assistant or medical sister will not be able to compensate absence of the special education [2].

Preparation of specialists on occupational therapy is absent in our country quite. Today in Ukraine there are only 3 certificated specialists on occupational therapy that passed training courses and got a degree in other countries.

For the decision of this problem in accordance with resolution of Cabinet of Ministers of Ukraine from April, 29, 2015 № 266 «About approval of list of knowledge and specialties areas after that preparation of entrants of higher education»[11] preparation of specialists after the educationally-qualifying levels of bachelor (direction of preparation «Human Health»), specialist degree and master's degree (Speciality of «Physical Rehabilitation»), that were included in the area of knowledge 0102 «Physical Education, Sport and Human Health», was attributed to the area of Health Protection for Speciality 227 of «Physical Rehabilitation»).

By Resolution of Cabinet of Ministers of Ukraine from February, 01, 2017 № 53 [10] were made alterations to the list of specialities in the fields of Health Protection. The change of Speciality title 227 «Physical Rehabilitation» on Speciality 227 «Physical Therapy, Occupational Therapy» took place.

The necessity of development of specialities as «Occupational Therapy» and «Physical Therapy» in Ukraine was repeatedly underlined, by both the representatives of Ministries and Departments accountable for development of Health Protection sphere in Ukraine and international experts. The Ministry of Healthcare of Ukraine (MHU) already undertakes certain steps for this purpose. So in August, 2016 new specialities were added to the classifier of professions: doctor of Physical and Rehabilitation Medicine, Ergotherapeutist and Physical therapeutist [8], afterwards, in November their professional descriptions were published [9], what give an opportunity to place in a job these specialists to health protection establishments.

The new professional titles «Ergo-therapy» and «Ergo-therapeutist» were accepted, as the Ukrainian equivalent of terms «Occupation Therapy» «Occupational Therapist», and the «Physical therapeutist» and «Physical therapy» for a mess will not arise out of present medical Speciality «Doctor-Physical therapeutist».

Physical therapy is a legal successor of Physical rehabilitation in our country, but these concepts are not identical. Physical therapy (syn. Physiotherapy) is the «profession of health protection sphere, related to strengthening of health, prevention of physical disability, estimation of the state and rehabilitation of patients with a pain syndrome, illness or trauma, and by treatment with application of physical therapeutic facilities and without application of medicamental, surgical or radiological facilities», or «use of physical facilities and methods, such as a massage and manipulations, therapeutic exercises, hydropathy and different forms of energy, in a rehabilitation and proceeding in a normal corporal function after a disease or trauma» [2, 12].

Physical therapeutist are often named specialists in area of motion. The duties of such specialist are:

- an estimation of the functional state of patient/of client and their environment;
- the determination of interference aims;
- the planning of interference;
- a choice of concrete methods and receptions of interference from the present in its arsenal the physical methods of influence;
- independent realization of the program;
- an estimation of changes in the state of patient/client, that took place during interference, that is the conduction of the repeated estimation during the realization of the program;
- an estimation of efficiency of interference;
- selection and adaptation of necessary auxiliary facilities and special equipment;
- education of persons, that look after or help a patient/client of the necessary receptions of help and correct using of the special equipment.

For future ergotherapeutists it is necessary more in detail to know ergonomics and that, how people execute those or other types of activity, except it, they are guilty able to make the simplest adaptations for people with the different types of violations. Today, Ergo–therapy is the speciality that is base on the scientifically well – proven facts that purposeful, that has for an individ, activity helps to improve functional possibilities (physical capacity, emotional, cognitive, psychical) [6].

The Ergo-therapy aims are:

- to educe present violations, renew or develop functional possibilities of individ, that need to them in everyday life (in activity);
- to help an individ with limitations of vital functions to become maximally independent in everyday life by proceeding (development) in their lost functions, use of the special adaptations, and also adaptation of environment;
- to create optimal terms for development and individual self-realization with limit functional possibilities through their «employment» in the different spheres of vital functions and, in an eventual account, to improve their life quality.

All these changes gave a push for the input of the new educational and educationally-scientific programs at the universities. Now a working group of the Ministry of Education and Science of Ukraine (MESU) has worked out standard for preparation of bachelors on Physical therapy and Ergo-therapy and the first set of students took place. Standards are developed for the second and third educational levels. Preparation of «Ergo-therapeutists» and «Physical therapeutist» is expedient to continue at the universities that have a scientifically-methodical base and twenty-year experience of preparation of specialists on a Physical rehabilitation and programs with world's standards. It is gradually necessary to bring over to preparation the medical higher educational establishments and to reduce the amount of educational establishments that give off-grade education.

At the same time, taking into account discipling and recommendations of World Confederation on Physical Therapy and World Federation of Ergo-therapeutists (with that MHC of Ukraine signed a memorandum about a collaboration) preparation of Physical therapeutists and Ergo-therapeutists at the Bachelor's degree level is planned together, then preparation at the Master degree level is desirable to divide with the aim of observance of world educational requirements.

An issue about the skilled providing of departments that will prepare such specialists is separately examined.

Participants of the Ukrainian Scientifically-Methodical Conference on issue of licensing and introduction of Speciality 227 «Physical therapy, Ergo-therapy» that took place in the National University of Physical Education and Sport of Ukraine on February, 20 in 2017, marked a necessity:

– to confirm at the level of «Order, officially listed in MHC» for Speciality of 227 «Physical therapy, Ergo-therapy» of such specializations: «227.01 Physical therapy» and «227.02 Ergo-therapy» for the applicants of higher education of Master's degree with the aim of the effective forming and placing the government order, preparation to different professional activity of corresponding specialists, and also for development of standard of higher education for the indicated Speciality that will include the independent lists of special (professional, subject) competences and results of studies for each of specialization, realization of the differentiated licensing of corresponding educational activity in the part of content of staff, material and technical providing preparation.

– to admit the graduate specialists of Speciality 8.01020302 the «Physical Rehabilitation» and «24.00.03 – Physical Rehabilitation» such that can provide normative content of preparation of higher education applicants on professional disciplines for Specialization «227.01 Physical therapy» and «227.02 Physical therapy, Ergo-therapy».

– to admit the graduate specialists of Specialities 8.01020302 the «Physical Rehabilitation», 8.01010401 «Correction education (after nosologies)», «24.00.03 – Physical Rehabilitation», «13.00.03 – Correction education» such that can provide normative content of higher education applicants preparation on professional disciplines for specialization «227.02 Ergo-therapy» of Speciality «227 Physical therapy, Ergo-therapy».

Nowadays there is a project of employment of present graduating students in clinical and rehabilitation establishments of MHC at the terms of the further retraining and increase of their qualification. Specialists of WHO on results the estimation of situation in the field of rehabilitation in Ukraine, consider necessary development of criteria of accreditation, educational programs of retraining and transition plan for the existent professionals of rehabilitation according to principle, «taking better» from international models (for example development of educational programs for the doctors of physical and rehabilitation medicine in accordance with the standards of European Council for Physical and Rehabilitation Medicine, and programs for Physical therapeutics and Ergo-therapeutics in accordance with modern requirements and recommendations of international professional organizations (WCPT, WFOT).

The unsolved problem is realization of valuable clinical practice of Physical Therapy and Ergo-Therapy and necessity for development only test of estimation of theoretical knowledge and practical skills of future specialists (STEP – by professional aspiration). Subject of discussion is the requirements to accreditation of educational establishments that prepare the marked specialists. One of the major points of accreditation is clinical practice.

For providing of clinical practices, the amount hours of clinical preparation (1000–1500 hours for all period of preparation) and norms in relation to the presence of agreements on a collaboration between higher educational and clinical establishments are indicated in the standards of higher education. Presence in the staff of the marked clinical establishments of specialists on a Physical Rehabilitation or Curative Physical

Culture and Physiatrists, and afterwards Physical therapeutics and Ergo-therapeutics with whom a signed labor contracts are obligatory. The amount of agreements and power of clinical establishments must provide the visit of practice by group of students with 5–6 persons per on one specialist on a Physical Rehabilitation or Curative Physical Culture.

All of it creates new calls for training of scientifically-pedagogical staff of universities, arrangement of students clinical practice bases, introduction of university clinics.

Conclusions. Taking into account the modern state of problem of Physical Therapy and Ergo-therapy, there is a necessity of preparation of specialists programs in accordance with world standarts with quality practical preparation in clinics. The specialized courses of disciplines that will examine and bind the human anatomical and physiological features of Physical Therapy and Ergo–therapy must go out in the first positions. Graduating students must be adapted for a work in curative establishments, in the content of patient-oriented multi-disciplinary command.

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Стаття надійшла до редакції 30.05.2017 р.

УДК 796(73)

CHARACTERISTIC FEATURES OF PROFESSIONAL STUDY OF PHYSICAL EDUCATION AND SPORTS IN THE USA

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Abstract

Actuality. Innovative processes in the field of physical culture and sports, understanding the value of health, recognition of high social importance of physical education, promotion of fitness, physical activities and sports, creating a positive public attitude to physical activity and sport through the recognition and respect for the achievements of teams or individual people – all of the above leads to the need of the expansion of the services rendered by means of physical activity and accordingly requires substantial changes in the study of future professionals of physical education and sport. One of the current issues in society today is a lack of professionals in the sphere of physical education and sport. Preparation of these professionals should take into account current global trends of education and the need to consider the experience of leading countries. ***Methods.*** Methodological principles of research are: the theory of philosophical knowledge and mutual interdependence of the phenomena of objective reality; an objective study of the development and communication of specific historical conditions based on the unity logical and historical, general and special, theory and practice. ***Results.*** The study proved the theory and practice of professional preparation of specialists of physical education and sports in the USA. Scientific theory of the system of such training is generalized. Tendencies of development of physical culture and sports in the US as determinants of modernization of professional preparation of specialists are revealed. The system of professional preparation of specialists of physical education and sports is characterized as one that has a coherent, continuous and differentiated character within university education We studied majors, spheres of physical education and sports, in a wild range of USA universities. The analysis of educational programs, available at these universities, helped us to generalize them as the bachelor programs – academic specializations, which are determined as majors. We outline twelve majors of bachelor's levels which correspond with the titles of bachelor's specializations. Data of the comparative analysis of curriculum shows that it structure has common and quite unified character and consists of three key components: general education, field disciplines and major courses. It was found that for the Parks, recreation, leisure, and fitness studies divides these components pretty much alike and displays slight divergences not as much in the content of curricula as in the titles of the studied disciplines. Four years is provided for a bachelor's degree education, during which the student assimilates a set of academic courses within 120 credits. Selection process at the universities is based on grade requirements for academic courses. Hence only 14–15 % of the students on average complete bachelors degree in the USA.It is studied that in US schools traditional forms of learning and modern interactive technologies are practiced. Current control and selection provide quality of professional preparation of specialists. Universities and colleges in the United States available additional paid spring and summer semester lasting 1–3 weeks to eliminate the «debt» capture additional students in disciplines such additional payment semesters.

Key words*:* major, bachelor, professional preparation, specialist, physical education, sport, the USA.

Сергій Мединський. Характерні риси системи професійної підготовки фахівців із фізичного виховання й спорту в США. ***Актуальність.*** Інноваційні процеси у сфері фізичної культури й спорту, осмислення цінності здоров'я людини, визнання високої соціальної значущості фізкультурної освіти, популяризація фізкультурно-оздоровчих заходів та олімпійських видів спорту, формування позитивного ставлення широкого загалу до фізкультури й спорту через визнання та пошанування досягнень команд чи окремих осіб – усе це зумовлює потребу в розширенні послуг, що здійснюються засобами фізичної культури й, відповідно, потребує суттєвих змін у професійній підготовці майбутніх фахівців із фізичного виховання та спорту. Актуальне питання сьогодення – потреба суспільства в педагогічних кадрах, підготовка яких має відбуватися з урахуванням сучасних світових тенденцій освіти та необхідністю врахування досвіду провідних країн світу з досліджень проблем професійної підготовки фахівців із фізичної культури й спорту, зокрема США. ***Методи дослідження.*** Дослідження ґрунтується на порівняльно-аналітичному вивченні професійної підготовки фахівців із фізичного виховання та спорту в США, в основу якого покладено системний підхід, що передбачає розгляд органічних складових цілого в їх взаємодії, а також дає змогу провести дослідження з позицій цілісності, розкрити структурні компоненти системи професійної освіти, виявити механізми їх взаємозв'язків і взаємовпливів. ***Результати дослідження.*** Особливими ознаками професійної підготовки фахівців із фізичного виховання й спорту в Сполучених Штатах Америки визначено децентралізацію освіти (відсутність прямого впливу Департаменту освіти США на освітній процес; запровадження освітніх стандартів та ліцензування фахівців департаментами освіти штатів; визначення змісту освітніх програм і внутрішніх

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

правил та вимог навчальними закладами безпосередньо); наявність законодавчо визначеної освітньої галузі «Парки, рекреація, дозвілля та фітнес»; наявність чотирьох основних напрямів (педагогічного, тренерсько-інструкторського, оздоровчо-реабілітаційного, управлінсько-адміністративного) і 12 академічних спеціалізацій із підготовки фахівців із фізичного виховання й спорту в рамках університетської освіти; для здобуття ступеня бакалавра передбачено чотири роки, протягом яких студент засвоює комплекс навчальних дисциплін у межах 120 кредитів; наявність у програмах підготовки фахівців блоків дисциплін загальної освіти, галузі знань, академічної спеціалізації, вибіркового блоку дисциплін; вимоги щодо якості знань студентів як з окремих дисциплін, так і змістових блоків упродовж періоду навчання, що визначають умови поточного відбору та зумовлює низький відсоток (14–15 %) випускників бакалаврату впродовж останніх 50 років; об'ємну та різнопланову складову практичної діяльності з особливими вимогами допуску й звітності; додаткові навчальні семестри тривалістю 1–3 тижні для ліквідації «заборгованостей», опанування додаткових навчальних дисциплін (додатково оплачувані); високий рівень фінансово-матеріального забезпечення навчального процесу. ***Висновки.*** Комплексно розкрито теоретичні та практичні засади професійної підготовки фахівців із фізичного виховання й спорту в Сполучених Штатах Америки, що виявляється у виявленні та розкритті концептуальних засад, змісту та особливостей організації професійної підготовки фахівців із фізичного виховання й спорту в системі вищої освіти США.

Ключові слова: академічна спеціалізація, бакалавр, професійна підготовка, фахівець, фізичне виховання, спорт, США.

Сергей Медынский. Характерные черты системы профессиональной подготовки специалистов по физическому воспитанию и спорту в США. ***Актуальность.*** Инновационные процессы в сфере физической культуры и спорта, осмысление ценности здоровья человека, признание высокой социальной значимости физкультурного образования, популяризация физкультурно-оздоровительных мероприятий и олимпийских видов спорта, формирование позитивного отношения широкой общественности к физкультуре и спорту через признание и уважение достижений команд или отдельных спортсменов – все это обусловливает потребность в расширении услуг, осуществляемых средствами физической культуры и, соответственно, требует существенных изменений в профессиональной подготовке будущих специалистов по физическому воспитанию и спорту. Актуальным вопросом сегодняшнего дня есть потребность общества в педагогических кадрах, подготовка которых должна происходить с учетом современных мировых тенденций образования и необходимостью учета опыта ведущих стран мира по исследованиям проблем профессиональной подготовки специалистов по физической культуре и спорту, в частности в США. ***Методы исследования.*** Исследование базируется на сравнительно-аналитическом изучении профессиональной подготовки специалистов по физическому воспитанию и спорту в США, в основу которого положен системный подход, предполагающий рассмотрение органических составляющих целого в их взаимодействии, а также позволяет провести исследования с позиций целостности, раскрыть структурные компоненты системы профессионального образования, выявить механизмы их взаимосвязей и взаимовлияния. ***Результаты исследования.*** Особыми признаками профессиональной подготовки специалистов по физическому воспитанию и спорту в США определены децентрализация образования (отсутствие прямого воздействия Департамента образования США на образовательный процесс; внедрение образовательных стандартов и лицензирования специалистов департаментами образования штатов, определение содержания образовательных программ и внутренних правил и требований учебными заведениями непосредственно); наличие законодательно определенной образовательной отрасли «Парки, рекреация, досуг и фитнес»; наличие четырех основных направлений (педагогический, тренерско-инструкторский, оздоровительно-реабилитационный, административно-управленческий) и 12 академических специализаций по подготовке специалистов по физическому воспитанию и спорту в рамках университетского образования; для получения степени бакалавра предусмотрено четыри года, в течение которых студент усваивает комплекс учебных дисциплин в пределах 120 кредитов; наличие в программах подготовки специалистов блоков дисциплин общего образования, отрасли знаний, академической специализации, выборочного блока дисциплин; требования к качеству знаний студентов как по отдельным дисциплинам, так и содержательных блоков в течение периода обучения, определяющие условия текущего отбора, низкий процент (14–15 %) выпускников баклаврата в течение последних 50 лет; объемную и разнообразную составляющую практической подготовки с особыми требованиями допуска и отчетности; дополнительные учебные семестры продолжительностью 1–3 недели для ликвидации «задолженностей», овладение дополнительными учебными дисциплинами (дополнительно оплачиваемые), высокий уровень финансово-материального обеспечения учебного процесса. ***Выводы.*** Комплексно раскрываются теоретические и практические основы профессиональной подготовки специалистов по физическому воспитанию и спорту в Соединенных Штатах Америки, что отражается в выявлении и раскрытии концептуальных основ, содержания и особенностей организации профессиональной подготовки специалистов по физическому воспитанию и спорту в системе высшего образования США.

Ключевые слова: академическая специализация, бакалавр, профессиональная подготовка, специалист, физическое воспитание, спорт, США.

Introduction. Innovative processes in the field of physical culture and sports, understanding the value of health, recognition of high social importance of physical education, promotion of fitness, physical

activities and sports, creating a positive public attitude to physical activity and sport through the recognition and respect for the achievements of teams or individual people-all of the above leads to the need of the expansion of the services rendered by means of physical activity and accordingly requires substantial changes in the study of future professionals of physical education and sport.

One of the current issues in society today is a lack of professionals in the sphere of physical education and sport. Preparation of these professionals should take into account current global trends of education and the need to consider the experience of leading countries.

Indisputable global leadership of the USA in the achievements of Olympic, professional and student sports; comprehensive state policy to encourage citizens into recreational physical activity; progressive system of improving motor activity of the population; a wide range of educational programs in the field of physical education and sport in universities and colleges requires the analysis of American experience. In this context, the acquisition of US experience of professional study in the field of physical education and sport is of particular interest to us.

In this paper we research both the educational sphere of physical culture and sports of the United States and define commonalities US higher education in general.

Material and Methods of the Study. Methodological principles of research are: the theory of philosophical knowledge and mutual interdependence of the phenomena of objective reality; an objective study of the development and communication of specific historical conditions based on the unity logical and historical, general and special, theory and practice.

We used a system approach which enables the analysis of the study of professionals of physical education and sport in the United States from the standpoint of integrity; disclosure of the structural components of vocational education; specific features inherent in the system of professional study in physical education and sports in the United States.

The base study sources are: documents of the American government and its departments (President's Council on Fitness, Sports & Nutrition, Department of Health and Human Services, The Center for Disease Control and Prevention, The Office of Disease Prevention and Health Promotion, The Office of the First Lady), documents of public associations and organizations in the field of physical education and, sports and higher education of the USA (Education Department, Education Commission Of The States, National Education Association, Association Of American Colleges And Universities, American Alliance For Health, Physical Education, Recreation And Dance, National Association for Sport and Physical Education); scientific, methodological and analytical literature of colleges and universities of the USA (education curricula, syllabus, guidelines, textbooks and academic journals for future specialists in physical education and sport in the United States).

Results of the Study. Discussion. There have been significant changes in American higher education in general and university training program in particular during the last decade.

The main reasons for the above changes were radical transformation of universities and higher education programs.This paper defines majors available in the United States universities and colleges in order to specify educational sphere of physical culture and sport of the US. Furthermore, the analysis of the relationship of state and public higher education quality management has been conducted.

National Center for Education Statistics of the United States is the primary federal agency for the collection, analysis and presentation of data related to education in the United States and other countries. Department of Education of the Institute of Educational Sciences of the National Center for Education Statistics of the United States has developed Classification of Instructional Programs, which is a systematized study programs in US colleges and universities [1].

Working on Classification, we have established the existence of more than 60 areas of study.

To the sphere of physical education and sports we have allocated the following:

– Area of Study № 13 «Education», Instructional Program 13.1314 Physical Education Teaching and Coaching;

– Area of Study № 31 Parks, Recreation, Leisure, and Fitness Studies. This area of Study consists of training programs that focus on the principles and techniques of management of parks and other recreational and fitness organizations, as well as providing services in recreation, leisure and fitness and studies human functional condition. We have researched that it includes 5 concentrations and consists of 12 Instructional Programs [2].

In the course of a close scrutiny of the USA physical education field was established the whole «Parks, recreation, leisure, and fitness studies» division according to the USA educational information sites

«Campus Explorer», «The College Board», «Educational portal», «College Majors 101», «My Plan.com» [3; 4; 5; 6].

Comparing the list of educational programs of the educational information sites to the list of Classification of Instructional Programs we have noted the following controversies:

– Educational information site offers 2 educational concentrations in contrast to Classification of Instructional Programs which offers 5 educational concentrations;

– Educational information site offers from 9 to 13 instructional programs whereas Classification of Instructional Programs offers 12 instructional programs;

– Educational information site «Campus Explorer» offers similar instructional programs in both educational concentration «Physical Fitness» and «Park, Recreation and Leisure».

S. Hoffman noted the presence in the Area of Study «Parks, recreation, leisure, and fitness studies» six majors: Physical Education teacher, trainer, expert in athletic training, fitness specialist, sports manager, a specialist in health promotion. Each of the above majors has special requirements within the curriculum, but they are treated as professionals in kinesiology. These professions combine academic career in five areas of specialists in physical education and sport in the United States: 1. Teaching; 2. Coaching and sport; 3. Rehabilitation; 4. Recreation and fitness; 5. Sports management [7].

We have studied each educational program, represented in Educational information site, at least at five different universities. Thus, we researched that universities offer «majors» instead of «educational programs». Furthermore, universities offer several academic majors for the same «educational program» from the educational information site.

The title of the academic major is the same as the title of the bachelor program, and this title is quite different from the title of the educational program, which is presented in the educational information site. Our research identifies 12 types of majors for the Bachelor level in the educational field of physical education and sport USA. Further research allowed us to group these majors into 4 educational concentrations [8; 9].

Thus, we identify the following educational concentrations in the sphere of physical education and sport in the United States:

1. Teaching-includes two academic majors:
– Physical Education Teacher Education,
– Adapted Physical Education;
2. Trainer-instructor – consists of three academic majors:
– Fitness Specialist,
– Exercise Science or/and Applied Exercise and Sport Sciences,
– Sport Psychology and Leadership;
3. Health-Rehabilitation – comprises five academic majors:
– Athletic Training,
– Foods & Nutrition,
– Pre–Physical Therapy,
– Health Promotion,
– RecreationalTherapy;
4. Administrative management – combines two academic majors:
– Sport Administration/ Management,
– Recreation Administration.

Each state has the right to set different levels of monitoring and control over education under the federal law. Quality of education is periodically monitored by the accreditation. There are two main types of accreditation: institutional accreditation (comprehensive assessment of the educational institutions, university's departments); academic Accreditation (evaluation of educational programs, academic disciplines). Information about the accreditation of educational institutions and programs is accessible to the public. This information is available on the Federal Department of Education US website. It is represented as a special catalog, which lists all accredited colleges and programs.

However, higher education institutions are allowed to operate with a significant degree of independence and autonomy. As a consequence, American educational institutions can widely and quickly change their educational programs according to the market demand, society, development of science and technology. Thus, the higher education of the USA combines diverse state institutions and community associations in the

field of education, physical culture and sports. Their joint efforts are aimed at providing modern and high level quality in education.

Below we are going to outline the general characteristics of academic majors and define public organizations in charge of certifying specialists of every major:

1) Physical Education Teacher Education. This major prepares teachers of physical education who can work at schools (from primary to high school). Classes are taught using different techniques of aerobics and at the same time students are introduced to the basics of various sports. Major programmer includes such classes as pedagogy, health teaching methods, physiology, kinesiology, aerobics and recreational sports, and applied physical education. Usually a field student–teaching experience is included towards the end of the bachelor's program. It enables students to obtain first–hand experience in teaching students at educational institutions supervised by licensed instructors. Physical education teachers can also coach sport teams at schools.

Graduates of this major are certified by National Association for Sport and Physical Education, a leading organisation of all levels of physical education. It is compulsory for physical education teachers who work at public schools to have a license, however at private institutions it is not obligatory to have the above license in order to teach or coach. Terms and conditions of licensing vary depending on the state, however the main criteria are successful completion of a 4–year major program and good grade point average. Even after obtaining a license, teachers are required to renew it every 3 to 5 years.

2) Adapted Physical Education major is a type of physical education, which is modified so as to be suitable for people with disabilities and health disparities. There are Adapted Physical Education National Standards, which determine the career direction of Adapted Physical Education graduates. In addition, this organization is also in charge of issuing the certificates and licenses for the professionals of this filed.

3) Fitness Specialist major focuses on physical education and fitness. Students can undertake various positions related to promoting a healthy lifestyle. Fitness Specialist major is based on the applicative scientific theories and on research and development, sufficient enough for the students to obtain qualification certified by ACSM. Students study principles of physiology and kinesiology. They are also involved in numerous workshops and activities related to fitness and physical activity assessment, developing training programs, nutrition plans and theories of sports motivation.

Generally, fitness specialist developing programs aimed at reducing cardiovascular, respiratory, metabolic and musculoskeletal health problems. Directions and recommendations of American College of Sports Medicine are used as a basis for curricula of the most universities in the US.

4) Exercise Sciences and Applied Exercise and Sport Sciences major.

The curriculum of this major combines medical and sports disciplines. So, that makes it possible to obtain not only the profession of coach, but also one of the non-medical professions such as movement therapy specialist.

Major Exercise Sciences is accredited by Commission on Accreditation of Allied Health Education Programs according to the standards determined by Committee on Accreditation for the Exercise Sciences. This major consists of the following components: core academic subjects, specialized courses in assessment, preparation and implementation of training programs and practical application of acquired skills.

5) Sport Psychology and Leadership major is an interdisciplinary science that combines aspects of both psychology and kinesiology. This major studies the relationship of psychological factors and sports performance and the level of sports training and how psychological status and athletic performance are affected by training activities and exercises.

In addition to teaching and forming psychological skills that improve sports results of athletes, Sport Psychology and Leadership graduates can also build a career directly working with athletes, coaches and parents on issues such as trauma, rehabilitation, team building, career development etc.

Association for Applied Sport Psychology issues the licenses for Sport Psychology and Leadership graduates which enables them to work as a Certified Consultant.

6) Athletic Training major is an academic specialization that prepares professionals in the provision of health and rehabilitation services, rather than training athletes or coaching fitness classes.

Graduates of this major can become certified staff in a sphere of health care, specializing on activities in the field of sports medicine.

American Medical Association, AMA, was the first association to recognize Athletic Trainer profession as one of the auxiliary medical specialty occupations in 1990. This academic major is accredited by the Commission on Accreditation of Athletic Training Education. Professional Certification of Athletic Training

specialists are granted by The Board of Certification, formed in 1989. The Board of Certification establishes standards for athletic training and regularly reviews the requirements of already certified athletic trainers.

7) Foods and Nutrition (Foods science, or Dietics) major enables students with complex knowledge of the basic principles of food use and nutritional necessities of the person. The diverse program incorporates the regions of food science, nutrition, biochemistry, physiology administration, and social sciences. This major is an interdisciplinary study of the impact of the quality and sources of food, its evaluation and selection, dietary health status and well-being of people.

Graduates of Foods and nutrition major qualify as food science technical specialists; they often work with sales and marketing of foods and nutritional products, weight control and fitness programs; as service managers at food companies, governmental agencies and laboratories.

Many graduates have become food science technical specialists doing research, development and quality control of food products for food companies.

This program is accredited by the Accreditation Council for Education in Nutrition and Dietetics; Academy of Nutrition and Dietetics; officially recognized by the Council on Postsecondar Accreditation and the US Department of education.

8) The Pre-Physical Therapy program of study is not a degree-granting major. Pre-Physical Therapy major is one of many academic disciplines of the faculty of kinesiology, which provides students with basic knowledge and skills that enable them to choose among many Master's programs in health care. It is important to understand that physical therapy is the so–called graduation or master's program.

Physical therapists use their ackquired scientific and medical knowledge to treat patients of all ages; to ease their pain; to minimize or prevent deformities; to improve patients' general health and functional ability.

Physical Therapy Association (now called the American Physical Therapy Association) provides accreditation of educational programs, academic disciplines and licensing specialists of Physiotherapy Association.

9) Health Promotion major prepares students to ensure a good level of health and disease prevention and improve the quality of life for public. The major prepares students to master the roles of wellness/health, fitness professionals in private or public sector, community organizations, and health care centres.

Following graduation students posses the below skills: planning of health program, conducting health needs assessments, implementation and evaluation of health programs.

Experts of this major are certified in such institutions and organizations as Certified Health Education Specialist, American College of Sports Medicine, National Academy of Sports Medicine etc.

10) Recreational Therapy major specializes on recreational activities and other exercises for the treatment and improvement of functional status of people in aspects of their mental, emotional and social well-being. In its activities, recreational therapists often use techniques such as adaptive sports, play therapy, anger management and psychological training, water therapy, cognitive training, stress management and relaxation and more.

A Recreational Therapist helps clients to improve functioning for greater health through developing their knowledge, skills and behaviors. Activity-based interventions are used as a part of the methodical therapeutic recreation process that addresses specific evidence-based results.

Most recreational therapists work in health care facilities such as hospitals, medical centers, schools and so on..

11) Sport Administration major combines elements of business education in physical education and sport.

This major enables students with an understanding of vital communication and business principles that are necessary for successful adminstion within the sport industry; knowledge of how to use business principles in the areas of sports industry

Major includes following topis: management communications, finance, research, marketing, media relations, leadership, law and regulations etc.

Graduates of this major are taught how to use legal and business principles to manage sports teams, health clubs, athletic programs and fitness facilities.

12) Recreation Administration major focuses on the fundamental concepts of recreational and leisure activities; holdind indoor and outdoor recreational events and services for the citizens.

Graduates of this major should be concerned in creating programs that are tailored to the target audience; search for, hire and fire staff; interact with the community to promote recreational and sport events.

Students of Recreation Administration major intensively study disciplines such as management and planning theory, ecology, management of recreation outdoors and more. They acquire practical experience during the three-month internship period

Takes care accreditation recreation programs and recreation park National Association

National Recreation and Park Association acridities this major and certificates professionals which are called Certified Park and Recreation Professionals.

Specific features of the higher education in the USA are following:

I. *Curriculum.*

An undergraduate curriculum is a formal academic plan for the learning experiences of students in pursuit of a college degree. The term *curriculum,* broadly defined, includes goals for student learning (skills, knowledge and attitudes); content (the subject matter in which learning experiences are embedded); sequence (the order in which concepts are presented); learners; instructional methods and activities; instructional resources (materials and settings); evaluation (methods used to assess student learning as a result of these experiences); and adjustments to teaching and learning processes, based on experience and evaluation [10].

Our research reveals that curricula of higher education at universities of the US are divided into three basic components:

- general or liberal arts studies;
- professional education (discipline of Studying Area);
- major education (also includes laboratory and field experience).

Each of the above components is worth a specific amount of credits: general or liberal arts studies courses – 20–40 credits; professional education courses – 20–30 credits; courses of major education – 30–50 credits.

General or liberal arts studies component provides a wide range of optional courses. However courses of major education are usually clearly defined at each university.

II. *Educational credits.*

The Bachelor degree program traditionally requires a total of 120 credits (credit hours, units).

A credit hour certainly interconnects with student contact hours.

Cumulative students' contact hours are independent of the universities and are determined by the total number of credit hours.

Universities and colleges in the United States available additional paid semester lasting 1–3 weeks to eliminate the «debt» capture additional students in disciplines such additional payment semesters;

Traditionally a calendar year is divided into 2 semesters (fall and spring) of 15 weeks each. There also is an additional spring and summer session of varying lengths, but there is no official summer semester. These additional sessions are used for the retake or studying extra courses.

III. *Educational requirements.*

There are specific grade requirements for academic courses. Furthermore, there are prerequisites to some courses where basic level of the subject should be completed before being admitted onto the higher level.

Moving onto studying major education is allowed only after completing general or liberal arts studies and some courses of professional education with the grade of C or above.

Major education is a key component in a bachelor study. It includes experiential education such as field studies, internships, service-learning, intenships and practica.

There are specific admission requirements to practice and reporting.

Personality-oriented, interactive professional and educational technologies are widely used in the higher education process. They include personal mentoring and individual formation of educational programs, adaptation workshops, a first year seminar, senior seminars, case method, the Socratic method; professional and simulation training, modular technology, the formation of professional portfolios and multidirectional training.

Selection process at the universities is based on grade requirements for academic courses. Students' knowledge is assessed throughout the semester and exam periods. Thus there is constant selection of the students. Hence only 14–15 % of the students on average complete bachelors degree in the USA.

IV. *Additionaly.*

An important encouraging factor is the opportunity to receive a scholarship. Our research determined that 60–80 % of students receive various scholarships.

Conclussion. This paper analyses the system of professional study of physical education and sport in the United States. It shows that the preparation of such specialists is systemic, multidimensional phenomenon that is holistic, of continuous character that encompasses a set of interconnected structural elements (legal framework; universities, colleges and educational centers; national and federal programs for the development of physical education and sports; education and sports and recreational programs;

curricular; principles of innovative learning; teaching staff, scientific and methodological support etc.). Such structure of the higher education positively affects the quality of the professional education and leads to individual and society development.

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Стаття надійшла до редакції 29.05.2017 р.

УДК: 796. 378. 37. 338

SPORTS-ANIMATION ACTIVITIES IN PIDKARPATTIYA: STATUS AND STAFFING PROSPECTS

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Abstract

The aim of this study was to identify the characteristics of sports and animation services in cities and establish feasibility Pidkarpatiya training to provide sports and animation activities in places of public entertainment. We used theoretical analysis, surveys and statistical methods. Among the respondents, the number of 1200 people, representing the general population, included people of different professions: teachers, doctors, students, workers manufacturing jobs and the service sector. In every village we have interviewed 300 people. Found that animation activities, standing out from a number of other types of social activity has its characteristics, namely implemented in their spare time; different freedom of choice, voluntary, active as the initiative of one person, and different social groups; caused by ethnic, regional peculiarities and traditions; characterized by a diversity of species based on different interests of adults, youth and children; a humanistic, cultural, developmental, recreational and educational nature. We conducted a survey showed that the most popular animation activities in Ivano-Frankivsk (reported by 44,0 % of respondents), 36,0 % of respondents say that the animation used in Bukovel, 14,0 % – in Vorokhta and 6,0 % – in Yaremche. So in all tourist centers Pidkarpatiya formation occurred animation scope of the various groups. This is obviously a deterrent is the lack of qualified personnel, providing animation activities requires an appropriate response to this education of the profile.

Key words: animation sports, leisure, staffing.

Богдан Мицкан, Назарій Фединяк, Олег Вінтоняк. Спортивно-анімаційна діяльність у Підкарпатті: стан та перспективи кадрового забезпечення. ***Мета цього дослідження*** – виявити особливості розвитку спортивно-анімаційних послуг у містах Підкарпаття та встановити доцільність підготовки кадрів для забезпечення спортивно-анімаційної діяльності населення в місцях проведення дозвілля. ***Методи.*** Під час дослідження використано теоретичний аналіз, опитування, статистичні методи. До респондентів у кількості 1200 осіб, котрі становили генеральну сукупність, входили люди різних професій: учителі, лікарі, студенти, працівники виробничих професій і сфер обслуговування. У кожному населеному пункті нами опитано по 300 осіб. Установлено, що анімаційна діяльність, виділяючись із низки інших видів суспільної діяльності, має свої характерні ознаки, а саме: реалізується у вільний час; відрізняється свободою вибору, добровільністю, активністю, як ініціативою однієї людини, так і різних соціальних груп; зумовлена національно-етнічними, регіональними особливостями й традиціями; характеризується різноманіттям видів на базі різних інтересів дорослих, молоді та дітей; має гуманістичний, культурологічний, розвивальний, оздоровчий і виховний характер. Проведене опитування показало, що анімаційна діяльність найбільш популярна в Івано-Франківську (на це вказали 44,0 % респондентів); 36,0 % опитуваних стверджують, що анімація використовується на Буковелі, 14,0 % – у Ворохті та 6,0 % – у Яремчі. Отже, у всіх туристичних центрах Підкарпаття відбулося становлення анімаційної сфери діяльності різних груп населення. При цьому очевидно, що стримувальним фактором є дефіцит кваліфікованих кадрів, які забезпечують анімаційну діяльність, що вимагає відповідного реагування на це навчальних закладів відповідного профілю.

Ключові слова: спортивна анімація, дозвілля, кадрове забезпечення.

Богдан Мицкан, Назарий Фединяк, Олег Винтоняк. Спортивно-анимационная деятельность в Подкарпатье: состояние и перспективы кадрового обеспечения. ***Цель исследования –*** выявить особенности развития спортивно-анимационных услуг в городах Прикарпатья и установить целесообразность подготовки кадров для обеспечения спортивно-анимационной деятельности населения в местах проведения досуга. ***Методы.*** Во время исследования использовали теоретический анализ, опросы, статистические методы. К числу респондентов, в количестве 1200 человек, что составляло генеральную совокупность, входили люди разных профессий: учителя, врачи, студенты, работники производственных профессий и сфер обслуживания. В каждом населенном пункте нами опрошено по 300 человек. Установлено, что анимационная деятельность, выделяясь из ряда других видов общественной деятельности, имеет свои характерные признаки, а именно: реализуется в свободное время; отличается свободой выбора, добровольностью, активностью, как по инициативе одного человека, так и различных социальных групп; обусловлена национально-этническими, региональными

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

особенностями и традициями; характеризуется многообразием видов на базе различных интересов взрослых, молодежи и детей; имеет гуманистический, культурологический, развивающий, оздоровительный и воспитательный характер. Проведенный нами опрос показал, что анимационная деятельность наиболее популярная в Ивано-Франковске (на это указали 44,0 % респондентов); 36,0 % опрошенных утверждают, что анимация используется на Буковеле, 14,0 % – в Ворохте и 6,0 % – в Яремче. Так что во всех туристических центрах Прикарпатья произошло становление анимационной сферы деятельности различных групп населения. При этом очевидно, что сдерживающим фактором является дефицит квалифицированных кадров, которые обеспечивают анимационную деятельность, что требует соответствующего реагирования на это учебных заведений соответствующего профиля.

Ключевые слова: спортивная анимация, досуг, кадровое обеспечение.

Introduction. Most researchers [2; 4; 18] consider the concept of animation as a new trend in tourism, which is designed to «breathe life» into tourism programs and thereby to engage a lot of people of different functions to participate in them. As for the animator, this is an expert who is engaged in the development and implementation of individual and collective programs for active leisure and proving proper rest.

However, according to M. Dutchak [3] in the modern world the concept of «animation» – is determined by «3D»: delassiment – «relaxation», divertissement – «fun» development – «evolution», which involves the physical restoration of a person (relaxation) through experiencing joy and satisfaction (fun), as well as fulfilling of needs (evolution).

According to Alyoshina AI [1] animation – a kind of service that aims to improve quality of service while helping to attract people to the active forms of leisure.

Today in tourism and leisure business of Ukraine quite fundamental changes take place: a departure from the standards of the Soviet system and the transition to European service began, including service in the field of entertainment. As a result, there is a «Europeanisation» of tourist facilities and leisure services, and specialists of this field require a higher level of training that would enable them to acquire relevant competencies [4].

It is clear that the tourism sphere badly needs skilled animators, whose preparation should be based on modern philosophy, principles and values of active leisure. [2] In this regard, the issue of professional training of specialists animators is quite important for the education system in Ukraine. The term «specialist in the field of leisure» covers various concepts and is characterized by ambiguity in the universe. In Italy, Spain, France, specialist in the field of leisure are called socio-cultural animators, in Germany – social workers, free time teachers, in the US – recreator–therapists, in the UK – social workers [2].

Our analysis of publications on the issue of sports animation (Dutchak M. V., Pasichnyak L. V., 2015, Schuryk I. M., 2015), animation as a form of recreational activity (Aleshin A., Bychuk A., 2016) , tourist animation (Maksymets A. V., 2011; Soboryn M. S., 2011), legal regulation of animation activities in the country (Danilyeva J. G., Lastochkina D. Y., 2010, Zasymovych E. S., and Volobueva I. I., 2010), shows that the problem of training STAFFING to implement the animation activities is the most important since according to Dutchak M. V. [3] sports animation through its significance and demand, acquires features of independent type of social activity.

The aim – to identify the characteristics of sports and animation services in cities of Prykarpattia and establish preparation feasibility of staffing to provide sports and animation activities of the population.

Material and Methods of the Study. To achieve this goal a set of interrelated methods were used, such as: analysis, synthesis and generalization of scientific information on the problem of study, surveys, statistical analysis of quantitative data. Among the respondents, the number of 1200 people,which represents the general population, included people of different professions: teachers, doctors, students, manufacturing jobs workers and the service sector. In every settlement we have interviewed 300 people.

Results of the Study. Discussion. Organizer of animation services – a creative profession that requires knowledge of history, sociology of tourism, psychology, pedagogy, history of world tourism development, regional geography, tourism resources, religious studies [5]. Organizer should have a high level of professional communication culture and professional speech, and therefore, a thorough knowledge of the Ukrainian language of professional direction, foreign languages and other subjects, which students study according to the curriculum.

Animation – a completely new direction, which is extensively used throughout the world, as people expect from future vacation not only physical and psychological recovery of the body, but still something

special and unusual, which they do not have in everyday life. Animation – a kind of service that aims to improve the quality of service. The essence of the animation activity is to attract people to the active forms of leisure. Sometimes animation is called intermediary between the individual and society [1].

Animation activities, standing out from a number of other types of personal and social activities, has its characteristic features [1], namely:

- it is realized in his free time;
- has freedom of choice, voluntary, activity, as the initiative of one person, as different social groups;
- is caused by ethnic, regional features and traditions;
- is characterized by a diversity of kinds of actiities based on different interests of adults, youth and children;
- has humanistic, cultural, developmental, recreational and educational nature.

However, still there is not conducted a proper systematic scientific study of this social phenomenon [6]. It should be noted that the term «animation», «sports animation», «tourist animation» is not clearly understood among scientists and the public. Mostly, among the respondents, animator is regarded as «massovik-zatiynyk», «tamada», «humorist» or «animator» who is to entertain people during the leisure.

In our opinion, the animation – a service aimed at organizing an active forms of leisure of the person, improving and sustaining the health, formation of knowledge and skills about healthy lifestyles and recreation, as well as attracting a diverse population to physical activity.

We conducted a survey in Ivano–Frankivsk, ski resort of Bukovel, Yaremche and Vorokhta, which showed that animation is the most popular activity in the Ivano–Frankivsk (figure 1).

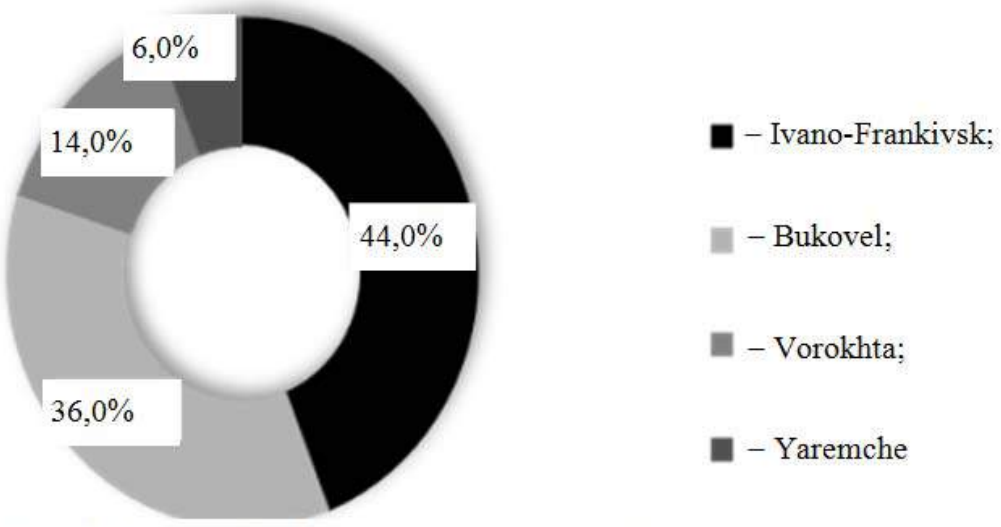

Fig. 1. *Results of the Survey to Provide Sports and Animation Services Pidkarpatiya*

Data on the use of sports animation of different groups is shown in fig. 2. As shown in figure among the students sports animation is more common among males. As for doctors, teachers and service workers, during leisure sports animation is much more used by women. The least common sports animation is among manufacturing jobs workers.

The results of investigation in Ivano-Frankivsk, which were received by L. Pasichnyak [6] confirms our assertion, namely: 53,8 % of respondents do not understand the importance of programs of sports animation and their feasibility in leisure due to low awareness and motivation for health-recreational physical activity, also the attention is drawn by the fact that the vast majority (84,2 %) do not use animation services in their free time and this phenomenon is largely due to ignorance of what animation activities are. However, a small part of respondents (15,8 %) use animation services, but prefer the hotel, tourism and children's animation.

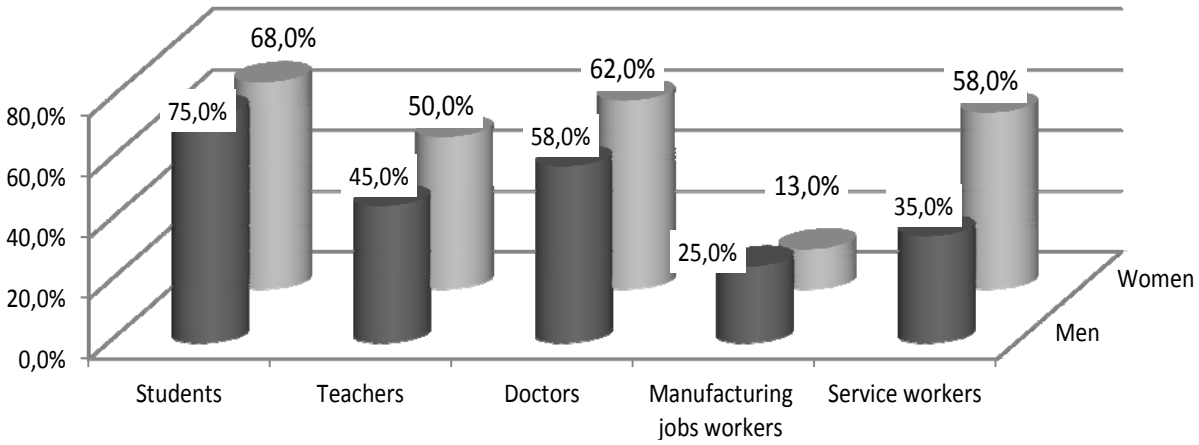

Fig. 2. *The Use of Animation Sports by Different Groups in Pidkarpatiya*

Conclusion. In the near future there will be an increase of the demand for teaching people to become an animator and the training of specialists of cultural and leisure areas on the in higher educational institutions.

The study of the problem, allows us to conclude that the improvement process of preparing future professionals of animation licensing in universities of Ukraine is an actual problem of national higher education. We have found that there is no clear understanding of the concept of animation activities among scientists, experts and ordinary citizens. We have questioned different groups of people which confirmed the hypothesis about using animation sports in tourist market in Pidkarpatiya, however it requires appropriate staffing.

Services that are provided as «animated» generally do not foresee any interaction between the animator and the consumer, since there are no health or recreational exposure. Functions of the «animator» are only entertainment activities, programs, and so on.

Therefore, the purpose of training future professionals of animation licensing in universities of Ukraine should be training of highly qualified personnel, able to fully implement the tasks that belong in sports animation.

Prospects for further research are available for graduates with this educational background of the particular profile as will as the provision of sports and animation services to different groups of people.

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Стаття надійшла до редакції 28.05.2017 р.

Технології навчання фізичної культури

УДК 373.016:796

REALIZATION OF A HEALTH SAVING EDUCATIONAL TECHNOLOGY «IN-MOVEMENT EDUCATION» IN ELEMENTARY SCHOOL

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Abstract

Topicality of the research is conditioned by the need to improve the children's physical, psychological and emotional health by their involvement into active educational forms combining studying and physical movement activities. ***The aim*** of the study is to determine the ways of a health saving technology «In-Movement Education» in elementary school. ***Work Results.*** Health saving technology «In-Movement Education» is a methodological complex, serving the aim of recreational and educational activities, realized gradually, in dynamics of studying material acquisition based on both «child-mother (father)» and «pupils-teacher» relations. Above-mentioned technology ameliorates educational environment, stimulating new knowledge acquiring, motivating creating thinking and making students fulfill already known exercises in a new order. ***Conclusions.*** Health saving technology «In-Movement Education» presupposes intellectual, emotional and physical activities alteration, in individual, pair and group forms. This stimulates children's mental processes, enhancing their physical movements, timely prevention of their brain fatigue, develops their responsibility by means of game situations creation and challenging integrated classes.

Key words: educational technology, in-movement education, elementary school, pupils, personality-oriented studies.

Олександра Дубогай, Анатолій Цьось. Реалізація здоров'язберігальних технологій «навчання в русі» в початковій школі. ***Актуальність дослідження*** зумовлена потребою поліпшення здоров'я й психоемоційного стану учнів активними засобами навчання, що поєднують освітню та рухову діяльність. ***Мета дослідження*** – визначити способи реалізації здоров'язберігальної технології «навчання в русі» в початковій школі. ***Результати роботи.*** Здоров'язберігальна технологія «навчання в русі» – це комплекс методичних підходів, які під час занять фізичними вправами підпорядковані меті оздоровчо-виховної освіти дітей, котра реалізується послідовно, у динаміці розкриття змісту навчального матеріалу з опорою як на взаємозв'язок «дитина–мама (тато)», так і «учні–учитель». Технологія «навчання в русі» сприяє створенню таких умов освітнього середовища, які стимулюють засвоєння нових знань, сприяють виникненню імпульсу для творчого мислення, спонукають учнів до виконання знайомих їм дій у новій послідовності. ***Висновки.*** Здоров'язберігальна технологія «навчання в русі» передбачає зміну діяльності, чергування інтелектуального, емоційного та рухового її видів для індивідуальної, парної, групової форм роботи. Це стимулює мислення дітей, сприяє поширенню їхньої рухової активності, своєчасному запобіганню розумовій утомі, розвиває відповідальність за рахунок створення ігрових ситуацій, нестандартних інтегрованих уроків.

Ключові слова: технологія, навчання в русі, початкова школа, учні, особистісно орієнтоване навчання.

Александра Дубогай, Анатолий Цесь. Реализация здоровьесберегающей технологии «обучения в движении» в начальной школе. ***Актуальность исследования*** обусловлена необходимостью улучшения здоровья и психоэмоционального состояния учащихся активными средствами обучения, сочетающими образовательную и двигательную деятельность. ***Цель исследования*** – определить пути реализации здоровьесберегающей технологии «обучение в движении» в начальной школе. ***Результаты работы.*** Здоровьесберегающая технология «обучение в движении» – это комплекс методических подходов, которые во время занятий физическими упражнениями подчинены цели оздоровительно-воспитательного образования

детей, которая реализуется последовательно, в динамике раскрытия содержания учебного материала с опорой как на взаимосвязь «ребенок–мама (папа)», так и «ученики–учитель». Технология «обучение в движении» способствует созданию таких условий образовательной среды, которые стимулируют усвоение новых знаний, способствуют возникновению импульса для творческого мышления, побуждают учеников к выполнению знакомых им действий в новой последовательности. ***Выводы.*** Здоровьесберегающая технология «обучение в движении» предусматривает изменение деятельности, чередование интеллектуального, эмоционального и двигательного ее видов для индивидуальной, парной, групповой форм работы. Это стимулирует мышление детей, способствует распространению их двигательной активности, своевременному предотвращению умственной усталости, развивает ответственность за счет создания игровых ситуаций, нестандартных интегрированных уроков.

Ключевые слова: технология, обучение в движении, начальная школа, ученики, личностно ориентированное обучение.

Introduction. Happy childhood, happy parents, flourishing country – all this means healthy children, who combine good physical state with high intellectual and moral standards. Lately physical state of the body has been spoken about more frequently not only as an abstract social phenomenon but also as characteristics of individuality [4; 12; 19; 20]. The system of physical upbringing gives foundation to the mechanism and impact results of the systemic exercising on intellectual development and cognition activity, on the feelings and social behavior development, morality and spiritual demands [1; 5; 7; 11; 18].

Complex situation of the pedagogic, medical and social tasks can contribute to the improvement and strengthening of children health accounting for their individual peculiarities in different age periods.

Contemporary conceptual grounding of physical upbringing consists in forming of person's movement entity, which is formed in mastering of movement skills for reaching of the definite result in running, jumping and throwing. But all the results do not show the level of pupil's individuality with his interests, needs and goals. The process of physical upbringing does not take into account the fact that the indexes of power, endurance and mastery are not only the interior factors which are far from being determined by the inner psychological and physical state of a child. At the same time the child's development and his health is to be taken up in its correlation with his intellectual and social activity, his personal and individual characteristics.

The development of children, their health improvement, creation of the conditions for rational day planning, regular correlation between physical and mental loading is performed on the ground of individuality-oriented approach to the upbringing process. The principal value of the individuality-oriented approach is a child, his physical and common to all mankind culture. From this goes the essence of physical upbringing as a activity, which concerns and develops a child, stimulating his harmonious development.

The aim of individuality – oriented upbringing lies not only in forming of self-perfection mechanisms, but in their search, support for personal qualities in the interaction process with other people, in confronting with nature, culture and civilization.

This approach is aimed at the revealing of the child's interests, at the need of individual assistance in the search for the potential, inner and physical reserves; moreover, it gives every child an opportunity for being realized, found and acknowledged in the social context.

Learner-centered educational process takes into account not only individual peculiarities of pupils, but primarily consists in their attitude towards them in the process of education and upbringing as individuals, responsible and conscious actors. «Without seeing in the pupil something valuable and interesting, inherent only to him, the teacher, in fact, cannot bring up a pupil, because in this case the teacher has no point of support for human contact with his student», – notes I. Kon [10]. Educational situations of learner-centered physical education should ensure the development of such level of consciousness that would encourage the child to self-knowledge of physical condition and physical self-activity, so that he or she could become the creator of his or her own spiritually rich, healthy life. Therefore, it is necessary to cultivate situations in which the relations of teachers and parents with children are based on taking into account not only their dignity and the right to be a person, but also physical abilities.

Learner-centered physical education of primary school age pupils must be carried out in two directions: the *first* is mainly the socialization of the pupils' personality, which takes into account the needs of the state and aims at the maximum physical adaptation of the child in society; the *second* is aimed at maximizing the disclosure of the person's physical abilities and child's assets, taking into account individual peculiarities of growth and development, the main interests of certain types of sports and physical activity, the level of psychological and physiological, and motor capabilities of organism.

Understanding the content of physical culture classes allows the teacher to manage purposefully the mastery of knowledge and skills, that is the process of self-improvement. After all, physical culture is transmitted through skills and knowledge, and is absorbed through the content. The quality of knowledge, skills and abilities is one of the criteria for the student's personal development. It should be appreciated that the psychological and pedagogical moments of development in physical education are influenced by the object of activity. The approach in which physical development and the formation of child's health is not only a goal, but also the process and the result of purposeful interaction of teachers, parents and pupils, that is, educators and pupils.

The key tasks of a modern educational institution involve not only mastering the study program but also consolidating the school material while meeting the claims of children's cognitive, aesthetic and motor development in order to maintain their healthy condition in general as well as to build up a harmonious and intellectually and physically developed personality. Considering that most cases of the child's physical deviations (such as defect in bearing, scoliosis, vascular dystonia, neurosis, gallbladder ailments, short-sightedness clinical behavior, etc.) are linked to the great mental load as well as the decrease in amount of motor activity, one of the alternative approaches to remove children's tiredness and exhaustion and to enhance the potency of the curricular material mastering is the health sustaining technology of 'teaching in motion'.

The **research aim** is to indicate the ways of implementation of the health sustaining technology of 'teaching in motion' in the elementary school.

Methods. The research methods are the ones of analysis and synthesis applied to generalize the theoretical grounds of the research issue; the methods of abstraction and generalization used to define the influence of educational factors on the technology that is suggested; the method of modelling applied to test the guidelines of implementation of the 'teaching in motion' technology and to substantiate the efficiency of the suggested procedure.

Results and Discussion. The research results demonstrate that the health sustaining technology of 'teaching in motion' is a system of methodical approaches that are subordinated to the goal of children's health improving and educational in-class training which is being implemented gradually through the dynamic exposure of the content of the school material within the frame of 'pupil-mother (father)' and 'pupil-teacher' relations. The technology promotes creation of such conditions of the educational environment that encourage learning new knowledge in the process of the educational and motor technologies' implementation and fosters originating the hyped-up moments in class when the impulse of creative thinking may urge the pupils to do the familiar actions in a different order.

Health-saving technology «learning in motion» involves a change in the activity, alternation of its intellectual, emotional and motorized types for individual, dual, group forms of work, which stimulates the instantaneous thinking of children, promotes the spread of their motor activity, timely prevention of mental fatigue, teaches friendly and humane communication, develops patriotic responsibility in the team, ability to respect the thoughts and mistakes of others through the creation of game situations, non-standard integrated lessons.

One of the real approaches to solving this problem may be the creation of the «School of Health» on the basis of a comprehensive school in which the modular method is used to perform the tasks. This feature allows us to determine the stages of formation and management of the «School of Health», based on the following measures:

– diagnostics and introspection of the psychophysiological state of schoolchildren, teachers and parents;
– modelling educational environment, its organizational, methodological and content components;
– a special mode of motor activity;
– formation of individual correction programs.

The main purpose of modern education is the formation of a fully developed personality, which has not only a high level of knowledge and skills, but also a high potential of creative, moral, physical, psychological development and health. The effectiveness of the influence of the health-educational environment, the continuity between educational units depends on the timely assessment and consideration of the set of many factors that can be determined in the dynamics of the monthly, semester, academic year, with the help of a system for assessing the effectiveness of health education or monitoring of health and development of the pupil's personality. Such a system has been developed and implemented through the «Diary of Health

Promotion». This monitoring is a real health monitoring tool and an objective criterion for age-related development of children. It is characterized by the following benefits:

– is affordable and reliable, does not require additional material costs for special equipment and large space for execution;

– provides an opportunity to assess the personal level of health, physical development, mental status, school performance and emotional attitude towards specific school subjects;

– helps to determine and measure your biological age in relation to the calendar (passport).

The implementation of the «Diary of Health Improving» into the system of education and training of junior pupils makes it possible to assess objectively the dynamics of educational and health work in the «school-family» system, the influence of integrated training technologies with a wide spectrum of directed recreational activities at the lessons in accordance with the content and peculiarities of the taught information in various general subjects, the level of experience of a supervisor, a teacher of physical education, singing, rhythmic, the whole teaching process at school with the effective implementation of a healthy lifestyle into the life of pupils and teachers.

With the help of the «Diary of Health Improving» one can solve the following tasks:

1. To raise the personal interest of each child in checking and subjective assessment of his physical and mental condition, as well as to stimulate self-improvement by means of physical education.
2. To involve children and their parents into leading a healthy lifestyle.
3. To satisfy everybody's natural need in physical activity.
4. To obtain a comprehensive assessment of the pupil's physical preparation for training in the corresponding form.
5. To correct with the help of worked out sets of physical exercises for the violation of posture, feet and general level of physical preparation.

One of the main problems of education is the gap between physical training and other types of schoolchildren's activities. The possible reason for this is the lack of real mechanisms for the interrelation of cognitive and motor activity. The essence of such interaction is the formation of an integrated educational, recreational and general educational effect of education. However, in a modern school, these components are implemented separately.

Scientists [3; 6; 14] has long come to the conclusion that individual abilities (thinking, perception, imagination) should not be considered in isolation, without the context of the child's motor development. Game activities refer to normal conditions for the manifestation and development of children's abilities during studying, communicating with other children a child moves, easily memorizes everything heard. A typical example is the quick and easy process of teaching immigrant children a foreign language, who during a conversation with their peers in a month of staying in another country, obtain a large supply of words and more often become translators for their parents.

Psychologists [3; 15] believe that information is remembered quicker if the child not only hears, but also sees, figuratively imagines what she has heard, against the backdrop of gaming or any motor activity, which is considered to be a certain emotional background and mood. Based on these concepts we have worked out a system based on the educational pedagogy of cognitive-motor learning. Gaming situations in the system of cognitive-motor learning raise children's interest, create and enhance interactions with the information that pupils get at a lesson in a particular subject. It is worth noting: the content of the material being studied is accompanied by motor actions of a certain structure, which helps to simulate the image-association of knowledge in parallel with the information provided by the teacher, in particular, on the essence of the topic of a particular subject, which contributes to the acquisition of knowledge. The transfer of knowledge during the didactic game makes it possible to use not only the conscious memory of the child in work, but also the intermediate associative thinking between the motor and mental processes.

It's better to remember and understand the information when a person is standing or moving, and the most optimal is background motion activity, which is supplemented by associations (figurative-motor perception). In the system of cognitive-motor learning, the activity of a child improves the qualitative perception of incoming information. When installing on a conscious memory of the basic plot of the game involuntary reproduction of new material in the memory at the lesson is imposed and the child's desire to recreate motor actions that mean the correct answer.

Involuntary memorization is observed in a mobile didactic game and, due to the motor activity and physical exercises of a specified structure, the mental fatigue is mitigated, vision and posture are corrected,

the respiratory function and the emotional state of a junior pupil are improved. I. P. Pavlov [13] noted, «Associations are very important for the process of memory and thinking as their key factor».

Cognitive-mobile learning has a direct impact on children's mental abilities. Children try to make use of them at the very beginning of a game, so as not to screw over their team (the row in which a pupil sits in a classroom), or their prestige before friends during mobile games in the gym, corridor, etc. The effect depends on the professional skills and creativity of a teacher, namely, on the rules of the game he suggests, its organization, the distribution of roles or the development of the plot.

The development of child's thinking is clearly manifested in his/her activities. I. M. Sechenov [16] wrote, «Thinking at the time of movements is of great importance for the development of brainwork». Thus, the flow of nervous impulses gets into the cerebral cortex and increases tonus, promotes the update of content in the process of muscle activity.

The optimization of mobile activity in General Studies classes, organized due to the didactic material which pupils process, is the key point to their normal mental and physical development. Differentiated application of mobile instructional techniques in accordance with the tasks of mathematical or linguistic didactic material, as well as the change from the cognitive activity types into the mobile ones, allow to achieve active linguistic activity (regardless of the native or foreign language) not only in the process of games, but also in everyday situations. There is a close link between pupils' auditory perception, linguistic and mobile reproduction during the game activity with the elements of the correlation between mathematical solutions, language and movements.

Each lesson should be started with the maximal intake of breath and the holding of it up to 20 s, and at the time of expiration it should be loudly counted '21, 22, 23…'. The duration of the calculation is directly proportional to the degree of fatigue, that is, the day of a week, the complexity of a subject and the order of a lesson in an academic school day.

It is extremely important to perform such breathing exercises after a teeming activity (it calms nervous system, slows children behaviour down, performs lungs hyperventilation, and increases blood circulation).

The application of additional exercises during lessons can vary, depending on the teacher's professional skills, his/her imagination, etc.

At the maths lesson:

– all learned numbers can be memorized not only during writing in the notebook, but also by the movements of the shoulder joints (the task: write the numbers 1, 2, 3 ... with the help of shoulders), or «write» them with the help of the nose in the air? It removes fatigue from the cervical and thoracic spine, which are the most statically loaded while sitting at the desk;

– to train in motion the speed of thinking during the reinforcement of mathematical operations (addition, subtraction or multiplication table), in conditions of competition between rows (task: standing between the desks, each team starts the game from the first pupil, who invents his case, and the next solves it and continues game with his own case, turning to 180 ° and clapping hands to the next. For example, 5 + 5 = 10; 10 – 2 = 8; 8 + 5 = 13; 13 – 3 = 10; and so on, the team that wins the game has to solve all the examples by all the pupils in a row.

At the lesson of the Ukrainian language:

– to reinforce the spelling of the letters, apply spelling by their shoulder joints and nose in the air;

– to display each learned letter in the form of improvised motions;

– to reinforce the parts of speech and develop the speed of thinking, you can apply the game «Recognize a part of speech»; each row of pupils raise only when they hear their part of speech: the 1st row-noun, the second row - adjective, the third row - verb. The teacher reads a familiar verse, and the pupils respond accordingly to their parts of speech. A team that has fewer mistakes will win.

At the reading lesson:

– for each correct answer the student has the right for additional movements - flanges, squatting, etc.;

– if the child that was called to the board moves correctly with the bag on the head, maintains a good posture during the response, and the bag does not fall from his/her head, then the student has the right for encouragement.

It should be noted that all of these movements do not require any additional time, because during the answer pupils do not wait until the previous one completes the movements, they begin to answer.

This methodological approach prevents mental fatigue and, ultimately, aids in solving educational and health improving problems. The advantage of this approach is that the methods and means of physical education are utilized not as the factors inhibiting the student' motor activity, but as the efficient tools contributing to the integration of learning and cognitive skills. The students' motor activity tailored as an interplay of didactic materials and specially designed physical and breathing exercises along with a directed

activity do not only provide a timely removal of mental and static muscular fatigue but also stimulate the central nervous system and improve the muscular-articular sensitivity and raise the students' awareness of their body orientation in space. The students are trained to recognize images and symbols, to identify shapes through a generic similarity and a specific dissimilarity. Besides, the motor activity of the students makes it possible to reveal the typological and combined characteristics of physical objects.

The efficiency of a health improving and educational process depends upon a target-directed impact of a teacher. It must be underscored that its qualitative consequence is invariably a system of attitudes to ones own level of physical condition and health, the motor and functional potentialities of a human body and mind, the students awareness of themselves as unique individuals and their attitude to what they are doing. Of great importance in this case is the choice of the adequate tools of impact.

The teachers tend to regard, erroneously, the methods of a targeted health strengthening and educational impact as the results of a training process, which determines the contents of the approaches selected to this end.

The foundation of health improving and educational job, however, is the methods by which the conditions of organizing a teacher-student interaction are created. This is done during a comprehensive school class taught with an emphasis on integration of educational and health improving strategies. Under the circumstances, the interaction between teachers and students is an outgrowth of their joints life-sustaining activity over the same period of time, which brings about an automatic (or, more precisely, inevitable rather than coercive) formation of a set of attitudes towards the generation and development of the students' stable motivation efforts to improve health by means of physical education.

Conclusion and Prospects of Further Research. The health saving technology of «teaching and learning in motion» is a continuing methodological techniques implemented in the classes of physical education and subordinated to an overall goal of providing a health improving education of schoolchildren. This goal is accomplished sequentially and dynamically in terms of defining the teaching and learning content with reliance on interdependence of both «student-parent» relations. The «teaching and learning in motion» technology is conductive to the appropriate teaching and learning environment, ensuring the implementation of the educational and motor technologies. The latter will enhance the student's learning skills, trigger the student's creative thinking and urge them to do familiar things arranged in a new sequence.

The health-saving «teaching and learning in motion» has been designed to provide a change of mode of activity and an alternation of its intellectual, emotional or motor types during the students' individual, pair or group work. This approach spurs the students' instant thinking, provides means for their motor activity, helps to secure a timely prevention of mental fatigue, moulds the skills of friendly and humane communication, and develops the student's sense of responsibility and teaches the students to respect the opinion of others within a framework of a game situation or an innovative integrated lesson.

Further research is focused on the implementation of the devised technology in preschool educational institutions.

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Стаття надійшла до редакції 05.05.2017 р.

УДК 796.41-055.25-057.874

THE USE OF INDIVIDUAL FITNESS PROGRAMS ACCORDING TO THE BODY TYPES OF HIGH SCHOOL GIRLS AS MEANS OF INCREASING PHYSICAL ACTIVITY

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Abstract

The actuality of the problem is caused by the necessity of the use of fitness as means of increasing physical activity at the educational institutions. The introduction of the newest pedagogical technologies is known to enable us to solve different problems of the individual oriented study, formation of the individual educational aspect. ***The methods of the research*** of the revelation of initial psychoemotional and morphofunctional state of the high school girls were questioning, testing, medical investigation. ***The results of the research.*** Fitness programs based on the recreative kinds of gymnastics considering the age, health state, the level of the physical development and motivational interests of high school girls. To solve the tasks of the correction of constitution, increase or decrease of some body parts fitness programs aimed at weight lifting were offered. During the pedagogical experiment the quantity of the respondents with a high level of physical activity increased by 54,7 %. The level of physical preparation ($P < 0,001$) improved according to their endurance, strength, flexibility, agility. ***Conclusions.*** The improvement of the theoretical explanation and experimental testing of the methods of making individual fitness programs for high school girls considering their morphofunctional peculiarities, motivation and the high school girls' body types in the process of doing physical exercises independently as a constituent part of health protection competence was emphasized. The importance of the received results defining the aspects of the development of the scientific approaches according to the chosen course in the future should be noted.

Key words: fitness programs, physical activity, high school girls, body types.

Людмила Ващук, Ніна Деделюк, Олена Томащук, Ольга Рода, Жанна Мудрик. Застосування індивідуальних фітнес-програм за типами тілобудови старшокласниць як засіб підвищення фізичної активності. ***Актуальність теми*** зумовлена необхідністю використання в загальноосвітніх навчальних закладах фітнесу як засобу підвищення фізичної активності. Відомо, що впровадження новітніх педагогічних технологій дає можливість розв'язати різні проблеми особистісно зорієнтованого навчання, формування індивідуальної освітньої перспективи. ***Методи дослідження*** – виявлення початкових психоемоційного та морфофункціонального станів старшокласниць (анкетування, тестування, медичне обстеження). ***Результати дослідження.*** Зважаючи на вік, стан здоров'я, рівень фізичного розвитку, мотиваційні інтереси дівчат старшого шкільного віку, застосовували фітнес-програми, засновані на оздоровчих видах гімнастики. Для виконання завдань корекції будови тіла, зменшення або збільшення маси й окружностей частин тіла нами запропоновано фітнес-програми силового спрямування. За час педагогічного експерименту кількість респондентів із високим рівнем фізичної активності зросла на 54,7 %. Також в учнів вірогідно ($P < 0,001$) покращився рівень фізичної підготовленості за витривалістю, силою, гнучкістю, спритністю. ***Висновки.*** Ураховуючи той факт, що в дослідженні акцентовано на вдосконаленні теоретичного обґрунтування й експериментальної перевірки ефективності методики побудови індивідуальних фітнес-програм старшокласниць з урахуванням морфофункціональних особливостей, мотивації та типу статури старшокласниць у процесі самостійних занять фізичними вправами як складової частини здоров'язберігальної компетентності, відзначаємо важливість отриманих результатів, які встановлюють напрям розвитку наукових підходів за обраним напрямом у майбутньому.

Ключові слова: фітнес-програми, фізична активність, старшокласниці, типи тілобудови.

Людмила Ващук, Нина Деделюк, Елена Томащук, Ольга Рода, Жанна Мудрык. Применение индивидуальных фитнес-программ по типам телосложения старшеклассниц как средства повышения физической активности. ***Актуальность темы*** обусловлена необходимостью использования в общеобразовательных учебных заведениях фитнеса как средства повышения физической активности. Известно,

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

что внедрение новейших педагогических технологий дает возможность решить различные проблемы личностно-ориентированного обучения, формирования индивидуальной образовательной перспективы. ***Методы исследования –*** выявления начальных психоэмоционального и морфофункционального состояний старшеклассниц (анкетирование, тестирование, медицинское обследование). ***Результаты исследования.*** Учитывая возраст, состояние здоровья, уровень физического развития, мотивационные интересы девушек старшего школьного возраста, применяли фитнес-программы, основанные на оздоровительных видах гимнастики. Для решения задач коррекции телосложения, уменьшения или увеличения массы и окружностей частей тела нами предлагаются фитнес-программы силового направления. За время педагогического эксперимента количество респондентов с высоким уровнем физической активности возросло на 54,7 %. Также в учащихся достоверно (P <0,001) повысился уровень физической подготовленности по выносливости, силе, гибкости, ловкости. ***Выводы.*** Принимая во внимание тот факт, что в исследовании акцентируется на совершенствовании теоретического обоснования и экспериментальной проверки эффективности методики построения индивидуальных фитнес-программ старшеклассниц с учетом морфофункциональных особенностей, мотивации и типа телосложения старшеклассниц в процессе самостоятельных занятий физическими упражнениями как составной части здоровьесберегающей компетентности, отмечаем важность полученных результатов, которые определяют направление развития научного подхода по избранному направлению в будущем.

Ключевые слова: фитнес-программы, физическая активность, старшеклассницы, типы телосложения.

Introduction. An important task of modern education is health improvment of pupils . The National doctrine of development of physical culture and sport physical culture is considered as the most important factor in a healthy lifestyle, disease prevention, the organization of leisure. Systematic physical exercise help to improve physical, mental and social health, increase life expectancy and active longevity [1; 9; 14].

Physical education at schools is an essential component of educational system of pupils, which contributes to a fully developed person and ensure its healthy and safe activity. Comprising various forms of physical activity, fitness contents the needs of different social and age groups in health activities through a variety of fitness programs, their availability and emotion. The research results gave reason to conclude that the fitness based on a fitness program the characteristic feature of which is a set of specially selected exercises at a comprehensive or selective effect on body systems or body parts depending on morphological human capabilities [2; 3; 4; 10; 13].

The aim of the research is theoretical substantiation and experimental verification of effective methods aimed at constructing individual fitness programs for high school student in the process of self-studying physical activity as a means of physical activity increasing.

Objectives of the Study:

1) to analyze the problem of studying fitness at secondary schools;

2) to determine the indicators of motor activity and physical condition of high school girl students as a prerequisite for implementing fitness of methods;

3) to substantiate the content and structure fitness programs for self-study high school as a way of increasing physical activity.

Methods: early detection of emotional and functional state of high school girls students(questionnaires, tests, medical examinations).

Research Results. Discussion. Despite the age, health, level of physical development, motivational interests of high school girls, fitness programs were used based on improving kinds of gymnastics [11].

To solve the tasks of the body correction, reduction or increase in weight and body parts we proposed fitness programs of forceful direction. Performing strength training exercises involved the use of various movements (bench presses, traction dilution) not only with weights (barbells, dumbbells, barbells), but also on special simulators and the own weight.

Physical exercises were formed to develop major muscle groups with regard to «problem» areas of the body (buttocks, thighs, abdomen). For high school girls students asthenic body structure, which is inherent thinness, above average height, narrow shoulders, thin limb, deficiency of body weight, activities of different power orientation we recommended to increase body weight, circumference of the body (shoulders, chest, pelvis, femur) to improve performance muscle tone. High school girls students of the hypersthenic body structure preferably have a massive body, medium height, heavy shoulders, shortened limbs overweight. Therefore, physical exercises were aimed at weight loss, reducing the circles of the body and fat component. Girls of the normostenic body type have a relatively proportionate body structure. Due to the factors physical activity is aimed at improving muscle tone, decreasing growth rates of body weight and reducing the circumference of the pelvis.

During the classes the optimal sequence of strength exercises was as follows: abdominal muscles; femoris, tibia; pectoral muscles, back muscles and hands. The list of recommended exercises also includes breathing exercises and exercises for the maintenance of static postures, where special attention is paid to proper posture. Training fitness program for women includes a series of exercises which are repeated every other day. 1–2 muscle groups are worked out at one training, such as: day 1 is chest muscles and triceps; day 2 is leg muscles (quadriceps and biceps thigh); day 3 is deltoid muscles of the arms and abdominal muscles; day 4 is back muscles and biceps hands. In research [5; 6; 7; 8] it is proved that one of the most characteristic features of physical development of a person is th ebody structure. Deviation of the body structure of the optimal values negatively affects the physical and mental status of youth. Therefore, when designing fitness programs of the body structure types (asthenia, hypersthenic, normostenic) were taken into account. The research has found that 22 % of high school student have asthenic body structure, 19 % have hypersthenic and 59 % have normostenic.

For girl with asthenic body structure, fo rwhich thinness, above average height, narrow shoulders, thin limb deficiency of body weight are characterized, strength exercises orientation are recommended to increase body weight, circumference of the body (shoulders, chest, pelvis, femur) to improve performance muscle tone. Fitness program for women of this group is aimed at strengthening of the tone major muscle groups.Appropriate exercises are recommended . Despite the peculiarities of the physical condition of girls belonging to different groups, we accordingly developed a dosing of strength loads.

Table 1

Dosage Loads for Girls of Different Body Structure

Physique	The Dimension of the Burden (Maximum Repetitions) Times	Number of Approaches, Times	The Duration of Rest Between Series, *min*	Temp of Acting
Asthenic	8–12	5–6	1,5–3,0	slow, medium
Hypersthenic	15–25	3–4	0,63–1,0	fast
Normostenic	8–12	4–5	1,0–2,0	average

To increase the muscle strength of the first group of girls we offer to perform 5–6 exercise approaches. Each exercise is repeated 8–12 times, duration of rest between series 1,5–3,0 min. Exercises are performed at a slow pace and average (mode increase muscle mass). Methods to devlop strength for members of the second group are slightly different: the number of approaches reduced to 3,4 times, and the number of repetitions increased to 15–25 times. Exercises are recommended to perform at a rapid pace with the duration of breaks between sets 40–60 sec (fat reduction mode). Girls of the third group should perform exercises in 4–5 approaches with burdens of 8–12 times the size and duration of rest 1,0–2,0 min. Rate of doing is average.

In scientific studies it is indicated that the main reason for reducing the health and functional parameters girls body is lack of physical activity. To confirm these data, it was determined the level of motor activity girls according to questionnaire. International International Physical Activity Questionnaire (IPAQ) [12; 15; 16].

Molding pedagogical experiment showed the high efficiency offered by fitness programs (table 2). The girls have high experimental group (57,3 %) or moderate (42,7 %) level of physical activity. In the control group, high motor activity – 12,5 % of respondents.

Table 2

The Level of Motor Girls Activity of Experimental and Control Groups After the Teaching Experiment, *%*

The Level of Motor Activity	Group of Students	
	Experimental	Control
High	57,3	12,5
Average	42,7	49,2
Low	–	38,3

Test results of physical activity of IPAQ methodology showed a significant increase in the number of movements of students experimental group.

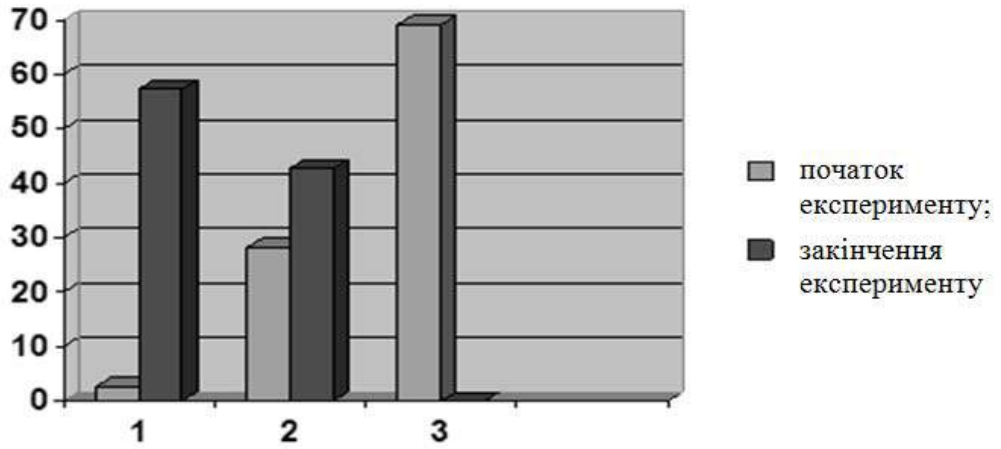

Fig. 1. *The Level of Motor Activity of Women Before and After the Teaching Experiment*
Notes. *The level of motor activity: 1 – High, 2 – Medium 3 – low.*

During pedagogical experiment of respondents with a high level of physical activity increased by 54,7 %. After the experiment women with low physical activity were not find, and at baseline they were 69,2 %.

Conclusions and Perspectives for Further Research. In the research the main focus was on improving the theoretical and experimental study to test the effectiveness of individual methods of constructing high school fitness programs based on morphological features, body type and motivate high school student for independent exercises as a part of competence that preserves health, it is necessary to note the importance of the received results which determine the direction of scientific approaches for the selected direction in the future.

So the pedagogical experiment shows the high efficiency of the method of formation of individual fitness programs for self-study of high school student, which is the basis for their widespread implementation in the practice of secondary schools. The issue of building fitness programs for persons with disabilities requires further invastigation.

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Стаття надійшла до редакції 18.05.2017 р.

УДК 796.332-057.87

TRAINING PROCESS PROGRAMMING OF QUALIFIED FOOTBALL PLAYERS IN HIGHER EDUCATION ESTABLISHMENTS

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Abstract

Relevance. Modern trends in the athletes' training need to find new ways to improve the structure and content of different structural units of the training process. One of the most effective theoretical and methodological approaches in the athletes' training is programming. The **purpose** is to launch structural units program of the training process and, on this basis, to increase the efficiency of qualified football players training in the annual macrocycle in terms of higher educational establishments. ***Results.*** Research was conducted in student football team. Age of players is 18–23 years old. Sports qualification – candidate masters, athletes of the first category. The study had been conducting during two years. In the first year, a confirmatory experiment was conducted, in the second – forming. Structural units programs of qualified football players training process were launched and experimentally grounded. On the basis of the main competitions calendar, the replayed training cycle of qualified football players was planned. The program of each cycle of the annual macro cycle consists of four blocks: the duration of the preparation, competitive periods and the transition phase; quantitative indicators of trainings; the ratio of training work means and training loads of different orientations; criteria of athletes' preparation. ***Conclusions:*** it is established that the construction of the training process on the basis of structural units programming of the training process allows optimizing managerial influences at different stages of the annual macro cycles, depending on the three phases of the sports form of skillful football players.

Key words: footballers, training process, programming, macrocycle.

Віктор Костюкевич, Вадим Стасюк. Програмування тренувального процесу кваліфікованих футболістів в умовах вищих навчальних закладів. ***Актуальність.*** Сучасні тенденції підготовки спортсменів потребують пошуку нових способів удосконалення структури й змісту різних структурних утворень тренувального процесу. Одним із найбільш ефективних теоретико-методичних підходів у системі підготовки спортсменів є програмування. ***Мета статті*** **–** розробити програми структурних утворень тренувального процесу та на їх основі підвищити ефективність підготовки кваліфікованих футболістів у річному макроциклі в умовах вищих навальних закладів. ***Результати.*** Дослідження проводили в студентській футбольній команді. Вік футболістів – 18–23 роки. Спортивна кваліфікація – кандидати в майстри спорту, спортсмени першого розряду. Дослідження проводили протягом двох років. На першому році проведено констатувальний експеримент, на другому – формувальний. Розроблено та експериментально обґрунтовано програми структурних утворень тренувального процесу кваліфікованих футболістів. На основі календаря основних змагань сплановано потроєний цикл підготовки кваліфікованих футболістів. Програма кожного циклу річного макроциклу складається з чотирьох блоків: тривалості підготовчого, змагального періодів і перехідного етапів, кількісних показників тренувальної роботи, співвідношення засобів тренувальної роботи й тренувальних навантажень різної спрямованості, критеріїв підготовленості спортсменів. ***Висновки.*** Установлено, що побудова тренувального процесу на основі програмування структурних утворень тренувального процесу дає змогу оптимізувати управлінські впливи на різних етапах річного макроциклу залежно від трьох фаз спортивної форми кваліфікованих футболістів.

Ключові слова: футболісти, тренувальний процес, програмування, макроцикл.

Виктор Костюкевич, Вадим Стасюк. Программирование тренировочного процесса квалифицированных футболистов в условиях высших учебных заведений. ***Актуальность.*** Современные тенденции подготовки спортсменов нуждаются в поиске новых путей по совершенствованию структуры и содержания различных структурных образований тренировочного процесса. Одним из самых эффективных теоретико-методических подходов в системе подготовки спортсменов является программирования. ***Цель статьи*** – разработать программы структурных образований тренировочного процесса и на их основе повысить эффективность подготовки квалифицированных футболистов в годовом макроцикле в условиях высших учебных заведений. ***Результаты.*** Исследование проводилось в студенческой футбольной команде. Возраст футболистов – 18–23 года. Спортивная квалификация – кандидаты в мастера спорта, спортсмены первого разряда. Исследование проводили в течение двух лет. На первом году проведен констатирующий эксперимент, на втором – формировочный. Разработаны и экспериментально обоснованы программы структурных образований тренировочного процесса квалифицированных футболистов. На основе календаря основных соревнований спланирован потроенный цикл подготовки квалифицированных футболистов. Программа каждого цикла годичного макроцикла состоит из четырех блоков: продолжительности подготовительного, соревновательного периодов и переходного этапа, количественных показателей тренировочной работы, соотношение средств тренировочной работы и тренировочных нагрузок различной направленности, критериев

подготовленности спортсменов. ***Выводы.*** Установлено, что построение тренировочного процесса на основе программирования структурных образований тренировочного процесса позволяет оптимизировать управленческие воздействия на различных этапах годичного макроцикла в зависимости от трех фаз спортивной формы квалифицированных футболистов.

Ключевые слова: футболисты, тренировочный процесс, программирование, макроцикл.

Introduction. In recent times, organization of the training process of athletes is mainly carried out on the basis of the theory of periodization [1; 5, 9; 11; 12–14; 21; 27].

Depending on the calendar system of competitions, the preparation of athletes in team sports takes place in one-cycle, in two and in three cycles models [4, 6, 9, 10, 18; 20]. It is worth noting that two and three-cycle models of the training process in the framework of the annual training cycle are specific for high-skillful football players. As a rule, in the leading football countries: England, Spain, Germany, Italy, France and others during the last 20 years at the competitions in high divisions, a two-cycle model is used [4; 16; 1; 19; 21]. The two-cycle model of the training process involves competitions under the autumn-spring scheme. In competitions during the spring-autumn stage of the annual training cycle, the preparation of football players is carried out within the limits of one-cycle model [4; 6; 11; 14; 18; 24]. Mostly under this model a training process is organized. This training process is for skillful football players who take part in competitions at the level of youth teams, city championships, and region championships. The subject of this study is an analysis of the training process programming of student football teams. That is, on the one hand, based on the calendar of competitions, it is necessary to determine, from the point of view of the periodization theory, the appropriate model of the training process organization of student football teams within the annual macro cycles, and, on the other, to substantiate the effectiveness of constructing structural units of the training process (lessons, microcycles, mesocycles, stages, periods) on the basis of programming.

Literary resources analysis [9; 10; 16; 18] allowed confirming the prediction that the problem of training process organized for qualified football players in higher education establishments is not sufficiently studied. One of the ways of its solution is the use of programming of structural units of the training process taking into account the main provisions of the theory of periodization [2; 3; 8; 15; 19; 21; 26].

Connection of Research with Scientific Plans, Themes. The research was carried out on the topic «Theoretical and methodological foundations of individualization in physical education and sports» (state registration number 0112U002001) according to the integrated plan of research work of the Ministry of Science, Youth and Sports of Ukraine for 2011–2015.

The Purpose of the Research is to develop programs of structural education of the training process and, on the basis of them, to increase the efficiency of training of qualified football players in the annual macro cycles in higher education institutions.

Organization of Research. The research was conducted at the student football team, which participated in the regional championship among the teams of the 1st group on football and mini-football, as well as in the competitions of the student football league of Ukraine. Age of players is 18–23 years old. Sports qualification – candidates master, athletes of the first category.

The study was conducted during two years. During the first year, the stated experiment was conducted, during the second year – forming.

Research Methods. In the process of research, the following methods were used: the analysis of scientific and methodological literature – the relevance of the research was determined, the directions of scientific research on this problem were analyzed by national and foreign scientists; Pedagogical observation – defined parameters of training work of qualified football players; Control tests – defined indicators of players' preparedness at different stages of the training cycle; Video shooting – an analysis of the competitive activities of teams and players; Modeling – developed models of programs of structural units of the training process; Methods of mathematical statistics. Descriptive statistics, sampling method, Shapiro-Wilka consistency criterion, Student's parametric criterion, and Mann-Whitney's nonparametric criterion were used. Mathematical processing of the results of the study was carried out using software packages MSExsel, Statistica 10,0.

Results of the Research and Discussion. The hypothesis of this study involved the experimental programming of the training process of qualified football players in conditions of higher educational establishments.

At the stage of the forming research experiment, programs of individual training tasks were developed, the structure of which consisted of general-preparatory, special-preparatory, subordinate (auxiliary) and competitive exercises. On the basis of programs of training tasks, programs of training sessions, which were included into the structure of training microcycles (fig. 1), were developed. The developed microcycle programs formed the basis for planning training work and competitive activities of skillful players at the stage of the forming experiment.

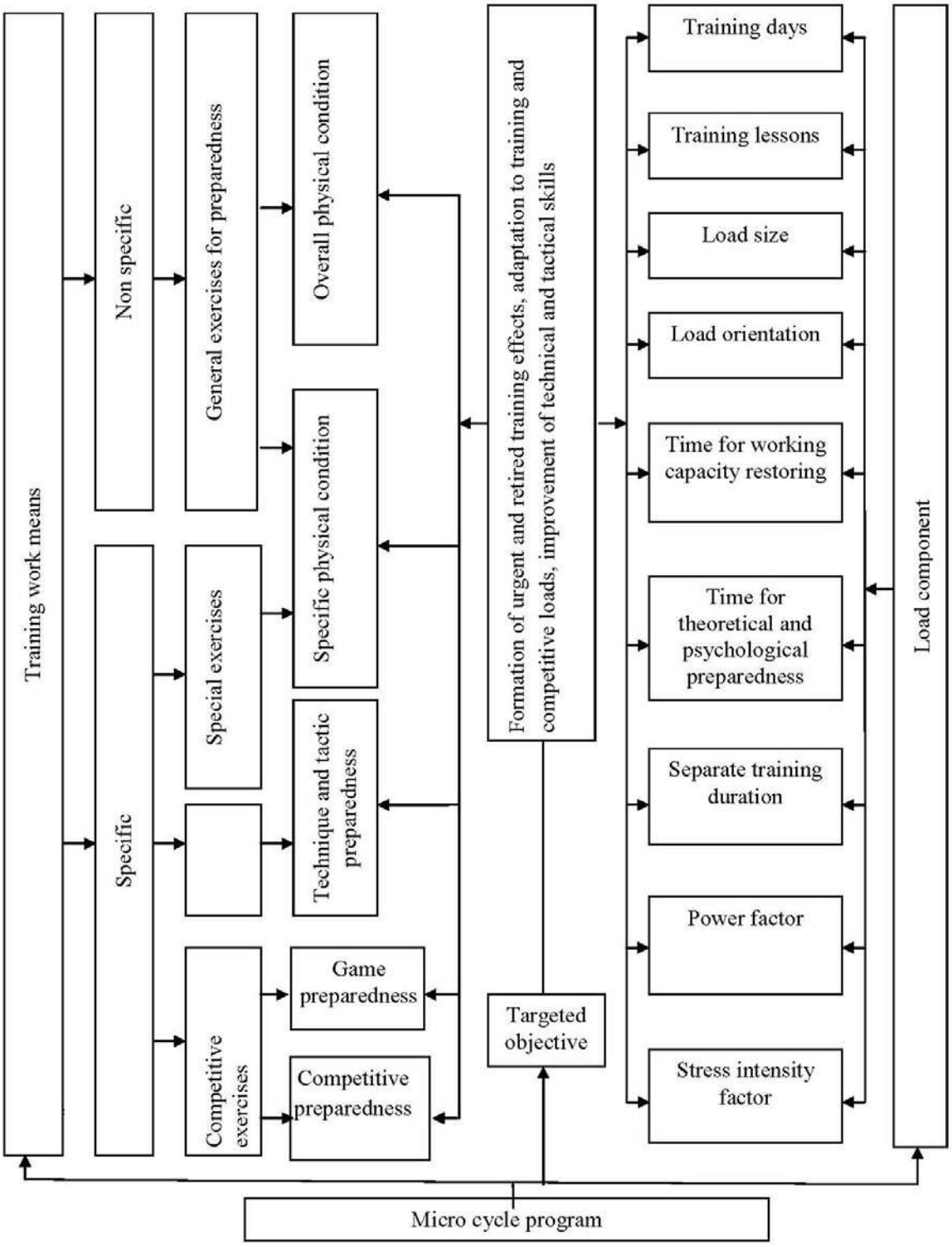

Fig. 1. *Logical Chart of the Micro Cycle Program in the Training Process of Skillful Football Players*

The main objectives for each microcycle were: the formation of urgent and retired training effects, adapting players to training and competitive loads, improving technical and tactical skills.

Microcycle programs have become the basis for developing programs for individual stages of training skillful football players in the annual training cycle.

On the basis of the calendar of competitions of the soccer team «Thunderbird (Burevisnyk)» of the

Kamyanets-Podilsky Ivan Ohienko National University in the 2014–2015 campaign, the team's cycle of training was developed (fig. 2).

Cycle	**I**			**II**			**III**		
Months	03.08 – 31.08.14	01.09 – 12.11.14	13.11 – 21.11.14	22.11 – 08.12.14	09.12 – 15.03.15	16.03 – 22.03.15	23.03 – 07.04.15	08.04 – 19.07. 15	20.07 – 02.08. 2015
Periods	1–st preparatory	1–st preparatory	1–st preparatory stage	2–nd preparatory	2–nd competitive	2–nd preparatory stage	3–rd preparatory	3–rd competitive	3–rd transitional

Fig. 2. *The Triple Cycle of Training of Skillful Players in the Annual Macro Cycles at the Stage of the Forming Experiment*

The main goal of the first cycle was the preparation and participation of the team in the first round of the championship of the Khmelnytsky region and the student league of Ukraine in the first round of the championship (the duration of the first cycle was 108 days). In the process of the second cycle (123 days), the preparation and holding of games of the championship and the Cup of Khmelnytsky region on football was carried out.

The training process of the team during the third cycle (134 days) was aimed at preparing and participating in the second round of the championship of the Khmelnitsky region on football.

For each cycle of the team's annual training, a training program was developed (fig. 3). The program consists of four blocks. The first one presents the duration of the preparatory, competitive periods and the transition phase, the types and the correlation of the training of qualified football players. The second block contains quantitative indicators: training days, training sessions (nonspecific, specific and complex), games (educational, control and official). In the third block the correlation of means (general preparation, special-preparatory, competitive) and training loads (aerobic, mixed, anaerobic, alactatious, anaerobic glycolytic) in preparatory, competitive stages and transitional stage are presented. The fourth block is characterized by criteria of high–speed, speed–force training, as well as special and general endurance* .

The content part of the program consisted of retractable, shock, submersible, competitive, intermixed and rebuilding microcycles. The structure of each microcycle consists of the types and components of the training work – the magnitude of the load, orientation, specific and non-specific exercises, the time allocated for restoration, theoretical and psychological training. In each microcycle, the coefficient of load size (CLS) and the intensity of the training load CI T.n. were determined. To determine the CLS of each training session or game and a certain type of microcycle, the methodical approach offered by V. N. Sorvanov (1978) was used. Exercise, performed with heart rate (heart rate) 114 beats for a minute^{-1} was estimated at 1 point; 120 – 2 points; 126 – 3 points; 132 – 4 points; 138 – 5 points; 144 – 6 points; 150 – 7 points; 156 – 8 points; 162 – 10 points; 168 – 12 points; 174 – 14 points; 180 – 17 points; 186 – 21 points; 192 – 25 points; 198 – 33 points. Based on the estimation of the intensity of the exercise, the coefficient of load size was determined.

$$KBH = \sum_{i=1}^{n} t_i \cdot I_i, \tag{1}$$

where: *ti* – duration of exercise (min); *Ii* – intensity of exercise (ball).

For the magnitude of the training effect in a training session (game) or microcycle, CIT.n. was determined.

$$KI_{т.н} = \frac{\sum_{i=1}^{n} t_i \cdot I_i}{\sum_{i=1}^{n} t_i}, \tag{2}$$

where: *CIT.n.* – Coefficient of intensity of training load; $\sum_{i=1}^{n} t_i \cdot I_i$ –

Value of load in balls; $\sum_{i=1}^{n} t_i$ – the duration of the training session.

*Identical programs have been developed for the second and third cycle. The limited amount of an article does not allow them to be presented in the text.

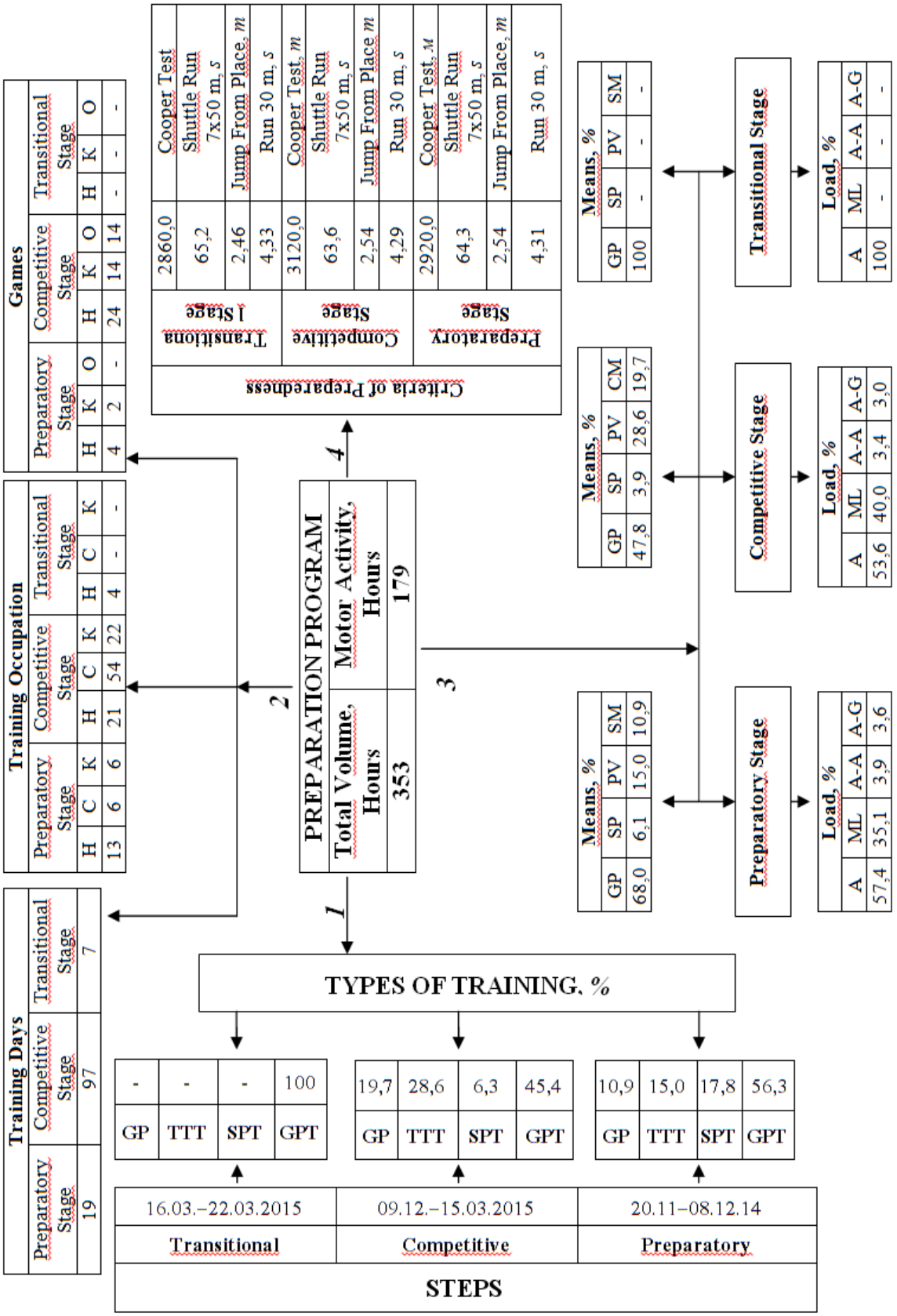

Fig. 3. *The Program of Training of Qualified Football Players in the Second Cycle During the Training Year at the Stage of the Forming Experiment*

Such an approach to the programming of structural units of the training process allowed planning not only the ratio of training loads of different orientations, but also the magnitude of training effects (fig. 4).

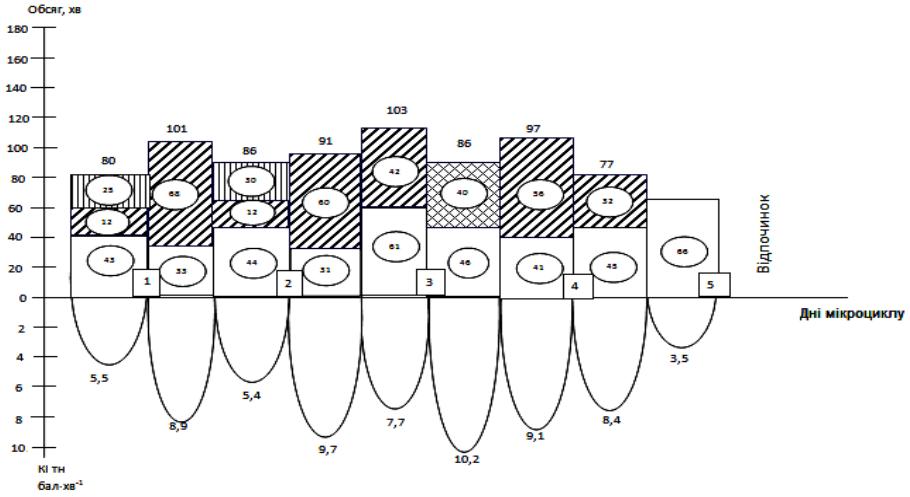

Fig. 4. *The Volume, Intensity and Direction of Training of a 5-day Shock microcycle of the 1-st Cycle of Annual Training of Skillful Players at the Stage of the Forming Experiment*

– aerobic loading;

– mixed loads;

– anaerobic-alcatate stresses;

– anaerobic-glycolytic stresses.

Programming of annual training, carried out on the basis of rational use of training equipment, loads of different orientation and types of training players allowed to optimize the training process and improve the effectiveness of managerial influences in the university football system.

As for the indicators of training work during the year, in general, the motor activity of the players of the student football team was 32 074 minutes (535 hours), of which 10 184 minutes (170 hours) were assigned to the 1-st cycle, 10 753 (179 hours) to the 2-nd Cycle and 11 137 mines (186 hours) – for the 3-rd cycle of annual training.

The amount of training facilities for skillful players in the annual training cycle at the stage of the forming experiment is presented in the tabl. 1.

During the year in the training process the ratio of nonspecific and specific exercises is approximately the same, 50,9 and 49,1 %. General training exercises were most used in the 2 nd cycle of annual training (53,3 %), specially – preparatory exercises – in the first cycle (5,6 %), subordinate (auxiliary) in the 2 nd cycle (25,1 %), Competitive – in the 1st cycle of annual training of skillful players.

Table 1

The Amount of Training Facilities for Skillful Football Players in the Annual Training Cycle at the Stage of the Forming Experiment

Training Year Cycle	Amount of Funds, *min. (%)*				Total min, *(%)*
	Nonspecific	Specific			
	General Preparatory	Special Preparatory	Auxiliaries	Competitive	
1-st cycle	4967 (46,7)	569 (5,6)	2494 (24,4)	2154 (23,3)	10184 (31,8)
2-nd cycle	5737 (53,3)	462 (4,3)	2694 (25,1)	1860 (17,3)	10753 (33,5)
3-rd cycle	5626 (50,5)	482 (4,3)	2705 (24,3)	2324 (20,9)	11137 (34,7)
In all	16330 (50,90)	1513 (4,8)	7893 (24,9)	6338 (19,4)	32074

A significant difference in the redistribution of training loads of different orientations between the 1st, 2nd and 3rd cycles of annual training is practically not established (table 2). Aerobic loads ranged from 52,4 (1st cycle) to 55,7 % (2nd cycle), mixed – from 37,9 (2nd cycle) to 39,7 % (3rd cycle), anaerobic alactatic – from 3,5 (2nd cycle) to 5,0 % (1st cycle), anaerobic glycolytic – from 2,6 (2nd cycle) to 2,9 % (1st cycle).

Table 2

The Amount of Training Load of Skillful Football Players in the Annual Training Cycle at the Stage of the Forming Experiment

Training Year Cycle	Amount of funds, *min (%)*				Total min, *(%)*
	Aerobic	Mixed	Anaerobic Alactatious	Anaerobic Glycolytic	
1-st cycle	5335(52,4)	4039(39,7)	506(5,0)	304(2,9)	10184(31,8)
2-nd cycle	5992(55,7)	4079(37,9)	372(3,5)	310(2,9)	10753(33,5)
3-rd cycle	5877(52,8)	4419(39,7)	541(4,9)	300(2,6)	11137(34,7)
In all	17204(53,6)	12537(39,1)	1419(4,4)	914(2,9)	32074

In general, for the annual training cycle, the proportion of aerobic loads was 53,6 %, mixed – 39,1 %, anaerobic alactatic– 4,4 % and anaerobic glycolytic – 2,9 %.

Regarding the distribution of different types of training of qualified football players within the training year (table 3), the total training was 60858 minutes (1014 hours), among which 17585 minutes (293 hours) were spent on theoretical and psychological training, 11 199 minutes (187 hours) was used to restore the sports performance of players.

Table 3

The Volume of Different Types of Training of Skillful Players in the Annual Training Cycle at the Stage of the Formation Experiment

Training Year Cycle	Types of Training, *min (%)*						Total min, *(%)*. The Total Amount / Motor Activity
	General Physical Training	Special Physical Training	Technical and Tactical Training	Game Preparation	Theoretical and Psychological Preparation	Restora-tion	
1-st cycle	4406 (43,3)	1128 (11,1)	2496 (24,5)	2154 (21,1)	5805	3004	18993/10184 (31,8)
2-nd cycle	5286 (49,2)	913 (8,5)	2694 (25,1)	1860 (17,2)	5930	4520	21203/10753 (33,5)
3-rd cycle	4911 (44,1)	1196 (10,7)	2706 (24,3)	2324 (20,9)	5850	3675	20662/11137 (44,7)
In all	14603(45,5)	3237 (10,1)	7896 (24,6)	6338 (19,8)	17585	11199	60858/32074

Means of direct motor activity of qualified players were divided into GPT(45,5 %), SPT (10,1 %), TTT (24,6 %) and GP (19,8 %). It should be noted that approximately the same trend is observed during each of the three cycles of annual training.

Thus, microcycle program, the structure and content of which took into account the types and components of training work were developed and implemented in the training process of qualified footballers, they have allowed increasing the effectiveness of the training process of football teams in higher education institutions.

Conclusions. At the present stage the construction of the training process of qualified athletes within the year is carried out mainly on the basis of the theory of periodization of sports training. Athletes of team playing sports including football are characterized as one cycle, two-and three-cycle schemes for training process organization in the annual macro cycles.

It is established that programming is one of the best ways to increase the effectiveness of the training process of skillful football players. Programming of the training process of qualified football players should be done taking into account the main provisions of the theory of periodization.

Programming of the training process of athletes should be determined by: a hierarchical structure in which smaller structures are subordinate to larger, for example, microcycles to mesocycles or stages; target units according to each stage of the annual training cycle; algorithmicity – step by step planning and correction of managerial influences.

Further research will be aimed at programming the training process of players of different qualifications.

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Стаття надійшла до редакції 30.05.2017 р.

УДК 796.011.3:001.895

INNOVATIONS IN THE PHYSICAL EDUCATION OF SCHOOLCHILDREN

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Abstract

The article is devoted to the problems of application of the innovative technologies in the system of physical education. Iinnovation in the education is the process of creating, dissemination and application of the new means (novelties) for the solving those pedagogical problems which have been solving before in a different way. Leading scientists suggested innovative technologies like Nordic walk, fit ball aerobic, healthy movably thematic games for solving the problems of educational valeological aiming of the physical education of the primary school children and other. Practical demonstration of the sports and health improvement technologies in physical education is fitness programs. Application of the innovative sports and health improvement fitness technologies in the physical education process of the children of secondary school age will favor to increase of efficiency of both in school and after school work. Aerobic training is the most justified among the health building technologies. Therefore development of the programs aimed at sport and health improvement of this kind gain exceptional sense. Role skating is an effective means of improvement of health which involves a big number of muscles, without getting out aerobic regime of energy supply.

Key words: physical education, innovation technologies, fitness programs, role skates.

Софія Власова. Інновації в системі фізичного виховання школярів. У статті досліджено проблему впровадження інноваційних технологій у систему фізичного виховання. Інновація в освіті – це процес створення, поширення й використання нових засобів (нововведень) для розв'язання тих педагогічних проблем, які досі розв'язувалися по-іншому. Провідні вчені запропонували такі види інноваційних технологій, як скандинавська ходьба, фітбол-аеробіка, оздоровчі рухливо-пізнавальні ігри для вирішення питань освітньо-валеологічної спрямованості фізичного виховання учнів та ін. Практичним проявом фізкультурно-оздоровчих технологій у фізичному вихованні є фітнес-програми. Упровадження інноваційних фізкультурно-оздоровчих фітнес-технологій у процес фізичного виховання учнів основної школи сприятиме підвищенню ефективності як урочних, так і позаурочних форм занять. Аеробне тренування найбільш виправдане в побудові здоров'яформувальних технологій. Тому розробка програм фізкультурно-оздоровчої спрямованості за таким типом набуває виняткового значення. Катання на роликових ковзанах – ефективний засіб оздоровлення, що задіює велику кількість м'язів, не виходячи при цьому за межі аеробного режиму енергозабезпечення.

Ключові слова: фізичне виховання, інноваційні технології, фітнес-програми, роликові ковзани.

София Власова. Инновации в системе физического воспитания школьников. В статье исследуется проблема внедрения инновационных технологий в систему физического воспитания. Инновация в образовании – это процесс создания, распространения и использования новых средств (нововведений) для тех педагогических проблем, которые до сих пор решались по-другому. Ведущие ученые предложили такие виды инновационных технологий, как скандинавская ходьба, фитбол-аэробика, оздоровительные подвижно-познавательные игры для решения образовательно-валеологического направленности физического воспитания учащихся и др. Практическим проявлением физкультурно-оздоровительных технологий в физическом воспитании являются фитнес-программы. Внедрение инновационных физкультурно-оздоровительных фитнес-технологий в процесс физического воспитания учащихся основной школы будет способствовать повышению эффективности как урочных, так и внеурочных форм занятий. Аэробная тренировка является наиболее оправданной в построении здоровьеформирующих технологий. Поэтому разработка программ физкультурно-оздоровительной направленности по такому типу приобретает исключительное значение. Катание на роликовых коньках является эффективным средством оздоровления, задействует большое количество мышц, не выходя при этом за пределы аэробной режима энергообеспечения.

Ключевые слова: физическое воспитание, инновационные технологии, фитнес-программы, роликовые коньки.

Introduction. In the terms of development of the national system of the secondary education innovation activity of the secondary schools which is characterized by experimentations, approbations and application of innovations (novelties) in the process of education gains importance.

At the present stage of development of the comprehensive secondary education system in Ukraine the number of the experimental schools which develop or approbate pedagogical innovation for the last three

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

years increased in 18 percent. At the all–Ukrainian level of experiments there were registered 47 pedagogical innovations which involved in their realization 134 secondary educational institutions; at the regional level – 103 innovation which work in the 340 educational institution [2].

Experts turn attention to the necessity of cardinal reorganization of the educational process of the comprehensive secondary schools, application of the innovative approaches in the educational system considering psychophysiological patterns of child development.

The issues of application of innovative technologies in the sphere physical education were the subject of researches of many scientists (N. V. Moskalenko, 2009; V. A. Savchenko, 2012; N. E. Pangelova, 2013; O. M. Sayinchuk, 2014; T. G. Kozhedub, 2014; T. Y. Krucevych etc., 2014 and etc.).

There are several approaches in the definition of the notion «Innovation». Thus contemporary domestic scientists consider innovation in the education as the process of creating, dissemination and application of the new means (novelties) for the solving those pedagogical problems which have been solving before in a different way [3].

Educational innovation which are applied at the present stage of development of the national comprehensive secondary education system must be considered in their content, forms, methods and technologies of teaching and educating of pupils; content, forms and methods of educational institution management [6].

Innovative pedagogical technologies have the following features:

– they are the results of creative finding of the original, non-standard solution of various pedagogical problems;

– they are actual, significant and systematic new formations, which emerge on the groung of diverse initiatives and novelties, which become perspective for the evolution of education and have positive influence on its development;

– they are the product of the innovative educational activity which are characterized by processes of creation, dissemination and application of new means (novelty) in the field of education and scientific researches;

– they are the new forms of work organization and management, new types of technologies which embrace not only separate institution and organization but various spheres of activity;

– they are the process renewal and improvement of theory and practice of education, which optimize achievement of its goals; process of realization of targeted changes, oriented on transformation of any components in the structure or functioning of the organization;

– they are the new ideas, actions, or adapted ideas, or those ideas which are in time to be realized;

– they are the novelties in the field of technic, technologies, work organization and management, which are based on exploitation of the achievements of the science and progressive experience and on use of those novelties in various fields and spheres of activity [12].

Recently studies directed on improvement of the organizational and methodological principles of the physical education process of the pupils, especially by providing innovative technologies have been conducted.

O. M. Saiynchuk [10] suggested introducing in the system of physical education innovative type of motor activity – Nordic Walking. The author grounded, developed and experimentally verified the effectiveness of the program of the Nordic walk exercises after school for the physical condition of the primary school children.

T. G. Kozhedub [3] suggested innovative technology of the theoretical training of the schoolchildren. This allows improving physical activity performance, level of physical preparedness, physical growth and state of health of the pupils and determines the appropriateness of its use in the physical education system of the children of secondary school age.

T. G. Omelchenko grounded the model of donozological state of the primary school children (taking in consideration anthropometric, physiological (cardiovascular), psychophysiological indicators, rate of physical development and psychical state of organism) and on its base she developed technology of management and correction of the donozological state of the organism using the example of the exercises with the elements of fit ball aerobic [7].

Y. V. Vaskov is confident that with the help of non-traditional lessons the problem of differentiation of the education, organization of the independent learning and practice of pupils may be solved and ability to exercise self-control by training activities may be formed. However as Y. V. Vaskov state among the

selected types of innovative works at the physical training lessons practicing teachers suggest to use around six type of work: lessons–competitions, lessons-games, lessons-stories (fairy tales), lessons–travels, lessons circle training, binary and integrated lessons. This affirms that both the scientists in the sphere of school physical education and practicing teachers have not yet developed system of projecting, preparing and conducting of non-traditional lessons [1].

I. Makushchenko and V. Prystynskyi proposed to use healthy movably thematic games for solving the problems of educational valeological aiming of the physical education of the primary school children [5].

But application of innovative technologies in the school education process rests limited, which makes relevant the scientific research in this direction.

The Aim of the Study is analysis, generalization and systematization of data of the scientific and methodological literature concerning realization of the contemporary healthy technologies in physical education process of the of the primary school children.

Results of the Study. Discussion. Innovation is the result of the systematic activity which is directed at realization of the achievements of the scientific and technical progress which favors to quantitative and qualitative changes in the internal environment of the enterprise and secures the increase of efficiency and receiving of competitive advantages.

Translated from Greek «Innovation' means "renewed, novelty, change». The most common is definition of American scientist K. Rogers [9] who states that novelty is an idea which is new for the particular person, and no matter if the idea is objectively new or not, we determine it in the time, which is passed from the moment of its discovery or first use.

Modernization of the education system is linked first of all with the application of innovative concepts in educational environment, in the basis of which the complete models of educational process will be put in, which are set up on unity of methodology and means of their realization, i.e. those which exist not only at the level of ideas but those which embody at the level of technologies the idea of humanization in the system of education in general and in specific aspects of educational process.

Learning with the use of innovative technologies qualitatively surpasses classical education. It integrates the processes which may not be united in the framework of classical education, employment, career, continual education.

But technologies are introducing slowly in the educational process. The main reason of delay is appetence or habit of a teacher to be in the center of the studies: to be senior and initiator. If a teacher goes to the background, leading the lesson the way that the schoolchildren are initiators, implementers, that is full value actors, the lessons' quality vary. Interactive methods of teaching are the best stepping stone for carrying out this task.

Solving of the problem of the efficiency increasing of physical education lessons stipulate the realization of the contemporary innovative pedagogical technologies aimed at formation of schoolchildren's knowledges in the field of physical education that favors to increasing schoolchildren's interest to physical exercises. Search for the new effective means and their scientific argumentation have their logical place in the improvement of the school physical education system.

Principle of healthy orientation of the physical education concretize in physical and healthy technologies, which are developing now. Notion «physical and healthy technologies» unites a process of using physical education means for the recovery goals and scientific discipline, which develops and improves the basis of methodic of physical and health process building.

Practical manifestation of the physical and healthy technologies in physical education is different fitness programs, which form the main content of fitness groups' activity, which are functioning on the basis of sport and athletic societies and school and after school physical education work.

Fitness programs as a form of motor activity, especially organized in the frame of group or individual (personal) work, may have both health condition direction (reduction of diseases progress, reaching and keeping of certain physical condition) and pursue the goals linked with development of ability to solve efferent and athletic tasks at the rather high level.

In the first case fitness program is oriented at the goals of healthy fitness, in second one at athletic or efferent level.

The classification of fitness programs is based at [11]:

a) One type of motor activity (e.g. aerobic, jogging, swimming etc.);

b) Combination of several types of motor activity (e.g. aerobic and body building, aerobic and stretching, swimming and jogging etc.);

c) Combination of one or several types of motor activity and different factors of healthy mode of life (e.g. aerobic and conditioning to the cold, body building and massage, swimming and hydropathic recovery procedures etc.).

In their turn fitness programs based on the one type of motor activity may be divided in programs based on:

- types of motor activity of aerobic orientation;
- healthy types of gymnastic;
- types of motor activity of power orientation;
- types of motor activity in the water;
- psycho-emotional regulation means.

Besides that integrational generalized fitness programs oriented at special groups of population: for children; for the elderly people; for women in prenatal and postpartum periods; for the persons with high risk disease and ill person; body correction programs may be distinguished. Computer fitness programs are developing intensively.

This diversity of the fitness programs is determined by aspiration to satisfy different athletic and health interests. Considering that the notion «fitness» comprises multifactorial components (planning of life career, hygiene of body, physical preparedness, rational nutrition, disease prevention, social activity, psycho–emotional regulation, including stress prevention and other factors of healthy mode of life), the number of fitness program which are created is limitless.

One of the fitness program set up on the types of motor activity of the aerobic orientation is role skating.

High emotionality, effective development of aerobic abilities lead role skating to the number of the most popular types of motor activity. Around 15 millions of people are practicing role skating all around world.

Physiological value of this type of motor activity lies in the positive influence on cardiovascular, musculoskeletal and muscle systems. As a result of fulfilment of specific motions which require constant control of equilibrium and balancing the work of the vestibular system is improved and as well as coordination skills. Simultaneously hormone endorphin (hormone of «hapyness») is secreted and this conduces elation.

Role skating is especially topical for the people who are overweight. Thus during one hour uniform medium intensity skating 400 kcal may be burned, intensive skating with speeding up burns 900 kcal. Besides that these exercises set in norm metabolism.

The main elements of role skating for the beginners are:

- skating on one leg;
- skating backward;
- simple jumps;
- basic elements of slalom, so called «serpent»;
- breaking.

Simple skating may be diversified with active games. For games on roles any outdoor games may be adapted. The most attractive among them which suit to the specific of movements on the role skates are the dynamic and mobile games which do not require the big size of the skating ground. Unlike sport games, games on roles do not require specially equipped play ground or sport equipment.

Biomechanical peculiarity of role skating allow including in work those groups of muscles which may not be developed with the other types of exercises. Efficiency of the work is largely determined by technical equipment: role skates, special clothes, helmet, knee-guards and elbow-guards.

World sport equipment manufacturers suggest four types of role skates: for pleasure trips, for fitness, for extremal (acrobatic) skating, and universal.

Role skates which used in the fitness programs for the improving the functional state of the organism have specific technical characteristics (ventilation, buckles, peculiarities of the roles, availability of break, etc.), that allows to secure comfortable condition during durable exercises [5].

To customize physical exercises with primary schoolchildren both on land and in water teachers are trying to select and borrow verity of recreation and wellness, fitness technologies, elements of sports for development both motor capacity and recreation in general, choreography, conditioning to the cold procedures etc.

Peculiarities of pedagogical leading of the game activity of the children do not stay out of scientific attention. Compositions of usual and folk active games with transferring them into touristic and local history

work with the aim to influence both on physical and moral and spiritual development of the schoolchildren are experimentally tested as independent training and educational elements at school and after school time. Traditional physical exercises of the Ukrainian people which are used to educate patriotism become increasingly popular in the practices of improvement of health and involvement of primary schoolchildren to the motor activity [4].

Conclusions. Application of innovative physical and health fitness technologies into the process of the physical education of the schoolchildren will enhance the effectiveness both school and after school forms of work. Data synthesis of scientific and methodological literature indicates that aerobic training is the most justified in the health building technologies. It is established that age of 10–12 years is favorable for fulfilment of aerobic opportunities, therefore development of physical and health oriented programs of this kind acquires exceptional importance. Role skating is the effective means of health improvement which involves a big number of muscles, without getting out aerobic regime of energy supply.

The prospect of further research. Grounding and development of the program of physical and health lessons with the priority use of means of role skating for the schoolchildren of 5–6 grade of secondary school.

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Стаття надійшла до редакції 18.05.2017 р.

УДК 373.2.016:796:394.3

INTRODUCTION OF FOLK PHYSICAL CULTURE TRADITIONS IN THE EDUCATIONAL PROCESS OF SENIOR PRESCHOOL CHILDREN

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Abstract

The article analyzes the feasibility of national physical culture in the educational process in preschool educational establishments, historic significance and especially the use of traditional physical training in the physical and mental development of senior preschool children. The extensive experience of many national and foreign researchers and listed priorities for their implementation were overviewed. The fundamental basis of education and training is a concern for the health of the younger generation, because first of all teachers have task to choose the most appropriate means of education and training of preschool children to improve their physical development and state of health. Widespread use of elements of Ukrainian traditions in preschool educational establishments is an important mean of spiritual and physical strength, self-knowledge and recreation. Every nation, depending on the social and economic conditions of its development, psychological structure, ideology and geographic location, long historical time created distinctive types of exercise, outdoor games, amusements, entertainment, improved methods for their use, which then also became a kind of folk physical culture.

Key words: folk games, fun, entertainments physical education, physical exercises, folk physical culture, senior preschool children.

Анатолій Вольчинський, Ярослав Смаль, Олександр Малімон, Андрій Ковальчук. Упровадження традицій народної фізичної культури в навчально-виховний процес старших дошкільників. У статті проаналізовано доцільність народної фізичної культури в навчально-виховному процесі дошкільних закладів, історичне значення та особливості застосування засобів народної фізичної культури в процесі фізичного й розумового розвитку старших дошкільників. Узагальнено великий досвід роботи багатьох вітчизняних і зарубіжних дослідників та вказано пріоритетні напрями їх реалізації. Фундаментальна основа виховання й навчання – турбота про здоров'я молодого покоління, тому, передусім, перед вихователями поставлено завдання вибору найбільш оптимальних засобів виховання та навчання дітей старшого дошкільного віку з метою покращення їхнього фізичного розвитку й стану здоров'я. Широке використання в дошкільному вихованні елементів традицій українського народу є вагомим засобом розвитку духовних і фізичних сил, самопізнання та відпочинку. Кожний народ, залежно від соціально-економічних умов свого розвитку, психологічного складу, світогляду, а також географічного місцезнаходження, протягом тривалого історичного часу творив самобутні види фізичних вправ, рухливих ігор, забав, розваг, удосконалював способи їх використання, які потім і ввійшли до складу своєрідних систем народної фізичної культури.

Ключові слова: народні рухливі ігри, забави, розваги, фізичне виховання, фізичні вправи, народна фізична культура, діти старшого дошкільного віку.

Анатолий Вольчинский, Ярослав Смаль, Александр Малимон, Андрей Ковальчук. Внедрение традиций народной физической культуры в учебно-воспитательный процесс старших дошкольников. В статье проанализирована целесообразность народной физической культуры в учебно-воспитательном процессе дошкольных учреждений, историческое значение и особенности применения средств народной физической культуры в процессе физического, а также умственного развития старших дошкольников. Обобщен большой опыт работы многих отечественных и зарубежных исследователей, указаны приоритетные направления их реализации. Фундаментальной основой воспитания и обучения является забота о здоровье молодого поколения, поэтому прежде всего перед воспитателями стоит задача выбора наиболее оптимальных средств воспитания и обучения детей старшего дошкольного возраста с целью улучшения их физического развития и состояния здоровья. Широкое использование в дошкольном воспитании элементов традиций украинского народа является весомым средством развития духовных и физических сил, самопознания и отдыха. Каждый народ, в зависимости от социально-экономических условий своего развития, психологического склада, мировоззрения, а

также географического местонахождения, в течение длительного исторического времени творил самобытные виды физических упражнений, подвижных игр, забав, развлечений, совершенствовал способы их использования, которые затем и вошли в состав своеобразных систем народной физической культуры.

Ключевые слова: народные подвижные игры, забавы, развлечения, физическое воспитание, физические упражнения, народная физическая культура, дети старшего дошкольного возраста.

Introduction. Ukrainian national system of physical education has deep historical roots. In the process of historical development the original folk games and exercises were elaborated, which, unfortunately, in recent years are forgotten. To preserve the richness of traditional folk physical culture or, more precisely, to give a new lease of life to folk games, national sports and entertainment, you need to use them more widely in the educational process [1; 4]. Thus, in addition to a systematic description and analysis of traditional folk physical education, we should intensify their implementation in the various spheres of ethnicity, the system of folk religious festivals, educational work of preschool institutions and everyday life.

The purpose of the research – to analyze the state of physical education in preschool educational establishments and implement in the educational process of national physical training facilities for preschool children.

Materials and methods of the research were used as data analysis and synthesis of scientific literature, software and regulatory and archive documents.

Research results. Each culture is a kind of organism that has a unique spiritual foundation, characterized by originality and continuous process of development. It is so versatile and comprehensive that the study of development and content need to get acquainted with lots of different and often distant from other disciplines.

According to many researchers [2; 3; 5; 8; 12], an important component of an integrated national culture, from ancient times to nowadays, is folk physical training, which covers all the achievements in the creation and rational use of special tools, techniques and natural conditions to deliberate physical improvement of humans.

Every nation, depending on the social and economic conditions of its development, psychological structure, ideology and geographic location, long historical time, created distinctive types of exercises, popular games, fun, entertainment, improved methods for their use, which also included in the original part of folk physical training.

In traditional society, on the formation of the preschool age child personality a positive impact had not only structural elements (types) of national physical culture (popular games, competitions, dancing, fun, tempering), but also its educational tradition (the use of folk images and names of famous athletes, participation of adults in the motor activity of children, physical training elements as part of the holiday, the connection with work) [6].

In traditional society, a significant role had mentoring as a tradition of folk physical culture, which originated in the Stone Age. The best hunters, soldiers who because of age, injury or illness could not take part in the hunting or battle, were assigned to train and to prepare the younger generation to physical training [8]. Nowadays mentoring is equally important, since, as already mentioned, family physical education is very low, and educational institutions do not provide all preschoolers normal motor activity. Older preschoolers may be involved in a group of children engaged in physical exercises under the guidance of mentors. Temporary isolation from parents and caregivers promotes independence, communication skills, teamwork, a sense of partnership and other important personal qualities.

Many major sports classes start in pre–school age. In establishments of additional education with a sports bias it is good to use in the training process folk games, competitions, games, folk dance elements to create greater diversity and emotiveness of exercises.

In older preschool age the preconditions of self education are laid in. In the tradition of folk pedagogy the great importance has the independence of children from the early childhood. So extremely useful is an independent physical activity, which in symbiosis with rationally constructed popular classes in physical education provides an opportunity to educate preschoolers' ability to creatively use the acquired physical culture knowledge and skills to be active, independent, ingenuous, and resourceful. Popular outdoor games, dances, competitions and fun, where competitive element contributes to the volitional self education, are very important. In addition, the formation of many moral qualities is associated with the need for strict compliance with the rules. In folk dances mental stress caused by physical activity in accordance with the rhythm and character of musical accompaniment, so in addition to aesthetic and spiritual self, and then we also have to deal with self–educational volitional qualities.

Important role in the harmonious development of older preschoolers play choral games and fun. The vast majority of it is a dramatized motor game that takes place in the form of dialogue (two choirs). Song in spring circle dances was of secondary importance. The main thing here is not the song, and rhythm and dance, that can raise mood, awaken the energy and transfer it to the outside world, to awaken the natural forces of new life, action, movement, raising [9]. In traditional physical education the significant educational role played the heroic images of folklore, which combine incredible physical and military capabilities with a number of positive personality traits (patriotism, honesty, hard work, respect for ordinary people, etc.). In the family circle folklore images, used as educational tools, can be in the form of reading stories aloud, and talks about read material; drawing and sculpting folk heroes; role-playing games with folk scenes [10].

The presence of elements of national physical culture at the festival – it is a remarkable folk tradition. The educational role of celebrations is to foster the process of socialization, awareness of their place and relationship to social groups and elements of physical culture enhance the emotional impact. In ancient times, exercise was an essential component of virtually every national holiday. And in the family and in educational institutions during the holidays it is important not to forget folk dances, games and fun. The use of national traditions, holy attributes add special beauty and emotion, increasingly influenced by the spiritual sphere of child personality.

Currently, means of popular culture, pedagogical value which goes far beyond physical education and is proven by many centuries, are underused. The feasibility of using elements of popular culture in physical education of preschool children is reflected in many scientific studies [7, 10, 11].

Types and traditions of folk physical training can and should be used in modern preschool pedagogy, in classroom, while walking during a morning exercise in preschool educational establishment and independent work during various forms of joint motor activity of teacher and children of preschool age, as part of family education.

We have developed and applied in preschool educational establishments and methodological provisions that provide for the use of traditional folk physical culture in practice of preschools, providing daily, weekly, monthly and annual standards of motor mode considering its uniformity according to the seasons and individual characteristics of the child, in particular:

- morning gymnastics with popular motor games (10–12 min);
- complexes of Ukrainian national motor games according to their classification: the time of year, age of children, and in place of the national calendar (for organization of independent motor activity);
- physical training exercises (35 min) using elements of national sports (fighting hopak, salvage, Asgard);
- break for P. T. (2–3 min) using Ukrainian folk songs – hayivky, hahilky;
- walks with elements of national sports games (30–40 min).

After a nap preschoolers had an awakening gymnastics, which set up the child's body into active productive activities using elements of folk dance and corrective exercises.

During walks and pedestrian crossings outside preschool physical activities were of low, medium and high intensity (15–25, 25–30, 50–55 %) in the motor density of 50–60 %.

For older preschoolers, characterized by high emotiveness, we recommend the fun associated with the preservation of equilibrium walking on narrow a board or «bumps», jumping on one leg, walking in an unusual position (for example, the emphasis lying behind), exercises with manual dexterity (e.g. juggling). In addition to the development of coordination skills the above–mentioned exercises enhance the emotional sphere of personality, develop the ability to concentrate. Such fun as skating, skiing, sledding, contribute to the formation of a number of volitional qualities (courage, determination, focus).

At home and in preschool education it is extremely important to conduct tempering, which is not only a mean of physical training for health, but also to the formation and development of volitional qualities and emotional and mental sphere of children. Walking barefoot, air baths and water treatments – all of these forms of tempering from the ancient times were in the arsenal of traditional culture in almost all nations. It should be added that the popular motor games, competitions and fun outdoor activities, especially those where there is contact with the natural elements, very useful for older preschoolers, that is particular game on the water (in summer), playing in the snow (in winter). This not only contributes to hardening, but also forms the basis of representations of human as a part of nature.

Knowledge and usage features motor activity of older preschoolers by teachers and parents help to build efficiently motor mode in preschools and at home.

Conclusions: for more productive use of traditional physical training in preschool institution the following issues have to be applied:

• to develop educational programs, taking into account the traditions of folklore;

• to use people's national attributes (rituals, costumes, etc.) during the holidays with elements of national physical training;

• for pre-schools workers to have regular contact with parents in terms of their counseling on family education, and increasingly involve parents and older children to participate in the organization of sports and sports events;

Prospects for Further Research. Further research is seen in the implementation of traditional folk physical culture in the educational process of preschool education.

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Стаття надійшла до редакції 26.05.2017 р.

Фізична культура, фізичне виховання різних груп населення

УДК 37.016:796.42-057.87

FEATURES OF STRENTG DEVELOPMENT IN HIGH SCHOOL-AGED CHILDREN INVOLVED IN ATHLETIC THROWING

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Abstract

Topicality. Relevance of research due to the need to search for and study of new ways to take force of children of high school age who are engaged in athletic throwing. ***The aim –*** to optimize the training process throwers of high school age through the use of different education methods of power quality. ***Results of research*** in recent years the tendency of decline in strength, and in connection with this decrease in athletic performance of boys and girls high school age who are engaged in athletic throwing. Therefore there is a need to find the most effective methods of training young people in which they can to reach maximum heights, using all the reserves of the body without harming him. ***Conclusions.*** Quite popular and promising means of strength training exercises are terasat, which combined with isometric exercises enhance the level of power quality, the effectiveness of the training process and improve athletic performance in the discus. Compared with classic strength training terasat application makes it possible to improve the emotional background of occupation, easy to adjust the load according to individual capacity boys and girls. The gradual reduction of the length terasat can develop not only the strength endurance but also to correct the human physique.

Key words: power quality, physical activity, terasat, the training process.

Людмила Черкашина, Роман Черкашин. Особливості розвитку силових якостей дітей старшого шкільного віку, які займаються легкоатлетичними метаннями. ***Актуальність*** дослідження зумовлена потребою пошуку й обґрунтування нових засобів розвитку сили в дітей старшого шкільного віку, які займаються легкоатлетичними метаннями. ***Мета дослідження*** – оптимізація тренувального процесу метальників старшого шкільного віку на основі використання диференційованої методики виховання силових якостей. ***Результати роботи.*** Протягом останніх років простежено тенденцію до зниження рівня розвитку сили, а у зв'язку з цим – зниження спортивного результату юнаків та дівчат старшого шкільного віку, які займаються легкоатлетичними метаннями. Тому виникає потреба пошуку новаційних засобів розвитку силових якостей і найбільш ефективних методів підготовки юнаків та дівчат, за допомогою яких була б можливість досягати максимальних висот, використовуючи всі резерви організму без шкоди для нього. ***Висновки.*** Досить популярним і перспективним засобом силової підготовки є вправи з терасетами, що в поєднанні з ізометричними сприяють підвищенню рівня силових якостей, ефективності тренувального процесу й покращенню спортивного результату в метанні. Порівняно з класичними силовими вправами, застосування терасетів дає можливість підвищувати емоційний фон занять, легко регулювати навантаження відповідно до індивідуальних можливостей юнаків та дівчат. Поступове зменшення довжини терасетів уможливлює розвиваток не лише силової витривалості, але й коригування статури людини.

Ключові слова: силові якості, фізичні навантаження, засоби, терасети, старший шкільний вік, тренувальний процес.

Людмила Черкашина, Роман Черкашин. Особенности развития силовых качеств детей старшего школьного возраста, занимающихся легкоатлетическими метаниями. ***Актуальность*** исследования обусловлена необходимостью поиска и обоснования новых средств развития силы у детей старшего школьного возраста, занимающихся легкоатлетическими метаниями. ***Цель исследования*** – оптимизация тренировочного

процесса метателей старшего школьного возраста на основе использования дифференцированной методики воспитания силовых качеств. ***Результаты работы.*** В последние годы наблюдается тенденция снижения уровня развития силы, а в связи и с этим – снижение спортивного результата юношей и девушек старшего школьного возраста, занимающихся легкоатлетическими метаниями. Поэтому возникает необходимость поиска новационных средств развития силовых качеств и наиболее эффективных методов подготовки юношей и девушек, с помощью которых была бы возможность достигать максимальных высот, используя все резервы организма без вреда для него. ***Выводы.*** Достаточно популярным и перспективным средством силовой подготовки являются упражнения с терасетами, которые в в сочетании с изометрическими способствуют повышению уровня силовых качеств, эффективности тренировочного процесса и улучшению спортивного результата в метании. По сравнению с классическими силовыми упражнениями, применение терасетив дает возможность повышать эмоциональный фон занятий, легко регулировать нагрузку в соответствии с индивидуальными возможностями юношей и девушек. Постепенное уменьшение длины терасетив позволяет развивать не только силовую выносливость, но и корректировать фигуру человека.

Ключевые слова: силовые качества, физические нагрузки, средства, терасеты, старший школьный возраст, тренировочный процесс.

Introduction. Strength training – is a specialized process of teaching physical improvement of pupils of all ages and gender, aimed to improve health, develop strength and athletic formation. The means for development of force are exercises with a high burden (resistance), which directed to stimulate an increase in the degree of muscle tension. They divided into: primary and secondary. It should be noted that physical education, one of whose tasks is to develop strength qualities, has its differences for children high school age who are engaged in sports sections compared with other children who attend only the lessons in physical education.

Nowadays, in an era of high sports achievements, one of the major questions is how to prepare young people who are engaged in athletic throwing better, to reach a maximum height using all the reserves of the body without harming it.

We have worked out programs of different authors. They emphasize the importance of improving power capacity, scientifically prove that the power has load positive effect on the health, performance, endurance, agility, speed, convinced of that the optimal level of force is an effective factor in preventing disease and providing energy.

So we can see, the authors do not have a consensus on this issue. Also it should be noted that most of the research and methodical recommendations intended for professional athletes and the general nature without distinction of youth and adult organisms. However, the body of a child is weaker than adult and development of power quality in them is different.

In our opinion, the development of power quality of children of high school age must be methodically properly constructed taking into account age features, rules of selection adequate means regulation of intensity differentiated approach to power quality education.

Thus, based on the foregoing, we concluded that increasing the strength training of children of senior school age, involved in athletics throwing events, is timely and relevant. The aim of our study was the optimization of the training process throwers of high school age through the use of differentiated methodology of training strength qualities.

The aim of our study was to design and experimental verification of program effectiveness through the use of force resistance elastic items (terasat) and static exercises athletes, throwers high school age. To solve the problems raised in the paper, we used the **following methods:** study and analysis of educational, scientific and methodological literature; interviews with experts; pedagogical supervision, pedagogical experiment, methods of mathematical statistics.

Research Results. Discussion. The primary role of physical education of school youth and their peers who are engaged in sports sections belonging to power exercises that form the necessary muscle mass, which provides not only body movements, but also the production of energy. Sports training can lead to significant progress if it is properly organized, carried out according to plan and system that is based on the experience of best practice and science.

An important step in the development of physical qualities, including strength of boys and girls of high school age to training sessions could be the introduction of a popular youth kind of motor activity – exercises with terasat (special latex tape having varying degrees of resistance and fixed on the hand and leg). In comparison with classic power training application of terasat makes it easy to adjust the capacity. The gradual reduction of the length of terasat, increasing their elasticity allows not only strength endurance

development, but also their own power qualities influence on the increase of muscle in diameter, and ultimately on the charter of man. For example, teraset applications in such gymnastics exercises as spin in the emphasis lying ,substantially increases the load on the upper shoulder girdle.

So, according to the study of modern scientific and technical literature on the development of power quality we have selected all the proposed exercises of which was compiled application of force. For this purpose in our program of development of force in children of the advanced school age we used one of fixed assets of development of force – static exercises in the isometric mode (exercises in which muscular tension is created due to strong-willed efforts with use of external objects) and additional resources, namely exercise with use of resistance of elastic objects where used the sets of exercises developed by us from a terasat.

The program was selected and arranged such exercises, which does not require special equipment, which have the natural character close to competitive exercise, and have no negative impact on the locomotive apparatus young athletes (table. 1). In their working out, we tried to take into account all positive aspects that exist in other methods of strength training.

The features of our program of power quality are:

1. Changing the value of a specific strength training

– the general strength training was given to 25 % of total training time (Various exercises at the gym, exercise with dumbbells, damn, etc.);

– the exercise of the local action on muscle groups (with different set of exercises terasat) was given to 40 % of the training time;

– on exercise of isometric (static), 20 % of total training time;

– on exercises to develop explosive strength, 15 % training time.

2. Classes carried integral character and conducted in combination with technical training.

3. Exercises were selected on the basis of the impact mainly on those muscle groups that are engaged in the process of throwing. These exercises should have been simultaneously promote the development of power quality and providing valuable skills in the discus throwing.

Table 1

Value Means of Strength Training in the Experimental Group

Strength Training of the Athlete				
The Focus of Exercises	**Examples of Exercises**	**Variants of Training Loads coaches, *%***		**Dosage Load, *%***
Weight Training of global action	Complex exercises with terasetamy	0	5	40
Exercises of general power orientation	Various exercises at the gym, exercise with dumbbells, damn, *etc*	60	40	25
Exercises to develop explosive strength	Jumping, throwing, percussion exercises	40	45	15
Isometric exercises	Tension general and local effects (eg. extensor tension legs and torso)	0	10	20

Training program was designed for 12th weeks. In trainings the group method of exercises was used. Exercises are performed serially with accurately dosed load. When doing throwing exercises attention is paid to correct technique of these exercises.

Teacher observations and experiments were conducted to determine the level of force readiness, level of physical development and to assess the effectiveness of the proposed program and its impact on athletic performance in the discus. The 16th young men of 15–16 years which specialize in the javelin throwing participated in a research and had III–II adult categories. In order to identify the effectiveness of the proposed development program force control standards of physical and technical preparedness of javelin throwers were proposed, which included: running 30 meters on the run without and with a spear; triple jump with seats on the right and on the left leg; throwing the core with both hands behind the head, both hands

behind the head, two hands back over his head; squat, jerk and taking the bar to the chest; javelin right away, left from the place, two hands, with 3–4 steps 5–6's steps, javelin with a takeoff (table 2).

Table 2

Indicators of Physical and Technical Preparedness of Young Trainees

Indicators	To exp.	After exp.	Increment	Increment, %	Planned Result
	Speed Quality				
Running 30 meters from the course, *sec*	4,49	3,99	0,5	11	4,15–3,96
Running 30 meters on the run with a spear, *sec*	4,87	4,29	0,58	12	4,40–4,30
Running 15 m allotted spear, *sec*	2,51	2,12	0,39	16	2,20–2,10
Power-speed					
Triple jump away, *cm*	721	810	089	14	775–845
Jump on the right foot	11,42	12,21	0,79	7	12,00–12,50
Jump on the left leg	11,54	12,42	0,88	8	12,00–12,50
Explosive power					
Throwing a core with both hands from behind the head	14,22	15,49	1,27	9	15,00–15,50
Throwing a core with both hands from the head with running up	16,48	17,72	1,24	8	17,50–18,00
Throwing a core with two hands back over the head	16,96	18,21	1,25	7	17,50–18,00
Power Quality					
Squats, *kg*	60,0	79,4	19,4	28	70–80
Spurt bar, *kg*	54,7	67,5	12,8	21	60–65
Taking the bar to the chest, *kg*	60,4	76,1	15,7	22	70–75
Technical preparedness					
Throwing right from a place, *m*	4,96	41,06	36,1	14	38–40
Throwing left from a place, *m*	30,17	35,1	4,93	16	33–35
Throwing a spear with both hands, *m*	5,47	23,43	28,9	23	28–30
Javelin Throw with 3–4 steps, *m*	40,26	6,54	46,8	16	43–45
Javelin Throw with 5–6's steps	43,24 m	48,9	5,66	13	45–48
Javelin throwing with a run	47,63 m	53,7	6,07	13	50–53

After the introduction of the experimental programs evident positive dynamics in all control exercises and in some exceeding standard rates. All three indicators are in high–speed figure on the top limit of the planned result, in particular the result of 30 m after the conducted research made of the course 3,99 c, with that on 0,5 sec with exceeded initial result. The result of run of 30 m with the javelin was 4,29 sec, and the result is shown in run of 15 m with the taken–away javelin made 2,12 sec. In high–speed and power exercises of hopping orientation the following results were shown: the triple jump from place increase of 0,89 m and amounted to 810 m; in the fifth jump on the right foot figure increased by 7 % and amounted to 12,21 m; in the fifth jump on the right leg result was at 12,42 sec. All figures are within the intended result.

Some indicators of explosive force of ballistic character exceeded the planned result, namely throwing core with two hands back over his head result was improved by an average of 1,25 m and was at 18,21m, which is 21 cm higher than the top rate of planned results. The results of javelin throwing with two hands behind the head was at the upper limit of the planned and amounted to 15,49 m. The core throwing with both hands behind the head result increased by 9 % and amounted to 17,72 m. In power exercises two of three indicators exceeded the planned result that can testify to efficiency of the offered training program.

Therefore, in breakthrough of a bar the result was at the level of 67,5 kg, in squat with a bar – 79,4 kg, and in capture of a bar on a breast – 76,1 kg.

By results of technical readiness positive changes were recorded on all indicators, and on five of six they exceed the planned standard indicators. Results in javelin throwing indicators from different positions and options on average increased from 14 to 23 %.

According to many scientists, for athletes of 13–18 years satisfactory rate of growth results in control exercises that characterize the level of physical qualities are such as sprint running (30–60 m) – 8,5–11,0 % jumping tests – 8–20 %, throws tests – 8,5–25,0 % strength tests (spurt, squats) – 15–37 %. In adult athletes, these criteria are slightly higher.

Indicators of running, jumping, throwing and power exercises on average increased from 8 % in core throwing from various of provisions to 23,66 % exercises with a barbell that fit into the limits of model parameters result of a gain of control exercises proposed by scientists, and is satisfactory (tabl. 3)

Table 3

Summarized Indicators of Experimental Groups

Experimental Groups		Exercises Orientation				
		Throwing	Crossing	Hopping	Throwing	Power
	x	5,6	0,88	1,25	15,96	0,49
	%	15,83	9,66	8	23,66	13
Model indexes	%	8–20%	8–20%	7,5–25%	15–37%	8,5–17%

In order to add general information about the status of individual features of physical development of high school children who are engaged in athletic throwing, we determined anthropometric indicators: (high, weight, circumference of chest) functional performance (vital capacity, heart rate at rest, blood pressure) respiratory system (test weights, test Serkina) and cardiovascular and physical development indexes (tabl. 4).

Table 4

Indicator of Physical Development of Young Trainees

Age	Anthropometric Indicators					Functional indicators			
	DT	MT	WGC			Systolic	Diastolic	Pulse	GJEL
			Rest	Inhale	Exhale				
15–16 Years	175,51	68,53	90,12	94,97	86,89	116,91	67,73	64,01	3640
	Index			Samples					
	BMI	Skibinski	ЖІ	Serkina			Ryfeu	Shtangi	Ghen
				а	б	в			
	390,83	33,8	53,11	59,1	42,3	55,2	5,31	59,4	43,9

We studied groups of throwers 15–16 yearswhose length of the body is bigger compared with their pers not involved in physical activities (175,6 cm). Weight everage– 67,53 kg.

Systematic physical training and sport contribute to the development of respiratory muscles and chest expansion. Thus, the average value of VC in throwers was 3640 ml (for young people trained range from 3 to 4,5 liters). Chest circumference (WGC) is at rest – 90,12 cm. Overall throwers anthropometric parameters within the model characteristics for trained people. HR as the most simple and informative indicator of the functional state of the cardiovascular system – 64,01 beats / min, indicating that heart learned to handle work more economical than their peers who are not involved in sports. But do not forget that the heart rate in athletes can significantly vary depending on lifestyle, food conditions and individual characteristics.

The second common method of cardiovascular system – blood pressure – 117/67 mm Correspond to the normal values of blood pressure for healthy young people (–100–129 mm Hg for systolic, diastolic for – 60–79 mm).

To determine the distribution of weight per cm tall and definition of overweight was defined body weight code. In general, we can observe that the weight–height indicators are within normal limits children high school age (325–375 g in girls, boys 350–400 g. boys). The results of the Ruf'ye test were able to identify cardiovascular adaptation to exercise. Thus the average index of Ruf'ye at 5,31 points on the table that corresponds to the assessment index well.

Index by Skibinska is at the level of 33,8 and allows to characterize a functional condition of the respiratory and cardiovascular systems of an organism investigated on «well» (it agrees the classification techniques developed by the author).

On the basis of the data of a functional condition of breath and blood circulation (Serkina) obtained during the research we found out what groups of the throwers investigated by us, belongs to the category of the healthy trained people. The average value put (59,1sec–42, 3sec–55, 2sec). This indicator in investigated by us equaled – 53,11ml/kg which is in limits of the average sizes characteristic for male, – to 60 ml/kg].

Our data on the quantities of breath duration (with 59,4 and 43,9 –the inspiration from – on exhalation) is higher than the performance characteristic of young people (40–55 s and 20–40 s on inhalation to an exhalation). However, these figures are within the ranges inherent athletes (60–90 c to inhale and exhale 40–60 s).

Conclusions and Perspectives for Further Research. The experimental materials presented in a research allowed to note that the program of training sessions in which static exercises and exercises with terasat were used to increase the level of power qualities, the efficiency of training process and improve sports result in a throwing. Results on all indicators increased from 8 to 23,66 %, as gives us the chance to claim about efficiency of the training program offered by us and to recommend its use in training process of throwers of the high school age.

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Стаття надійшла до редакції 05.05.2017 р.

УДК 797.21

SELECTION OF 7–10 YEARS OLD CHILDREN OF DIFFERENT TYPES OF CONSTITUTION IN SPORT SWIMMING, TAKING INTO ACCOUNT THEIR PSYCHOLOGICAL AND PHYSIOLOGICAL FEATURES

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Abstract

The article revealed the need to consider the psychophysiological parameters of the central nervous system of the children of schoolchildren in the selection and orientation of the sport swimming. The interrelation of features such as the schoolchild constitution and the activity of his central nervous system has been revealed. Presented conducted an extensive research of boys 7–10 years old and based on the analysis of selected types of the most successful, the algorithm is composed of sports selection procedure, revealing the specificity and individuality of each student, which increases the effectiveness of achieving high results in the future.

Key words: Somatotype, psychophysiological parameters of the central nervous system, school age, selection, sport swimming.

Володимир Давидов, Анна Манкєвич, Ольга Морозова. Відбір для плавання дітей 7–10 років різних типів конституції з урахуванням психофізіологічних особливостей. У статті розкрито необхідність дослідження психофізіологічних параметрів діяльності центральної нервової системи школярів для відбору й орієнтації в спортивному плаванні. Виявлено взаємозв'язок особливостей типу конституції школяра та діяльності його центральної нервової системи. Проведено маштабне дослідження хлопчиків 7–10 років і на основі аналізу результатів виділено типи найбільш успішних, складено алгоритм процедури спортивного відбору, що виявляє специфіку й індивідуальність кожного школяра та підвищує ефективність досягнення високих спортивних результатів у майбутньому.

Ключові слова: тип конституції, психофізіологічні параметри діяльності центральної нервової системи, шкільний вік, відбір, спортивне плавання.

Владимир Давыдов, Анна Манкеевич, **Ольга Морозова. Отбор для плавания детей 7–10 лет разных типов конституции с учетом психофизиологических особенностей.** В статье раскрывается необходимость исследования психофизиологических параметров деятельности центральной нервной системы школьников для отбора и ориентации в спортивное плавание. Выявлена взаимосвязь особенностей типа конституции школьника и деятельности его центральной нервной системы. Проводится обширное исследование мальчиков 7–10 лет и на основе анализа результатов выделяются типы наиболее успешных, составлен алгоритм процедуры спортивного отбора, выявляющий специфику и индивидуальность каждого школьника, что повышает эффективность достижения высоких спортивных результатов в будущем.

Ключевые слова: тип конституции, психофизиологические параметры деятельности центральной нервной системы, школьный возраст, отбор, спортивное плавание.

Introduction. It is already known that to achieve high sports results a person needs to have not only a certain level of physical qualities development, but also an optimal organization of psycho physiological processes. The functional mobility (lability) of the central nervous system, the ability to concentrate, the severity of static and dynamic tremors, and the accuracy of movements are the indices of the functional activity of the central nervous system, which are especially important for those involved in sports. Obviously, in order to optimize sports selection, it is necessary to study psychological and physiological criteria for the development of the central nervous system of a person already at a primary school age.

At the same time, a close connection between the athletic performance of a person and the peculiarity of his or her physique has been proved. To improve the quality of selection, it seems rational to perform comprehensive testing of the psycho physiological parameters of the central nervous system, taking into consideration the type of constitution of people involved.

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

Methods of Research. 322 boys of 7–10 years were involved in study. Everyone was examined according to the method of Stefko-Ostrovsky, (1929) which helped to determine the type of constitution (asthenoid, thoracic, muscular, and digestive). Psycho physiological indicators of examinees were studied using the psycho-diagnostic complex «MIR». The time of a simple visual-motor response (RT, ms) was determined; characteristic of the ratio of the processes of excitation and inhibition of the central nervous system; Number of touches (NT, times), reflecting the static tremor of the muscles of the hand.

Also effective time was recorded (ET, sec.), characterizing the ability and concentration of attention. A critical flicker fusion frequency was established (CFFF, Hz), which makes possible to assess the lability of the visual analyzer; reaction of lead (RL, Ms.), characterizing the severity of the excitatory processes of the central nervous system. The number of hits and omissions was calculated, characterizing the accuracy of movements. To assess the age-specific features of psycho physiological functions, all children were divided into four age groups (1st-7 years, 2nd-8 years, 3rd-9 years, 4th-10 years).

Using the methods of mathematical statistics, the arithmetic middling (M) and the mean square deviation (x) were determined. The reliability of the differences was identified by Student's t-test.

Statement of the Material and Justification of the Results of the Research. The results of the study are shown in table 1.

Table 1

Psycho Physiological Indicators of 7–10 Years old Boys of Different Constitutional Types *(M ± x)*

Indicators	Age, *Years*	n	Types of Constitutions	M± x	V	Min-max
1	2	3	4	5	6	7
Time of reaction	7	16	Asthenoid	396,7 ± 16,0 398,4 ±18,0	4,0	243,0 – 506,0
		25	Thoracic Muscular		4,5	305,0 – 483,0
		13	Digestive	536,0 ± 14,0	2,6	360,0 – 432,0
		13		399,7 ± 18,6	4,7	300,0 – 460,0
	8	14	Asthenoid	396,0 ± 15,9	4,0	292,0–524,0
		24	Thoracic	379,8 ± 18,7 385,8 ± 14,0	4,9	293,0–461,0
		17	Muscular		3,8	274,0– 496,0
		13	Digestive	365,0 ±18,3	3,0	266,0–508,0
	9	13	Asthenoid	352,3 ±16,5	4,7	306,0–381,0
		25	Thoracic	317,4 ± 13,4	4,2	244,0–443,0
		19	Muscular	347,5 ± 16,6	4,8	324,0–371,0
		12	Digestive	350,4 ± 17,4	5,0	321,0–366,0
	10	18	Asthenoid	341,7 ± 14,8	4,3	215,0–340,0
		79	Thoracic	315,0 ± 14,9	4,7	231,0–362,0
		19	Muscular	296,0 ±17,0	5,7	210,0–432,0
		12	Digestive	334,1 ± 19,4	5,8	220,0–432,0

Table 1

1	2	3	4	5	6	7
Number of touches	7	16	Asthenoid	47,3 ± 6,0	12,7	26,0–79,0
		25	Thoracic	50,1 ± 6,4	12,8	12,0–94,0
		13		31 ,0 ± 5,6	18,1	15,0–70,0
		13	Muscular	61,0 ± 5,8	9,5	32,0–96,0
	8	14	Asthenoid	40,3 ± 4,6	11,4	17,0–55,0
		24	Thoracic	36,3 ± 4,5	12,4,	15,0–66,0
		17		40,4 ± 5,3	13,1	34,0–55,0
		13	Muscular	29,0 ± 4,6	15,9	12,0–44,0
	9	13	Asthenoid	28,7 ±4,3	15,0	23,0–37,0
		25	Thoracic	31,8 ± 4,5	14,1	13,5–60,0
		19	Muscular	39,5 ± 5,3	13,4	35,0–50,0
		12	Digestive	51,2 ± 5,2	10,1	25,0–88,0
	10	18	Asthenoid	25,9 ± 7,4	28,6	14,0–62,0
		79	Thoracic	35,4 ±5,6	15,8	14,2–52,0
		9	Muscular	27,0 ± 6.4	23,7	10,0–48,0
		11	Digestive	44,1 ± 4,5	10,2	16,0–64,0
Effective time	7	16	Asthenoid	23,8 ± 4,3	18,1	13,0–36,0
		25	Thoracic	26.1 ± 3,9	14,9	10,0–48,0
		13	Muscular	17,0 ± 5,4	31,8	9,0–45,0
		13	Digestive	15,0 ± 3,6	24,3	11,0–35,0
	8	14	Asthenoid	25,8 ± 3,7	14,3	14,0– 38,0
		24	Thoracic	21,9 ± 3,6	16,4	10,0–40,0
		17	Muscular	28,8 ± 4,0	13,9	28,0– 33,0
		13	Digestive	30,3 ± 4,5	14,8	20,0–42,0
	9	13	Asthenoid	18,3 ± 1,9	10,4	17,0–21,0
		25	Thoracic	21,7 ± 4,5	20,7	12,0–37,0
		19	Muscular	20,0 ± 3,0	15,1	17,0–23,0
		12	Digestive	22,3 ±4,5	20,3	11,0–38,0
	10	18	Asthenoid	18,0 ± 2,4	13,3	13,0–24,0
		79	Thoracic	15, 0 ± 2,9	19,3	10,0– 20,0
		19	Muscular	19,0 ± 2,0	10,5	14,0–26,0
		21	Digestive	21,4 ± 3,8	17,7	15,0–35,0
CFFF, Hz	7	16	Asthenoid	26,6 ± 4,85	18,2	16,2–35,1
		25	Thoracic	30,7 ± 5,27	17,1	6,10–93,3
		13	Muscular	35,7 ± 3,02	8,4	28,3–44,1
		13	Digestive	62,5 ± 4,08	10,7	30,4–72,9

Table 1

1	2	3	4	5	6	7
	8	14	Asthenoid	28,8 ± 4,56	16,2	13,15–50,0
		24	Thoracic	26,8 ± 4,03	15,4	9,13–55,5
		17	Muscular	31,8 ±5,15	16,6	32,7–38,8
		13	Digestive	34,2 ± 5,59	16,3	25,0–50,0
	9	13	Asthenoid	22,9 ± 4,59	20,0	19,3–29,7
		25	Thoracic	25,4 + 4,02	16,0	9,82–38,6
		19	Muscular	31,3 ± 2,30	14,5	12,2–22,6
		12	Digestive	31,6 4± 4,48	14,2	19,6–55,5
	10	18	Asthenoid	23, 1 ± 3,16	13,7	17,1 – 29,4
		79	Thoracic	21,1 ± 4,32	20,5	18,5 – 55,5
		19	Muscular	17,7 ± 2,63	7,4	14,7– 20,0
		21	Digestive	29,8 ± 6,02	20,2	12,4–48,4
Hits	7	16	Asthenoid	1,3 ± 0,5	38,5	1,0–2-,0
		25	Thoracic	1,9 ± 0,9	47,4	1,0–4,0
		13	Muscular	2,0 ± 1,3	65,5	1,0–4,0
		13	Digestive	1,4 ± 0,6	42,8	1,0–2,0
	8	14	Asthenoid	1,8 ± 0,4	22,2	1,0–2,0
		24	Thoracic	1,9 ± 1,5	78,9	1,0–6,0
		17	Muscular	1,8 ± 1,3	72.2	1,0–4,0
		13	Digestive	2,3 ± 0,5	21,7	2,0–3,0
	9	13	Asthenoid	2,5 ± 0,5	20,8	2,0–3,0
		25	Thoracic	2,8 ± 1,3	46,4	1,0–5,0
		19	Muscular	1,9 ± 0,5	26,3	1,0–2,0
		12	Digestive	2,0 ± 1,0	50,1	1,0–3,0
	10	18	Asthenoid	2,1± 0,9	42,8	1,6–3,6'
		79	Thoracic	4,0 ± 0,6	15,3	4,0–4,0
		19	Muscular	2,9 ± 0,6	20,7	2,0–4,0
		21	Digestive	1,9 ± 1,3	68,4	1,0–5,0
Omissions	7	16	Asthenoid	1,3 ± 0,4	30,8	1,0–2,0
		25	Thoracic	1,7 ± 0,8	47,0	1,0–3,0
		13	Muscular	2,0 ± 0,8	40,0	1,0–3,0
		13	Digestive	2,0 ± 0,5	25,1	1,0–3,0
	8	14	Asthenoid	2,0 ± 0,7	35,7	1,0–3,0
		24	Thoracic	1,7 ± 0,6	35,3	1,0–3,0
		17	Muscular	1,1 ± 0,5	45,4	1,0–2,0
		13	Digestive	3,0 ± 0,4	13,3	1,0–3,0

Table 1

1	2	3	4	5	6	7
	9	13	Asthenoid	5,0 ± 2,0	40,9	3,0–7,0
		25	Thoracic	1,9 ± 1,1	57,9	1,0–8,0
		19	Muscular	3,5 ± 0,9	14,3	3,0– 4,0
		12	Digestive	3,1 ± 1,2	38,7	1,0–4,0
	10	18	Asthenoid	4,0 ± 0,6	15,5	1,0–3,0
		79	Thoracic	3,0 ± 1,4	46,7	1,0–5,0
		19	Muscular	2,0 ± 0,6	30,8	1,0–3,0
		21	Digestive	2,9 ± 0,6	20,7	2,0–4,0
Reaction of lead	7	16	Asthenoid	4,64 ± 2,14	46,1	1,00–6,33
		25	Thoracic	4,91 ± 1,50	30,5	1,08–7,50
		13	Muscular	6,55 ± 1,70	25,9	3,10–9,40
		13	Digestive	4,50 ± 1,86	41,3	2,08–8,30
	8	14	Asthenoid	4,46 ± 1,93	43,3	2,14–8,42
		24	Thoracic	5,79 ± 1,45	29,9	3,07–9,28
		17	Muscular	5,48 ±1,48	25,6	4,46–8,34
		13	Digestive	5,18 ±0,86	14,6	4,66–6,53
	9	13	Asthenoid	5,68 ± 2,10	37,0	3,50–9,88
		25	Thoracic	5,26 ± 1,70	32,3	2,00–9,12
		19	Muscular	6,88 ± 0,96	13,9	5,92–7,83
		12	Digestive	4,35 ± 1,82	41,8	1,06–6,23
	10	18	Asthenoid	5,21 ± 0,90	17,3	4,30–6,20
		79	Thoracic	4,70 ±1,65	35,1	1,12–9,08
		19	Muscular	6,83 ± 2,04	30,0	3,02–10,12
		21	Digestive	4,60 ± 1.40	30,4	1,15–6,0

Response time (RT) in earlier age (7 years) is minimal in boys of the asthenoid type of constitution, maximal in boys of the muscular type of constitution. At the age of 8, the smallest RT is recorded in boys of the digestive type, the largest RT – boys of the digestive type of constitution. At the age of 9, the best results were found in boys of the thoracic type, the worst – boys of the digestive type of constitution. At 10, the shortest response time was found in boys of the muscular type, the largest – boys of the asthenoid type of the constitution.

The number of touches (TN) is the smallest in 7-year-old schoolchildren of the muscular type, the largest in the boys of the digestive type of constitution. At 8 years, this indicator is the best value for boys of the digestive type and the worst is for the asthenoid type of constitution. At the age of 9, the number of touches, on the contrary, the digestive type is worse, and boys of the asthenoid and thoracic type is better. By the age of 10 the best results in this test were demonstrated by children of the muscular type, the worst – boys of the digestive type of constitution.

The effective time in 7 years is minimal in boys of muscular type and maximal in boys of the thoracic type of constitution. In 8 years, the effective time, on the other hand, is minimal in the thoracic type, while the digestive type of the constitution has the maximum one. In 10 years, this indicator is minimal in boys of the thoracic type, and is maximal in boys of the digestive type of constitution.

CFFF (the critical fusion frequency of flickering) in all age groups is higher for boys of the digestive type of constitution. The lowest values of this indicator have 7 and 9 years old boys of the astenoid type, 8 years old boys of the thoracic and 10 years old boys of the muscular type of the constitution.

Maximal **number of hits** had 7 years old boys of muscular type and minimal – boys of the astenoid type of constitution.

8 years old boys of the digestive type had the greatest number of hits and significantly less – boys of asthenoid and muscular types of constitution. At the age of 9, the number of hits is higher in boys of the thoracic and minimal in children of muscle types of the constitution. 10 years old boys of thoracic type of constitution had maximal number of hits and minimal – boys of the digestive type of constitution.

The number of omissions in the group of 7 years old boys of asthenoid type was minimal and maximal – in boys of the muscular and digestive type of constitution. At the age of 8, the number of passes was minimal in the muscular type and maximal – in boys of the digestive type of constitution. At the age of 9, the indicator was minimal in the thoracic and maximal in the asthenoid type of the constitution. At the age of 10, the number of omission was maximal in boys of asthenoid and minimal in boys of the muscular type of constitution.

The **reaction of lead** in 7 years old boys of asthenoid type of constitution is minimal and maximal – in boys of the muscular type of constitution. At the age of 8 the reaction of lead was smaller in boys of the asthenoid type and significant in boys of the thoracic type of constitution. At the age of 9 and 10, the lead response is minimal in children of digestive and maximal in boys of the muscular type of constitution. **Discussion of the Results.** Information in terms of general patterns and directions of development of psychological and physiological functions of 7–10 years old boys is presented in table 2.

Table 2

Development of Psychological and Physiological Functions in 7–10 Years old Boys of Different Types of Constitution

Types of constitution	Age, *Years*	Braking in the Central Nervous System	Coordination of Movements	Coordination of Attention	Lability of the Visual Analyzer	Accuracy of Movements	The Predominance of Excitation
Asthenoid	7 8 9 10	→ (И) → ↓ ↓	→(И) ↑ ↑↑ ↑	→(И) ↓ ↑↑ →	→(И) ↑ ↓↓ ↑	→(И) ↑ ↑ ↓	→(И) ↓ ↑ ↑
Thoracic	7 8 9 10	→ (И) → ↓↓ ↓	→(И) ↑↑ ↑ ↓	→(И) ↑↑ → ↑↑	→(И) ↓ ↓ ↓	→(И) → ↑↑ ↑↑	→(И) ↑ ↑ ↓
Muscular	7 8 9 10	→(И) ↓↓ ↓ ↓↓	→(И) ↓ ↑ ↑↑	→(И) ↓↓ ↑ ↑	→(И) ↑ → ↓↓	→(И) ↓ ↑ ↑	→(И) ↓ ↑ ↑
Digestive	7 8 9 10	→(И) ↓ ↓ ↓	→(И) ↑↑ ↓↓ ↑	→(И) ↓↓ ↑ →	→(И) ↓ ↓ ↓	→(И) ↑ ↓ ↓	→(И) ↑ ↓ ↓

↓ – moderate function decrease; ↓↓ – marked function decrease; → – constancy of functions; ↑ – moderate function increase; ↑↑ – pronounced function increase; И – initial state; ↓ – the best in terms of this indicator to the age of 10.

The obtained results allow us to conclude the following issues:

1) development of child psychological and physiological functions has a pronounced heterochronic character;

2) the heterochronicity of the formation of the psychological and physiological functions of the central nervous system is substantially interrelated with the type of the child's constitution.

The general principle of child development of any type of constitution is a gradual, steady decline in the inhibitory force of the central nervous system. Mostly, this process is expressed in children of the muscular

type of the constitution, in which there are 2 qualitative «leaps» in the improvement of the BP index (8 and 10 years old). The balance of the inhibition and excitation processes at the age of 10 is maximal in boys of digestive and thoracic types, and minimal in the muscular type of the constitution.

The development of coordination of movements, according to the data of PE in boys of the thoracic, muscular, digestive types of the constitution has wavy character. For the thoracic and digestive types, there is a marked improvement in the coordination of movements in 8 years old boys and stabilization of this indicator in 9–10 years old boys. Children of muscular type of constitution have improved coordination of movements only by the age of 10. A stable improvement of this indicator throughout the entire period of child development was revealed only in boys of the asthenoid type of the constitution.

The development of the ability to concentrate attention also has wavy-like dynamics in most constitutional types. This is typical for the asthenoid, muscular, digestive types of constitution. In boys of the thoracic type of constitution, the ability and concentration of attention with age steadily increases, which makes possible to consider this type of constitution to be the best among the rest.

Consistency, which is typical for all types of the constitution, is a decrease in the lability of the visual analyzer. This process is mostly pronounced in boys of the digestive type of constitution. However, children with this type of constitution have a very high lability in the visual analyzer at a young age (7 years). Therefore, despite the age-related decline, this indicator by the age of 10 in boys of the digestive type of constitution is higher than in the rest of the constitutional types.

Accuracy of movements according to the number of hits with age increases, this process is most pronounced in boys of the thoracic type of constitution, in which the accuracy of movements sharply increases at the age of 9 and 10.

Thus, for the totality of the studied psycho-physiological indicators, the thoracic type of constitution is the most favorable for sports selection for swimming in boys at the age of 10. This type of constitution is characterized by high ability and concentration of attention, increased accuracy of movements, balanced excitatory and inhibitory processes of the central nervous system.

Somewhat less favorable is the muscular type of constitution, which, however, by the age of 10 has a high strength of excitation processes. Marginal types - asthenoid and digestive are less favorable for achieving high sports results. However, asthenoid-type boys can successfully engage in those sports that require a high level of coordination abilities, precise coordination of small motor acts. Digestive type of the constitution at the age of 7–10 is characterized by high lability of the visual analyzer, which is also useful for some sports activities.

Conclusions. Thus, the conducted research allows us to conclude that it is advisable to test the psychological and physiological indicators of children taking into account their type of constitution.

The algorithm of the sports selection procedure should include the following issues:

1) determination of the children type of the constitution. Analysis of the initial level («sufficiency») of psychological and physiological functions;

2) an analysis of the annual dynamics of indicators characterizing the processes of excitation and inhibition of the central nervous system, coordination of movements, concentration of attention;

3) the implementation of an operational correction of the training process on the parameters of psychological and physiological functions that have unsatisfactory dynamics in a particular type of constitution.

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Стаття надійшла до редакції 29.05.2017 р.

УДК 796.015.572:378

IMPROVEMENT OF RESPIRATORY SYSTEM PERFORMANCE AMONG THE STUDENTS OF TRANSPORT COLLEGE BY MEANS OF RUNNING EXERCISES AND THE METHOD OF ENDOGENOUS HYPOXIC RESPIRATION

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Abstract

The influence of a 24-week program including running exercises and endogenous hypoxic respiration method on the parameters of external respiration was studied. After 8 and 16 weeks a spectrum of volume and speed parameters of external respiration improved. The changes in the above mentioned parameters are an indication of the better spare capacity of external respiration system and better functional capacity of respirational muscles. Positive changes in speed spirometry parameters characterize improved air passage through different sections of bronchi.

Key words: students, respiratory spirometry, running exercises, endogenous hypoxic respiration, transport college.

Станіслав Галандзовський, Вікторія Онищук. Покращення показників дихальної системи в студентів Транспортного коледжу за допомогою використання бігових навантажень і методики «ендогенно-гіпоксичного» дихання. Досліджено вплив 24-тижневої програми із використанням бігових навантажень та методики «ендогенно-гіпоксичного дихання» на показники зовнішнього дихання. Через вісім і 16 тижнів покращився спектр об'ємних та швидкісних показників зовнішнього дихання. Такі зміни характеризують підвищення резервних можливостей системи зовнішнього дихання, а також зростання функціональних можливостей дихальних м'язів. Позитивні зміни швидкісних показників спірографії засвідчують поліпшення проходження повітря на різних ділянках бронхів.

Ключові слова: студенти, дихальна спірографія, бігові навантаження, «ендогенно-гіпоксичне дихання», Транспортний коледж.

Станислав Галандзовський, Виктория Онищук. Улучшение показателей дыхательной системы у студентов Транспортного колледжа путем использования беговых нагрузок и методики «эндогенно-гипоксического» дыхания. Исследуется влияние 24-недельной программы с использованием беговых нагрузок и методики «эндогенно-гипоксического дыхания» на показатели внешнего дыхания. Через восемь и 16 недель улучшился спектр объемных и скоростных показателей внешнего дыхания. Такие изменения характеризуют повышение резервных возможностей системы внешнего дыхания, а также рост функциональных возможностей дыхательных мышц. Положительные изменения скоростных показателей спирографии свидетельствуют об улучшении прохождения воздуха разными участками бронхов.

Ключевые слова: студенты, дыхательная спирография, беговые нагрузки, «эндогенно-гипоксическое дыхание», Транспортный колледж.

Introduction. Considerate social and economic changes in society caused impact on the structure and process of physical education at technical colleges including the transport college. It's impossible to characterize social economic functions of students' physical education without considering future professional skills of students for their thorough performance of work duties. This to great extent concerns the whole system of physical eucation which mostly aims at integrated development of students as well as in–depth level of practical professional training[1; 2].

As it is known, usage of endogenous hypoxic respiration (EHR) together with physical activity encourages improvement of physical strength.

V. Y. Onishchuk states in her scientific works that application of EHR method with the help of the device Endohenik – 01 together with physical activity positively influences functional state of the students suffering from bronchial asthma [3; 4].

The results of scientific studies show that use of this model of hypoxia increases functional capacity of respiratory muscles and facilitates easier air passage through the bronchi of a small, medium and large size. Finally, such changes reduce energy consumption for respiratory muscle activity and also create favourable

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

conditions for the better diffusion of gases through alveolar capillary barrier and, consequently, better conditions for the display of aerobic performance of the body appear. What is more, use of Endohenik – 01, as it was stated by some scientists [4, 5], contributes to the increase of red–blood–cell count, saturated with 2,3 – Bisphosphoglycerate which acts as the modulator of haemoglobin in the body. Connected with haemoglobin 2,3 – Bisphosphoglycerate increases oxyhemoglobin dissociation and decreases the risk of oxygen deficiency in the body.

Given all the above mentioned facts, the content of physical education of the students is determined by the requirements of their future profession, thus it has elements of practical professional physical training. Modern data confirm the relevance of specific physical training in the structure of physical education [6; 7]. However, the problem is not studied enough and requires further research.

Use of endogenous hypoxic respiration in the course of training increases functional readiness in terms of physical working capacity, aerobic and anaerobic productivity of the body and functions of the apparatus of external respiration.

The results of some studies show that a one-time use of EHR method causes positive changes in the functioning of the apparatus of external respiration, as reflected in better work of respiratory muscles and air passage through the bronchi of a small, medium and large size [3].

I. V. Hruzevich and Y. M. Furman state that the use of physical exercises together with EHR method in educational training process of teen-swimmers contributes to a high level of aerobic and anaerobic lactate working ability of the body [8].

N. V. Havrylova and Y. M. Furman prove, that the use of EHR method increases the effective influence of physical exercises on anaerobic lactate productivity and physical preparedness, as well as improves physical working ability, aerobic, anaerobic lactate productivity of the body and functional capacity of the apparatus of external respiration [9].

Taking into account the above mentioned facts, we can claim, that integrated use of running exercises and artificially created normobaric hypoxia and hypercapnia with the help of special respiratory devices may be one of the perspective available and effective technologies which are close to educational process in high school.

The **objective of the study** is investigation of the influence of running exercises in a combined regime of energy supply and EHR method on the performance of the students' respiratory system.

Tasks:

1) to define the volume and speed parameters of the respiratory system among the students of the transport college;

2) to evaluate the results of the influence of the programme of running exercises combined with EHR method on the volume and speed parameters of the respiratory system.

Material and Methods of the Study. The research took place in September 2015–April 2016 based on Vinnytsia state pedagogical university. It involved 44 male students. Study methods: theoretical analysis and synthesis of data of scientific methodical literature, methods of mathematical statistics.

In order to study the function of external respiration we applied the method of spirometry. In the course of testing we used an open type spirograf «Cardio Spiro». During the use of an open type Spirograph research participants inhale ambient air which is being exhaled comes to a gas meter that continuously defines the volume of air and oxygen uptake per unit time. Operation of the device started with its preparation in accordance to its manual [5; 3]. Testing was conducted in a position while seated. Before using the device the research participants breathed through a tube connected to the device for one minute with the aim of adaptation. In order to prevent air leak a clamp was placed on the participants' noses [5]. We defined respiratory rate (RR) and also registered volume parameters of external respiration: respiratory volume (RV), respiratory minute volume (RMV), inspiratory reserve volume (IRV), expiratory reserve volume (ERV), Vital capacity (VC), Inspiratory Vital Capacity (IVC), expiratory vital capacity (EVC), maximum lung ventilation (MLV). Volume parameters were recorded along with speed parameters: forced vital capacity (FVC), forced expiratory volume in 1 second (FEV_1), FEV_1/VC (Index Tiffeneau), peak expiratory flow (PEF), momentary expiratory flow through large bronchi (MEF_{25}), momentary expiratory flow through medium bronchi (MEF_{50}), momentary expiratory flow through small bronchi (MEF_{75}) , average expiratory flow through medium bronchi ($MEF_{25–75}$), average expiratory flow through medium bronchi ($MEF_{75–85}$).

The study was conducted in September 2015–April 2016 on the basis of Vinnytsia state pedagogical university and Vinnytsia transport college. It involved 44 male students. They were divided into 2 groups:

control group (CG) and main group (MG). Students of CG exercised in accordance with the «Training programme of physical education for high schools of 1st–2nd accreditation levels» [10]. Students of MG exercised in accordance with the designed program which included running exercises in the mixed regime of energy supply, and also EHR method with «Endohenik-01» [5].

Results of the Study. Discussion. Average volume and speed spirometry parameters of the students of CG and MG, recorded before exercising, didn't differ credibly ($p<0,05$).

After 24 weeks average volume and speed spirometry parameters of CG students aged 15–16 didn't increase credibly in the course of physical training (table 1).

After 24 weeks MG students who exercised in accordance with the integrated programme of running exercises in the mixed regime of energy supply, and EHR method improved their volume and speed spirometry parameters credibly.

Table 1

Influence of Running Exercises in the Mixed Regime of Energy Supply, and EHR Method on the Volume Parameters of External Respiration of Students Aged 15–16

Groups	Spirometry Parameters	Average Value, $\bar{x}\pm S$			
		Before	After 8 Weeks	After 16 Weeks	After 24 Weeks
CG	RR, times	17,59±0,57	17,68±0,63	15,77±1,03	16,27±0,63
MG		16,18±0,4	14,32±0,51*	13,59±0,63*	13,27±0,63*
CG	RV, l	0,64±0,04	0,63±0,04	0,64±0,04	0,64±0,04
MG		0,69±0,04	0,86±0,04*	0,88±0,04*	0,9±0,04*
CG	RMV, $l \cdot m^{-1}$	11,15±0,89	11,05±0,95	10,03±1,18	10,27±0,93
MG		10,96±0,73	12,1±0,69*	11,78±0,7*	11,71±0,71*
CG	IRV, l	2,18±0,22	2,17±0,22	2,19±0,22	2,26±0,22
MG		1,88±0,13	2,4±0,13*	2,5±0,13*	2,61±0,13*
CG	ERV, l	1,37±0,13	1,35±0,13	1,38±0,14	1,49±0,14
MG		1,48±0,15	2,11±0,15*	2,22±0,15*	2,32±0,15*
CG	VC, l	4,19±0,22	4,15±0,22	4,21±0,22	4,39±0,23
MG		4,05±0,25	5,38±0,24*	5,61±0,24*	5,83±0,24*
CG	IVC, l	2,82±0,2	2,8±0,2	2,83±0,2	2,9±0,2
MG		2,57±0,13	3,26±0,14*	3,39±0,14*	3,51±0,14*
CG	EVC, l	2,01±0,14	1,98±0,14	2,02±0,14	2,13±0,14
MG		2,17±0,16	2,97±0,16*	3,1±0,16*	3,22±0,15*
CG	MLV, $l \cdot m^{-1}$	117,05±8,34	116,21±8,22	116,28±8,21	116,36±8,21
MG		116,85±2,49	127,54±2,03*	128,78±2,01*	130,18±1,99*

Note. *Credible difference of value relative to the value registered at the beginning of the shaping experiment: * – $p<0,05$.*

As can be seen in the table 1, after 8 and 16 weeks a spectrum of volume parameters of external respiration improved. Such parameters as RR and RMV compared to the values which were registered before the shaping experiment credibly decreased (RR decreased by 12,99 and 19,06 %, and RMV – by 9,42 and 6,96 %), which demonstrates external respiratory function saving. Students also improved their IRV, ERV, VC, IVC, EVC. Average IRV increased by 21,67 and 24,80 %, ERV by 29,86 and 33,33 %, VC by 24,72 and 27,81 %, IVC by 21,17 and 24,19 %, EVC by 26,94 and 30,00 % ($p<0,05$). The changes in the above mentioned parameters are an indication of the better spare capacity of external respiration system. Members of this group also improved functional capacity of respiratory muscles, which is proved by the increase in MLV by 8,38 and 9,26 % ($p<0,05$). It's worth noting, running classes and EHR method encouraged a higher average value of RV (by 19,77 and 21,59 %).

Speed parameters of external respiration which characterize the ability of bronchi of different sizes to let air through during an exhale, give important information about the influence of running exercises in the mixed regime of energy supply on the functional capacity of respiration systems of the transport college students.

After 8 and 16 weeks students of the MG unlike CG improved their average values of the following parameters: FVC, FEV_1, PEF, MEF_{25}, MEF_{50}, MEF_{75}, $MEF_{25–75}$, $MEF_{75–85}$. The recorded changes in the speed spirometry parameters are an indication of better air passage in different bronchi sections. The average value of FVC, in particular, credibly increased related to primary data by 15,50% and 17,03%, FEV_1 – by 24,40 and 27,63 %, PEF – by 31,43 and 35,61 %, MEF_{25} – by 32,50 and 36,55 %, MEF_{50} – by 28,29 and 33,33 %, MEF_{75} – by 23,08 and 26,47 %, $MEF_{25–75}$ by– 26,04 and 28,64 %, $MEF_{75–85}$ – by 18,00 and 20,39 % ($p<0,05$). It's worth noting, after 16 weeks the value of FEV1/VC increased by 22,89 % (table 2).

Table 2

Influence of Running Exercises in the Mixed Regime of Energy Supply, and EHR Method on the Speed Parameters of External Respiration of Students Aged 15–16

Group	Spirometry Parameters	Average Value, $\bar{x}\pm S$			
		Before	After 8 Weeks	After 16 Weeks	After 24 Weeks
CG	FVC, l	2,98±0,23	2,97±0,23*	3,02±0,23*	3,07±0,23*
MG		2,29±0,1	2,71±0,09	2,76±0,09	2,83±0,09
CG	FEV_1/VC, l	71,29±5,75	71,8±5,86	71,95±5,78	70,22±5,66
MG		64,06±4,8	53,65±2,84	52,13±2,84*	51,12±2,67*
CG	FEV_1, l	2,19±0,25	2,18±0,25	2,24±0,25	2,32±0,25
MG		2,20±0,17	2,91±0,18*	3,04±0,18*	3,16±0,18*
CG	PEF, $l \cdot s^{-1}$	3,31±0,31	3,31±0,31	3,37±0,32	3,42±0,32
MG		2,64±0,27	3,85±0,29*	4,1±0,29*	4,33±0,29*
CG	MEF_{25}, $l \cdot s^{-1}$	3,12±0,3	3,11±0,3	3,15±0,31	3,19±0,31
MG		2,43±0,28	3,6±0,28*	3,83±0,28*	4,07±0,28*
CG	MEF_{50}, $l \cdot s^{-1}$	2,73±0,26	2,73±0,26	2,74±0,26	2,78±0,26
MG		1,80±0,17	2,51±0,17*	2,7±0,19*	2,83±0,19*
CG	MEF_{75}, $l \cdot s^{-1}$	1,57±0,18	1,56±0,18	1,57±0,18	1,64±0,18
MG		1,00±0,07	1,3±0,08*	1,36±0,08*	1,41±0,08*
CG	$MEF_{25–75}$, $l \cdot s^{-1}$	1,99±0,19	1,98±0,19	1,99±0,19	2,03±0,19
MG		1,42±0,11	1,92±0,11*	1,99±0,11*	2,06±0,11*
CG	$MEF_{75–85}$, $l \cdot s^{-1}$	1,32±0,12	1,31±0,12	1,31±0,12	1,32±0,12
MG		0,82±0,04	1,00±0,04*	1,03±0,04*	1,05±0,04*

Note. *Credible difference of value relative to the value registered at the beginning of the shaping experiment : * – $p<0,05$.*

Conclusions. The results of the conducted study indicate that introduction of running exercises in the mixed regime of energy supply into educational process encourages the improvement of volume parameters of respiratory system. Integrated use of EHR method and running exercises promotes better functioning of the apparatus of external respiration due to easier air passage through bronchi of a small, medium and large size, which is proved by the increased values of speed spirometry parameters.

Prospects for further research are to study the influence of running exercises in anaerobic regime of energy supply and EHR method on the parameters of work of cardiovascular system.

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Стаття надійшла до редакції 18.05.2017 р.

УДК 796.011.3:616–001

INJURIES DURING PHYSICAL EDUCATION STUDENTS AS A PEDAGOGICAL PROBLEM

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Abstract

The article focuses on the prevention of trauma in the process of physical education among students of higher educational institutions. It has been determined that pedagogical conditions for the prevention of accidents are the best means of combating injuries. The preventive focus of Ukrainian health care determines the implementation of a set of preventive measures for the preservation and strengthening of human health. These measures include a large-scale system of measures for the prevention of injuries, in particular in the process of physical education.

To achieve this, you need to properly organize the classes, create the necessary conditions for the proper level of physical perfection. Promoting this will be the acquisition of elementary knowledge and skills that prevent injury, serious damage, and deterioration of health. Before performing physical exercises it is necessary to worry about the proper equipment – clothes, footwear, and protective equipment. All components of the sport form must be fitted in accordance with the figure, clean. The neglect of special means of safety is absolutely inadmissible. Nobody needs a reassessment of their physical perfection, the erroneous belief that insuring means of heavy and uncomfortable that they create the impression of lack of genuine courage provoke students to injuries.

The next rule is qualitative warm-up. And this is not a formality, as it often seems to students. Preparatory exercises, presentation of the structure of the previous movements help to bring the nervous system to the optimum state, activate respiration and blood circulation, «warm up muscles» and «scroll» the joints. Man begins to better orient in space, its movements become more economical, internal organs and systems acquire the ability to withstand the most severe mode of physical and neuro-emotional stress.

Key words: prophylaxis, traumatism, physical education, students.

Олег Гребік, Петро Савчук, Олександр Валькевич, Олександр Панасюк, Анатолій Хомич. Травматизм як педагогічна проблема на заняттях із фізичного виховання студентів. У статті висвітлено аспекти попередження травматизму в процесі фізичного виховання серед студентів вищих навчальних закладів. Зазначено, що педагогічні умови профілактики нещасних випадків – кращий засіб у боротьбі з ушкодженнями. Профілактична спрямованість української охорони здоров'я зумовлює проведення комплексу попереджувальних заходів для збереження й зміцнення здоров'я людини. У ці заходи входить величезна за своїми масштабами система заходів із профілактики травматизму, зокрема в процесі фізичного виховання. Для досягнення цієї мети потрібно правильно організовувати заняття, створювати необхідні умови для забезпечення належного рівня фізичної досконалості. Сприятиме цьому набуття елементарних знань і навичок, які запобігають отриманню травм, важких пошкоджень, погіршенню стану здоров'я. Перед виконанням фізичних вправ варто потурбуватися про відповідну екіпіровку: одяг, взуття, захисне спорядження. Усі складники спортивної форми повинні бути підігнані відповідно до фігури, чистими. Нехтувати спеціальними засобами безпеки абсолютно недопустимо. Нікому не потрібні бравада, переоцінка своєї фізичної вдосконалості, помилкова впевненість у тому, що підстраховуючі засоби важкі та некомфортні, вони створюють враження відсутності справжньої мужності, провокують студентів до травматизму. Наступне правило – якісна розминка. І це не формальність, як часто здається студентам. Підготовчі вправи, уявлення структури попередніх рухів допомагають привести в оптимальний стан нервову систему, активізувати дихання та кровообіг, «розігріти м'язи» й «прокрутити» суглоби. Людина починає краще орієнтуватись у просторі, її рухи стають економнішими, внутрішні органи й системи здобувають властивість витримувати найжорсткіший режим фізичних і нервово-емоційних навантажень.

Ключові слова: профілактика, травматизм, фізичне виховання, студентство.

Олег Гребик, Петр Савчук, Александр Валькевич, Александр Панасюк, Анатолий Хомич. Травматизм как педагогическая проблемма в процессе физического воспитания студентов. В статье отражаются аспекты предупреждения травматизма в процессе физического воспитания среди студентов высших учебных заведений Отмечается, что педагогические условия профилактики несчастных случаев являются лучшим средством в борьбе с повреждениями. Профилактическая направленность украинского

здравоохранения обусловливает проведение комплекса предупредительных мероприятий для сохранения и укрепления здоровья человека. В данные мероприятия входит огромная по своим масштабам система мер по профилактике травматизма, в том числе в процессе физического воспитания. Для достижения этой цели нужно правильно организовывать занятия, создавать необходимые условия для обеспечения надлежащего уровня физического совершенства. Способствовать этому будет приобретение элементарных знаний и навыков, которые предотвращают получение травм, тяжелых повреждений, ухудшение состояния здоровья. Перед выполнением физических упражнений следует позаботиться о соответствующей экипировке: одежде, обуви, защитном снаряжении. Все составляющие спортивной формы должны быть подогнаны в соответствии с фигурой, чистыми. Пренебрегать специальными средствами безопасности абсолютно недопустимо. Никому не нужна бравада, переоценка своего физического совершенства, ложная уверенность в том, что подстраховывая средства тяжелые и некомфортные, что они создают впечатление отсутствия подлинного мужества, провоцируют студентов к травматизму. Следующее правило – качественная разминка. И это не формальность, как часто кажется студентам. Подготовительные упражнения, представление структуры предыдущих движений помогают привести в оптимальное состояние нервную систему, активизировать дыхание и кровообращение, «разогреть мышцы» и «прокрутить» суставы. Человек начинает лучше ориентироваться в пространстве, ее движения становятся экономнее, внутренние органы и системы получают свойство выдерживать жесткий режим физических и нервно-эмоциональных нагрузок.

Ключевые слова: профилактика, травматизм, физическое воспитание, студенство.

Introduction. Formulation of problems. On the modernity stage of development of society there is an intesive need of Physical training to increase level of physical endurance, health and protective functions of the body. Together with the development of Physical training is needed to create a secure environment while performing physical exercise, therefore, there is a necessity to create a method which would prevent injuries thus providing the best conditions for physical development. Since exercise can lead to injuries, preventive measures during physical education classes must be primal.

The problem of injuries and their prevention was the subject of research specialists in different areas. Raise issues in their scientific works dealt TJ Antennae, Y. A. Ostroverkha, I. P. Piskun, M. K. Khobzey, D. D. Alks, R. G. Agarkov, B. S. Monks, Z. I. Belousov, P. Statmyen, V. F. Bashkirov, A. A. Gorlov, L. P. Juice, G. McCaul, I. Hrubar. But it was work, which examined the nature of the child's injuries.

The aim of this artical is a theoretical substantiation of pedagogical conditions of prevention of injuries during physical training of university students.

Discussion and the Results of the Study. The relevance of the topic during recent events is not in doubt. In Ukraine, the number of deaths in physical exercise scares. Experts advise always to teach young people physical activity. In their opinion, students have health problems because they are not used to it. But it is well known that physical exercise should be gradual. Accordingly, in such cases, the injury is almost inevitable. However, doctors say the opposite – physical education – not sports, and therefore excessive pressure on physical activity workshops unacceptable because the average health of Ukrainian modern student is much worse than it was 30–40 years ago.

Parents of young students frightened by the tragic events that took place in the modern Ukrainian schools. What should teacher do? He must be on guard. He should create a pedagogical terms all possible measures to prevent the occurrence of injuries in class and be prepared properly to provide first aid when a child needs it.

Physical education in universities is an integral part of studies, which provides the possibility of acquiring each person needs scientifically based knowledge about health and to strengthen the means, methods leisure organization, which provides the possibility of acquiring each person needs scientifically based knowledge about health and to strengthen the means, methods leisure organization, which aims at developing their physical, social and spiritual health I improve physical and mental training to driving long active life and professional activities. The system of physical education of students is based on the principles of personal and differentiated orientation, health priority focus, using traditional and non–traditional forms of motor activity and other forms of physical perfection. The goal of physical education is to form individual aimed at ensuring the required level of essential motor skills and physical qualities; universal values: health, physical, social and mental well–being; education interests and habits of self-study physical education and sport skills of healthy lifestyles and prevention of injuries. Direct management of physical education in high school carries out its leadership. It shall be responsible for the state of physical education, sports and recreation activities in universities. responsibility for health and physical development of pupils; creating conditions for the development of instincts, natural abilities and talents of the young generation of the

spiritual and physical development of physical training facilities; creating the necessary conditions for physical education; classes with students who are classified as health to special medical group; sports and recreational activities in the mode of the day, playing area sports clubs; providing conditions for the implementation of science–based youth quantity of physical activity and its control; ensure regular monitoring of the educational process in physical education; Annual in-depth medical examinations on time; providing the necessary sports equipment and facilities; A systematic analysis of the physical development of students; ensuring compliance with hygiene standards and safety requirements in buildings; Students compliance regime of the day, personal hygiene and social requirements of safe behavior.

Preventive health Ukrainian direction causes a complex of preventive measures to maintain and promote health. As part of these measures in their huge scale system in its measures, on prevention of injuries, particularly in physical education.

To achieve this, you need to properly organize a class, create the necessary conditions to ensure the proper level of physical perfection. Contribute to this acquisition of basic knowledge and skills to prevent injuries, severe injuries, deterioration of health.

Research and practice of physical education shown that regular physical exercise promotes health, improvement of basic systems. However, the execution of motor actions should take place according to certain rules [2; 3; 4]. Failure to observe this leads to a variety of injuries that affect the entire human body.

The first rule – systematic medical examination. The medical opinion on access to do favorite sports type is fundamental. It is not only that the body may have one hidden imbalance. Suppose that a completely healthy student decided to do swimming. In this case, the damage to the teeth, even the most basic, will cause him a lot of trouble while he is in cold water. Some completely healthy people do not tolerate getting water in the ear. Drops of liquid irritant vestibular apparatus. So when you start physical activity classes, you should always get permission physicians.

Second rule – strict adherence to the principles of physical education. Silly example, by hardening join the «winter swimming», learn the basics of athletics marathon run, climb the tower for jumping into the water not knowing how to swim. With each case should be followed logical sequence and order. The new element, complicated exercise should be based on comprehend well learned. Tempo and rhythm can be increased only without overloading the body. A start physical education classes always with small volumes. Besides better deal with 3–4 times a week for 15 minutes than once an hour.

Before exercise should take care of the appropriate gear – clothing, footwear, protective gear. All components of fitness should be adjusted according to the figure clean. Ignore special security measures are absolutely unacceptable. Re-evaluation of their physical perfection, mistaken belief that insurance means heavy and uncomfortable, they give the impression of lack of genuine courage what provoke students to injuries.

Next rule – a quality workout. This is not a formality, as often seems to students. Preparatory exercises, understanding the structure of previous movements help bring in the best condition of the nervous system, enhance blood circulation and breathing, «warm up the muscles» and «scroll» joints. Man begins to better navigate in space, its movements are economical, internal organs and systems acquire properties to withstand the toughest regime of physical and neuro-emotional stress. If you take up sessions and especially to take the start without warming up – be trauma. The student seemed prematurely dooms itself to bruises, bumps, damage to muscles, tendons and so on.

During physical education classes is important to be gathered, careful and cautious. For each topic there are special techniques of self neglect that are necessary.

It is impossible not to mention about another problem that occurs during physical education classes. Sometimes a student is experiencing signs of early disease characterized by headache, fever and weakness. But peers to shame makes him wear a sports uniform and fully implement the program classes. This is detrimental to health, complicates the treatment of the disease and can lead to dangerous complications. There is no alternative! If any ailments exercise is strictly prohibited. Even after recovery playground output must necessarily be allowed by medical examination. Good health does not mean that the body is restored to function fully and danger had passed. The main thesis of medicine and physical education – enhance health, not destroy it!

Injuries at the gym often occurs due to lack of protective devices, handling facilities, poor methodology sessions, the presence of many foreign objects. To prevent accidents steam heating radiators, pipes, wires, stretching must close the grill or shield. The floor should not be slippery. For windows and lamps installed grid, lattice or transparent shields that keep them from ball knocks.

Injuries should be prevented at the classroom and outdoors. Tracks for running, for example, short–distance mark in such way that after the finish there is the reserve for at least 10–15 meters of space. Otherwise, the runner does not have time promptly «knock down» speed. These tracks can be used for takeoff during the course of jumps. Jumping pit in this case is not placed on the finish line, as in racing, but rather in the starting area. Note that it should fill completely clean sand without impurities. Sector for throwing equipped with regard to rocket – ball or grenade – not caused anyone harm, not harm neighboring coverage areas.

All elements of gymnastic towns and places with obstacles polished, covered with waterproof paint. You need to focus on the joints designs. They should not be heads of nails, screws, anything that could cause injury. Diameter metal pipes must be at least 30 mm.

The longitudinal axis playgrounds desirable target in the meridional direction from north to south. Permissible deviations should be not more than + (–) 20 mm. But where with strong winds longitudinal axis area is better positioned perpendicular to the direction of the cold wind. It is important that the surface area ensures rapid runoff of water after rain. This is achieved by coating uniformity entire sports complex and a small inclination of its surface from the center out. Another condition – timely care pads, leveling, garbage collection, leaves, snow, unnecessary items, regular watering in summer.

A special issue – the choice of water activities for practicing physical activity. On the coast, pond, lake, river or pond shore is used, which falls to the smoothest water approach to it must be free from thickets of sedges, reeds, podorosliv; bottom – solid depth – gradually increase. Before the swim, especially before games, jumping into the water, make sure that the bottom free of rocks, snags and other dangerous objects.

You may not swim near a drain dirty water, watering animals, ship berths, places to wash clothes. The control zone of sanitary safety is: river «blue arena» should be removed from the nearest source of contamination is not less than 100 m or above 500–600 m below current; on the pond with neprotochnoyu water at least 200 meters. For those who can not swim deep waters must not exceed 1 m. For diving, the figure depends on the height of the tower or springboard: for 3–meter tower and springboard – at least 3 meters to 5 meters – at least 4 meters to 10 meters –5 meters.

Before visiting the artificial swimming pool helpful to students acquainted with the following information. Existing regulations allow swimming in one lane 50–meter pool at most 15 and 25–meter – no more than 10 people. If the track stretched across the pool, the maximum amount determined by the rate of one per meter length of track. At the bottom of the pool lined with glazed tile dark band that divides the track in half (not the Boundary Line between tracks, as some students). At both ends it has a T-shaped line from which the side of the pool equal to 2 m.

When assessing the depth of the reservoir should be careful because of the refraction of light rays the water depth always seems less than it is. Standing on the edge height of only 30 cm, a person growing 170 cm perceive the object loaded on 50 cm as the first track – at a depth of 45 cm, the second – 30 cm, the third – 22 cm. A false shallowness student who badly floats can cause unhappiness.

In winter, most injuries connected with the freezing weather, piercing wind. Snow and ice tracks should equip arenas in places well protected from wind and snow. Stepping onto the ice ponds and rivers is possible only after it reaches 10–15 cm thick.

It is important to take into account that in mountainous areas in the first 2–3 days after a significant snowfall and avalanches are possible thaw. Sports physical education and sport at that time prohibited [1].

As practice shows, diseases of the musculoskeletal system is much more common in physically prepared students than students with low levels of physical fitness. This is largely associated with a great physical activity in the classroom. A significant percentage of these changes is explained not responsible attitude to treat injuries.

Often the cause of injuries may be a violation of sanitary conditions for sports facilities, sports equipment and faulty equipment. Complications injuries in physical education caused by the lack of skilled care in the first few minutes or even seconds after an accident. Elementary knowledge, skills, timely assistance to victims can significantly improve his condition or even save lives.

Conclusions. Analyzing the scientific literature involuntarily ask yourself the question: Is injuries – an incurable pathology, the presence of which can only be stated. Injuries in physical education among students have been and remain a serious educational problem. Because of injuries occurring loss of working time for first aid and subsequent medical treatment and rehabilitation of victims, «that is unprofitable for the educational process». Pedagogical conditions of Injury prevention is the best way to combat injuries.

Prospects for Further Research in this area lies in determining the state of distribution of injuries during physical training of students.

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Стаття надійшла до редакції 29.05.2017 р.

УДК 796.035

ANALYSIS OF FEATURES OF MOTIVATIONAL PRIORITIES TO RECREATION AND RECREATIONAL ACTIVITIES OF DIFFERENT GROUPS OF PEOPLE

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Abstract

Actuality. The reasons for insufficient focusing on of people's health and their involvement in recreational and healthful activities are due to the lack of motivation of individuals in different population groups, from childhood to maturity. Improving the situation in question requires taking a number of measures that presuppose identifying and creating conditions for the realization of the motives for recreational and healthful activities, involving people in regular physical training during their lives. ***The goal of the research*** is to determine the peculiarities in the motivational priorities of different population groups for recreational and healthful activities. ***Research Results.*** The task of recreational and healthful activities is to make motor activity more meaningful, purposeful in accordance with the individual peculiarities of everyone involved. E. O. Fedorenko suggested the classification of motivational factors for schoolchildren, which can be clustered into 5 groups: informational, individual, educational, informational and communicative, structural and financial. O. E. Likhachev distinguishes three types of motives for recreational and healthful activities in woman's class: motivation by an object as a type of motor activity; motivation by a situation and motivation through partnership. It should be noted that motivational factors for the elderly, according to A.B. Belorusov are rather specific, namely: internal-personal motives, interpersonal motives, motives that operate at the community level. ***Conclusions.*** Due to the investigation of the motivation for recreational and healthful activities of different population groups, the absence of a unified, integrated system for the development of motivational priorities throughout life, from childhood to maturity has been found out. Each age period has its own specific features depending on conditions and environment, on the level of health and support of family members and friends, on the opportunities to learn and develop individually, on the level of satisfaction and the perception of environment.

Key words: motivation, recreational and healthful activity, different population groups, recreation.

Ганна Гакман, Анжела Ведмідь, Юрій Мосейчук, Вадим Мужичок. Аналіз особливостей мотиваційних пріоритетів до рекреаційно-оздоровчої діяльності різних груп населення. ***Актуальність.*** Причинами недостатньої орієнтації на здоров'я людей і їх залучення до рекреаційно-оздоровчої діяльності є недостатня мотивація осіб різних груп населення з дитинства й до старості. Подолання такої ситуації потребує вжиття низки заходів, які передбачають виявлення та створення умов для реалізації мотивів рекреаційно-оздоровчої діяльності, залучення населення до регулярних занять фізичними вправами протягом життя. ***Мета дослідження*** – визначити особливості мотиваційних пріоритетів до рекреаційно-оздоровчої діяльності різних верств населення. ***Результати досліджень.*** Завдання рекреаційно-оздоровчої діяльності полягає в тому, щоб зробити активну рухову діяльність більш осмисленою, цілеспрямованою, такою, що відповідає індивідуальним особливостям кожного, хто займається. Е. О. Федоренко запропонувала класифікацію мотиваційних факторів, для школярів, які можна об'єднати в п'ять груп: інформаційні, індивідуальні, освітні, інформаційно-комунікативні структурно-фінансові. О. Е. Лихачов виокремлює три типи мотивів занять рекреаційно-оздоровчою діяльністю жінок: мотивація об'єктом виду рухової активності; мотивація ситуації й мотив через партнерство. Потрібно зазначити, що мотиваційні фактори для осіб похилого віку, на думку А. В. Бєлорусова, досить специфічні, а саме: внутрішньоособистісні мотиви, міжособистісні мотиви, мотиви, що діють на рівні спільнот. ***Висновки.*** У результаті досліджень мотивації до рекреаційно-оздоровчої діяльності різних груп населення виявлено відсутність єдиної взаємодоповнювальної системи розвитку мотиваційних установок протягом життя – із дитинства до старості. Кожен віковий період має свої особливості залежно від умов та оточення, рівня здоров'я й підтримки близьких, можливостей навчатися та розвиватись особисто, рівня отримання задоволення й світосприйняття довкілля.

Ключеві слова: мотивація, рекреаційно-оздоровча діяльність, різні групи населення, рекреація.

Анна Гакман, Анжела Медведь, Юрий Мосейчук, Вадим Мужичок. Анализ особенностей мотивационных приоритетов к рекреационно-оздоровительной деятельности разных групп населения. ***Актуальность.*** Причинами недостаточной ориентации на здоровье людей и привлечение их к рекреационно-

оздоровительной деятельности является недостаточная мотивация лиц различных групп населения с детства и до старости. Преодоление этой ситуации требует принятия ряда мер, которые предусматривают выявление и создание условий для реализации мотивов рекреационно-оздоровительной деятельности, привлечения населения к регулярным занятиям физическими упражнениями в течение жизни. ***Цель исследования*** – определить особенности мотивационных приоритетов к рекреационно-оздоровительной деятельности разных слоев населения. ***Результаты исследований.*** Задачи рекреационно-оздоровительной деятельности заключается в том, чтобы сделать активную двигательную деятельность более осмысленной, целенаправленной,такой, которая бы соответствовала индивидуальным особенностям каждого занимающегося. Е. А. Федоренко предложила классификацию мотивационных факторов, для школьников, которые можно объединить в пять групп: информационные, индивидуальные, образовательные, информационно-коммуникативные, структурно-финансовые. А. Е. Лихачев выделяет три типа мотивов занятий рекреационно-оздоровительной деятельностью женщин: мотивация объектом вида двигательной активности; мотивация ситуации и мотив через партнерство. Следует отметить, что мотивационные факторы для лиц пожилиго возраста, по мнению А. В. Белоруссова, являются весьма специфическими, а именно: внутренне-личностные мотивы, межличностные мотивы, мотивы, действующие на уровне сообществ. ***Выводы.*** В результате исследований мотивации к рекреационно-оздоровительной деятельности разных групп населения выявлено отсутствие единой взаємодополняющей системы развития мотивационных установок на протяжении жизни – с детства до старости. Каждый возрастной период имеет свои особенности в зависимости от условий и окружения, уровня здоровья и поддержки близких, возможностей учиться и развиваться лично, уровня получения удовольствия и восприятия окружающей среды.

Ключевые слова: мотивация, рекреационно-оздоровительная деятельность, различные группы населения, рекреация.

Introduction. Motivation presents the realized reason of activity aimed at achieving this goal and it is a priority for the organization of recreational and recreational activities [12]. Motivation is not constant, it varies depending on the environment. Creating positive conditions greatly increases motivation and provides the challenges health activities [4; 7; 9].

Researches (R.V Bibik, 2010; M. Vylenskyy, 1981; EP Ilyin, 2002 et al.) show that the needs, motivations and interests in physical education have their age features are related to psychological development, social formation of personality, temperament, socio-economic conditions. However, in the literature there are no data that allow to identify factors influencing the motivation of physical self-improvement, incentives for regular exercise according to individual and typological features of the nervous system, socio-economic conditions of organizational and methodological conditions for recreation and recreational activities of different groups in all regions of Ukraine. Addressing these issues will improve the organizational and methodological basis for the organization of recreational activities of different sectors of the population, increasing the level of health and quality of life in Ukraine.

The research is performed in accordance with the plan of the research work of the department of physical culture and health basics of Chernivtsi National University. According to the department theme «Theoretical and methodological foundations of physical education and sport and training of the field» Physical education, sport and health». State registration number – 01091/002723.

The Aim of the Study. To identify features of motivational priorities to the recreational and health activities of various population groups.

Methods: method of analysis and synthesis, induction and deduction, comparison and synthesis.

Results and Discussion. One of the ways to improve recreational and health activities is to develop students motivation to complete self-study. Motivational sphere of students, their attitude to different activities and manifestation of activity in the classroom is basically defined by their needs and appropriate goals. Formation of motivational attitudes of activity begins in the childhood, and this process affects a large number of factors both external and internal. Formation of full motivation to studies is one of the ways to increase the efficiency of physical education, sports and recreational activities of students.

The structure of the motives and factors that influence their formation differs by age and sex specific. Comparative analysis of the structure of motivation of adolescents showed that there are expressed age-related features that should consider the organization of recreational and health activities [11].

Students are so busy that they just do not have time for recreation and fitness classes. And it is because of the large workload students lead a sedentary lifestyle. In secondary schools the necessary level of motor activity almost is never reached. Lack of meaningful motor activity (physical inactivity) inevitably leads to irreparable losses in physical development, weakening the body's defenses and serious health problems.

The essential pedagogical conditions that contribute to the maintenance and development of deep sustained interest of students to physical training are: a variety of means, methods and ways of organizing

students in class; the use of competitive gaming and techniques to improve studied stage movements; providing clear, accurate, in-depth understanding of the importance of students each academic topics section of the program; setting specific tasks manageable for students learning and training; using of non-standard equipment and equipment; encouraging students to self-exercise at school time, using a system of rewards and others. Interest in physical culture passes through the mastery of knowledge and skills exercise, sports, satisfying needs, consistent theme, create a positive mood. Positive interest in physical training is defined as a form of cognitive orientation of the individual in terms of knowledge (sociocultural experience in physical development and improving human capabilities of their own physical self in close connection with the spiritual culture) [14].

There are different ways to motivate young people to exercise, demonstrating positive effects of physical activity; interest in new business; interesting forms of breakout sessions; opportunity to assert themselves in the environment and in competition with others; the opportunity to have a beautiful body; be healthy and attractive externally; career development opportunities; imitation idol; analyzing, together with friends, interesting and useful entertainment and more.

The success of the process of formation of motivation of senior pupils to specially organized motor activity depends on the orientation of the educational process, it has characteristic differences, depending on the priorities of the institution and features organizational and methodological conditions institution. The initial concept of the nature of motivation of pupils to specially organized motor activity are the main reasons that high school students guide in their actions, desires in terms of academic and extracurricular physical activities. Study of factors influencing the motivation of senior pupils to specially organized motor activity determines the structure of motivation.

The main motivation of exercise includes are improving sports training classes to enjoy physical activity, participation in sports competitions, health improving, harmony of physique, normalizing of body weight, self-assertion, active leisure, socializing with friends. Research has established that there are many factors influencing the motivation of high school students to a specially organized motor activity very.

E. O Fedorenko [17] proposed a classification of these factors by which they can be divided into 5 groups: information, personal, educational, informational communication structural and financial.

The first group of factors includes the information of required knowledge gained at the lessons of the physical education about the positive effect of physical activity on human health, as well as the impact of physical activity on the sound quality of life, physical and mental condition.

A group of individual factors includes gender and age characteristics of students, their desire to do, tastes and interests, this group of factors are extremely important and it is one of the priorities in the formation of motivation for physical activity.

The group innovative communication combines factors are fashion and advertising which in the vast majority of youth do not convey the correct setting for a healthy lifestyle, the term «successful person» through fashion and advertising today does not associates in young people with the concept of «harmonious development of person» that is a negative factor.

Factors such as socializing with friends, associations and youth organizations certainly have a great impact on the formation of motivation of senior pupils to physical activity.

The group of structural and financial factors includes: family material status, availability of developed infrastructure of schools and sections in various sports, finance of sports schools for youth.

Educational factors include education of the family and features of educational and organizational process of educational institutions and it certainly have a great influence on the formation of motivation of senior pupils to physical activity. .

The main tool in the implementation of personal reasons and serves the needs of students is the use of educational technology, sports and recreational and health orientation with regard to their health, physical fitness, motivational and psycho-emotional features. That's why technology of motivation needs is determined by many factors: ethnic and cultural traditions and climatic features of territory of residence, specific joint activities, etc. [16].

According to Yu Moseychuk [16], the preferred initial motivation courses of students are «health promotion» (33,5 and 33,4 %) and, characteristically, the largest percentage falls on first year girls students (52 %). Quite high indices have first year g students, and the second year students of motive «interesting free time» (17,0 and 16,8 %). The characteristic feature is a measure of «education volitional qualities» of girls where its indication is zero. In second year, and compared with the first year increases index of motive

«communication with their peers,» indicating that the gradual adaptation of new students to living and studying.

The complex measures to improve and maintain the motivation of recreation and recreational activities, according to E. V. Andreeva [3] should include: accounting fitness and recreational interests of the population; then the analysis of the reasons reasons that motivate people to exercise. Formation of motivation is influenced by external and internal factors related to the implementation of human needs. In his studies, O. E. Likhachev [15] distinguishes three types of motives of recreational classes and recreational activities of women: motivation of the object of motor activity (fashion, popular form of motor activity) M**o**tivation by the situation is realization that the health is lost, something must be done, and motivation through partnership – a friend does that, and I can try, because it is quite difficult for women of this age to decide to start classes without external support. Types of motives that prevail at the start of of physical activity classes determines the specifics of this of activity types it is the basis in determining ways to maintain the interest of women in recreational and recreational activities.

According to some authors [2; 8; 9; 10], little attention is paid to the involvement of elderly people to recreation and recreational activities, especially the study of motivational priorities. It is this age group can that serve a good role model for all age groups. Quite important is the fact that consideration of behavioral factors that influence on the decision of people the to change the style and way of life, believing that knowledge of these determinants and their integration in the development of appropriate policy measures will provide the implemented measures with more focused character and improve their effectiveness (table 1) [11].

Table 1

Factors that Encourage Seniors to Enhance Lifestyles

Groups of Factors	Characteristic
Intra-personal motives	Improving the health (physical and mental), combating diseases, weight loss, improve overall health, enjoyment of physical activity, its competitive nature
Interpersonal motives	Support for the family, colleagues, friends, meeting new people, socializing during workout
Motives acting at Community level	Institutional incentives: the nature of the program (collective action, music), environmental parameters, motivational interviewing. Financial Incentives: a reward for participating in the program, free software or programs with low price, volunteering

So determinants of motor activity of older people are quite large. Studies show that many of them can be given a positive external influence both through improvement of the environment according to the needs of older people and by organizing appropriate programs, taking into account the identified factors.

Conclusions and Perspectives for Further Research. As a result of studies of motivation to recreation and recreational activities of various groups the lack of a unified system of complementary motivational systems throughout life, from childhood to old age is identified. Each age period is different depending on the conditions and environment, the level of care and support of relatives opportunities to learn and develop personally, the level of enjoyment and outlook of the environment. It is found that motivation is based on external and internal factors. Moreover, the data components of motivation must exist in the dialectical unity. Further research should be directed at studying the motivational structures of different sections of the population as a whole system.

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Стаття надійшла до редакції 03.05.2017 р.

УДК 796.011.3:371.71–057.875

THE ASSESSMENT OF STUDENTS' PHYSICAL SHAPE IN THE CONTEXT OF PHYSICAL EDUCATION MODERNIZATION

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Abstract

The Urgency of the Research. The prospect of modernization of the process of physical education in higher educational establishments and the improvement in students' physical shape is made by providing with football classes as a part of campus sports club activity. ***The aim of the Research*** – is to analyze and to assess the students' physical shape in the context of the modernization of current physical education in higher educational establishments by means of campus football sport club classes. ***Results of the Research.*** It is specified that a low level of physical fitness and middle level mostly were natural for students of the control group while students of the experimental group were characterized by the sufficient and high levels. None of the students of both groups had more than middle and high levels of the somatic health. 43,75 % of students in the control group and 31,25 % of students in the experimental group are characterized by a low level of the somatic health. Students in the experimental group are characterized by better statistical average rates of physical ability than students in the control group. According to the defined grading levels of physical ability, none of the students had low or high-level rates. Rates of health and fitness physical activity in experimental group students were accurately higher than in control group students. ***Conclusions.*** Campus football sport club classes have more influence on the physical shape of student youth, i.e. improve the level of physical fitness, somatic health, health and fitness physical activity and physical ability in general.

Key words: physical education, physical shape, physical fitness, somatic health, physical ability, physical activity.

Валерій Григор'єв, Валерій Смульський. Оптимізація фізичного стану студентів у компонентах модернізації фізичного виховання. ***Актуальність.*** Перспектива модернізації процесу фізичного виховання у ВНЗ та покращення фізичного стану студентів убачається у впровадженні заняття футболом у рамках секційної роботи. ***Мета дослідження*** – здійснити аналіз й оцінку фізичного стану студентів у контексті модернізації сучасного фізичного виховання у вищих навчальних закладах засобами секційних занять футболом. ***Результати роботи.*** Установлено, що низький рівень фізичної підготовленості й, більшою мірою, середній характерні для студентів основної групи, тоді як студентам групи порівняння здебільшого властиві достатній і високий рівні. Жодному студенту обох груп не був характерний вищий від середнього та високий рівні соматичного здоров'я. 43,75 % студентів основної групи та 31,25 % – групи порівняння властивий низький рівень соматичного здоров'я. Студенти групи порівняння характеризувалися кращими середньостатистичними показниками фізичної працездатності, ніж студенти основної групи. У жодного студента, згідно з установленою градацією рівнів фізичної працездатності, не виявлено показників на низькому та високому рівнях. Показники фізкультурно-оздоровчої рухової активності в представників групи порівняння виявилися достовірно вищими, ніж у студентів основної групи. ***Висновки.*** Секційні заняття з футболу мають більший вплив на фізичний стан студентської молоді, а саме покращують рівні фізичної підготовленості, соматичного здоров'я, фізкультурно-оздоровчої рухової активності й фізичної працездатності в цілому.

Ключові слова: фізичне виховання, фізичний стан, фізична підготовленість, соматичне здоров'я, фізична працездатність, рухова активність.

Валерий Григорьев, Валерий Смульский. Оптимизация физического состояния студентов в компонентах модернизации физического воспитания. ***Актуальность.*** Перспектива модернизации процесса физического воспитания в вузах и улучшения физического состояния студентов усматриваются во внедрении занятия футболом в рамках секционной работы. ***Цель исследования*** – провести анализ и оценку физического состояния студентов в контексте модернизации современного физического воспитания в высших учебных заведениях средствами секционных занятий футболом. ***Результаты работы.*** Установлено, что низкий уровень физической подготовленности и, в большей степени, средний характерные студентам основной группы, тогда как представителям группы сравнения в большинстве случаев характерны достаточный и высокий уровни. Ни одному студенту обеих групп не был характерен выше среднего и высокий уровни соматического здоровья. Для 43,75 % студентов основной группы и 31,25 % – группы сравнения присущий низкий уровень соматического здоровья. Студенты группы сравнения характеризовались лучшими среднестатистическими показателями физической работоспособности, чем студенты основной группы. Ни в одного исследуемого, согласно

установленной градации уровней физической работоспособности, не обнаружили показателей на низком и высоком уровнях. Показатели физкультурно-оздоровительной двигательной активности у студентов группы сравнения оказались достоверно выше, чем у студентов основной группы. ***Выводы.*** Секционные занятия по футболу имеют большее влияние на физическое состояние студенческой молодежи, а именно улучшают уровни физической подготовленности, соматического здоровья, физкультурно-оздоровительной двигательной активности и физической работоспособности в целом.

Ключевые слова: физическое воспитание, физическое состояние, физическая подготовленность, соматическое здоровье, физическая работоспособность, двигательная активность.

Introduction. At the current stage of the development of the sovereign Ukraine and the rebirth of its national education a matter of health maintenance and promotion of students is an important cultural, educational, economic, social and political problem. Many types of research prove that the level of the physical shape of student youth during the study in higher educational establishments has a steady trend toward its decline.

According to our observations and numerous results of other researches the programme of physical education in higher educational establishments which is standardized by the content and volume of obligatory credit hours of a curriculum unfortunately cannot completely provide the complex of tasks as to the physical fitness, mental and spiritual development of students (H. L. Kryvosheieva, 2001, V. V. Hanshyna, 2011) [1;2].

As scientists prove the cause of this is the lack of physical activity of students during the period of study in the higher educational establishment (S. V. Perevierzieva, 2012, L. Pokotilo, R. Bentsak, 2015) [3;4]; reduced credit hours in physical training (N. Zavydivska, I. Opolonets, 2010) [5]; lifestyle (V. O. Hruzhevskyi, 2014) [6]; insufficient system of physical education (T. Iu. Krutsevych, 2008) [7].

Scientists emphasize that a traditional system of physical education is not able to effectively influence the development of individual physical abilities, the formation of professionally–oriented physical learning skills of students.

The Cabinet of Ministry of Ukraine issued the decree of 25 September 2015 № 1/9–459 as to the development and modernization of the physical education of students in higher educational establishments and provided recommendations to maintain physical education in higher educational establishments by means of four forms of teaching: campus sports clubs, professionally–oriented, traditional and individual.

Scientists considers that the prospect of the development of the process of the physical education can be made by campus sport club work (A. Tsyos, 2008, Zh. L. Kozyna, L. N. Barybina, L. V. Hryn, 2010) [8; 9] and various sports and physical activities that can be recommended to students to improve the health level. The leading place belongs to different sports games specifically football (H. Lysenchuk, 2003, V. Kostiukevych, 2006, Z. Ordzhonikidze, 2008, D. V. Bondariev, 2009) [10].

Taking into account the analysis of scientific and methodical resources it is still a topical problem to find out effective methods, means, and forms of physical education to optimize a physical shape of students in higher educational establishments.

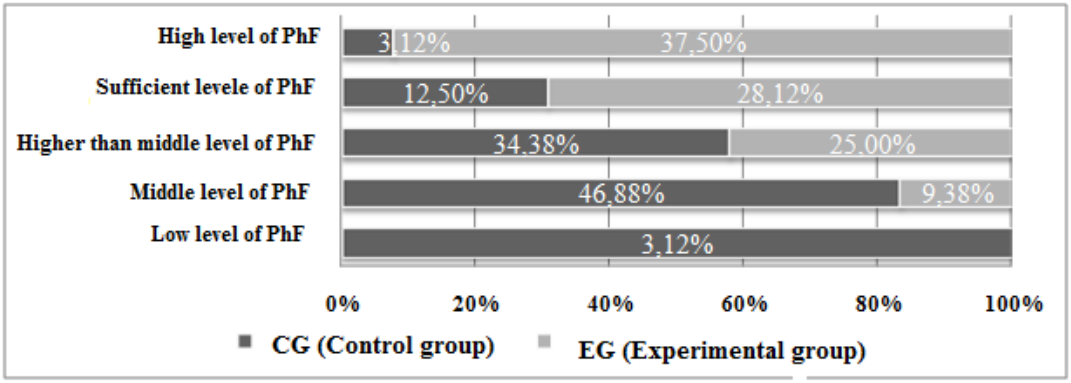
The aim of the research: to make the analysis and the assessment of a physical shape of students in the context of the modernization of current physical education in higher educational establishments by means of campus football sport club classes.

Study Material and Methods of the Research. The research of a physical shape of students was made at Kherson State University from December 2015 until June 2016. 1st, 2nd, 3rd– year male students took part in this research who attended traditional forms of physical education lessons (CG – control group n1=32) and male students who attend campus football sport club classes as a part of physical education in higher educational establishments (EG – experimental group n2=32).

It was defined a physical fitness (PhF) (L. P. Serhiienko's battery testing); quantitative outcomes of the somatic health (SH) (H. L. Apanasenko's method); physical activity index (PhAI) (O. S. Kuts's method); physical ability (Harvard step test – IHST) [11; 12; 13].

The results of the research. Discussion. To solve tasks of the experiment and to assess objectively students physical shape rates it was researched the outgoing data of physical fitness level. Control system was made up of the following 12 exercises for different physical qualities, results of which are given in the chart 1 and picture 1.

In general, it is possible to point out that results of tasks for PhF level were better in EG than in CG.



Pic. 1. *Level Rates of the Physical Fitness Among 1–3 Year Male Students (%)*

It is specified that a low level of PhF was natural for CG only and it was 3,12 % out of the total number. The middle level was common to 46,88 % of CG students and 9.38% EG students; the sufficient level was observed in EG (28,12 %) more than in CG (12,50 %). The high level was natural for students of CG but only 3,12 % while EG students showed 37,50 % of the total number. Higher than middle level was found in MG (34,38 %) and EG (25,0 %) (table 1).

Table 1

Physical Fitness Rates Among 1–3 Year Students (in %, each Standard Separately)

№	Test Vontent for Physical Fitness	Groups	Average Value, in %	Mx ± Smx	in CG n1=32, in EG n2=32	Rate for t Criterium of a Student	Statistical Variance (P)
1	50 meter race, *(sec)*	CG	49,62	7,38 ± 0,07	32	4,341	p < 0,001
		EG	54,50	7,03 ± 0,04	32		
2	100 meter race, *(sec)*	CG	68,90	14,33 ± 0,15	32	3,316	p < 0,01
		EG	82,46	13,75 ± 0,09	32		
3	1000 meter race, *(sec)*	CG	52,25	3,48.15 ± 2,42	32	12,07	p < 0,001
		EG	89,43	3,09.42 ± 2,14	32		
4	Shuttle run 4x10 m, *(sec)*	CG	64,31	9,55 ± 0,14	32	3,821	p < 0,001
		EG	71,84	8,82 ± 0,13	32		
5	Zigzag run, *(sec)*	CG	63,87	22,88 ± 0,23	32	1,822	p > 0,05
		EG	70,00	22,30 ± 0,22	32		
6	Push-ups, *(times)*	CG	75,84	42,09 ± 3,20	32	0,433	p > 0,05
		EG	73,59	40,0 ± 3,62	32		
7	Chin-ups, *(times)*	CG	60,34	11,93 ± 1,10	32	1,238	p > 0,05
		EG	68,43	13,90 ± 1,15	32		
8	Crunches for 30 sec, *(times)*	CG	58,34	27,46 ± 0,55	32	2,040	p < 0,05
		EG	61,46	28,87 ± 0,42	32		
9	Standing long jump, *(cm)*	CG	50,87	228,37 ± 3,66	32	2,553	p < 0,05
		EG	55,32	239,35 ± 2,26	32		
10	Vertical jump, *(sm)*	CG	74,21	80,09 ± 1,79	32	2,108	p < 0,05
		EG	89,40	85,00 ± 1,49	32		
11	Maximum trunk flexion, *(sm)*	CG	59,56	14,90 ± 0,76	32	3,149	p < 0,01
		EG	63,68	17,93 ± 0,59	32		
12	Wrist dynamometry (right-left hand/in kg)	CG	35,50	37,68 ± 1,19	32	1,315	p > 0,05
		EG	38,28	39,93 ± 1,23	32		

Among numerous methods of the assessment of the somatic health, we used a famous one which was made by a professor H.L. Apanasenko [12]. Results of the research are given in the table 2. The analysis of the dynamics of somatic health rates in CG and EG showed that statistical variances are mostly absent (p>0,05).

Table 2

Quantitative Outcomes of the Somatic Health Among 1–3 Year Students

№	Quantitative Outcomes of the Somatic Health	Groups	Mx ± Smx	In CG n1=32, In EG n2=32	Rate for t Criterium of a Student	Statistical Variance (P)
1	Broca–Brugsh height weight index (H–W)	CG	68,75 ± 0,89	32	0,784	p > 0,05
		EG	69,57 ± 0,55	32		
2	Quetelet weight height index (W–H)	CG	401,06±13,80	32	0,900	p > 0,05
		EG	415,02 ± 7,07	32		
3	Quetelet body mass index in kg/m^2	CG	22,89 ± 0,78	32	0,668	p > 0,05
		EG	23,47 ± 0,38	32		
4	Robinson economization reserve criterion (ERC)	CG	93,71 ± 1,70	32	2,503	p < 0,05
		EG	87,90 ± 1,58	32		
5	Power index (PI) Wrist dynamometry	CG	37,68 ± 1,19	32	1,315	p > 0,05
		EG	39,93 ± 1,23	32		
6	Pinje body shape index (BSI)	CG	16,95 ± 1,31	32	0,623	p > 0,05
		EG	15,88 ± 1,11	32		
7	Chest proportion index (CP)	CG	52,59 ± 0,79	32	2,536	p < 0,05
		EG	50,12 ± 0,57	32		
8	Vital capacity (VC)	CG	59,61 ± 1,61	32	1,675	p > 0,05
		EG	56,40 ± 1,04	32		
9	Heart rate recovery time after 20 squats in 30 seconds using test of Martine	CG	150,31 ± 5,12	32	4,129	p < 0,001
		EG	122,81 ± 4,26	32		
10	Recovery process after loads using Ruffier test	CG	11,89 ± 0,41	32	0,572	p > 0,05
		EG	11,55 ±0,43	32		

The analysis of the somatic health rates in CG and EG showed that statistical variances are mostly absent (p>0,05). Thus having researched the level of students' somatic health using H. L. Apanasenko's recommendations we have the following results: by weight–height index (W–H) the best result is among male students of CG which on the average was 401,06±13,80 g while EG male students had 415,02±7,07 g (t=0,90, p>0,05). By vital capacity index (VC) the result was also better in CG and was 59,61±1,61 ml/kg, while in EG – 56,40±1,04 ml/kg (t=1,675, p>0,05). The rate of economization reserve criterion (ERC) by Robinson was better in EG and was on the average 87,90±1,58 conventional units, while in CG – 93,71±1,70 conventional units (t=2,503, p<0,05). Power index (PI) was better in EG and its rate was on the average 39,93±1,23 %, while in CG this rate was 37,68±1,19 % (t=1,315, p>0,05).

As to the recovery process after loads using Ruffier index it was the relevantly high rate in EG 11,55±0,43 conventional units while in CG 11,89±0,41 conventional units (t=0,572, p>0,05).

As to the proportion of the somatic health (SH) according to the specified standards it was found out the following: a low level is natural for 43,75 % of students in CG and 31,25 % of students in EG; the level lower than the middle one was natural for 43,75 % of students in CG and 50,0 % of students in EG; a middle level was observed in CG (12,5 %) and in EG (18,75 %). None of the students of both groups had higher than a middle level and a high level of the SH.

By means of additional indexes we also made the research of the somatic health. Thus rates for Broca–Brugsh height weight index (H–W) was on the average 69,57±0,55 in EG while in CG it was 68,75±0,89 (t=0,784, p>0,05). Quetelet body mass index was better in CG (22,89±0,78 kg/m²) in comparison with EG 23,47±0,38 kg/m² (t=0,668, p>0,05).

Pinje body shape index (BSI) we point out that EG students have 15,88±1,11 conventional units, while in CG – 16,95±1,31 conventional units (t=0,623, p>0,05).

Chest proportion index (CP) rate was 50,12±0,57 conventional units while in CG – 52,59±0,79 conventional units (t=2,536, p<0,05). Heart rate recovery time using test of Martine was reliably higher (t=4,129, p<0,001), in EG (122,81±4,26 c), while in CG (150,31±5,12 c).

Thus having analyzed additional indexes it is possible to conclude that the level of the somatic health was better in EG than in CG.

The comparative characteristic of the physical ability of the 1–3 year students using Harvard step test (IHST) showed that both CG and EG students do not have high results; in CG an average rate was 70,09±1,04 conventional units while in EG – 72,71±1,10 conventional units (t=1,731, p>0,05). In general, the physical ability of students in EG who attend campus football sport club classes was better than CG students who attend traditional physical training classes.

To define physical activity index (PhAI) we used the method of a weekly timing system designed by O. S. Kuts [5]. The results of a weekly timing system afford us to confirm that the differences in rates of the general physical activity in both groups are not critical. Thus CG students had on the average such a PhAI rate as 18,36±0,24 conventional units while in EG – 17,78±0,25 conventional units (t=1,674, p>0,05). As to the health and fitness activity, its rate in CG is much less (4,89 ± 0,34 conventional units) comparing with EG (9,44 ± 0,45 conventional units). The accuracy was t=8,067, p<0,001.

Conclusions and Perspectives for Future Research. It was proved that campus football sport club classes have a great impact on the physical shape of student youth, specifically improve the level of physical fitness, somatic health, health and fitness activity and physical ability in general. Conducted research does not use up all the possibilities and problems connected with the modernization of the physical education of students in higher educational establishments. That's why the directions for future research are the following: the development and implementation of innovative approaches as to the core models or the combination of various forms of the physical education; the assessment of their potential.

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Стаття надійшла до редакції 19.05.2017 р.

УДК 796.853.26-053.5

PHYSICAL FITNESS OF CHILDREN FROM 10 TO 15 YEARS WHO ARE ENGAGED IN KYOKUSHIN KARATE

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Abstract

The relevance of the study is caused by the lack of data in content and organization of training process in Kyokushin Karate and impact on the physical fitness of children 10–15 years old. ***Purpose:*** to determine the effect of Kyokushin Karate on the physical fitness of children aged 10–15 years. ***Methods*****:** analysis and synthesis of scientific and technical literature; summarizing advanced practices of training children karate; pedagogic observation of a training activities and pedagogical experiment; examination tests; methods of mathematical statistics. We have found that practicing Kyokushin Karate has a significant impact on the development of all the physical qualities of children 10–15 years. Training karate youngsters in macrocycle includes the development and improvement of all aspects of general and special training and meets the principles of sports training. The obtained data show that children who are involved in Kyokushin Karate have high–speed movements for applying powerful strikes by their arms and legs. This is achieved by special training, which includes a large variety of exercises using different kinds of equipment: med balls, rubber loops, dumbbells, skipping ropes, boxing paws, pads and others. ***Conclusions*****:** it was determined that the level of physical fitness of children 10–15 years who are engaged in Kyokushin Karate for the year is reliably increasing, especially in the performance strength ($p < 0,01$), endurance ($p < 0,01$), dexterity ($p < 0,01$) and velocity ($p < 0,01$), which is caused by a corresponding amount of the training sessions with the complex challenges; set probable kick speed increase by the right hand in the 11–13 years old children ($p<0,05$), by the left hand in the 14–15 years old children ($p<0,05$), by the right foot in all age groups ($p < 0,01$) and left foot in 11–13 ($p<0,01$) and 14–15 ($p<0,05$) years old children, which indicates a high level of special preparedness of children 10–15 years old who are engaged in Kyokushin karate.

Key words: Kyokushin Karate, physical preparedness, children of 10–15 years old, physical fitness equipment, physical qualities.

Світлана Калитка, Нінель Мацкевич, Валерій Кузнєцов, Анастасія Повєткіна, Василь Шевчук. Фізична підготовленість дітей 10–15 років, які займаються Кіокушин-карате. *Актуальність дослідження* зумовлена відсутністю даних про зміст та побудову тренувального процесу в Кіокушин-карате й впливу на фізичну підготовленість дітей 10–15 років. ***Мета –*** визначити вплив Кіокушин-карате на фізичну підготовленість дітей віком 10–15 років. ***Методи –*** аналіз й узагальнення науково-методичної літератури; узагальнення передового практичного досвіду підготовки дітей-каратистів; педагогічні спостереження за тренувальною діяльністю та педагогічний експеримент; контрольні тести; методи математичної статистики. Нами встановлено, що заняття Кіокушин-карате має значний вплив на розвиток усіх фізичних якостей дітей 10–15 років. Підготовка юних каратистів у макроциклі включає розвиток та вдосконалення всіх сторін загальної й спеціальної підготовленості та відповідає всім принципам спортивного тренування. Отриманні дані показують, що діти, які займаються Кіокушин-карате, володіють високою швидкістю рухів для нанесення потужних ударів руками й ногами. Усе це досягається спеціальною підготовкою, яка включає велику кількість різноманітних вправ із застосуванням різних предметів: метболи, резинові петлі, гирі, скакалки, лапи, пади та ін. ***Висновки.*** Визначено, що рівень фізичної підготовленості дітей 10–15 років, які займаються Кіокушин-карате, протягом року вірогідно зростає, особливо за показниками сили ($p<0,01$), витривалості ($p<0,01$), спритності ($p<0,01$) та швидкості ($p<0,01$), що зумовлено відповідним тренувальним обсягом занять із комплексним виконанням завдань; установлено вірогідний приріст швидкості ударів правою рукою в дітей 11–13 років ($p<0,05$), лівою рукою – у дітей 14–15 років ($p<0,05$), правою ногою – у всіх вікових груп

(p<0,01) і лівою ногою – у дітей 11–13 років (p<0,01) та 14–15 років (p<0,05), що свідчить про високий рівень спеціальної підготовленості дітей 10–15 років, які займаються Кіокушин-карате.

Ключові слова: Кіокушин-карате, фізична підготовленість, діти 10–15 років, засоби фізичної підготовки, фізичні якості.

Светлана Калитка, Нинель Мацкевич, Валерий Кузнецов, Анастасия Поветкина, Василий Шевчук. Физическая подготовленность детей 10–15 лет, которые занимаются Киокушин-каратэ. *Актуальность исследования* обусловлена отсутствием данных о содержании и построении тренировочного процесса в Киокушин-каратэ и влиянии на физическую подготовленность детей 10–15 лет. ***Цель –*** определить влияние Киокушин-каратэ на физическую подготовленность детей 10–15 лет. ***Методы –*** анализ и обобщение научно-методической литературы; обобщение передового практического опыта подготовки детей-каратистов; педагогические наблюдения за тренировочной деятельностью и педагогический эксперимент; контрольные тесты; методы математической статистики. Нами установлено, что занятия Киокушин-каратэ имеет значительное влияние на развитие всех физических качеств детей 10–15 лет. Подготовка юных каратистов в макроцикле включает развитие и совершенствование всех сторон общей и специальной подготовленности, а также соответствует всем принципам спортивной тренировки. Полученные данные показывают, что дети, которые занимаются Киокушин-каратэ, обладают высокой скоростью движений для нанесения мощных ударов руками и ногами. Все это достигается специальной подготовкой, которая включает большое количество разнообразных упражнений с применением разных предметов (метболы, резиновые петли, гири, скакалки, лапы, пады и др.). ***Выводы.*** Определено, что уровень физической подготовленности детей 10–15 лет, которые занимаются Киокушин-каратэ, в течение года достоверно возрастает, особенно по показателям силы (p <0,01), выносливости (p <0,01), ловкости (p <0,01) и скорости (p <0,01), что обусловлено соответствующим тренировочным объемом занятий с комплексным решением задач; установлено вероятный прирост скорости ударов правой рукой у детей 11–13 лет (p <0,05), левой рукой – у детей 14–15 лет (p <0,05), правой ногой – во всех возрастных групп (p <0,01) и левой ногой – у детей 11–13 лет (p <0,01) и 14–15 лет (p <0,05), что свидетельствует о высоком уровне специальной подготовленности детей 10–15 лет, которые занимаются Киокушин-каратэ.

Ключевые слова: Киокушин-каратэ, физическая подготовленность, дети 10–15 лет, средства физической подготовки, физические качества.

Introduction. Karate origins are dated more than two thousand years ago. Indian monk Dharma, who fled from persecution to China, being in the monastery of Shao Lin taught his students with help of physical training in order to develop the ability to endure and develop physically. He has developed that harsh discipline to the part of his religion. These principles and methods of physical training was aimed to further development and improvement of the individual, and at the same time were known as the Shao Lin art of combat (fighting). Thanks to its efficiency this art was required by the monks of the monastery for protection from armed attacks of the nomads. Without weapons, Shao Lin monks found a way to protect themselves and the monastery, studying and perfecting the art of unarmed combat, inherited from Dharma. Subsequently, the fight spread across ancient China and the entire East. Natives of Shao Lin, settling in new places, have formed their own schools, improving their skills, which migrated to the island of Okinawa, where they have mixed with native types of struggle and have strengthened as a result of practical application. Kagoshyma Lord, who had the possession on the south of island Kiushu in Japan, has banned using a weapon on pain of death, so big upsurge of fighting techniques were okinavate («Okinawa hand») [1; 4; 7; 8]. Gradually, okinavate became the property for only samurai and noble dynasties that preserve the secrets of that martial art, passing their knowledge inherited – from generation to generation. That martial art was first shown to Japanese public in 1922 by a master from Okinawa Funakoshi Gichin. His struggle he called Karate («empty hand»). Karate style Kyokushinkai – athletic, power, dynamic, active and aggressive. Its tools are arsenal of rational and the most effective techniques. Kyokushin Karate develops physical qualities, promotes health, and affects the development of volitional and moral qualities. Literature analysis shows that the questions of physical fitness of children and adolescents are not enough covered. There are a small number of works that focus on the history of Kyokushin Karate [2; 3], general information about the development of physical qualities [4; 6] and psychological training. We have not found works that focus on physical preparation, including children aged 10–15 years who are engaged in Kyokushin Karate, that is why current direction of our research is topical.

The aim of the study – to determine the effect of Kyokushin Karate on the physical fitness of children aged 10–15 years.

Materials and Methods of Research. To achieve the objectives the following methods were used: analysis and synthesis of scientific and technical literature; summarizing advanced practices of training

children karate; pedagogical observation of a training activities and pedagogical experiment; examination tests; methods of mathematical statistics.

The research involved children aged 10–15 years who are engaged in kyokushin karate for 2–3 years. To assess the various aspects of physical fitness of children the following tests were used: the speed – running 30 meters and 100 meters, number of strikes with the left and right hand for 15 seconds, and right and left foot; the strength – hands flexion – extension in the emphasis lying and pulling up on a crossbeam; the agility – shuttle run 4 to 9 meters; the endurance – the 800 meters distance running.

Research Results. Discussion. During the preparation of young karatekas, we follow all the principles and methods of training, which provide the best training and result. The annual cycle of training consists of three macrocycles. During the year the team participates in many tournaments and championships. However, there are two major ones: Volyn region Open Championship and Championship of Ukraine. We approach to the preparation and performance in these tournaments respecting existing laws incipience sports skills including karatekas' physical abilities [5].

The preparation during the macrocycles and participation in the competition last about 3–4 months and includes 4 mesocycles: initial, base, pre–competitive and competitive. Each mesocycle consists of 3–4 microcycles that enable us to best approach the preparation of karatek.

Initial mesocycle lasts from 2 to 3 weeks. It is aimed to prepare the karatekas body to large loads. Most often these are training sessions at low and medium loads. However, 1–2 sessions with large loads are planned. Training session consists of three parts: 1 – warm–up (running, general developmental exercises, special exercises, simulation «kumite»), 2 – technical part (kata, kihon, idoheyko), 3 – special physical training (mainly special exercises aimed to develop an explosive and static strength, endurance, flexibility and other physical properties). One example of such classes is training according to the system Krosfit, which focuses on the development of explosive strength, the most important quality for kyokushin karate. It is a program of strength exercise which consists of constantly changing functional exercises of high intensity. The complex proposed by us consists of ten exercises, each of which runs 20 seconds. Total one approach time lasts 3 minutes 20 seconds, which in its turn simulates the fight on the mat (a fight on the mat for children lasts 2 minutes plus 1 extra minute), after that a rest for 1 minute is taken. Athletes perform three of such approaches. Base and pre–competitive mesocycles take 2 months and are the most important in karatekas preparation. The proposed system, which called «Budo» in karatekas preparation process, includes achievements of battle tactics and strategy, learning and improvement of strikes, combinations: move, attack tactics, tactics of defense, counterattack, working punches, combinations working, and opponent evaluation. Competitive mesocycle envisage participation in competitions. Often in this cycle karatekas participate in 2–3 tournaments.

Therefore, the preparation of young karatekas in the macrocycle includes the development and improvement of all aspects of general and special training and meets the principles of sports training.

The data in Table 1 indicate that the rate of speed (running 30 meters) during the year has reliably increased (p <0, 01). Also the performance results of running speed of 100 meters distance among children 11–13 years old (p <0,01) have increased. However, among children aged 14–15 years a slight increase in speed endurance can be found, which may be the termination of sensitive periods of speed development. We have found a credible increase of explosive strength and speed endurance resulting from the use of large quantities of jumping exercises.

Table 1

Karatekas Speed Performance Among 10–15 Years Old

Age	Run 30 m (s)with n/s	Run 100 m (s)
2014–2015 Academic Year		
10–12	4,54±0,18	18,53±0,07
13–14	4,01±0,02	15,37±0,05
2015–2016 Academic Year		
11–13	4,33±0,15**	18,03±0,06**
14–15	3,86±0,02**	15,22±0,04

**** – possible difference p< 0,05; ** – possible difference p< 0,01 of results increment.***

About dynamic force development we judged by performance flexion and extension hands in the emphasis lying, which are likely to have increas among children of 11–13 years (p <0,01) and 14–15 years

(p <0,05) and pulling up on a crossbeam (p <0,01) in all age groups (table 2). Therefore, Karate lessons has a significant impact on the strength of young karatekas in all age groups.

Table 2

Indicators of Strength Abilities Among 10–15 Years Karatekas

Age	Hands Flexion-extension in the Emphasis Lying, Number of Times	Pulling up on a Crossbeam, Number of Times
2014–2015 Academic Year		
10–12	40,30±1,54	8,60±0,33
13–14	58,10±2,23	12,0±0,39
2015–2016 Academic Year		
11–13	49,4±1,67**	10,20±0,41**
14–15	65,3±1,82*	14,50±0,62**

We have found the probable increase of endurance among children of all age groups (p <0,01), as indicated by the the results of running at 800 meters distance (table 3). About the level of agility we judged by the test «4 to 9 meters shuttle run», which are likely to have improved (p <0,01) among young karatekas. Therefore, kyokushin karate has a great influence on the development of coordination and stamina among involved children.

Table 3

Indicators of Endurance and Coordination Among 10–15 Years Karatekas

Age	Run 800 m (min, s)	Shuttle run 4 to 9 m (c)
2014–2015 Academic Year		
10–12	3,36±0,04	10,93±0,98
13–14	2,50±0,03	9,58±0,41
2015–2016 Academic Year		
11–13	3,13±0,03**	10,14±0,09**
14–15	2,22±0,01**	9,26±0,05**

The data in table 4 indicate special preparedness of children of 10–15 years engaged in Kyokushin Karate, namely – speed strikes right and left hand for 15 seconds to makivari and strikes «low kick» right and left foot for 15 seconds to makivari. We determined the probable rate impacts growth right hand among the 11–13 years (p <0,05), left hand among the 14–15 years (p <0,05), the right foot among all age groups (p <0,01) and left foot among 11–13 years (p <0,01) and 14–15 years (p <0,05).

Table 4

Indicators of Speed Strikes Among Children 10–15 Years Engaged in Kyokushin Karate

Age	Attacks for 15 s (max. Amount of Times)			
	2014–2015 Academic Year			
	Right Hand	Left Hand	Right Foot	Left Foot
10–12	38,30±0,72	35,60±0,42	19,60±0,26	17,60±0,38
13–14	50,00±1,21	45,80±1,27	23,80±0,47	23,10±0,36
2015–2016 Academic Year				
11–13	40,70±0,52*	38,40±1,44	22,30±0,30**	20,70±0,44**
14–15	53,20±1,00	50,50±0,93*	26,50±0,46**	24,60±0,45*

The obtained data show that children who are involved in Kyokushin Karate have high speed movements for applying powerful punches and kicks. This is achieved by special training, which includes a large variety of exercises using different kinds of equipment: med balls, rubber loops, dumbbells, skipping ropes, boxing paws, pads and others. Therefore, we found that Kyokushin Karate lessons have a significant impact on the development of all the physical qualities of children 10–15 years.

The means of speed training in Kyokushin Karate are the variety of exercises that require quick response, high-speed performance of individual exercise and maximum frequency of movement.

Widespread use in the training process of such exercises as outleap on the curb 40–50 cm, outleap from the place with burden, outleap from starting position of sitting on with a rubber loop, performance of special exercises to develop explosive strength of feet and others leads to a reliable growth of this quality, as

indicated by the results of running 30 meters from a low start. As a result of increasing the strength of legs, the results of running the 100 meters among a group of children 11–13 years are likely to increase, indicating a growth rate. However, among children aged 14–15 years a slight increase in run results has been found, which may be the termination of sensitive periods of speed development and small use of cross anaerobic exercises in the area of energy.

An effective means of improving the integrated high-speed abilities are competitive exercises performed in pairs and using makivary. Exercises are performed with maximum intensity, strength, speed punches (two direct, two low and two side) for 1 minute, kicking (low kick, mavashi-gary into the belly, mavashi-gary into the head) for 1 minute. The exercises to speed reaction are used – karate performs «shadow boxing» and with the signal, takes the emphasis lying down, bending hands, lying and continues to «fight». As a result, the rates of speed of movement and agility indicators have significantly increased, as indicated by amount of strikes for 15 seconds by hands and foots and results of shuttle run.

In the training process of young karatekas there also used exercises of power character: flexion and extension hands in the emphasis lying with their fists, squats with a wide stance, trunk flexion and extension in lying position, jumping rope, complex «Atlante» and others, leading to the development of strength, as evidenced by increase of the probable results pulling on the crossbar and flexion and extension hands in the emphasis lying.

Using a 45-minute cross with mild and moderate pace and continued execution of general developmental systems, specialized and competitive endurance exercise are significantly developed, as indicated by the probable increase of the results of the run for 800 meters.

Therefore, Kyokushin Karate is an effective means of comprehensive development of physical qualities, especially speed-power capabilities.

Conclusions. Analysis of the scientific and methodological literature showed that the development of physical qualities and control of physical fitness among children of 10–15 years who are engaged in Kyokushin Karate has not found adequate coverage.

We have determined that the level of physical fitness among children of 10–15 years who are engaged in Kyokushin Karate, for the year increased significantly, especially in the performance strength ($p < 0,01$), endurance ($p < 0,01$), dexterity ($p < 0,01$) and speed ($p < 0,01$), which is caused by a corresponding amount of the training sessions with complex challenges.

We have determined the probable increase of rate impacts by the right hand among the children of 11–13 years ($p < 0,05$), by the left hand among the children 14–15 years ($p < 0,05$), by the right foot among all age groups ($p < 0,01$) and by the left foot among the children of 11–13 years ($p < 0,01$) and 14–15 years ($p < 0,05$), indicating a high level of preparedness of special children 10–15 years who are engaged in Kyokushin karate.

Prospects for Further Research. Subsequently it is necessary to investigate the age dynamics of the physical properties and content of training loads for older children of school age who are engaged in Kyokushin karate.

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Стаття надійшла до редакції 29.05.2017 р.

УДК 796.835–057.87

PHYSICAL DEVELOPMENT FEATURES OF STUDENTS, ENGAGING IN KICKBOXING

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Abstract

Topicality*.** The research actuality is predefined by the requirement of society in forming of the physically developed young people by facilities of sporting activity and, in particular, kickboxing. ***The objective of the study is to define the level of physical development of students engaging in a kickboxing. ***Results of the Work***. Anthropometric indexes of a kickboxing are at high level and testify to trained sportsmen. The index of fatty mass is 14,85 percentage of skeletal muscles – 43,25. The length of kickboxers body of is connected with the circumference of thorax in the state of calmness (r = 0,433), circumference of thorax on inhalation (0,539) and by body weight (0,785). Negative correlation of length of body of sportsmen is observed with muscular mass (– 0,341) and visceral fat (– 0,17). ***Conclusions.*** Average grouping indexes of level of students physical development engaging in a kickboxing are in such limits: length of body is 179,55 cm, the mass of body is 71,15 kg, a circumference of thorax in the state of calmness is 93,67 cm, on inhalation is 98,02 cm, on exhalation is 88,64 cm, an excursion of thorax is 9,38 cm. The index of body weight is 21,95 mind. odes, fatty mass – 14,85 %, muscular mass is 43,25, visceral fat – 2,82. The results specify on the high level of trained and development of kickboxer`s muscular system.

Key words: physical development, body weight, length of body, circumference of thorax, content of fat, kickboxing, students.

Юлія Хильчук. Особливості фізичного розвитку студентів, які займаються кікбоксингом. ***Актуальність дослідження*** зумовлена потребою суспільства у формуванні фізично розвинутої молоді засобами спортивної діяльності й, зокрема, кікбоксингом. ***Мета дослідження*** – визначити рівень фізичного розвитку студентів, які займаються кікбоксингом. ***Результати роботи.*** Антропометричні показники кікбоксингом перебувають на високому рівні та свідчать про тренованість спортсменів. Показник жирової маси складає 14,85 %, відсоткового вмісту скелетних м'язів – 43,25. Довжина тіла кікбоксерів взаємопов'язана з окружністю грудної клітки в стані спокою (r = 0,433), окружність грудної клітки на вдиху (0,539) та масою тіла (0,785). Від'ємна кореляція довжини тіла спортсменів спостерігається з м'язовою масою (–0,341) та вісцеральним жиром (–0,117). ***Висновки.*** Середньогрупові показники рівня фізичного розвитку студентів, які займаються кікбоксингом, перебувають у таких межах: довжина тіла – 179,55 см, маси – 71,15 кг, окружність грудної клітки в стані спокою – 93,67 см, на вдиху – 98,02 см, видиху – 88,64 см, екскурсія грудної клітки – 9,38 см. Індекс маси тіла становить 21,95 ум. од, жирова маса – 14,85 %, м'язова маса – 43,25 %, вісцеральний жир – 2,82. Отримані результати вказують на досить високий рівень тренованості та розвиток м'язової системи кікбоксерів.

Ключові слова: фізичний розвиток, маса тіла, довжина тіла, окружність грудної клітки, уміст жиру, кікбоксинг, студенти.

Юлия Хильчук. Особенности физического развития студентов, занимающихся кикбоксингом. ***Актуальность исследования*** обусловлена потребностью общества в формировании физически развитой молодежи средствами спортивной деятельности и, в частности, кикбоксингом. ***Цель исследования*** – определить уровень физического развития студентов, занимающихся кикбоксингом. ***Результаты работы.*** Антропометрические показатели занятой кикбоксингом находятся на высоком уровне, что свидетельствует о тренированности спортсменов. Показатель жировой массы составляет 14,85 %, процентного содержания скелетных мышц – 43,25. Длина тела кикбоксеров взаимосвязана с окружностью грудной клетки в состоянии покоя (r = 0,433), окружностью грудной клетки на вдохе (0,539) и массой тела (0,785). Отрицательная корреляция длины тела спортсменов наблюдается с мышечной массой (–0,341) и висцеральным жиром (–0,117). ***Выводы.*** Среднегрупповые показатели уровня физического развития студентов, занимающихся кікбоксингом, находятся в следующих пределах: длина тела – 179,55 см, масса тела – 71,15 кг, окружность грудной клетки в состоянии покоя – 93,67 см, на вдохе – 98,02 см, выдохе – 88,64 см, экскурсия грудной клетки – 9,38 см. Индекс массы тела составляют 21,95 усл. ед, жировая масса – 14,85 %, мышечная масса – 43,25 %, висцеральный жир – 2,82. Полученные результаты указывают на достаточно высокий уровень тренированности и развития мышечной системы кикбоксеров.

Ключевые слова: физическое развитие, масса тела, длина тела, окружность грудной клетки, содержание жира, кикбоксинг, студенты.

Introduction. A health of student's youth is priority direction of development in the system of education. Strengthening and maintenance of student's youth health, increasing of their physical preparedness is one of basic tasks that stand before Ukrainian society [1; 2; 3; 6; 11; 16]. Engaging in a

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

kickboxing direct to strengthening of health and tempering of sportsman organism, improvement of their physical, moral and volitional and capture motive skills.

A. A. Markosyan with coauthors assert that anatomical and physiological features are one of basic factors, that determine a health level, development and display of physical capabilities [5].

On the example of karate kiokushyn, the influence on effectiveness of sportsman of his proportions (longitudinal sizes, width of shoulders), mass of skeletal musculature, fatty body weight have well–proved [4]. Scientists assert that forming of organism of students is predefined by the indexes of physical development and physical preparedness. Development of anthropometric indexes characterizes a bodily condition and physical capabilities that represent physical preparedness of student [12]. Scientists investigated physical development of students of higher educational institutions, that predefined by the necessity of individualization of physical education of students [7; 9; 10].

A kickboxing is to one of the most difficult types of sport in a technical and tactical relation. A situation on a ring changes quickly, that requires from kickboxer the lightning speed and exact reacting, timely acceptance and realization of decisions. Large intensity of actions envisages development of endurance, force, systematic and economic expense of energy. In later years in our country in kickboxing industry considerable changes took place: the amount of higher digits kickboxers increased, trainers of high qualification, all new and modern sections are opened, and the competitions of international level are conducted. It is therefore important to i of engaging in a kickboxing on physical development of students.

Research aim is to define the level of physical development of students, engaging kickboxing.

Methods and organization of research are an analysis and generalization of literary sources, anthropometry and methods of mathematical statistics. For the estimation of physical development of students that engage in a kickboxing, the analysis of such indexes was conducted: length and body weight, circumference of thorax in the state of calmness, on inhalation and exhalation, the index of body weight, fatty and muscular mass, content of visceral fat in an organism. Measuring of kickboxers body weight we conducted on the device of Body Composition Monitor OMRON BF510, that gave an opportunity to define exact body of sportsmen weight, index of body weight, fatty and muscular masses, percent of visceral fat.

For creation of scale on determination of composition of body a device takes into account an electric impedor, and also height, weight, age and sex, and gives out the indexes of body composition on the basis of data of OMRON device. The index of body weight settled accounts after formula:

$$\text{IMT} = \text{weight (kg)} / \text{height(м)} / \text{height(м)}.$$

A percentage of fat in an organism is a relation of fat weight in an organis to general body weight, shown in percents.

$$\text{Percent content of fat in an organism (\%)} = \{\text{Mass of fat in the organism (kg)} / \text{body weight (kg)}\} \times 100.$$

Researches were carried out on the base of the Lesya Ukrainka Eastern European National University, 33 students, engaging kickboxing, participated there.

Research Results. Discussion. Physical development is a process of change of morphological and functional signs of organism, basis of that are the biological processes, predefined by the inherited genetic factors, terms of environment and education. It depends on the natural life-breaths of organism and its structure. The high level of physical development combines high-performance physical preparation. Physical development is one of indexes of the population health state [1; 3; 10; 12] and depends on the level of motive activity [8; 14; 15; 17]. It is known that a health is determined by not only a presence or by absence of illnesses but also harmonious development, normal level of basic functional indexes [1; 16; 18].

The integral index of physical development is length of body (distance from the overhead point to the plane of feet). In researches of scientists [4; 10] marked, that during all period of studies length of body substantially did not change and was 178,2–179,4 cm. These data testify that the height of body in length practically came to an end at 18 years old. Our researches testify that length bodies of students, engaging in a kickboxing is on the average of 179,55 cm. These indexes are within the limits of age–old norms (table 1).

Table 1

Physical Development of Students that Engage in a Kickboxing

Indexes	$\overline{X}$	S	$S\bar{x}$
1	**2**	**3**	***4***
Length of body, *cm*	179,55	7,49	1,294

Table 1

1	2	3	4
A circumference of thorax in a calmness, *cm*	93,67	4,56	0,794
A circumference of thorax on inhalation, *cm*	98,02	5,33	0,928
A circumference of thorax is on exhalation, *cm*	88,64	5,0	0,87
Body weight, *kg*	71,15	7,70	1,341
Index of body weight, *kg/m²*	21,95	1,73	0,302
Fatty mass,*%*	14,85	3,32	0,578
Muscles mass	43,25	2,30	0,400
Visceral fat, *mind. odes.*	2,82	1,76	0,306

Circumference of thorax – one of the basic anthropometric parameters that characterize the transversal sizes of body. It represents the degree of development of thorax, functional state of the respiratory system, development of muscles of thorax and hypodermic–fatty basis of breasts also. An excursion of thorax is a difference of circumference of thorax between inhalation and exhalation. An excursion is the indirect index of athlete training. It is set that at the years of the intensive training an excursion increases. For sportsmen, especially for swimmers, the excursion of thorax can arrive 10–14 cm, for patients decrease to 2–1 cm and even to the zero. On the average it makes a 5–7 cm. In investigated кickboxers the circumference of thorax in a calmness makes 93,67 cm, on maximal inhalation it is 98,02 cm, to exhalation – 88,64 cm, an excursion is 9,38 cm. These indexes are at high enough level. Excursion in 9,38 cm, testifies for the athleticism and trained of sportsmen, high functional state of the respiratory system and developed muscles of thorax.

Individual body weight is a sum of bones weight, muscles, and internals, liquid and fatty fabric. Water presents 60–65 % of general body weight and is a component that changes quickly, though in small amounts. Quantitative description of body composition, estimation of correlation of fatty, muscular and others components, is the reflection of balance of energy and degree of satisfaction of necessity of organism in energy. The middle index of body weight in kickboxers is 71,15 kg, that substantially does not differ from the conditional average man of corresponding age-old group.

An index of body weight (IMT) is a calculation size that allows approximately to estimate the degree of accordance of person's weight mass of man and its height. According to recommendations of ВООЗ, if an index below than 16, then it means the expressed weight deficit; 16,5–18,49 is insufficient body weight; 18,5–24,99 is a norm, 25–29,99 is surplus body weight, 30 and higher is obesity. Determination of IMT it is necessary for verification of accordance of height and weight body indexes of sportsmen, and also for the estimation of development of the diseases risk related to surplus or insufficiency of body weight.

An index of body mass for students, that engage in kickboxing is 21,95 mind. odes, that is in norm and specifies on harmonious development of sportsmen.

For the estimation of percentage of fat in an organism a device uses the method of БІ. Depending on the place of accumulation of fat in an organism it is divided by visceral (internal) and hypodermic fat. For men in age of 17 the percentage of fat in a norm folds 10,1–24,2 % and in age of 18–39 it presents 8,0–19,9 %. For students, that engage in kickboxing the index of fatty mass folds 14,85 that specifies on normal correlation of percentage of fatty mass in the body of students engaging kickboxing.

It is considered that an increase amount of visceral fat is directly related to the increase of content of fat in the circulatory system, that can result in such general diseases like a hyperlipidemia and diabetes, what does not allow insulin widespread disease to pass energy from a blood stream and use it in cages. In order to avoid widespread diseases or to promote immunity, it is necessary to reduce the amount of visceral fat to the acceptable level.

For the people the norm is a level of visceral fat is in limits from 1 to 9, high level is considered from 10 to 14, and very high from 15 to 30. For students that engage in kickboxing a middle index is 2,82, that is within the limits of norm. It specifies on correct metabolism, proper functioning of internals and systems in organisms.

Muscular component, however no one other morphological index so well characterizes physical possibilities of sportsman. Muscles are divided into two kinds: muscles of internals, for example heart, and muscles connected with bones and necessary for bodies moving. Skeletal muscles can be grown due to physical exercises and other activity. The increase of percentage of skeletal muscles means that an organism can easier spend energy, and, less apt to the accumulation of fat. It facilitates the conduct of active way of life. Measuring results of skeletal muscles percentage for adult men in age from 18 to 39 is 33,3 % – low,

33,3–39,3 % – normal, 39,4–44,0 % high, and from 44,1% is very high. For students that engage in kickboxing a middle index folds 43,25 % and it testifies to the high level of muscular system development, that an organism can easier spend energy for sporting activity and less apt to the accumulation of fat in an organism. Also it specifies on high training level of sportsmen.

For of intercommunications between the indexes of physical development of kickboxers a correlation analysis was conducted. Research results testify that length of kickboxers body connects with the circumference of thorax in the state of calmness(r =0,433), circumference of thorax on inhalation (0,539) and body weight (0,785) (table 2).

Negative correlation of sportsmen body length of body is observed with muscular mass (– 0,341) and with visceral fat (– 0,117). It specifies that than sportsman is higher, thus the index of muscular mass and visceral fat is less in an organism.

Table 2

Correlation Intercommunications Between Indexes of Kickboxer's Physical Development

№	2	3	4	5	6	7	8	9
1	0,433	0,539	0,072	0,785	0,109	0,155	–0,341	–0,117
2		0,896	0,855	0,719	0,633	0,681	–0,442	0,495
3			0,611	0,792	0,623	0,640	–0,419	0,526
4				0,389	0,562	0,546	–0,286	0,515
5					0,616	0,548	–0,501	0,330
6						0,744	–0,364	0,695
7							–0,714	0,747
8								–0,442

Notes. *1 – length of body, 2 – a circumference of thorax in a calmness, 3 – a circumference of thorax on inhalation, 4 – a circumference of thorax on exhalation, 5 – body weight, 6 – an index of body weight, 7 – fatty mass, 8 – muscular mass, 9 – visceral fat.*

Body weight of kickboxers positively correlates with an index of the body mass (0,616) and by fatty mass and negatively with muscular mass (– 0,501). The index of body weight positively correlates with the percentage of fatty mass (0,695) and level of visceral fat (0,744).

Conclusions and Perspectives of Further Researches. Average grouping indexes of physical development level of students that engage in kickboxing are in such limits: length of body is 179,55 cm, the masses of body is 71,15 kg, a circumference of thorax in the state of calmness is 93,67 cm, on inhalation is 98,02 cm, on exhalation is 88,64 cm, an excursion of thorax is 9,38 cm. The index of body weight is presented of 21,95 mind. odes, fatty mass – 14,8 5% muscular mass – 43,25 %, visceral fat – 2,82. The got results specify on the enough high level of trained and development of the kickboxers muscular system.

In further it is needed to define intercommunication of physical development with the functional state of kickboxers.

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Стаття надійшла до редакції 30.05.2017 р.

УДК 373.3–057.874:796.035

INCREASE OF PHYSICAL ACTIVITY OF PRIMARY SCHOOL STUDENTS WITH CHEERLEADING MEANS

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Abstract

Revelance of research is due to gain trend of worsening health of primary school students and necessity of search of innovative forms of modernization of system physical education in conditions of reforming the education system. The purpose of research is to experimentally substantiate the effectiveness of cheerleading practices as mean of increasing physical activity of primary school students in the process of extracurricular physical educative and sports work. Based on the generalization of scientific literature on the research problem found out, that cheerleading practices contribute to the effective functioning of the body's basic systems, formation of vital physical skills, increasing of physical preparation level, perfection of physical qualities. Proposed the program of cheerleaders' physical preparation with the purpose of increasing the level of their physical activity, where 50 % of the practice time is allocated to general physical training with a priority direction of development of endurance, strength, flexibility, coordination skills, dexterity in the process of both specially organized and substantive cheerleading practices. According to the results of the initial and control stages of diagnosis based on standardized tests (broad jump, jumps through the gymnastic bench on two legs for 10 seconds, lifting the torso from a prone position, flexion of the torso from sitting position, push-ups) proved that systematic practices contributed to an increase of physical development indicators and physical preparedness of students by 25 %. It has been proved, that cheerleading practices, as a model for improving children` health physical regime of primary school students, provide necessary amount of physical activity to pupils during extracurricular physical educative and sports work.

Key words: physical activity, cheerleading, pupils, extracurricular physical educative and sports work, health improving potential

Ольга Коломейцева. Підвищення рухової активності учнів початкової школи засобами черлідингу. ***Актуальність дослідження*** зумовлена поглибленням тенденції погіршення здоров'я учнів початкової школи та потребою пошуку інноваційних форм модернізації системи фізичного виховання в умовах реформування системи освіти. ***Мета дослідження*** полягає в експериментальному обґрунтуванні ефективності занять черліденгом як засобом збільшення рухової активності учнів початкової школи в позакласній фізкультурно-спортивній роботі. Запропоновано програму загальної фізичної підготовки (ЗФП) та спеціальної фізичної підготовки черлідерів задля підвищення рівня їхньої рухової активності, де 50 % часу навчально-тренувальних занять відведено на загальну фізичну підготовку з пріоритетною спрямованістю розвитку витривалості, сили, гнучкості, координаційних здібностей, спритності в процесі як спеціально організованих, так і самостійних занять черліденгом. За результатами вихідного та контрольного вимірювань на основі стандартизованих тестів установлено, що в процесі систематичних секційних занять показники фізичного розвитку та фізичної підготовленості учнів збільшилися на 25 %. Доведено, що секційні заняття черліденгом як модель оздоровчого рухового режиму молодших школярів забезпечують необхідний обсяг рухової активності учнів початкової школи в позакласній фізкультурно-спортивній роботі.

Ключові слова: рухова активність, черліденг, молодші школярі, позакласна фізкультурно-спортивна робота, оздоровчий потенціал.

Ольга Коломейцева. Повышение двигательной активности учащихся начальной школы средствами черлиденга. Актуальность исследования обусловлена усилением тенденции ухудшения здоровья учащихся начальной школы и необходимостью поиска инновационных форм модернизации системы физического воспитания в условиях реформирования системы образования. ***Цель исследования*** заключается в экспериментальном обосновании эффективности занятий черлиденгом как средством увеличения двигательной активности учащейся молодёжи в процессе внеклассной физкультурно-спортивной работы. Предлагается программа физической подготовки черлидеров с целью повышения уровня их двигательной активности, где 50 % времени учебно-тренировочных занятий отводиться на общую физическую подготовку с приоритетной направленностью развития выносливости, силы, гибкости, координационных способностей, ловкости в процессе как специально организованных, так и самостоятельных занятий черлиденгом. По результатам исходного и контрольного этапов диагностики на основе стандартизированных тестов (прыжок в длину с места толчком двух ног, прыжок через гимнастическую скамейку на двух ногах за 10 с, поднимание туловища из положения лежа, наклон туловища из положения сидя, сгибание и разгибание рук в упоре лежа) установлено, что систематические занятия в секции способствовали увеличению показателей физического развития и физической подготовленности учащихся на 25 %. Доказано, что секционные занятия черлиденгом как модель

оздоровительного двигательного режима младших школьников обеспечивает необходимый объем двигательной активности учащейся молодёжи во внеклассной физкультурно-спортивной работе.

Ключевые слова: двигательная активность, черлиденг, младшие школьники, внеклассная физкультурно-спортивная работа, оздоровительный потенциал.

Introduction. Social and economic changes that occur rapidly in all spheres of society actualizes the problem of finding new approaches to the education of the younger generation**.** Analysis of regulations demonstrates the urgency of the problem of maintaining, strengthening and restoring the health of students, improve their physical fitness, formation of essential physical skills based on self-development and self-education.

However, the trend of deteriorating health of primary school students leads to search for innovative forms to modernization of physical education system. In modern conditions of development of the sports movement in Ukraine, consider that, in solving the aforementioned problems, using cheerleading is perspectively, as a means of increasing the physical activity, physical, mental and social improvement of primary school students, and therefore – attracting the youth to a healthy lifestyle.

The aim of research – to prove experimentally the effectiveness of cheerleading practices as a means of increasing the physical activity of primary school students in extracurricular sport activities.

Research Methods. The study used the following methods: analysis and systematization of scientific literature on the activation of physical activity of primary school students by means of cheerleading, pedagogical methods (pedagogical supervision, pedagogical experiment); summarizing and interpretation of results, methods of mathematical statistics

Results of Research. Discussion. At present, the scientific and methodological literature there is no single established opinion on the interpretation of the term «physical activity». Thus, foreign researchers S. Boushard, R. Shephard, T. Stephens by human's physical activity mean any body motion that performed by using muscles and is characterized by appreciable power consumption [12].

According to national researcher N. Levinets, physical activity – is the amount of different motions per certain period of time, that is normalized in terms of energy expended or the number of executed motions (locomotions). Their data provide an opportunity to determine the level of human physical activity, assess the condition of physical practice. The Last acts as one of the most important conditions of maintain optimal functional state of human's organism, satisfy its biological needs [7, p. 83].

A. Antipova and A. Komkov define physical activity as human motion activity that aims to improve health, develop physical potential, achieve physical perfection for the effective implementation of their potential subject personal motivation and social needs [3, p. 5].

In the context of person-centered approach to the formation of children and youth physical culture note the views of scientist T. Krutsevych which considers the optimal level of physical activity as a factor in increasing the mental capacity of students as a powerful means of strengthening the health of primary school pupils.

Numerous scientific studies have shown that physical activity contributes significantly to the observance of human healthy life and in some cases reduce the negative impact of bad habits on the human body, increased stress resistance and distract from asocial behavior. Physical activity is generating and stimulating factor in the system of a healthy lifestyle is important for improving physical development and readiness of individuals, prevention of excessive body mass and obesity, and helps to reduce of risk of occurrence cardiovascular diseases, diabetes, osteoporosis, certain of oncologic diseases and depression [11].

According to T. Loza, locomotor activity is defined and predetermined by a set of physical activity in human life, in learning, work, during leisure and rest. So are two types of human physical activity: spontaneous (motions aimed at satisfying natural human needs – personal hygiene, eating, sleeping) and specially organized (game activity, self-dependent physical exercises, sports activities) [8, p. 210].

Thus, the term «physical activity» is explained by scientists as natural and specially organized human motion activity, ensuring its physical and mental development. Researchers unanimously agreed that a necessary and a priority condition for improving physical activity level is to involve children and youth to exercise and sports activity as a factor in the maintenance and development of optimal physical and mental characteristics using a variety of forms, methods and means of physical education.

However, as current researches demonstrate, the level of physical activity level of students is extremely low and usually limited to physical education lessons, which, in turn, does not compensate for the required level of physical activity. Thus, almost 90 % of pupils have deviations in health, more than 50 % – unsatisfactory physical fitness. Drastically increasing the number of students classified the condition health to special medical group [5, p. 60]. It found that, two lessons in physical education does not form students'

habit of regularly engage in physical activities and sports, and compensate the necessary level of physical activity only 10–20 % of hygienic norms of motions. Proved that proper physical preparation have only students that in addition to physical education lessons regularly engaged twice – three times a week in children' and youth sport schools or sports clubs [2; 5; 9]. Thus, significant potential to attract primary school students to physical culture sees in extracurricular sport activities as one of the forms of organization of students' leisure.

Based on generalising of scientific literature on the study (T. Bala, I. Maslyak [1] N. Kryvoruchko [4]) found that cheerleading practices contribute to the effective functioning of major body systems, formation of essential physical skills; increasing the level of fitness; improving physical and moral qualities.

In particular, this sport is characterized by the complexity of the structure of physical actions, provides intensive training and emotional and spectacular competitions. Cheerleading contains a wide difference of variety intense motions, that include elements of choreography, tumbling, artistic and rhythmic gymnastics, sport and folk dances. It consists of two main programs – Cheerleading and Perfomance Cheer. Cheerleading program consists of cheer, which may contain tumbling, stunts, pyramids, jumps and other means to call upon spectators to support the team and the basic part of the routine that includes required elements: stunts, pyramids, tumbling (which include jumps) basket tosses and dance. Perfomance Cheer is divided into three types: Pom (freestyle), Jazz and Hip Hop [1; 10].

The complexity of structure of cheerleaders` physical motions makes it necessary to remember significant amount on each other different motions. This makes the memory requirements for cheerleaders and their characteristics such as diligence, clarity and completeness of visual representations and fidelity of motions. Skills execution quality (precision, artistry, etc.) determines the necessity of formation self-control ability and correction of muscular effort, stability of attention, ability to concentrate and distribute attention, responsiveness, speed of thinking, ingenuity, self-criticism, perseverance. Cheerleading as sports mass movement, the goal has: to attract youth to a healthy lifestyle and participate in sport competitions; promote physical, cultural and spiritual development; empowering youth in the choice of their career, achieve of personal success; creating favorable conditions for disclosing potential. It is used for the full and harmonious physical development, health promotion and improvement of movement functions, posture [4, p. 9].

In order to determine the potential of improving health by cheerleading we conducted an experimental research aimed at determining the level of physical fitness and physical development of pupils that attending cheerleading practices and engaged with the author's sport educational program. Author program «Cheerleading» aims at mastering the pupils of primary school the basics of technique and tactics of performances, a sufficient level of physical qualities and abilities that will allow further specialized training to achieve a high level of individual and collective skills and its successful implementation in conditions of overall activity. The training program and curriculum designed for 36 weeks a year (102 hours of group practices and participation in competitions). The duration of one training practice in the first year is not more than academic hour three times a week. In addition, younger students perform daily morning exercises and individual tasks of the coach for physical improvements that contributed to the formation of positive motivation to regular self execution of skills and exercises.

The first phase of the experiment was defined homogeneous group of students 8–9 years old, which at the beginning of 2016–2017 academic year began practicing in the club. Using standardized tests (long jump from place pushing two legs, jump through gymnastic bench on two legs for 10 seconds, lifting the torso from a prone position, torso tilt of a seated position, flexion and extension arms in emphasis lying) was diagnosed output level of physical development and physical fitness and developed exercise program general physical preparation (GPP) and special physical preparation (SPP). In developing the experimental program, we considered that the physical skill more effectively formed on the basis of sufficient physical fitness. In view of this, 50 % of the time practices were given on the exactly general physical preparation of primary school children (first year) with a priority focus on the development of endurance, strength, flexibility, coordination skills, agility (table 1).

Table 1

Set of Exercises used in the Author Program «Cheerleading» in Order to Create the Need for Physical Activity and Physical Perfection of Primary School Children

Development of Physical Abilities	GPP	SPP
1	**2**	**3**
Endurance	jumping rope, running at different speeds and duration, mobile games	handstand

Table 1

1	2	3
Power	static and dynamic exercises theirs` own weight, with weights, aimed at developing muscle strength hands, hands, shoulder girdle, press, back, legs	handstand, stunts
Flexibility	active and passive exercises to develop flexibility in the shoulder, hip joints and flexibility of the spine	Skills that strengthen the joints
Coordination abilities	Sports; shuttle run, dance exercise exercises (somersaults, wheels) exercise in balance	organizing exercises (forming a column, moving in a column diagonally, etc.), special jumps (jump, leap jumping)
Dexterity	exercise that requires immediate response, the minimum time to overcome the short distances (running short distances, shuttle run, jumping rope, sports games).	Dance styles (jazz, funk, breaks, hip-hop), a dance unit using the basic elements of cheerleading

The results of the control measurements using standardized tests showed that eight months of systematic practicing cheerleading indicators of physical development and physical fitness of students increased on average by 25 %. (*table* 2).

Table 2

Dynamics of Physical Development of Primary School Children

Test	Girls, (n 15)	Girls, (n 15)
	Experiment	
	Before	After
Long jump with two feet space pushing	80–95	100–110
Jump through gymnastic bench on two legs for 10 seconds	6–8	10–12
Lifting the torso from a prone position	8–10	12–16
Torso tilt of a seated position	5–6	7–9
Flexion and extension arms in emphasis lying	4–6	8–10

Conclusions. It was found that physical activity – is a natural and specially organized human motion activity, ensuring its physical and mental development. Proved efficiency of the developed experimental program aimed at mastering by pupils the basics of technique and tactics performances, a sufficient level of physical qualities and abilities, increasing their physical activity.

The study suggests that cheerleading practices as a model of improving health by mode provides primary school children the necessary amount of physical activity primary school students in extracurricular sport activities.

Perspectives of further studies sees in the problems identifying features of formation competence by means of cheerleading primary school children in extracurricular sport activities.

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Стаття надійшла до редакції 22.05.2017 р.

УДК 796.011.3 – 053.2 / – 53.7: 159.922.7

AGE DIFFERENCES OF SELF–ESTEEM OF PHYSICAL SELF AT SCHOOL. GENDER ASPECTS

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Abstract

Actuality. This article contains reviews of various aspects of gender problems and gender approach in pupils physical education. ***Task of the article.*** Our research is devoted to scrutinize the differences between self–esteem of physical development of the youth of different age, who are engaged and aren't engaged in physical activities and reveal the connection between the general level of self-esteem of the respondents and their belonging to the psychological type of personality. ***Methods.*** For examining the physical self–esteem level was used questionary «Self-description of physical development». ***Results.*** It is proved, that self–esteem of physical development has high and overstated level and composes 80–85 % from highest point. Based on the results of cluster analysis it was diagnosed, that among young males, who have overstated self-esteem level of physical development most of respondents belong to masculine type. ***Conclusions.*** Revived results let us assert that the essential gender distinction are exist among the own characteristic of the girls of different age. This fact has a direct influence on the level of general self-esteem. The differences between sportsmen and respondents who don't go on for sport were identified. Thus, received data could be used as a base for further gender researches in the field of physicals culture and sport, the results of which will be used as a theoretic ground for conception of gender approach in physical education of pupils.

Key words: pupils, gender differences, physical self, physical education, physical culture, juveniles, girls, self-esteem of physical development.

Тетяна Круцевич, Оксана Марченко. Вікові відмінності самооцінки фізичного «Я» школярів. Гендерний аспект. ***Актуальність.*** У статті розглянуто різноманітні аспекти гендерної проблематики та гендерного підходу у фізичному вихованні школярів. ***Завдання роботи –*** вивчення гендерних відмінностей самооцінки фізичного розвитку юнаків та дівчат різного віку, які займаються й не займаються спортивною діяльністю, та виявлення взаємозв'язку між загальним рівнем самооцінки респондентів і їх приналежністю до психологічного типу особистості. ***Методи.*** Для вивчення рівня самооцінки фізичного розвитку школярів використано тест-опитувальник «Самоопис фізичного розвитку». ***Результати роботи.*** Доведено, що самооцінка фізичного розвитку школярів має високий та завищений рівень і складає 80–85 % від максимального бала. За результатами кластерного аналізу виявлено, що серед юнаків та дівчат, які мають завищений рівень самооцінки фізичного розвитку, більшість респондентів маскулінного типу. Середній рівень самооцінки мають переважно досліджувані андрогінного типу. ***Висновки.*** Визначено гендерні відмінності показників самоопису фізичного розвитку респондентів різних вікових груп, котрі мають безпосередній вплив на рівень їхньої загальної самооцінки. Простежено різницю між вибірками спортсменів і школярів, які не займаються спортом. Отже, отримані дані є підставою для подальших поглиблених гендерних досліджень у сфері фізичної культури й спорту, результати яких стануть теоретичною основою концепції гендерного підходу у фізичному вихованні школярів.

Ключові слова: школярі, гендерні відмінності, фізичне виховання, фізична культура, юнаки, дівчата, самооцінка фізичного розвитку.

Татьяна Круцевич, Оксана Марченко. Возрастные различия самооценки физического «Я» школьников. Гендерный аспект. ***Актуальность.*** В статье рассмотрены различные аспекты гендерной проблематики и гендерного подхода в физическом воспитании школьников. ***Задачи работы.*** Наше исследование раскрывает изучение гендерных различий самооценки физического развития юношей и девушек разного возраста, которые занимаются и не занимаются спортивной деятельностью, выявлению взаимосвязи между общим уровнем самооценки респондентов и их принадлежностью к психологическому типу личности. В исследовании приняли участие школьники 5–11 классов (587 человек). ***Методы.*** Для изучения уровня самооценки физического развития школьников использован тест-опросник «Самоописание физического развития», сделан корреляционный и кластерный анализы показателей самоописания. ***Результаты работы.*** Доказано, что самооценка физического развития школьников имеет высокий и завышеный уровень и составляет 80–85 % от максимального балла. В результате кластерного анализа выявлено, что среди юношей и девушек, которые имеют завышенный уровень самооценки физического развития, большинство респондентов

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

маскулинного типа. Средний уровень самооценки имеют преимущественно респонденты андрогинного типа. ***Выводы.*** Полученные результаты дают нам право утверждать о существовании гендерных отличий между показателями самоописания респондентов различных возрастных групп, что имеет непосредственное влияние на уровень общей самооценки. Определены различия между выборками спортсменов и школьников, которые не занимаются спортом. Таким образом, полученные данные являются основанием для дальнейших углубленных гендерных исследований в сфере физической культуры и спорта, результаты которых станут теоретической основой концепции гендерного подхода в физическом воспитании школьников.

Ключевые слова: школьники, гендерные различаи, физическое воспитание, физическая культура, юноши, девушки, самооценка физического развития.

Introduction. Among the challenges facing the secondary school becomes an urgent problem of the formation of values of physical culture, conscious attitude to sports and recreation and sports activities. It is a means of preserving and strengthening health. Relevance of gender approach (by gender – sociocultural gender) and activity in the field of modern physical culture is undeniable. It allows a new perspective to look at the features of the human person associated with it [4]. 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. Scientists have expressed different views regarding the consideration of age and gender peculiarities of physical education and sports training of young people [1; 4; 5; 7; 10]. Supporters of the gender approach believe that the child is born male or female, but becomes masculine or feminine as a result of education and the identification process of gender role [1]. 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 (S. Soha, 1999; T. Soha, 1991; M. Messner, 2000; L. Shahlyna, 2006, 2010). Also, scientists examined the number of women with masculine characteristics enrolled on sports departments [5]. 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 [9; 11; 12; 13; 14]. 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.

The aim – to examine gender features of boys and girls self physical development based on their psychological type.

Material and Methods – analysis of scientific literature, test – questionnaire «physical self-description of», test of Sandra Byem, methods of mathematical statistics.

In a scientific experiment students grades 5–11 CEI in number of 587 persons (boys – 282, girls – 305) took part among them 126 respondents (97 boys and 29 girls) were engaged in some sport (swimming, basketball, volleyball, athletic gymnastics, wrestling, taekwondo). Other students attend regular classes in physical education. To study the physical profile of the individual «I» personality the questionnaire by E. V. Bochenkova «physical self-development» was used in our test. It is a modified version of the well–known technique of A. M. Prikhozhan [2].

Research Results. Discussion. Self-esteem- an element of identity, which is characterized by emotionall intense estimation of themselves as individuals, their ability, integrity and behavior [3]. Self-esteem of person is influenced by various factors. And whether judgments underlying self-esteem, their own or others, it is always subjective. [3] In the self-assessment of students physical development internal and external factors are affected. External factors related to fashion (imitation) on the exterior, build, clothing, physical qualities (strength, agility, stamina, grace, etc.) and popular types of motor activity [6]. Analysis of the study results indicate the presence and characteristics of gender differences in young people's physical development.

Girls 10–13 years, estimating the actual physical «I», the highest score given the following physical qualities: «endurance» (92 % of the maximum score), «global physical «I» (83,12 %), «harmony» (83,88 %) and «self-esteem» (83,46 %). Thus there is a low level of physical activity (78,14 %) and lowered estimate physical properties of these «flexibility» (74,18 %) and «power» (71,70 %).

Analysis of the physical qualities of self-esteem with physical self «I» of 5–7 form boys (10–13 years) indicates the low level of physical fitness. The worst performance was marked on the scales «physical activity» (77,09 %), «power» (75,95 %) and «appearance» (74,43 %). Thus, the total «self-esteem» has one of the highest results (83,91 %). In such a range «slender body» (86,61 %) and «health» (83,72 %) are marked. Comparing the results of self-esteem of boys and girls of 5–7 forms (10–13 years), we found that for ten of the eleven indicators of boys physical development of self-esteem have higher scores than girls.

The results of the physical self-esteem, «I», which we received for testing young people aged 14–15 years (8–9 Form) show that boys raised the highest marks on the scale that characterize health (84,4 %) self-esteem and overall (81,9 %). Among physical and athletic abilities which boys appreciate as worse are «endurance» (58,8 %), «flexibility» (63,7 %) and «physical activity» (69,6 %). Boys are inadequate (inflated) self-esteem physical «I» at a low level of physical activity and a low level of development of physical qualities. The highest values girls attributed as the scales of «health» (77,3 %), «self-esteem» (76,3 %) and «coordination» (77,6 %).

«Athletic ability» (66,9 %) is evaluated no less restrictive than «force» (66,5 %) and «endurance» (47,2 %). So, all with 11 scales of self–description, boys' indicators also higher than girls'.

The overall level of self-esteem of high school students (16–17 years) is more realistic. In the boys self-esteem physical «I» subjectively has the highest score. Less points are given to their own health, while most developed qualities of a young man determined «coordination» (81,9%) and «physical activity» (80,3 %). Senior high school students rated «slender body» (84,3 %). Girls come up to their self-esteem of their constitution more demanding and have a scale «slender body» with a lower mark (79,0 %). Almost it is the same percentage of boys and girls with their self-care (79,2 % and 79,6 %). Boys have higher self-esteem of physical «I» on the scales «strength» and «endurance». The girls have the worst performance scales and their own «appearance». Girls of senior classes are rated higher (79,2 %). Assessment of health declined and became more realistic in comparison to boys and girls of younger age. Our own self-esteem among high school students has high scores: boys – 80,7 %, girls – 80,4 %.

Preliminary studies of gender characteristics of individual pupils, with the help of Sandra Bem, allowed us to determine the gender identity of students (femininity, masculinity, androgyny) [8]. Cluster analysis of parameter IS of C. Boehm allowed us to distribute the respondents into groups according to the affiliation to psychological sex. For this, a variable clustering was taken as a value parameter IS. As a measure of the distance between the centers of clusters – Euclidean distance is calculated as follows:

$$dist = \sqrt{\sum_{i=1}^{n} (x_i - y_i)^2}$$

Thus, the first cluster includes all respondents who are setting IS test ranges from – 0,35 to 0,46. According to the classification Sandra Bem test – a psycho androgynous respondents (–1 <IS <1). The proportion of the total number of respondents was 51,03 %. The second cluster includes masculine respondents (IS <–1) and psycho androgynous features of masculinity (–1 <IS <–0,46), which have the option IS ranging from – 1,97 to – 0,36 (15,72 %). The third cluster includes respondents of feminine psycho (IS> 1) and androgynous psycho with signs of femininity (0,58 <IS <1,86), who have the option IS ranging from 0,47 to 1,86 (33,26 %) .

In order to identify relationships between the general level of self-esteem of respondents and their attachment to the psychological sex, we conducted a comparative analysis of self-description and parameter IS of respondents. Groups of respondents were considered with the level of self-respect (table 1, 2). The most interesting, was the distribution of respondents of psychological type of young people 14–15 years (8–9 class).

Table 1

Distribution of Respondents According to the General Type of Psychological Self-esteem (Boys 8–9 Classes)

The Overall Level of Self-esteem	Cluster 1 (Androgynous)		Cluster 2 (Masculine)		Cluster 3 (Feminine)	
	n	%	n	%	n	%
1	2	3	4	5	6	7
– overestimated	18	25,7	13	31,0	5	27, 8

Table 1

1	2	3	4	5	6	7
– high	40	57,1	22	52,4	8	44, 4
– average	10	14,3	7	16,6	5	27,8
– low	2	2,9	0	0,0	0	0,00
Total	70	100	42	100,1	18	100

In boys with high self-esteem has the representatives of masculine (13 person) and androgynous (18 people) psycho types. The girls have high self-esteem are more representative of androgynous psycho types (8 people). Boys and girls who are classified as feminine psycho types, have a high self-esteem or underestimate their own abilities. This may be due to such psychological characteristics as the «need for achievement», which directly affects the motivation to work. This aspect requires further research.

Table 2

Distribution of Respondents According to the General Type of Psychological Self-esteem (Girls 8–9 classes)

The Overall Level of Self-esteem	Cluster 1 (Androgynous)		Cluster 2 (Masculine)		Cluster 3 (Feminine)	
	n	%	n	%	n	%
– overestimated	8	15,1	1	8,3	3	7,7
– high	28	52,8	6	50,0	12	30,8
– average	13	24,5	5	41,7	19	48,7
– low	4	7,5	0	0,00	5	12,8
Total	53	100	12	100	39	100

Conclusions and Perpectives for Further Research. The results of scientific experiments give us the right to assert the existence of significant gender differences between indicators of self-description of respondents of different ages, which have a direct impact on the overall self-esteem. Boys self-esteem is directly associated with his strength and physical activity, girls – with the appearance and coordination. Self-esteem of physical development of pupils is inflated of nature and is on average 80–85 % of the maximum rate. Established that on a total self-esteem of boys affects more performance than girls. According to the study was detached the effect of psychological sex on overall self-esteem of students. Given the above, we consider it appropriate that further gender studies in the field of physical culture and sports, the results of which will be the theoretical basis of the concept of gender approach in physical education students.

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Стаття надійшла до редакції 18.05.2017 р.

УДК 378.015.3.159.91

LEVEL OF DEVELOPMENT OF PSYCHOPHYSIOLOGICAL INDICATORS OF FEMALE STUDENTS OF 1–4 YEARS OF STUDY

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Abstract

It is stating in modern scientific literature that physical exercises have the healthiest meaning according to the individual physiological peculiarities of children and youth. Taking into consideration all these investigations for the optimization of physical education in higher educational establishments, firstly it is necessary to study the real conditions of students' psychophysical preparation. It is scientifically proved that systematic implementation of physical exercises increases functional human ability, physical development and preparation, improves health conditions, helps to recover quickly after different physical loads. Psychophysiology studies the role of many body processes in the behaviour and understanding of psychological process. The main place belongs to the learning of typical features, the discovering of properties of the nervous system. This direction is based on object-instrumental learning of the regularities of central nervous processes. The effectiveness of physical activities is defined by many «inner» (psychophysical) factors: motivations to work, abilities, stability for unfavourable factors of environment and states which are developed in human being under these factors. Studying age, sex and individual-typical peculiarities of human psychomotor skills is necessary for the determination of practical tasks in choosing the organization forms, methods and development tools. It is important to describe those age periods in which the most active different psycho–motor skills appear. The particular part of psychophysical indexes is the quickness of simple and complicated reaction on the irritant and static and dynamic tremor. To optimize physical education of students it is necessary to research definite indicates of their psychophysical state such as: the quickness of simple and complicated reaction on the irritant, the exactness of measuring strength, time and spatial parameters, statistic and dynamic tremor before and after physical load. The questions of changing the peculiarities of the quickness of simple and complicated reaction on the irritant, static and dynamic tremor before and after the loads of the students of the Eastern European National University are enlighten in the article.

Key words: peculiarities, static and dynamic tremor, students, physical training exercises

Сергій Ніколаєв, Юрій Ніколаев. Рівень розвитку психофізіологічних показників студенток 1–4-х курсів. У сучасній науковій літературі стверджується, що найбільше оздоровче значення мають фізичні навантаження, які відповідають індивідуальним психофізичним особливостям дітей і молоді. Зважаючи на ці дослідження, для оптимізації фізичного виховання у вищих навчальних закладах потрібно, насамперед, вивчити реальний стан психофізіологічної підготовленості студентів.

Науковцями доведено, що систематичне виконання фізичних вправ підвищує функціональні можливості людини, її фізичний розвиток і підготовленість, зміцнює здоров'я, сприяє швидкому відновленню після різноманітних психічних навантажень. Вивчення вікових, статевих й індивідуально–типових особливостей психомоторики людини необхідне для виконання практичних завдань вибору організаційних форм, методів і засобів її розвитку. Важливо визначити ті вікові періоди, у які найбільш активно проявляються ті чи інші психомоторні здібності.

Психофізіологія вивчає роль усіх багато численних процесів організму в поведінці та усвідомленні психічних процесів. Особливе місце належить вивченню типологічних особливостей, виявленню властивостей нервової системи. Цей напрям ґрунтується на об'єктивному інструментальному вивченні закономірностей протікання центрально–нервових процесів.

Ефективність фізичної діяльності визначається багатьма «внутрішніми» (психофізіологічними) факторами: мотивами до діяльності, здібностями, стійкістю до несприятливих факторів зовнішнього середовища й до станів, які розвиваються в людини під впливом цих факторів.

Вивчення вікових, статевих й індивідуально–типових особливостей психомоторики людини необхідно для виконання практичних завдань вибору організаційних форм, методів і засобів її розвитку. Важливо визначити ті вікові періоди, у яких найбільш активно проявляються ті чи інші психомоторні здібності. Складовою частиною психофізіологічних показників є швидкість простої й складної реакції на подразник та статичний і динамічний тремор.

Для оптимізації фізичного виховання студентів потрібно вивчити окремі показники їхнього психофізіологічного стану, а саме: швидкість простої та складної реакцій на подразник, точність вимірювання

силових, часових, просторових параметрів статичного й динамічного тремору до та після виконання фізичного навантаження.

У статті висвітлено питання особливостей зміни показників швидкості простої й складної реакцій на подразник, статичного та динамічного тремору до й після виконання фізичного навантаження в студентів СНУ ім. Лесі Українки.

Ключеві слова: особливості, статичний і динамічний тремор, студенти, фізичні вправи.

Сергей Николаєв, Юрий Николаев. Уровень развития психофизиологических показателей студенток 1–4-х курсов. В современной научной литературе утверждается, что самое большое оздоровительное значение имеют физические нагрузки, которые соответствуют индивидуальным психофизическим особенностям детей и подростков. Отталкиваясь от этих выводов, для оптимизации физического воспитания в высших учебных заведениях необходимо, в первую очередь, изучить реальное положение психофизиологической подготовки студентов.

Ученые доказали, что систематическое выполнение физических упражнений повышают функциональные возможности человека, его физическое развитие и подготовленность, укрепляет здоровье, способствует быстрому восстановлению после различных физических нагрузок. Изучение возрастных, половых и индивидуально-типовых особенностей психомоторики человека необходимо для решения практических заданий выбора организационных форм, методов и средств его развития**.** Важно изучить те возрастные периоды, в которых наиболее активно проявляются те или другие психомоторные способности.

Психофизиология изучает роль всех многочисленных процессов организма в поведении и осознании психических процессов. Особое место занимает изучениет типологических особенностей, индивидуальностей нервной системы. Это направление базируется на обективном изучении закономерностей протекания центрально-нервных процессов.

Еффективность физической деятельности определяется многими внутренними (психофизиологическими) факторами: мотивами к деятельности, способностями, стойкостью к неблагоприятным факторам внешней среды и состояний, которые развиваются у человека под влиянием этих факторов.

Изучение возрастных, половых и индивидуально-типовых особенностей психомоторики человека необходимо для решения практических заданий выбора организационных форм, методов и средств его развития. Важно определить те возрастные периоды, в которых наиболее активно проявляются те или другие психомоторные способности. Основной частью психофизиологических показателей есть скорость простой и сложной реакций на раздражитель и статический и динамический тремор.

Для оптимизации физического воспитания студентов необходимо изучить отдельные показатели их психофизиологического состояния, таких как точность измерения силовых, часовых, пространственных параметров статического и динамического тремора.

В статье рассматриваются вопросы особенностей изменения статического и динамического тремора до и после физических нагрузок у студентов СНУ им. Леси Украинки.

Ключевые слова: особенности, статический и динамический тремор, студенты, физические упражнения.

Introduction. Scientists have proved that systematic physical exercises increase the functional capabilities of a person, his/her physical development and preparedness, strengthen his/her health, and promote rapid recovery from various mental loads.

The effectiveness of physical education depends on the psychophysiological characteristics of a person. Special attention has been paid to the study of typological features, the identification of properties of the nervous system, or, as psychologists often say today, [2; 4; 6], – the neurodynamic characteristics.

Psychophysiology focuses on the role of physiological processes in the internal experiences of a person [1; 3; 4]. The effectiveness of physical activity is determined by many «internal» (psychophysiological) factors: motives for activity, abilities, resistance to adverse external factors and states that develop in a person under the influence of these factors [5; 6].

In order to optimize the physical education of students of higher educational institutions, it is necessary to study separate indicators of their psycho–physiological states, namely the measurement accuracy of the parameters of strength, time, and space of static and dynamic tremors.

Tremor is an oscillation of the distal parts of limbs with a small amplitude. It is a normal physiological response to the regulatory action of the nerve centers that influences muscles, respiration, heart contractions, stability of the body position, etc. Tremors may be classified as static and dynamic. A static tremor is an oscillation of the distal parts observed in a fixed stretched straignt forward position of an arm. A dynamic tremor is measured during outlining contours of different configurations.

One of the tasks of our research aims to determine the rate of simple and complex reactions to a stimulus and static and dynamic tremors in the students of the EENU.

In view of these studies, in order to optimize physical education in higher education institutions, it is necessary, first of all, to study the state of psychophysiological preparedness of students.

The essential part of psychical and physiology indexes is the speed of simple and complex reaction on an irritant and static and dynamic tremor.

Physical education and sport in educational establishments of each level of accreditation are the important constituent of forming the person's general and professional culture, maintaining and strengthening of health, organization and providing healthy way of life, increasing the physical and functional backlogs of human organism, creating the conditions for active work longevity [5, 6].

In modern scientific literature [2; 4; 6] it is firmly established that physical activities, that answer the individual psychical and physiological characteristics of children and young people, have the greatest value for their health. Taking these researches into consideration, for optimization the physical education in higher educational establishments it is necessary, first of all, to learn the real state of students' psychical and physiological health. The study of age, sexual and individual features of person's psychical reactions is necessary for the solving the practical tasks as to the choice of organizational forms, methods and facilities of his development. It is important to define those age-old periods, when those or other psychomotor capabilities show up most actively. This problem stimulated us to investigate the indexes of speed of simple and complex reaction on an irritant and the indexes of static and dynamic tremor for the students of ENU named after Lesia Ukrainka.

The research aim is: 1) to find the indexes of speed of simple and complex reaction on an irritant and the indexes of static and dynamic tremor and 2) to define the conditions of these indexes changes after physical activity.

Research Results. The speed of simple reaction for students depending on the course of studies makes 0,16–0,19 p.s The complex reaction is for 0,04–0,06 c more protracted.

The highest indexes of simple and complex reaction are observed on the 1 and 4 courses of studies (table 1).

Table 1

The Speed of the Simple and Complex Reaction

Indexes	The Course of Study											
	1			2			3			4		
	X	S	Sx	X	S	Sx	X	S	Sx	X	S	Sx
The speed of the simple reaction, *s*	0,16	0,03	0,005	0,19	0,03	0,006	0,19	0,03	0,001	0,17	0,03	0,01
The speed of the complex reaction, *s*	0,20	0,04	0,005	0,24	0,02	0,005	0,25	0,03	0,009	0,22	0,04	0,01
The speed of the simple reaction after somersaults, *s*	0,18	0,03	0,005	0,21	0,03	0,006	0,21	0,02	0,005	0,19	0,02	0,007
The speed of the complex reaction after somersaults, *s*	0,24	0,04	0,006	0,27	0,02	0,005	0,29	0,02	0,004	0,27	0,02	0,01

After two somersaults the reaction rate is slowed down (a simple reaction of 0,18–0,21 s, a complex reaction of 0,24–0,29 s). The average rate of first-year girl students simple reaction after two somersaults is equal to 0,18 ± 0,03 s., second-year year girl students simple reaction – 0,21 ± 0,03 s., third-year girl students simple reaction – 0,21 ± 0,03 s. and forth-year girl students simple reaction – 0,19 ± 0,2 s. The average of the complex reaction after two somersaults among first-year girl students is 0,24 ± 0,004 s., second-year girl students – 0,27 ± 0,002 s., third-year girl students – 0,29 ± 0,02 s. and forth-year girl students 0,27 ± 0,02 s.

It is evident that the execution of the muscular work in particular in coordination exercises slightly slows down the duration of sensorimotor reactions

The results of static and dynamic tremor testing have shown that static tremor values are 2,20 – 3,87 (a right hand) and 4,91–5,80 (a left hand) of strokes (table 1).

There is a rather peculiar tendency to increase the tremor among first – second year students and a slight decrease among senior students. The exception is only forth year girl students (a left hand). The comparison of static tremor results shows that the values of the right hand are 27,13–163,63 % better than the left one.

The indicators of the dynamic tremor are much worse than the static one. The number of strokes with the right hand during the rod holding is 6,00–6,40. The time during which the students were performing the test varies within 11,60–12,97s. The productivity coefficient depending on the training year is 0,49–0,63 cu.

The results of testing with the left hand are lower than with the right one, in particular, the number of strokes during the test is 8,18–9,25 times. Exercise time – 12,25–14,58 s. The productivity factor is 0,58–0,71 cu. It should be noted that the productivity of the right hand is 34,69–37,29 higher.

During the studying at a higher educational institution the productivity coefficient of the dynamic tremor slightly changes.

The best results are observed at 1–3 training years. At the same time, these differences are not valid. The value of the static right-hand tremor after somersaults among first year students is 6,74 strokes.

The tremor average among second year students is 7,08 points. The static tremor results of the right hand after somersaults have improved to 6,92 and 6,60 strokes among second year students. Left-hand test values – 1,32–1,48 % worse than right ones.

In general, there is a tendency to improve the results of the right hand static tremor and the deterioration of the left one over the study period at the EENU.

It is necessary to state that the values of static tremor after performing somersaults are significantly worse than before somersaulting. The difference between the indices of the right arm is 174,0 % on the 1st course, on the 2nd – 177,0 %, on the 3rd – 257,0 %, on 4th – 300 %; left arm accordingly – 180,0 %, 168,0 %, 182,0 %, 168,0 %.

Analyzing the indicators of dynamic tremor of the right arm after performing somersaults, an increase in the number of touches from 9,23 (on the 1st course) to 13,60 (on the 4th course) and the test run time (from 4,62 sec to 17,0 sec) was found. The coefficient of performance is 0,68–0,79 u. A similar tendency is observed with the indicators of the left arm tremor. At the same time, the value of the productivity coefficient is worse and is 0,77–0,91 u.

By comparative analysis of the values of dynamic tremor before and after performing somersaults, a significant difference was found between the indices.

In general, indicators of dynamic tremor after somersaulting worsen by about 100 %.

Conclusions and Perspectives of Further Research. The highest indices of simple and complex reaction were recorded on the 1st and 4th courses of study. There is a tendency to increase tremor by students of the 1st and 2nd courses with a subsequent minor improvement on the 3rd and 4th courses of study. The exception is only the 4th year students (left arm). The results of the test performed by the left arm are worse than by the right arm. The productivity of the left arm is 0,58–0,71u. The productivity factor of the right arm is 34,69–37,29 % higher. After exercising, indicators of static tremor worsen. The difference between the indices of the right arm is 174,0 % on the 1st course, on the 2 nd – 177,0 %, on the 3 rd – 257,0 %, on 4 th – 300 %; left arm accordingly – 180,0 %, 168,0 %, 182,0 %, 168,0 %. In general, indicators of dynamic tremor after physical activity deteriorate by about 100 %.

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Стаття надійшла до редакції 13.04.2017 р.

УДК 796.093.46

ANALYSIS OF SOMATIC HEALTH STATE OF STUDENTS AT LESYA UKRAINKA EASTERN EUROPEAN NATIONAL UNIVERSITY

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Abstract

The research urgency is caused by necessity of studying the students somatic health level due to a sharp deterioration of health state during the last decade**.** ***The aim*** of the investigation is studying the dynamics and nosological forms of students diseases of higher educational institutions. ***The results of the work*.** It is established that the incidence of students in the dynamics of 2010–2016 is growing rapidly. The diseases of cardiovascular system, stomach and digestive organs, musculoskeletal system are the most common. In the analysis of nosologic forms of diseases for a gender characteristics, the percentage of women with pathology, from the first to the fourth year study within the specified research period is significantly more than men. ***Conclusions.*** The state of students health is unsatisfactory. This requires the search for new approaches for setting issue of youth health.

Key words: disease, special medical groups, students, nosological forms, somatic health.

Василь Пантік. Аналіз стану фізичного здоров'я студентів Східноєвропейського національного університету імені Лесі Українки. ***Актуальність дослідження*** зумовлена потребою вивчення рівня соматичного здоров'я студентської молоді внаслідок різкого погіршення стану здоров'я протягом останнього десятиріччя. ***Мета дослідження*** – вивчити динаміку та нозологічні форми захворювань студентів вищих навчальних закладів. ***Результати роботи***. Установлено, що рівень захворюваності студентів у динаміці 2010–2016 р. стрімко зростає. Найбільш поширені хвороби серцево-судинної системи, шлунку та органів травлення, опорно-рухового апатату. Під час аналізу нозологічних форм захворювань за гендерними ознаками відсоток жінок I–IV курсів із патологією протягом зазначеного періоду дослідження значно більший, ніж чоловіків. ***Висновки*.** Стан здоров'я студентів є незадовільним. Це вимагає пошуку нових підходів до вирішення питання здоров'я молоді.

Ключові слова: захворюваність, спеціальні медичні групи, студенти, нозологічні форми, соматичне здоров'я.

Василий Пантик. Анализ состояния соматического здоровья студентов Восточноевропейского национального университета имени Леси Украинки. ***Актуальность исследования*** обусловлена необходимостью изучения уровня соматического здоровья студенческой молодежи вследствие резкого ухудшения состояния здоровья в течение последнего десятилетия. ***Цель исследования*** – изучить динамику и нозологические формы заболеваний студентов высших учебных заведений. ***Результаты работы.*** Установлено, что уровень заболеваемости студентов в динамике 2010–2016 гг. стремительно растет. Наиболее распространенные болезни сердечно-сосудистой системы, желудка и органов пищеварения, опорно-двигательного аппарата. При анализе нозологических форм заболеваний по гендерным признакам процент женщин I–IV курсов с патологией в течение указанного периода исследования значительно больше, чем мужчин. ***Выводы.*** Состояние здоровья студентов является неудовлетворительным. Это требует поиска новых подходов к решению вопроса здоровья молодежи.

Ключевые слова: заболеваемость, специальные медицинские группы, студенты, нозологические формы, соматическое здоровье.

Introduction. The problem of maintaining health becomes global in recent decades. The health of the population is an indicator of spiritual, social, economic and medical-biological level of welfare of civilized country. As shown by numerous scientific researchers, in recent years the level of somatic health of young students significantly deteriorated. It is associated with a number of objective and subjective reasons. In our view, many factors influence the formation of the health of students in the learning process. These factors can be conditionally divided into two groups. The first group includes factors, which directly related to the educational process (the length of the school day, workload, due to a schedule, break between classes, status of the classrooms, etc.). The second group of factors is subjective, personal characteristics, which include diet, physical activity, recreation organization, presence or absence of bad habits, etc. [1; 3; 8; 15].

The negative impact on the health of young people has a low social level, inappropriate conditions of training activities, the lack of incentive mechanism of a healthy lifestyle, decreased interest in physical activity, lack of stimulation mechanism of a healthy lifestyle, which leads to lower immunity and increase in

the number of infectious diseases, diseases of the musculoskeletal system, respiratory and cardiovascular systems, the spread of drug abuse, reducing the reproductive potential of young people [2; 5; 9; 11].

European vector of social development and reform of higher education in Ukraine aims to bring its content to international standards. It significantly changed the organization of teaching in higher educational institutions, has formed a new outlook on the development of the education system, its capabilities and prospects. This, in turn, puts high demands on the health status of students. In the higher educational institutions there is a tendency to decline in motor activity of students as a result of the intensification of educational process. Chronic shortage of motor activity in the mode of life of young student poses a threat to their health and normal physical development. The problem of maintaining health in the last decade has gained priority status, including young students as socially important part of society and reproductive potential of state [1; 4].

In studies of many authors there is a clear trend of poor health of young people [2; 6; 10; 17]. Due to the scientific research, in Ukraine, about 90 % of students have deviations in health state, 50 % – poor physical fitness, in 70 % of students there is a low level of motor activity [3; 4; 15; 16].

To the structure of these problems the first place is still occupied by chronic fatigue (50 %), depressed mental condition (25 %), slight indispositions (9 %), headache (12 %) and other factors (4 %). Nowadays, the health of students has the negative consequences of national importance [2; 12; 13].

In the context, the topical issue is studying of health state of students.

The aim of the investigation is to determine the level of somatic health state of higher educational institutions and to analyze the dynamics and nosological forms of students diseases in 2010–2016 years.

Material and Methods of Analysis. Analysis and synthesis of the literature, teaching observation, analysis of medical records of students. The incidence of students at the Lesya Ukrainka Eastern European National University studied based on medical records, the number of requests for medical care, chronic diseases and medical certificates of temporary exemption from classes. We evaluated the incidence of both general and specific for each class (International Statistical Classification of Diseases and Related Health Problems), based on nosology scheme proposed by the World Health Organization. The research, which took place during the years 2010-2016, was attended by 13,177 students.

The Result of Research. Discussion. In our research we studied the health state of students of I–IV courses at the Lesya Ukrainka Eastern European National University from 2010 to 2016.

The analysis of diseases of young students viewed on medical records of students' clinics at the Lesya Ukrainka Eastern European National University and municipal institution «Lutsk Center of Primary Health Care». Due to the analysis of the results, it can be argued that not all students underwent planned medical examination, and after health reform in 2015, the number of people who underwent it residence of the family doctor significantly decreased (table 1).

Table 1

Number of Checkups of Students at the Lesya Ukrainka Eastern European National University

Categories /Years	2010	2011	2012	2013	2014	2015	2016
1	2	3	4	5	6	7	8
Subject to a medical examination, including people:	8050	8010	7474	7093	6651	6501	6438
Number of people who have not undergone the medical examination	1543	1407	871	413	959	1574	1712
Examine persons	6507	6603	6693	6680	5692	4927	4726
Persons with temporary disability	3458	3657	3715	2913	4837	2445	1906
Revealed chronic pathologies, *persons*	1844	1822	1921	1910	1858	1879	1943
Relatively healthy contingent, *persons*	1205	1124	1057	1003	997	903	877
Subject to medical examination % including:	100	100	100	100	100	100	100
Number of people who have not undergone the medical examination, *%*	19,17	17,57	11,65	5,82	14,42	24,21	26,59

Table 1

1	2	3	4	5	6	7	8
Examine persons, % including:	80,83	82,43	89,55	94,18	85,58	75,79	73,41
– Persons with temporary disability, %	53,14	55,38	55,51	43,61	84,98	49,62	40,33
– Revealed chronic pathologies, %	28,34	27,59	28,70	28,59	32,64	38,14	41,11
– Relatively healthy contingent, %	18,52	17,02	15,79	15,01	17,52	18,33	18,56

As seen from this table, the number of people who have not undergone the planned medical examination do not have a clear trend and is chaotic. The main reason that leads not to visit doctors, as indicated by students – is irresponsible attitude to their health. They motivated it primarily by the fact that they do not feel significant variations in health, do not want to stand in queues during medical examinations, so there is no need to visit a doctor. However, if there are any pathology, they will necessarily go to the doctor. It is also worried that the percentage of people in this category increased in years in dynamics from 19,17 % in 2010 to 26,59 % in 2016.

It can be also argued that absolute figures of the number of persons with temporary disability dynamics decreased slightly – from 53,14 % to 40,33 % in 2016. However, the percentage of people with chronic disorders has increased significantly – from 28,34 % in 2010 to 41,11 % in 2016. The dynamics of indicators makes it possible to assert that the percentage of people in this category is a clear trend in the annual increase in chronic pathologies since 2014, and these are the obvious candidates for health to special medical group.

The relatively healthy people have minor fluctuations both upwards and in the downwards every year. But over the years the percentage of people in this category has not changed significantly: from 18,52 % in 2010 to 18,56 % in 2016.

The structure of the lymphoma disease forms of students is also disturbing. The following pathologies are on the top for the last years (fig. 1).

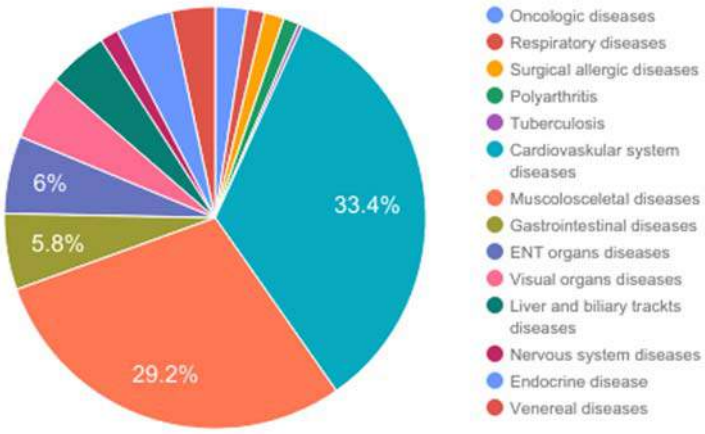

Figure 1. *The Statistic of Students Diseases for 2010–2016 in Lesya Ukrainka Eastern European National University*

The results of the study show that cardiovascular system diseases are the most spread (30,9 %), the second place is taken by musculoskeletal diseases (27,0 %),than go gastrointestinal (5,4 %), ENT organs diseases (5,5 %) and others. The lowest percentage among the students is observed in TB disease (0,3 %) and polyarthritis (1,1 %). What concerns the most is that the dynamics of nosological forms disease data fluctuates both upward and downward, but during the observation the data remains unchanged. The most spread diseases, the students suffer from are the following: visual organs disease (4,7 %), nervous system diseases(4,3 %), liver and biliary tract infection (4,2 %), endocrine diseases (4,0 %), venereal system diseases (3,1 %), skin diseases (2,4 %), oncologic diseases(2,3 %), respiratory diseases (1,2 %) and surgical-allergic diseases (1,4 %).

Having analyzed the overall growth rate of incidence from 2010 (22,91 %) to 2016 (30,17 %), a significant increase in the incidence is observed (7,26 %).

Taking into account gender indicators, the number of females, who have certain diseases, significantly exceeds the number of males diseases. So, during the study, the dynamics of the percentage of men among people with pathologies has not significantly increased: 7,34 % vs. 9,77 % in 2016, but there is an increase – 2,43 %. Meanwhile, the indicator among women is slightly higher: 15,59 % vs. 20,52 % in 2016. The total increase is 4,93 %, which is almost twice higher than the dynamics of disease among men.

Table 2

Quantitative and Gender Incidence Rate Indicators Among LUEENU Students During 2010–2016

Indicators		2010	2011	2012	2013	2014	2015	2016	Total
Total number of students of the university	total	8050	8010	7474	7093	6651	6501	6438	50217
Students, detected to have a disease, *q-ty*	m	591	618	679	656	623	573	629	4369
	f	1255	1203	1244	1253	1237	1308	1321	8821
	total	1844	1825	1920	1908	1859	1880	1945	13181
Incidence rate, *%* converted to number of students	total	22,91	22,75	25,70	26,93	27,94	28,90	30,17	26,24
Incidence rate, *%* converted to number of university students	m	7,34	7,72	9,08	9,25	9,37	8,81	9,77	8,70
	f	15,59	15,02	16,64	17,67	18,60	20,12	20,52	17,57
	total	22,91	22,78	25,69	26,90	27,95	28,92	30,21	26,25

The analysis of the study results confirms the general trend of decreasing of students physical health level during last years. It has been noticed that the level of physical health of young people, who are regularly engaged in exercises and sport, has been increased twice. Therefore, we think that the physical condition of students may be significantly improved due to physical activity increase, taking into account gender, age and morphological features.

Conclusions and recommendations for further research. A comparative analysis of the physical health of students makes it possible to assert that the number of students with chronic diseases is steadily growing, and it will increase the number of people who were included special medical group because of their medical status. The percentage of women`s disease is much more higher than the one of men`s.

Poor health indicators of students can be connected in first place with low physical activity, a violation of the NPT regime, a violation of the usefulness of nutrition, inadequate conditions of training activities, as well as neglect to their health and the presence of harmful habits.

That is why one of the priorities of the current stage of education of education is the formation and development of modern health culture of students, the formation of knowledge, values and practical skills to ensure effective management of the vital forces of the body at the maximum realization of physical and physiological capabilities.

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Стаття надійшла до редакції 10.05.2017 р.

УДК 37.037

METHODOLOGICAL PECULIARITIES OF THE USAGE OF STRETCHING TECHNIQUES IN THE PROCESS OF FLEXIBILITY DEVELOPMENT

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Abstract

The article is devoted to theoretical and methodological substantiations of the body flexibility development practically applying the stretching techniques. It was generalized scientific data on the organization and methodological features of stretching exercises. Semantic content and structural componential model of stretching usage in the process of flexibility development and the estimation of the changes of this characteristic according to the age were carried out. In particular, some parameters were highlighted especially which allow to recommend that methodology both for individual and group usage were analyzed. Besides, it was analyzed the diversity of physiological mechanism of the influence of stretching on human body, especially it was singled out the effect on mental and physical spheres of human being. The generalized scientific data on the theoretical and practical aspects of flexibility development with the help of stretching techniques indicate the priority of usage of this method in many types of physical activities irrespective of the scope of its practical application.

Key words: stretching, flexibility, development.

Оксана Романюк, Богдан Задворний. Особливості методики використання стретчингу в процесі розвитку гнучкості. У статті здійснено теоретико-методичне обґрунтування розвитку гнучкості за допомогою практичного застосування вправ стретчингу. Узагальнено наукові дані щодо організаційно-методичних особливостей проведення занять зі стретчингу, проаналізовано змістове наповнення й структурно-компонентну модель використання стретчингу в процесі розвитку гнучкості та вікові нормативи оцінки її змін. Зокрема, виділено окремі параметри, що дають змогу рекомендувати методику як для індивідуального застосування, так і для групових занять. Окрім того, у роботі проаналізовано різносторонній фізіологічний механізм впливу стретчингу на організм людини, що полягає в активізації всіх систем, установлено дію на психічну та соматичну сфери людини. Узагальнені наукові дані щодо теоретичних і практичних аспектів розвитку гнучкості засобами стретчингу свідчать про пріоритетне використання методики в багатьох видах фізичної активності, незалежно від сфери її практичного застосування.

Ключові слова: стретчинг, гнучкість, розвиток.

Оксана Романюк, Богдан Задворный. Особенности методики использования стретчинга в процессе развития гибкости. В статье исследуется теоретико-методическое обоснование развития гибкости путем практического применения упражнений стретчинга. Обобщены научные данные касательно организационно-методических особенностей проведения занятий стретчинга, проанализированы содержательное наполнение и структурно-компонентная модель использования стретчинга в процессе развития гибкости, а также возрастные нормативы оценки ее изменений. В частности выделены отдельные параметры, позволяющие рекомендовать методику как для индивидуального применения, так и для групповых занятий. Кроме того, в работе проанализирован разносторонний физиологический механизм влияния стретчинга на организм человека, который заключается в активизации всех систем; установлено воздействие на психическую и соматическую сферы человека. Обобщаются научные данные о теоретических и практических аспектах развития гибкости средствами стретчинга, что свидетельствуют о приоритетном использовании методики во многих видах физической активности, независимо от сферы ее практического применения.

Ключевые слова: стретчинг, гибкость, развитие.

Introduction. The Ukrainian and foreign scientists very often interpret the term of flexibility as morphological and functional properties of the musculoskeletal system which define the mobility of its parts. A sufficient level of flexibility is the ability to do some elementary movements without any difficulties. However, doing any movements requires the usage of the means and methods of its development and support [1; 2; 5; 7; 11].

Scientists on the sphere of physical education and sport M. M. Bulatova (1997), N. M Kovalchuk (1994) and others worked in their works on the issue of flexibility development and improvement. However,

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

the investigation of the flexibility development under the influence of different factors is going on even now. Besides, the development of fitness industry offers new modern approaches of the development and improvement of human flexibility. The importance and need of their investigations are motivated be the high demands to physical and mental state of a person, without taking into account the age and the area of activity. From this perspective the problem of special methodology investigation arises. The aim of this methodology is to achieve normal physiological point of view of the human motions through the use of exercises.

The aim of the research is to prove the theoretical and practical aspects of the methods of using stretching exercises in order to develop flexibility.

Research Methods. The aim of the research is to study the set problems of the theoretical level using the method of analyzing literature, which includes the study, data systematization and generalization of scientific and technical literature on aspects of the practical application of stretching in order to improve the development of flexibility.

The Results of Research. Discussion. Nowadays every person performs a lot of movements during the day, which require a significant level of motion skills and flexibility in particular. A. Bondarenko (2016) emphasizes the improvement of the quality of the engine as one of the important factors in the physical state of the person. It indicates the possibility of doing exercises form the early age till. Inactivity can cause adverse physiological and morphological changes in organs and system at all. Moreover, it is proved that the level of physical development depends on the consistency and somatic vegetative functions, which can be achieved while doing exercises regularly [5; 6; 7;].

The sufficient level of flexibility should ensure the implementation of exercises which are necessary for every day activity. Of course, monitoring and evaluation of development should be conducted in terms of the division into age groups. In particular, V. Sergienko (2011) proposed differentiated standards of flexibility evaluation which are based on defined mathematical rules of sigmoid scale, according to which the results of tests are measured in 5–12 point scale. The accessible and objective defining of the level of flexibility is an important criterion of control and correction of the influential methods [8; 9].

One of the important points of the development and improvement of methods of flexibility is to single out optimal proportions of stretching exercises usage. This statement is the basis of the wide usage of stretching on the modern physical education system [10; 12].

Stretching is the system of static exercises the aim of which is to develop flexibility and to increase elasticity of muscles. Like other modern techniques it is a quite individual one. Nevertheless, the movements should be soft and slow in order to control them. The duration of the one set of exercises should be approximately from 10 to 45 minutes and the dosage of some exercises in static ranges from 15 to 60 seconds. Also, it is very important not to do the exercises on the same part of muscles, but to change them and to do exercises in different variations [3; 10; 12].

M. O. Zhukovsky (2016) proves the effectiveness of the usage of stretching to improve students' body flexibility. In particular, the author emphasizes the utmost importance of the popularity of new types of recreational gymnastics, which is important for the effective organization of practical physical education classes. The scientist highlights the positive impact of methods on the emotional state of students and the availability of performing these exercises at home [6].

The physiological nature of stretching is in the process of stretching muscles and keeping of certain provisions in these processes activates blood circulation and metabolism. Duration of rest between exercises is identified individually [3].

The impact on the human body of stretching from physiological and morphological standpoint is difficult to overemphasize. This method helps to reduce muscle tension and pain of normal joint mobility, improves physical and mental recovery of the body after prolonged stress, increase flexibility connective tissues, reduces the risk of injury and improve the quality of motor activity [3; 6; 12].

Stretching affects the mental and physical spheres of human growth and it is manifested in the improvement of human's abilities and capabilities. An important manifestation of this versatile technique on the human body is the development of management skills and movements control, increasing of resistance to external factors and special endurance [10].

In the practice of physical education and sport are the following types of exercises that promote muscle stretching method of stretching:

– ballistic – moves of arms and legs, trunk flexion and extension. The speed of stretching muscles is proportional to the rate of swings and flexion. This type of stretching is rarely used in practice during the group sessions because it is quite traumatic;

– slow – stretching muscles to the maximum length. This type of stretching is effectively used in the workout and is called «rhythmic flexibility».

– static – using slow movements for 5–30 and even 60 with a certain posture. At the same time, periodically or continuously person can strain the stretched muscle group;

– PNF – method consists of several stages and involves collaboration with a partner [4].

V. V. Biletska (2012) offers a program of stretching flexibility and divides it into separate blocks. The first block of the author recommends using exercises to develop strength and flexibility, a second unit represents Pilates system, the third block system combines yoga exercises with relaxation, meditation, breathing exercises. In our view, the author proposed efficient program of classes, integrated through the use of modern health techniques, which are accessible and effective way to promote flexibility [3].

It should be noted that stretching exercises is not only effective training body for further physical activity. Their use in the final part of the lesson will help muscles to recover by returning from of the reduced state to its original length (at rest). However, remember that stretching is allowed only up to certain limits peculiar to every individual, which is accompanied by pleasant sensations, pain in this case shows excessive range of motion and the risk of injury [10].

In the training process it is important to pay attention to breathing, it is simple, quiet, and forced expiratory without delay [12].

The peculiarity of the application of stretching is that it does not have clearly defined methods for constructing training session. General amount of its movements is so large that there are many variations and modifications of this physical activity.

Stretching techniques exhibit maximum efficiency in the development of flexibility under the terms of the following circumstances:

– an increase in static and dynamic activities occurs gradually and in stages, and the set of exercises on each stage is justified both from educational and from physiological point of view;

– an increase of the flexibility and dynamic development occurs in counter to achieve maximum health effect.

The physiological mechanism of action of stretching is to enhance muscle fibers by reducing the time of relaxation.

Being an interesting and modern technique, stretching is used in many types of physical activity. In particular, it its effectiveness is proved in the field of preventive medicine and as a means of physical education classes in educational institutions at all levels and in private coaching practice.

Conclusions and Perspectives for Further Research. Stretching is reasonably considered to be rather «soft» method of flexibility development. This system of exercises does not have clearly identified contraindications as to be used at classes, however, in some cases the one shoud be very careful. Despite the technique is marketed as a means to prepare for further activities and "warming" of the muscles, it has been successfully used as an effective exercise for developing flexibility, strengthen muscles, posture improvement and joint mobility.

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Стаття надійшла до редакції 18.05.2017 р.

УДК 616-051-057.87

LIFESTYLE OF STUDENTS STUDYING IN THE SPECIALTY «NURSING»

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Abstract

The article analyzes the lifestyle of students studying in the specialty «Nursing». Among students of medical colleges there was conducted a survey, which was attended by young men (n = 10) and women (n = 106), aged 15 to 21 years. The study revealed a small number of students who smoke cigarettes, but alcohol and low alcoholic drinks were consumed by about 73 % of female students, of which 28 people were underage. There was discovered low physical activity among students after school – 107,08 ± 14,9 min. per week, which is about 15 minutes. for a day.

It is already stated, that the lifestyle of students studying with a speciality called «Medical care» needs a constant and purposeful forming during the whole learning period.The realizing of the importance of health preservation for patients and first of all for yourself the change of students attitude according to the lifestyle and forming of the value relation to own health – all of it will promote a success full realization of social and professional functions of the future nurses.

Key words: healthy lifestyle, students of medical colleges, physical activity.

Наталія Семенова, Романа Сіренко, Мар'яна Ріпак, Любов Чеховська. Спосіб життя студентів, котрі навчаються за спеціальністю «Сестринська справа». У статті розглянуто питання способу життя студентів, які навчаються за спеціальністю «Сестринська справа». Серед студентів медичних коледжів проведено опитування, у якому взяли участь юнаки (n=10) та дівчата (n=106) віком від 15 до 21 року. Дослідження дало змогу виявити незначну кількість студентів, котрі курять тютюн, проте алкогольні та слабоалкогольні напої вживають близько 73 % опитаних студенток, 28 осіб із яких – неповнолітні. Виявлено низьку рухову активність серед студенток у позанавчальний час – 107,08±14,9 хв на тиждень, що становить близько 15 хв на день. Установлено, що спосіб життя студентів, які навчаються за спеціальністю «Сестринська справа», потрібно цілеспрямовано й постійно формувати протягом усього періоду навчання. Усвідомлення важливості проблеми збереження здоров'я пацієнта та насамперед свого власного, зміна ставлення студента до способу життя й формування ціннісного ставлення до здоров'я сприятиме успішній реалізації соціальних і професійних функцій майбутніх медичних сестер.

Ключові слова: здоровий спосіб життя, студенти медичних коледжів, рухова активність.

Наталья Семенова, Романа Сиренко, Марьяна Рапс, Любовь Чеховская. Образ жизни студентов, обучающихся по специальности «Сестринское дело». В статье рассматривается вопрос образа жизни студентов, обучающихся по специальности «Сестринское дело». Среди студентов медицинских колледжей проведен опрос, в котором приняли участие юноши (n = 10) и девушки (n = 106) в возрасте 15–21 год. Исследование позволило выявить небольшое количество студентов, которые курят, однако алкогольные и слабоалкогольные напитки употребляет около 73 % опрошенных студенток, 28 из которых – несовершеннолетние. Выявлено низкую двигательную активность среди студенток во внеучебное время – 107,08 ± 14,9 мин. на неделю, составляет около 15 мин. в день. Установлено, что образ жизни студентов, обучающихся по специальности «Сестринское дело», необходимо целенаправленно и постоянно формировать течение всего периода обучения. Осознание важности проблемы сохранения здоровья пациента, и в первую очередь, своего собственного, изменение отношения студента к образу жизни и формированию ценностного отношения к здоровью будет способствовать успешной реализации социальных и профессиональных функций будущих медицинских сестер.

Ключевые слова: здоровый образ жизни, студенты медицинских колледжей, двигательная активность.

Introduction. Concern for the health of students is a priority for higher education. Student youth forms scientific, cultural, defense potential of Ukraine, the gene pool of the nation. However, the preservation and strengthening of health of students is a complex cultural, educational, economic, social and political issue. [1]. In difficult conditions of the present time, training of competitive medical specialists is possible only if their level of health is high, that is provided, by adhering a healthy lifestyle (HLS).

A lot of researches by native and foreign specialists are dedicated toformation of culture and health of future doctors, healthy lifestyle of medical students studying at universities of III–IV accreditation level

[2; 3; 4]. In domestic scientific literature there are researches [5] devoted to the formation of a healthy lifestyle of students studying at medical colleges. In the scientific literature there are few studies devoted to healthy lifestyle and physical activity of students studying in the specialty «Nursing» [6; 7; 8].

Question about the lifestyle of students studying in the specialty «Nursing» is urgent and requires scientific research, because nurses are the largest medical personnel involved in the medical and health care institutions. In many European countries, nurses constitute the basis of primary health care branch [9].

Methods. To determine the lifestyle of medical students studying in specialty «nursing» in the 2016–2017 academic year, there was conducted anonymous survey among students of Medical College of Danylo Galytskyi National Medical University of Lviv and A. Krupynsky National Medical College of Lviv. In the survey, there were involved students aged 15 to 21 years, and information was received regarding the presence of their bad habits and their physical activity outside school. The survey was conducted among boys (n = 10) and girls (n = 106). The students answered the question whether they smoke cigarettes or not, and if yes, how many cigarettes a day. Also, whether students consumed alcoholic and alcoholic beverages, if yes, how often. The questionnaire included questions about drugs use. In response to questions about their motor activity outside schools, students had to indicate whether they were engaged in physical activity, if yes, how often and what amount of time they devote to motor activity. Also, they had to specify what kind of sport or motor activity they were practicing.

The survey results were processed using the methods of mathematical statistics (t-criteria of a student for independent samples).

Research Results. Discussion. The results are provided in Table 1 and shown in figures 1, 2.

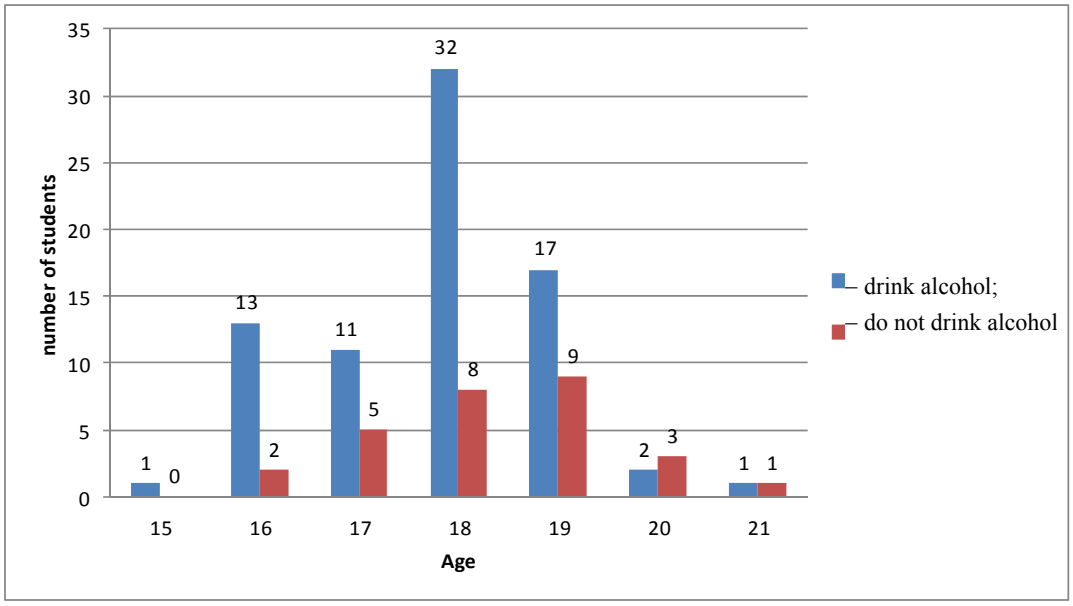

Figure 1. *The Ratio of Students who Drink and do not Drink Alcohol and Low Alcoholic Drinks by their Age.*

Table 1

Students Practicing Physical Activity (RA) Outside the Classroom *(n = 116)*

Number of the Surveyed Students	Students' Age	Not Practicing p.a. *(n=37)*		Practicing p.a. *(n=69)*	
		Number	%	Number	%
3	15	0	0	3	100
19	16	7	36,8	12	63,2
18	17	6	33,4	12	66,6
41	18	17	41,5	24	58,5
26	19	7	27	19	73
6	20	1	17	5	83
3	21	1	33,4	2	66,6
Average value	17,8		27 %		73 %

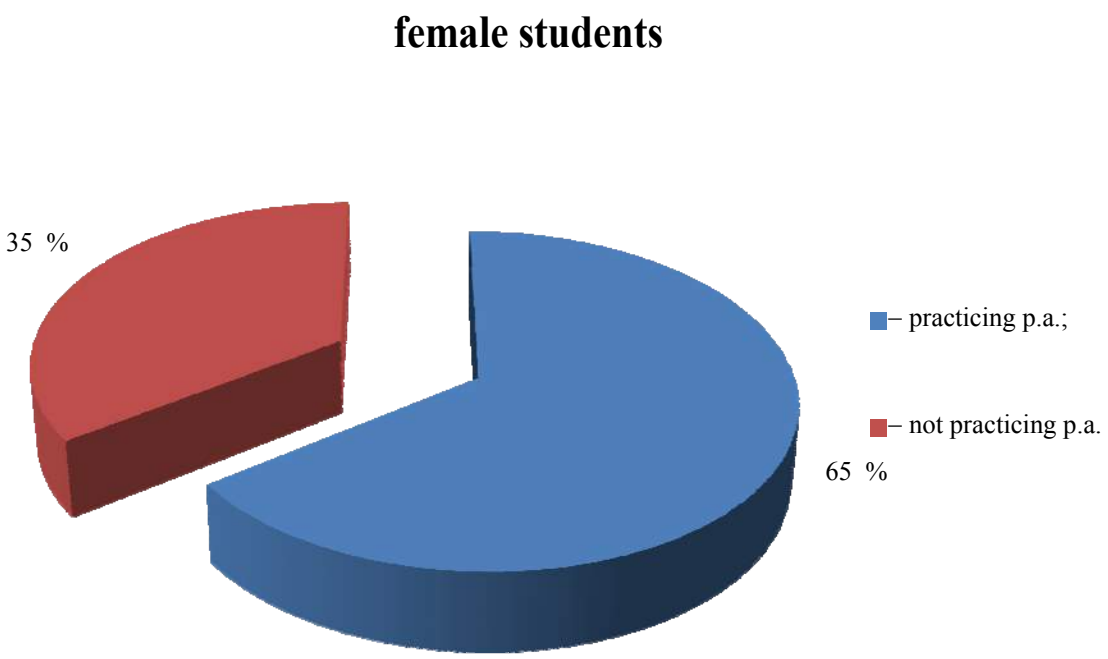

Fig. 2. *Students' Current Pphysical Activity Outside school (%)*

It was found, that among the surveyed students four juveniles have smoking habits, five students sometimes use alcohol and low alcoholic drinks. Eight surveyed students, on average, spend on physical activity outside schools about 312 ± 95,8 min. per week, which is about 50 minutes for a day. According to the survey, the most popular sports among young students were football, volleyball and training in the gym.

In a survey of female students, it was found that among girls 14 students sometimes smoked tobacco, while two mentioned that they smoke only when they drink alcohol. However, about 73 % of the surveyed students, of which 28 people – juvenile consume alcoholic and low alcoholic drinks (figure 1).

The received data confirm numerous researches of scientists [10], that a great number of citizens aged 12 to 22 years from time to time or regularly drink alcohol. Also, about the growing prevalence of smoking among adolescents 14–17 years.

According to the survey, 65 % of female students devote time to physical activity outside school. During the questionnaires, female students indicated, that they prefer physical activity based on a gymnastics exercises, different directions of health fitness, shaping, aerobics, bodybuilding. Also, they indicated that they are practicing walking and jogging. However, on average, physical activity among students, according to the survey, amounted to about 107,08 ± 14,9 min. per week, which is about 15 minutes for a day. The received data indicate the physical activity deficit of students studying in the specialty «Nursing». The specified amount of physical activity among students is significantly lower than recommended for this category of citizens. Physical activity is a key aspect of a healthy lifestyle. The absence of need in regular classes of physical education during the school years for students complicates achieving the goals for improving physical activity of students studying in the speiality «nursing».

Conclusions. The level of alcohol consumption that occurs among medical students is alarming and confirms the alarming statistics all over Ukraine. Determined physical activity is lower than the recommended rates for these age groups, and the number of girls who consume alcohol is higher than the number of students involved in physical activity outside schools.

Healthy lifestyle students studying in the specialty «Nursing» must deliberately and continuously formed throughout the study period, including physical education classes. That requires a change in the areas of health, fitness and mass sports activities at institutions, the use of new technologies, the main goal of which is health strengthening, providing healthy entertainment, reproduction of a high level of physical training of medical students – as part of human culture.

Awareness of the importance of maintaining the health of the patient and, especially, your own health, change of students' attitude to lifestyle and the formation of valuable attitude to health will contribute to the successful implementation of social and professional functions of future nurses.

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Стаття надійшла до редакції 18.05.2017 р.

УДК 796.035-057.874

IMPACT OF RECREATIONAL SWIMMING ON PHYSICAL CONDITION OF THE VISUALLY IMPAIRED JUNIOR PUPILS

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Abstract

In the article the comparative analysis of physical development and physical preparedness of visually impaired schoolchildren of junior age comes true after application of the health swimming and his influence on the bodilycondition of children. An important problem in the period of development of th functional systems of organism is strengthening of health of children of midchildhood, as general bases of health aremortgaged exactly in this period of life, that it is especially important for children that have defects of sight, as at themarked pathology functional possibilities of organism andlevel of capacity below, than in healthy. Basic motions provide the health of children, them normal development and physical perfection. A correction and in demnification of lacks of physical development and physical preparedness of visually impaired children ade quately influenced the health swimming on the bodily condition of children, to what indexes testify got during an experiment. Onquestioning of parents and teachers, application of th health swimming influenced also on reduction of catarrhal diseases among children, that was marked on the visit of school lessons. The results of our researches testify to the necessity of application of the health swimming, that must take the important place in the complex of measures on the aim of strengthening of health of children, improvement of motiveinternalss, prophylaxis of secondary diseases of visually impaired students of midchildhood.

Key words: health swimming, physical development, physical preparedness, visually impaired unior schoolchildren.

Тетяна Цюпак, Юрій Цюпак, Фелікс Філак. Вплив оздоровчого плавання на фізичний стан слабозорих школярів молодшого віку. У статті здійснюється порівняльний аналіз фізичного розвитку та фізичної підготовленості слабозорих школярів молодшого віку після застосування оздоровчого плавання і його впливу на фізичний стан дітей. Важливою проблемою в період розвитку функціональних систем організму є зміцнення здоров'я дітей молодшого шкільного віку, оскільки саме в цей період життя закладаються загальні основи здоров'я, що особливо важливо для дітей, які мають вади зору, оскільки при зазначеній патології функціональні можливості організму і рівень працездатності нижчий, ніж у здорових. Забезпечують здоров'я дітей основні рухи, їх нормальний розвиток і фізичне вдосконалення. Корекція та компенсація недоліків фізичного розвитку і фізичної підготовленості слабозорих дітей оздоровчим плаванням адекватно вплинула на фізичний стан дітей, про що свідчать показники, отримані в ході експерименту. За опитуваннями батьків і вчителів, застосування оздоровчого плавання вплинуло також на зменшення застудних захворювань серед дітей, що відзначилося на відвідуванні шкільних уроків. Результати наших досліджень свідчать про необхідність застосування оздоровчого плавання, яке повинно зайняти важливе місце в комплексі заходів із метою зміцнення здоров'я дітей, поліпшення рухових якостей, профілактики вторинних захворювань слабозорих учнів молодшого шкільного віку.

Ключові слова: оздоровче плавання, фізичний розвиток, фізична підготовленість, слабозорі молодші школярі.

Татьяна Цюпак, Юрий Цюпак, Феликс Филак. Влияние оздоровительного плавания на физическое состояние слабовидящих школьников младшего возраста. В статье осуществляется сравнительный анализ физического развития и физической подготовленности слабовидящих школьников младшего возраста после применения оздоровительного плавания и его влияния на физическое состояние детей. Важной проблемой в период развития функциональных систем организма является укрепление здоровья детей младшего школьного возраста, так как именно в этот период жизни закладываются общие основы здоровья, что особенно важно для детей, имеющих недостатки зрения, поскольку при указанной патологии функциональные возможности организма и уровень работоспособности ниже, чем у здоровых. Обеспечивают здоровье детей основные движения, их нормальное развитие и физическое совершенствование. Коррекция и компенсация недостатков физического развития и физической подготовленности слабовидящих детей оздоровительным плаванием адекватно влияние на физическое состояние детей, о чем свидетельствуют показатели получены в ходе эксперимента. По опросам родителей и учителей, применение оздоровительного плавания повлияло также на

уменьшение простудных заболеваний среди детей, отметилось на посещении школьных уроков. Результаты наших исследований свидетельствуют о необходимости применения оздоровительного плавания, которое должно занять важное место в комплексе мероприятий с целью укрепления здоровья детей, улучшение двигательных качеств, профилактики вторичных заболеваний слабовидящих детей младшего школьного возраста.

Ключевые слова: оздоровительное плавание, физическое развитие, физическая подготовленность, слабовидящие младшие школьники.

Introduction. At the present stage of life the burden on all the sense organs, and especially vision increased. This led to a large number of people with impaired vision (myopia, hyperopia, nystagmus, etc.). There is a large number of children of primary school age among them. According to statistics, 3 % of children in the early years of training already have visual impairment. Till 3–4th form, this indicator rises to 10 %.

The drawbacks in physical development of impaired people are explained by functional abandonment of motor analyzer and by methodological imperfection of teaching children such physical exercises [6].

Analysis of the scientific and methodological literature showed that the works of researchers are devoted to the question of visual correction and rehabilitation usage in the classes with visual impaired children [4; 9]. A number of works of contemporary scholars devotes to the impact of different types of motor activities such as swimming [8] dancing [5], outdoor games [3], music and gaming activities [1] on the health of blind and visually impaired children.

There was found by numerous studies that methodically properly organized classes with special tools usage contribute largely to correct and compensate movement disorders and drawbacks of physical development of visually impaired children [4; 8; 10]. Experts offer several methods of process optimization for learning new exercises and using all sorts of technical devices [7].

Indeed, an important issue during the development of functional organism's systems is to strengthen children's health, because in this period of life lay the foundations of general health.

Purpose of assignment is to study the impact of recreational swimming on the physical conditions of the visually impaired junior pupils.

Results of the Research. **Discussion.** Recreational swimming is an effective means of hardening against sudden temperature fluctuations and colds, to improve the functionality of the organism. The usage of recreational swimming on purpose to correct the physical condition of children with visual impairment has preventive and healing effect.

Several authors note the favorable properties of water as the effective means of rehabilitation and improvement of physical fitness [6; 8]. Water reduces weight, lows the load on the joints and spine. In addition, it creates pressure on the human body in all directions, fights back during the person's movement, making them smoother, and relieves pain in muscles during exercises. According to some authors [9; 10], one of the most effective means of influencing the human body in health purposes should be considered in terms of motor activity of the aquatic environment. With swimming dosage one can increase stability of organism's biosystems to a variety of diseases, and especially to acute respiratory infections.

Scientists M. M Bulatova and K. P. Sahnovskyy [2] note that swimming influences positively on the condition of blood vessels. During the swimming the elasticity of the lungs increases, bronchi and alveoli are trained, the size of the chest, lung and vital capacity also increases. Water environment has a great tonic effect on the nervous system.

Several authors [2; 9; 10] investigated the role of medical swimming in the cardiovascular and nervous systems, bronchi and lungs diseases have developed the technique using a set of exercises in the water, which helps to prevent disease and improve the body.

In turn, this contributed the adaptation of organism not only to swimming, but also to other types of physical activity. Classes in the pool with a temperature of 27 ° C cause positive changes in thermoregulation system, contributing the adaptation to cold.

Despite the considerable number of scientific works to study features of development, movement disorders' structure, teaching methods, forms of correction, their effects on motor activity of impaired people require further scientific study of problems of improvement and correction of physical development, physical fitness, formation and development of all functional systems, corrections of other deviations in young students with visual impairments, because this is the age when physical qualities develop the most. Therefore, early rehabilitation of the child's development defects is considered particularly important, and

the usage of recreational swimming as a prophylactic and healthful means of young children with visual impairments very relevant.

In the study, which lasted 6 months, children with visual impairments took part in it. Due to ungraded classes, in which students of one class are combined with others with varying degrees of vision loss and different age, experimental results are presented without division by year and sex.

Recreational swimming classes were conducted by the standard method twice a week and included three parts. Preparation of the lesson was conducted ashore and consisted of general development exercises, special and simulation ones. The main part was held in the pool and included exercises at the banking board, swimming with recommended methods and styles to influence the functional systems of the organism, games in order to make an impact on the emotional and mental health of children. The final part of the session consisted of loosening up exercises and relaxation.

Anthropometric indicators are commonly used to control the state of health. The constitutional characteristics of the body are the external reflection of the functional relationship systems.

The results of our studies found that body length of primary school children with visual impaired analyzer was 127, 1 ± 2, 08 cm before using the recreational swimming. During the experiment the growth rate of students increased to 129, 1 ± 2, 81 cm.

As seen from the data presented in table 1, the average body weight of children with visual impairment amounted to 25, 4 ± 0, 83 kg before the experiment and 26, 9 ± 0, 80 kg after it.

Table 1

Indicators of Physical Development in junior Pupils with Visual Impairment *(n=15)*

Indicators	Before Experiment			After Experiment			P
	$\overline{X}$	s	m	$\overline{X}$	s	m	
Weight, *kg*	25,4	0,83	0,21	26,9	0,80	0,21	<0,001
Height, *cm*	127,1	2,08	0,54	129,1	2,81	0,72	<0,01
Chest circumference, *cm*	61,07	0,86	0,22	63,24	0,81	0,21	<0,001
VC, *ml*	1537,0	61,81	15,96	1774,0	121,1	31,26	<0,001
HR beats. / *min*	91,13	3,11	0,80	83,67	2,82	0,73	<0,001
Dynamometry of right hand, *kg*	10,33	1,11	0,28	12,5	0,71	0,18	<0,001
Dynamometry of left hand, *kg*	9,70	0,99	0,26	11,07	0,68	0,17	<0,001
Strength index, *%*	40,67	0,47	0,15	46,47	1,06	0,33	<0,001
Life index, *ml / kg*	60,51	1,11	0,35	65,95	1,31	0,42	<0,001

Averages of chest circumference before the experiment were 61, 07 ± 0, 86 cm; after – 63, 24 ± 0, 81 cm; the difference of indicators was 2,17 cm.

It is known that an important indicator of external breathing is vital capacity (VC), which is determined to characterize the functional ability of the pupils' respiratory system of children at rest. It depends on the sex, age, body size and fitness. As the researchers D. O. Sylantyev, N. H. Baykina [8] point out, visually impaired children have vital capacity 10–20 % less than healthy ones.

As a result of the experiment, indices of functioning of the cardiovascular and respiratory systems of the examined students have changed.

The study found that the average VC of the primary school children with visual impairments amounted to 1537,0 ± 61,81 ml before the experiment. After a six-month health – improving swimming lessons the average VC of the primary school children with impaired vision amounted 1774,0 ± 121,1 ml, indicating improvement of these indicators on the average of 237,0 ml.

One of the most important parameters to characterize the functional state of the respiratory system is to determine its reserve capacity. These capabilities we tried to predestined according to ratio of the VC – indexes up to body weight (life index).

According to our information, this index of children in the primary school who are visually impaired was 60,51 ± 1,11 ml / kg before the experiment and 65,95 ± 1,31 ml / kg - after the experiment; difference forms 19,28 ml / kg. This difference in marks of life index, in our opinion, can be explained by the fact that children with vision disorders began to lead a movable lifestyle during the experiment.

Average heart rate at baseline of the experiment was 91, 13 ± 3, 11 beats / min. As a result of children's recreational swimming lessons this index decreased to 7,46 beats / min and at the end of study was 83,67 ± 2,82 beats / min, indicating the adaptation of children's organism for adequate regular physical activities.

An important feature that is included in the assessment of children's physical development is an indicator of muscle strength. We found that the average power of left and right hands after the experiment increased to 2,17 kg and 1,37 kg respectively.

However, absolute characteristics of muscle strength are not informative enough, because examined children differ in mass and physique. Therefore, to assess the reserve capacity of the muscle system there was used the relative value of a stronger hand to body weight – power index. According to our results, average power index of primary-school children with visual impairments amounted to 40, 67 ± 0, 47 % before the experiment and 46, 47 ± 1, 06 % after the experiment, the difference is 5,8 %.

So due to the evaluated point for physical development and physical training of junior children with disorders of the visual analyzer after recreational swimming, positive changes are marked. Recreational swimming adequately influenced on the level of children's somatic health that indicates the necessity for further implementation of health events with them.

There were used tests for studying the physical readiness of primary-school children with visual impairments, with the help of which the most important movable qualities of children were determined – speed, flexibility, agility and endurance.

On the advice of a specialized boarding – school doctor for pupils with vision disorders the test duration should not exceed 30 seconds. Therefore, the test for determining strength, which is performed by from a prone position for 1 minute, we did not use in our research.

Table 2 shows the results of motive tests that characterize the physique of junior pupils with disorders of vision.

Table 2

Indicators of Physical Fitness of junior Pupils with Visual Pathology *(n = 15)*

Motive Test	Before the Experiment			After the Experiment			P
	$\overline{X}$	s	m	$\overline{X}$	s	m	
Running on the spot for 5 sec, *motions/min*	14,11	1,15	0,30	15,96	1,01	0,26	<0,001
Shuttle run 4×9 *m, sec*	13,49	0,80	0,21	12,36	0,79	0,20	<0,001
Throwing the ball in the goal, *times*	4,53	0,99	0,26	5,93	0,88	0,23	<0,001
Body incline from sitting position, *sm*	0,71	0,64	0,17	1,93	0,78	0,20	<0,001
Rufje's Test, *y. o.*	8,31	0,87	0,22	7,07	0,88	0,23	<0,001

Results of our research indicate that the level of development of the basic physical qualities of the junior students with visual impairments, which were conducted before and after the experiment, had positive upheaval. Thus, after the implantation of the recreational swimming on purpose to improve the physical condition of the visually impaired children, running on the spot – indicators for 5 seconds improved to 1,85 movements / min.

Many authors note that age period from 7 to 12 years is the most favorable for the skills development. Shuttle run 4 × 9 m children performed 1,13 sec. faster than before the experiment; indicators of the throwing the ball in the goal improved by 1,3 times. Particularly significant improvements were observed in the flexibility development. Body incline from sitting position children improved to 1,22 cm.

Although due to Rufje's test indexes of endurance improved after the experiment for 1,24, but index evaluation corresponds to the meaning of the average productivity before and after the experiment.

Besides, in consequence of a survey of parents and teachers, the children began to have less respiratory-viral aches, which recorded on the school absence because of illness.

Thus, the results of our research indicate a necessity for recreational swimming purposely to afforce children's health, disease prevention, improvement movable qualities with impaired primary-school children.

Conclusions. After applying health-improving swimming intentionally to improve the physical condition of primary-school children with disorders of the visual analyzer improvements of indexes of physical development are marked: the average VC increased by 237,0 ml; difference of circumference indicator of the chest after the experiment was 2,17 cm; indicators of strength of right and left hands increased by 2,17 and 1,37 kg respectively.

Also are marked positive changes in characteristics of physique, so indicators of the running on the spot for 5 seconds improved to 1,85 motions. / min. Particularly significant improvements were observed in the development of flexibility, children improved body incline up to 1,22 cm.

Although due to Rufje's test indexes of endurance improved after the experiment for 1,24, but index evaluation corresponds to the meaning of the average productivity before and after the experiment.

During the autumn and spring periods when an increase of catarrhal sickness is remarked, was recorded the reduction of the number of missing lessons almost doubled.

So, recreational swimming adequately impact on the level of physical health and physique of primary - school children with visual disorders and indicates the feasibility of its implementation in complex of corrective events with these children.

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Стаття надійшла до редакції 03.05.2017 р.

Лікувальна фізична культура, спортивна медицина й фізична реабілітація

УДК: 616.248 : 615.8 : 616.003.9 – 001.8

THE ROLE OF PHYSICAL ACTIVITY IN THE REHABILITATION OF PATIENTS SUFFERING FROM MILD PERSISTENT BRONCHIAL ASTHMA

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Abstract

Bronchial asthma – a chronic relapsing disease that affects 1–18 % of the population in various countries worldwide, die annually around 250,000 people. Asthma worsens quality of life, reduced exercise tolerance, causing respiratory dysfunction and poor physical condition of patients. The aim of research is to study the role of physical activity for rehabilitation of patients suffered from mild persistent asthma during their treatment at hospital. The study involved 30 patients being in hospital due to the exacerbation of asthmatic disease. To compare the effectiveness of the proposed physical rehabilitation program was formed two control groups of 30 patients who used medication and only with traditional methods of exercise. The average age of patients was 35,41 ± 1,05 years. Groups were formed by randomization patients were compared by sex and age. Monitoring the rehabilitation process conducted by the current and landmark controls, which ensure adequate treatment expansion and intensification of physical activity each patient. The program of physical rehabilitation is based on the survey results of patients, paying attention to their functional state, rapid assessment of health and physical features of the disease. The basis of the program was a gradual expansion of physical activity of patients. When building sessions followed a certain sequence purpose of physical training, which consisted of three parts: introduction, main and final. Used have morning hygienic gymnastics and gymnastics, independent study, individually and in small groups. One of the popular methods of training both in-patient and outpatient basis, was walking up the stairs. The second half of the course of rehabilitation systems used cyclic exercises. The use of dosed physical activity while physical rehabilitation of patients suffered from mild persistent asthma has improved functional status of their cardiovascular and respiratory systems, physical performance, quality of life, helped to control the disease.

Key words: asthma, patients, physical activity, physical rehabilitation.

Ігор Григус. Роль фізичної активності в реабілітації хворих на легку персистуючу бронхіальну астму. Бронхіальна астма – хронічне рецидивуюче захворювання, що вражає 1–18 % населення в різних країнах. Щорічно у світі від цієї недуги помирає близько 250 000 людей. Бронхіальна астма значно погіршує якість життя, знижує толерантність до фізичного навантаження, викликає порушення функції дихання й поганий фізичний стан пацієнтів. ***Мета дослідження*** – вивчити роль фізичної активності в реабілітації хворих на легку персистуючу бронхіальну астму в умовах стаціонару. Обстежено 30 хворих, які поступили на стаціонарне лікування в результаті загострення хвороби. Для порівняння ефективності запропонованої програми фізичної реабілітації сформовано ще дві контрольні групи по 30 хворих, які застосовували лише медикаментозне лікування та традиційні методи ЛФК. Середній вік хворих – 35,41±1,05 р. Групи хворих формували методом рандомізації та порівнювали за статтю й віком. Моніторинг реабілітаційного процесу проводили методом поточного та етапного контролю, що забезпечувало адекватне розширення режиму й інтенсифікації фізичного навантаження кожного пацієнта. Розроблено програму фізичної реабілітації хворих з урахуванням результатів обстеження функціонального стану, експрес-оцінки стану фізичного здоров'я та особливостей перебігу хвороби. За основу програми взяли поступове розширення фізичної активності хворих. Під час побудови занять дотримувалися визначеної послідовності призначення фізичних тренувань, які

складалися з трьох частин: вступної, основної та завершальної. Застосовували ранкову гігієнічну й лікувальну гімнастику, самостійні заняття індивідуально та в малих групах. Одним із загальнодоступних способів тренування як у стаціонарних, так і в амбулаторних умовах, була ходьба сходами. Із другої половини реабілітаційного курсу використовували комплекси циклічних вправ. Застосування дозованої фізичної активності в програмі фізичної реабілітації хворих на легку персистуючу бронхіальну астму дало змогу поліпшити функціональний стан серцево-судинної й дихальної систем, фізичну працездатність, якість життя, сприяло досягненню контролю над хворобою.

Ключові слова: бронхіальна астма, хворі, фізична активність, фізична реабілітація.

Игорь Григус. Роль физической активности в реабилитации больных легкой персистующей бронхиальной астмой. Бронхиальная астма – хроническое рецидивирующее заболевание, поражающее 1–18 % населения в разных странах. Ежегодно в мире умирает от этой болезни около 250 000 чел. Бронхиальная астма значительно ухудшает качество жизни, снижает толерантность к физической нагрузке, вызывает нарушение функции дыхания и плохое физическое состояние пациентов. ***Цель исследования*** – изучить роль физической активности в реабилитации больных лёгкой персистирующей бронхиальной астмой в условиях стационара. Обследовано 30 больных, поступивших на стационарное лечение в результате обострения болезни. Для сравнения эффективности предложенной программы физической реабилитации сформировали ещё две контрольные группы по 30 больных, получавших только медикаментозное лечение и с традиционными методами ЛФК. Средний их возраст – 35,41 ± 1,05 лет. Группы больных формировались методом рандомизации и были сопоставимы по полу и возрасту. Мониторинг реабилитационного процесса проводился методом текущего и этапного контроля, что обеспечивало адекватное расширение режима и интенсификацию физической нагрузки каждого пациента. Разработали программу физической реабилитации больных с учётом результатов обследования функционального состояния, экспресс-оценки состояния физического здоровья и особенностей течения болезни. За основу программы взяли постепенное расширение физической активности больных. При построении занятий придерживались определённой последовательности назначения физических тренировок, которые состояли из трёх частей: вводной, основной и заключительной. Применяли утреннюю гигиеническую и лечебную гимнастику, самостоятельные занятия индивидуально и в малых группах. Одним из общедоступных способов тренировки как в стационарных, так и в амбулаторных условиях, была ходьба по ступенькам. Со второй половины реабилитационного курса использовали комплексы циклических упражнений. Применение дозированной физической активности в программе физической реабилитации больных лёгкой персистирующей бронхиальной астмой позволило улучшить функциональное состояние сердечно-сосудистой и дыхательной систем, физическую работоспособность, качество жизни, способствовало достижению контроля над болезнью.

Ключевые слова: бронхиальная астма, больные, физическая активность, физическая реабилитация.

Introduction. Asthma is a chronic relapsing disease being often in progressive state because of the immunologic or non-immunologic reasons, asthmatic attack develops as mandatory clinical symptom arising from bronchial spasm, mucus hypersecretion and swelling of the bronchial mucosa. This is a chronic respiratory disease that affects 1–18 % of population in different countries (300 million in the world), 8–10 % of them are disabled, around 250 000 people die of asthma in the world every year [2; 6; 9; 12].

Asthma is a common and potentially serious chronic disease that can be controlled but it cannot be cured. Asthma has a significant impact on people especially on quality of their lives, including attendance and learning performance, it reduces their activity. The goal of treatment and rehabilitation of patients suffered from asthma is to achieve adequate life with normal tolerance to exercise, avoid serious asthma attacks and achieve optimal lung function with the fewest symptoms. As most patients have respiratory dysfunctions and their physical condition is poor physical therapy may have a beneficial effect [1; 3; 4; 11].

At present there is a steady growth of asthmatic disease in Ukraine, it is motivated by environmental pollution, so the number of people with allergies is increasing, nation's gene pool is deteriorating [5; 7; 8; 10]. All these factors allow considering a bronchial asthma (BA) as an important social and medical problem that requires improvement of diagnostics, development and implementation of comprehensive programs for prevention, treatment and rehabilitation. Hence, it is necessary to develop the modes of physical activity for the patients suffering from asthma, especially in the period of disease exacerbation. These regimes should be applied during the treatment at hospitals.

Material and Methods. The study is involved 30 patients with mild persistent asthma (study group). To compare efficiency of the proposed physical therapy program (PTP) among patients it was formed two control groups included 30 patients each who used only medication (control MT) and traditional methods of exercise (exercise control). The average age of patients was 35,41 ± 1,05 years. Groups of patients were formed by randomization and were compared according to their sex and age. In hospital all patients were in

the acute phase of varying degrees of severity. The term of treatment was 14–21 days. At hospital the observations of each patient was being carried out for about 20 days. If the patient left hospital earlier, he continued on performing physical therapy program of rehabilitation and passed the exam in hospital. In general, patient was being observed for 6 months.

All the patients were examined comprehensively. All figures were recorded at the beginning and at the end of the research, besides of surveying there was an additional examination of patients so that it could be found out the quality of interviewees' lives, the data were recorded in six months after physical rehabilitation.

The clinical examination of patients included survey, inspection, revealing of physical changes.

The assessment of patients' current status was performed according to the following clinical criteria:

- a number of asthma attacks for a day (NAAD);
- a number of asthma attacks last week (NAAW);
- severity of breathlessness (SV) without asthma attacks on a scale of five point MRC (medical research council dyspnea scale);
- physical activity for a day (FAD);
- asthma control test (Asthma Control Test – ACT).

Respiratory function (RF) was evaluated according to the computer spirography. Spirographic figures were recorded in compliance in accordance with the essential requirements. Three basic functional parameters were selected to make necessary analysis:

- forced expiratory volume for the first second (FEV_1);
- vital capacity (VC);
- peak expiratory flow rate (PEF) and its daily fluctuations (DF).

The test connected with the reversibility of bronchial obstruction was done due to the spirometry (TRBO).

The evaluation of physical capacity was performed by immediate performance using a 6-minute step test (6MST) and Ruff'ye's functional test, the degree of motor capacity was identified with the help of ergo-measurement method that allowed us to determine individual exercise tolerance. The value of work (power), expressed in watts being transformed into a value of oxygen consumption was the result of cycling ergo-measurement testing. Finally, the received actual maximum consumption of oxygen was compared with the proper size and level of physical performance being measured as a percentage of the proper maximum consumption of oxygen (PMCO).

With functional tests we evaluated the overall health of patients, the state of individual systems and their spare capacity, especially the adaptation of different systems to physical activity. To do this, we use body mass index, vital index, strength index, Robinson's index, Martin's test and Skibinski's index. The overall level of physical health (OPHL) was identified due to the Apanasenko's methodology. Skibinski's index allows evaluating the function of the respiratory and cardiovascular systems simultaneously it can be also used to determine the state of adequate supply of oxygen indirectly.

To study the quality of life and general health of patients Ukrainian version (made by PhD in medicine Pkhidenko S.) is used by World Health Organization (WHO-100).

Research Results. Monitoring the rehabilitation process was conducted by the current and landmark controls which ensured adequate treatment expansion and intensification of patient's physical activity. The first level of current control over the process of physical rehabilitation included the most accessible and also very informative clinical research (survey, inspection, palpation, percussion, auscultation, peak flow measuring etc.) which allowed analyzing either the dynamics of individual symptoms, syndromes of disease or overall progress of disease. The second level of control consisted of instrumental methods, including computer spirography, electrocardiography and peak flow measuring. During the evaluation of physical rehabilitation a particular importance had exercise tolerance, which was conducted using the bicycle ergo-measuring.

The severity of the disease was evaluated on the basis of subjective and objective tests. Paying attention to the data of survey and the problems often befalling with patients, we developed a comprehensive physical rehabilitation, based on the results of examination of the functional state, rapid assessment of health status and features of the disease.

The basis of program was a gradual expansion of patient's physical activity. Making the classes we followed a certain sequence purpose of physical training, which consisted of three parts: introduction, main

part and final. During the first part of physical training the patients were taught to regulate their volitional management of physical training to control the lasting of breathing during the inspiration and expiration, to behave properly while approaching the attacks of breathlessness. We applied morning hygienic gymnastics and remedial gymnastics (RG), distinct lessons both individually and in small groups. RG included respiratory and general developmental exercises, relaxation exercises while lying, sitting or standing. RG set of exercises lasting up to 25 minutes consisted of 30–35 exercises being performed an average pace. We focused on prolongation of patients' exhalation being strengthened by additional movements. Warm-up was performed during the introduction, before performing the main part of the load. The main part of exercises occupied 50–70 % of all classes. In addition to the previous forms of exercises there were walking trails during the second part of training. Then physical activity was being reduced gradually. Physical exercises were performed not earlier than in 2–3 hours after the last meal, with intervals from 10 to 14 or from 17 to 20 hours. Patients of the main group (the second degree of ability to move) DAM lasting 10–15 minutes consisted of 12–15 exercises. The set of cyclic exercises were used in the second part of rehabilitation systems. Correlation of respiratory and general developmental exercises is 1:2–3. Breathing exercises together with RG showed not only a training effect, but also allowed us to solve several other problems associated with improved drainage function of bronchial tubes: to help eliminate the bronchospasm increasing gas exchange, to relieve tension of the respiratory muscles regulating their collaboration, to uniform ventilation increasing their elasticity, to prevent airway from early closuring and form the correct stereotype of breathing. An important principle of breathing exercises was to achieve the effect of novelty due to the combination of different exercises and introduction of new ones.

One of the most popular methods of training was walking upstairs both at hospitals and in an outpatient setting. For the main group the patients' rate of going up stairs was 16–20 steps a minute, and the rate of walking down stairs was 50–60 steps a minute, training lasted 30 min.

The effectiveness of treatment and the application of the proposed physical rehabilitation program held according to the complex parameters. The study identified the dynamics of clinical status of patients due to the program of physical rehabilitation and other options for treatment of mild persistent asthma. Daytime asthma attacks disappeared in all cases at the end of treatment. Also, shortness of breath did not disturb the patients of main group there was not any physical limitation of patients' daily activity. Meanwhile the patients of control groups felt partly limited physical daily activity after treatment. In a month of treatment, after using the drug therapy weekly, asthma attacks resumed (0,89 ± 0,31 times a week) and after the traditional methods of exercise asthma attacks occurred 0,75 ± 0,28 times a week, which almost did not happen after the program of physical rehabilitation (0,13 ± 0,33 times a week). It demonstrates the complete control of the disease while using PRP (ACT grew from 13,47 ± 0,32 to 23,57 ± 0,30 points), the lack of control while using traditional methods of exercise (ACT decreased from 13,95 ± 0,35 to 19,36 ± 0,31 points) and there is no control while using only medicines (ACT increased from 12,85 ± 0,47 to 17,22 ± 0,41 points).

Significant improvement of lung function occurred in patients with mild severity of asthma after taking part in the program of physical rehabilitation that was proved by the results shown in table 1. For example, in the study group forced expiratory volume for first second increased from 69,22 ± 3,45 to 88,60 ± 3,22 % ($p<0,001$), vital capacity – from 74,36 ± 3,61 to 95,18 ± 3,46 % ($p<0,001$) and peak expiratory flow rate – from 69,35 ± 4,33 to 88,77 ± 4,12% ($p<0,01$). Similar changes occurred in patients of the control group where forced expiratory volume for the first second increased from 71,45 ± 3,36 to 82,17 ± 3,23 % ($p<0,05$) and vital capacity – from 75,36 ± 3,72 to 86,66 ± 3,44 % ($p<0,001$). Statistically significant changes in the patients of control group who were being treated with medication did not happen. Significant changes happened to the indicators of bronchial reactivity, which statistically decreased after the implementation of physical rehabilitation program: reversible airflow obstruction decreased from 22,31 ± 1,46 to 9,70 ± 1,41 % ($p<0,001$), daily fluctuations of peak expiratory flow rate decreased from 29,47 ± 1,62 to 9,30 ± 1,73 % ($p<0,001$). The same happened to the patients of control groups: reversible airflow obstruction decreased from 21,52 ± 1,84 to 12,23 ± 1,93 % ($p<0,01$) daily fluctuations of peak expiratory flow rate decreased from 28,38 ± 1,73 to 11,35 ± 1,71 % ($p<0,001$) in the patients treated with medication the reversible airflow obstruction decreased from 23,49 ± 2,62 to 15,66 ± 2,43 % ($p<0,05$), daily fluctuations of peak expiratory flow rate reduced from 30,43 ± 2,74 to14,49 ± 2,85 % ($p<0,001$).

The use of physical rehabilitation program caused some increasing of patients' functionality and it was reflected by increasing in functional tests (Stange's test shows the growth of indicators from 33,59 ± 1,57 to

48,71 ± 1,50 s (p<0,001) and Ghencea's sample – from 17,25 ± 1,36 to 25,88 ± 1,32 s (p<0,001) and Skibinski's index – from 13,63 ± 1,82 to 36,12 ± 1,62 conv. units (p<0,001). Similar changes occurred in the patients of the control group while using traditional methods of exercises, which registered an increase in Stange's test from 34,63 ± 1,45 to 43,29 ± 1,54 s (p<0,001) and Skibinski's index – from 14,24 ± 1,67 to 30,62 ± 1,56 conv. units (p<0,001). Treatment only with medicines caused some positive changes in these indicators too, so Skibinski's index increased from 12,28 ± 2,45 to 20,02 ± 2,40 conv. units (p<0,05), Stange's sample – from 32,42 ± 2,13 to 38,90 ± 2,06 s (p<0,05).

In general it should be noted that exercise therapy for the patients in the main and control groups led to normalization of respiratory function. According to Skibinski's index the state of oxygen supply for patients after using the program of physical rehabilitation was «good», but using only traditional exercise therapy and drugs it was «satisfactory».

The evolution of physical capacity among the patients suffered from mild asthma during the treatment in hospital is given in table. 2. While implementing the program of physical rehabilitation the exercise tolerance of men increased from 75,12 ± 5,36 to 134,4 ± 6,12 W (p<0,001), in accordance with the growth of appropriate maximal oxygen consumption from 38,94 ± 3,62 to 69,70 ± 3,71% (p<0,001). These patients began walking 577,4 ± 53,34 m distance for 6 minutes (before treatment – 322,6 ± 52,45 meters, p<0,01), which was 82,23 ± 3,36 % from the proper value (before treatment – 45,94 ± 3,53 %, p<0,001). According to Ruff'ye's Index physical capacity of the patients decreased from 16,11 ± 1,54 to 5,56 ± 1,25 conv. units (p<0,001), thus improved physical capacity was on a «good» level (though at the beginning of treatment it was «unsatisfactory»).

Similar changes occurred with physical performance of men while treating them with the help of traditional methods of exercise therapy. So their exercise tolerance increased from 74,16 ± 5,38 to 104,5 ± 5,12 W (p<0,001), in accordance with the growth of appropriate maximal oxygen consumption from 38,05 ± 3,46 to 53,65 ± 3,54 % (p<0,01), figures of 6-minute step test increased from 315,5 ± 55,22 (45,12 ± 3,68 % of the proper size) to 444,8 ± 51,32 m (63,62 ± 3,45 % of the proper value, p<0,05). According to Ruff'ye's index physical abilities improved and became «average» (falling down from 15,23 ± 1,72 to 8,96 ± 1,36 conv. units, p<0,05). There were some changes in physical capacity of male patients being treated only with drugs, their exercise tolerance increased from 73,83 ± 6,22 to 95,98 ± 5,23 W (p<0,05), in accordance with the growth of appropriate maximal oxygen consumption from 37,85 ± 4,47 to 49,21 ± 4,32 %, figures of 6-minute step test increased from 305,6 ± 67,15 (44,72 ± 4,32 % of the proper size) to 397,2 ± 61,42 m (58,14 ± 4,58 % of the proper value, p<0,05). According to Ruff'ye's index physical capability of these men improved to the «medium» level (reduced from 15,03 ± 1,97 to 9,95 ± 1,45 conv. units, p<0,05).

Table 1

Dynamics of Respiratory Function and Respiratory Functional Tests in Patients Suffering from Mild Persistent Asthma, *(M ± m)*

Indexes	Groups of Patients with Mild Persistent Asthma					
	Control MT		Exercise Control		Study Group	
	At the Beginning	At the End	At the Beginning	At the End	At the Beginning	At the End
FEV_1, *%*	68,41±4,38	75,25±4,46	71,45±3,36	82,17±3,23*	69,22±3,45	88,60±3,22***
VC, *%*	73,18±4,54	80,50±4,32	75,36±3,72	86,66±3,44*	74,36±3,61	95,18±3,46***
PEF, *%*	67,57±5,36	74,33±5,21	70,66±4,64	81,26±4,51	69,35±4,33	88,77±4,12**
TRBO, *%*	23,49±2,62	15,66±2,43*	21,52±1,84	12,23±1,93**	22,31±1,46	9,70±1,41***
PEF DF, *%*	30,43±2,74	14,49±2,85***	28,38±1,73	11,35±1,71***	29,47±1,62	9,30±1,73***
Skibinski's index, *conv. units*	12,28±2,45	20,02±2,40*	14,24±1,67	30,62±1,56***	13,63±1,82	36,12±1,62***
Stange's test, *s*	32,42±2,13	38,90±2,06*	34,63±1,45	43,29±1,54***	33,59±1,57	48,71±1,50***
Ghencea's sample, *s*	16,57±1,76	19,88±1,44	18,53±1,48	22,05±1,32	17,25±1,36	25,88±1,32***

Table 2

The Evolution of Physical Performance and Overall Assessment of Physical Health in Men Suffering From Mild Persistent Asthma, *(M ± m)*

Indexes	Groups of Patients with Mild Persistent Asthma					
	Control MT		Exercise Control		Study Group	
	At the Beginning	At the End	At the Beginning	At the End	At the Beginning	At the End
Exercise tolerance, *W*	73,83±6,22	95,98±5,23**	74,16±5,38	104,5±5,12***	75,12±5,36	134,4±6,12***
PMCO, *%*	37,85±4,47	49,21±4,32	38,05±3,46	53,65±3,54**	38,94±3,62	69,70±3,71***
6MST, *m*	305,6±67,15	397,2±61,42*	315,5±55,22	444,8±51,32	322,6±52,45	577,4±53,34**
6MST, *%* from proper value	44,72±4,32	58,14±4,58*	45,12±3,68	63,62±3,45*	45,94±3,53	82,23±3,36***
Ruff'ye's index, *conv. units*	15,03±1,97	9,95±1,45*	15,23±1,72	8,96±1,36*	16,11±1,54	5,56±1,25***
OPHL, *points*	4,11±1,86	6,78±1,63	4,44±1,64	8,21±1,48	4,75±1,42	11,88±1,37***

It is necessary to emphasize that while applying the program of physical rehabilitation and exercise therapy the men improved their possibilities to move from the second degree to the third one but during the medical treatment possibilities of patients to move did not change remaining on the first level.

The evolution of physical efficiency among the women suffered from mild asthma is given in table 3. After the program of physical rehabilitation being applied, women's tolerance to the physical activity increased from 60,42 ± 5,51 to 108,1 ± 5,25 W ($p<0,001$), it corresponded to the growth of appropriate maximal oxygen consumption from 36,71 ± 3,46 to 65,71 ± 3,39 % ($p<0,001$). These patients began walking 526,9 ± 61,24 m (before treatment – 294,4 ± 60,32 meters, $p<0,01$) distance for 6 minutes which was 77,95 ± 3,35 % of the proper value (before treatment – 43,55 ± 3,65 %, $p<0,001$). Ruff'ye' index dropped from 17,62 ± 1,33 to 6,08 ± 1,42 conv. units ($p<0,001$), indicating that women were capable of improving their physical activity to the «average» level (at the beginning of treatment it was «unsatisfactory»).

Similar changes in physical performance were recorded in women being treated with the help of methods of traditional exercise, their exercise tolerance increased from 59,46 ± 6,64 to 83,84 ± 6,12 W ($p<0,01$), maximum consumption of oxygen increased from 35,77 ± 4,53 to 50,44 ± 4,26 % ($p<0,05$), 6-minute step test went up from 280,3 ± 63,43 (42,74 ± 3,96 % of proper size) to 395,2 ± 61,24 m (60,26 ± 3,96 % of proper value, $p<0,01$). Ruff'ye's index decreased from 16,68 ± 1,85 to 9,81 ± 1,73 cu ($p<0,05$) and changed from «poor» into «average». The women being treated only with medicines had the following changes of physical capacity: exercise tolerance increased from 58,75 ± 5,28 to 76,38 ± 5,42 W ($p<0,05$), maximum consumption of oxygen increased from 35,12 ± 3,62 to 45,66 ± 3,55% ($p<0,05$), 6-minute step test – from 276,3 ± 66,54 (41,94 ± 3,72 % of the proper size) to 359,1 ± 62,34 m (54,52 ± 3,46 % of the proper value, $p<0,05$). According to the Ruff'ye's index women's physical capacity changed from «poor» to «fair» (it went down from 15,83 ± 1,53 to 10,55 ± 1,33 cu $p<0,05$).

Table 3

The Evolution of Physical Performance and Overall Assessment of Physical Health in Women Suffering From with Mild Persistent Asthma, *(M ± m)*

Indexes	Groups of Patients with Mild Persistent Asthma					
	Control MT		Exercise Control		Study Group	
	At the Beginning	At the End	At the Beginning	At the End	At the Beginning	At the End
Exercise tolerance, *W*	58,75±5,28	76,38±5,42*	59,46±6,64	83,84±6,12**	60,42±5,51	108,1±5,25***
PMCO,*%*	35,12±3,62	45,66±3,55*	35,77±4,53	50,44±4,26*	36,71±3,46	65,71±3,39***
6MST, *m*	276,3±66,54	359,1±62,34*	280,3±63,43	395,2±61,24	294,4±60,32	526,9±61,24**
6MST, *%* from proper value	41,94±3,72	54,52±3,46*	42.74±3,96	60,26±3,96**	43,55±3,65	77,95±3,35***
Ruff'ye's index, *conv. units*	15,83±1,53	10,55±1,33*	16,68±1,85	9,81±1,73**	17,62±1,33	6,08±1,42***
OPHL, *points*	2,63±1,43	5,13±1,27	2,82±1,81	7,28±1,68	2,93±1,38	10,55±1,32***

In general, it is necessary to emphasize that women's motion possibilities increased from the second to the third degree only after applying the program of physical rehabilitation for patients suffering from mild asthma.

Analysis of physical health according to Apanasenko's methodology showed substantial and statistically significant improvement of physical health in men after applying the program of physical rehabilitation, their performance increased from 4,75 ± 1,42 to 11,88 ± 1,37 points (p<0,001) and while treating with traditional methods of exercise their performance increased from 4,44 ± 1,64 to 8,21 ± 1,48 points, but using only medicines physical capacity of patients changed from 4,11 ± 1,86 to 6,78 ± 1,63 points. Similar coincidence was found in women while applying the program of physical rehabilitation: general assessment of physical health increased from 2,93 ± 1,38 to 10,55 ± 1,32 points (p<0,001), using the traditional methods of exercise – from 2,82 ± 1,81 to 7,28 ± 1,68 points, during the drug therapy – from 2,63 ± 1,43 to 5,13 ± 1,27 points.

We also saw the dynamics of quality the patients' lives. After treating, the quality of life among the patients of control group who were treated with medication changed positively. Thus, compared with the initial state the level of independence increased from 8,14 ± 0,24 to 8,95 ± 0,26 points (p<0,05), the range of «social relations» went up from 8,06 ± 0,23 to 8,87 ± 0,25 (p<0,05), the range of «environmental» increased from 9,10 ± 0,25 to 10,01 ± 0,27 (p<0,05) and overall quality of life improved from 62,85 ± 2,43 to 77,68 ± 2,12 points (p<0,001). In the control group, using traditional methods of exercise, positive and statistically significant dynamics was in all range of life quality: physical sector increased from 9,22 ± 0,25 to 13,18 ± 0,22 points, psychological sphere – from 13,05 ± 0,42 to 18,66 ± 0,36 points (p <0,001) level of independence – from 9,24 ± 0,21 to 13,21 ± 0,23 points (p <0,001), social relations – from 9,11 ± 0,15 to 13,03 ± 0,14 points (p <0,001), environment – from 10,23 ± 0,17 to 14,63 ± 0,13 points (p <0,001), spiritual sphere – from 14,72 ± 0,43 to 17,96 ± 0,37 points (p <0,001) and overall quality of life – from 64,06 ± 1,75 to 91,75 ± 1,84 points (p<0,001). These 5 indicators (physical sphere, psychological aspect, the level of independence, social relationships, environment) from 7 ones remained below normal values, so it was proved that the respondents were relatively satisfied with their lives.

The most significant dynamics of patients' life quality was identified in the main group of the respondents. The use of physical rehabilitation program patients' physical capability considerably increased from 8,71 ± 0,28 to 17,50 ± 0,22 points (p<0,001),their psychological state improved from 12,23 ± 0,45 to 19,57 ± 0,36 points (p<0,001), degree of independence went up from 8,66 ± 0,19 to 16,28 ± 0,12 points (p<0,001), social relations increased from 8,94 ± 0,16 to 16,10 ± 0,14 points (p<0,001), environment – from 9,71 ± 0,18 to 16,99 ± 0,15 points (p<0,001), spiritual sphere of their life improved from 14,35 ± 0,47 to 18,94 ± 0,39 points (p<0,001) and overall quality of life changed from 63,62 ± 1,88 to 112,0 ± 1,63 points (p<0,001). Achieved quality of life for our patients was appropriate to normal values. Patients restored and strengthened their psychological state.

The effectiveness of our physical rehabilitation program for the patients suffering from mild persistent asthma is given in the table. 4. Effects of treatment and physical rehabilitation program for the current state of patients was equally effective (according to the changes of numbers of asthma attacks a day, severity of dyspnea, physical activity during the day). However, the control of disease was more significant after applying physical rehabilitation program, it was indicated by offset MPA (ACT) – 10,10 ± 0,95 points (control during the exercise therapy decreased by 6,00 ± 1,05 points, p<0,01, control while treating with drugs decreased by 4,37 ± 1,15 points, p<0,001).

Table 4

Achieved Effects (the Difference Between the Beginning and End of the Study) in Patients Suffering From Mild Persistent Asthma, *(M ± m)*

Indexes	Groups of Patients with Mild Persistent Asthma		
	Control MT	Exercise Control	Study Group
1	2	3	4
Clinical			
NAAD, *number*	-2,25±0,32	-2,12±0,27	-2,18±0,24
SV, *points*	-1,32±0,43	-1,60±0,32	-1,73±0,30
FAD, *points*	-0,80±0,46	-1,38±0,35	-1,30±0,31
Control Flow Asthma			
ACT, points	4,37±1,15	6,00±1,05	10,10±0,95**###
Respiratory Function			

Table 4

1	2	3	4
FEV_1, *%*	6,84±3,42	10,72±3,53	19,38±4,14 #
VC, *%*	7,32±3,12	11,30±3,36	20,82±4,05 ##
PEF, *%*	6,76±2,53	10,60±3,47	19,42±3,26 ##
TRBO, *%*	-7,83±2,45	-9,29±2,32	-12,61±2,33
PEF DF, *%*	-15,94±3,18	-17,03±3,15	-20,17±3,24
Physical Capacity			
Men			
Exercise tolerance, *W*	22,15±9,45	30,41±10,23	59,34±9,86 * #
6MST, *m*	91,68±32,37	129,3±36,05	254,8±38,45 *##
Ruff'ye's index, *conv. units*	-5,08±1,23	-6,27±1,35	-10,55±1,42 *##
Women			
Exercise tolerance, *W*	17,63±8,53	24,38±10,16	47,73±11,57 #
6MST, *m*	82,89±31,26	114,9±36,46	232,5±39,42 *##
Ruff'ye's index, *conv. units*	-5,28±1,13	-6,87±1,32	-11,54±1,41 *##
Physical Health by Apanasenko GL			
OPHL men, *points*	2,67±0,84	3,77±0,81	7,13±0,92 **##
OPHL women, *points*	2,50±0,81	4,46±0,86	7,62±0,90 *###
Quality of Life			
Physical sphere	0,80±0,97	3,96±1,84	8,79±1,75 ###
Psychological sphere	1,15±0,88	5,61±2,25	7,34±1,92 ##
The level of independence	0,81±0,75	3,97±1,74	7,62±1,82 ##
Social relations	0,81±0,72	3,92±1,63	7,16±1,60 ###
Environment	0,91±0,68	4,40±1,86	7,28±1,76 ##
The spiritual sphere	0,92±0,74	3,24±1,05	4,59±1,07 ##
The total QOL and health	15,23±2,96	27,59±5,96 #	48,88±5,85**###

Note. *# – statistically significant differences compared with the control group treated with medication (# – p<0,05, ## – p<0,01, ### – p<0,001) * – compared with the patients of control group being treated with the help of exercise therapy (*– p<0,05 ** – p<0,01, *** – p<0,001).*

Physical rehabilitation program was more effective for restoring the state of respiratory function. Using it caused the increase of forced expiratory volume in a second by 19,38 ± 4,14 % (control of exercise therapy – by 10,72 ± 3,53 %, control of medication – by 6,84 ± 3,42 %, p<0,05), vital capacity – by 20,82 ± 4,05 % (control of exercise therapy – by 11,30 ± 3,36 %, control of medication – by 7,32 ± 3,12 %, p<0,01), peak expiratory flow rate increased by 19,42 ± 3,26 % (control of exercise therapy – by 10,60 ± 3,47 % control with medication – by 6,76 ± 2,53 %, p<0,01). Also, the application of physical rehabilitation program more significantly decreased reactivity of bronchi, which showed the decrease of reversibility of bronchial obstruction by 12,61 ± 2,33 % (control of exercise therapy – by 9,29 ± 2,32 %, control with medication – by 7,83 ± 2,45 %, p<0,01) and daily fluctuations in peak expiratory flow rate – by 20,17 ± 3,24 % (control during exercise therapy – by 17,03 ± 3,15 %, control with medication – by 15,94 ± 3,18 %). These shifts of indicators while performing the program of physical rehabilitation, compared with the control group being treated with drugs, were statistically more significant.

Men indicators of physical performance after applying physical rehabilitation had following changes: exercise tolerance increased by 59,34 ± 9,86 W (control of exercise therapy – by 30,41 ± 10,23 W, p<0,05, control with medication – by 22,15 ± 9,45 W p<0,05), 6-minute step test increased by 254,8 ± 38,45 m (control of exercise therapy – by 129,3 ± 36,05 meters, p<0,05, control with medication – by 91,68 ± 32,37 meters, p<0,01) and Ruff'ye' index decreased by 10,55 ± 1,42 conv. units (control of exercise therapy – by 6,27 ± 1,35 conv. units, p<0,05, control with medication – by 5,08 ± 1,23 conv. units, p<0,01).

In women, rates of physical performance after applying the program of physical rehabilitation had such shifts as: exercise tolerance increased by 47,73 ± 11,57 W (control of the exercise therapy – by 24,38 ± 10,16 W control with medication – by 17,63 ± 8,53 W, p<0,05) 6 step minute test increased by 232,5 ± 39,42 m (control of exercise therapy – by 114,9 ± 36,46 meters, p<0,05, control with medication – by 82,89 ± 31,26 meters, p<0,01), and Ruff'ye' index decreased by 11,54 ± 1,41 conv. units (control of exercise therapy – by 6,87 ± 1,32 conv. units, p<0,05, control with medication – by 5,28 ± 1,13 conv. units, p<0,01).

Thus, the achieved effects of physical performance indicators while applying the program of physical rehabilitation were more significant in comparison with control groups being treated with drugs.

While applying the program of physical rehabilitation the restoration effects of physical health, according to the overall assessment, were also more pronounced. According to Apanasenko' method physical health condition of men improved by 7,13 ± 0,92 points (during the control of exercise therapy – by 3,77 ± 0,81 points, p<0,01 control with medication – by 2,67 ± 0,84 points, p<0,01) in women – by 7,62 ± 0,90 points (during the control of exercise therapy – by 4,46 ± 0,86 points, p<0,05 during the control with medication – by 2,50 ± 0,81 points, p<0,001). Compared with control groups achieved effect connected with recovery of patients while applying the program of physical rehabilitation was statistically significant in both men and women.

Data analysis showed the different effectiveness and impact on quality of life during the application of physical rehabilitation program. Using our program of physical rehabilitation patients improved their physical health by 8,79 ± 1,75 points (during control of exercise therapy – by 3,96 ± 1,84 points, control with medication – by 0,80 ± 0,97 points, p<0,001), psychological state of patients was improved by 7,34 ± 1,92 points (during the control of exercise therapy – by 5,61 ± 2,25 points, p<0,05, control with medication – by 1,15 ± 0,88 points, p<0,01), independence – by 7,62 ± 1,82 points (during the control of exercise therapy – by 3,97 ± 1,74 points, control during the drug treatment – by 0,81 ± 0,75 points, p<0,01), social relations – by 7,16 ± 1,60 points (control of exercise therapy – by 3,92 ± 1,63 points, control with medication – by 0,81 ± 0,72, p<0,001), environment – by 7,28 ± 1,76 points (during the control of exercise – by 4,40 ± 1,86 points, p<0,05, control while treating with medication – by 0,91 ± 0,68 points, p<0,01), spiritual sphere – by 4,59 ± 1,07 points (during the control of exercise therapy – by 3,24 ± 1,05 points, control with medication – by 0,92 ± 0,74 points) and overall quality of life increased by 48,88 ± 5,85 points (during the control of exercise therapy – by 27,59 ± 5,96 points, p<0,01, control with medication – by 15,23 ± 2,96 points, p<0,001). In all cases achieved shift indicators of life quality while applying the program of physical rehabilitation were higher and statistically they were different from the effects having been achieved in the control group while treating them with medicines.

The use of physical rehabilitation program allowed to reduce the duration of salable period in patients suffering from mild asthma for 5,44 ± 0,46 days, which statistically was fewer than in the control group being treated with medication (9,54 ± 0,59 days (p<0,001)) and in the control group during the exercise therapy (7,62 ± 0,53 days (p<0,01)). While applying the program of physical rehabilitation, compared with the group of patients treated only with drugs, duration of disease period was reduced by 4,10 ± 0,36 days.

To set the length of gymnastic period we analyzed daily value of physical performance for men and women within 20 days. The distance increased by 10 % in 8 days in the men of the main group (355,2 ± 58,5), in the control group while using exercise therapy it happened in 11 days (34,6 ± 61,0 m), in the control group using the treatment with drugs it was in 12 days (335,4 ± 66,2 m). In the women of study group 10-percent increase of the distance was recorded in 9 days (324,75± 3,2), in the control group, using the exercise therapy – in 11 days (30,5±62,2 m) and in the control group using the treatment with drugs – in 13 days (302,3±65,1 m).

In each group of the men suffering from mild asthma the average calculations showed that in the control group treated with medication the length of gymnastic period was 12,28 ± 0,55 days, in the control group treated with exercise therapy – 10,72 ± 0,57 days and in the study group – 7,52 ± 0,51 days (compared with the control group of patients treated with medication p<0,001, with control group of patients treated with exercise therapy – p<0,001). That is, due to the application of physical rehabilitation program for men the duration of gymnastic period of disease was reduced by 4,16 ± 0,38 days compared with the group of patients treated with medication. The duration of gymnastic period in the female control group treated with medication was 12,64 ± 0,56 days in the control group treated with exercise therapy – 11,08 ± 0,59 days and in the study group – 7,88 ± 0,45 days (compared with the control group treated with medication p<0,001 with control exercise – p<0,001). Due to the application of physical rehabilitation program gymnastic duration period of the disease in women was reduced by 4,76 ± 0,41 days compared with the group of patients treated with medication.

Thus, using the program of physical rehabilitation for the patients suffering from mild persistent asthma allowed us to achieve complete control of disease in a month after treatment (ACT – 23,57 ± 0,30 points), while the use of traditional methods of exercise and drug treatment allowed controlling only partially (ACT – 19,36 ± 0,31 points) or without any control (ACT – 17,22 ± 0,41 points). The program of physical rehabilitation significantly improved respiratory function: forced expiratory volume increased up to 88,60 ±

3,22 % in 1 second (in the control group of patients while using the exercise therapy – to 82,17 ± 3,23 %, with medication – to 75,25 ± 4,46 %), physical capacity of patients: men's exercise tolerance grew to 134,4 ± 6,12 W (in the control group of patients while using the exercise therapy to 104.5 ± 5,12 W in the control group of patients treated with medication – to 95,98 ± 5,23 W), women's exercise tolerance increased to 108,1 ± 5,25 W (in the control group of patients while using the exercise therapy – to 83,84 ± 6,12 W, in the group of patients treated with medication – to 76,3 8 ± 5,42 W), the duration of asthma attacks was reduced to 5,44 ± 0,46 days, gymnastics period of the disease was reduced to 7,52 ± 0,51 days for men and to 7,88 ± 0,45 days for women, allowing them to train sooner compared with other treatments. The use of physical rehabilitation program in clinical situation greatly improved physical health and life quality of patients that was reflected in the growth of overall assessment of physical health in men to 11,88 ± 1,37 points (in the control group of patients while using the exercise therapy – to 8,21 ± 1,48 points, in the control group of patients treated with medication – to 6,78 ± 1,63 points), in the women – to 10,55 ± 1,32 points, (in the control group of patients while using the exercise therapy – to 7,28 ± 1,68 points, in the patients treated with medication – to 5,13 ± 1,27 points) and the rate of overall quality of life increased to 112,0 ± 1,63 points (in the control group of patients while using the exercise therapy – to 91,75 ± 1,84 points, in the patients treated with medication – to 77,68 ± 2.12 points) and they achieved full satisfaction with the quality of their lives.

Physical rehabilitation programs, based on a gradual increase of physical activity, are developed for the patients to improve their physical fitness, neuromuscular coordination and self-confidence. Although aerobic exercise can provoke bronchoconstriction in patients, regular physical activity and exercise are considered to be important components of rehabilitation program. However, fear of the dyspnea restricts a lot of patients to take part in physical activity, besides the low level of physical activity leads to the low level of physical training. Increasing the strength of respiratory muscles can reduce the intensity of breathlessness and improve exercise capacity. Thus, the dosed increase of physical activity and respiratory muscle training should be compulsory for patients while performing the program of physical rehabilitation.

At the end of the study, patients of the main group had a positive trend of decrease in clinical symptoms of asthma attacks. Asthma attacks became less intense, and their frequency was reduced, cough was being accompanied by the discharge of phlegm, wheezing in the lungs disappeared, patients slept better and noticed that they could use bronchodilators less, medium performance peak of expiratory flow and forced expiratory volume in the first second were higher than in the patients of control group. Exercise improved physical performance, quality of life, improved cardiopulmonary endurance and fitness.

The result of physical activity was observed in dynamics during the rehabilitation, allowing us to determine the objective effectiveness of the proposed program.

Conclusions. Using the dosed physical activity in programs of physical rehabilitation for the patients suffering from mild persistent asthma can improve their functional state of cardiovascular and respiratory systems, physical performance, quality of life, promote their mental stability, give them confidence in the future and help to control the disease.

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Стаття надійшла до редакції 30.05.2017 р.

УДК 615,825:616-066.33-055.1

THE REHABILITATION INFLUENCES OF THERAPEUTIC EXERCISES ON THE NEUROLOGICAL FOCAL SYMPTOMS IN PATIENTS WITH LUMBOSACRAL SPINE OSTEOCHONDROSIS

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Abstract

Physical therapy of patients with lumbosacral osteochondrosis is the recent problem in clinical neurology, family medicine and kinesiotherapy. Dorsalgia is a prominent symptom of this disease, it has been observed at 40–80 % of population. ***Goal of research:*** to establish the effectivety of therapeutic exercises which are used for physical therapy of the lumbosacral osteochondrosis. ***Methods of research:*** analysis and compilation of modern scientific sources of information, clinical tests, statistical techniques. ***Research results:*** 44 patients, divided into control and experimental groups, participate in the research. Every group consists of 22 patients. All sick persons got pharmaceutical treatment after guideline for the diagnosis and treatment of vertebral osteochondrosis (MOZ Ukraine). Additionally the patients from experimental group had therapeutic exercises. All the patients estimated the pain intensity on the 1st and 10th day of therapy according to the VAS. On the same days the stretch symptoms were observed as the criteria of the state of lumbosacral spine. It was found the VAS score, determined on the 1st day, was statistical different in both group from the VAS score, determined on the 10th research day. During exam of Laseague sing it was established the data received on the 1st day were statistical different from the data received on the 10th day. Besides the Lasegue sing indexes obtained in the experimental group on the 10th day were statistic different from the same indexes in the control group. ***Summary.*** It is proved the combined use of the pharmaceutical treatment and the therapeutic exercises is more effective for pain relief and block of the neurological local signs than single pharmaceutical treatment at the patients with lumbosacral osteochondrosis.

Key words: lumbosacral osteochondrosis, therapeutic exercises, stretch symptoms, visual analogue scale, dorsalgia, rehabilitation

Олена Якобсон, **Наталя Грейда**, **Володимир Лавренюк**, **Оксана Грицай**. **Реабілітаційні впливи терапевтичних вправ на локальні неврологічні симптоми при остеохондрозі попереково-крижового відділу хребта.** Фізична терапія хворих на остеохондроз поперекового-крижового відділу – актуальна проблема в неврології, сімейній медицині та ЛФК. Дорсагія, яка є базовим проявом цієї нозології, трапляється в 40–80 % населення. ***Мета дослідження*** **–** оцінити ефективність терапевтичних вправ як складової частини фізичної терапії при остеохондрозі попереково-крижового відділу хребта. ***Методи дослідження*** **–** аналіз та узагальнення сучасних наукових інформаційних джерел, клінічні методи, методи математичної статистки. ***Результати дослідження.*** У дослідженні брали участь 44 пацієнти, яких поділено на контрольну й експериментальну групу. У кожну входило по 22 людини. Усі пацієнти отримували медикаментозне лікування остеохондрозу попереково-крижового відділу хребта згідно з рекомендаціями МОЗ України. Хворі, які входили в експериментальну групу, додатково займалися ЛФК. Усі досліджувані оцінювали інтенсивність болю за візуально-аналоговою шкалою на 1-й і 10-й дні лікування. У ці ж терміни в пацієнтів перевіряли стан попереково-крижового відділу хребта за допомогою симптомів натягу. У процесі аналізу отриманих показників установлено, що показники за візуально-аналоговою шкалою, які виявлено в 1-й день дослідження, статистично значимо відрізнялися в обох групах від даних за візуально-аналоговою шкалою, отриманих на 10-й день. Аналогічну ситуацію спостерігали щодо результатів, які зафіксовано під час проведення симптому Ласега: дані, отримані в 1-й день, статистично значимо відрізнялися від результатів, установлених на 10-й день дослідження. Також значення цих показників на 10-й день у хворих експериментальної групи були статистично значимо нижчі від відповідних показників у пацієнтів контрольної групи. **Висновки.** Установлено, що комбіноване застосування медикаментозного лікування та терапевтичних вправ більш ефективне для зменшення інтенсивності болю та проявів патологічної неврологічної симптоматики при остеохондрозі ПКВХ, ніж використання тільки медикаментозної терапії.

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

Ключові слова: остеохондроз попереково-крижового відділу хребта, терапевтичні вправи, симптоми натягу, візуально-аналогова шкала, дорсалгія, реабілітація.

Елена Якобсон, Наталья Грейда, Владимир Лавренюк, Оксана Грицай. Реабилитационные воздействия терапевтических упражнений на локальные неврологические симптомы при остеохондрозе пояснично-крестцового отдела позвоночника. Физическая терапия больных остеохондрозом пояснично-крестцового отдела является актуальной проблемой в неврологии, семейной медицине и ЛФК. Дорсагия, которая считается базовым проявлением этой нозологии, встречается у 40–80 % населения. ***Цель исследования*** – оценить эффективность терапевтических упражнений как составляющей физической терапии при остеохондрозе пояснично-крестцового отдела позвоночника. ***Методы исследования*** – анализ и обобщение современных научных информационных источников, клинические методы, методы математической статистки. ***Результаты исследования.*** В исследовании приняло участие 44 пациента, которые были разделены на контрольную и экспериментальную группы. В каждую входило по 22 человека. Все пациенты получали медикаментозное лечение остеохондроза пояснично-крестцового отдела позвоночника в соответствии с рекомендациями Минздрава Украины. Больные, которые входили в экспериментальную группу, дополнительно занимались ЛФК. Все больные оценивали интенсивность боли по визуально-аналоговой шкале на 1-й и 10 дни лечения. В эти же сроки у пациентов проверяли состояние пояснично-крестцового отдела позвоночника с помощью симптомов натяжения. При анализе полученных показателей установлено, что показатели по визуально-аналоговой шкале, которые обнаружены в 1-й день исследования, статистически значимо отличались в обеих группах показателей по визуально-аналоговой шкале, которые получены на 10-й день. Аналогичная ситуация сложилась с результатами, зафиксированными при проведении симптома Ласега: данные, полученные в 1-й день, статистически значимо отличались от результатов, которые установлены на 10-й день исследования. Также значение этих показателей на 10-й день у больных экспериментальной группы было статистически значимо ниже соответствующих показателей у пациентов контрольной группы. ***Выводы.*** Установлено, что комбинированное применение медикаментозного лечения и терапевтических упражнений более эффективно для уменьшения интенсивности боли и проявлений патологической неврологической симптоматики при остеохондрозе ПКВХ, чем использование только медикаментозной терапии.

Ключевые слова: остеохондроз пояснично-крестцового отдела позвоночника, терапевтические упражнения, симптомы натяжения, визуально-аналоговая шкала, дорсалгия, реабилитация.

Introduction. At the present stage both diseases and lesions of the spine are dominant in the structure of diseases among the population. Dorsalgia, which is the most common manifestation of the various pathological vertebrogenic conditions, is found in 40–80 % of the population. At the age from 20 to 65 years are complaining of back pain 24 % of men and 32 % of women [1; 6].

Osteochondrosis of the spine is the most common cause of spine pathology, which ranks first in the group of diseases of the musculoskeletal system. In this nosology there are degenerative-dystrophic changes in the intervertebral disks, that reduce their elastic qualities and have a negative impact on the functional state of the spine [4]. Clinically, this condition is manifested by a decrease in spine endurance to static loads, caused pain, and decreased range of motion.

There has recently been a trend towards relatively early osteochondrosis debut – it is observed at the ages of 25–50 years, that is, in the working population. In 27 % of cases of spinal osteochondrosis occurs a temporary disability, in 3 % – disability [3]. These figures indicate insufficient use of methods and means of treatment and physical therapy for the patients with the specified pathology. Therefore recovery of locomotor function of the lumbar-coccygeal region of the spine (LCRS) is not only a medical, but also a social problem. It needs a balanced comprehensive approach that includes not only medical treatment, but also physical therapy and social rehabilitation of the patients.

The research was conducted within the scientific department topic: «Quantifying the value of effects of rehabilitation actions» (state registration number 0116U002282) for 2016–2018 years.

Therefore, **the aim of our research** is to evaluate the efficacy of therapeutic exercises as part of physical therapy in osteochondrosis LCRS.

Research methods – analysis and synthesis of modern scientific information sources, clinical methods (content analysis of medical records, determining the intensity of pain on a visual analogue scale (VAS), clinical tests to determine the state of the LCRS), and methods of mathematical statistics.

The research was conducted at the communal establishment «Lutsk center of primary care». It was attended by 44 patients who were divided into a control (CG) and an experimental group (EG). Each group consisted of 22 people. All the patients received pharmacological treatment for osteochondrosis of the LCRS as recommended by the Ministry of Health of Ukraine and clinical protocols of health care for the patients with dorsalgia. The patients who were in the EG additionally did therapeutic exercises with a physical

therapy instructor within the medical establishment and/or self-training at home, the patients with CG did not conduct such exercises.

To determine the efficiency of therapeutic exercises for physical therapy of osteochondrosis of the LCRS, we assessed pain intensity in the patients based on VAS and performed clinical tests to determine the state of the LCRS, that is, tension symptoms (Lasegue, Neri and Dezheryn symptoms) on the first and the tenth day of outpatient treatment.

VAS is based on the interpretation of the feelings of the patients. To assess pain syndrome, a patient was offered a scale with marks from 0 to 10 and he was asked to mark the figure, which according to the patient, corresponds to the intensity of his pain. When assessing painful manifestations is common the following gradation: 1–4 points – weak pain; 5–6 points – moderate pain; 7–10 points – severe pain [2].

Symptoms of tension arise if there is irritation of spinal roots and spinal nerves, what causes pain syndrome and is accompanied by reflex tension of the associated muscles [5]. When conducting the Lasegue symptom, we paid our attention to the angle of ascent of the lower extremity and determined the degree of manifestation of this symptom. There are several levels of Lasegue symptoms: I level – pain appears when the angle of the ascent straight lower limb is 60^{o} or more; II level – pain appears when the angle of the ascent straight lower limb is $45–60^{o}$, thus there is a contraction of individual muscles; III level - pain appears when the angle of the ascent straight lower limb is $30–45^{o}$, in addition, there is a protective muscle contraction and possible autonomic manifestations [5; 10].

The Neri and Dezheryn symptoms are rated on a scale «positive/negative» and have no alternative quantitative assessment. The Dezheryn symptom is considered positive in the case of strengthening pain manifestations when coughing, sneezing or when the patient is pushing. In case of the Neri positive symptom, when the patient lies on his back is marked increasing in pain during passive tilt of his head forward, additionally can be recorded flexion of the bad limb in hip and knee joints [5; 10].

Research Results. Through content analysis of outpatient medical records was found that 100 % of our selected patients have a history of risk factors that increased the possibilities for development vertebrogenic pathology that could affect them. These include: «sedentary» lifestyle, injuries and lesions of the spine in the history, hard physical labor/ carrying heavy loads, age and hormonal changes in the human body, hereditary influences, and various pathological conditions (disorders of the circulatory system and nutrition of tissues of the spine of various origins, physical diseases etc.) [5; 6]. The detection rate of these factors in the patients in the control and the experimental groups is presented in figure 1.

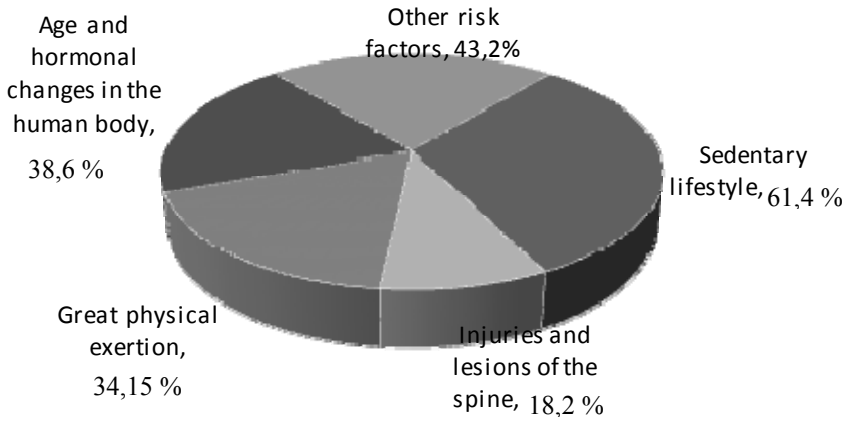

Figure 1. *Major Risk Factors that Increase the Possibility of Developing Osteochondrosis of the Spine in the Patients*

In addition, it should be noted that in only 40,9 % of the patients had established a risk factor, in 31,8 % of the patients were identified 2 risk factors for osteochondrosis in 27,3 % – 3 and more.

General characteristics of the patients (median age, sex, primary diagnosis) included in the CG and the EG pointed to homogeneity and representativeness of these groups. Therefore, it became possible to compare the results that were obtained after treatment and physical therapy in the CG and the EG, and make conclusions about the effectiveness and usefulness of therapeutic exercises as part of the rehabilitation program in osteochondrosis of the LCRS.

Reference indicators in both groups were the following: in the CG on the first day of treatment the average indicator of VAS was 6,05±0,373 ($p \leq 0,05$), during the Lasegue symptom pain arose when lifting limbs on average in 48,55 ± 2,77^o ($p \leq 0,05$), the positive Neri symptom was found in 86,3 % of the patients, in 75 % of case the patients had registered the positive Dezheryn symptom. In carrying out the research, in the EG were recorded the following indicators: on the 1 day of treatment VAS was 5,91 ± 0,384 ($p \leq 0,05$); when checking the Lasegue symptom pain arose when lifting a limb to 49,14±3,07^o ($p \leq 0,05$), 81,8 % of the patients had the positive Neri symptom, the positive Dezheryn syndrome was found in 79,5 % of the patients. When comparing starting indicators in the patients of the CG and the EG were proved that these data are not statistically different ($p \leq 0,05$).

These parameters were re-determined in the patients on the 10 day of observation after treatment and physical therapy (in the EG). The term of 10 days was chosen due to the fact that this is the average duration of outpatient treatment of osteochondrosis of the LCRS. Also, in average on the 8–9 day of treatment begins remission of the disease, so at this time it is possible to evaluate the effectiveness of medication and rehabilitation treatment [6, 7]. When prescribing therapeutic exercises for the patients with osteochondrosis of the LCRS in the EG, we aimed to achieve the following results:

1. Reduction of pain syndrome.
2. Relaxation of postural muscles.
3. Improvement of trophic processes in the spine.

In the case of prescribing therapeutic exercises as part of physical therapy for osteochondrosis of the LCRS, for each patient from the EG was conducted an assessment of his physical condition and state of his cardiovascular system. The complex of therapeutic exercises included passive, ideomotor, breathing, static (isometric) and dynamic (isotonic) exercises [7, 9]. Exercises of each group may varied in the patients from the EG, because they were prescribed individually, depending on the intensity of the pain syndrome, physical condition of the patient, muscle strength and so on. But the general rules of dosing and performing these exercises have been saved.

Passive exercises were conducted in one direction and in the same plane at the same rate. Range of motion in the joint was in the maximum possible extent, which did not lead to the emergence or worsening of pain [6; 8]. In case of strong permanent pain the patient was recommended to conduct ideomotor exercises. Were used two types of breathing exercises – static and dynamic. When conducting dynamic breathing exercises different phases of the respiratory cycle were combined with the movements of the upper limbs and the trunk; when conducting static breathing exercises were involved only the diaphragm and the intercostal muscles. But the task of these two types of exercises had a common indicator – increasing exhalation.

At the beginning of physical therapy the patients with osteochondrosis of the LCRS ware recommended isometric exercises, which are conducted without holding breath and pushing. The purpose of their prescribing was to improve blood circulation of the skeletal muscles and the spine, prevent muscle malnutrition, increase muscle strength and reduce the load on the spine [8; 9]. The next step in the majority of the patients was prescribing active dynamic (isotonic) exercises with lighter starting position. The most latest were prescribed active isotonic exercises with the initial standing position [10]. After the restorative treatment in outpatient basis all the patients of the EG were recommended to continue the therapeutic exercises up to 3 months at home.

In the second research of the patients on the 10 day of treatment were obtained the following results: in the CG VAS index was 1,91±0,41 ($p \leq 0,05$), when conducting the Lasegue symptom pain arose when lifting the lower limb up to 57,95 ± 2,42^o ($p \leq 0,05$), the positive Neri and Dezheryn symptoms were found in 36,4 % and 45,5 % of the patients in this group, respectively. In the EG on the 10 day of treatment were recorded the following data: VAS = 1,27±0,32 ($p \leq 0,05$); when conducting the Lasegue symptom pain arose when lifting the limb up to 63,86±3,41^o ($p \leq 0,05$), the positive Neri symptom was recorded in 27,4 % of the patients, the positive Dezheryn symptom – in 36,4 %. In the analysis of the received indicators was found that VAS indicators, which were found in the 1 day of the research, were statistically significantly different in both groups ($p \leq 0,05$) from VAS indicators, which were obtained on the 10 day of the research. A similar situation exists with the results, which were recorded during conduction the Lasegue symptom: the received data on the first day were statistically significantly different ($p \leq 0,05$) from the defined results on the 10th day of treatment. Also values of these two indicators on the 10-th day of the research in the patients from the EG were statistically significantly lower ($p \leq 0,05$) to corresponding indicators in the patients from the CG. General dynamics of VAS parameters and pushing symptoms are shown in table 1.

Table 1

Trends in the VAS Indicators and Pushing Symptoms in the Patients with Osteochondrosis of the LCRS

Indicators	1-st Day		10-th Day	
	CG	EG	CG	EG
VAS	6,05±0,373 ($p \le 0,05$)	5,91±0,384 ($p \le 0,05$)	1,91±0,41 ($p \le 0,05$)	1,27±0,32 ($p \le 0,05$)
The Lasegue symptom (lifting angle of the limb when pain arose), ^{0}	48,55 ± 2,77 ($p \le 0,05$)	49,14±3,07 ($p \le 0,05$)	$57,95^o \pm 2,42^o$ ($p \le 0,05$)	$63,86^o \pm 3,41^o$ ($p \le 0,05$)
The Neri symptom, %	86,3	81,8	36,4	27,4
The Dezheryn symptom, %	75	79,5	45,5	36,4

Conclusions and Perspectives for Further Research. A comparison of efficiency using only medical treatment of osteochondrosis of the LCRS with a combined therapeutic approach. It was established that the combination of medical treatment and therapeutic exercises is more effective for reducing the intensity of pain syndrome and pathological manifestations of neurological symptoms in osteochondrosis of the LCRS, than using only medical treatment. Further research is expected to be conducted to learn the features of locomotor function recovery of the LCRS using anti-gravity techniques.

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Стаття надійшла до редакції 22.05.2017 р.

УДК 616-004

MULTIPLE SCLEROSIS: METHODS OF TREATMENT AND REHABILITATION

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Abstract

The specificity of multiple sclerosis (MS) is a young age patients with a variety of symptoms, the unpredictability of the disease. All these factors are the reason that the rehabilitation of patients with MS is one of the most difficult tasks of neurological rehabilitation. A wide range of symptoms in MS, the obvious way of complexity associated with his patient, and it is a disease with which we must contend daily. MS is a chronic disease of the CNS, diseases which frequency is 30–100 per 100 000 persons. However, knowledge about MS and its treatment may reduce symptoms intensity and improve the lot of their options. In recent years it is seen the increase in the number of scientific publications on effective rehabilitation of patients with MS. Rehabilitation in MS is symptomatic in nature and includes all motor dysfunction – of autonomic disorders to motor deficits. Well–conducted rehabilitation significantly reduces the effects of disease, thus increases the effects of pharmacotherapy. Regardless of the form of the disease, the result of PC is disability and reduced quality of life, making it difficult to self-service and independent functioning.

Doctor's detection of functional deficit targets and determining the therapeutic process, allows to reduce the intensity of symptoms of the disease. The work represents the chosen form of exercise methods of physiotherapy and some principles of rehabilitation strategies in the rehabilitation of patients with MS.

Key words: multiple sclerosis, treatment and rehabilitation.

Юрій Лисенко. Розсіяний склероз: методи лікування та реабілітації. Специфічність розсіяного склерозу – це молодий вік хворих, різноманітність симптомів, непередбачуваність перебігу хвороби. Усі ці фактори є причиною того, що реабілітація хворих на розсіяний склероз – одне з найскладніших завдань неврологічної реабілітації. Широкий спектр симптомів при розсіяному склерозі, імовірно, пов'язаний із його обтяжливістю для пацієнта, оскільки з цією хворобою потрібно змагатися щоденно. Розсіяний склероз – хронічне захворювання центральної нервової системи, частота якого складає 30–100 випадків на 100 тис. населення. Однак знання про розсіяний склероз, а також про його лікування може зменшувати інтенсивність симптомів і покращити багато параметрів якості життя людей. В останні роки простежуємо збільшення кількості наукових публікацій про ефективність реабілітації хворих на розсіяний склероз. Реабілітація при цьому захворюванні має симптоматичний характер і включає всі моторні дисфункції: від вегетативних до рухових порушень. Правильно проведена реабілітація значно зменшує наслідки хвороби, при цьому підвищує ефективність фармакотерапії. Незалежно від форми хвороби, наслідком розсіяного склерозу є інвалідність, а також зниження якості життя, що ускладнює самообслуговування й належне функціонування хворих.

Виявлення лікарем рівня функціонального дефіциту та визначення мети терапевтичного процесу, дає можливість зменшити інтенсивність симптомів при розвитку хвороби. У роботі здійснено огляд наукової літератури з питання основних форм фізичних вправ, методів фізикотерапії, а також деяких принципів реабілітаційної стратегії для хворих на розсіяний склероз.

Ключові слова*:* розсіяний склероз, лікування, реабілітація.

Юрий Лысенко. **Рассеянный склероз: методы лечения и реабилитации.** Специфичность рассеянного склероза – это молодой возраст больных, разнообразие симптомов, непредсказуемость течения болезни. Все эти факторы являются причиной того, что реабилитация больных рассеянным склерозом является одной из самых сложных задач неврологической реабилитации. Широкий спектр симптомов при рассеянном склерозе, вероятно, связан с его обременительностью для пациента, поскольку с этой болезнью необходимо бороться ежедневно. Рассеянный склероз является хроническим заболеванием центральной нервной системы, частота которого составляет 30–100 заболеваний на 100 тыс. населения. Однако знание о рассеянном склерозе, а также о его лечении может уменьшать интенсивность симптомов и улучшить многие параметры качества жизни людей. В последние годы прослеживается увеличение количества научных публикаций о эффективности реабилитации больных рассеянным склерозом. Реабилитация при этом заболевании имеет симптоматический характер и включает все моторные дисфункции: от вегетативных к двигательным нарушениям. Правильно проведенная реабилитация значительно уменьшает последствия болезни, при этом повышает эффективности фармакотерапии. Независимо от формы болезни, следствием рассеянного склероза является инвалидность, а также снижение качества жизни, что затрудняет самообслуживание и надлежащее функционирование больных.

Выявление врачом уровня функционального дефицита и определение цели терапевтического процесса позволяет уменьшить интенсивность симптомов при развитии болезни. В работе представлен обзор научной

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

литературы по вопросу основных форм физических упражнений, методов физикотерапии, а также некоторых принципов реабилитационной стратегии для больных рассеянным склерозом.

Ключевые слова: рассеянный склероз, лечение, реабилитация.

Introduction. Multiple sclerosis (lat. Sclerosis multipex, SM), a chronic inflammatory, neurodegeneration disease of central nervous system where is the focal damage (demyelination) in many places and the collapse of myelin membranes of nerve tissue. This is the cause of abnormal transfer of impulses along nerve pathways in the brain and spinal brain [1; 2]. This disease usually has a multiphase flow with periods of exacerbation and remission [3]. Multiple sclerosis (MS) is one of the most common causes of disability of young people.It is generally more common for women than for men between 20 and 40 years old [1]. The incidence rate ranges from 30 to 100 per 100 thousand people [4].

Among many focal symptoms, it should be noted: symptoms of motility, sensitivity (paresthesia), cerebellum (imbalance), visual disorders, autonomic nervous system, pain syndromes and psychiatric dysfunction: violation of cognitive functions [2; 5]. Usually, at the beginning of illness the patient begins to experience a weakening of isolated muscle groups (especially in the upper limbs or themnot). Later, there is an increased muscle tone (spasticity), which makes it difficult to perform certain movements, and even makes them completely impossible [6; 7]. Quite often there are violations of the autonomic nervous system (dysfunction of the bladder, bowel dysfunction, dysphagia [7; 8]. Multiple sclerosis may take one of the following forms: relapsing-remitting; secondary progressive; primary progressive; progressive-relapsing [5; 9].

One of the most common ailments for which patients complain is sustained fatigue, exhaustion, which greatly reduces their quality of life. More than half (50–60 %) of patients describes the fatigue as the most irksome in their life, and also have occasion to disability and social exclusion.

The syndrome is characterized by uncontrolled depletion of apathy, rapid fatigue, lack of energy. To assess exhaustion syndrome, most commonly used scales fatigue (Fatigue Severity Scale, FSS), Scale and Impact fatigue (Fatigue Impact Scale, FIS) [10; 11].

In the past believed that physical activity is a factor which stimulates exhaustion (increases temperature, which causes a violation of neurotransmission). Most MS patient's exercises help to reduce the depletion syndrome, in some it does not change, but rarely diagnosed gain. Since in MS pathogenesis depletion has many causes, the result of the impact of physical activity on fatigue may depend on the mechanisms that cause the underlying disease.

Currently, there are many approaches to treatment and rehabilitation of patients with multiple sclerosis. However, to further improve effects of this pathology is a need of systematic analysis experience with various methods of treatment and rehabilitation.

The aim is to characterize the modern methods of treatment and rehabilitation of patients with multiple sclerosis.

Research Methods. The paper used data analysis literature.

Research Results. From over 40 years the value of rehabilitation of MS patients has increased significantly, and use of it in the combination with pharmacological treatment significantly improved treatment outcomes, as indicated by a survey of patients subjective and objective research data. Immunomodulation treatment smooths pathological symptoms, reduce the risk of exacerbations and slow the disease. Rehab makes it possible to improve the functional status of the patient, and most importantly, improve the quality of life. The rehabilitation program can not be the same for different groups of patients with MS, with a focus on clinical features and the degree of disease progression.

The quality of life of patients with MS in addition to pharmacological treatment affects complex rehabilitation at every stage of the disease, which must be constantly, not only in clinical settings [13; 14].

The specificity of MS (young patient age, diversity of symptoms, unpredictability of the disease) is the fact that the rehabilitation of patients with MS is one of the most difficult tasks of neurological rehabilitation [7]. In the rehabilitation of these patients are carried two therapeutic strategies: therapy, which is based on treating the symptoms (facilitation – impairment – based approach) as well as therapy, which is based on performance objectives (taskoriented – disability – focused approach [2; 7].

The principal element of the rehabilitation of patients with MS is an individual approach that depends on the stage of disease and patient empowerment [15]. In other words, it is a therapeutic process where the patient who is disabled or disability he faces, acquires and then sells knowledge, experience and skills needed for the most comfortable physical, mental and social functioning [15].

Patients suffering from MS demonstrate a wide range of symptoms, depending on the location of the disease in the CNS. Regardless, before you start treatment, should assess the functional status of the patient in performing the basic tasks of daily life (Activities of Daily Living) [16; 17].

Clinical Metric Study. Often there is a need to evaluate symptoms in a patient diagnosed with the help of scales. The most frequently used scales are Kurtske-EDSS (Expanded Disability Status Scale), the scale of Scripps (The Scripps Neurologic Rating Scale, SNRS), Barthel Index (BI), the index of serviceability AI (Ambulation Index) and measure functional independence (Functional Independence Measure, FIM) [9; 18; 19].

Kinesitherapy. There is no unified system of rehabilitation and kinesitherapy for patients with MS. It is believed that kineziterapiya should be comprehensive and multifaceted [20]. Movement disorders are the results of paresis, easing muscle strength, spastic phenomena omplitudy restriction of movement in the joints, ataxia, impaired balance and coordination and a sense of pain [21]. All this leads to social and psychological problems, manifested in low self-esteem, depression, phobias and cognitive disorders [22]. A permanent standby to full recovery of self-cares, frequent need for changes in the professional activity and the need for assistance leads to chronic emotional stress.

The goal of physical rehabilitation of patients with MS is to increase the muscle strength, improve the general physical condition, compensation for violations of coordination, maintaining optimal range of motion in joints, standardization of muscle tone, prevent muscle atrophy, fatigue resistance [23].

Physical rehabilitation should be carried out continuously. Keeping the patient's motor activity depends largely complete understanding of the model of therapy for this disease. Contraindications are excessive physical exhaustion, overwhelmed. Active exercise should be performed without complication or in isolated positions that avoid complication. Thus the patient can perform these exercises with many repetitions without bringing the body to a state of exhaustion.

Daily rehabilitation exercises should also include coordination in recognition of his own body position, proprioretseptsiz, because abuse muscular sense, often diagnosed with MS and creates difficulties at every stage of rehabilitation. It should be remembered daily breathing exercises, and patients with urinary disfunctions should also do exercises for the pelvic zone. During the exercises belong guard against overheating of the body. Fever can cause an increase in spasticity and fatigue strengthen. Dynamic exercises should be done in the change with breathing and relaxation exercises (in rhythm 10/15/15 minutes). The patient should perform exercises according to their own circadian biorhythms, recommended the same hours every day (during highest physical performance, never immediately after taking food, more hour or half before taking food. There should be no pain and exhausting of body. Not belonging follow the same apartment complex exercise program and change depending on the patient.

Exercise in the RS: stretching exercises that improve flexibility and range of movements in the joints and reduce the spastka; active dynamic exercises that increase muscle strength, muscle trophic through improved vascular function muscle–pump that improve endurance and physical layer; breathing exercises that improve respiratory function and oxygenation of muscle tissue; exercises to improve the static and dynamic balance.

Despite the lack of objective data on the topic of efficiency of rehabilitation treatment of patients with MS, there is a rule: do not treat the disease, but the patient. [24] There are no guidelines selection exercise without debate. Each patient must adjust itself loading, moving gradually from a minimum to a larger, bearing in mind that not allow to perform exercises «through the power», as opposed to the healthy individuals. Evaluation of physical deficits largely depends on the subjective feelings of the patient. For this planning of the rehabilitation should focus on issues of concern to the patient. It is appropriate to assess the functional deficits and target rehabilitation. The disease is improvident, but optimistic approach to therapy will help patients conquer difficulties in treatment [8]. Rehabilitation patients should be painless, consistent motor needs of the patient and based on natural movement patterns.

Author's Rehabilitation Techniques of Paresis and Paralysis in Patients with MS. Methodology of Karel and Berta Bobath is based on neurophysiological, hierarchical approach based on the stimulation of normal, proper movement and inhibition of pathological spastic movement patterns using detonization. The method aims to translational inhibition of pathological reactions and abnormal movement patterns. There are special provisions for changing the posture of the body that are opposite to those caused abnormal synergies. This approach is common in Europe [25].

Methods of Sahh and Shepherd. The approach is working on muscle strength antagonists. By increasing muscle strength is a struggle with spasticity. And also performed specific tasks that contribute to the inhibition of spasticity. This approach is common in the US and Canada [26].

Methods of Fetters. The cognitive approach, based on the explanation and report patient problems elasticity, the goal is to learn by using the brain to control spasticity, as much as possible.

Methods of PNF or method of proprioceptive facilitation of N. Kabat developed in the early 50's. Kabat – therapy – physiotherapy based on a selection of movements that strengthen impulses from proprioceptors and cause tonic reflexes. Using certain types of schemes and exercises close to natural movements that enhance signals from proprioceptors, which in turn improves the functional state of the motor centers [27].

Methods of Chedok – McMaster Stroke Assessment. Methodology of the survey, which provides a clear picture of the condition of patients with hemiparesis. The methodology is neurophysiological approach to Sihen Brunstrom. To determine the stage of recovery using progressive control stage recovery of upper limb, lower limb, foot, hand [28].

Methods of Ekzarta. This technique involves neuromuscular activation of sensorimotor training and co-activation of superficial and deep muscles. Selects the optimum load, a person learns to move right without pain. Suspension systems of Ekzarta help to determine which muscles are weak and broken, and gently tap them into operation.

Methods of physiotherapy of JI. Potekhin. Kinesitherapy can restore lost motor function and forms the daily routine of patient in which his physical activity will help to restore movement disorders. Physiotherapy includes exercises, massage, electrical stimulation, exercises in the water [29].

The *method* described by *Carrera Lorenzo.* The conventional method of specialists who successfully applied in many countries. Provides functional recovery stages verticalization, practice balance, walking, limb muscle strength increasing with special provisions, movement, exercise and other means of rehabilitation. [30]

The *method of forced training of paretic limb E.Taub (CI-therapy).* Concludes that the training of the paretic limb is carried out at the fixation of the healthy limb. A healthy arm is fixed using a special device to the body for 5–6 hours a day for two weeks. This forces patients to use the paretic limb, causing a condition in which the patient all the attention pays to the implementation of paretic limb movements [31].

Methods «neuromotor re-education» described by Robenesku N. Spifanov V. Based on modern methods of correction and dynamic proprioreceptive artificial movement correction.

Methods of recovery by Bubnovsky. To affect the body the Bubnovsky method uses specially designed complex of exercises on multi–gym of Bubnovsky with the functions of decompression and antigravity.

Methods of MGC by V. M. Motkov designed for patients with hemiparesis. Used in exacerbations (attacks) MS. Includes use of facilities, which use passive, active and passive, active exercises treatment provision. Active exercises in the affected limbs perform in the same plane and the same direction – to the study of quality movement in certain joints, and then – in different planes and directions [32].

Feldenkrais method or technique of physical training. Based on the meaningful impact on the brain stem, cerebellum and its connections. The technique is based on tracking the eyes on a bright object on a trajectory «maximum right – at the center – maximum left», «maximum up – in the center – maximum down», diagonally, learning proper mechanism for turning heads, tracking eyes on a bright object with a turn of the head and fixing at the point of maximum amplitude turns heads with fixing view on the center line of eyes tracking the position of maximum allotment of view and turning heads with bringing sight to the center line VPR tongue movements ABO – right – up – down, homo lateral rotation of the eyes, tongue, head for fixed gaze, directed oppositely turning heads, eyes and tongue, turning the shoulder girdle, chest, pelvis and legs bent.

In foreign literature [4; 5; 7; 9] there are described three main approaches in the rehabilitation of neurological patients used today. These are biomechanical, neurophysiological and cognitive approaches.

Biomechanical Carr and Shepherd. The underlying work on muscle strength antagonists by increasing muscle strength is a struggle with spasticity. The approach is common in the USA and Canada.

Neurophysiological Bobach, PNF. The underlying normal stimulation. proper motion suppressing abnormal movement patterns and stimulate the development of a proper movements. This approach is common in Europe.

Cognitive Fetters. The underlying explanation and informing the patient of his motor problems, including spasticity; the aim is to study the conscious control of movement.

All methods include working with relatives and instructions for the care of patients, active assistance and participation of relatives in rehabilitation is possible. However, a common feature of the technique is that they are designed to increase the independence and autonomy of the patient, reduce the appearance of disability and achieve full autonomy in active daily activities without assistance in the future.

The methodology is the use of medical provisions, various exercise movements and difficult coordinations of different assumptions close to the natural movements of achieving full independence in order to perform everyday functions of varying complexity.

Based on common features of methods, in search of increasing the efficiency of rehabilitation, given the known methods, tools, principles and features, our technique was perfected.

At this point need to be reminded the use of relaxation techniques (autohene training). At each stage of the disease need to find time for rest, relaxation and regeneration powers. Relaxation techniques are also a positive effect on the psychics of the patient, who can think about his illness with greater realism, assess its condition and leaks. Such a procedure appears, for example, in relaxation massage, performed three times a week for 45 minutes (promotes relaxation, reduces contracture and enhances blood circulation [33; 34].

Another form of rehabilitation is work therapy, which largely improves physical skills while fulfilling the tasks of daily life, which is an extension and complement to exercise physiotherapist. This gives the patient the awareness of its possibilities, thanks to the fact the patient recovers mental balance. Planning occupational therapy, the patient should be placed the task according to its capabilities [35].

MS patients are also recommended in studies of musical therapy. Properly chosen physical exercises performed in an appropriate rhythm is one of the important factors that facilitate the execution of complex movements. These exercises are also stimulating and calming simultaneously. Rhythm stimulate the patient to exercise and simultaneously divert his attention from the pain, encourage the implementation of relevant stride length, etc [36].

During the implementation of the rehabilitation program, the patient must learn to maintain balance in all major body position. You can use these devices as Balance Trainer. This device enables the patient acceptance of the passive vertical position (standing training), and perform various exercises (balance training).

Conclusions. Comprehensive and systematic rehabilitation positively affect the quality of life and prolong life and professional activity of the patient. In combination with pharmacological treatment, rehabilitation enables the creation of positive attitudes, strengthens the sense of cost and sociability.

Rehabilitation of patients with MS is a complex process and complexed. Thanks to medical advances, the use of new methods of rehabilitation, the life expectancy of patients with MS equal to the life expectancy majorities. It is essential understanding of the pathogenesis of the disease, which allows using treatment to increase the independence of the functioning of MS patients and improve their quality of life. A comprehensive approach, the use of different methods of kinesitherapy, including unconventional makes it possible to achieve a certain progress in the rehabilitation of patients with MS.

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Стаття надійшла до редакції 11.05.2017 р.

УДК 616.72-053.3

JOINT HYPERMOBILITY SYNDROME IN INFANTS

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Abstract

In the article considered the problem and treatment of joint hypermobility syndrome of people in different ages, especially of children of the first year of life. The mission of the theoretical study is expected the realization of the system analysis of scientific and methodological literature on the topic, studying methods of examination and reformation of individuals with the joint hypermobility syndrome; identifying the key issues of differential diagnosis of infants with the syndrome of joints hypermobility, burdened with delayed development of general motor skills; analysis of physical rehabilitation of children in the above-mentioned age and nosological category. Methods of the analysis include the theoretical analysis, synthesis and generalization of the literary sources. In the article emphasized the concept of screening and identifying the manifestation of joints hypermobility in individuals of different ages. It demonstrates the necessity of the application of differentiated diagnostic testing of locomotors areas in infants and application of appropriate specific examinations for the objective evaluation of these patients. In particular, there is a proposed use of the following tests: the visual assessment of the child's arbitrary posture at rest and in motion, test on tone muscles, test for traction, determining whether there are «symptoms of a composite blade» and «symptom of flaccid shoulder», detection of supportive functions of legs, arms, determination and volume resistance of passive movements. Attention focused on the necessity to find a comprehensive physical rehabilitation program for the effective and rapid formation of motor functions in infants. As a result of the theoretical research, it is possible be concluded that the clinical studies of the joint hypermobility syndrome, the consequences of this pathology and directions towards its correction in the literal sources are not enough highlighted. It demands the improvement of methods of the diagnosis delay in motor areas in infants at the presence of joints hypermobility. It is necessary to optimize the programs of physical rehabilitation in infants with the developmental delay of locomotion to prevent complications of their features musculou-ligamentous apparatus.

Key words: joint hypermobility syndrome, musculoligamentous apparatus, diagnostics, joint and outer extra-articular symptoms, delay of overall motility, muscle tone, muscle strength and rehabilitation.

Ольга Нагорна, Людмила Брега, Віктор Горчак. Синдром гіпермобільності суглобів у дітей першого року життя. У статті розглянуто проблему діагностування та лікування синдрому гіпермобільності суглобів в осіб різних вікових категорій, зокрема в дітей першого року життя. Завданням теоретичного дослідження передбачено проведення системного аналізу науково-методичної літератури за темою, вивчення методів обстеження та корекції осіб із синдромом гіпермобільності суглобів; визначення основних проблем диференційованої діагностики дітей першого року життя із синдромом гіпермобільності суглобів, обтяженим затримкою розвитку загальної моторики; аналіз засобів фізичної реабілітації дітей цієї вікової та нозологічної категорії. ***Методи дослідження*** включали теоретичний аналіз, синтез й узагальнення літературних джерел. У статті висвітлено концепцію обстеження та виявлення гіпермобільності суглобів в осіб різного віку. Обґрунтовано необхідність застосування розмежованих діагностичних тестувань локомоторної сфери дітей першого року життя й застосування відповідних специфічних обстежень для об'єктивного оцінювання цієї категорії хворих. Зокрема, запропоновано застосування таких тестувань, як візуальна оцінка довільного положення тіла дитини в спокої та в русі, проба на тонус привідних м'язів, проба на тракцію, визначення наявності «симптому складеного ножа» й «симптому млявих плечей», виявлення опороздатності ніг, рук, визначення опірності та обсягу пасивних рухів. Акцентовано увагу на потребі пошуку комплексної програми фізичної реабілітації для ефективного й швидкого формування рухових функцій у дітей першого року життя. Унаслідок теоретичного дослідження можна зробити висновки, що клінічні дослідження щодо синдрому гіпермобільності суглобів, наслідки цієї патології та напрями корекції в літературних джерелах висвітлено достатньо. Потребує вдосконалення методика діагностики затримки моторної сфери в дітей грудного віку за наявності гіпермобільності суглобів. Постає необхідність оптимізації програми фізичної реабілітації дітей першого року життя із затримкою розвитку локомоцій для попередження в них ускладнень цієї особливості м'язово-зв'язкового апарату.

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

Ключові слова: синдром гіпермобільності суглобів, м'язово-зв'язковий апарат, діагностування, суглобові та позасуглобові прояви, затримка становлення загальної моторики, тонус м'язів, сила м'язів, реабілітація.

Ольга Нагорная, Людмила Брега, Виктор Горчак. Синдром гипермобильности суставов у детей первого года жизни. В статье рассматривается проблема диагностики и лечения синдрома гипермобильности суставов у лиц разных возрастных категорий, в том числе у детей первого года жизни. Задачей теоретического исследования предусматривалось проведение системного анализа научно-методической литературы по теме, изучение методов обследования и коррекции лиц с синдромом гипермобильности суставов; определение основных проблем дифференциальной диагностики детей первого года жизни с синдромом гипермобильности суставов, отягощенный задержкой развития общей моторики; анализ средств физической реабилитации детей данной возрастной и нозологической категории. ***Методы исследования*** включали теоретический анализ, синтез и обобщение литературных источников. В статье освещается концепция обследования и выявления гипермобильности суставов у лиц разного возраста. Обосновывается необходимость применения разграниченных диагностических тестирований локомоторной сферы детей первого года жизни и применения соответствующих специфических обследований для объективной оценки данной категории больных. В частности, предлагается применение таких тестов, как визуальная оценка произвольного положения тела ребенка в покое и в движении, проба на тонус приводящих мышц, проба на тракцию, определение наличия «симптома составленного ножа» и «симптома вялых плеч», выявление опороспособности ног, рук, определение устойчивости и объема пассивных движений. Акцентируется внимание на необходимости поиска комплексной программы физической реабилитации для эффективного и быстрого формирования двигательных функций у детей первого года жизни. Вследствие теоретического исследования можно сделать выводы, что клинические исследования по синдрому гипермобильности суставов, последствия данной патологии и направление коррекции в литературных источниках освещены достаточно. Требует совершенствования методика диагностики задержки моторной сферы у детей грудного возраста при наличии гипермобильности суставов. Необходима оптимизация программы по физической реабилитации детей первого года жизни с задержкой развития локомоций для предупреждения у них осложнений данной особенности мышечно-связочного аппарата.

Ключевые слова: синдром гипермобильности суставов, мышечно-связочный аппарат, диагностирования, суставные и внесуставные проявления, задержка становления общей моторики, тонус мышц, сила мышц, реабилитация.

Introduction. Many sources emphasize that joint hypermobility (JHM) is a condition in which the range of motion in joints higher than normal [1; 3; 6]. Joints hypermobility syndrome (JHMS) appears when an excessive joint mobility is combined with musculo-articular symptoms and extraarticular manifestations [4].

The main feature of joint hypermobility (JHM) is fundamentally an abnormal flexor-extensor movements of the joints [1]. There is a well-known fact that the distribution of JHM among European adult population constitutes about 10–15 % and 15–25 % – for African and Asian representatives; regards gender ratio: women tend to have higher frequency and severity of JHM than men [1]. JHM is often found in athletes, especially in certain specialties, such as dancers [7].

Even though JHMS in medicine is traditionally considered as mild pathology, clinicians distinguish joint and outer joint symptoms of this condition. JHMS together with influences on the musculoskeletal system is represented by the following diagnoses: polyarthralgia [1; 6] appears in about 30–40 % of children, in the adult population – 28 %; Arthralgia appears in adults and associated with exercise-related activities and injuries [1; 6]; diagnoses recurrent arthritis, arthralgia of unknown etiology [1; 6], recurrent muscular-articular symptoms, inflammatory joint damage [1; 6]; joint subluxation, recurrent effusion, crunch («click») joints dorsalgia, symptomatic flatfoot, periarticular destruction; joint noises; functional subluxation, tendinitis, epicondylitis, enthesopathy, bursitis, tunnel syndrome, excessive flexibility of joints and spine, knees crunch in joints, back, posture, frequent dislocation, subluxation [5]. These effects lead to JHMS disorder of biomechanics musculoskeletal system, lower the tone of muscles, ligaments, tendons [5]. It is believed that the most vulnerable structure is musculoligamentous apparatus of joint ligaments, shoulder joints, lateral and medial callosity, lumbar and cervical spine [5].

Among extra-articular manifestations the frequency of appearance of prolapse of mitral valve at JHMS is 30–40 %; it appears a misbalance of leukocyte populations, reducing the number of T-lymphocytes; it observes excessive elongation, skin vulnerability, dysfunction of the autonomic nervous system, varicose veins, tendency to bruising, urogenital prolapse, Raynaud's syndrome, neuropathy, fibromyalgia, low bone density, anxiety and panic conditions, depression [1; 5; 7].

The outcomes of the research [1; 5] demonstrated that there was a presence of protrusion in lumbar spine and cervical region in 50 % of patients with JHMS. In 58,3 % of patients with connective tissue

dysplasia were detected cervical intervertebral hernia and, consequently, lumbar intervertebral hernia. Thus, there is a direct connection between hypermobility of joints and pain syndromes in back.

More objective examination of diagnosis JHMS patients of different age provided in many literary sources. In particular, there are goniometry indicators, standard criteria introduced by S. Carter J. Wilkinson (1964) with modifications by P. Beighton (1983), which are 9-point assessment of the subject's ability to perform the corresponding five movements. Criteria Rotesa is sufficiently objective and specific, and allows to assess mobility in majority of joints. When hypermobility of joints decreases, especially in the elder age, it is proposed to use Hakim and Graham's questionnaire [3; 5; 6].

P. Graham's formula (2003) is used for better understanding the relationships between physiological JHMS and pathological JHM: joint hypermobility syndrome combines actual hypermobility of joints and symptoms [1; 5].

However, there are a number of problems in the diagnosis of JHM, such as it is not proved what results of performance should be taken as an average volume rate movements; what is attributed to the unconstitutional hypermobility; often the use of standardized tests in clinical practice is limited because they are time-consuming, requiring the ability to use a goniometer; or, had not considered gender feature and age. The particular difficulty constitutes the definition of this disease in infants because their inherent physiological hypermobility, given the immaturity of the connective tissue.

If we consider the problem JHMS in pediatrics, JHM is observed in almost 50 % of children aged 2–3 years, but further decreases the proportion of about 20 years when the connective tissue condition gets stabilized. [3] Furthermore, JHM in children up to the age of three occurs with equal frequency in boys and girls, and in puberty – often in girls [3]. According to many studies [4], based on background of JHMS in children, it develops inflammatory joint damage, observed frequent injuries, especially during exercise and sports, systematic recourse to cardio rheumatologists, orthopedists and other doctors.

Thus, joint hypermobility is the cause of dysfunction of the musculoskeletal system and other systems in individuals of different gender and age. Diagnosis of the infants' health conditions is not sufficiently represented in the sources; furthermore, it requires objective evaluation and selection of physical rehabilitation.

The aim of study – to explore diagnostic techniques of joint hypermobility syndrome in infants and patients' physical rehabilitation with this pathology.

Objectives of the Study:

1.To conduct a systematic analysis of scientific literature, domestic and foreign experience in diagnostic methods and physical rehabilitation of people with joint hypermobility syndrome.

2. Identify the main problems of differential diagnosis of infants with the joint hypermobility syndrome.

3. Analyze the methods of children physical rehabilitation of this age category and nosology.

Methods involving theoretical analysis, synthesis and analysis of the literal sources.

Material and Methods of the Study. Due to the lack of familiarity with the above-mentioned pathology, pediatricians, neurologists and orthopedists often do not provide the correct diagnosis established even after complaints from parents and the presence of symptoms. Traditionally, doctors' attention drew from limited range of motion in joints, not the determination the excess amount. These children in their first year of life often get the attention of neurologists about the delay of the overall motor skills. Subsequently, they are turning to cardiologists, orthopedists, trauma surgeons and other physicians [3; 4; 5].

Because physiological muscle hypertonicity it is very hard to identify articular hypermobility in children of first weeks of life. During neurological or orthopedic examination, delay of motor development in infants becomes to be essential.

The main criteria for evaluation of psychomotor development in children of first year of life are tone, muscle strength, formation of motor functions, reduction of automatism, visual-motor coordination, eye contact [2].

There is a need for differentiated selection of tests to identify the causes of delays locomotions in a view of JHM presence.

To identify JHMS in infants we suggest using the following special techniques: visual assessment of the child arbitrary posture at rest and in motion, driven test tone muscles, the presence of "symptoms folded blade" and "symptom flaccid arms", detection of feet reliance, hands, determination and resilience amount of passive movements.

The proposed tests could help detect joint hypermobility of the lower limbs, shoulder girdle, increased flexibility of the spine. However, this assessment can be used in case of change the strength and muscle tone, and thus lead to other pathology.

The concept of evaluation of infants muscle strength proposed to conduct a six-point system: 0 points – no movement; 1 – no active movement, but is determined by palpation muscle tension; 2 – passive movements are possible in full; 3 – passive movements are possible in overcoming a slight resistance; 4 – passive movements are possible in dealing with moderate resistance; 5 – muscle strength in the normal range [2].

For visual assessment of muscle tone we propose to determine the position of the child and the position of the limbs at rest and in motion, which will determine which muscle tone or their groups dominates, or is impaired at the time of the examination. An additional method of assessing muscle tone is to determine the amount of resistance and passive movements.

However, our proposed approach can also be biased because these symptoms inherent for pathological condition characterized by a decrease in muscle tone, particularly atony, hypo-, hyper- and dystonia.

However, it should be noted that at JHMS there is no reduction observed in muscle strength and muscle tone changes. In the diagnostic phase of identifying the causes of delayed motor development is important the differentiation of pathological conditions characterized by decreased muscle strength, muscle tone with joint hypermobility syndrome.

In our view, such an assessment methodology will provide impartial examination and facilitate the formation of optimal physical rehabilitation program based «fallout» in child's development.

Treatment and rehabilitation of children, including infants, from JHMS today is not completely developed. General principles of treatment and rehabilitation tactics at JHMS must fundamentally differ from those in the treatment of other diseases of the musculoskeletal system. In the role of non-medicinal therapy we offer the application of medical physical culture and massage, hydrotherapy for use exercises for muscles that surround joints hypermobility, and if necessary – correction of orthopedic artificial restriction the range of motion in the joint.

Based on the characteristics of symptoms, it is advisable to use exercises that will strengthen the muscles and do not promote active bending-extension of the joints. There are effective fitness exercises for strengthening the deep back muscles, transverse abdominal muscle, abdominal press, feet, hands and trapezius muscles. It will promote the improvement of musculo-ligamentous apparatus with use of compression joints. However, exercises, aimed at increasing the flexibility of joints and spine, in our opinion, is inappropriate in the rehabilitation of this pathology. The best way is to avoid excessive over bending of joints when performing various movements. To generate a feedback it is advisable to carry out all the exercises in front of a mirror.

It is important consider the chronological age and motor capabilities of the child at the time of rehabilitation when forming meaningful motor function. "Jump" through certain stages of the overall motor skills can only trigger abnormal situation. So, sitting near the fixation of support, or, sitting with outstretched legs without the support of the knee provokes the formation of a round back; sitting in a pose «W» – splayfoot; standing with over bending knees offset by increased lordosis of the lumbar spine.

Classes of hydrocolonoherapy will strengthen the major groups of muscles and ligaments, and, in the same time, axial load of joints and spine.

Therapeutic massage has restorative direction, as a general and periarticular, will improve the state of the musculoskeletal system, local action on the joints.

All of the above means of rehabilitation aimed at increasing muscle strength, normalize muscle tone, neuromuscular coordination and, consequently, improve the level of motor functions. In our opinion, the main argument in favor of rehabilitation program effectiveness timely phasing formation of motor functions.

Conclusions. The scientific literature presents enough basic clinical research on joint hypermobility syndrome, and studies the effects of disease and medical correction. However, there are no developed diagnostic tests for separated joint hypermobility syndrome in infants. This problem needs an immediate solution to create the optimum tactics and reasonable rehabilitation of children in this category and the prevention of their joint and extraarticular complications.

Prospects for Further Research. Diagnostic tests that would promote the differentiation of abnormalities of neurological and orthopedic in infants at JHMS remain topical. It is necessary a specific selection of physical rehabilitation of children with the joint syndrome hypermobility, burdened by developmental delay locomotions.

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Стаття надійшла до редакції 29.05.2017 р.

УДК 616.243:616.248+796/799

RESPIRATORY TRACT DYSFUNCTION IN SPORTSMEN

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Abstract

Actuality. Increasing number of macrocycles during athletes' training focused on the achievement of high sports results leads to lower adaptive potential and as a result to the pre and pathological conditions, including – respiratory tract dysfunction. ***The aim*** – to analyze prevalence and reasons of respiratory tract dysfunction in athletes of high qualification. ***Results.*** The analysis of modern scientific data indicates high prevalence of asthma among professional sportsmen, skiers – 14–55 %, swimmers – 13–44 %, long-distance runners – 15–24 %. Professional sportsmen have got induced by physical loading laryngeal obstruction that is the main reason of larynx obstruction. The prevalence of this pathology among healthy population is ~ 5 % while among athletes – from 35 % to 70 %. Symptoms that indicate the infection of upper respiratory tract are between 30 to 40 % of the complaints of professional sportsmen in health facilities, especially among runners, cyclists, skiers, swimmers, rowers, and – tennis players and gymnasts. Currently, many experts hold to the hypothesis of «non-infectious» nature of symptoms of URTI, likely of allergic nature. Risk factors, mechanisms of respiratory tract dysfunction in sportsmen were analyzed.

Conclusions. The prevalence of respiratory tract dysfunction (asthma, induced by physical loading laryngeal obstruction, chronic cough, respiratory infections) among qualified athletes is much bigger than among the normal population. Determining risk factors are atopy, ventilatory needs of the kind of sport and training environment.

Key words: bronchial asthma, bronchial hypersensitivity, respiratory tract infections, throat obstruction, sportsmen.

Зіновій Остап'як, Ігор Випасняк, Богдан Лісовський, Тетяна Мицкан. Дисфункція дихальних шляхів у спортсменів. ***Актуальність.*** Збільшення кількості макроциклів підготовки спортсменів, орієнтованих на досягнення високих спортивних результатів, призводить до зниження адаптаційного потенціалу і, як результат, – до виникнення перед- та патологічних станів, у тому числі, дисфункції дихальних шляхів. ***Мета дослідження*** – проаналізувати поширеність та причини респіраторної дисфункції в спортсменів високої кваліфікації. ***Результати.*** Проведений аналіз сучасних наукових даних свідчить про значну поширеність бронхіальної астми серед професійних спортсменів (лижники – 14–55 %, плавці – 13–44 %, бігуни на довгі дистанції – 15–24 %). У спортсменів-професіоналів індукована фізичним навантаженням обструкція гортані є основною причиною обструкції гортані. Поширеність цієї патології серед здорового населення складає ~ 5 % тоді як у спортсменів – від 35 до 70 %. Симптоми, які свідчать про наявність інфекції верхніх дихальних шляхів, складають 30–40 % звернень професіональних спортсменів у спортивно-медичні заклади, насамперед у спортсменів-бігунів, велосипедистів, лижників, плавців, веслярів, а також тенісистів і гімнасток. На сьогодні багато фахівців притримуються гіпотези про «неінфекційний» характер симптомів URTI, імовірніше, алергічного характеру. Проаналізовано фактори ризику, механізми порушення функції дихальних шляхів у спортсменів.

Висновки. Поширеність дисфункції дихальних шляхів (астма, індукована фізичним навантаженням обструкція гортані, хронічний кашель, інфекції дихальних шляхів) серед висококваліфікованих спортсменів значно більша, ніж серед звичайних людей. Визначальними чинниками ризику є атопія, вентиляторні потреби виду спорту й тренувальне середовище.

Ключові слова: бронхіальна астма, гіперчутливість бронхів, інфекція дихальних шляхів, обструкція гортані, спортсмени.

Актуальность. Увеличение количества макроциклов подготовки спортсменов, ориентированных на достижение высоких спортивных результатов приводит к снижению адаптационного потенциала и, как результат, – к возникновению перед- и патологических состояний, в том числе дисфункции дыхательных путей. ***Цель исследования*** – проанализировать распространенность и причины респираторной дисфункции у спортсменов высокой квалификации. ***Результаты.*** Проведенный анализ современных научных данных свидетельствует о значительной распространенности бронхиальной астмы среди профессиональных спортсменов: лыжники – 14–55 %, плавники – 13–44 %, бегуны на длинные дистанции – 15–24 %. У

спортсменов высокой квалификации индуцированная физической нагрузкой обструкция гортани является основной причиной обструкции гортани. Распространенность данной патологии среди здорового населения составляет ~ 5 % в сравнении у спортсменов –35 до 70 %. Симптомы, свидетельствующие о наличии инфекции верхних дыхательных путей, составляют 30–40 % обращений профессиональных спортсменов в спортивно-медицинские учреждения, прежде всего, у спортсменов-бегунов, велосипедистов, лыжников, пловцов, гребцов, а также – теннисистов и гимнасток. В настоящее время многие специалисты придерживаются гипотезы о «неинфекционном» характере симптомов URTI, вероятно аллергического характера. Проведен анализ факторов риска, механизмы нарушения функции дыхательного тракта у спортсменов.

Выводы. Распространенность дисфункции дыхательных путей (астма, индуцированная физической нагрузкой обструкция гортани, хронический кашель, инфекции дыхательных путей) среди высококвалифицированных спортсменов значительно больше, чем среди обычной популяции. Определяющими факторами риска являются атопия, вентиляторные потребности вида спорта и тренировочная среда.

Ключевые слова: бронхиальная астма, гиперчувствительность бронхов, инфекция дыхательных путей, обструкция гортани, спортсмены.

Introduction. A distinctive feature of modern sport is a significant increase in the number of critical events during an annual macrocycle and four-years Olympic training period. This factor influenced the change in the structure of the annual training of athletes. The result of these changes was to increase the number of macrocycle training aimed at achieving and maintaining a high level of integrated athlete training for a competition period. This usually leads to lower adaptive capacity and, consequently, to an increase of injuries, pre–emergence and pathological conditions. The problems of respiratory diseases such as airway hypersensitivity (AHR) / asthma, exercise-induced laryngeal obstruction (EILO), chronic cough, respiratory infections are particularly relevant for highly skilled athletes who are engaged in various sports [2; 6; 16; 20].

The aim of this study was to analyze the prevalence and causes respiratory dysfunction in athletes qualifications.

Research methods. To achieve this goal were used theoretical methods: analysis, synthesis, induction, deduction

Research results. Discussion. The prevalence of AHR / asthma among athletes is from 10 to 17,2 % [3; 4; 10; 12].

As seen from the table. 1, between sports there is great variability in the level of prevalence of exercise-induced asthma – EIA / exercise induced bronchoconstriction – EIB athletes [21].

Table 1

Prevalence EIB/EIA Among Sportsmen in Different Sports
Sport Prevalence of EIB/EIA, *%*

Sport Prevalence	**EIB / EIA, *%***
Cross country skiing	14–55
Skiing, jumping	4
Speed skating	12–43
Ice Hockey	15 — 35
Hockey	5
Figure skating	35
Swimming	13–44
Diving	4
Running	15–24
Cycling	16–17
Triathletes	25–56
Olympic sports	17

Obviously, sports related physical activities with high endurance, in which athletes have to inhale large amounts of air increases the risk of EIB / EIA. For example, – Olympian skiers – who are participating in competitions and in the Nordic Combined ski race when the level of ventilation reaches 200 l / min over a long period of time and which often compete with low ambient temperatures, are more likely to develop EIB / EIA – 14–55 %. Despite such weather training skiers and jumpers jumping prevalence of the disease in the past is less than 4 % as they inhale large amounts of cold dry air. In addition, athletes who inhale various irritants, pollutants or allergens present in the air are exposed to an increased risk of EIB / EIA. More than

13–44 % Olympian swimmers and 13 % suffer synchronisors EIB / EIA [14]. Breathing air containing bleach (e.g chlorinated derivative) during many hours of training in the indoor pool is causing the high prevalence of EIB / EIA athletes in water sports. Unlike the aforementioned water sports, jumping into the water does not require training for endurance, but mostly held in closed chlorinated pools and the prevalence of disease in these sports is less than 4 % as they inhale large amounts of cold dry air. The traditional view is that the fins naturally gravitate to sail through pre-existing respiratory diseases has been questioned work [14; 16].

Athletes training and competitions are held in closed rollers, inhale cold air and can be exposed to particulate matter and nitrogen oxides emitted filling machines. The Olympic competitions in speed skating, which refers to endurance sports, the prevalence of EIB / EIA is 12–43 %. Hockey players and figure skaters breathing the same air, but none of these groups of athletes are not trained for endurance, but the risk of EIB/ EIA they also increased – 15–35 %, partly due to poor air quality in indoor ice arenas [20], while in hockey on grass – 5 %. Olympian cyclists who spend many hours training on the roads and are often subjected to the impact of particulate matter, nitrogen oxides, ozone and allergens also in the group with high proliferation EIB / EIA ~ 17 % [2]. It is not surprisingly, that in the Olympic triathletes, especially sport, which includes the effect of the environment and training schedules as swimmers and cyclists, marked the highest percentage of incidence of EIB / EIA – 25–56 %.

The results of operations related to the prevalence of the disease are consistent with the concept, which is that atopy, fan needs of the sport and training environment – determinants of risk of EIB / EIA in elite athletes [5; 9].

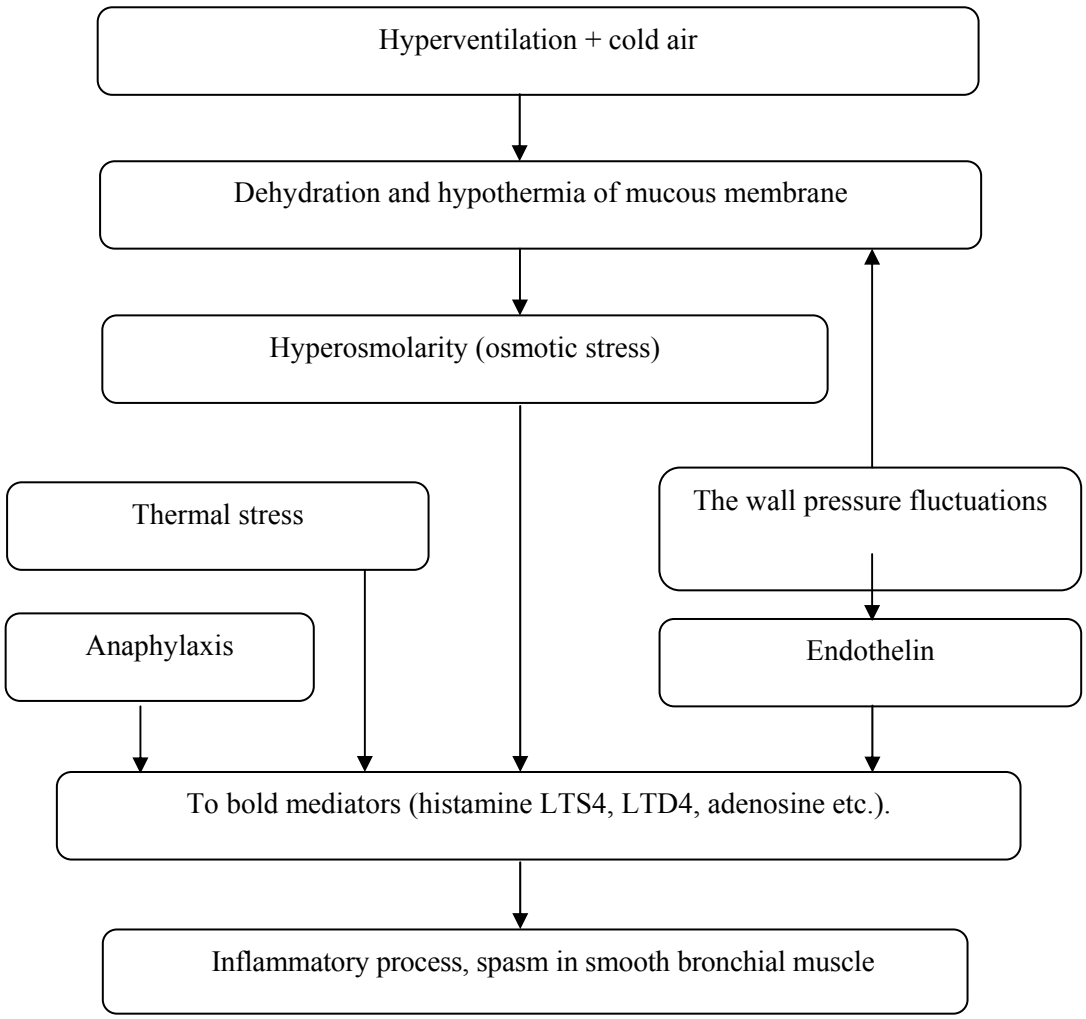

Fig.1. *Mechanisms of AHR in Athletes*

As shown in figure 1 of breathing at high velocity of air flowing for a long time leads to drying and cooling airway mucous membrane due to excessive evaporation of the liquid from the surface and significant dehydration and hypothermia of mucous membrane in the respiratory tract. Dehydration leads to hiperosmolarity (osmotic stress). The main reason for the release of mediators by changing the osmolarity can be modified ionic interactions in the cell and is an incentive for the release of mediators histamine, LTS4, LTD4 and adenosine et al., Which leads to inflammation and eventually to airway narrowing [6].

Inhalation of cold air cooling strengthens of the mucous membrane, causing its reactive hyperemia, edema and also enhances the obstruction. After cooling airway mucosa during exercise, followed by rapid heating airways after exercise, can serve as an additional stress, so-called «thermal stress» [9].

During hyperventilation increases strength and angles of the wall pressure, which increases dehydration of epithelial cells, leading them even to the complete detachment [14]. Furthermore, re-stretching and contraction of airway epithelial cells at high velocity, air flow could adversely affect the function of epithelial cells. Endothelin produced by the cells of the bronchial epithelium and endothelium may increase airway response to exercise by increasing the tone of smooth muscles and increased permeability of microcirculation and output cytokines involved in the acute phase of inflammation. Despite the ability of airway epithelium to a rapid recovery, repeated trauma followed by reduction considered as a cause structural and functional changes. These are the structural changes (airway reconstruction) obtained by the method of bronchoscopy in elite swimmers and cross–country racers [11].

Another factor that increases or causes bronchospasm may be redistribution of blood from the intestines to the early exercise of mast cells and transport of swallowed allergens in the lining of the airways, leading to NAIVE anaphylaxis [20].

An important condition to identify asthma in athletes is that they do not act only as bronchospasm, but as other objective criteria. The proper formulation of diagnosis and differential diagnosis of asthma requires a comprehensive assessment of disease history, results of clinical examination and appropriate laboratory and function tests.

The International Olympic Committee has several recommendations for the diagnosis of EIA in athletes, to enable the use of anti-asthma drugs: positive history of the disease and at least one positive provocative test [6]. Protocols of provocative tests are standardized and published.

Table 2

Diagnostic Asthma Tests Recommended by The Medical Commission (MC) of the International Olympic Committee (IOC) and World Anti–Doping Association (WADA)

Methods	Criteria
Spirography	FEV1<70 %, FEV1/VC <55 %
Bronchodilation test	↑ FEV1 ≥ 12 % (>200 мл)
Hyperventilation test (EVH)	↓ FEV1 ≥ 10 %
Physical activity	↓ FEV1 ≥ 10 %
Methacholine test	↓ FEV1 ≥ 20 % при: – PC20 ≤ 4 mg/ml (the athletes who were not taking inhaled corticosteroids; – PC20 ≤ 16 mg/ml (the treatment with inhaled corticosteroids more than 1 month.)
Hyperosmolar test (inhaled mannitol)	↓ FEV1 ≥ 15 %

Baseline spirometry is a poor predictor of asthma in professional athletes as well as indicators of lung function may be within the normal range, but in fact, they are underestimated as for the athlete, so in this case is only forced expiratory volume in the first second (FEV1), since this has the best rate and reproducibility of diagnostic value [1].

To assess the reversibility of obstruction used bronchodilation test beta–2–agonists, short-acting (salbutamol). It should be noted that this test can be diagnostically significant only at the initial bronchial obstruction. From resulted above provocation tests – EVH is the most sensitive test for the detection of highly EIB in athletes. Many experts count it «gold standard» for the diagnosis of asthma. But it is believed that holding only EVH enough, especially in athletes with borderline results, and to prevent misdiagnosis it is recommended to use in the diagnosis of asthma 2–3 provocative tests [1; 6; 15; 19].

EVH can also be used as a method of screening in athletes without symptoms of EIB.

Ambiguous Recommendations on conducting methacholine test, not all experts proponents of the study, explaining that with different pathogenetic mechanisms of asthma in athletes it is shallow and Bougault V., Turmel J., Boulet L. P. [6] believe that this test with EVH should be mandatory when examining athletes. Anderson S. D., Kippelen P. [11] it is recommended to inhaled mannitol as highly provocative test in athletes.

And it should be noted that testing should be conducted at different times of the year. With indirect methods for diagnostic purpose as pulse ostsylometriya [23], the definition of nitrogen oxide in exhaled air [12].

Currently, there is no evidence that asthma in athletes is different from asthma in non-athletes. However, MK IOC and WADA restricts the use of certain drugs and doses in the treatment of asthma [12].

For the prevention of attacks of bronchospasm in athletes beta-2-agonists are commonly used, and for several decades the question is debated whether they cause the improved performance in athletes as according to the World Anti–Doping Agency Olympic athletes with the diagnosis of asthma in the last two Olympics won more medals than their fellow non-asthmatics.

At the present time directives WADA [25] athletes who have confirmed diagnosis of EIB permitted inhaled salbutamol (maximum 1600 micrograms over 24 hours), formoterol (maximum dose 54 micrograms over 24 hours) and salmeterol in accordance with the manufacturer's recommendations in the therapeutic dose [7].

Exercise-induced laryngeal obstruction (EILO), formerly known as vocal dysfunction (VCD), is a major simulators asthma and EIV. Although the term VCD covers more prominent in the scientific literature and is still in use, a recent consensus statement declares that EILO is more appropriate and more accurate umbrella term to represent conditions that cause narrowing of the larynx during exercise [10; 23].

EILO is paradoxically manifested by sudden constriction of the glottis during inspiration, and rarely at expiration, during exercise and immediately the development of dyspnea and inspiratory stridor, voice changes and heaviness in the chest that can lead to hypoxia and low efficiency [9]. In professional athletes EILO is a common cause of laryngeal obstruction during exercise. The prevalence of this disease among healthy population is about 5 % [22] athletes – from 35 % to 70 % [17].

The exact etiology of EILO is unknown; However, a variety of factors as Laryngeal hyperreactivity, guttural stimuli and psychogenic rare neurological disease are possible and recognized as the main causes of the dysfunction. In some cases, gastroesophageal reflux (GER) is a trigger in the development EILO [3]. The majority of cases EILO (> 80 %) is found in female athletes and the athletes who participate in outdoor sports and are often mistakenly classified as asthma [25].

Despite the fact that the EIV and EILO can exist separately, they often accompany each other. During numerous studies have shown that about one-third to half of the patients also had EIB [5], EILO and asthma – 6 % [12]. However, this does not mean that they are dependent on each other, as in EILO shortness of breath originates from the larynx, while EIB signs of laryngeal dysfunction there [13].

Accurate diagnosis of asthma, EIB and EILO requires objective testing. EILO is best diagnosed by direct visualisation (endoscopy) larynx. Spirometry is little value in the diagnosis EILO, as indicators such as reduced forced expiratory volume in 1 second and forced vital capacity, but should not be used as a primary diagnostic test for EILO because of low sensitivity. In some cases, clinical data can be differentiated states, usually manifested through EIV 5–20 minutes after exercise, while EILO evident during exercise and usually passes within 5 min after exercise.

Currently, surgery [24] that is used to strengthen the vocal cords, respiratory muscle training, speech therapy, psychotherapy, hypnosis is not yet as effective if wanted, so further studies are needed to determine how to optimize the effectiveness of measures at EILO [17].

Respiratory tract infections, including upper respiratory tracts (URTI), are very common in the general population and can affect people of different ages who are immunocompromised. We know that 75–80 % of all acute diseases in the US population due to respiratory diseases, 80 % are caused by viral infections of the respiratory tract diseases in average 3–6 per person per year. Athletes are no the exception. Symptoms that indicate the presence of URTI, ranged from 30 to 40 % of the complaints of professional athletes in the sports and medical clinics [6], especially in athletes runners, cyclists, skiers, swimmers, rowers, as well as tennis players and gymnasts [13].

Rhinoviruses, adenoviruses and para-influenza viruses often cause URTI in athletes. However, a small number of scientific works that have received actual evidence of an infectious agent in athletes with URTI [4; 7]. At least 70 % of cases were not identified pathogen and disease proceeded shorter in duration and less manifest.

It is known that exercise can cause significant changes in immunological parameters, including temporary immunosuppression (change in the number and activity of neutrophils, lymphocytes, macrophages and cytokine secretion, decreased activity of natural killer cells). Results of the study R. Paiange [19] showed that a significant physical activity leads to immunosuppression, which is most pronounced in the first hours after exercise. There is even a term J-curve («open window») when marked sensitivity to viral and bacterial infections. But it should be noted that despite numerous studies, a clear link between altered immune parameters and URTI is not documentary confirmed.

The study of the cellular structure showed an increase in the number of neutrophils, epithelial cells swimmers, skiers and hockey that may be a direct result of endurance training, as they are in the off-season. In contrast, the increase in eosinophils and lymphocytes, are probably due to the influence of environmental factors, such as chlorine or dry swimmers and skiers in the cold air. [6] Mixed (eosinophilic and neutrophilic) airway inflammation is found in hockey, as these athletes are chronically exposed to cold and dry air and oxides of carbon and nitrogen [4].

Fortunately, in most cases, these inflammatory cells exhibit a rather low level of adhesion, explaining why airway inflammation can occur in athletes erased, despite numerous inflammatory cellular elements. Recently, there is growing evidence that lifestyle factors, difficulties in overcoming everyday stress, the impact of food because their own diet and dietary supplements in a position to influence the immune response in athletes during intense exercise [9; 15; 24]. The concept of inflammation without infection in athletes requires further study.

Recent results [25] challenge the early doctrine that exercise influence the incidence of URTI.

Highly skilled athletes with recurrent URTI should undergo a thorough clinical examination to establish the basic factors of airway inflammation. Perhaps there is a genetic predisposition to the pro–inflammatory response disregulation and anti-inflammatory cytokines in response to intense exercise as a possible mechanism of airway inflammation.

Identifying athletes with an increased risk of relapse URTI is essential to prescribe preventive measures. Monitoring speed secretion and salivary IgA concentration drop can identify athletes at increased risk of the disease [13; 21].

Rhinitis is very common in athletes, the prevalence of which is> 30 % and swimmers, this figure could reach 74 % and may have a negative impact on athletic performance, as well as intense exercise requiring nasal breathing, in order to effectively meet the growing demand for oxygen [18].

Most athletes rhinitis is associated with an allergic component, so their condition worsens in the presence of specific environmental conditions; the impact of allergens in the air, inhaling irritants (O3, particulate matter and chlorination byproducts), or the influence of cold dry air [19; 22].

Cough is very common for the sportsmen, especially those who are engaged in winter sports [17]. In cross-country racers prevalence of this symptom can reach 86 %, while the cough is marked as the most common respiratory symptom [20] in athletes. Despite the fact that the cough is often associated with bronchospasm, as a result of physical activity, more than half of the athletes without evidence of bronchospasm reported the presence of cough due to physical stress [8; 22].

Along with asthma, any of the following factors can become a cause of coughing during or after exercise, rhinitis, sinusitis, laryngitis, respiratory irritants sensitising effect [8]. In each case, the symptom should be verified.

Subclinical pulmonary oedema. Arterial hypoxemia as a result of exercise (EIAH) is common in highly skilled athletes who train for endurance, especially in young athletes (50 % or more). [20] This gas exchange occurs violations of varying degrees. The result is EIAH insufficient supply of oxygen to working muscles, which may limit their performance. Mechanisms of this condition are not fully known, one of the possible – the development of high pressure in the lungs, which is able to injure the alveolar–capillary membrane. Clinical manifestations EIAH often occur in divers and swimmers, as well as marathon runners, triathletes [5;17; 23].

Conclusions. The prevalence of airway dysfunction among skilled athletes is much greater than in the normal population. Determining risk factors are atopy, fan needs of the sport and training environment.

Despite numerous studies in this area a lot of directions are to be clarified: not fully understood mechanisms of AHR during exercise for the sportsmen without atopy and clinical manifestations of the disease; causes «infection» of the upper respiratory tract, as well as preventive measures.

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Стаття надійшла до редакції 30.05.2017 р.

УДК 796.1+76.352

DANCING EXERCISES AS A FACTOR OF SOCIALIZATION OF CHILDREN WITH VIOLATION OF SIGHT

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Abstract

In the article the individual differentiated approach is reflected to employments by dancing exercises as important mean of optimization of educational process in the specialized schools-boarding-schools, shown role of dances in the increase of level of physical preparedness and somatic health at children 7 years with violations of sight.

Examined 45 schoolchildren aged 7–9 years who study at a specialized boarding school for children with violation of sight. The analysis of the influence of dances on the psychoemocyanal sphere of children with violations of sight led to the results of testing the coordination abilities, the level of formation of the need for communication, the diagnosis of the motivational structure of the personality, the definition of communication style, value orientations and the level of communicative complexity. Comparative analysis showed that with age these indicators decrease, and in children with low coordination abilities there is a low level of need for communication and low motor activity. Among the motivations that motivate children with visual impairment to group interaction, 54,3 % fall on the need to establish a wide range of relationships, about 45,4 % to the needs for their own development, the need for personal credibility is 39,5 %. Another 35,2 % of indicators are due to the need for information accumulation, and the opportunity to increase the value of one's own person is 24,7 %. At the same time, the need for communicative learning and the need to achieve communicative success are pushed to the background and make up only 14,2 and 15,7 %, respectively. Low indicators of communicative training cause significant difficulties in the integrative process, which requires the development of a program to improve and improve the level of coordination abilities in children with violation of sight.

The necessity of forming of motivation is marked to the increase of level of motive activity as effective mean of harmonization of physical development, is marked on importance of permanent employments by dances, that substantially promotes efficiency of process of socialization and helps to be deprived psychological complexes.

Key words: to put 7 years, violation of sight, dances, physical development, somatic health.

Сергій Попель, Оксана Крижанівська, Надія Замська, Едуард Лапковський, Ярослав Яців, Галина П'ятничук. Танцювальні вправи як фактор соціалізації дітей із порушенням зору. У статті висвітлено індивідуальний диференційований підхід до занять танцювальними вправами як важливий засіб оптимізації навчального процесу в спеціалізованих школах-інтернатах, показано роль танців у підвищенні рівня фізичної підготовленості й соматичного здоров'я в дітей семи років із порушеннями зору. Обстежено 45 школярів віком 7–9 років, які навчаються в спеціалізованій школі-інтернаті для дітей із порушенням зору. Аналіз впливу танців на психоемоційну сферу дітей із порушенням зору проводили за результатами тестування координаційних здібностей, рівня сформованості потреби в спілкуванні, діагностики мотиваційної структури особистості, визначення стилю спілкування, ціннісних орієнтацій і рівня комунікативної складності. Порівняльний аналіз показав, що з віком ці показники зменшуються, а в дітей із низькими координаційними здібностями спостерігали низький рівень потреби в спілкуванні та низьку рухову активність. Серед мотивів, що спонукають дітей із порушенням зору до групової взаємодії, 54,3 % припадає на потреби у встановленні широкого кола взаємозв'язків, близько 45,4 % – на потреби у власному розвитку, необхідність у зростання особистого авторитету складає 39,5 %. Ще 35,2 % показників зумовлені потребою накопичення інформації, а можливістю довести цінність власної особи – 24,7 %. Разом із цим потреба в комунікативному навчанні й потреба досягнення комунікативного успіху відсуваються на другий план і складають, відповідно, лише 14,2 і 15,7 %.

Низькі показники комунікативної підготовки – причина суттєвих труднощів інтегративного процесу, що вимагає розробки програми для вдосконалення та підвищення рівня координаційних здібностей у дітей із

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

порушенням зору. Зазначено необхідність формування мотивації до підвищення рівня рухової активності як ефективного засобу гармонізації фізичного розвитку, наголошено на важливості постійних занять танцями, що істотно підвищує ефективність процесу соціалізації й допомагає позбутися психологічних комплексів.

Ключові слова: діти семи років, порушення зору, танці, фізичний розвиток, соматичне здоров'я.

Сергей Попель, Оксана Крыжановская, Надежда Замская, Эдуард Лапковський, Ярослав Яцив, Галина Пятничук. Танцевальные упражнения как фактор социализации детей с нарушением зрения. В статье освещается индивидуальный дифференцированный подход к занятиям танцевальными упражнениями как важное средство оптимизации учебного процесса в специализированных школах-интернатах, показана роль танцев в повышении уровня физической подготовленности и соматического здоровья у детей семи лет с нарушениями зрения. Обследовано 45 школьников в возрасте 7–9 лет, обучающихся в специализированной школе-интернате для детей с нарушением зрения. Анализ танцев на психоэмоциональную сферу детей с нарушением зрения проводили по результатам тестирования координационных способностей, уровня сформированности потребности в общении, диагностику мотивационной структуры личности, определения стиля общения, ценностных ориентаций и уровня коммуникативной сложности. Сравнительный анализ показал, что с возрастом эти показатели уменьшаются, а у детей с низкими координационными способностями наблюдается низкий уровень потребности в общении и низкая двигательная активность. Среди мотивов, побуждающих детей с нарушением зрения к групповому взаимодействию, 54,3 % приходится на потребности в установленнии широкого круга взаимосвязей, около 45,4 % – на потребности в собственном развитии, потребность в росте личного авторитета составляет 39,5 %. Еще 35,2 % показателей обусловлены потребностью в накоплении информации, а возможность доказать ценность собственной личности составляет 24,7 %. Вместе с тем, потребность в коммуникативном обучении и достижении коммуникативного успеха отодвигается на второй план и составляет, соответственно, только 14,2 и 15,7 %.

Низкие показатели коммуникативной подготовки являются причиной существенных трудностей интегративного процесса, требуют разработки программы для совершенствования и повышения уровня координационных способностей у детей с нарушением зрения. Указана необходимость формирования мотивации к повышению уровня двигательной активности как эффективного средства гармонизации физического развития, подчеркивается важность постоянных занятий танцами, что существенно повышает эффективность процесса социализации и помогает избавиться от психологических комплексов.

Ключевые слова: дети семи лет, нарушения зрения, танцы, физическое развитие, соматическое здоровье.

Introduction. One of the diseases most attracted by the attention of parents, teachers, doctors is a violation of vision of varying severity [4; 9]. The development of this disease has a chronic and often progressive course. As a rule, myopia begins in childhood and often leads to blindness and disability [4; 8; 9].

As statistics show, the ideal vision is found in less than half of humanity. According to scientists [1; 3], from around the globe myopia suffers from 40 to 60 % of children (depending on the urbanization of the region), and blindness develops in 0,6–1,1 %. As a rule, they have a high level of hypokinesia, which is one of the reasons for the violation of posture, the development of flat feet, obesity, low level of physical fitness and other violations of physical development and physical health.

The health of children with visual impairment is largely determined by the level of the functional capabilities of the body, depends on the hygienic norms of physical activity. In turn, motor activity within the physiological reserves of the body, is a healing factor [2; 3]. This can explain the high effectiveness of various forms of FC, when they are based on the principle of the overall impact on the child's body [1; 5]. Therefore, timely prevention of hypokinesia and increasing the level of physical development are important for maintaining high–grade physical health and physical performance of children with visual impairment [7].

The purpose of the study is to theoretically substantiate and experimentally test the effectiveness of dance exercises in younger schoolchildren with visual impairment considering the level of physical development, physical health and physical performance.

Organization and methods of research. The study involved 68 pupils of a specialized boarding school for children with visual impairment in the town of Dolina.

For the conduct of the pedagogical experiment, two groups of 7-year-old children were organized. Control group – 32 pupils (17 boys and 15 girls) and the main group – 34 pupils (19 boys and 15 girls).

For the students of the main group, 75–80 % of the duration of the physical training lesson was allocated to performing dance exercises (beside the handrail, paired with children without visual impairment or individually without steam) [10]. Also, the students of the main group, on the recommendation of the doctors and the choreographer, were given individual extracurricular tasks, which consisted of special exercises to increase flexibility and strengthen the strength of the muscles. Schoolchildren of the control group were engaged in a standard program with physical education.

The level of physical performance was determined by the results of the veloergometric test [8]; The state of SZ – according to the incidence rate and the total number of passes during the school year [5]; Motivation to exercise by the results of the questionnaire.

Results of the Study. At the beginning of the study, a questionnaire was conducted, the analysis of which was revealed by a high percentage of children who were irregularly engaged in physical exercises. Thus, 76,4 % of boys and 78,94 % of girls did not exercise regularly. Only 17,64 % of boys and 10,52 % of girls systematically engaged in physical exercises (playing on sports grounds, swimming, running, etc.). Every morning 10,52 % of boys and 5,26 % of girls were assigned 10–15 minutes for gymnastics.

Repeated questioning made it possible to establish that after the experiment in the control group there were almost no changes. In the main group, 58,82 % of boys and 47,06 % of girls were systematically engaged in physical exercises. Every morning 64,71 % of boys and 76,47 % of girls perform gymnastics. 47,06 % of boys and 64,47 % of girls started taking breaks and physical breaks during homework.

The results of our studies show that the growth–weight indices of the pupils of the control group and the main group in both boys and girls did not have a significant difference (P> 0,05) between themselves before the start of the study. There was no significant difference in these parameters at the end of the experiment (P> 0,05).

Many researchers point to the close dependence of the influence of systematic physical exercises on the parameters of external respiration. Analysis of the results of the vital capacity of the lungs shows a statistically significant increase in the lung capacity after the experiment in the schoolboys of the main group, both boys and girls (P <0,05) compared with the control group. In schoolchildren of the main group, this indicator increased by 219,2 ml in boys and 208,5 ml in girls. So, the proposed dance exercises have a pronounced aerobic orientation, which positively affects the improvement of the functioning of the cardiorespiratory system as a whole.

A similar picture was observed when analyzing the results relative to the index of the vital index. Thus, in boys of the main group, it increased by 5,1 ml / kg, in girls – by 5,8 ml / kg (P <0,05).

Analysis of indicators of physical readiness of schoolchildren showed that in the vast majority of these indices in the main group, statistically significant changes occurred at the end of the experiment (P <0,05).

One of the important physical qualities of a person is speed–power capabilities. When analyzing the average long jump results from the place, the boys of the main group improved their results by 5,61 cm compared to the control group, and the girls, respectively, by 8,73 cm (P <0,05).

A similar picture is observed in the analysis of the dexterity development indicators (shuttle run 10 x 5 m). The results of testing with a shuttle run of 10 x 5 m in the main group were statistically significant (P <0,05) compared with the control group at 1,74 s in boys and 1,94 in girls.

During the period of the pedagogical experiment, the method used by us has made it possible to improve the flexibility in boys of the EG by 4,39 cm and, respectively, in girls of the main group by 3,23 cm, which is 8,7 and 9,6 %, respectively, (P<0, 05).

The results of the analysis of the rates of increase in the strength of the muscles of the hands (hanging on the bent hands, c) showed that in the students of both the main group and the control group it increased insignificantly (P> 0,05), which is 3,83 and 3,98 seconds, and in girls 2,20 and 2,5 seconds.

In order to test the effectiveness of the applied technique, we conducted a repeated examination of the state of somatic health of junior schoolchildren with visual impairment. Analysis of the results of the survey showed that statistical changes were noted in the main group. Thus, the overall morbidity in the control group remained almost unchanged at 17,5 %. In the main group, the amount of passes for the year is only 10,8 %, which indicates an increase in resistance of the organism.

Conclusions. Conducted pedagogical experiment confirmed formulated our hypothetical assumptions about the necessity of formation of motivation of physical activity, its gain by performing dance exercises at physical training lessons and other extracurricular activities and comparison of test performance, as well as on the basis of the control parameters of an individual, differentiated approach in dealing with such complex socio-pedagogical problems, which, of course, is the process of retaining Nia and strengthen the health of younger students with visual impairment.

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Стаття надійшла до редакції 24.05.2017 р.

УДК 004.5–06:617.754–053.7

VIOLATION OF THE TEENAGERS-COMPUTER USERS' BINOCULAR VISION AND PECULARITIES OF ITS RESTORATION

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Abstract

According to WHO experts, vision is vulnerable to computer loads. Computer users have complaints, combined by the terms «visual fatigue», «computer vision syndrome», which include a complex of violations in the system of refraction-accommodation. We did not find any research on the peculiarities of senior students' binocular vision with emmetropia when they are working with a personal computer, and therefore we decided to study this issue. 63 healthy school age senior students were examined, those with emmetropic refraction but without ophthalmic, somatic and psychological abnormalities. Chromatic angle of view and chromatic stereoscopy were studied with the help of special computer techniques. The survey was conducted in three stages. At the first stage, we studied the effect of a one-hour nonstop work in front of the computer monitor on the visual functions, at the second one – their state after a 15 minute passive rest. The third stage involved implementing our own program «Saving and Restoration of Vision» and determining the investigated parameters. The «Saving and Restoration of Vision» program contains special eye exercises, as well as those for the shoulder and neck with breath-holding elements. It is ascertained that high school students' one-hour work at the computer leads to deteriorating chromatic angle of view as well as chromatic stereoscopy. Herewith, the perfect match frequency of test objects decreased by 14,5 and 24,2 % respectively. Applying a set of rehabilitation exercises after a one-hour computer work allowed to restore the binocular vision to the original state, while a passive fifteen-minute rest after the computer visual load did not give such results. Thus, the study of senior students' binocular vision with emmetropic refraction, after one hour of work, showed its violation, which can be eliminated by a complex of rehabilitation exercises from the authors' program «Saving and Restoration of Vision».

Key words: computer influence, teenagers, chromatic angle of view, chromatic stereoscopy, restoration measures.

Наталія Ульяницька, Степан Вадзюк, [1]Наталія Бєлікова, Світлана Індика, Оксана Усова. Порушення бінокулярного зору та особливості його відновлення в підлітків-комп'ютерокористувачів. Як стверджують експерти ВООЗ, зір вразливий до комп'ютерних навантажень. У користувачів комп'ютерів виникають скарги, об'єднані термінами «зорова втома», «комп'ютерний зоровий синдром», які включають комплекс порушень у системі рефракція-акомодація. Досліджень особливості бінокулярного зору в старшокласників з еметропією під час роботи з персональним комп'ютером ми не виявили й тому вирішили вивчити це питання. Обстежено 63 здорові особи старшого шкільного віку з еметропічною рефракцією без офтальмологічних, соматичних та психічних відхилень. Хроматичний кут зору й хроматичну стереоскопію вивчали з використанням спеціальних комп'ютерних методик. Обстеження проводили за три етапи. На першому вивчали вплив годинної безперервної роботи за монітором комп'ютера на зорові функції, на другому – їх стан після 15-хвилинного пасивного відпочинку. Третій етап уключав застосування авторської програми «Збереження та відновлення зору» з наступним установленням досліджуваних параметрів. Програма «Збереження та відновлення зору» містить спеціальні вправи для очей, а також для плечового пояса й шиї з елементами затримки дихання. Установлено, що одногодинна робота старшокласників за комп'ютером призводить до погіршення як хроматичного кута зору, так і хроматичної стереоскопії. При цьому частота ідеальних зіставлень тест-об'єктів зменшувалася на 14,5 і 24,2 % відповідно. Застосування комплексу відновлювальних вправ після одногодинної роботи за комп'ютером дало змогу повернути бінокулярний зір до вихідного стану, тоді як пасивний п'ятнадцятихвилинний відпочинок після зорового комп'ютерного навантаження не привів до відновлення цього показника. Отже, дослідження бінокулярного зору в старшокласників з еметропічною рефракцією після одногодинного навантаження засвідчило його порушення, яке можна усунути комплексом відновлювальних вправ з авторської програми «Збереження та відновлення зору».

Ключові слова: вплив комп'ютера, підлітки, хроматичний кут зору, хроматична стереоскопія, відновлювальні заходи.

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

Наталья Ульяницкая, Степан Вадзюк, Наталия Беликова, Светлана Индыка, Оксана Усова. Нарушение бинокулярного зрения и особенности его восстановления в подростков-компьютеропользователей. Как утверждают эксперты ВОЗ, зрение является уязвимым к компьютерным нагрузкам. У пользователей компьютеров возникают жалобы, объединенные терминами «зрительная усталость», «компьютерный зрительный синдром», что включает комплекс нарушений в системе рефракция−аккомодация. Исследований особенности бинокулярного зрения у старшеклассников с эмметропией при работе с персональным компьютером мы не обнаружили и поэтому решили изучить этот вопрос. Обследовали 63 представителя здоровых лиц старшего школьного возраста с эметропической рефракцией без офтальмологических, соматических и психических отклонений. Хроматический угол зрения и хроматическую стереоскопию изучали с использованием специальных компьютерных методик. Осследование проводили в три этапа. На первом изучали влияние часовой непрерывной работы за монитором компьютера на зрительные функции, на втором – их состояние после 15-минутного пассивного отдыха. Третий этап включал применение авторской программы «Сохранение и восстановление зрения» с последующим установлением исследуемых параметров. Программа «Сохранение и восстановление зрения» содержит специальные упражнения для глаз, а также для плечевого пояса и шеи с элементами задержки дыхания. Установлено, что одночасовая работа старшеклассников за компьютером ведет к ухудшению как хроматического угла зрения, так и хроматической стереоскопии. При этом частота идеальных сопоставлений тест-объектов уменьшалась на 14,5 и 24,2 % соответственно. Применение комплекса восстановительных упражнений после одночасовой работы за компьютером позволило вернуть бинокулярное зрение к исходному состоянию, тогда как пассивный пятнадцатиминутный отдых после зрительной компьютерной нагрузки не привел к восстановлению этого показателя. Таким образом, проведенное исследование бинокулярного зрения у старшеклассников с эметропичной рефракцией после часовой нагрузки показало его нарушение, которое можно устранить комплексом восстановительных упражнений с авторской программы «Сохранение и восстановление зрения».

Ключевые слова: влияние компьютера, подростки, хроматический угол зрения, хроматический стереоскопом, восстановительные мероприятия.

Introduction. Overall informatization of society as a global process and multifaceted changes in the organization of work motivates many people to use various means of computer technology (Bolshakova V. A., 2006; Akhmadiev P. P., 2010; Trubylin V. N., etc., 2010).

The computer has become common not only in scientific laboratories, offices, banks and production halls, but also in school classrooms. Therewhile, the introduction of computers in all spheres of human life has revealed not only positive but also the negative effects of their use. According to World Health Organization (WHO) experts Vision, psyche, autonomic nervous system and musculoskeletal system are the most vulnerable. The teaching of high school students is characterized by the widespread use of computers. The work at the computer display is characterized by a significant load on the visual analyzer, therefore, such professional activity is considered to be a visual-intensive work. Visual fatigue and visual efficiency are closely related to the state of the accommodation convergent system [1]. The process of intensive computerization causes many medical and social problems. Up to 40–60 % of users suffer from a computer vision syndrome [10].

The emergence of young people with refraction abnormality, the number of whom grows every year and the emergence of late-acquired short-sightedness among the computer users at video display terminals (VDT) is a problem [13].

In Ukraine the influence of the computer on sight has been studied recently (L. V. Kochin, M. I. Kovtun, 2008), but the influence of work at the computer monitor on visual functions of senior school students has not been defined yet [8]. Some researches have shown that the ergonomic organization of the workplace of a person at a computer provides visual comfort [9]. However, even if these requirements are hold, there are complaints caused by changes in the functional state of the visual analyzer under the influence of the peculiarities of work with the PC [10]. Existent measures and the search for new non-pharmacological physiological recommendations for a complex of recovering exercises require further improvement; implementation will reduce the negative impact of computer technology and protect vision.

The goal of the research is to study the chromatic angle of view and chromatic stereoscopy of senior school students working at a computer monitor, and to propose effective correction of revealed deviations.

The Materials and Methods of the Research. 63 healthy students of the senior school age with hemitropic refraction without ophthalmological, somatic and psychical deviations have been inspected. The conditions of the carrying out of the research met all the sanitary and – hygienic demands [7]. The chromatic angle of view and chromatic stereoscopy were studied with the employment of special computer methods [5; 6].

The research was carried out by the standard light conditions. The inspected person was offered to sit down with his face to the monitor of a personal computer so that his eyes were on the mid-level of a tested

field. The chromatic angle of view and chromatic stereoscopy indices conditioned by such physical phenomenon as chromatic dispersion of the refracted eye mediums were established. The chromatic angle of view is a result of the chromatic diversity of the foci, and the chromatic stereoscopy is a result of the chromatic diversity of the enlargement. The stereoscopic effect that reflects the state of the binocular vision is quantitatively determined at the binocular fixation.

The research of the chromatic angle of view was carried out at a distance of 0,5 m from the monitor. In the process of the inspection it was necessary to combine the blue stripe with the yellow one up to the appearance of a white one. On the basis of this the degree of the divergence in grades was determined.

During the studying of the chromatic stereoscopy it was necessary to combine vertical lines of red and blue test-objects, that alternated with each other, in one line on a computer monitor. The result was obtained owing to the automatic calculation of the angular distance between the axis of blue and red circles in grades at the distance of 0,5 m from the monitor.

The inspection was carried out at three stages. At the first stage the influence of one-hour continuous work in front of the monitor over visual functions was studied.

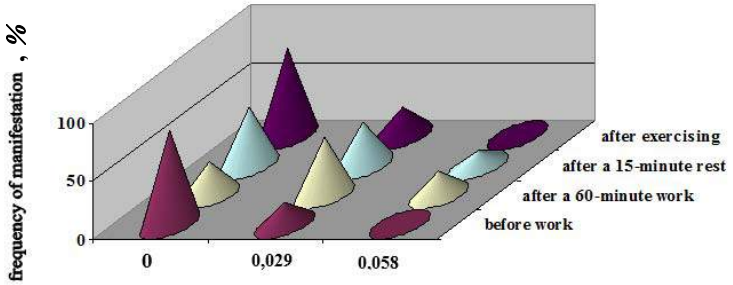
At the second stage after an hour computer load and the following 15-minutes break (shutting eyes or looking aside of the monitor) the chromatic visual angle and the chromatic stereoscopy were estimated.

The third stage foresaw the studying of the researched visual functions after the work in front of a computer and the complex of renewing exercises with the elements of respiratory gymnastics of the author's program.

The results were worked out on a PC with the usage of a software applied package Statistica 6,0 (Statsoft, USA). The results are given as a average meaning +– standard deviation (M+–0). At the normal distribution of the variable quantities the t–test Student for independent categories was used. To compare independent mean quantities the non–parametrical Wilkokson-Mann-Witney-Mann-Witney criterion was used [3].

Research Results. Discussion. Determination of high-school students with emitropic refraction of the chromatic angle of view in the initial state showed (fig. 1) that of 32 people the perfect comparison of the vertical blue band with the yellow one demonstrated only 26. Only 6 students demonstrated the difference in 0,029 degrees.

One-hour work of the 24 examined students by the computer monitor, caused significant changes in the chromatic angle (fig. 4,1). Almost 70 % of high school students, after hour of visual load, could not match the blue and yellow strips on the monitor without deviation. Moreover, 1/5 of schoolchildren assumed a mistake of 0,058 degrees. Thus, 60 minutes visual computer load of high school students significantly degrades the state of binocular vision.



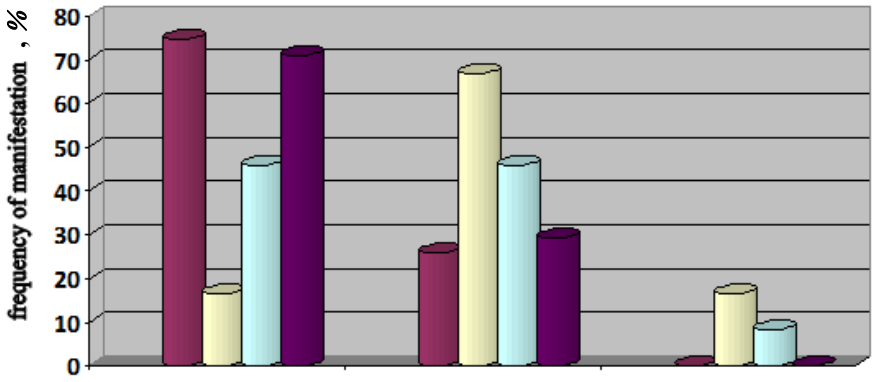
	The magnitude of the chromatic angle of view (in degrees)		
	0	0,029	0,058
before work	81,25	18,75	0
after a 60-minute work	29,17	50	20,83
after a 15-minute rest	50	37,5	12,5
after exercising	75	25	0

Fig. 1. *Chromatic Angle of View Before and After Work in Front of the Computer Monitor*

15 minute rest from the visual computer load caused certain changes in the ability of the surveyed high school students to match the colored stripes on the monitor. We found that 50 % of the students could not complete the test perfectly. That is the rest from the visual computer load improved the researched senior pupils indicator in 20 %. However, this short rest failed to achieve the initial state of binocular vision.

A set of exercises, after hour of visual computer loading of senior pupils, caused significant changes (see figure 1). It was found that inaccuracy in the performance of the test in the comparison of colored stripes was observed only in 0,029 degrees in 1/4 of the surveyed. Thus, the implementation of a complex of exercises, after 60 minutes visual computer load has significantly improved the index of the chromatic angle of view.

Research of chromatic stereoscopy of senior students with emmetropic refraction (fig. 2) in the initial state showed that of 31 persons the perfect combination of the vertical rows of red and blue test–objects was observed in 23 persons. The divergence in 0,029 degrees was observed in 8 students.



	The magnitude of the chromatic angle of view (in degrees)		
	0	0,029	0,058
before work	74,72	25,8	0
after a 60-minute work	16,67	66,67	16,67
after a 15-minute rest	45,83	45,83	8,33
after exercising	70,83	29,17	0

Fig. 2. *Chromatic Stereoscopy Before and After Work in Front of the Computer Monitor*

One-hour work in front of the computer monitor of 24 surveyed students caused significant changes in the parameters of chromatic stereoscopy.

Almost 83 % of senior students after the computer visual load were unable to match the vertical rows of red and blue test-objects on the monitor without deviation. Moreover 1/6 students made mistakes in 0,058 degrees. Thus, the study of chromatic stereoscopy has once again proved that a 60-minute visual computer load of senior students significantly worsens binocular vision.

A 15-minute rest of eyes from one–hour work in front of the computer monitor caused certain changes in the ability of surveyed students to match the vertical rows of red and blue circles on the monitor (see fig. 2). As it turned out, almost 54 % of the surveyed could not do the test perfectly. That is, applied passive rest from the visual computer load improved chromatic stereoscopy of 7 senior students. However, this event failed to achieve the initial state of binocular vision.

Performing a set of exercises after one-hour computer visual load by school age senior students has brought about significant changes. It was found that inaccuracy in doing the test on comparing the vertical rows of red and blue circles on the monitor was observed only at 0,029 degrees in 29 % of the surveyed. Thus, the implementation of a complex of exercises after a 60-minute computer visual load has significantly improved chromatic stereoscopy.

It must be mentioned, that an hour's work of high school students in front of the computer display results in blurred binocular vision. This statement is based on determination of chromatic angle of view and chromatic stereoscopy. Binocular vision is known to be related with the activity of cortical vision centres. Thus it is possible to claim about changes in cortical neurons functioning. This complies with literature data [9] about the suppression of activity of the cortex area of visual analyser after 60-minute computer activity of schoolchildren aged 11–14 years. To some extent, a 15-minute rest from computer load renewed binocular vision. However, a complex of exercises with breathing component turned out to be the most effective way

for vision improvement, which must improve blood and oxygen supply of the brain and prompts substantial renewal of its neuron functions.

Conclusions and Perspectives of Further Studies. Thus, the study of chromatic angle of view and chromatic stereoscopy revealed their more than tripled blurring after 60–minute load. Proposed data signify a positive dynamics of visual functions during the author's programme sessions of the complex of exercises: «Preservation and renewal of vision», which supports its effectiveness. That is why it is advisable to be used in educational establishments and other spheres of our life for prevention of vision fatigue and renewal of vision functions.

Binocular vision is known to be related with the activity of cortical vision centres, so the next step of our studies is seen as determining the functional state of higher reasoning activity.

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Стаття надійшла до редакції 30.05.2017 р.

УДК 796.035-053.6

THE ROLE OF PHYSICAL ACTIVITY IN THE QUALITY OF LIFE FRAMEWORKS, SOCIAL ADAPTATION AND PHYSICAL REHABILITATION OF INDIVIDUALS WITH DISORDERS IN THE ENERGY METABOLISM

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Abstract

There were described the role of motor activity in the quality of life frameworks, social adaptation and physical rehabilitation of the teens with obesity. In the paper were solved factor determining the foundation and direction of a physical rehabilitation program for the teens with primary obesity, it was a quality of life. During performed studies we're using the common questionnaire PedsQL-4.0 (Pediatric Quality of Life Questionnaire) in the Ukrainian version of the two groups of the teens (group № 1, n = 72, teens with obesity, group № 2, n = 72, teens with normal body weight), it were rated basic components of the quality of life: as the physical functioning, emotional functioning, social functioning, school functioning and mental health. Through the data analyzation, the relationships scored indicators of quality of life parameters of physical condition that characterize the severity of obesity and fat distribution features.

Key words: quality of life, nutrition, body mass index, obesity, motor activity.

Ірина Жарова. Роль фізичної активності в якості життя, соціальній адаптації та фізичній реабілітації осіб із порушенням енергетичного обміну. Охарактеризовано роль рухової активності в якості життя, соціальної адаптації й фізичної реабілітації підлітків з ожирінням. Розкрито чинник, що визначає характер і спрямованість заходів фізичної реабілітації в підлітків із первинним ожирінням – якість життя. У процесі досліджень за допомогою загального опитувальника PedsQL-4.0 (Pediatric Quality of Life Questionnaire) в російськомовній версії в підлітків двох груп (група №1, n = 72 – підлітки з ожирінням; група № 2, n = 72 – підлітки з нормальною масою тіла) оцінено основні складові частини якості життя: фізичне функціонування, емоційне функціонування, соціальне функціонування, функціонування в школі й психічне здоров'я. Отримані дані дали змогу провести аналіз взаємозв'язків показників бальної оцінки якості життя з параметрами фізичного розвитку, котрі характеризують вираженість ожиріння та особливості розподілу жирової тканини.

Ключові слова: якість життя, харчування, індекс маси тіла, ожиріння, рухова активність.

Ирина Жарова. Роль физической активности в качестве жизни, социальной адаптации и физической реабилитации лиц с нарушениями энергетического обмена. Охарактеризована роль двигательной активности в качестве жизни, социальной адаптации и физической реабилитации подростков с ожирением. Раскрыт фактор, определяющий характер и направленность мероприятий физической реабилитации у подростков с первичным ожирением – качество жизни. В процессе исследований с помощью общего опросника PedsQL-4.0 (Pediatric Quality of Life Questionnaire) в русскоязычной версии у подростков двух групп (группа № 1, n=72 – подростки с ожирением; группа № 2, n=72 – подростки с нормальной массой тела) были оценены основные составляющие качества жизни: физическое функционирование, эмоциональное функционирование, социальное функционирование, функционирование в школе и психическое здоровье. Полученные данные позволили провести анализ взаимосвязей показателей балльной оценки качества жизни с параметрами физического развития, характеризующими выраженность ожирения и особенности распределения жировой ткани.

Ключевые слова: качество жизни, питание, индекс массы тела, ожирение, двигательная активность.

Introduction. On the way from the postindustrial social development to the knowledge about the society and information era, the intensity of scientific and technological progress is a real examination of biological adaptation, social and other mechanisms for compensating from the difficult aspects of the life of the modern man [1].

It is extremely widespread and the potential of various diseases, trauma, and other psychical and emotional disorders, imbalances and dysfunctions, it largely caused by the pathogenic lifestyle of modern people, physical inactivity, disturbance regimes and quality of food, stress, chronic fatigue, the presence of bad habits, etc [4].

Changes in the diet and physical activity associated with the spread of the obesity often occur due to environmental and social changes connected with the development and the absence of appropriate measures

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

in sectors such as health, agriculture, transport, urban planning, environment, food processing, marketing, and education.

According to the World Health Organization (WHO) Newsletter №311 (from the March 2013), since 1980, the number of people worldwide suffering from obesity more than doubled. In 2008, more than 1,4 billion adults aged 20 years and more suffer from obesity. Particularly, the negative tension of the last years is the development of obesity at the young age. Thus, in 2010 about 40 million children under 15 had excess weight or obesity [12].

The rapid rising of the spread of obesity in recent decades, probably, there is not associated with changes in the genetic structure of humans in so short a time. It caused by the significant changes in the lifestyle of the population [7]. Interaction of genes that bringing to obesity from environmental factors and determine the degree of excess body fat [3].

Prospective epidemiological studies of the feeding behavior of people in the US have shown that in 15 years fixed a significant reduction of motor activity in children and adolescents [13]. The study of schoolchildren motor settings [8] showed that almost 80 % of students had overweight, a limited exercise in a class at school and only 20–25 % further engaged in various sports clubs. However, these studies were not constant and often interrupted by the illness. In addition, according to a special surveying [6], 70 % of children with overweight played music, visited various sections, studied foreign languages. The students with overweight have no morning exercises and/or procedures harden. Games and exercises outdoors they had not so often. In families of adolescents enrolled in the college and high school did none morning exercises by themselves or with the family members. Unfortunately, sports and recreational physical activity in these families are not practiced.

Thus, from all forms of physical training of students with overweight is only physical education classes in school, therefore the daily range of motion is clearly low. The expectation of the compensation of the lack of movement activity by the spontaneous motor activity is not so necessary because these children have become a regular sedentary lifestyle, quiet games with peers. Even in healthy children develop properly, only spontaneous motor activity and physical culture lessons in schools can not provide the required range of motion.

According to research [7] in the teens during the puberty drastically changes psyche and behavior. Obese teens begin to lag from the teens with normal body weight in the performance of those movements, teens with normal body weight still had the advantage. During this period, even on smooth physical training lessons children either boys or girls, on any occasion trying to evade many exercises or exercises make fewer times, abandon attempts to exercise the result.

The analysis of progress under the «Physical culture» education program [8] showed that students from 12–13 years initially stages of obesity are beginning to dramatically lag behind in the development of endurance, speed, and strength. Particularly, they make out with exercises on the equipment, climbing ropes, acrobatic exercises. They fail high jumping and fast running.

Evaluation of the motor activity [9] spent on physical education classes for children with overweight (using a pedometer) showed that by fourth grade these students had average movements per lesson (low level only in rare cases) compared with children with normal weight. From the fifth to the eighth-grade performance motor activity both in boys and in girls with overweight was only small.

Free time in the most cases students spending by the watching television or playing computer games or reading fiction. Thus, students in fourth grade wasting 44–58 % of their free time by the watching television nearby the two hours per day, and ninth grade students – more than three hours per day. The watching television and video programs, playing the video games occupy more and more of the free time [7].

Talking about the food, it was fixed an increasing part of the diet of sandwiches meals, «fast food» and high-calorie foods advertised on television. There is a direct correlation between watching television and the magnitude of overweight, especially in the teens [6].

The correlation between television watching and obesity due to three factors: a decrease of the motor activity, increased caloric intake while watching basal metabolism and decrease in a sitting position. It was found that children suffering from obesity, physically less active than children of normal weight [3].

The Connection with Scientific Planes and Themes. This research performed according to the Plan of the scientific and research working of the Physical Rehabilitation dept., NUUPES and «Consolidated Plan of research in the area of physical culture and sports in 2016–2020 yy.» by the theme 4,6 «The improvement of the theoretical and strategical foundations of the programming of physical rehabilitation process during the initial exogenous and constitutional forms obesity», state registration № 0116U001665.

The aim of the research was to define the role of physical activity in the quality of life frameworks, social adaptation and physical rehabilitation of the teens with disorders in the energy metabolism.

Research Objectives there are follows: to evaluate the quality of life and nutrition of the teens 11–15 years old with primary form of the obesity and teens 11–15 years of normal levels of body mass index (BMI); to compare and evaluate the indicators studied in the two groups of teens; to analyze the relationships scoring indicators of quality of life parameters of physical development that characterize the severity of obesity and fat distribution features.

Materials and Methods. Methods, used in the research were the generally scientific methods (as the analysis, synthesis, generalization, comparison); sociological methods (as the interviewing, questioning) and the methods of mathematical statistics.

The quality of life in our studied group was evaluated in 72 children 12–15 years (group №1) with the obesity using common questionnaire PedsQL – 4,0 (Pediatric Quality of Life Questionnaire) in the Ukrainian version. The questionnaire measures the overall health of 100 point scale, as the components of health that are not specific to all age groups, specific disease or treatment program: as the physical functioning, emotional functioning, social functioning and operation of the school. The questionnaire filled both teenagers and their parents independently.

Given the current lack of regulatory quality of life of children, we performed parallel surveying conducted 72 healthy children without obesity, matched by sex and age (average age was 13,5 years) and their parents after their acquaintance with the procedure and consent (group № 2). Research performed at the Center for Radiation Medicine of The Academy of Medical Sciences of Ukraine.

Results. The development of overweight and obesity and related noncommunicable diseases can be largely prevented. Favorable environmental conditions and society are crucial to the formation of choice people, determining the most appropriate (available, accessible and affordable cost) choose healthier foods and regular motor activity and thus preventing the development of obesity.

At the individual level, one might [1]

- restrict calorie intake from general fats;
- increase consumption of fruits and vegetables as well as legumes, whole grains, and nuts;
- regularly engage in physical activity (60 minutes a day for children and 150 minutes per week for adults).

According to WHO experts [11] responsible attitude to their own health can fully give positive results only when people have the opportunity to keep a healthy lifestyle. Therefore, the level of public importance there follows:

- support the people in following recommendations by the constant manifestation of political commitment and participation by many public and private stakeholders;
- to take measures for the regular physical activity and healthy eating, there is affordable and easily attainable to all, especially the poorest.

Adopted by the World Health Assembly in 2004, Global Strategy of the Diet, Physical Activity, and Health [12] were formed a description of the necessary actions to support healthy eating and regular physical activity. The strategy has four main objectives:

1. To reduce the risk factors for chronic diseases that are caused by unhealthy diet and physical inactivity, through the health actions.

2. To increase awareness and understanding about the impact of nutrition and health of motor activity and the positive impact of preventive measures.

3. To develop, enhance and implement policies and action plans at a global, regional and national level for improving the nutrition and increase physical activity to be sustainable, comprehensive and actively to involve all sectors.

4. To follow the scientific achievements and to promote research in nutrition and physical activity.

Thus, a large and versatile range of critical issues related to the violation of energy metabolism, has long ceased to be purely medical and acquired global, universal character because of the stability and complexity dysfunction, accompanied by long and often persistent disability, reduced the quality of life these patients [].

Over the past decade, research activity in the field of quality of life (QL) has been significantly increased worldwide as one of the most important indicators of health care effectiveness [8]. The concept of QL research is logically based on the main components of the WHO definition of health and offers an effective model for an integral assessment of the child's condition, a comprehensive and deep understanding of the impact on various areas of its functioning.

The QL is understood as an integral characteristic of a person's physical, psychological and social functioning, based on his subjective perception. The value of the indicator lies in the fact that subjective

evaluation is based on strict principles of evidence-based medicine, which makes the quality of life an informative and reliable criterion [7].

Measurement of the QL in pediatrics is carried out both in medical, social and in clinical studies, covering almost all nosological forms.

Subjective experiences of the child, his attitude to health, illness, treatment, as well as to the family, school, life as a whole can have a significant impact on the formation of the clinical picture of the disease. An important factor that led to the development of QL research methodology in pediatrics was the understanding of the effective monitoring of the child's health and successful treatment that's impossible only on the basis of clinical and laboratory data without determining the condition of the «optimal functioning» of the child and his parents.

From the point of view of society, obesity is associated, first of all, with laziness, selfishness, from reduced of the mental abilities, low activity in society and low academic performance, as well as with ill health, inadequate nutrition, and low motor activity. According to a study performed in the United States, children share a negative evaluation of people with obesity in the society, regardless of the body weight [4]. Children, starting from the age of five, are worried about their own weight, affecting appearance, physical performance, self-respect and self-esteem [8], but parental approval and lack of concern about obesity in the child can play a protective role in reducing self-esteem [9]. Among teens with severe forms of obesity, 48 % have mild or severe depressive symptoms, 35 % have a high level of anxiety. Psychopathological distress is detected in 26 % of obese individuals and worsens the QL more than the obesity-related somatic diseases [1].

Thus, knowledge about the characteristics of disorders of the QL of the teens with obesity can help in the development of rehabilitation programs and assess their effectiveness.

According to our survey results, the total score for assessing the QL in a group of the teens with normal BMI values (group № 2) was 80 (at average) for children and 74 for parents. Parents assess the QL of children lower than the children themselves, with the exception of emotional functioning. The greatest difference in the assessment of the QL level is indicated by the scales of social functioning and functioning in school. The lowest indices the teens with normal BMI values are revealed by the scales of emotional functioning and functioning in school. At the highest level, there were physical and social functioning (fig. 1).

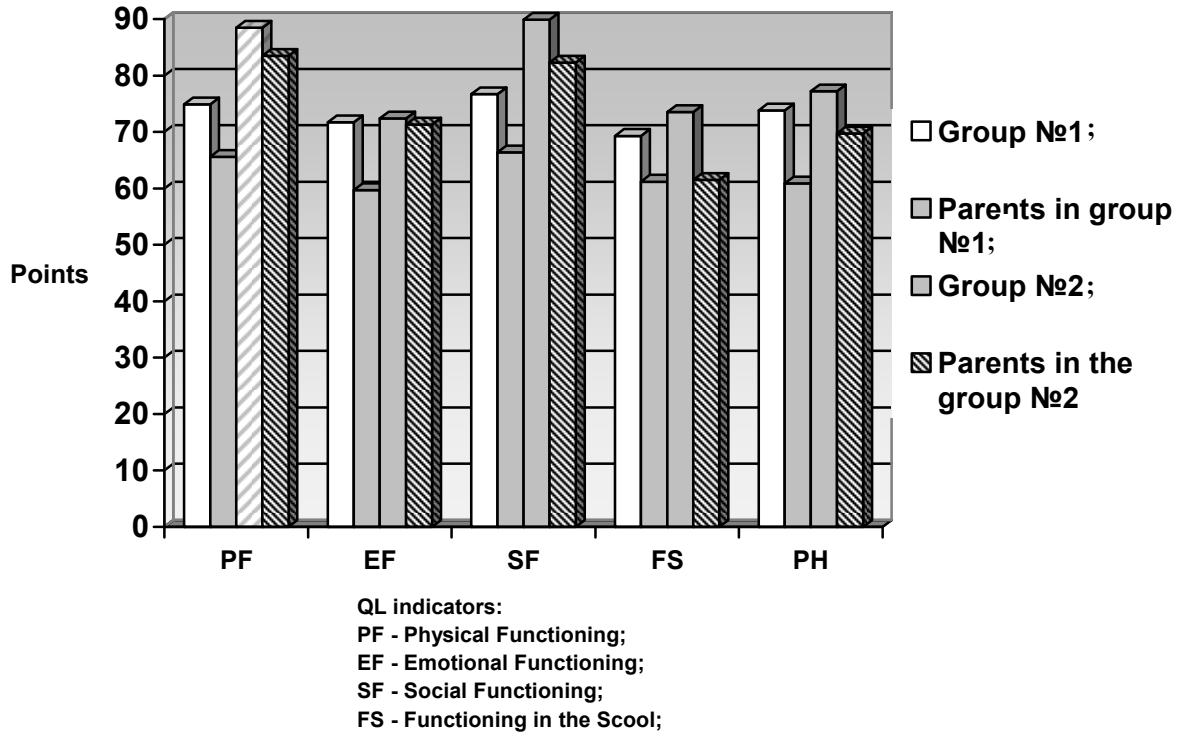

Fig. 1. *The Indicators of the QL of the Teens:*

PF – physical functioning;
EF – emotional functioning;
SF – social functioning;
FS – functioning in the school;
PH – psychic health.

In adolescents with obesity (group №1), compared to the control, the overall QL indicator was significantly lower, both according to the assessment of the children themselves, there was 73 points, and their parents, there was 63 points. Obese children are less likely to assess their physical and social functioning than their peers without obesity – 74,9 and 76,7, compared to 88,5 and 89,9, respectively. Parents also gave a low assessment of physical (65,6 points), social (66,4 points) and emotional (59,7 points) aspects of the QL of their children. The parents' score for all indicators was lower than that of the children (fig. 1).

According to the survey, we noted that obesity in the children can limit certain types of motor activity. So, when they answering the questions of the questionnaire, the children noted difficulties in such kinds of activity: running, physical exercises performance, muscular pain during physical exertion. Limiting the participation of children with obesity in sports games and competitions brings to adverse social consequences, disrupting the adaptation in society. The questioned children had problems in the communicating with their peers. The stereotype of attitudes towards obese people in the society is spreading among children, the answers to questions of the scale of social functioning have shown that children with obesity suffer from ridicule, they find it difficult to find friends.

The environment plays a more significant role in childhood than in adults, especially with considerable teenage dependence on peer opinion. Children with obesity are painfully experiencing shortcomings in their appearance, which, of course, should be reflected in a decrease in the evaluation of emotional functioning. The lack of reliable differences in the evaluation of this aspect by obese children compared with the control is probably due to an overestimation of the assessment because of the reluctance to demonstrate their experiences, which can be considered as a variant of psychological protection. In part, this assumption can be confirmed by an estimate given by the parents of children with obesity – 59,7 points, it was significantly lower than the parents' score in the control group – 71,3 points.

The QL of children is affected by family, friends, teachers, with the last two factors becoming more significant at school age. Children, both with the presence of obesity and with a normal body weight, as well as their parents very low evaluated life in school. Thus, the school can be considered as a stress factor, significantly affecting the quality of life of children.

Girls with obesity, in comparison with boys with obesity, lower estimated almost all parameters of QL: physical functioning – the indicator was 70,5 and 79,3 points, emotional functioning – 65,4 and 78,0 points, mental health – 69,7 And 77,9 points, social functioning – 71,6 and 81,8 points. The indicator of school functioning in girls was higher and amounted to 71,8 points, compared with boys, whose score was 66,8 points. Parents of girls rated lower the same QL indicators as their children, but the parents' score for all indicators was even lower than that of children.

The scores of the OL indices were compared with the parameters of physical development that characterize the severity of obesity and the distribution of fat tissue. As a result of the analysis of interrelations, moderate negative correlations of the indices of practically all aspects of the quality of life with the BMI index were revealed (table 1). In the group of children without obesity, there were no reliable correlations of the quality of life indicators with similar parameters of physical development.

Table 1

The Correlation Coefficients of Various Aspects of the QL with the BMI Index in Adolescents with Obesity

Indicator	Children	Parents
Physical functioning	-0,34	- 0,39
Emotional functioning	-0,40	- 0,33
Social functioning	-0,43	- 0,35
School fucntioning	-0,33	н/д
Psychic health	-0,43	- 0,33
QL total indicator	-0,41	- 0,36

Based on the study about the relationships, it can be concluded that the QL in obese children is more affected by the deterioration of social and emotional functioning. Apparently, this can be explained by a more negative perception of the shortcomings of a figure with a significant distribution of adipose tissue both by the children themselves and by their environment.

Thus we see that contempt for the physical aspects of rehabilitation of patients brings to smooth rather adverse effects.

Rehabilitation of persons with obesity should be a long-term state policy aimed at optimum and the full restoration of their life.

According to some authors [7] physical rehabilitation of persons with disorders of the energy metabolism includes cases about the problem of the using of physical factors in the rehabilitation of patients. These include exercise, environmental factors, hygiene factors, spa treatments and more.

If obesity treatment were offered a wide range of therapeutic measures - from diet to use modern medicines to reduce overweight. At the same time, domestic and foreign experts note that the pathogenic agents that contribute to a cure obesity, there is. Additionally, some complex of the medical interventions, prescribe untimely and unjustified, excluding major pathogenetic factors, stage of disease severity and clinical syndromes.

It is important to consider that physical rehabilitation used in patients with obesity can give a positive effect when they detect drilling performance and enhance adaptive capacity, provided that physiotherapist knows and takes into account a number of interventional rules and principles of physical exercise.

A. P. Averianov [1] indicates that in the first dosed exercise causes a sharp decrease in insulin resistance in obese patients; leptin level decreases after the seventh physical exercise and remains low for four weeks of treatment. Additional aerobic exercise combined with a low-calorie diet can reduce the size of adipocytes of subcutaneous adipose tissue. In most cases, weight loss, the following aerobic activity, like walking, cycling, aerobics and various options for aerobic trainers.

According to I. M. Hryhus [6] therapeutic effect of exercise is based on a significant increase in energy consumption, which is possible due to the normalization of metabolism. With loads of aerobic orientation is enhanced lipolytic processes, improving adaptation to load all organs and systems.

Promoting consumption of large quantities of carbohydrates, exercise focus ring mechanism catalyzed removal from stores of the neutral fat subsequent transformation of phosphatides that are easily oxidized to carbon dioxide and water.

Thus, despite the fact that physical activity in children with obesity can greatly vary, one only reduce time spent in sedentary position leads to a shift of the energy balance towards reducing energy entry, excluding the impact of diet and physical activity programs. In controlled studies, some authors [3,9,15] has been proven that children with obesity are encouraged to reduce time spent passively (watching TV, on the computer), noted a marked reduction in body weight compared to those who were encouraged to increase motor activity (all patients followed low-carbo diet). In addition to reducing passive pastime, effective turns any extension of motor activity in daily life: climbing stairs instead of using elevators, reducing the use of transport etc.

Conclusions in the teens with obesity in comparison with the control, the overall QL is statistically significantly lower, both according to the assessment of the children themselves – 73 points, and their parents – 63 points. Based on the study of the relationship of all aspects of the questionnaire, it is noted that QL in children with obesity is more affected by the deterioration of social, physical and emotional functioning. The assessment of parents for all indicators is lower than that of children. Obesity limits the normal existence of the child, and these limitations reduce the QoL of children to a greater extent than the disease itself.

Prospects for further research are related to the development of the concept of physical rehabilitation for primary adiposity in adolescents, taking into account the factors characterizing the quality of life and nutrition in this category.

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Стаття надійшла до редакції 18.05.2017 р.

УДК 796.093.46

THE LEVEL OF LUNGS CAPACITY OF HIGHLY SKILLED FEMALE VOLLEYBALL PLAYERS

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Abstract

Actuality of Research. Scientific works proved that the greater the volume of the lungs, the better the physical abilities of athletes. So researching of the functional state of organism, namely the level of lung capacity of volleyball players is very important. ***The aim of the Researching.*** Determining of the level of lung capacity, forced air volume in 1 second and peak expiratory flow rate in volleyball qualifications. ***Results.*** The average rate of lung capacity of volleyball players is – 3,98 l, Forced air volume in 1 second – 3,32 liters, peak expiratory flow rate 5,77 – l/sec. ***Conclusions.*** The results of researching indicate that the level of vital capacity in girls is rather higher. So volleyball players (girls) have a high level of fitness of the body, providing adaptation to hight loads and hight endurance.

Key words: lung vital capacity, forced air volume, peak speed of exhalation, volleyball.

Анна Галицька. Рівень життєвої ємкості легень у волейболісток високої квалифікації. ***Актуальність дослідження.*** Науковими працями встановлено, що чим більший об'єм легень, тим кращі фізичні можливості спортсменів. Тому дослідження функціонального стану організму, а зокрема рівня життєвої ємності легень, у волейболісток має велике значення. ***Мета дослідження.*** Визначали рівень життєвої ємності легень, об'єм форсованого повітря за 1 секунду й показник пікової швидкості видиху у волейболісток високої кваліфікації. ***Результати роботи.*** Середній показник життєвої ємності легень у волейболісток становить – 3,98 л, об'єм форсованого повітря за 1 секунду – 3,32 л, пікова швидкість видиху – 5,77 л/с. ***Висновки.*** Результати роботи засвідчують те, що рівень життєвої ємності в дівчат вищий від середнього. Отже, у волейболісток високий рівень тренованості організму, що забезпечує адаптацію до високих навантажень і високий рівень витривалості.

Ключові слова: життєва ємкість легень, об'єм форсованого повітря, пікова швидкість видиху, волейболістки.

Анна Галицкая. Уровень жизненной емкости легких у волейболисток высокой квалификации. ***Актуальность исследования.*** Научными трудами установлено, что чем больше объем легких, тем лучше физические способности спортсменов. Поэтому исследование функционального состояния организма, в особенности жизненной емкости легких, у волейболисток имеет большое значение. ***Цель исследования*** – определить уровень жизненной емкости легких, объем форсированного воздуха за 1 секунду и показатель пиковой скорости выдоха у волейболисток высокой квалификации. ***Результат роботы.*** Средний показатель жизненной емкости легких у волейболисток составляет 3,98 л, объем форсированного воздуха за 1 секунду – 3,32 л, пиковая скорость выдоха – 5,77 л/с. ***Выводы.*** Результаты работы показывают, что уровень жизненной емкости легких у девушек выше среднего. А это значит, что у волейболисток высокий уровень тренированности организма, что обеспечивает адаптацию к большим нагрузкам и высокий уровень выносливости.

Ключевые слова: жизненная емкость легких, объем форсированного воздуха, пиковая скорость выдоха, волейболистки.

Introduction. The level of vital lungs capacity is the maximum amount of exhalation after inhalation. It is an important indicator for examination while respiratory and lung diseases. Verification of this indicator is compulsory in modern pulmanory diagnosis. At the same time, the indicator is significant for the diagnosis of respiratory diseases, differential diagnosis, treatment evaluation and selection of surgical indicators [1; 2; 6; 15], as well as in the course of physical activity [3; 10; 11; 14; 17; 18]. Thus, due to the rapid development of clinical physiology of respiratory system the use of special equipment for lungs capacity testing is also gaining popularity.

Spirometer is a portable device for testing the functional state of the lungs that is characterized by the compact size, low energy use and usability. The device is suitable for testing patients in hospitals as well as outpatients. Patient should take a deep breath and grip the mouthpiece with his lips, he should take a uniform, maximally deep breath, trying not to slouch and then exhale the air as quickly as possible and with maximum effort. Three attempts are made and the highest result is recorded with the accuracy within the limits of 100 cubic centimeters.

The following credible indicators will be shown on the screen: Forced Vital Capacity, Forced Expired Volume in one second (FEV1), Peak Expiratory Flow (PEF).

British surgeon John Hutchinson, who was interested in the diagnosis of tuberculosis, published the article about lungs capacity in 1846. He investigated the lungs capacity of 2000 people and came to the conclusion that the volume of air that can be forced to exhale with fully inflated lungs is a useful indicator of the early death risk (discovery that is confirmed in numerous modern studies). He also discovered that the adult lungs capacity decreases with age.

To carry out his measurements Hutchinson invented the spirometer that was a graded bell submerged into water with the aperture for inhalation. He studied a wide variety of people from fighters and dwarfs to the dead. Hutchinson tested dead people using fur to blow as much air into the lungs as possible and then measured the volume of air that was produced during the elastic thrust of the lungs and chest.

Nowadays doctors use modern versions of Hutchinson spirometer to evaluate lungs functioning and to check the volume and velocity of air exhalation after the maximally exhaling and inhaling of examined person. Graphical representation of the exhaled air over a certain period of time (e.g. forced exhalation for 6 seconds) is useful while evaluation of such conditions as lungs cancer, heart attack, COPD (Chronic obstructive pulmonary disease in which the airways become narrowed, for example as a result of chronic bronchitis and emphysema), asthma, cystic fibrosis (accompanies the lungs disease which is a blockage of airways with mucus) and pulmonary fibrosis (the formation of excessive fibrous connective tissue in the lungs). Hutchinson was not a pioneer in studying the human lungs capacity but thousands of his clinic studies that were carried out using a new device, allow us to consider him to be a pioneer in spirometry [13].

Lungs volume of the average person constitutes about 3–6 litres (air). Sportsmen, for whom the filling of lungs with air is essential, can develop their lungs volume to 8 liters in the course of workout. During the deep inhalation the lungs volume loads the maximum amount of air, but during the normal breathing lungs are not at the maximum of their capabilities.

In the state of the rest, the body that is not burdened with diseases, does not use the entire lungs volume to support the work of all functional systems. But the organism always has compensatory mechanisms that start working while it is necessary and change the rhythms of ordinary life (in the state of fear or nervous tension, overcoming difficult obstacles of the surrounding environment, during exercise, the pathological changes in the various structures of the body).

In all unusual situations involving running, breath holding, any physical activity, the body must have the opportunity to relate expenses of oxygen to its inflow and to breathe more often or load the greater air volume into the lungs in order to maintain the normal oxygen level in the body. A person can not predict when there will be a necessity of compensatory mechanism work, thus it is necessary to worry about maintaining the lung capacity in normal condition beforehand. It is essential to promptly identify and treat respiratory diseases, train the lungs during the lifetime, undertaking some physical activities. It will help in cases when the compensation of respiratory insufficiency will be needed.

The ϕim of κesearch is to determine the level of lung capacity, forced air volume in 1 second and peak expiratory flow rate in volleyball qualifications.

Materials and κesearch ьethods: 15 girls of volleyball club «Volyn University – ODIUSSH» in Lutsk took part in the experiment. To determine the parameters of external breathing in athletes a Heaco – SP10 portable microprocessor spirometer was used. In the mode of computational spirometer using the program SPIROMETER the following parameters were identified : Forced Vital Capacity , Forced Expired Volume in one second (FEV1), Peak Expiratory Flow (PEF).

Results of Research. Discussion. Untrained healthy young men usually possess the vital lungs capacity within 3,0–4,5 liters, while it is 2,5–3,5 liters for women. Vital lungs capacity decreases with age. For instance, the level of VLC of 20–years–old woman is 3,5 liter and it is 2,5 liter for 55-years-old woman [5].

The advantages of a large lungs volume:

1. More strength and endurance. Explosive power is provided with oxygen exchange as well as endurance. The more body is enriched with oxygen, the hardier and stronger muscles are. Therefore, in modern sport the lungs are primarily trained and then the techniques and muscles are worked on.

2. Improved volume of oxygen allows the body to expend less effort for providing itself with oxygen.

3. Reaction of speed is improved.

The indicator of vital lungs capacity also depends on the general level of health and the amount and way of training [3; 4; 7; 9; 12; 16]. Those who like running and also go skiing swimming and others kind of sport that develop endurance, the level of VLC is so high – he level of VLC of men is more than 5 liters and of women – approximately 4 liters. Athletes, who train for endurance, the highest levels of VLC are recorded: for men it's till 8 and more liter and for women till 5 and more. The average level of VLC of the highly-qualified athletes is listed in the table. 1. During the first year of properly organized regular the level of DVC increases intensively (for 0,2–0,8 liters) [5].

Table 1

The Indicators of Vital Lungs Capacity of the Representatives of Different Kind of Sport

Kind of Sport	Men	Women
Swimming	5,49	4,34
Rowing	5,62	4,40
Volleyball	5,55	4,15
Cross-country skiing	5,25	4,02
Hockey	5,20	–
Cycle sport	5,19	3,95
Football	5,12	–
Athletics (running)	5,10	3,92
Olympic weightlifting	4,60	–
Gymnastics	4,50	3,33

After analysis of Y.Kleshcheva's and A.Furmanova's works, age-related changes of vital lungs capacity of volleyball players since 11 up to 17 years old can be seen [8]

Table 2

Age-related Changes of Vital Lungs Capacity Volleyball Players, *ml*

Age	Sex	Indicators of Vital Lungs Capacity				
		High	Above average	Average	Middle Average	Low
1	2	3	4	5	6	7
11	boys	3264,2	3264,2–2757,1	2757,1–1742,9	1742,9–1245,8	1245,8
	girls	2823,2	2823,2–2394,9	2394,9–1542,3	1542,3–1110,0	1110,0
12	boys	3345,8	3345,8–2837,9	2837,9–1822,9	1822,9–1314,2	1314,2
	girls	3310,2	3310,2–2766,0	2766,0–1677,6	1677,6–1133,4	1133,4
13	boys	4119,5	4119,5–3428,5	3428,5–2046,5	2046,5–1355,5	1355,5
	girls	3475,3	3475,3–3036,0	3036,0–2157,4	2157,4–1718,1	1718,1
14	boys	4530,3	4530,3–3856,8	3856,8–2509,8	2509,8–1836,3	1836,3
	girls	3980,6	3980,6–3333,6	3333,6–2039,6	2039,6–1392,6	1392,6
15	boys	5145,9	5145,9–4465,8	4465,8–3105,6	3105,6–2425,5	2425,5
	girls	4097,4	4097,4–3564,2	3564,2–2497,8	2497,8–1964,6	1964,6

Table 2

1	2	3	4	5	6	7
16	boys	5708,2	5708,2–4984,1	4984,1–3535,9	3535,9–2811,8	2811,8
	girls	4545,0	4545,0–3900,6	3900,6–2611,8	2611,8–1968,4	1968,4
17	boys	5748,0	5748,0–5060,1	5060,1–3684,3	3684,3–2996,4	2996,4
	girls	4401,3	4401,3–3898,9	3898,9–2894,1	2894,1–2391,7	2391,7

The amount of absorbing oxygen and carbon dioxide is higher for trained person than for a non-trained one. Sportsmen have better interaction between there is better interprocess communication between the respiratory system and circulatory system. Vital lungs capacity increases Under the influence of long-term regular exercise of aerobics, especially such as rowing, swimming, running, skiing, boxing, sport games (volleyball, soccer, handball).

Training develops breathing apparatus and increases vital lungs capacity. The level of VCL mainly depends on the sport, methods and duration of training. The greatest value of vital capacity observed in those who are trained for speed and endurance, the lowest – those who are trained in strength. The highest level of vital capacity is observed in those who are trained for speed and endurance, the lowest – in those who are trained for strength. There is a certain level of sports performance that depends on the level of VCL. Highly qualified masters of sport have high levels of vital capacity.

We have investigated vital lungs capacity of girls of the volleyball club «Volyn University-ODYUSSH» in Lutsk. Thanks to the spirometrical data we were able to define average indicators of forced vital lungs capacity (3,32 liters.), forced air volume in 1 second (3,32 liters.) and peak expiratory flow rate 5,77 – l/sec. Thus the level of vital lungs capacity of volleyball players (girls) of high qualification is above average.

Conclusions and Perspectives for Further Research. The investigation that was carried our indicates that the rate of functionality volleyball players (girls) are at above average level. The average rate of lung capacity of volleyball players is – 3,98 l., forced air volume in 1 second – 3,32 liters, peak expiratory flow rate 5,77 – l/sec. The results of researching indicate that the level of vital capacity in girls is rather higher. So volleyball players (girls) have a high level of fitness of the body, providing adaptation to hight loads and hight endurance.

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Стаття надійшла до редакції 18.05.2017 р.

УДК 796.012.656:796.41

FUNCTIONS OF CHOREOGRAPHY IN SPORTS

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Abstract

The aim of paper is to determine the functions of choreographic training in sport. *Research methods:* theoretical analysis and synthesis of scientific sources, studying of documentary materials, induction and deduction methods, system approach. *Research results.*The functions of the system of choreographic training are based on determining its role within the framework of the system of multi-year sports improvement, which is realized through the direct activity of the subject of the training activities and its interaction with other participants in this process *Concussions.* The following functions are singled out: integral-auxiliary, educational-educational, competitive-reference, recreational, emotional-spectacular, aesthetic, motivational, self-realization, design-constructive, diagnostic-corrective.

Key words: choreographic training, techno-aesthetic sports, functions, athletes training system.

Валентина Тодорова. Функції хореографії в спорті. ***Мета дослідження –*** визначити функції хореографічної підготовки в спорті. ***Методи дослідження –*** теоретичний аналіз та узагальнення наукових джерел, вивчення документальних матеріалів, індукції та дедукції, системний підхід. ***Результати дослідження.*** Функції системи хореографічної підготовки ґрунтуються на визначенні її ролі в межах системи багаторічного спортивного вдосконалення, яка реалізовується через безпосередню діяльність суб'єкта навчально-тренувальної діяльності та його взаємодії з іншими учасниками цього процесу. ***Висновки.*** Виокремлено такі функції, як інтегрально-допоміжна, освітньо-виховна, змагально-еталонна, оздоровчо-рекреативна, емоційно-видовищна, естетична, мотиваційна, самореалізаційна, проектувально-конструктивна, діагностично-коригувальна.

Ключові слова: хореографічна підготовка, техніко-естетичні види спорту, функції, система підготовки спортсменів.

Валентина Тодорова. Функции хореографи в спорте. ***Цель исследования –*** определить функции хореографической подготовки в спорте. ***Методы исследования –*** теоретический анализ и обобщение научных источников, изучения документальних материалов, индукции и дедукции, системный подход. ***Результаты исследования.*** Функции системы хореографической подготовки основываются на определении ее роли в рамках системы многолетнего спортивного усовершенствования, которая реализовывается через непосредственную деятельность субъекта учебно-тренировочной деятельности и его взаимодействия с другими учасниками этого процесса. ***Выводы.*** Выделены такие функции, как интегрально-вспомогательная, образовательно-воспитательная, состязательно-эталонная, оздоровительно-рекреативная, эмоционально-зрелищная, эстетическая, мотивационная, самореализационная, проэктно-конструктивная, диагностично-корректирующая.

Ключевые слова: хореографическая подготовка, технико-эстетические виды спорта, функции, система подготовки.

Introduction. Theoretical analysis of scientific-methodical and special literature allowed to characterize choreographic preparation as a compulsory component of the process of athletes preparation. Choreography has its own historical traditions, which is strongly influenced by the specifics of sports activities. However, the works of many scholars [4; 7; 8; 10] confirmed the need for choreographic training of athletes, and the lack of proper scientific and methodological substantiation of choreographic training multifunctionality in technic and aesthetic sports caused the need for further research.

Relationship of Work with Scientific Programs, Plans, Themes. The work was carried out according to the themes of the SRD: «Theoretical and methodological bases of management of the training process and competitive activities in the Olympic, Professional and Adaptive Sports» according to the plan of the LSUPC for 2016–2020 (State registration number: 0116U003167).

Analysis of the Last Researches and Science Papers. A lot of specialists in technical and aesthetic sports were engaged in the choreographic training isssues: in Artistic Gymnastics – Ye. Biryuk (1981), O. M. Khudolii (1997, 2000), V. Y. Sosina (2009), T. T. Roters (1989), I. Ruda (2014); in the Sports rock-n-roll – N. P. Batieieva (2016), P. M. Kysim (2016), L. S. Lutsenko (2015); Figure skating – I. M. Miedviedieva (2003), K. Proida, K. Yarymbash (2011) and others; in Sports Aerobics –

S. I. Atamanyuk (2012), A. A Boliak, E. O. Serebryanska (2009), B. V. Kokariev (2013), O. A. Cherepovska (2008), and others.; in Jumping on a Trampoline – A. Ya. Dyadyun (2014), V. O. Skakun (2003), and others; in Synchronous swimming – M. N. Maksymova (2012), M. P. Moisieiev, O. O. Zolotova (2007), and others, in Sports acrobatics – E. O Lysenko (2006), S. Prokopyuk (2012), N. Bachynskaa (2015) and others.

The Choreographic art is characterized by multifunctionality. Function (from lat. functio – execution, implementation) means the role of Choreographic art in the people's and society life [6; 10].

Choreography carries out certain social and cultural functions [6–8; 10–12]. Among them the main functions are: humanistic (development of creative potential of a person); social-information (accumulation, storage and transfer of social experience); communicative (social communication); educational (socialization of the invidious, its attachment to knowledge and cultural heritage); regulating (value-normative regulation of social behavior); integrating (the association of people, the development of their sense of community, maintaining the stability of society). All these functions are inherent in choreography as a type of art, but in the aspect of sports training the functions of choreographic training are not sufficiently established. Practically there are no researches devoted to choreographic training as a system of interrelated knowledge, which needs to be determined and substantiated by the main functions that will be carried out in its implementation.

Research goal is to determine the functions of the system of choreographic training in technical aesthetic sports.

Research methods – theoretical analysis and synthesis of scientific sources, studying documentary materials, methods of induction and deduction, systematic approach.

Discussion and the Results of the Research. The functions of the choreographic training system are based on the definition of its role within the system of multi-year sports improvement, which is realized through the direct activity of the subject of training activities and its interaction with other participants in this process.

Analysis of the characteristics of the training athletes system, its focus on solving basic problems [1; 9] and the interpretation taking into account the needs of the choreographic training allowed us to distinguish the following functions: integral-auxiliary, educational, competing-reference, recreational, emotional-spectacular, aesthetic, motivational, self-realization, design-constructive, diagnostic-corrective.

Integral and Auxiliary Function

The integral-auxiliary function consists in the universality of the means of choreographic training. Means of choreography (as auxiliary) can be used in all kinds of sports training. For example, in the physical preparation of the choreography`s means are used to develop flexibility, agility, strength, endurance and speed [8].

In technical and tactical preparation, the means of choreography contribute to the assimilation of the optimal number of motor actions, which

are characterized by complex combination and coordination of movements of individual parts of the body, which are performed for musical accompaniment [11]. Due to the use of choreographic exercises, the technique of the implementation of complex elements is improved, the special skills necessary for fighting in the conditions of sport competitions in the chosen sport form are formed [12].

The following important tactical techniques in technic-aesthetic sports that are related to choreography training are:

1) the selection of athletes who have approximately the same weight and growth rates, technical and physical preparedness, style of execution;

2) the choice of musical accompaniment and the setting of exercise, taking into account the physical, technical and emotional capabilities of athletes;

3) rational distribution of complex elements between athletes taking into account their individual abilities;

4) developing methods of behavior in extreme situations in case of error, in order to restore the rhythm and pace of exercise as soon as possible;

5) external appearance of the performance – costumes, hairstyles, access to the playground, stitching.

It is expedient to include in theoretical training the basics of techniques and methods for studying the main choreographic movements, the basis of musical literacy and composition. To master the technique, the athlete must clearly imagine how each individual movement and all movements together occurs, be able to mentally reproduce them and know the biomechanical foundations. The inclusion of the fundamentals of choreography in the theoretical training enables the athlete to understand the essence of the training process, to demonstrate activity and autonomy, to assist the coach in solving common problems [10].

In the aspect of psychological training, means of choreography are used for the development of high activity of analyzers – visual, acoustic, vestibular and motor; for training memory – visual, motor, musical; for educating the speed, depth and flexibility of thinking, a rich imagination; for the formation of a high level of coordination abilities, musical abilities (hearing, rhythm sensation, ability to listen and understand music), expressive abilities (emotionality, expressiveness and artistry), moral qualities (organization, discipline, individual responsibility, collectivism), volitional qualities (purposefulness, perseverance, determination and courage, endurance, patience, initiative and independence, emotional stability, confidence in their strengths and opportunities); the ability to self-regulate mental states, the ability to concentrate and resist adverse effects [1; 6; 10].

Musical-motor or musical-rhythmic training in technique-aesthetic sports is crucial for the development of a sense of music, expressiveness and creative activity of athletes. Exercises are the composite complex, the creation of which is complicated by the requirements for full compliance with musical accompaniment [11].

It should be noted that all types of training do not have clear boundaries; they are able to use the means of choreographic training, where each element is an integral part of the general system of sportsmen training in technique -aesthetic sports.

Educational function is realized in the knowledge, skills acquired during the process of choreographic training, which influence on the consciousness and behavior of people and set the goal of forming the social values. This should also be seen in transferring the experience of previous generations to a new generation. With the help of the systematic activity of the persons of educational training process and their interaction with other participants, a worldview is formed within the frames of the choreographic preparation, social norms of behavior, values orientations. Also, on the basis of this function, the skills associated with responsible and concentrated work on the achievement of an individually possible sports result and using self-control techniques, persistence in overcoming difficulties, promoting activity and self-activity are formed. Thus, choreographic training represents great opportunities not only for physical and sports improvement, but also for moral, aesthetic and intellectual education.

Competitive-reference function is expressed in the fact that the level of athletic achievements serves as a kind of standard, an example of the maximum level of choreographic fitness of an athlete in sports with high requirements for choreography, and at the same time and a guide to further disclosure and improvement of the effectiveness of the competitive activities [9; 12].

The recreational function manifests itself in the positive influence of choreographic training on the condition and functional capabilities of the human body. The role in improving and preserving the physical conditions of a person, in the training of athletes for competitive activities and in strengthening and maintaining health is significant [2; 5].

Emotional and Spectacular Function. Choreographic training helps to create an emotional character, attracting the attention of a huge number of the audience to the competitions. Due to the high-quality choreographic training, athletes can create emotional images that are responsive to the perception of fans. Due to choreographic training, competitive programs influence on the collective mood of the audience, interests, and bring together large groups of people [10–12].

Aesthetic Function. Choreography in sport has a great aesthetic effect on the athlete and the audience. In the process of sports activities athletes the certain aesthetic feelings, tastes, ideals, aesthetic abilities are formed. It finds expression in the beauty of the constitution and performance, artistic and expressive technical and tactical techniques and combinations, etc. [4].

Motivational function is determined by such organization of the choreographic training of athletes, in which there is a stimulation of improvement of individual (team) results, development of responsibility for the performance of their functional duties, the creation of an atmosphere of healthy competition, the formation of in-depth motives (needs) of training activities, which eventually gradual purposeful activity will contribute to the formation of interests both for self-improvement and for future professional activities in sport. The motivational function is also related to the inducement of an athlete to the activity and to maintain the achieved level of sport result during a certain time interval [8].

Self-realization function – this function is manifested in the athlete's realization of their capabilities, self-actualization, satisfaction of the person's desire for the most complete identification and development of his abilities, the formation of an internal active trend of their development, the desire to achieve the result which an athlete can objectively claim [1; 2].

Any influences of the system of athletes preparation and choreographic training are realized with the help of the acquired experience, value orientations, needs, aspiration to self-expression and self-

improvement. The function of self-realization is considered as the athlete's need, its direct activity and as an objective and subjective result of this activity. Another aspect is the universal personality ability to identify, disclose, and inventory of its essential forces, covering the planning of means and methods to achieve the main goal of training activities.

Design-constructive function is to predict and plan sports activities, as well as to form their own activities and behavior, to propose a solution to specific individual characteristics, which should be to determine the scope and content of sports activities, methodological development of individual areas in their own sporting activities [3]. This function is also related to the constructive coordination of choreographic training, in which any part of the organization can not be effectively planned, if it does, regardless of other components of the activity. That is, the implementation of choreographic training should contain objective content consistency with other types of sports training.

Diagnostic-correctional function indicates on the causes of the complications that arise in athletes during the choreographic training and competitive activities, the identification of gaps in skills and abilities, the personal becoming and making on this basis of corrective actions aimed at eliminating deficiencies [5; 9].

The diagnostic-correctional function of choreographic training is closely related to control, which in fact involves determining the level of achievements of a single athlete at a particular stage of multi-year sport improvement.

With the diversity of functions, the developing potential of choreography in sports and its pedagogical influence are connected. The boundaries of certain functions are conditional. They are similar, forming a holistic system of choreographic training.

Conclusions. The direction of scientific research in the field of choreographic training in sports associated with the presence of scientific and applied problem, the lack of proper scientific and methodological support for the training of athletes in techno-aesthetic sports at various stages of their many years of improvement is perspective. One of the directions of the solution of this problem may be the generalization and integration of knowledge about the choreographic training of athletes, the definition of the functions of choreographic training of athletes in the techno-aesthetic sports. Analysis of the researches works in various the techno-aesthetic sports and our own trainer's experience have allowed us to select the following functions: integral-auxiliary, educational, competitive-reference, recreational, emotional-spectacular, aesthetic, motivational, self-realizing, design-constructive, diagnostic-corrective.

Prospects for Further Research is to form a system of choreographic training of athletes in techno-aesthetic sports.

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Стаття надійшла до редакції 25.05.2017 р.

УДК 796.322:796.056.1

USE OF ACROBATIC EXERCISES IN READINESS FORMATION OF YOUNG HANDBALL PLAYERS FOR COMPETITIONS

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Abstract

The article deals with the feasibility and effectiveness of acrobatic exercises in training sessions for young handballers in preparations. In terms of increasing the density of the game, increasing the combat power on the ground, implementation of complex technical elements in modern handball topical issues including the structure of the training process of exercise that will help speed development, coordination, and promote the education of children volitional qualities.

The offered method of the use of acrobatic exercises is in trainings employments. For verification of efficiency of application of acrobatic exercises and with the purpose of determination of changes in the indexes of physical and technical preparedness the young handballers of investigational groups had the conducted testing. A pedagogical experiment confirmed efficiency of application of method of the use of acrobatic exercises in trainings employments of young handballers.

Key words: acrobatics, physical readiness, technical readiness, young handball players.

Юрій Цюпак, Олександр Швай, Леонід Гнітецький, Андрій Ковальчук. Використання акробатичних вправ у формуванні готовності юних гандболістів до змагань. У статті розглянуто питання доцільності та ефективності використання акробатичних вправ у тренувальних заняттях юних гандболістів у підготовчому періоді. В умовах підвищення щільності гри, збільшення силових єдиноборств на майданчику, виконання складних технічних елементів у сучасному гандболі є актуальним питання включення в структуру тренувального процесу фізичних вправ, які сприятимуть розвитку швидкості, координації, а також вихованню в дітей вольових якостей.

Запропонована методика використання акробатичних вправ у тренувальних заняттях. Для перевірки ефективності використання акробатичних вправ та для визначення зрушень у показниках фізичної й технічної підготовленості в юних гандболістів досліджених груп проведене тестування. Педагогічний експеримент підтвердив ефективність застосовування методики використання акробатичних вправ у тренувальних заняттях юних гандболістів.

Ключеві слова: акробатичні вправи, фізична підготовленість, технічна підготовленість, юні гандболісти.

Юрий Цюпак, Александр Швай, Леонид Гнитецкий, Андрей Ковальчук. Использование акробатических упражнений в формировании готовности юных гандболистов к соревнованиям. В статье рассматривается вопрос целесообразности и эффективности использования акробатических упражнений в тренировочных занятиях юных гандболистов в подготовительном периоде. В условиях увеличения плотности игры, увеличения силовых единоборств на площадке, выполнения сложных технических элементов в современном гандболе актуален вопрос включения в структуру тренировочного процесса физических упражнений, которые будут способствовать развитию скорости, координации, а также воспитанию у детей волевых качеств.

Предлагается методика использования акробатических упражнений в тренировочных занятиях. Для проверки эффективности применения акробатических упражнений и с целью определения сдвигов в показателях физической и технической подготовленности у юных гандболистов исследованных групп проводили тестирование. Педагогический эксперимент подтвердил эффективность применения методики использования акробатических упражнений в тренировочных занятиях юных гандболистов.

Ключевые слова: акробатические упражнения, физическая подготовленность, техническая подготовленность, юные гандболисты.

Introduction. Sports practice shows that the increase of level of sporting trade of handballers depends on systematic and qualified mass studies the game of children, beginning from early age.Only the correct and reasonable use of the most effective methods of teaching and training, taking into account patterns of the age of the systems, make it possible to fully solve the task of preparing high–class handball. The primary purpose of sporting preparation of

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

handballers is achievement of maximally possible level of tactical, technical, physical and psychological training, handball due to specific requirements and achieve the highest results in competitive activities [2; 5].

In our time the leading specialists of sport critically behave to the mechanical increase of volume of loading as to the method of increase of training efficiency.The constant increase of this index every year makes less and less impact on the growth of sports results. Consequently, necessary orientation on other ways of increase of efficiency educational-training to the process of skilled sportsmen .These areas include:

1. Specification of the total volume of training loads, depending on the intensity and physiological orientation;
2. Optimization of correlation of loadings of different orientation;
3. Improving the organizational basis of training so that you can provide the optimal conditions for full implementation of an athlete's adaptive capacity on the basis of a rational relationship between the spending and the restoration of its energy resources and psychological stability;
4. Rationalize the structure of the training process

In addition, many scientists unanimous in that one of the most perspective directions of increase of efficiency educational–training there is that the process of skilled sportsmen, in basis of which there is the stopped up account of accordance of individual possibilities of sportsman the offered loadings and requirements [3; 4].

In the conditions of increase of closeness of game, its speed, increase of power single combats, on a ground, implementation of difficult technical elements in a modern handball is actual question of plugging in the structure of training process of physical exercises, which will assist speeding up, co–ordination, and also to educate volitional qualities for children.

The Aim of the Work is determining of expedience and efficiency of the use of acrobatic exercises in trainings employments of young handballers, their influence on physical and technical preparation and exposure of reaction of young handballers on employment with the use of acrobatic exercises.

Research Results. Discussion. Due to the peculiarities of the chosen sport, sportsmen have different leading qualities, different level of their development and correlation. Thus the difference of structure and maintenance of physical preparedness depends on the requirements of contention activity. Thus, it is needed strictly to take into account the features of every type of sport at the choice of facilities and methods SPP [5].

In modern handball in connection with changes in the rules of the game, increasing the intensity of the game to players of different line of roles identically in relation to them physical preparedness. Therefore, along with improvement of technical and tactical to trade of handballers, by an important task educational-training there is an increase of level of physical preparedness of sportsmen a process. This is one of the urgent problems of modern handball. High technical preparedness and modern tactics based on strong physical fitness – the success of performance of the team in responsible competitions [1; 3] .

For effective development of physical possibilities of handballers it is necessary to know what requirements belong before the separate functions of organism and physical qualities of sportsmen a game; on physical quality in the first place should pay attention during training; that the means and methods of training are most effective for the development of certain physical qualities; how to effectively distribute the tools and training methods at various stages of preparation [2; 4; 5].

The study involved 36 young handballers, engaged in teaching and training groups in the third year of study.

For the pedagogical experiment 2 groups were formed of athletes 12–13 years: control – 18 persons; an experimental group – 18 people. The people of which studied behaved to the basic medical group, the state of their health was controlled twice on a year in an area to athletic–medical dispensary At the time of the survey, they had no complaints on the health and well-being. Each training session for young handball experimental group was given a set of acrobatic exercises in accordance with the tasks of training. Employment in a control group was conducted on the generally accepted program.

For the study of physical preparedness of young handballers, which get busy in educational-trainings groups of the third year of studies, used tests, which the most essential motive qualities of handballers – agility, speed, strength, endurance, coordination abilities.

The level of explosive force was determined using the test «long jump from their seats.» It is set as a result of testing, that the young handballers of experimental and control groups have a level of muscular force at middle level.Thus, the average length of the jump seats in the experimental group of young handball are 232,5 ± 5,5 cm in the control group of young handball – 228,0 ± 3,0 cm (P> 0,05).

The level of speed qualities determined by a test «run 50 meters.» According to table 1, we found no reliable difference (P> 0,05) in speed training. Therefore, averages at run on 50 m, for the young handballers of experimental group, make 7,4±0,4 s, for the handballers of control group, make 7,5±0,5 s. Level them speed preparation estimated as sufficient, that specifies on the optimum level of work in this direction.

In the work we probed general endurance as motive quality of man – to execute ability muscular work of moderate intensity, by a test at «run 1000 meters.» As can be seen from Table. 1, the control group athletes overcome the distance of 1000 m at an average 3,55 ± 0,16 min., Young handball experimental group by 4,09 ± 0,28 min.

The level of development of force was determined as a result of test by raising of trunk from position, lying (30 s). The handballers of experimental group on the average executed for this time 29±1 times, control group – 27±2 times. It

is possible to draw conclusion from findings of test, that a trainer does not spare sufficient attention of development of force of young sportsmen.

The best results were obtained by us as a result of agility testing students using the «shuttle run (4 × 10 m)». The average score in this norm in the experimental group was 9,5 ± 0,2 s, and in the control group – 9,7 ± 0,4 s (P> 0,05). These information testify to the sufficient level of development of adroitness for the handballers of both groups.

As evidently from a table 2, the young handballers of experimental group ran about 20 mcodes with the conduct of ball after 5,8±0,4 s, and handballers of control group accordingly after 6,1±0,3 s. Middle indexes of test a «throw on distance» for the handballers of experimental group made 32,5±1,5 mcodes and 30,5±2,0 m – for the young handballers of control group. Test a meter penalty throw» made «7th 4,0±0,2 times for the young handballers of experimental group and 3,9±0,2 times for the young handballers of control group. At comparison of results of testing from the special physical and technical preparedness of young handballers of experimental and control group it is not discovered by us reliable difference between these indexes.

Middle level was coordinating capabilities of young handballers (tab. 3). Thus, the average in the experimental group in the preparation of test «run of slalom dribbling» were 12,8 ± 0,3 sec and 13,2 ± 0,5 sec in the control group.

To test the efficacy of acrobatic exercises and to assess progress in terms of physical and technical preparedness of young handball, we conducted a retest.

Results are resulted in a table. 1 and 2 show that the indexes of physical and technical preparedness became better both in experimental and in control, groups. However in an experimental group indexes appeared higher, than in control. According to Table. 1 in the experimental group of young handballers most improved results with the physical fitness of the following standards: shuttle run, long jump from their seats and lifting the torso from a prone position. Thus, children who were in the experimental group at the end of the experiment, the performance norm a standing broad jump was improved result on 17 see, ran back distance 4×10 m on 0,5 secs. quick than at the beginning of research and executed the norm of raising of trunk from position, lying 33±1,04 times.. Young handball control group at the end of the experiment improved their results in accordance with jump seats with only 10 cm × 4 ran a distance of 10 m by 9,6 sec. and constituted power test result of 29 ± 1,99 times. In other norms it was not observed from physical preparation of the special changes.

Table 1

The Indexes of Physical preparedness of Young Handballers

Indexes	**Beginning Research**		**End of Research**		**Reliability of Difference, *P***
	x	**m_x**	**X**	**m_x**	
1	**2**	**3**	**4**	**5**	**6**
The Experimental Group					
Running 50 m	7,4	0,13	7,4	0,13	> 0,05
Shuttle run	9,5	0,27	9,0	0,23	< 0,05
Lifting the body of prone position	29	1,11	33	1,04	< 0,05
Long jump from place	232,5	2,61	249,0	2,47	< 0,05
Running 1000 m	4,35	0,22	4,34	0,21	> 0,05
The Control Group					
Running 50 m	7,5	0,16	7,6	0,16	> 0,05
Shuttle run	9,7	0,31	9,6	0,23	> 0,05
Lifting the body of prone position	27	2,08	29	1,99	> 0,05
Long jump from place	229,0	2,82	239,0	2,56	< 0,05
Running 1000 m	4,48	0,22	4,48	0,22	>0,05

We look after a similar picture at the analysis of indexes from technical preparedness (table 2). For the handballers of experimental group most the indexes of norms became better 7th meter penalty throw (in 0,4) and conduct of ball (0,4 s). Unfortunately, «Throw on distance» of the special changes did not test the results of test.

At the same time the proper indexes for the children of control group remained almost without changes. The young handballers of control group at the end of experiment accordingly improved the results of norms 7th meter penalty throw and conduct of ball accordingly on 0,05 and 0,1 s.

Table 2

Indicators of Technical Preparedness of Young Handball

Indexes	Beginning Research		End of Research		Reliability of Difference, *P*
	x	m_x	x	m_x	
The Experimental Group					
7–meter free throw in the upper corners	3,8	0,14	4,2	0,11	< 0,05
Dribbling maximum speed at a distance of 20 m	5,8	1,05	5,4	0,97	< 0,05
Throw the ball at a distance of 2,5 m wide corridor with a running start in the reference position	32,5	1,48	33,0	1,46	>0,05
The Control Group					
7-meter free throw in the upper corners	3,9	0,19	3,95	0,19	>0,05
Dribbling maximum speed at a distance of 20 m	6,1	1,29	6,0	1,21	>0,05
Throw the ball at a distance of 2,5 m wide corridor with a running start in the reference position	30,5	2,07	30,55	20,7	>0,05

Information some other character we got analysing the results of test from co–ordinating preparation (table 3). For the handballers of experimental group the indexes of speed reaction became better most, that was in same queue represented in diminishing of time which was outlaid by handballers on drafting of test.

Table 3

Indicators Coordinating Preparedness of Young Handball

Indexes	Beginning Research		End of Research		Reliability of Difference, *P*
	x	m_x	x	m_x	
The Experimental Group					
Slalom run of dribbling	12,8	1,54	12,1	1,36	< 0,05
The Control Group					
Slalom run of dribbling	13,2	1,69	13,1	1,65	>0,05

With the purpose of determination of reaction of sportsmen on reading with the complexes of acrobatic exercises, at the end of experiment, we conducted the verbal questioning, the results of which rotined that handballers in swingeing majority understood the values of application of acrobatic exercises in a training process and gladly execute them. At the same time, it is discovered by us, that young sportsmen in an insufficient measure pay regard to implementation of these exercises independently out of training process. The main reason for the lack of seats can be considered for employment

Conclusions. Thus, the results of our research show that the technique using specially selected best acrobatic exercises affect both the physical and the technical preparedness of young handballers. In our opinion, it is related to plugging in trainings employments of acrobatic exercises, by the observance of the set mode of trainings, conscious and conscientious implementation of the offered program of employments. The prospects of subsequent researches are related to the ground and development of method of application of acrobatic exercises in different periods of training process.

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Стаття надійшла до редакції 25.05.2017 р.

УДК 612.76:796.856

PHYSIOTHERAPEUTIC APPLICATIONS OF BIOMECHANICAL OPPOSING INDICATORS–BASED ON MEASUREMENTS OF TAEKWON-DO ATHLETS

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Abstract

Background. In everyday life people constantly face the dilemma of speed and accuracy. The aim of the cognitive quantification was to increase the knowledge about kinematic effect of a target. The practical aim would be to apply kinematic effect of a target in clinical situations, to supply for physiotherapeutic programs. ***Material and Method.*** The analysis was performed 14 taekwondo ITF athletes. During research they performed front left and right kicks in a lateral standing position: into the air (without a physical target), to a table tennis ball hanging on a line and a training target. The laboratory for the analysis of movement named HML was used here. ***Results.*** The highest average maximum velocity was obtained by the kicks without a physical target (10,78 ± 1,32 m/s for men and 8,51 ± 1,50 m/s for women) ($p<0,05$), then to the shield (9,98 ± 1,40 m/s for men and 8,28 ± 1,59 m/s for women) ($p<0,05$) and to the ball (9,63 ± 0,94 m/s for men 7,73 ± 2,01 m/s for women) ($p<0,05$). ***Discussion.***The obtained results provided the argument supporting the thesis that the type of target influences on the method of solving the dilemma: the velocity of movement and its precision during a frontal kick. Both, in the case of women and men who practisetaekwon-do, lowering the velocity of a kick, performed towards a precisely established target, in comparison with the velocity of a kick without a precisely established physical target (into the air) was observed. For many people with the dysfunctions of the movement organs, everyday functioning, especially related to movement, makes a challenge. In such a case crossing the road at the green light in particular time or stepping on the escalator (the examples of such barriers are numerous) are the tasks that reveal the dilemma of velocity and precision. There are many factors that may support the efficiency of these efforts. One of them may be the feeling of the efficiency of activity that has a psychological character.

Key words: quality of life, biomechanics, taekwon-do, movement analysis

Яцек Вонщік, Дорота Ортенбургер, Томаш Гура. Фізіотерапевтичні застосування біомеханічних показників на основі вимірів спортсменів, які займаються тхеквондо. ***Мета дослідження.*** У повсякденному житті люди постійно стикаються з дилемою швидкості та точності. Метою когнітивно-кількісного визначення було підвищення знань про кінематичний ефект цілі. Практична мета полягає в застосуванні кінематичного ефекту мішені в клінічних ситуаціях, постачанні фізіотерапевтичних програм. ***Матеріали і методи.*** У досліді брало участь 14 тхеквондо-спортсменів. Під час дослідження вони виконували передні ліві та праві удари по боковій стійковій позиції: у повітря (без фізичної мети), по тенісному м'ячу, що висить на лінії, та по мішені. Використано лабораторію аналізу руху під назвою HML. ***Результати.*** Найвищу середню максимальну швидкість отримано ударами без фізичної мішені (10,78 ± 1,32 м / с – для чоловіків і 8,51 ± 1,50 м / с – для жінок) ($p <0,05$), потім до щита (9,98 ± 1,40 м / с – для чоловіків і 8,28 ± 1,59 м / с – для жінок) ($p <0,05$) та до м'яча (9,63 ± 0,94 м/ с – для чоловіків 7,73 ± 2,01 м / с – для жінок) ($p <0,05$). ***Висновки.*** Отримані результати підтверджують тезу про те, що тип цілі впливає на метод розв'язання дилеми: швидкість руху та її точність під час лобового удару. У випадках яких серед жінок, так і серед чоловіків, які практикують тхеквондо, знижується швидкість удару, що виконується в напрямку точно встановленої мети, порівняно зі швидкістю удару без точно встановленої фізичної мети (у повітря), для багатьох людей із порушеннями опорно-рухової функцій повсякденне функціонування, особливо пов'язане з рухом, ставить виклик. У випадку, що стосується перетину дороги на зелене світло в певний час або ступання на ескалатор (приклади таких бар'єрів численні), це будуть завдання, які виявляють дилему швидкості й точності. Є багато чинників, які можуть сприяти ефективності цих зусиль. Одним із них може бути відчуття ефективної діяльності, що має психологічний характер.

Ключові слова: якість життя, біомеханіка, тхеквондо, аналіз руху.

Яцек Вонщик, Дорота Ортенбургер, Томаш Гура. Физиотерапевтические применения биомеханических показателей на основе измерений спортсменов, занимающихся тхэквондо. ***Цель исследования.*** В повседневной жизни люди постоянно сталкиваются с дилеммой скорости и точности. Целью когнитивно-количественного определения было повышение знаний о кинематическом эффекте цели.

Практическая цель заключается в применении кинематического эффекта мишени в клинических ситуациях, разработки физиотерапевтических программ. ***Материалы и методы.*** В опыте участвовало 14 тхэквондо-спортсменов Во время исследования они выполняли передние левые и правые удары по боковой стойкой позиции: в воздух (без физической цели), по теннисному мячу, висящему на линии и по мишени. Была использована лаборатория анализа движения под названием HML. ***Результаты.*** Самая высокая средняя максимальная скорость получена ударами без физической мишени (10,78 ± 1,32 м / с для мужчин и 8,51 ± 1,50 м / с для женщин) (p <0,05), затем к щиту (9,98 ± 1,40 м / с – для мужчин и 8,28 ± 1,59 м / с – для женщин) (p <0,05) и к мячу (9,63 ± 0,94 м / с – для мужчин 7,73 ± 2,01 м / с – для женщин) (p <0,05). ***Выводы.*** Полученные результаты подтверждают тезис о том, что тип цели влияет на метод решения такой как дилеммы; скорость движения и ее точность при лобовом ударе. В случаях, если среди женщин и мужчин, практикующих тхэквондо, снижается скорость удара, он выполняется в направлении точно установленной цели, по сравнению со скоростью удара без точно установленного физической цели (в воздух). Для многих людей с нарушениями опорно-двигательной функции, повседневное функционирование, особенно связанное с движением, ставит вызов. В таком случае, пересекая дорогу на зеленый свет в определенное время или ступая на эскалатор (примеров таких барьеров много), ставятся задачи, которые проявляют дилемму скорости и точности. Есть много факторов, которые могут способствовать эффективности этих усилий. Одним из них может быть ощущение эффективной деятельности, которая имеет психологический характер.

Ключевые слова: качество жизни, биомеханика, тхэквондо, анализ движения.

Introduction. A more extended analysis of literature reveals many substantial reasons for conducting research among people who practice martial arts and fighting, high performance, or extreme sport in the context of the possibilities of applying the knowledge in the therapeutic context (rehabilitation, analgesic therapy, multimodal programs of chronic pain treatment) [1].

In everyday life people constantly face the dilemma of speed and accuracy. It considers, among others, the use of a revolving door to a shop or the attempt to validate a ticket on a moving bus, and in many other situations with the risk of falling. For the people who are completely healthy such complications are often not noticeable. However, for the people of limited psychomotor abilities caused by the disorders of different origins, the dilemma takes on an additional meaning. It reveals in the situations which, because of the risks of the secondary injury, become a challenge.

The way of overcoming such barriers influences directly the safety in everyday situations in rehabilitation and in sports. Similar problems may be noticed with the martial arts competitors who during their activities solve the problem of the speed and accuracy of hits, in order to make their actions effective.

There are reasons to suppose that the perception of the features of an object (or its lack) may change the kinetics of hits in a direct manner [2; 3]. Coordinated performance of the complex movement activities involves creating programmes of action before starting them. This is one of the reasons why knowledge of biomechanics and science of martial arts are very helpful. An increasingly growing number of researchers decide to search for biomechanical identification of factors determining an efficient performance sports technics and other actions[4].Taekwon-do along with other martial arts focus on a fast and precise delivery of strikes to the opponent's body. The strike velocity and accuracy are considered to be the key factors when it comes to victory[5].

*It is noticeable that the concepts concerning human psychophysical improvement deriving from the East and from the West correspond well with each other. The rule «maximum gain with minimum effort», which is well-known in physiology and respected in biomechanics, is clearly visible in*taekwon-do, Korean martial art in which parts of the body (especially hands and legs) perform each movement with maximum efficiency. It is confirmed by research in the area of biomechanics which in detail identifies small elements which may improve movement efficiency [2].In Choi's [6] description concerning the eastern concept of taekwon-do, a rule of maximum gain with minimum effort may be seen very clearly as a criterion for optimization of psychomotor improvement. Study on methods of improving functional capability, whose significant aspect is movement optimization are bringing more and more new findings from around the world [4].

There are indications in the movement theory that what happens after should be seen, as described in this work, as a *kinematic effect of a target*, which is an essential aspect of this programme[5].

The aim of this paper is to present an interdisciplinary approach to improving the functional capacity of an individual.The aim of the cognitive quantification was to increase the knowledge about *kinematic effect of a target*. The practical aim would be to apply kinematic effect of a target in clinical situations, to supply for physiotherapeutic programs.

Material and Methods of the Study. The analysis was performed 14 taekwondo atletes ITF (International Taekwon-do Federation) 6 women (age: 19,8±3,8 lat; body mass: 167,7±6,4 kg; height: 57,7±6,5) and 8 men (age: 18,3±1,7 lat; body mass: 70,4±6,0; height: 176,2±3,0 kg) During research they performed front left and right kicks in a lateral standing position: into the air (without a physical target), to a table tennis ball hanging on a line and a training target. The laboratory for the analysis of movement named HML was used here.

For all registered maximum velocities the mean and standard deviation was indicated. The normality of the distribution was checked with theShapiro-Wilk's test. The differences between comparable groups were assessed on the basis of t-test. The statistical significance was assumed at the level of $p<0,05$. All measurements were performed with the use of IBM SPSS Statistics 20,0.

Results of the Study. Discussion. Tables contains obtained values of legs' foot average maximum velocity, depending on the target of kicking for females (table 1) and males (table 2). The highest average maximum velocity was obtained by the kicks without a physical target (10,78 ± 1,32 m/s for men and 8,51 ± 1,50 m/s for women).

Table 1

Mean Velocity at Front Kicking for Females (Statistical Validity p<0,05)

	Średnia	SD	Min	Max
Air, *m/s*	8,51	1,50	6,36	12,99
Shield, *m/s*	8,28	1,59	4,87	11,13
Table tennis ball, *m/s*	7,73	2,01	5,13	13,71

Table 2

Mean Velocity at Front Kicking for Males (Statistical Validity p<0,05)

	Średnia	SD	Min	Max
Air, *m/s*	10,78	1,32	8,65	13,44
Shield, *m/s*	9,98	1,40	7,26	12,40
Table tennis ball, *m/s*	9,63	0,94	8,07	11,77

The obtained results provided the argument supporting the thesis that the type of target influences on the method of solving the dilemma: the velocity of movement and its precision during a frontal kick. Both, in the case of women and men who practise taekwon-do, lowering the velocity of a kick, performed towards a precisely established target, in comparison with the velocity of a kick without a precisely established physical target (into the air) was observed.

Based on this, we may assume that the increase of the precision influences negatively on velocity, along with the mechanism: «the speed-accuracy trade off» [3]. There are substantial mentions to think that such activities go along with the concept of the distribution of resources referred to in the cognitive psychology [7]. This concept talks about the selectiveness of concentration on a particular task in the categories of the distribution of energetic resources of the nervous system, under the rule: «something at the cost of something else».

For many people with the dysfunctions of the movement organs, everyday functioning, especially related to movement, makes a challenge. In such a case crossing the road at the green light in particular time or stepping on the escalator (the examples of such barriers are numerous) are the tasks that reveal the dilemma of velocity and precision. There are many factors that may support the efficiency of these efforts. One of them may be the feeling of the efficiency of activity that has a psychological character.

It can be observed that in the research over the effectiveness of tasks connected with extreme sport challenges, the aspects of physical education, biomechanics, physiotherapy, medicine, psychology and other fields run through each other. In sport science and physiotherapy more and more frequently the research concentrates on the connections at the level of the body, emotions, and cognition- in the search for fuller solutions (effective and certain) within these fields. Expected solutions to a large extent concern the widely understood effectiveness of undertaken actions: on one hand, they concern the results in the rehabilitative processes, on the other, the solutions refer to the results in a qualifying sport.

For many people with the dysfunctions of the movement organs, everyday functioning, especially related to movement, makes a challenge. In such a case crossing the road at the green light in particular time or stepping on the escalator (the examples of such barriers are numerous) are the tasks that reveal the dilemma of velocity and precision. There are many factors that may support the efficiency of these efforts. One of them may be the feeling of the efficiency of activity that has a psychological character[8].Therapists need both to monitor patients and clients progress in achieving their goals and help the clients develop the skills to do themselves, for future.It's also important that the patient and therapist re-evaluate their goals to determine whether they still relevant to the client's lifestale.

The process of rehabilitation constitutes a «fight» for health. Fighting for health is often difficult and complicated.The proper solution of the presented dilemma may mean for a particular person the difference between health and illness (in some cases- death), under the rule of one possibility [9].This is one of the reasons why biomechanical identification of movements makes an important element of many research works. Detailed analysis of human performance shows that minor elements, that were been taken into consideration earlier, may improve efficiency.

Improving a functional capability may be effective only when it is based on comprehensive activities of specialists from many areas oriented at an individual therapy of a specific person.This denotes personalized activities based on joint arrangements made between the therapists and an individual sportsman and/or an individual patient. However, detailed criteria (speed indicators and motion precision indicators) of each set goal should be agreed on, together with acceptable cost, which can be lifted by the body. It is about optimizing therapy, i.e. gaining maximal effect with minimal loss of energy. Clinical practice indicates that the improvement of an individual's psychophysical functioning encourages strengthening positive therapeutic effects [10].Formal exercise programmes (used conjunction with others methods of treatment) are one of main forms of conservative treatments used to treat painful musculoskeletal conditions.

The results and considerations presented herein may serve as the material for the comparisons for other researchers and may indicate the path for further searching of an interdisciplinary character in the clinical situations.

Conclusions. Summarizing the above, we can say that the target has an impact on the movement kinematics. The conducted research allowed to obtain empirical data and increase knowledge within the impact of the psychological factors (different targets) on the movement kinematics with reference to the results of the measurement of velocity of a punch performed towards different targets by taekwon-do competitors. This is the starting point for further analysis in the clinical context.

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Стаття надійшла до редакції 11.05.2017 р.

Рецензії, хроніки та персоналії

РЕЦЕНЗІЯ
на навчальний посібник «Навчання в русі. Здоров'язбережувальні педагогічні технології для дошкільнят та учнів» (О. Д. Дубогай, А. В. Цьось)

Інтегральним показником соціально-економічного й духовного розвитку суспільства є стан здоров'я нації. Як відомо, здоров'я людини формується в дитячому та підлітковому віці. На цей процес впливає багато чинників, зокрема генетичні, соціально-економічні та екологічні. Один із найважливіших – спосіб життя й, зокрема, належна фізична активність.

Розвиток дітей, їх оздоровлення, створення умов для раціонального режиму дня, правильного співвідношення фізичних і розумових навантажень здійснюються на основі здоров'язберігальної діяльності з урахуванням особистості дитини. Звідси – сутність фізичного виховання як діяльності, що зберігає й розвиває дитину, стимулює її індивідуальне різнобічне вдосконалення. Цей підхід спирається, передусім, на розкриття інтересів самої особистості дитини, потребу допомогти їй як індивідууму виявити свій потенціал, внутрішні резерви здоров'я та фізичного стану. Саме на такій концептуальній основі побудовано посібник «Навчання в русі. Здоров'язбережувальні педагогічні технології для дошкільнят та учнів».

У навчальному посібнику розкрито здоров'язберігальну дидактичну модель «навчання в русі». Під дидактичною моделлю «навчання в русі» автори видання розуміють комплекс методичних підходів, які під час занять фізичними вправами підпорядковані загальній меті освіти дітей, котра реалізовується послідовно, у динаміці розкриття змісту навчального матеріалу з опорою як на взаємозв'язок «дитина–мама (тато)», так і «учні–учитель», що загалом впливає на ефективність запам'ятовування дітьми нового навчального матеріалу. Модель «навчання в русі» сприяє створенню таких умов освітнього середовища, які стимулюють засвоєння нових знань у процесі впровадження освітньо-рухових технологій, сприяючи виникненню критичного моменту уроку та стимулюючи виникнення імпульсу для творчого мислення, спонукаючи учнів до виконання знайомих їм дій у новій послідовності.

Зміст навчального посібника складається із шести розділів, які логічно й комплексно висвітлюють обрану проблему.

У першому розділі «Засоби і технології збереження здоров'я матері та дитини в період вагітності жінки» подано рекомендації щодо здорового способу життя й раціональної рухової активності вагітної жінки як основи збереження здоров'я матері та дитини. Наголошено, що в українській народній педагогіці сформувалася система різноманітних заборон і пересторог, які чітко регламентували поведінку вагітної жінки. Усю сукупність пересторог та заборон умовно класифікують на три групи: психологічні, морально-етичні, оздоровчо-гігієнічні. До психологічних заборон належать ті, які оберігають вагітну жінку від сильних стресових ситуацій. Морально-етичні заборони пов'язувалися з нормами поведінки майбутньої матері. Оздоровчо-гігієнічні пересторогі включали правила харчування, гігієни та рухової активності жінки.

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

Приклади рухової діяльності й гігієнічних заходів новонароджених і немовлят, а також вимоги до фізичної активності жінок у післяпологовий період подано в другому розділі «Здоров'язбережувальні технології для дітей раннього віку з використанням засобів етнопедагогіки». Зауважено, що важливе значення для стимулювання росту й розвитку дитячого організму мають потішки (словесно-рухові ігри дитини з пальчиками, ручками, ніжками) та забавлянки (маленькі віршики, пісні, казочки, що супроводжуються елементарними рухами).

Третій розділ «Технології формування здоров'я для дітей дошкільного віку» стосується обґрунтування комплексного використання оздоровчих засобів у дошкільному навчальному закладі й сім'ї. Досить системно подано різноманітні засоби фізичної та розумової активності дітей улітку.

У четвертому розділі «Здоров'язбережувальні педагогічні технології в початковій школі» обґрунтовано організацію здоров'язберігальної освітньо-виховної роботи на основі рухової діяльності дітей. Здоров'язберігальні рухові технології «навчання в русі» передбачають зміну діяльності, чергування інтелектуального, емоційного та рухового її видів для індивідуальної, парної, групової форм роботи, що стимулює миттєве мислення дітей, сприяє поширенню їхньої рухової активності, своєчасному запобіганню розумовій утомі, учить дружнього й гуманного спілкування, розвиває патріотичну відповідальність у команді, уміння поважати думки й помилки інших за рахунок створення ігрових ситуацій, нестандартних інтегрованих уроків.

Теорію та практику українських народних ігор подано в п'ятому розділі «Українські народні ігри й забави в системі здоров'язбереження дітей». Наведено приклади народних ігор залежно від специфіки та умов використання.

У шостому розділі «Мотивація, самопочуття й контроль під час виконання фізичних вправ» висвітлено засоби формування мотивації дітей до занять фізичною культурою та спортом, методи контролю й самоконтролю в процесі виконання фізичних вправ, комплекси лікувально-оздоровчих та відновлювально-профілактичних фізичних вправ.

Представлений на рецензію посібник – це достатньо фундаментальна праця, у якій системно розкрито засоби, методи й форми здоров'язберігальної діяльності учнів, які реалізовуються в системі «сім'я – дошкільний заклад – школа». Рекомендовано для студентів вищих навчальних закладів, вихователів дошкільних навчальних закладів, учителів фізичної культури, методистів, батьків.

Рецензент – Вільчковський Едуард Станіславович, член-кореспондент Національної академії педагогічних наук України, доктор педагогічних наук, професор Східноєвропейського національного університету імені Лесі Українки.

ІНФОРМАЦІЯ ДЛЯ АВТОРІВ

Наукове видання «Фізичне виховання, спорт і культура здоров'я у сучасному суспільстві» містить такі рубрики:

- Історичні, філософські, правові й кадрові проблеми фізичної культури та спорту.
- Технології навчання фізичної культури.
- Фізична культура, фізичне виховання різних груп населення.
- Лікувальна фізична культура, спортивна медицина й фізична реабілітація.
- Олімпійський і професійний спорт.

Щоб мати можливість подавати рукописи в журнал та перевіряти їх поточний статус, потрібно зареєструватися на сайті (http://sport.eenu.edu.ua).

Для публікації приймаємо раніше не видані наукові праці (у тому числі іншими мовами в тій самій формі), які не надсилалися до розгляду редакціям інших журналів. За точність цитування та наведення в статтях наукових фактів, цифр й інших відомостей відповідальність покладено на авторів.

Подаючи статтю, автор тим самим:

– висловлює згоду на розміщення повного її тексту в мережі Інтернет;

– погоджується з рекомендаціями Всесвітньої асоціації медичних редакторів і стандартів **COPE** (http://publicationethics.org/) відповідно до принципів етики наукових публікацій.

Автори дають згоду на збір й обробку персональних даних із метою їх уключення в базу даних згідно із Законом України № 2297-VI «Про захист персональних даних» від 01.06.2010. Імена та електронні адреси, які вказуються користувачами сайта цього видання, використовуватимуться виключно для виконання внутрішніх технічних завдань; вони не поширюватимуться та не передаватимуться стороннім особам.

Наукові праці рецензують члени редакційної колегії збірника або сторонні незалежні експерти, виходячи з принципу об'єктивності й із позицій вищих міжнародних академічних стандартів якості.

Подання статті в журнал можливе за умови, якщо:

– робота не була опублікована раніше в іншому журналі;
– не перебуває на розгляді в іншому журналі;
– усі співавтори згодні з публікацією статті;

Мова рукопису – українська, російська, англійська, польська.

Видавниче оформлення структурних елементів статті:

– індекс УДК статті (верхній лівий кут) ;
– назва статті (до12 слів прописними літерами);
– прізвище, ім'я автора (-ів), афіліація (науковий ступінь, наукове звання, посада, місце роботи або навчання, місто);
– e-mail контактного автора;
– анотація (230–250 слів; структурована таким чином (із виділенням підзаголовків напівжирним шрифтом): актуальність теми дослідження, постановка проблеми, мета й методи дослідження, результати та ключові висновки; неприпустимим є використання нерозшифрованих абревіатур і вперше введених термінів);
– ключові слова (5–6 слів або стійких словосполучень, за якими надалі виконуватиметься пошук статті, які відображають специфіку теми, об'єкт і результати дослідження).

Метадані подаються мовою статті та англійською мовою (якщо мова статті англійська, метадані – англійською й українською/російською).

Використання комп'ютерного перекладу не допускається.

Абревіатури

Усі абревіатури повинні бути розшифровані при першому вживанні. Якщо абревіатур багато, то можна зробити список із розшифровкою кожної з них перед текстом статті.

Таблиці й малюнки

Кількість табличного матеріалу та ілюстрацій повинна бути доречною. Цифровий матеріал подаємо в таблиці, що має порядковий номер, вирівнювання по правому краю (наприклад: *Таблиця 1*) і назву (друкується

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

над таблицею посередині жирним шрифтом, наприклад: **Розподіл студентів за рівнем фізичної активності**). Текст таблиці подаємо шрифтом Times New Roman, кегль 12, інтервал 1. Формат таблиць – лише книжковий.

Рисунок повинен бути єдиним графічним об'єктом (тобто згрупованим). Для рисунків, виконаних у програмі Excel, потрібно додатково до статті відправити файл Excel (97-2003). Ілюстрації також слід нумерувати; вони повинні мати назви, які вказуються поза згрупованим графічним об'єктом (наприклад: **Рис. 1.** *Динаміка фізичної працездатності*). Ілюстративний матеріал обов'язково повинен бути контрастним чорно-білим, спосіб заливки в діаграмах – штриховий). Формули (зі стандартною нумерацією) виконуємо в редакторі Microsoft Equation. Підписи рисунків і формул повинні бути доступні для редагування. Усі графічні об'єкти не повинні бути сканованими.

СТРУКТУРА СТАТТІ

Бажано дотримуватися формату IMRAD (Introduction, Methods, Results, Discussion. Вступ, Методи, Результати, Обговорення

- **Вступ** (*постановка наукової проблеми та її зв'язок із важливими науковими чи практичними завданнями, аналіз останніх досліджень, у яких започатковано розв'язання цієї проблеми й на які спирається автор; виокремлення не розв'язаних раніше частин загальної проблеми, які розкриває означена стаття*).
- **Мета дослідження** *(метою повинно бути розв'язання проблеми або отримання знань щодо неї. Мета дослідження орієнтує на його кінцевий результат, завдання формулюють питання, на які потрібно отримати відповідь для реалізації мети дослідження. Для формулювання мети бажано використовувати слова* ***встановити, виявити, розробити, довести*** *та ін.)*
- **Матеріал і методи дослідження** *(указуються кількість, вік, спортивна кваліфікація досліджуваних, умови, тривалість і послідовність проведення експерименту, коротко обґрунтовується вибір методів, які використано в дослідженні).*
- **Результати дослідження. Дискусія.** Виклад основного матеріалу дослідження з повним обґрунтуванням отриманих наукових результатів (*результати досліджень з обов'язковою статистичною обробкою даних потрібно подавати у вигляді таблиць, графіків, діаграм. Дані, які відображаються в таблицях, мають бути суттєвими, повними, достовірними. Заголовок таблиці, назва графіка або діаграми повинні відповідати їхньому змісту. Переказувати словами дані таблиць і графіків неприпустимо. Результати дослідження мають бути обов'язково проаналізовані. Варто провести й паралелі з даними, отриманими іншими вітчизняними й закордонними вченими.*
- **Висновки та перспективи подальших досліджень** у цьому напрямі *(подається коротке формулювання результатів дослідження, осмислення та узагальнення теми. Висновки повинні бути лаконічними, конкретними, обґрунтованими, відповідати меті дослідження й випливати з основного змісту роботи).*
- **Джерела та література**
- Усі джерела зі списку літератури повинні бути процитовані в тексті статті, в іншому випадку відповідний елемент має бути вилучений. Якщо стаття, на яку є посилання, має цифровий ідентифікатор doi (http://www.doi.org/index.html), його обов'язково потрібно вказувати.
- Джерела списку літератури слід подавати в тексті у квадратних дужках, наприклад [1], [1; 6], при цитуванні конкретної сторінки – указувати її після номера джерела, наприклад: [1, с. 5], якщо вводиться в тих самих квадратних дужках ще одне джерело, то його потрібно відокремлювати від попереднього джерела крапкою з комою (наприклад: [4, с. 5; 8, с. 10–11].
- Повинні містити достатню кількість **сучасних** (за останні п'ять років) джерел за проблемою дослідження. До списку потрібно включати наукові статті українських та зарубіжних (до 50 %) авторів.
- Допускається посилання на власні роботи авторів статті (самоцитування), але **не більше ніж 25 %** від загальної кількості джерел.
- Список літератури повинен складатися з двох частин – ЛІТЕРАТУРИ й REFERENCES.
- ЛІТЕРАТУРА – це бібліографічний опис джерел, використаних під час підготовки статті, мовою оригіналу, оформлений відповідно до ДСТУ 8302:2015: Бібліографічне посилання. Загальні положення та правила складання. Київ, 2016.
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- «References» – список використаних джерел англійською мовою, оформлений за стандартом APA (редакція) (http://www.apastyle.org/). Зразки оформлення
- Назви кириличних джерел транслітеруються, далі у квадратних дужках розміщується переклад

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ФІЗИЧНЕ ВИХОВАННЯ, СПОРТ І КУЛЬТУРА ЗДОРОВ'Я У СУЧАСНОМУ СУСПІЛЬСТВІ

Збірник наукових праць

Східноєвропейського національного університету імені Лесі Українки

№ 2 (38)

Редактор і коректор: *Г. О. Дробот*
Верстка *І. М. Калиш*

Свідоцтво про державну реєстрацію КВ № 19773-9573ПР від 15.03.2013 р.
Сайт збірника наукових праць: www.physicaledu-journal.org.ua

Засновник і видавець − Східноєвропейський національний університет імені Лесі Українки.
Формат 60×84 1/8. Папір офсетний. Гарн. Таймс. Друк цифровий.
Обсяг 19,71 ум. друк. арк., 19,99 обл.-вид. арк. Зам. 3128-А.
Виготовлювач – Вежа-Друк
(м. Луцьк, вул. Винниченка, 14, тел. 29-90-65).
Свідоцтво Держ. комітету телебачення та радіомовлення України
ДК № 4607 від 30.08.2013 р.