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INDIVIDUAL ATHLETES' BIOMECHANICAL FEATURES OF INTERACTION WITH OBJECTS IN ART GYMNASTICS

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Annotation. *Purpose:* To design a biomechanical model of interaction of athlete with the subject, as well as the development of areas of its use in practice. *Material*: The study involved 10 students - athletes. *Results*: The presented computational schemes create direction of flight of different items (rope, hoop, ball, ribbon, clubs). The characteristics of the time of flight trajectories and with regard for the resistance force of the air environment. Shows the influence of initial parameters on departure flight time items. Graphic characteristics are presented trajectories of objects depending on the parameters of their departure. *Conclusions*: It is recommended to improve the judicial assessment and effective implementation gymnast exercises during the flight characteristics of the various items to consider trajectories of objects. Note that age, height and distance from the athletes at the end of the flight object defined biomechanical characteristics that can realize an athlete: absolute initial velocity of departure, departure angle, height of the center of mass manufacture items.
Keywords: art gymnastics, items, training, biomechanics, flight.

Introduction

Solution of practical tasks of sport training is impossible without analyzing of interconnections between separate elements of sportsmen's movements and comparing of them with some model characteristics. As model, in such cases, they usually base on movements of the best athletes in certain kind of sports. Such approach permits to create individual programs of sportsmen's training. One of important aspects in such training is creation of bio-mechanical models, which expand athlete's and his coach's understanding of mechanisms of separate elements' interconnections in general structure of movements' building and correction. Exactly, consideration of individual features of a sportsman permits to determine the most optimal characteristics of movements and find solutions for their practical application. In constantly increasing contest in sports such approach is urgent and necessary element of training and perfection of athletes.

Demand in consideration of sportsmen's individual features is noted in works: Zh.L. Kozina [16, 17]; S.S. Yermakov [8, 9]; S.S. Yermakov, S.N. Ivaschenko, V.V. Guzov [13]; N.A. Nosko. [24, 25]; G.V. Korobeynikov, Yu.A. Radchenko [19]; S.G. Kopchikova [18]; S.V. Latyshev, G.V. Korobeynikov [21]; V.A. Zaporozhanov [13, 14]; A.Ya. Pavelets, V.N. Ost'yanov, Ye.V. Maydaniuk [27]; Ilnitskaya A.S., Kozina Zh.L., Korobejnik V.A., Ilnickiy S.V., Cieślicka Mirosława, Stankiewicz Błażej, Pilewska Wiesława [35]; Rovnaya O.A., Podrigalo L.V., Iermakov S.S., Prusik Krzysztof, Cieślicka Mirosława [35], Volodymyr Adashevsky, Sergii Iermakov, Krzystof Prusik, Katarzyna Prusik, Karol Gorner [36] et al.

From point of view of bio-mechanics demand in consideration of individual characteristics of sportsman's movements was regarded in works by N.A. Bernstein [5]; A.N. Laputin [20]; D.D. Donskoy [7]; S.V. Dmitriyev [6]; S.S. Yermakov [8, 9]; V.M. Adashevskiy, M. Dulevskiy, S.S. Yermakov [1]; V.M. Adashevskiy, S.S. Yermakov, V.A. Shabashov [2] et al.

Great attention is paid in construction of bio-mechanical models to not only consideration of movements' individual parameters but to optimal combination of its separate elements. At the same time, optimization in constructing of bio-mechanical model, puts forward certain requirement to preliminary choosing of the most important elements of movement. Solution of problems of creation of bio-mechanical models of sportsman's acting with ball, with different apparatuses was regarded in the following works: S.S. Yermakov, V.M. Adashevskiy [10]; S.S. Yermakov, V.M. Adashevskiy, O.A. Sivolap [11]; V.M. Adashevskiy, M. Dulevskiy, S.S. Yermakov [1]; V.M. Adashevskiy, S.S. Yermakov, V.A. Shabashov [2]; A.L. Sidash [30].

Among kinds of sports, in which a sportsman interacts with an object with following catching of it, special place is taken by calisthenics. There are several kinds of catching and throwing of objects. In individual programs catching of an object after its flight is fulfilled by a sportswoman herself. In group exercises there are also movements, connected with catching of objects in different combinations by sportswomen of one team. It conditions demand in sportswomen's understanding of bio mechanical laws of flight and in studying of object's flight's phases. Fulfillments by sportswomen of exercises with objects were researched in works by L.A. Karpenko [15]; T.V. Nesterova, I.S. Sivash [22]; T.V. Nesterova, I.A. Shevchuk [23]; I.A. Stepanova [31]; V.A. Parakhin [28]; Bio-mechanical specificities of exercises with objects were elucidated in works by N. Andreyeva [4], S.L. Rukavitsina [29]. Among them we should note the works devoted to throws' techniques and catching of objects of N. Andreyeva [3]; N.O. Obraztsova [26]; A. Sumenkova, I. Nakonechnaya, A. Rudenko [32]; N.A. Ovchinnikova, L.A. Karpenko [33]. However there are still unsolved and

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insufficiently studied some problems of throws and catching of objects. In this aspect it is evident that it is necessary to construct bio-mechanical models of sportswoman's interacting with object, exactly in calisthenics.

Purpose, tasks of the work, material and methods

The purpose of the work is to construct bio-mechanical model of sportswoman's interacting with an object as well as work out directions of its application in practice.

The tasks of the research: to compose calculation diagrams for determination of characteristics of trajectory and time of objects' flight, considering sir resistance; compose physical-mathematic models of objects' flight; determine main bio-mechanical characteristics of flight; carry out research of influence of initial flight parameters on objects' flight time and obtain graphs of their trajectories; test in practice the received results.

Results of the research

In calisthenics referee's mark depends on gymnast's effective fulfillment of certain exercises in period of objects' flight with certain trajectories. It should be noted that time, height and distance from a sportswoman at the end of flight are determined in general by bio-mechanical characteristics, which can be realized by this sportswoman, videlicet: absolute initial velocity of flight start, angle of take off, height of mass centers of appropriate objects.

Let us regard calculation diagrams for determination of parameters of height and flight distance, basing on parameters of certain objects flight (see fig.1).

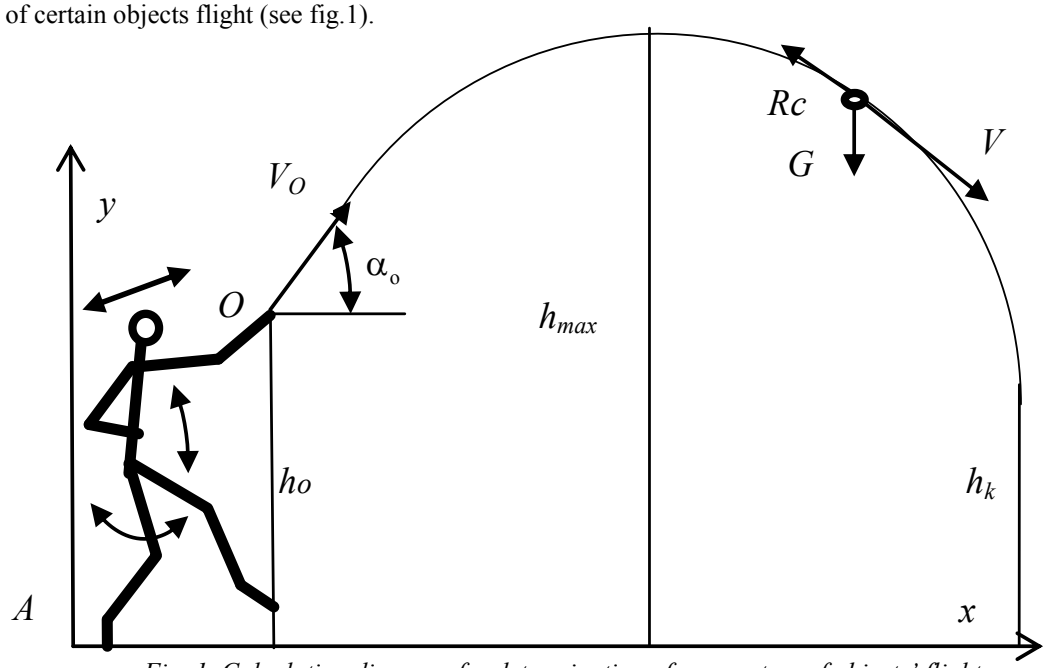


Fig. 1. Calculation diagram, for determination of parameters of objects' flight

$V_0 = VC_0$ – absolute initial velocity of objects mass centers' take off,

Vo_X – projection of velocity of objects' mass centers take off on axis Ox,

Vo_Y - projection of velocity of objects' mass centers take off on axis Oy,

V - current velocity of objects' mass centers.

In projections on axes of Descartes' absolute system of coordinates:

$$v_{Ox} = v_0 \cos\alpha_0; \quad v_{Oy} = v_0 \sin\alpha_0$$

Expression of absolute initial velocity of take off:

$$v_0 = \sqrt{v_{0x}^2 + v_{0y}^2}$$

$h_{Co} = h_0$ – height of objects' mass centers take off in initial time of take off,

$\alpha_0 = \alpha_{C0}$ – take off angle of objects' mass centers,

G – force of gravity of objects,

Rc – force of air resistance. For solution of the task force of aerodynamic resistance *Rc* for bodies, moving in air medium of density ρ, is

$$R_c = 0.5 \cdot c_\tau \rho s V^2; \; R_c = kV^2 .$$

With calculating of these forces non dimensional coefficients of frontal resistance c_τ are determined experimentally depending on shape of body and its orientation in medium. Value S (middle) is determined by value of projection of body's cross section on plane, perpendicular to axis of movement, V – current absolute velocity of body. Air density is $\rho \approx 1.3 kg/m^3$. Determination of variable values of middle S and coefficient of frontal resistance c_τ require substantial additional experimental researches, that is why with solution of this task we take their averaged variable values.

Variable in time values of coefficients k are determined by calculation.

As far as objects in flight phase move, mainly, in one of anatomic planes, we can compose equation of dynamic of plane-parallel movement in projections on coordinates' axes:

$$m\ddot{x}_c = P_x^e; \quad m\ddot{y}_c = P_y^e \quad .$$

Here m - mass of body, $\ddot{X}_c, \ddot{Y}_c$ - correspond to projections of acceleration of mass centers, P_x^e, P_y^e - projections of resultant forces acting on objects in flight.

With movement in plane *xAy*, system of equations can be written in the following way:

$$m\ddot{x} = -R_{c_x}; \quad m\ddot{y} = -G - R_{c_Y}$$

$$m\ddot{x} = -R_c \cos\alpha; \quad m\ddot{y} = -mg - R_c \sin\alpha$$

$$\cos\alpha = \dot{x}/v; \quad \sin\alpha = \dot{y}/v; \quad v = \sqrt{v_x^2 + v_y^2} = \sqrt{\dot{x}^2 + \dot{y}^2}$$

α – angle between current projections of velocity of body mass center and vector of its velocity, which determines signs of vectors' projections on axes of coordinates. Solution of this task requires integrating of differential equations of movement.

Let us build graph dependences of distance, flight height of objects considering initial parameters: absolute velocity of mass centers' take off, angle of mass centers' take off, height of mass centers, for variable force of air resistance (see fig.2). With it we calculate flight time of objects, which is required for effective fulfillment of certain exercises by a gymnast.

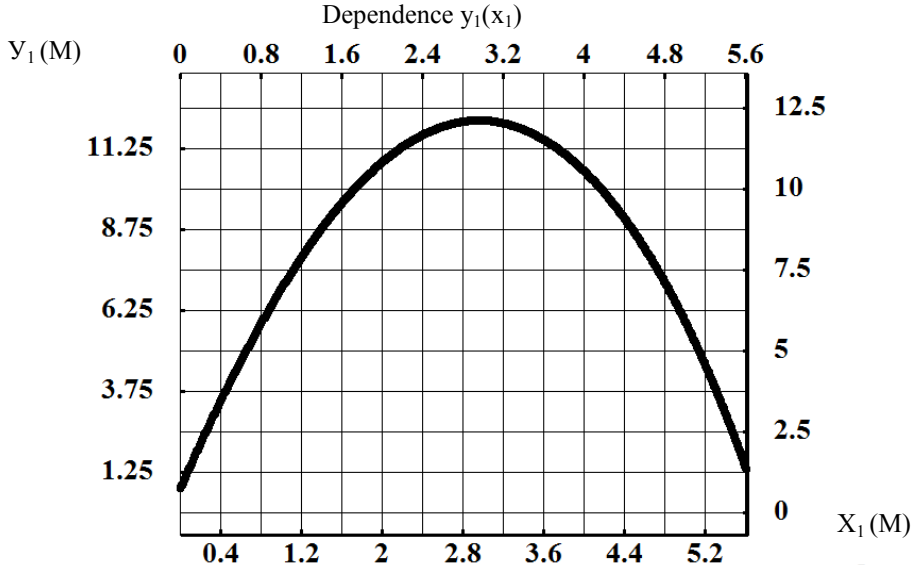


Fig.2. Graph dependence of parameters of skipping rope's flight for time t=3sec.; VC_0=17m/sec; $\alpha_{C0}=82^0$; h_{Co} =0.7m.; m= 0.1kg.

For flight time t=3sec. And received value of flight distance of skipping rope X_1= 5.6 m. Sportswoman fulfils such elements: throw of skipping rope on side step, two forward rolls and catching of skipping rope with hands or legs with full back turn around frontal axis.

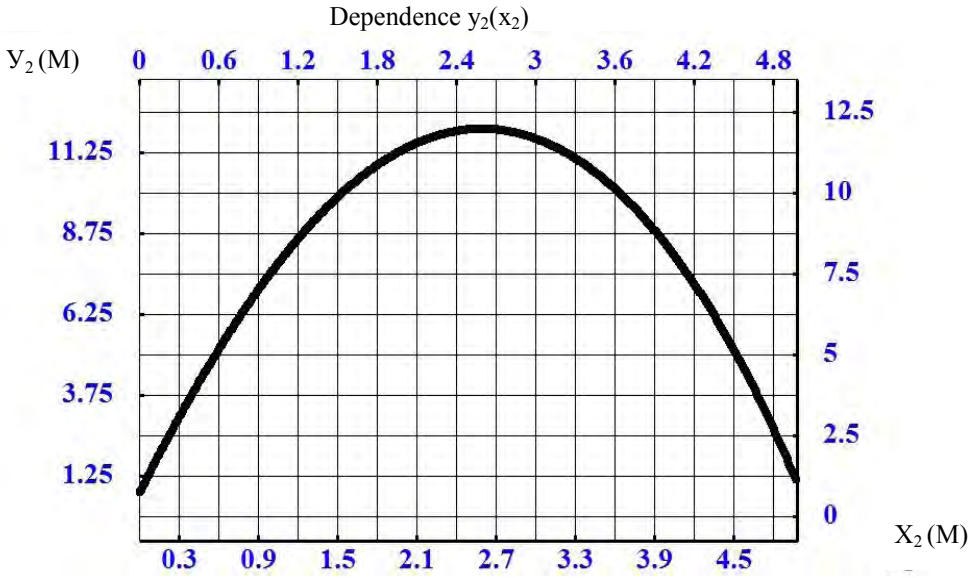


Fig.3. Graph dependence of flight parameters of hoop for time t=3sec.; VC_0=16.5m/sec; $\alpha_{C0}=83^0$; h_{Co} =0.75m.; m= 0.3kg.

For flight time t=3sec. And received flight distance of hoop X_2= 5 m. Sportswoman fulfills such elements: throw at side step and two forward rolls around frontal axis, cross split and catching of hoop with feet.

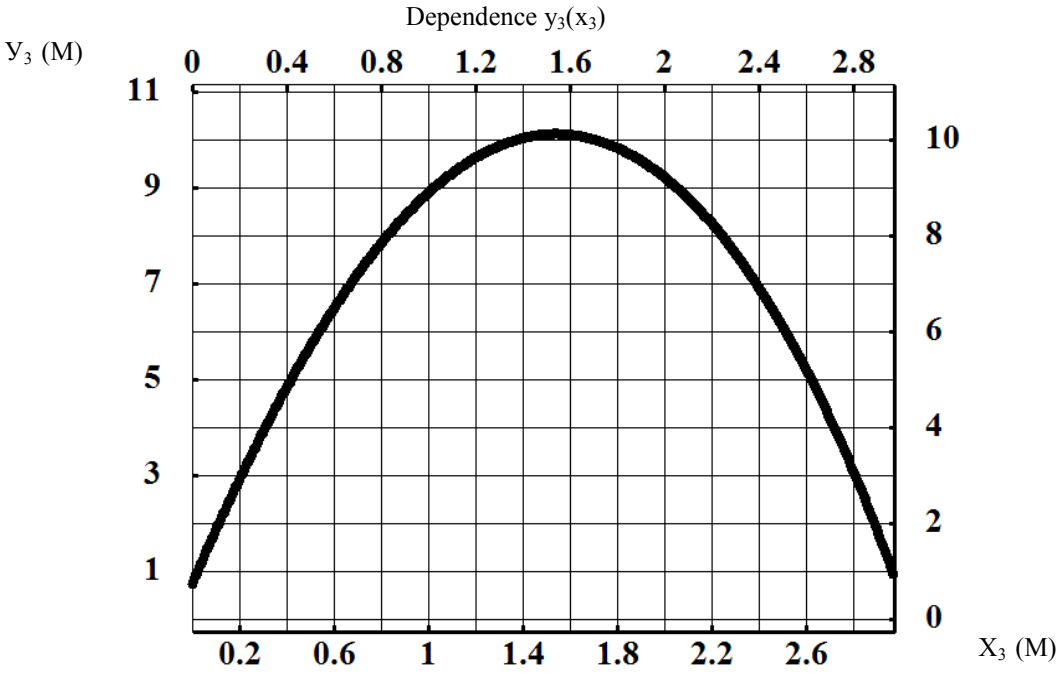
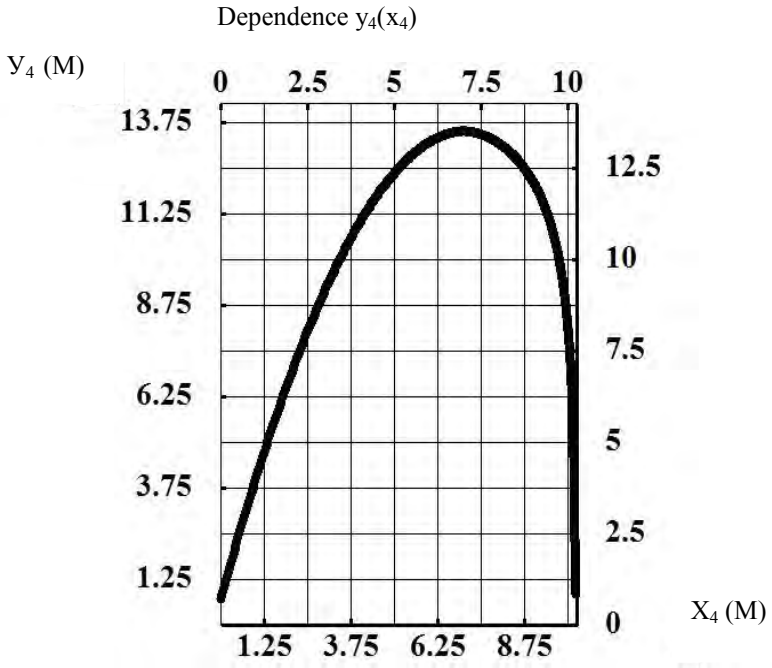


Fig.4. Graph dependence of parameters of ball flight for time t=2.75sec.; VC_0=15m/sec; $\alpha_{C0}=85^0$; h_{Co} =0.75m.; m= 0.4kg.

Fopr flight time t=2.75sec. and received flight distance of ball X_3=2.9m. sportswoman fulfills the following elements: throw of ball, rotation around longitudinal axis, forward roll and catching of ball with hands.



FDig.5. Graph dependence of parameters of ribbon flight for time t=4.5sec.; VC_0=17.3m/sec; $\alpha_{C0}=74^0$; h_{Co} =0.75m.; m= 0.1kg.

For time of flight t=4.5sec. and received distance of ribbon flight X_4=10.5 m. sportswoman fulfills the following elements: throw of ribbon, three forward rolls around frontal axis and catching of ribbon with hands in last roll.

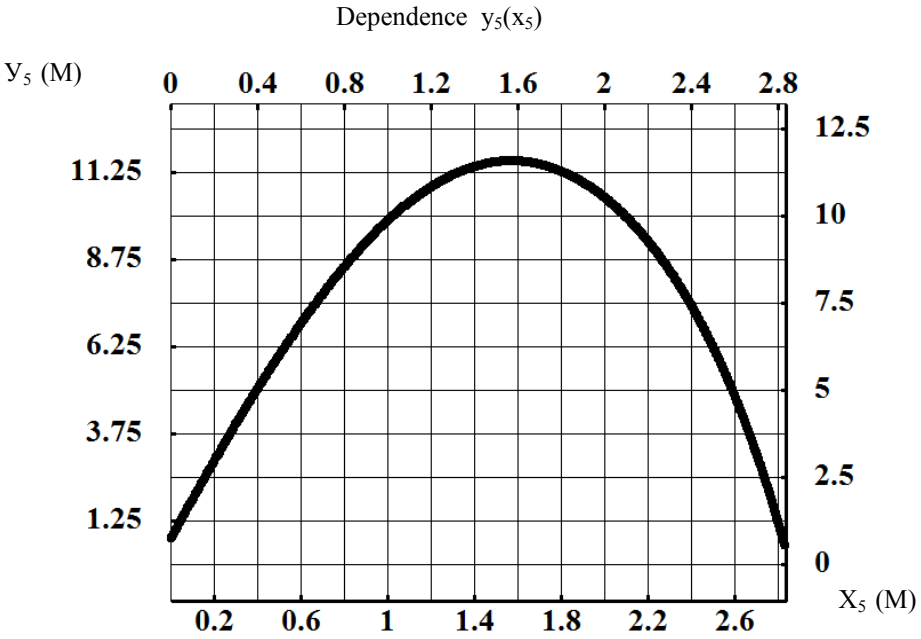


Fig.6. Graph dependence of parameters of clubs' flight for time t=3sec.; VC_0=21m/sec; $\alpha_{C0}=85^0$; h_{Co} =0.75m.; 2m= 0.3kg.

For time of flight t= 3 sec. and received distance of clubs' flight X_4=2.9 m. sportswoman fulfills the following elements: throw of club, one forward roll around frontal axis and catching of clubs with hands in roll.

Analysis of graph characteristics of trajectories of objects' flights permits to correct movements depending on individual physical features and potentials of sportsmen. Such approach permits to more effectively fulfill appropriate exercises as well as to create conditions for improving of referee's marks.

Conclusions:

Thus, practical application of bio-mechanical model of a sportswoman's movements permits to optimize training process. Besides, consideration of sportswoman's individual characteristics in bio-mechanical model permitted to mark out the most significant kinematic and dynamic parameters of movement. Practical application of results of analysis of

individual model requires from a coach and sportswoman knowledge of movements' bio-mechanic principles. When constructing a model special attention should be paid to using of modern equipment and control devices, which permit to register movements' parameters of athletes in certain kind of sports.

It is recommended to consider results of bio-mechanical analysis of objects' flights for improvement of referee's marks and effective fulfillment of certain routines by gymnast during objects flight at certain their trajectories. It is necessary to consider that time, height and distance from a sportswoman at the end of flight are determined with bio-mechanical characteristics, which the sportswoman can realize: absolute initial velocity of take off, take off angle, height of objects' mass centers.

In the future it is evident that it is necessary to apply modern equipment for video analysis of sportsman's movements.

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QUALITATIVE AND STRUCTURAL ANALYSIS OF THE MANAGERIAL COMPETENCY OF FUTURE PHYSICAL EDUCATION AND SPORT SPECIALISTS

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Annotation. *Purpose:* identifying theoretical and practical communication management competence in vocational training of future specialists of physical education and sport. *Material:* analysis of 220 literary sources of psycho-pedagogical nature, sports theory, control theory, methods of physical education, which cover the administrative aspect of modern specialist training. *Results:* the need to form a managerial competency in the process of future specialists in education and sport preparation with regard to its qualitative and structural characteristics was established in the research. *Conclusions:* there is an evidence that the meaningful impact on the development of managerial competency takes place successfully under conditions of personal socialization in the communicative environment; orientation towards systematic assimilation of knowledge about the phenomenon of management, focus on the effective implementation of activities; development of professional and individual characteristics, which together meet the objectives and content of the pedagogical preparation of students.
Keywords: *competency, management, professional competency, professional preparation*.

Introduction

The transition to a market economy, integration into the international educational environment, democratization and humanization of a social life in the country acquired more actuality. Identified socio-economic conversions led to the new challenges related to the improvement of higher education, physical education and sports. Solving these issues will be realized under the conditions of population value orientations formation directed towards health promotion, healthy lifestyle, improving physical education of youth, which generates a deep concern today and become a significant challenge for the society at the present stage of its development.

According to author's opinion the professional activities of physical training and sport specialists is a system process where its specific management features, performance, management attitude between its parties also must be taken into consideration, as well as other features associated with rapid developing types of market entities.

Therefore, the system of professional students training has to become more flexible, dynamic and capable of responding to the demands of modern life and existing practice.

In the course of research of 26 working professionals and 188 students of physical education and sport faculties it was determined that future physical education and sport specialists are lack of one of the professional feature management competency, which is extremely essential for the effective interaction between all parties of physical culture and sports in the direction of health promotion among population, physical development, youth sports improvement.

The article is a part of scientific research problem of Donetsk State Institute of Health, Physical Education and Sport, National University Physical Training and Sport of Ukraine «Formation of the professional self-determination system of children and youth in physical education and sport».

Purpose, tasks of the work, material and methods

Purpose – to carry out a qualitative and structural analysis of managerial competency.

It was the *objective* of the research to determine its theoretical relationship with the definitions of *competency, professional competency, management* and their practical link to the professional training of specialists in physical education and sports.

Methods of the research. The complex of general scientific methods directed to the comparative and logical analysis of psychological, educational, methodical and professional literature clarifying the current state of the managerial competency formation problem in the theory and practice of physical education and sport, conceptual and terminological apparatus singling out with the definition of the managerial competency main components in the process of the specialists in physical education and sport professional preparation have been used for the goal achievement and research objective solving.

Psycho-pedagogical surveillance, interviews with working professionals and students, surveys, content analysis and publications devoted to the managerial preparation of the specialists of physical education and sport industry have been occurred as the additional research.

Results of the research

The theoretical analysis allowed us to determine that the managerial competency for the pedagogical science is a relatively new concept. This definition has not yet received enough wider use and has been interpreted ambiguously. However, the use of the term "managerial competency" in the theory and practice of physical education and sports is absolutely justified.

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During our research we found that in the field of physical education, the term "competence" is treated as a universal prerequisite of a professional identity formation in the real socio-economic situation in accordance with the conditions consisting in society [1]; there is a frame of reference, where the professional competency has been realized as a reflection of a professional communication, including capabilities, knowledge, skills and their application [15].

In pedagogical science terms "competence" and "competency" define new realities and issues related to the preparation of young people for the active participation in public life. Competency - is the quality of the individual, which provides the obtaining of the settled competence. Professional competency has been considered as an individual characteristic of the degree of compliance with the requirements of the profession; individual psychological experience that includes education, knowledge, skills, professionally important features, psychological readiness [11, 2, 14].

We found that the function construction of the concept competency as the presence of a certain set of knowledge practically replaces the outdated concept "erudition", therefore we consider competency in a wider perspective: combination of knowledge, skills and experience of its application, where the motivation provides favorable conditions for the competency rising.

Despite the lack of a unified view among the authors of modern concepts regarding the definition of competency, we managed to see following in common among them: the majority of researchers agree that competency is the ability of the individual to effective or occupational activities [4].

The term "a competency of a manager" invokes an interest, which is presented in the psychological and educational literature and has been defined as: special education, broad general erudition, scientific and professional preparation developing, obtaining of business and personal characteristics [12].

The concept of "governance" in the scientific and educational literature is one of the deepest and generalized. If we consider the training of athletes, the management has to be observed as knowledge of the history and prospects of the sport development, forecasting of competition activities and sporting achievements, planning the study and training process, competition participation, etc. This list of administrative procedures is far from complete, but it reflects the comprehensive training of students in the formation of managerial competency.

The student or athlete are constantly in a definite physical condition that is always needs for improvement, therefore the physical condition of the human has to be managed, changing it towards necessary direction. By using a particular system of physical education or training process, a teacher or a coach controls the state of human, trying to reach the right conditions to increase the level of physical fitness and ability of pupils, enhancing their health, increasing athletic performance. Thus, managerial competency of a future specialist has been determined in its ability to carry out effective impact on human systems, bringing them to a more advanced level.

Analysis of scientific and educational literature confirmed the feasibility and promise of using managerial approach to the analysis of educational activities; management influence on the activation of a human, creating optimal conditions for the development of creative potential, efficiency increase and optimization of the education process [5; 16; 17].

Attractive for our study is a scientific position that defends the need for the formation of basic knowledge and skills in managing people, management methods and techniques of the future physical education and sport professionals. The basis of this concept is a statement that not everyone needs a full body of knowledge of theory and art of management [13].

We are also of the opinion of teachers who give a central place to the requirements of market economy in the concept of professional preparation of physical education and sport specialists, based on modern management principles [10; 3].

Our conceptual idea is that the managerial competency of a physical education and sport specialist will be considered by us as a system of motives, knowledge, skills, personal qualities, which characterizing the ability of the specialist to have an effective impact on the object of management in the areas of organizational, educational, physical and recreation, sporting activities.

During structural analysis, we found that a core component in the mechanism of managerial competency formation of future specialists in physical education and sport comes a personal component, its substructures - personally and professionally required qualities. They describe the outlook, social behavior, social and managerial orientation of the individual in the profession, the basic trend of self-development. Among the personal qualities required for the managerial functions fulfillment we have identified: dominance (the ability to influence others, self-confidence, the ability to persuade employees and students), business orientation, commitment to personal responsibility. The structure of the required vocational skills of future specialist includes: general erudition, broad cultural outlook and devotion for professional work, the need for self-fulfillment, independence, activity and flexibility of thinking, organization, initiative and enterprise [7].

We ascertained that a person who is engaged in management activities should be able to: set the goals and objectives of the dialogue, master all forms of business communication (conversation, debate, polemic, discussion, business talk, "round table", etc.); posses justification and reasoning skills, gently persuade, criticize and refute, to achieve agreements, compromises, correct and evaluate behavior of the opponent, obtain the linguistic and business etiquette, to be able to use it [8].All this points to the basic nature of the communicative skills of the individual and his ability to speak up, to take a different perspective, to inspire confidence during intercourse, to fight against stress and confusion, to distinguish the professional field of personal, to express creatively experiences and ideas. Exactly these particularities inherent both managers and professionals in physical education and sport, whereas both are the bearers of

culture, introduce modern technology, convey people an idea of the values and beliefs in a particular field of activity, indicating a need for the development of a communicative component in the structure of managerial competency

The structure of the expert knowledge of future physical education and sport specialists requires knowledge of related sciences and industries, possession of information, which is closer to the general and special erudition. The basic form of learning and assimilation of knowledge has been realized in practical problems solving, which become necessary during the acquisition of professional skills, has been acquired in the personal context, individual and creative level.

We consider a system of knowledge and skills taking into account specificity of a managerial function of a teacher, a coach, or a sports organizer, related to the following functions of pedagogical management as: planning, organization, motivation, coordination, control and decision making. At the heart of mastering the skills and experience is the knowledge that reflects the content of the functions and operations. The importance given to operational component, that includes the system of social and pedagogical skills, directed towards use of the management functions, use of forms, methods and techniques of management in physical education and sport. They are based primarily on the knowledge of psychological characteristics of management in the educational process, techniques and methods of information processing, managerial and executive actions, whereby the organization, management, motivation of work, knowledge of partners and the situation in general has been implemented. The next component of managerial competency is the evaluative component, associated with the ability to the valuation, the adjustments actions of others, their activation, well-qualified incentives for the efficient work, identifying changes that occur in the mind and behavior, physical condition of the person, comparing the actual level with the required one.

Distinguishing one of the features of a professional preparation of the future specialists - managerial competency, we must take into account that the formation of the competency has been made on the basis of integration of the individual to the professional practice in terms of motivation, the prospective targets for its development [6]. An interest in physical education and sport is the professionally significant motivation of a specialist's performance, devotion to pedagogical work in his field, motivation for the continuous improvement in it, love for children, commitment and responsibility for the quality of the work.

The process of professional identity formation involves the formation of the yang person's interest to the profession, outlook figures, attitudes, values, that facilitate the implementation of a successful work as a teacher, coach, manager, head of the institution or sporting asset. Professional performance of future physical education and sport specialists should be directed at the extension of the sphere, at the quality work with different age groups, with different levels of physical preparation, health conditions. It means that the result of the development of managerial competency of the specialist is the rate of professional preparation for the effective interaction with the surrounding people, focused on voluntary compliance of the pedagogical functions, management functions in a particular professional activity.

It should be emphasized that the formation of all components of managerial competency has been characterized by the systematic dissemination of knowledge about the phenomenon of management and its effective impact on the development and education of the individual. This knowledge is subordinated to teaching skills and directed towards implementation of practical activities of future specialists in physical education and sport in the process of professional preparation.

Conclusions:

The research categorical-conceptual apparatus analysis, the structural analysis, the scientific understanding of the problem of managerial competency testified the close meaningful relationship with the professional preparation of specialists in physical education and sport, that contributed to the separation of it as a part of professional competency and to characterize it as a quality of individual, which integrates the managerial knowledge, skills, abilities and experience of their application. There is a reason to affirm that the meaningful impact on the development of managerial competency takes place successfully under conditions of personal socialization in the communicative environment; focus on systematic assimilation of knowledge about the phenomenon of management, focus on the implementation of effective measures; development of professional and personal qualities, that in its totality meet the objectives and content of the students pedagogical preparation.

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PECULIARITIES OF FORMING HEALTH CULTURE OF PUPILS IN POLAND: HISTORICAL ASPECT

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Annotation. *Purpose:* analysis of progressive ideas of forming health culture and school health promotion of pupils in teacher attitudes figures of the past. *Material:* an analysis of more than 30 sources of scientific and educational literature. *Results:* it was found that the generation of pedagogical ideas in Poland took place in the Renaissance, helped open the first school and the University of Cracow that gave the society and the world of great scientists and educators. It was at this time teachers, doctors, humanists of Poland, who showed great interest in the protection, preservation and promotion of health and physical education of the rising generation, trying to raise healthy and active people. *Conclusions:* the galaxy of teachers and doctors of Poland enriched world knowledge about the formation and preservation of the health of children and young people not only means of physical training, but also compliance with the rules of hygiene, nutrition and hardening, thereby giving the term "culture of health" a broader meaning.
Key words: health culture, physical education, hygiene education, development, forming, Poland, personality, health.

Introduction

Solution of problems of health culture formation stimulates scientists and practitioners to searching, analysis and application of positive trends to formation of positive attitude of rising generation to own health and health of surrounding people.

In all periods of time care of children's health was a part of policy of any peoples and always was of priority in the aspect of consolidation of national unity, strengthening and expansion of territorial settlements, development of educational systems of rising generation. Ideas of comprehensive and harmonious child's progressing gradually were implemented in life and added to peoples and nations with physically hardened defenders of fatherland still more advantages in economic growths of country. Positive and effective approaches to strengthening of children's health were implemented in life and made basis for physical culture system, considering national features of education.

Analysis of literature sources permits to state that formation of health culture of personality in Poland has been being not only a center of pedagogues' attention but of medical doctors' as well during nearly all history of the country. That is why it permits to consider it urgent and timely to research Poland pedagogic inheritance.

The work has been fulfilled in compliance with plan of SRW of Kharkiv national pedagogic university, named after G.S. Skovoroda.

Purpose, tasks of the work, material and methods

The purpose of the work is analysis of progressive ideas of health culture's formation and health strengthening of schoolchildren in pedagogic establishments of the past.

Results of the research

Development of pedagogic ideas in Poland is connected with opening of first schools (12^{th} – 13^{th} centuries) and Krakov university in 1364, in spite of the fact that the country has more than one thousand years' history of its existence.

Problems of education in middle age Poland were not independent; they were only a component of philosophic and religious disciples and were regarded in tractates, devoted to different branches of science and practice. Only in 15^{th} century there appear translated works, attracting attention to education of schoolchildren.

Development of pedagogic ideas in Poland of 16^{th} – 17^{th} centuries was influenced on by works of well known in all Europe scientists of that time G. Galileo, T. Campanella, R. Wolfgang and other. Works by known English philosopher F. Bekon, who acutely criticized modern for him school, were of special importance.

Opening of Krakov, (Yagellon) university is connected with functioning of scientists and teachers, who made significant discoveries in field of pedagogic and works of whom, then, became known to Poland and foreign scientific circles.

One of the first propagandists of children's and youth's physical education as health related mean and method of hygiene and appearance in Poland was doctor and professor of Yagellonskiy university in Krakov S. Petritsi. His views on physical education can be considered innovative in Poland of Renaissance epoch. Just S. Petritsi put forward requirements to specialist – teacher, who should consider psychological and physiological features of disciples, to be familiarized with all means of physical education and schoolchildren's eating. The scientist affirmed that physical exercises form discipline and self assistance of schoolchildren [16; 25].

S. Petritsi thought that state shall be responsible for schools, for proper education of children, who are the future of the state. In its turn family should not stay aside.

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For creation of Poland physical education system views of outstanding Poland writer and reformer A. Modzhevskiy was of special importance; he attracted attention to childhood as the most important period of human development. In his opinion, traditions and values, cultivated in this period of life make the basis for later correct and honest life [11].

Necessity of physical education as important mean of health strengthening and improvement of physical fitness was stressed by M. Ray and known humanist and doctor V. Ochko. For example, M. Ray, in his works, pointed at demand in systemic fulfillment of physical exercises, starting from childhood [20]. V. Ochko grounded significance of physical exercises and correct eating not only as means of prophylaxis but also as means of treatment of most od diseases. Besides, V. Ochko is considered to be the founder of therapeutic physical culture in Poland [15].

In epoch of Illumination there were worked out new ideas and conceptions of health related orientation for children and youth, which stipulated compulsory application of physical education means.

So, ideas of health culture's formation among schoolchildren are connected with name of G. Piramovych – pediatrician, who researched health as the highest value of humanity, underlining that it was a condition of happiness and sound body. He regarded care of body from two positions: development of children's physical condition for keeping of good health and exercises, which are the sense of health – personal hygiene, eating, mental functioning and hardening [14].

G. Piramovych formulated requirements to teacher, which included problems of health and physical education. Besides, he pointed at teacher's role in propaganda and expansion of health related culture and was the first, who underlined necessity for teacher to care of own health. He was the first, who paid attention to women's physical education. He is considered one of initiators of school hygienic education in Poland [17].

Substantial contribution in forming and expanding of schoolchildren's physical education in Poland was made by known reformer of physical education Ye. Snyadetskiy, who combined medical knowledge with demands of education and is considered by successor of G. Piramovych; he also pointed on necessity for a person to achieve harmonious development of strong body.

Ye. Snyadetskiy was the first, who formulated main rules of controlling of human physical and mental development at scientific level and grounded application of physical trainings in the process of young generation's education [1]. In opinion of Ye. Snyadetskiy the purpose of physical education is "such education of a person, which makes all parts of body harmonious and strong, all senses – proper, all organs – perfect" [23].

Ye. Snyadetskiy, can be considered a nunciate of health related education because his program of hygienic knowledge was presented in such periodical edition as "Vilnius diaries" (1805, No.1), which was the leading journal of Poland of that time.

Besides physical exercises Ye. Snyadetskiy, recommended hardening for strengthening of health and ensure close contact of children with nature. These ideas remain still urgent [23; 8].

Similar ideas were declared by known doctor, teacher and propagandist of Sweden gymnastic Ye. Madeyskiy, who, in his works, analyzed health related value of gymnastics, stressed on demand in its introduction in school academic programs, studied its influence on human organism [13].

Publications of Ye. Madeyskiy, were innovative for his time because the author grounded from position of medical doctor health related and developing function of physical exercises and showed close connection of physical education and comprehensive progressing of human personality. He gave priority to Sweden gymnastic (health improvement and health strengthening through improvement of human body shape and sense of beauty) and criticized German gymnastic (preservation and strengthening of health through development of quickness, accuracy and coordination of movements, mental functioning), which, in his opinion, did not meet demands of children and youth, who studied at schools [13].

Development of Poland physical education system of youth was significantly influenced by views and activity of G. Jordan, which resulted in implementation in Poland schools lessons of gymnastics and medical aid, in organization of advanced training courses for physical education instructors at Yagellonskiy university [4].

Scientists (Ye. Zob, A. Krasuski et al.) of 19th century determined that motion functioning was the basis of physical education and, considering its therapeutic, prophylaxis and health related features it was reflected in different physical programs.

Medical sciences were closely connected with physical culture but such connection was an attempt to take care of health through motion in prophylaxis and therapy. Such dialogue and cooperation has been going since long ago. Each of them had its own history, including common moments, which are presented in historiography of both disciplines. Processed from position of medicine such conception was reflected in forms of medical practice, problems of health and diseases. Part of medical doctors evaluated motion as only therapeutic or preventive method, not even mentioning about motion functioning [24; 9].

At the end of 19th – beginning of 20th century in practice of Poland schools compulsory exercises as lectures on gymnastics were implemented and program-methodic materials of school physical education. It was facilitated by doctors' and teachers' environment, which in 19th century at public congress of doctors and teachers, at pedagogic congresses and on pages of special medical journals «Zdrowiu», «Szkole», «Muzeum» presented their attitude to physical education as health related mean for schoolchildren in their extra-curriculum activity [22].

All these facilitated development of extra-school establishments. For example, starting from 1889 in Poland Park of doctor Henry Jordan in Krakov (1889), Garden of outdoor games, named after V. Ye. Raoit in Warsaw (1899), Park of Association of outdoor games in Lvov (1909); one of the first in Warsaw Sweden gymnastic and massage club of Helena Kuchalskaya (1892); world-known association "Sokil" (has been functioning since 1967); sport clubs, tourism and local history organizations had been open [21]. Extra-school establishments had purpose to popularize outdoor games, organize sport competitions for children.

Just in these organizations and associations original ideas, conceptions and programs were worked out, which implemented them in educational system of Poland of that time under the aegis of physical education.

Special attention is required by name of S. Kopchinskiy, who was a pioneer of school hygiene and sanitary and introduced compulsory medical examination in schools.

Well known hygienist developed conception of medical-hygienic examination of schoolchildren and pointed at possibility of realization of health related problems in the frames of all school subjects. However the condition of the latter there were pedagogic approach of doctors and medical knowledge of teachers [18].

All this became a push to combination of teachers' and hygienists' efforts. Schoolchildren, who passed school of S. Kopchinskiy were so embraced by pedagogic thought that even in time of crisis they worked in schools free of charge. Being troubled with schoolchildren's health S. Kopchinskiy delivered lectures about usefulness of health for schoolchildren's parents. He independently carried out trainings on physical education, taught to hygiene and simultaneously free of charge worked as school doctor.

Special place among outstanding Poland pedagogues, propagandists of physical education's traditions belongs to Ye. P'yasetskiy – professor of Poznan university, medical doctor, public figure, theoretic of physical education and school hygiene.

Ye. P'yasetskiy was a key figure at many educational international European measures, putting forward his views at development of physical education and physical exercises. Starting from 1927 he was invited to Section of hygiene in League of Nations, where he visits England, Germany. Sweden, Italy and Austria with reports on origin of traditional games, which, in opinion of the scientist, played significant role in cultural, spiritual and physical forming of personality [10; 12; 5].

Logical continuation and progressing of this idea were in works "Amusements and games for children" (1916), "Influence of body exercises on children's physical condition" (1899), "Power games and games for children and youth in historically not oriented and regional traditions, in verbal form" (1916), "Program for body exercises" (1917).

Outstanding figure of end of 19th century was Kh. Radlinska – pedagogue, pioneer of social pedagogic and founder of family pedagogic of health and health education. Kh. Radlinska was the first in Poland, who combined social pedagogic with biological and medical sciences for improvement of schoolchildren's health as well as health strengthening.

As compulsory component of own theory of social work the pedagogue included "health related education", which implied help to people in receiving knowledge about health, in training to obtain skills, facilitating healthy life style and increasing health level, stimulation of interest in being healthy, propaganda of efficiency of prophylaxis, treatment and rehabilitation as well as importance of hygiene.

At the end of 19th century there were organized a lot of public initiatives for children and youth with purpose to educate healthy and patriotic generation. There appeared Association of Summer Colonies, which organized summer rest for children of poor parents; Warsaw Hygienic Association, which develops tutor activity in favor of children and implemented recreational and educational functioning; Institute of Children's Hygiene, which provided medical aid and consultations on children's hygiene; Association of Orphans' Nests, which solved problems of socially not adapted youth; Shlionskiy Educational establishment, which realized innovative educational measures for children and youth; Association of Struggle Against Tuberculosis, which opened sanatoriums [19; 6; 2].

It should be noted that popularization of knowledge with mass media and different publish centers was a peculiarity of educational illumination. For example, among special editions, which paid significant attention to problems of physical education, we should note: "Pedagogic review" (1882-1902, Warsaw), "Health" (1885-1914, Warsaw), "Gymnastic review" (1897-1901, Krakov) "Sokil" (1902-1913, Poznan), "Ruh" (1906-1914, Warsaw), "Diary of health for all states" [4].

Significant contribution in development of Poland infield of health improvement of population was made by A. Landim – doctor, pedagogue, who, in practice, created "health town" in one of the most distant places of Warsaw, Zoliborzh, as House-hold Cooperative; by M. Katspshak – doctor-hygienist, co-author of statutes of World Health Protection Organization, who in 30-s of 20th century was the first who pointed at the fact that every person has right to be healthy, because having health it is possible to achieve everything. All these, by opinion of M. Katspshak, characterized term "positive health" [3; 7].

Hygienic movement of the end of 19th – beginning of 20th century in Poland played unification role between world of doctors and pedagogues. Representatives of this movement were both medical doctors (A. Vinogorodskiy, P. Gontkovskiy, Ye. Madeyskiy, V. Osmolskiy, Ye. P'yastskiy, J. Tkhozhnitskiy et al) and pedagogues (M. Baranovskiy, J. Davida, S. Karpovitsa, I. Moshenskiy et al.), who actively published their knowledge, conceptions in manuals, primers, dictionaries. Such "unification" resulted in active usage of term "health culture", with hygienic culture, sanitary culture, hygienic education, sanitary, hygienic and health related education as its components. I.e. health culture at that time was regarded mainly from the points of view of hygiene and sanitary.

Conclusions: galaxy of Poland pedagogues and medical doctors enriched world with knowledge about forming and preservation of children's and youth's health not only with the help of physical education means but with observation of hygiene rules, correct eating and hardening, thus giving to term "health culture" wider meaning.

The prospects of further researches imply seeking of ways for solution of problem of personality's health culture forming in Poland.

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FEATURES OF TENNIS METHODS OF TEACHING 5-6 YEARS OLD CHILDREN IN THE INITIAL STAGES

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Annotation. *Purpose*: theoretical and methodological justification for the existing teaching methods tennis of 5-6 years old children. *Material*: 17 special analysis and scientific and methodological sources. *Results*: the features of the existing methods of teaching children at an early stage of training. The main theses of the existing methods: 1) the training process is carried out in the form of games; 2) the level of general physical preparedness level exceeds special; 3) The first two years of the children do not participate in official competitions; 4) education of children begins with " School Ball ", with a gradual transition to employment with racket and ball; 5) training is built on two levels: theoretical - each " part" in the form of pre- formation of a mental model of rational behavior, and practical - the formation of the ability to perform motor actions. *Conclusions*: it was found that the existing methods of constructing the training process for children 5-6 years do not account for their physiological characteristics, therefore proposed to use computer technology and animation, that will shorten the formation of motor skills of children.
Keywords: tennis, initial, stage, technique, young tennis players, classes.

Introduction

At modern stage tennis is characterized by significant increasing of popularity and attention to this game. It is important that junior generation is involved in this process. As on to day children often start to seriously practice sports at 5-6 years old age.

Nowadays in tennis a situation exists, when children at early stage of sportsman's formation are oriented on professional training, which is based on technique of power tennis for achievement of quick victories ate any rate. Such approach to training results in worsening of health and ruining of child's motor system; it prevents child from mastering of combinational game and tactic and, at last, children loose interest to game and leave tennis. It is connected with absence of theoretical and methodological provisioning in field of tennis for 5-6 years old children at first year of their training. It forces coaches to adapt the existing methodic, basing on demands and contingent. That is why analysis of existing methodic of 5-6 years' old children's training at initial stage is an urgent task. Analysis will permit to determine main characteristics of such methodic and specify approaches to improvement of children's tennis training.

The research was carried out in compliance with plan of SRW of physical education department of Automobile and tracks institute of SHEE "DonNTU".

Purpose, tasks of the work, material and methods

The purpose of the work is determination of characteristics of tennis trainings of 5-6 years' old children at initial stage of training.

As per the purpose of the research we set the following *tasks:*

1. Analyzing of existing methodic of 5-6 years' old children training at initial stage.
2. Determination of methodic peculiarities.
3. Determination of main approaches to improvement of children's tennis training at initial stage.

The methods of the research: theoretical analysis, generalization of special and scientific literature.

Results of the research

Different components of children's tennis training were described by many authors: S.P. Belits-Gayman [1], G.A. Kondratyeva, A.I. Shokin [2], G.K. Zhukin [3], T.S. Ivanova [4], who noted that tennis initial program is multi-component like in other kinds of sports. Distribution of time into different sections of training work is fulfilled in compliance with certain tasks of many years' training.

Different authors specify the following tasks: 1) strengthening of health and improvement of physical condition; 2) mastering of exercises' techniques; 3) comprehensive physical fitness on the base of practicing of different kinds of sports; 4) cultivation of interest in sport practicing; 5) training of will qualities; 6) determination of kond of sports for further training.

First two years children do not participate in official competitions, that is why annual cycle is not divided in periods and main attention is paid to content of week cycles.

At initial stage training is in form of game: with elements of general exercises and main orientation on development of necessary physical skills; in the form of relay race, outdoor games for evaluation of bents to game functioning, quickness, accuracy, coordination, accuracy of muscular efforts, emotional-will qualities, features of attention, ball exercises (ball school) [2, 17].

Most of authors recommend starting training of 5-6 years' old children with "ball school", working only with tennis ball, consequently making exercises more complex, close to tennis strikes.

Main task of ball school is training of simple motion skills, quickness, power of observation, concentration and quickness of attention's re-pointing, elementary abilities for prognostication. Working with ball junior tennis player

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receives experience in visual perceiving of ball, of familiarizing with different speed of its flight and dap from ground, helps to correctly coordinate movements with flight of ball.

For better harmonious progressing of a child and coordination of movements S.P. Belits-Gayman [1] advises to develop the so-called two-sided motion skills – ability to use equally right and left arms, right and left legs. For this purpose it is necessary to apply both games for arms and games for legs.

Then it is necessary to pass to training with racket and ball.

Training of junior tennis players is a complex stage-by-stage process, which is realized in sport clubs and children-junior sport schools and envisages achievement of certain level of fitness – physical, theoretical, technical-tactic.

Physical fitness is divided in general, auxiliary and special. General fitness stipulates comprehensive development of physical skills, functional potentials of organism's organs and systems, their coordinated manifestation in process of muscular functioning. In modern sport training general fitness is connected not with comprehensive physical condition in general, but with improvement of skills and abilities, which influence to certain extent on sport achievements and effectiveness of training process.

Auxiliary fitness is a functional basis for successful working on development of special physical skills, which manifest in movements, required in chosen kind of sport. Auxiliary fitness hardens organism for high special loads and intensive recreation.

Special fitness is characterized by level of physical skills, potentials of organs and functional fitness, which directly determine achievement in chosen kind of sports [5].

S.P. Belits-Gayman [1] underlines in his works that since the very beginning of tennis trainings it is necessary to pay attention to achievement of certain level of both general and special fitness. It is one of main conditions of mastering game's rational technique. Formation of strike skills is in direct dependence on strength of "working arm" and girdle. Only with their optimal condition modern comprehensive technique can be mastered.

Level of general and special fitness substantially depends on sportsmen's age. At 5-6 years old age general fitness exceeds special one. It is conditioned by peculiarities of organism's age development and many years' planning of training process [6].

V.N. Platonov (1086) [7] determines dynamic of load at stage of initial training tin the following way: 50% of general training, 45% of auxiliary fitness's training and 5% of training for special fitness.

A.P. Skorodumova [8] points that tennis players of first year of training have the best correlation of general and special physical fitness as 70% of general and 30% of special in respect to time, assigned for physical training. However, up to recent time it has been being considered that the best increment of general and special children's abilities is in conditions: 60% for general training and 40% - for special one in respect to total time of junior tennis players' physical training at initial stage.

Theoretical trainings are conducted in form of talks of coach (doctor, experienced tennis players) with demonstration of visual aids. It is purposeful to familiarize children with theoretical principles of tennis technique on example of exhibition performances of older sportsmen.

Tactical training at initial stage is reduced, mainly, to children's training of simple tactic actions. From the first training children shall be trained not only strike ball, but to control it, point it exactly to target with different speed and rotation [4].

Mastering of tactic techniques at initial stage is fulfilled, considering the following requirements:

- by the end of first year children shall be able to keep ball in game, exchanging strikes with partners not less than 20 times;
- in 2nd year they shall master cross strikes, strikes on line, conduct set game;
- at finalizing stage of initial training junior tennis players shall be able to fulfill attacking strikes of "short ball" type, varying them by strength and depth.

Technical training is a pedagogic process, oriented on sportsman's perfect mastering of game techniques that ensures reliability of skills in game and competition functioning. In modern tennis technique and following from it accuracy, stability of strikes' fulfillment determine efficiency of tennis players' actions. Traditionally training of techniques is carried out in several stages [9].

First stage is familiarizing with technique.

Second stage is training of the technique in simplified conditions. At this stage children shall obtain not only general but also detail understanding of the technique, they shall master. First of all they shall master:

-initial (preparatory for this action) stance;
- final stance;
- self-control technique when coming from stance to stance of phase's end;
- passing from one stance to other under visual control;
- fulfillment of movement slowly, controlling it.

Third stage is mastering of technique in complicated conditions. Training includes elements of competitions.

Fourth stage is consolidation of technique in game.

L.P. Matvyeyev [5] determines technique as rational motion action, which includes system of interconnected movements. Motion action consists of separate components: principles of technique, main (leading) link and detail. In training of techniques of tennis there are several methodic approaches based on these principles.

T.S. Ivanova [4] marks out main link – attacking interaction and offers to start training with formation of understanding of points of strike and attacking stances with relative fixed position of feet.

G.K. Zhukov [3] determines the following sequence: creation of general understanding of strikes; mastering of phases of striking interaction; fulfillment of strikes with full coordination of movements in conditions of restricted travelling; fulfillment of strikes with full coordination of movements in conditions of restricted quickness.

V.A. Golenko, A.P. Skotrodumova, Sh.A. Tarpyschev [10] mark out main "details" of elements in technique and sequence of strikes' fulfillment: ability to correctly choose place on site before strike; choosing of hold for technique's fulfillment; time of racket's contact with ball; finalizing of strike by finishing of raxcket's movement. Training is built on two levels: theoretical – every "detail" in the form of preliminary formation of mental model of rational behavior and practical – formation of ability to fulfill movement.

Such approach is coordinated with didactic model, which permits to imagine "what" and "how" to train: 1) formation of oriented basis; 2) formation of ability to solve situation; 3) carry out control of movement's level. Authors Yu.I. Kravtsov, S.L. Fetisova [11] regard technical tactic training as didactic process, oriented on effective solution of typical game situations with the help of specialized motion skills and complex of game skills.

Now there are carrying out a lot of scientific researches, which to some extent solve problems of initial training.

Thus, problem of differentiation and individualization are regarded in general in frames of game's style, which is determined by physical and psychological qualities of every sportsman (V.Z. Babushkin 1991) [12].

Dissertation researches of A.M. Linkov (2004) [13], who regards application of self-regulation methods in training of junior tennis players; I.Sh. Tuchashvili (1999) [14] who marks out three types of functional structure of junior sportsmen's psycho-regulatory system: rational, reflexive, receptive, were fulfilled in frames of psychological training in tennis.

As on to day problems of bio-mechanical foundation of tennis strikes' technique in different age groups are rather urgent (Al Khalili Muhammed, 1996) [15].

Concerning modern children, according to "theory of generations" [http://www.kommersant.ru/doc], they formed in period of quick development of computer technologies. In scientific literature (in field of psycho-physiology, these children are related to generation Z) [http://medpsy.ru]. They learn world through computer games. In modern children "clip" thinking dominates, which is oriented on processing of information by short portions, i.e. volume of information shall be within screen of computer. Only in this case children Z can understand it and remember. In this connection there appear problems of organizational, psychological character and other that, in its turn, negatively reflect on efficiency of all training process.

Generalizing the above said we can make conclusion that with availability of great number of researches on building of training process in tennis, all they do not consider psycho-physiological features of 5-6 years' old children. That is why we offer to use computer technologies and animation, which will permit to shorten terms of formation of motion skills at initial stage of training. Application of such interactive methods, their influence is the next stage of the author's researches.

Conclusions:

Analysis of special and scientific-methodic literature permitted to determine peculiarities of existing methodic of 5-6 years' old children's training. They shall include: training process, built in play form; general fitness exceeding special fitness; first two years children do not participate in official competitions; children's training starts from "ball school" with gradual passing to trainings with racket and ball; trainings are built on two levels: theoretical – every detail shall be preliminary formed mentally and practical – formation of skill to perform certain motion action.

But existing methodic of training process's building for 5-6 years' old children do not consider their psycho-physiological qualities. That is why we have offered to apply interactive method of tennis training for children.

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INTERFERENCE OF PSYCHOMOTOR AND SPATIO-TEMPORAL PARAMETERS ON THE EFFICIENCY OF MOTOR ACTIONS INVOLVED IN THE EASTERN SPECIES PHYSICAL CULTURE

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Annotation. *Purpose:* to identify interferences psychomotor abilities for consistency in the management of spatio-temporal parameters of procedural and final precision in the movements with complex motor structure. *Material*: the study involved 30 people occupying the eastern species physical culture (Wushu Qigong and Tai Chi Chuan). *Results*: It was found that the identified trusted connection as positive (n = 59, r = 0.63 to 0.92) and negative (n = 21, r = from -0.63 to -0.89) confirm the influence of particular classes in the eastern system ability to coordinated control movements of different coordination complexity. *Conclusions*: the ability to control the internal forces, the ability to focus, alertness and mind control depend on three complementary levels - substance "Jing", "Qi" and "Shen", which directly affect the state of psychomotor sphere and target accuracy of spatio-temporal motion parameters.
Keywords: psychomotor, ability, task, procedural, final, precision, substance, oriental, health systems, spatio-temporal parameters.

Introduction

Creation of conditions for appearing and gradual condensation of fine forces' flows, of energy flows, which feed mind and vital body is a peculiarity of oriental health related systems. Training of ligament structures results in creation of holistic dense inner structure, along which energy flow can be directed. There happens combining of fine and dense, sift and hard and the state – soft body, capable to firmly directed forces, appears [**Ошибка! Источник ссылки не найден.**-4]. That is why, oriental system trains not only external forms of movement but also its internal structure (by constant flow "Tsi") in contrast to western health related systems, where only external form of movements dominates, without inner understanding of actions.

Oriental health related systems are based on three inter-influencing levels – body, energy (senses) and spirit (thought and consciousness) [5-7]. At first level there is realized control of inner forces (substance Tszin); at the second – ability to concentrate attention and control of energy flow (Tsi- energy vibrations); at third level – awakening of consciousness and control of consciousness (substance Shegn), with it external and internal actions were fulfilled under control of mind [8-10].

Just on the second stage interconnection with psycho-motor abilities is realized because energy "Tsi" is connected with senses and perception of vibrations' flows, which pass through body in all directions and curl around centers in special body positions and movements of different coordination.

Psycho motor sphere of a person is a complex functional system, consisting of sensor, motor and cognitive-mental sub-systems of control over complex motion functioning that is in compliance with structure of functional system, The structure of functional system includes five interconnected blocks: afferent synthesis; taking of decision; forming of program of action; fulfillment of action and receiving of result (acceptor of action's result); feedback (information about results of performed action) [11, 12]. That is why it is logical to assume that psycho-motor abilities are the core of motion-coordination abilities, positioning themselves as their cognitive-motor component, which includes sensor-motor, perceptive, intellectual and neuro-dynamic states, realizing both on arbitrary and on controlled levels of self control and self regulation of movements.

Studying of psycho-motor human abilities, which can influence on indicators of coordinated movements' accuracy is of great theoretical and applied importance. In this connection it is quite logical that researchers pay attention to searching of interconnections between heterogeneous (elementary and complex) indicators of psycho-motor act and accuracy indicators of space-time movements' parameters, which relate both to leading (C_1, C_2, D), and to background levels of movements' construction [13].

As a result of many years' experimental researches it was determined that between separate indicators of different motion (conditional and coordination) abilities and separate psycho-motor functions (sensor-motor, proprioreceptive and perceptive-intellectual) there are no confident, positive correlations in great number of cases [14].

In opinion of V.I. Liakh, correlation structure of psycho-motor components is very specific and depends on many factors (age, profession, sport qualification, sex, environmental conditions and etc.) and with it, with age confidence of correlation links between indicators of psychic and motion abilities reduces [14].

Depending on the fact if there exists or not interconnection between separate components of holistic psychic and physical structure, selection of means for their development is top be realized. Presence of strong connections implies using of exercises of integrated influence and on the contrary: their absence implies searching of means of directed (address) influence.

As far as works of our predecessors showed that analysis of correlation interconnections in different age periods and in different contingents are far from being synonymous by their indicators of psycho-motor abilities and different special coordination abilities then the problem of researching of psycho motor sphere and its influence on

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procedural and final accuracy of movements is rather urgent, meaning revelation of influence of oriental health related systems on the regarded abilities.

Purpose, tasks of the work, material and methods

The purpose of the work is studying of inter-influence of psycho-motor abilities on accordance in controlling of space-time parameters of procedural and final accuracy of movements with complex motion structure.

The tasks of the research were to determine correlation interconnection between psycho-motor abilities and space-time parameters of movements' procedural and final accuracy of oriental health related systems' trainees.

The methods and organization of the research. The researches were conducted by author's program with direct assistance of instructors of physical culture theory and methodic department of Byelorussia state pedagogic university, named after M. Tank in period from September to November 2013. The research covered persons (n=30), having experience in oriental health related systems (Tsi-gun, U-shu and Thai Tsi Tsuan).

In the process of the research we used the following methods: analysis and generalization of literature sources; testing of psycho-motor abilities with the help of complex computer psycho-diagnostic program «Effect on Studio 2007» [15]. The battery of tests included the following tests (with calculation of 15 indicators):

– ***Sensor-motor responses:*** *simple sensor-motor response* – response to quick change of color (10 attempts); *simple ideo-motor response* – response to sound irritator (10 attempts); *complex visual-motor response* – response to one color (yellow) from three variants; *response to moving object* – accuracy of sensor-motor response to moving object.

– ***Psychic-cognitive processes:*** *re-directing and distribution of attention "Red and black table"* - it is necessary to close 49 figures on screen for quickness (25 red in order of increasing and 24 black in order of recessing); *volume of attentions* – remembering of quantity and location of emerging objects and pointing at them just after emerging of clean card; *stability of sensor attention* – during 3 minutes concentrate attention on appearing of even and odd figures (with even figures press "arrow to the right", with odd figures – "arrow to the left"; *stability of attention with deficit of time* – during 1 minute follow with mind 10 routes and determine their place at finish.

– ***Functional state of nervous-muscular system:*** *tapping-test* – valuation of quickness (maximal frequency of movements), stability of motion system and type of nervous system; *accuracy of time perceiving* – stopping of time interval with object's moving at equal speed.

For determination of procedural and final accuracy we used method of video-detecting and digital transposition of movements «S Motion» [16]. The battery of tasks included such tests as the following:

– ***Procedural accuracy (PA)*** was evaluated in complexly coordinated segment motions of right and left arms" right and left legs; body. *In initial position* – main stance (m.s.), electronic marker was fixed on every arm, leg and body of the tested; this marker could travel in frontal direction in respect to monitor with every movement of the tested. By signal the tested fulfilled movements with accurate copying of trajectory of cursor on monitor. In the process of movements it was necessary to correlate as close to the center as possible electronic marker with cursor. We calculated: PA min (mm) – mean minimal distance from electronic marker to center by cursor; PA max (mm) – mean maximal distance from electronic marker to cursor center; time of procedural accuracy (sec.) – was the time of electronic marker's being in circumference of moving cursor.

– ***Final accuracy (FA)*** was evaluated in complexly coordinated segment motions of right and left arms, right and left legs, body. *In initial position* – main stance (m.s.), electronic marker was fixed on every arm, leg and body of the tested; this marker could travel in frontal direction in respect to monitor with every movement of the tested. By signal the tested should quickly respond to sudden appearance of cursor on screen of monitor. In process of responding it was necessary to correlate (point electronic marker on suddenly appearing on monitor cursor) and hit in its center. We calculated: FA (n) – quantity of electronic marker's missing; time FA (sec) – time of test's fulfillment with hits in target of cursor.

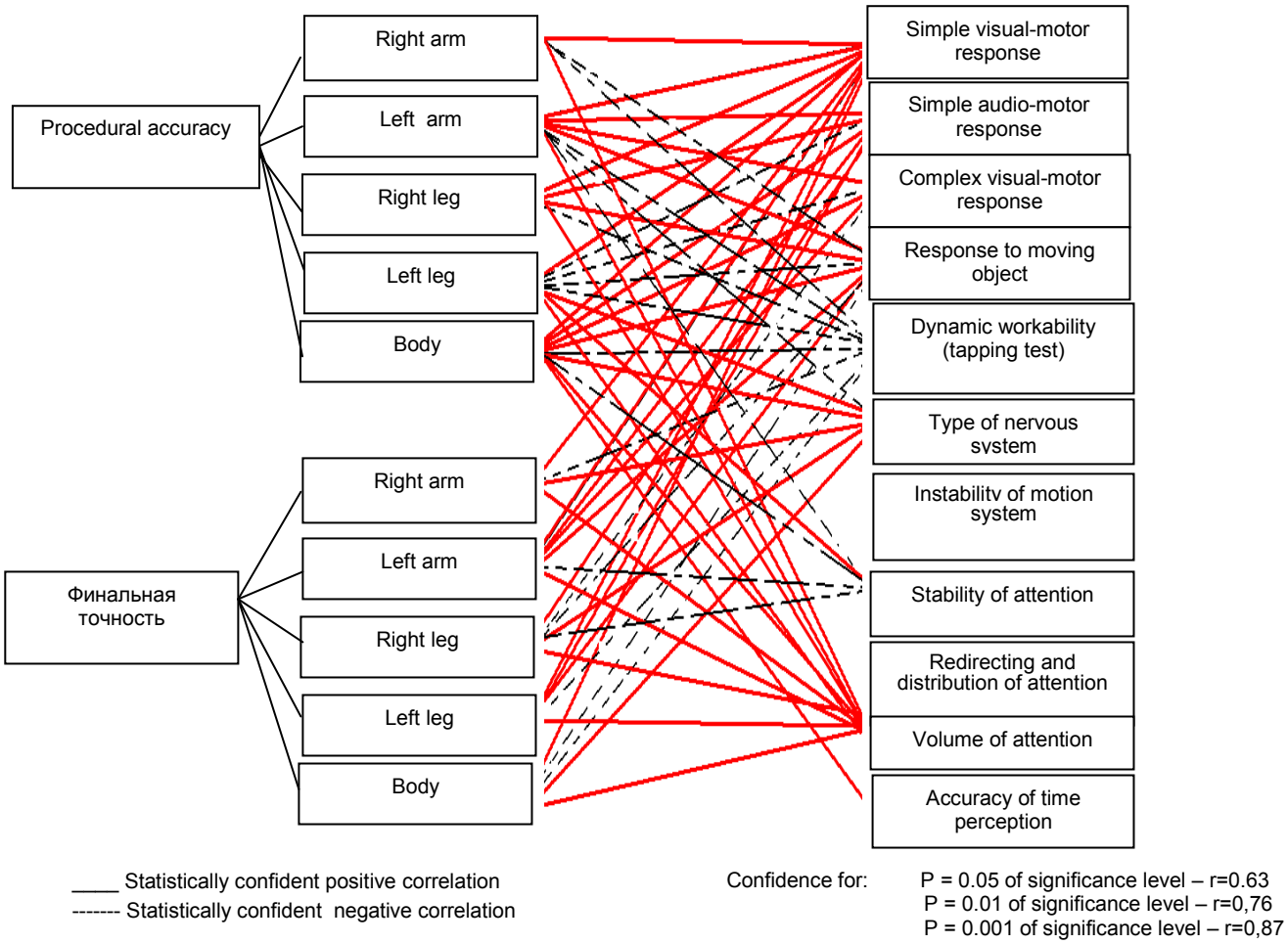

Fig.1. Correlation structure of psycho-motor abilities and space-time parameters of procedural and final accuracy of experiment's participants

Results of the researches

The conducted correlation analysis of psycho-motor abilities' indicators and space-time parameters of procedural and final accuracy resulted in determination that from 375 of calculated correlations between 40 tested indicators there were found 80 confident connections (positive n=59 (15.7%) (r= from 0.63 to 0.92) and negative n=21 (5.6%) (r= from -0.63 to -0.89)) that makes 21.3% from all studied connections (see fig.1).

Analysis of correlation inter-connections between tested indicators permitted to determine significant quantity of confident connections between tested indicators as well as consolidation of interconnections between heterogeneous components. Main leading integrators from the side of psycho-motor sphere were simple visual-motor and ideo-motor responses, response to moving object, type of nervous system, volume of attention. From the side of participant, accordingly procedural accuracy (body, left arm, right and left legs) and final accuracy (left and right arms, left and right legs, body).

In this connection it is logic to assume that with controlling of complexly coordinated accurate movements, persons, practicing oriental health related systems of physical culture have activated mechanisms of CNS, influencing on psycho-motor processes and permitting to control of "Tsi" energy, which is connected with sensing and perceiving of vibrations' flows, passing through body in all directions. However, we did not find any connections between ability to redirect and distribute attention and instability of motion system. This fact permits to affirm that in the process of fulfillment of exercises' complex, used in oriental health related systems one shall have constant stability and concentration of attention at substance – Shegn that permits not to spread energy "Tsi" but to direct it in required direction for controlling of internal forces (Tszin).

Conclusions

1. Generalizing the above presented analysis it should be noted that correlation structure of the tested indicators of oriental health related systems has some peculiarities, both in structural and content components. The determined confident connections (positive n = 59, with r = from 0.63 to 0.92 and negative n = 21, with r = from -0.63 to -0.89) prove peculiarities of influence of trainings by oriental system on ability to coordinated control of differently coordinated movements at the cost of three inter-influencing levels – substance "Tszin", "Tsdi" and "Shegn". Just high level of ability to demonstrate internal efforts, ability to concentrate attention and direct energy flow and mind, influence on level of psycho-motor sphere's development and targeted accuracy of movements' space-time parameters.

2. Specific features of correlation structure of psycho motor abilities and parameters of movements accuracy of persons, who practice oriental health related systems shall permit to purposefully select means and methods of combined influence on different homogeneous and heterogeneous abilities on scientific base that will rise the level of accumulated external and internal human potential, which determine effectiveness of controlling of highly accurate complexly coordinated movements.

The further researches imply determination of structural-content component of psycho-physical potential in bio-mechanical structure of movements of persons, who practice oriental health related physical culture systems.

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RATIONAL ORGANIZATION OF TRAINING A GROUP OF PHYSICAL REHABILITATION ON THE INITIAL STAGE OF TRAINING IN UNIVERSITIES

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Annotation. *Purpose:* to justify a rational approach to organization of group sessions of physical rehabilitation at the initial stage of training in universities. *Material:* 217 students of groups of physical rehabilitation KhNEU named Simeon Kuznets were involved in the experiment. *Results:* the organizational difficulties of physical education classes in groups of physical rehabilitation at the beginning of the school year were examined. An effective way of determination of the level of students' functional state was identified. The effectiveness of the formation of groups of physical rehabilitation at the initial stage of training was experimentally verified on base on the definition of students' functional state and the content of this stage of training was determined. A reduction of the level of students' functional state of physical rehabilitation groups at the beginning of studying (I semester) was stated. *Conclusions:* the proposed changes in the organization of students with disabilities in health status in the group by the level of functional status and the content of studying allowing students to preserve the functionality of the initial stage of studying.
Keywords: *group, physical, rehabilitation, level, functional, status.*

Introduction

Today the questions regarding the intensification of production stand sharply, requirements for the quality of specialists training in higher educational institutions, claims for specific types of professional activities and demands on the health of future employee are enhancing.

In modern conditions place and functional role of man in today manufacturing process changes. It requires a mind-body training, because the decrease in the proportion of simple physical labor doesn't remove the requirements for psychophysical training of students, but changes its structure and proposes additional requirements for the formation of active mental and physical abilities by using a focused use of physical exercise [5, 7].

It requires an active search for new forms and methods of physical education, that would help improve the training of future professionals in higher educational institutions [3, 6, 14].

Today in Ukraine developed a critical situation directly related to the health of the population. This is primarily due to the crisis in the national system of physical education of the population that doesn't meet modern requirements and international standards of physical fitness [12].

Organization of physical education in high school isn't conducive to the effective reduction of the deficit of students' motive activity, which is one of the reasons for all sorts of deviations in their health. It was established that during the period of study in higher educational institutions the number of preparatory and special medical groups increases from 5.36% in the first year to 14.46% at senior courses [3, 5]. Most university graduates aren't able to work efficiently with the performance required by modern production [8].

It isn't possible to change the situation due to the country's existing traditional health care system radically, because of lack of funds for its development. At the same time in other countries attach great importance to development of physical training, physical education and sports, considering them as the most cost-effective and efficient means of preventing disease, strengthening the gene pool and solving other social problems [11, 12, 15]. Therefore, before the universities of Ukraine becomes actual issue for further improvement of all elements of physical education and timely response to potential changes in the direction, content and methods of physical training of all categories of people.

Work carried out by plan research department of physical education and sport Kharkiv National University of Economics named Simeon Kuznets "The organization of physical education classes in high school of economic profile".

Purpose, tasks of the work, material and methods

Aim – justification of a rational approach to organization of lessons of group physical rehabilitation at the initial stage of learning in high school.

To achieve this aim, in the work raised and solved the following problem:

1. Set the reasons that complicate holding classes in groups of physical rehabilitation at the initial stage of learning the traditional system of organization.
2. To substantiate approaches to organization of lessons of group physical rehabilitation at the initial stage of learning based on the definition of the functional state of students and learning content.

Object of study – the process of physical education with groups of physical rehabilitation.

Subject of study – the organization of lessons with groups of physical rehabilitation.

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To solve the tasks used the *following methods*: analysis and synthesis of scientific information on the study, teaching and documentation; testing students of groups physical rehabilitation, methods of mathematical processing of the results.

Results of the researches

In Ukraine, physical education carried out in all schools by conducting obligatory lessons according to the curriculum. Physical education of youth in Ukraine is an essential part of the education system [6, 13].

Physical education in higher educational institutions was declared a compulsory subject in the Modern Social System of an educational cycle according to the state educational standard, that provides profiled and physical fitness and it is an essential component of holistic personal development, health promotion factor [13]. Physical training classes held with students of full I-IV courses as part of the educational process; physical training classes in study groups held according to the curriculum for educational institutions of Ukraine III - IV accreditation levels. Classes in educational groups held 2 times a week for 2 hours. The purpose of physical training in universities is to develop physical culture of student as systemic and integrated personality, an integral component of general culture of the future specialist who can implement it in academic, social and professional activities and family [7].

According to the "Regulations on medical control for physical education of population" and to a differentiated approach to physical education classes , all students pass medical examination every year in a polyclinic and, depending on status of health and functional training, classes are divided into 3 groups: primary, preparatory and special medical.

Students, who have abnormalities in health, usually a chronic disease or damage of musculoskeletal system, involved in a special medical groups. For practical classes, students are sent to the training group, which usually consists of 8 - 12 people.

According to the Ministry of Education and Science of Ukraine № 4 dated 11.01.2006 "On approval of the organization of physical education and mass sports in higher education institutions" educational division of the department physical education of university, which covers students of special training department (special medical group), there is a section in physical rehabilitation [2, 8, 13].

There are several approaches to the distribution of students who are engaged in a physical rehabilitation groups into subgroups: the basis of age, sex, type of disease, according to nosology, belonging to the group, course, for functional status, etc. The most common and effective is considered the principle of forming groups for lessons according to nosology [1, 4, 13].

In practice, teachers of physical rehabilitation groups face with organizational inconvenience that can not effectively use the traditional organization of lessons with groups of physical rehabilitation at an early stage (beginning of the year). These are:

– dividing students into groups according to nosological characteristics is made on the recommendation of a doctor on medical examination, and these results are communicated to teachers in October;

– working educational program does not include activities and time to determine the physical condition of students with disabilities in health;

– contents of the first semester of the work program doesn't meet the purpose which declares and the specific aims of the semantic module training program, because it focused on the distribution of groups on nosology component.

These disadvantages are amplified by the fact that the number of students who have several diseases with different nosological groups increased.

To verify this during 3 academic years in groups of physical rehabilitation in 197 students were identified indicators of physical qualities (Tabl. 1) and the level of functional status (Tabl. 2) at the beginning of training and at the end of the first semester.

Table 1

Test results of physical characteristics of students (in points) in physical rehabilitation groups (n = 197) during the 2010 - 2013 academic years

Physical quality	The beginning of training			The end of the first semester			t	p
	M^1	$\pm m^1$	S^1	M^2	$\pm m^2$	S^2		
Flexibility	2,67	0,1	1,43	2,81	0,1	1,36	1,0	>0,05
Speed	3,3	0,06	0,8	3,3	0,06	0,83	0,05	>0,05
Force	2,48	0,05	0,7	2,34	0,09	1,19	1,5	>0,05
Agility	2,65	0,07	1,01	2,5	0,09	1,2	1,37	>0,05
Endurance	2,86	0,09	1,24	2,95	0,1	1,38	0,74	>0,05

Table 2

The results of determination of the students' functional status of groups physical rehabilitation during 2010 - 2013 academic years

The level of physical status	The beginning of training			The end of the first semester			t	p
	M^1	$\pm m^1$	S^1	M^2	$\pm m^2$	S^2		
Test score physical status (in points) (n = 56)	61,07	3,03	22,67	51,1	2,62	19,63	2,77	<0,05
Index of physical status by E.A. Pirogova (in arb. un.) (n = 75)	0,49	0,02	0,2	0,39	0,02	0,17	3,63	<0,05
Functional sample (sec) (n = 66)	210,04	9,28	75,39	291,28	9,53	77,39	6,44	<0,05

To determine the indicators of physical qualities used tests with no contraindications for most nosological groups (flexibility - torso forward from a seated position; speed - torso forward from a seated position; speed - "relay" test of arm compression on line, that falls; force - bending and straightening the arms in the emphasis lying on the knees; agility - to send the ball with both hands from the chest; endurance - walking 2-3 km). Test results are translated into points on the scorecard.

State level of organism functional systems characterizes its functional and morphological features. The level of the functional state of students was identified as one of the three most common ways to assess the level of physical state:

1. Physical Evaluation Testing [13]: includes 7 indicators, each of which is rated a certain number of points. Total points reflect the level of physical condition.

2. Physical Fitness Index (IFS) by E.A. Pirogova [9]. Based on the indicators received in rest developed a formula for predicting the level of physical state:

IFS = W max / (350 - 2.6 * B + 0.21 * P)

where W max = 700 - 3 * HR - 2.5 * MAP average - 2.7 * B + 0.28 * M;

W max - maximum power (W);

HR - heart rate (for 1 min);

MAP average - mean arterial pressure is determined by the formula:

MAP average = (MAP s - MAP d)/3 + MAP d;

B - age in years, M - weight (kg), P - height (sm).

3. Functional test with 10 squats [10, 11, 13]. Tight functional relationship between the cardiovascular and respiratory systems, on the one hand, with the physical performance of the body, on the other hand, allow use a number of blood circulation indicators and breathing in conditions of stress these systems for assessing adaptation to muscular activity. These tests most valuable in relation to diagnostic PET of special groups of students.

The analysis of the test results of students in physical rehabilitation groups (see tabl. 1) shows that some indicators of physical properties have improved (flexibility, endurance), some - not remained variables (speed), and some - worsened (strength, agility), but these changes aren't statistically significant (p>0,05).

The results of determination of the functional state of students in physical rehabilitation groups decreased (see tabl. 2). These changes have statistically significant indicators (p <0,05).

Despite the variety of many different ways to assess the functional status of human development and physical health technologies, single point of professionals' view of unified methodology to nosological diagnosis and correction of functional disorders has not been reached yet.

The authors compared three most common ways to assess the level of functional status (Physical Evaluation Testing, Physical Fitness Index (IFS) by E.A. Pirogova, a functional test of 10 squats). Analysis of the results showed a high correlation between parameters that received in three ways (0,956, -0,925, -0,945) (Tabl. 3). Due to information content, validity, reliability and the ability to use standard computer programs for processing, ease of use and little time spent in conducting, we offer to teachers of physical education departments to apply the Physical Fitness Index (IFS) by E.A. Pirogova.

Table 3

The correlation coefficient of results of determination of the students' functional state in three ways

№	Method for determination of the functional state	1	2	3
1	PET	-		
2	IFS by E.A. Pirogova	0,956	-	
3	Functional test	-0,945	-0,925	-

For the classes rational organization of groups of physical rehabilitation at an early stage of learning at universities was proposed approach based on the distribution of students in terms of functional status and systematizing content of content modules to meet specific purposes of the first semester.

The objectives of the first semester students are adapting to the learning environment, familiarity with the organization and conduct of training in physical rehabilitation groups, mastery of basic general developmental exercises that are recommended for all groups of diseases.

It was formed the experimental group, into which 20 first-year students, including representatives of major nosological groups were selected. Students were engaged in a group of physical rehabilitation, where physical education classes were conducted by one teacher for one program during the first semester.

During the testing of physical qualities indicators have been received the following data (Tabl. 4).

Table 4

Test results of physical qualities indicators of students (in points) groups of physical rehabilitation (n = 20) 2013-2014 year of study

Physical qualities	Before experiment			After experiment			t	p
	M^1	$\pm m^1$	S^1	M^2	$\pm m^2$	S^2		
Flexibility	2,55	0,84	1,79	2,9	0,79	1,68	0,16	>0,05
Speed	3,5	0,47	1,0	3,65	0,46	0,99	0,09	>0,05
Force	2,6	0,72	1,54	2,8	0,61	1,31	0,11	>0,05
Agility	2,8	0,55	1,18	3,2	0,6	1,28	0,18	>0,05
Endurance	3,1	0,66	1,41	3,2	0,67	1,44	0,07	>0,05

The level of functional status (Tabl. 5) at the beginning of study and at the end of the first semester is determined by an index of physical condition (IFS) by E.A. Pirogova [9].

Table 5

The results of determination of the functional state of students groups of physical rehabilitation (n = 20) 2013-2014 year of study

The level of physical state	At the beginning of study			The end of the first semester.			t	p
	M^1	$\pm m^1$	S^1	M^2	$\pm m^2$	S^2		
IFS by E.A. Pirogova (in arb. un.)	0,55	0,05	0,24	0,56	0,04	0,17	0,14	>0,05

The analysis of the test results of students in groups of physical rehabilitation (see tabl. 4) shows that all indicators of physical properties improved, but these changes are not statistically significant ($p > 0,05$).

Organization of physical education classes in groups of physical rehabilitation at an early stage of learning and training content systematization allowed to maintain the level of the functional state of students groups of physical rehabilitation constant (see tabl. 5).

Comparison IFS of students in groups of physical rehabilitation at the end of the first semester for the last 3 academic years with IFS students in 2013-2014 academic years has statistically significant difference ($t = 3,86$; $p < 0,001$) and suggests a rational organization of physical education classes in these groups at an early stage of learning.

Conclusions.

1. Deterioration was found ($p < 0,05$) of the functional status of students in groups of physical rehabilitation at an early stage of learning (the first semester). The reasons for this are: a temporary lack of information on the distribution according to students in groups to nosological characteristics; content discrepancy of study at the first semester to aim.
2. Organization of students with disabilities in health in groups in terms of functional status and inclusion in the content of education topics that include determination of the level of mastering the basic general developmental exercise for all groups of diseases, helped to keep the functionality of the students at an early stage of learning.

Further investigation requiring new approaches in the organization of physical rehabilitation groups and clarify the content of labor training program for the next stages of learning.

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EXPRESS-METHOD OF SPORTSMEN'S PSYCHOLOGICAL TUNE-UP

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Annotation. *Purpose*: to elaborate express-method of autosuggestion for neurotic reactions relieving and sportsmen's psychological tune-up. *Material*: 20 senior dancers participated in the research. The research was held 2 times a week within 4 months. The procedures with specially selected physical exercises and autosuggestion influence before training in sports dances were applied in the experimental group guided by psychotherapeutist. Mechanism of the short-time abashment or stupefaction of the testee was taken as a basis. It was achieved by way of the sportsmen's attempt to determine quickly surfaces of the parts of the body in contact or concentration of attention on the feeling during physical exercise. *Results*: in the experimental group it was necessary 10-20 sessions for neurotic reactions relieving. Psychological make-up for training was achieved within 1-5 sessions. Short-time improvement of the psychological condition in the control group arrived only after 30-60 minutes of training in sports ball dances. *Conclusion*: using the elaborated express-method of suggestion it's possible to effect psychological tune-up of sportsmen for training sessions and competitions. The method of autosuggestion elaborated by us is more effective than impact of the dance-motion therapy upon the organism. It is possible to use the offered method for sportsmen's neurotic reactions relieving and for make-up for training sessions and competition.

Keywords: autosuggestion, sportsmen, psychological tune-up, neurotic reactions.

Introduction

Ascendance on sport pedestal starts from trainings. High quality trainings depend on psychological adjustment of sportsman to fulfillment of physical exercises.

It is known that significant physical and nervous-mental loads can result in sportsman's neurotic responses. Pre-pathological state reduces efficiency of sportsmen's functioning, S. Fonty and G. Mazy (1965).

B.M. Sherpis specified 4 variants of sportsmen's neurotic responses:

1. "Troublesome expectation" for competitions, when sportsmen strives to isolate himself, answers amiss, is absent minded and fussy.

2. "Satiation". Sportsmen is bored with trainings and competitions; he loses activity, becomes atonic and indifferent.

3. Hypochondria. Functional disorders.

4. "Remonstrance".

Releasing of sportsman's neurotic responses is urgent because irritability, disorders of sleep as well as frequent disorders of nervous system do not facilitate successful increment of sport results [3,7].

Method of instant hypnosis for treatment of neurotic responses is well known. Disadvantage of this method is the fact that not everybody is instantly hypnotizable [6,9].

Ancient oriental method, called "koans", for improvement of health and obtaining of enlightenment, when solution becomes clear, is also known [5]. Koan is a short tale, question, dialogue, usually having no logic basis, often containing paradoxes, which can be understood only intuitively. Brain shall work on determination of sense of koan. Paradoxical response of brain to paradoxical question is caused. For example "how clap with one hand will be heard. The purpose of koans – is to give certain psychological impulse to disciple for achieving of enlightenment or understanding of discipline, but koans are not effective because they require numerous trainings with the help of meditations.

Also the method with application of the so-called «mudras" for improvement of organism's functional state, is known when it is considered that owing to certain contacting of fingers there happens energy exchange between meridians, though it has been proved that such meridians do not exist as anatomical formations. System of meridians is convenient for acupuncture treatment [2]. Faith in energy exchange brings certain psychological improvement of an individual. Improvement also comes owing to influencing on biologically active points. In Sanskrit "mudra" means "giving joy", "seal". Mudra is a special position of fingers in compliance with certain rules. Disadvantage of this method is that treatment effect can be obtained only in some weeks. Moreover one mudra shall be practiced up to 30 minutes.

It is known that in the course of ha-tha yoga exercises, Yoga practitioner concentrates attention on the exercise and sensations, caused by fulfilled exercise. But nor everybody is able to fulfill Yoga exercise owing top absence of proper flexibility and, besides, Yoga practice takes a lot of time: months and years are required to receive health related effect [8].

Express-methods, offered by Kh.M. Aliyev on the base of ideo-motor act require certain conditions; for example it is easy to practice them in transport, on lecture and so on. [1].

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All these facts gave foundations for us to work out new express method of suggestive influence on sportsmen.

The work has been fulfilled in compliance with SRW of School of Higher sportsmanship.

Purpose, tasks of the work, material and methods

The purpose of the research is to develop express-method of auto-suggestion for releasing of neurotic responses and facilitating of proper sportsman's psychological condition.

The object of the research: people, training sport ball dancing, category – "seniors".

The subject of the research: the process of influencing on sport ball dancers with psychological method.

The tasks of the research:

1. Determination of influence of the worked out express-method of auto-suggestion on sportsmen with pre-pathological neurotic responses.

2. Demonstration of advantage of the worked out method in comparison with dancing-motion therapy in influencing of sportsmen's mentality.

The methods of the research: analysis of scientific-research literature, pedagogic observation and medical examinations, methods of psychological influence.

Organization of the research:

In the research 20 dancers ("seniors" category – 10 persons – experimental group and 10 persons – control group) with neurotic symptoms participated. The research was conducted in School of higher sportsmanship of Nikolayev, twice a week during 4 months.

In experimental group we applied procedures with specially selected physical exercises and auto suggestive influence before sport ball dances trainings under guidance of psycho-therapist., After elimination of neurotic symptoms sportsmen were recommended to practice prophylaxis series of procedures for some time.

In control group we conducted only sport ball dances trainings, twice a week, 2 hours every training.

The basis of new express-method was a mechanism of short term embarrassment of the tested, which was achieved by his attempts to quickly determine contacting body surfaces. At this moment it was necessary to pronounce short suggestion, for example: "I am quiet". Formulas of suggestion shall be pronounced aloud or silently several times until progress becomes.

In examples with crossed finger it was necessary to determine sides of contacting fingers' surfaces and before correct answer is found suggestion shall be pronounced. The same technique is used in other examples, excluding those, in which "brain stun" is used, when brain is "embarrassed" in connection, for instance, with arbitrary breathing pause, dangerous muscles stretching.

In such cases attention is forcedly concentrated on sensations, connected with the procedure. Such embarrassment of brain facilitates suggestion.

In suggestion the following exercise were applied:

1. Crossing of fingers.
2. Connecting of hands behind back.
3. Twisting of backbone clockwise or counterclockwise.
4. Crossing of arms on breast.
5. Torso forward bent to floor.
6. Deep inhale with pause.
7. Full inhale with pause (suggestion at inhale and exhale, when slight tension becomes).
8. Pulling own hairs.
9. Maximal stretching of tongue out of mouth.
10. Bugging out of eyes.
11. Pulling in of cheeks.
12. Positioning of tongue in not physiological position (rolling, pressing to roof).
13. Pulling in of belly.
14. Protruding of belly.
15. Keeping water in mouth.
16. Swelling of air.
17. Pinching of own body.
18. Visualization of just seen with closed eyes.
19. Opening of mouth widely.
20. Curling up of body.
21. Taking of unbalanced position. For example sitting on a chair with bending back to dangerous position. Sligh psycho-emotional tension shall be used as background for suggestion.

Every separate exercise shall be repeated for 5 times; if neurotic symptom reduced (but not eliminated) quantity of repetitions shall be increased. One course shall include 10-20 sessions; every session can consist of 5-10 repetitions; session can be repeated several times a day.

Example 1. Tested T felt weakness and indolence before training. With the help of exercise 1 he suggested: “I am strong”. Training was successful and cheerful.

Example 2. Tested Sh. had no wish to train. Using exercise 4 he suggested: “I want to train”. After several repetitions he started trainings in good mood.

Example 3. Tested S. felt uncertainty. She used exercise 6 and suggestion “I believe in myself”, “I can dance well”. Quality of her dancing significantly improved.

Example 4. Tested K felt anxiety, worry. Crossing of 2^{nd} and 3^{rd} fingers she pronounced: “I am calm”. After 3 repetitions she became quiet.

Example 5. Tested T felt headache. Crossing 2^{nd} and 3^{rd} fingers and 4^{th} and 5^{th} fingers several times reduced headache.

Example 6. Tested K. felt general weakness. He applied exercise 7 with suggestion: “I feel myself excellent”. After 2 procedures his self feeling improved.

Example 7. Tested S. had sleep disorder. In lying position, using exercise 10 she suggested “I am sleeping”. She became asleep in several minutes.

Results of the research

Experimental group proved effectiveness of the worked out express-method. For releasing of neurotic symptoms it was required to conduct 10-20 sessions. The obtained result preserved for long time; in case if symptoms appear again we conducted repeated sessions with the same or other exercise.

In experimental group psychological adjustment to training was achieved after 1-5 sessions.

In control group we registered positive result, connected with psycho-emotional influence of dance, but it was not durable and after several hours neurotic symptoms returned again.

Short term improvement appeared only after 30-60 minutes of sport ball dances training.

A person with closed eye is able with physiological position of hands to determine sides of fingers contact, but with crossing of them this task becomes a little difficult, if to solve it in short period of time – 2-3 seconds; there appears a kind of “brain embarrassment”, which is required for suggestion, for example “I fell better” or “Pain vanishes” with certain effect.

Advantage of offered by us method is that treatment if carried out by sportsman independently and can be practiced in any situation during 1-3 minutes. The task becomes more difficult, for example if to cross 4 fingers on one hand or 8 on two hands simultaneously. In other exercise positive effect is achieved by “brain stun” techniques.

One can choose only one exercise from list of offered by us exercises and use it, when required. For this purpose one shall strive to feel contacting parts of body or stretching muscles and simultaneously pronounce suggestion (suggestion shall be pronounced several seconds after felling of body sensations).

In our method we mean not solution of some problem, connected with adequate answers to difficult questions, with state of enlightenment, like it is stipulated by koans’ practicing; we mean only strive for calmness, psycho-emotional balance, restoration of physical condition, sleeping normalization, releasing of pain and irritability, psychological adjustment of dancers to trainings or preparation for competitions. In our method we consciously distract brain from problem for making suggestion. When brain actively solves the set task, it is not able to analyze information of suggestion.

Thus, any not physiological position of body and its parts can be used for successful suggestions, for example when practicing ha-tha yoga exercises [8].

Sudden slight push, pinch and etc can be used. Weak irritators, sometimes, are stronger, resulting in paradoxical responses. Influence of whisper in the process of suggestion is well known.

Example of calming of a patient with pinch is well known. Once, a man of average age tried to come to cash desk out of turn. People did not give him way. He outraged. Weak pressing of his hand skin caused paradoxical response of full obedience. With the help of two fingers, tenderly pressing his hand he was put out of turn, soft, calm and blemished.

Crossing of fingers distracts brain for solution of task which parts of fingers are in contact. Stretching exercises are accompanied by concentration of attention on sensations of stretching and on fulfillment of exercise, not to bring it to dangerous level.

We also attract attention to the fact that any haste gives no positive result.

In dance a person is distracted from painful state and releases psycho-emotional tension, feels positive emotions, caused by music and pleasant communication with partner, but, nevertheless, dance can not be related to express-method [4,10, 11-15].

In the base of developed by us method there is a mechanism, which is observed in hypnotizing, with effect of patient’s short-term embarrassment. Instant hypnosis can be caused by putting hands on patient’s shoulders, swinging him to and fro and pronouncing shortly “Sleep!”. V.l. Levi described method of hypnotizing of crocodile, when hypnotizer shall quickly jump on crocodile’s back. It is possible to hypnotize a hen if to quickly turn it on back.

By inhibiting human attention it is possible to suggest by TV, radio or telephone. For this purpose his attention shall be distracted with the help of concert translation and so on. It can be compared with TV commercials, in which suggestion is provided when attention is distracted on kitchen talks, play with a child and so on. You know interrupting of film by commercials. Often you come home being tired, you sit on sofa, relax and are in half dream state. This state facilitates suggestion. To avoid such kinds of suggestions one should be alert and analyze the received information.

Distraction of attention from main problem is used by hypnotizers, when they cause hypnotic state of a patient and command to feel heaviness in head, arms, legs, followed by sense of lightness, warm and etc., followed by suggestions.

Folk healers use words of praying, pronounced in low voice with certain ritual, burnt candles, icons and other attributes, facilitating distraction of attention from troublesome for patient problems with following suggestions.

Extra-senses tie attention to feeling in patient's body with hand passes, which are nearly the same as passes of a hypnotizer.

Conclusions:

1. With the help of our express-method of auto-suggestion it is possible to realize psychological training of dancers to trainings and competitions.

2. The developed by us express-method of auto-suggestion is more effective than influence of dance therapy on organism.

3. The offered method can be recommended to sportsmen for releasing of pre-pathological neurotic symptoms.

The further researches will be conducted for determination of this methodic effectiveness in other kinds of sports.

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TRAINING-TEST MODULE IN THE SYSTEM OF PEDAGOGICAL CONTROL OF PHYSICAL FITNESS IN LOWER GRADES

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Annotation. *Purpose*: to substantiate model characteristics of physical fitness of elementary school students of secondary schools through the introduction of training and test module in the pedagogical control. *Material*: the study involved 320 boys and 278 girls in grades 1-4 schools in Kharkov number number 57, 112, 166. *Results*: the level of physical fitness of elementary school students with available motor tests and the results are compared between the experimental data and control classes. Found that the introduction of educational test module in the process of physical education in the experimental classes has enhanced the level of physical fitness. In the experimental classes compared to the control classes, there was an increase of indicators (boys 22.2%, girls 24.6%). *Conclusions*: the introduction of educational test module in the pedagogical control for primary school pupils, will improve the physical fitness of children in the experimental classes, compared with controls, as well as to determine the averages on basic motor tests that can be used as a model characteristics of physical fitness.
Keywords: training and test module, model characteristics, pedagogical supervision, motor tests, physical fitness.

Introduction

One of important problems of modern education is increasing of its quality [1, 2, 3, 7, 8]. A component of this problem and condition of education's quality improvement is development of objective means and criteria for evaluation of disciples' progress. In modern conditions objective and systemic evaluation of junior school pupils' physical fitness is especially urgent. It is stressed both in official document [On approval of criteria for evaluation of junior school pupils' academic progress: order of Ministry of education and science of Ukraine № 755 dt. 20.08.2008 // Official site of Supreme Council of Ukraine: http: // zakon 1.rada.gov/ua/cgibin/1aws/main.cgi] and in researches of scientists (T.S, Bondar [1], Yu.V. Vaskov [3], G. Krotov [6], T.Yu. Krutsevych [7, 8], A.A. Predyk [9] et al.). The urgency of the mentioned problems is paid attention to also in foreign works [12-15]. Complexity of this problem is that curriculum of physical culture for pupils of 1^{st}- 4^{th} forms [11] determines: "Results achieved by pupils in academic year, in the course of determination of their reserve potentials **are not to be evaluated in points".** But, as it is stressed in this program, these results shall be bench marks for further perfection of pupils' physical fitness and server for teacher to make corrections for effective use of different forms and methods of training.

For objective evaluation of academic (**reserve** by program) potentials of junior forms' pupils it is necessary to have scientifically grounded bench marks of development of main motion skills. Such bench marks can be model characteristics of pupils' physical fitness. For their working out it is necessary to carry out research of development of 1-4 pupils' main motion skills and dynamic of this process in the process of studying at primary school. To carry out such research we offer to introduce academic-testing module in school curriculum; this module shall include stages of preparation and realization of accessible for pupils, motion tests as well as their detail analysis in comparison with requirements of program.

The work has been fulfilled in compliance with plan of SRW of Kharkiv humanitarian-pedagogic academy.

Purpose, tasks of the work, material and methods

The purpose of the research is scientific foundation of model characteristics of junior comprehensive school pupils' physical fitness.

Solution of this purpose was specified in the following *tasks*: determination of junior school pupils' physical fitness with the help of available tests; distribution of comprehensive school pupils – participants of experiments into control and experimental groups; fulfillment of experiment in experimental groups with the help of academic-testing module; comparison of indicators of experimental and control groups after experiment; determination of mean indicators of experimental groups pupils as model characteristics of physical fitness of 1^{st}-4^{th} forms pupils.

Main *methods of the research:* determination of pupils' physical fitness with the help of motion tests; determination of physical condition (height and weight); factor and correlation analysis; sociological questioning, methods of mathematical statistics.

Results of the research

One of means for determination of pupils' physical fitness is different tests. By dictionary "test" is interpreted and standard task for testing of mental development, physical abilities, will qualities and other psycho-physiological characteristics of a person. [Dictionary of foreign words. – M.: Russian language. – 1980. – pg.624].

Depending on field of researches K. Ingekamp [5] distinguishes such kinds of tests: tests of achievements, psycho-metric personality's tests, tests for school progress, tests for intellect and professional workability ad so on. Tests, in the base of which there are motion tasks, are called motion or motor ones (V.M. Zatsiorskiy [4]).

In physical education testing helps to solve a number of complex pedagogic tasks: determination of children's motion skills; comparing of different age and sex pupils' fitness; ensuring of objective control of pupils' training;

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determination of positive and negative influence of teaching methods; selection of pupils for certain kind of sports and so on.

Tests shall meet such criteria as validity, capacity, information character, accessibility, indifference, reliability and etc. Specifying of these criteria is not the task of our research, but every researcher, who fulfills measurements with the help of tests, shall be guided by them.

For realization of our tasks, in period from 2010 to 2011 we carried out pedagogic experiment on implementation of system of junior schoolchildren's physical fitness's testing in order to determine safe level of physical qualities' development. At first stage of experiment (stating) we formed control and experimental groups as well as mean indicators of physical fitness in these groups. At second stage of the experiment (forming) we implemented special, worked out by us, module, which, in its turn, consisted of stages of preparation and conducting of testing of 1^{st}-4^{th} forms pupils' physical fitness.

At third (comparative) stage we determined mean indicators of physical fitness in experimental and control groups, compared results and grounded model characteristics on the base of them. Pedagogic experiment was conducted on the base of comprehensive educational establishment No.57 (Kharkov, control group) and specialized school "Vertical" No.166, educational complex No.112 (Kharkov, experimental group).

At the beginning of experiment we determined results of standard test exercises, which were included into approximate complex testing of academic program "Physical culture" for 1^{st} -4^{th} forms (see tables 1-4). With it testing results were registered and calculated separately for girls and boys. In total 200 boys and 155 girls from experimental group and 120 boys and 123 girls from control groups took part.

Table 1

Mean indicators of physical fitness and physical condition of experimental group's boys

n=200	Height	Weight	30 meters run	6 minutes run	Torso forward bending	Chin ups	Shuttle run 4x9 m	Long jump from the spot
1 form (n=42)	121.6	23	7.960976	207.3171	3.609756	0	13.4878	113.1707
2form (n=77)	127.3	26.7	7.312821	363.4615	2.192308	4.65	12.35897	126.0256
3 form (n=48)	132.5	29.7	7.2125	412.5	3.916667	2.125	11.575	138.8333
4 form (n=33)	138.6	34.9	6.28	800	2,9	1.1	12.03	145.25

Table 2

Mean indicators of physical fitness and physical condition of experimental group's girl

n=155	Height	Weight	30 meters run	6 minutes run	Torso forward bending	Chin ups	Shuttle run 4x9 m	Long jump from the spot
1 form (n=39)	120.2	22.6	7.810526	206.3158	3.657895	12.18	13.49211	119.3421
2 form (n=46)	125.7	27.9	7.521277	324.4681	4.468085	15.38	12.59149	116.1915
3 form (n=34)	130.8	30.7	7.217647	426.4706	3.382353	10.23	12.01176	134.8235
4 form (n=36)	138.1	33.9	6.6	766.667	5.33333	18.66	11.56667	140.8333

Analysis of tables 1-2 data proves that mean testing results of experimental groups' boys and girls are within limits of academic program, i.e. correspond to criteria of academic process, For convenience of calculations we made

exclusion only with calculating of strength indicators of 1st form boys because chin ups on lows bar (as per program) for boys is not permanent for all period of studying.

The same situation was registered in control group – results of approximate complex testing in average meet governmental standards for academic process. In the whole, it permits to make conclusion that in compliance with criteria of academic discipline "Physical culture" for 1st-4th forms of comprehensive educational establishments control and experimental groups were equal.

Table 3

Mean indicators of physical fitness and physical condition of control group's boys

n=120	Height	Weight	30 meters run	6 minutes run	Torso forward bending	Chin ups	Shuttle run 4x9 m	Long jump from the spot
1 form (n=34)	122.0	24.6	7.321471	280.5294	2.75	0	12.82676	106.5588
2 form (n=30)	128.1	28.6	6.916452	330.9677	3.24	3.58	15.94355	120.5806
3 form (n=26)	132.6	30.34	7.196296	405.1852	5.37	2.57	12.7037	128.5926
4 form (n=30)	138.7	35.03	6.61	800	5	2	11,33	170

Table 4

Mean indicators of physical fitness and physical condition of control group's girls

n=123	Height	Weight	30 meters run	6 minutes run	Torso forward bending	Chin ups	Shuttle run 4x9 m	Long jump from the spot
1 form (n=34)	119.5	22.5	7.704118	221.9	4.835294	4.53	21.08	95,97
2 form (n=27)	126,.85	26.6	7.175	313.42	7.560714	4.0357	12.85357	119,4286
3 form (n=32)	131.359	28.9	7.17	424.2	7.484848	7.3333	12.51818	112,6364
4 form (n=30)	134.6	31.7	6.68	712.9	8.129032	6.9677	11.68097	133,8065

For determination of static confidence in the process of our research we, with the help of software Statistica calculated mean square deviation – dispersion of every indicators of physical abilities' and physical condition's development. In order to prove equality of samples by indicators of schoolchildren's physical fitness we used Fisher's criteria. Considering restricted limits of the present article, we do not provide completely the tables of these indicators.

The carried out comparison permitted to clear up statistical confidence of physical condition for experimental and control groups, both boys' and girls'.

In the process of forming experiment, in control and experimental groups we studied technical elements of tests' fulfillment; we carried out special physical training, motion tests like during stating measuring. These tests included: quickness – 30 meters run; endurance – 6 minutes run; flexibility – torso forward bent from sitting position; strength – chin ups (boys), chin ups in lying position (girls); dexterity – shuttle run 4 [9 m; speed-power skills – long jump from the spot. In tables 5 and 6 we gave mean indicators of control and experimental groups' members and indicator Tp, which was calculated by Fisher's criterion.

Table 5

Comparative characteristic of physical fitness indicators of control and experimental groups' boys at the end of experiment

	Quickness 30 m.p.sec			Endurance 6-min. run, m.			Flexibility, cm			Strength, q-ty of times			Dexterity Shuttle run 4x9 m, sec.			Speed-power abilities, cm			P
	CG	EG	Tp	CG	EG	Tp	CG	EG	Tp	CG	EG	Tp	CG	EG	Tp	CG	EG	Tp	
1 form	7.01	6.2	1.9	207.3	401.4	2.84	4.5	5.3	1.9	11	13.7	1.96	12.8	12.3	1.92	113.2	117.7	1.92	P<0.05
2 form	6.9	6.2	1.91	363.5	426..2	2.24	5	8.7	2.32	13	17.9	1.97	12.3	12	1.91	124.6	133.3	2.07	P<0.05
3 form	6.6	6	1.91	412.5	564.6	1.9	6.4	8.7	2.41	3.1	3.9	1.91	11.7	11.2	1.94	132.7	144.5	2.06	P<0.05
4 form	6.28	5.38	2.01	540	726.2	2.01	7	9.1	2.11	3.8	4	1.96	11.4	11.1	1.98	139.6	153.3	1.94	P<0.05

Table 6

Comparative characteristic of physical fitness indicators of control and experimental groups' girls' at the end of experiment

	Quickness 30 m.p.sec			Endurance 6-min. run, m.			Flexibility, cm			Strength, q-ty of times			Dexterity Shuttle run 4x9 m, sec.			Speed-power abilities, cm			P
	CG	EG	Tp	CG	EG	Tp	CG	EG	Tp	CG	EG	Tp	CG	EG	Tp	CG	EG	Tp	
1 form	7.1	6.5	1.9	305.5	386.3	1.95	5.2	6.3	2.08	6	13.5	3.45	15.3	12.5	2.12	102.6	117	1.97	P<0.05
2 form	7.0	6.3	1.93	380.2	426.3	2.04	8.1	9.6	2.03	8	17.7	4.84	12.1	12.1	1.03	124.2	131.9	2.02	P<0.05
3 form	6.9	6.2	1.92	485.3	583	2.47	8.3	8.6	1.98	11	18.6	3.01	11.7	11.3	2.09	126	132.4	1.91	P<0.05
4 form	6.2	5.5	1.91	735.2	764.6	1.99	9.5	9.5	1.21	12	20.9	3.44	11.2	11.0	1.94	135.4	144.5	2.03	P<0.05

Implementation of academic-testing module resulted in confident improvement of physical condition of experimental group boys of 1^{st} – 4^{th} form by all indicators (see table 5). It is conditioned by positive transferring and comprehensive character of pre-testing trainings. These trainings included special and preparatory exercises for increasing of quality of certain test's fulfillment. In general physical fitness of experimental group boys was better than in control group by 22.2% by the end of experiment.

General average indicator of experimental group's girls was 24.6% by the end of experiment that also permits to make conclusion that comprehensive pre-testing training of girls positive transferring also took place. Thus, the worked out methodic is effective. On the base of analysis of tables we determined model characteristics of junior school boys' and girls' physical fitness.

Conclusions:

The obtained with the help of tests results can be used as objective foundation for planning of academic-educational process. Tests help to solve the following tasks:

1. Determination of general physical fitness with the help of tests.
2. Determination of dynamic of results during academic year as well as during several academic years (junior, secondary and senior schools).
3. Determination of planning compliance with received in academic-educational process results.
5. Cultivation of pupils' independence at lessons on the base of their abilities for self control and control.
6. Testing of theoretical principles in practice, determination of ways of their implementation in practice.
7. Determination of pupils' health.
8. Determination of control standards by certain sectors for pupils of different age.
9. Determination of main criteria of achievement of maximal results.

Methodic recommendations shall include:

1. Tests for determination of different motion skills shall be fulfilled in certain sequence: first for quickness and coordination, then – for speed-power abilities and flexibility; at the end – for endurance.

2. Testing can be practiced from two (September – May) to four times a years (September, December, February, May).

3. It is recommended to make individual register for every pupils and fill it, starting from 1st form, noting changes of results during studying at school from 1st to 4th forms and then – up to 11th form. Such system permits for teacher-instructor to constantly carry out pedagogic control over development of pupils' main motion qualities.

In this article we tried to briefly elucidate main aspects of determination of pupils' physical fitness with the help of tests, included in academic program. *The prospects of further researches* imply theoretical and practical searches of motion and functional tests, with the help of which it would be possible to control dynamic of children's physical progressing from 1st to 11th forms, considering separate test for every motion quality, i.e. by complex of test for determination of certain motion ability's level.

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PECULIARITIES OF ENDURANCE DEVELOPMENT FOR FIRST YEAR STUDENTS

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Annotation. *Purpose:* to determine the dynamics of the specific endurance first-year students in the classroom of physical education. *Material*: the study involved 20 students. Conducted educational testing: seed of lifting in supine position, hang on bent arms, jumping from sitting up with the stop, run 30m, bending and straightening the arms in emphasis lying, tilt forward from a sitting position, shuttle run, broad jump start. *Results*: found that the passage of the training module volleyball observed development of specific endurance and all motor abilities. Established that the manifestation and development of motor skills are interrelated. Since force is a functional foundation for the development of other skills, flexibility - the foundation of all mechanical movements. Without the development of strength, speed, coordination abilities impossible to develop endurance. Therefore, it is inappropriate and incorrect receipt of unidirectional only specific endurance (dynamic power and static, speed-power). *Conclusions:* indicated the need to achieve functional specialization of the body in the direction which is necessary for high-level manifestation of certain motor skills.
Keywords: students, fitness, health, aerobic, specific endurance.

Introduction

Nowadays a raising of educational task is conditioned by social order, this is a preparation of highly active person, professionally mobile specialist, who can feel comfortably under various conditions. Exceptionally in the age period of 17-18, the basics of person's physical culture are lied, person's motor and functional potential is forming, health preservation, which appear as a main means, supporting physical and psychological activity and which ensure the effective self-realization in the professional sphere.

Theoretical and methodical approach towards physical education for current young people indicate that, the physical condition of senior pupil and later on first year students is becoming worse each year. It is connected to new technologies application, study intensification, what need the nervous and emotional, physical loading and lead to essential rebuilding of physiological states. Especially the first course students are watched in the state of dramastic decrease of interest towards physical culture. Due to statistics, during the level of physical preparedness estimation for first course students, about 40% were transferred to special medical groups.

The rational mode of the day with sufficient motor activity can overcome the problem of young people's health worsening. Endurance determine the adaptation and firmness towards various destructive factors, support the possibility of person's creative uncovering and is important condition for professional orientation, especially at the stage of vital self-determination. Just the level of endurance indirectly and with outstanding precision is testifying about general health condition and functional possibilities of respiratory and cardiovascular system. That is why the work for endurance development, in a quality of working capability improvement and health strengthening should be of primary importance direction for teachers of physical education.

Peculiarities for endurance development of young people were enlightened in scientific works by Krutsevich T.Y. (2008), Gogin O.V. (2001), Samokish I.I., Bosenko A.I. (2011), Myakishev V.A. (1977), Ilyin Y.P. (2000, 2003), Shiyan B.M. (2004), Zemskov A.S. (2005), Hudoliy O.M. (2007), Kozlov I.S. (2009), Posohov D.V. (2009) and so on. But there is a need to mention that usual by content and intensity, monotonous class for endurance development becomes not interesting for first year students and this is not a factor which arise the positive changes in their organism.

Hereby, this turns to be a basic problem question, which should be researched in the field of physical education of young people.

The work is carried out due to the Master plan for research work of Ukrainian families, young people and sport ministry for period of 2011-2015.

Purpose, tasks of the work, material and methods

Purpose of research – to determine the dynamic for development of specific endurance of first year students during physical education classes.

*Task of research***:** to generalize the theoretical questions regarding to the endurance development peculiarities of first year students and to analyze the dynamic for development of specific endurance during the time of physical education classes in the higher educational institution.

Subject of research – the process of physical education for first year students.

Object of research – the endurance development peculiarities for first year students.

Methods of research.

Research was conducted within six weeks at the base of Kharkiv national pedagogical university after G.S. Skovoroda. First year students (10 boys and 10 girls) took part in pedagogical testing. In order to determine the endurance level of examined students, we conducted following pedagogical tests: strength dynamical endurance we

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determined with help of such exercise as taking sitting pose from position of lying on back (number of repetitions in 1 min.); strength static endurance – with help of bended hands hanging (keeping the position in sec.); speed and strength endurance – with help of vertical jump from sitting position (number of repetitions within 1 min.).

At the same time, with purpose to arrange well-grounded research of physical education influence onto development of first year student's physical qualities, we were determining level of rapidity development (30 m. run), strength (push-ups), flexibility (shuttle-run) and speed and strength abilities (long jump from the spot).

In order to identify the dynamic for level of endurance development changing and other physical qualities of students during the time of educational module "volleyball", two measurements towards all kinds of tests were conducted. Received results were treated by methods of mathematical statistics, in particular, truth for difference between the results of tests was calculated with help of t-criteria Student's finding.

Results of the research

Due to result of research, girls have statistically trustworthy differences appeared as test results: in 30m. run ($t=2,4$ with $p<0,05$), shuttle run ($t=2,3$ with $p<0,05$), vertical jumps from sitting position ($t=2,3$ with $p<0,05$). It should be noted that the improvement of testing results in 30m run (11,90 %), shuttle run (7,21%) and vertical jumps from sitting position (12,42%). This gives evidence about the development of such motor abilities as speed, agility with speed and power endurance. Received figures given in table 1.

Table 1.

Indices of physical qualities test for students under study (girls n=10)

Pedagogical tests	**First test** (4-12.10.2012p.)	**Second test** (28.11-9.12 2012p.)	**t**	**p**	**%**
Rapidity (30м run), c.	5,4 ± 0,18	4,8 ± 0,19	2,4	p<0,05	11,9
strength dynamical endurance (take sitting pose from position of lying on back (number of repetitions)	42,4 ± 1,62	43,7 ± 1,62	0,6	p>0,05	2,97
Flexibility (bending forward from sitting position), sm.	17,5 ±1,62	18,1 ± 1,52	0,3	p>0,05	3,31
Strength (pull-ups on the low bar), number of repetitions	19,3 ± 1,30	20,8 ± 1,62	0,7	p>0,05	7,21
Agility (shuttle-run), s.	10,8 ± 0,16	10,2 ± 0,19	2,4	p<0,05	5,56
Speed and power abilities (long jump from the spot), sm.	189,3± 3,79	196,9± 4,44	1,3	p>0,05	3,86
Strength static endurance (bended hands hanging), sec.	42,2 ± 3,25	44,0 ± 3,25	0,4	p>0,05	4,09
Speed and strength endurance (vertical jump from sitting position), number of repetitions	27,5 ± 1,08	31,4 ± 1,30	2,3	p<0,05	12,42

The comparison of two selective medium connected samples showed that boys statistically reliable peculiarities appeared in the results of tests in 30m run ($t=2,3$ with $p<0,05$) and shuttle run ($t=2,3$ with $p<0,05$). The test results improved in vertical jumps from sitting position ($t=1,0$ with $p>0,05$). The improvement of test results in speed was noted (6,21%), agility (2,84%) and speed and power endurance (5,84%).

Received figures showed in table 2.

Table 2.

Indices of physical qualities test for students under study (boys n=10)

Pedagogical tests	**First test** (4-12.10.2012p.)	**Second test** (28.11-9.12 2012p.)	**t**	**p**	**%**
Rapidity (30м run), c.	4,5 ± 0,09	4,2 ± 0,07	2,3	p<0,05	6,21
strength dynamical endurance (take sitting pose from position of lying on back (number of repetitions)	48,3 ±0,90	49,0 ± 0,80	0,6	p>0,05	1,48
Flexibility (bending forward from sitting	11,1 ± 0,60	11,5 ± 0,70	0,4	p>0,05	3,17

position), sm.					
Strength (pull-ups on the low bar), number of repetitions	12,5 ± 0,90	12,8 ± 0,80	0,2	p>0,05	2,13
Agility (shuttle-run), s.	9,5 ± 0,10	9,3 ± 0,06	2,3	p<0,05	2,84
Speed and power abilities (long jump from the spot), sm.	218,9 ± 4,49	223,0 ± 4,49	0,6	p>0,05	1,83
Strength static endurance (bended hands hanging), sec.	40,8 ± 2,39	42,7 ± 2,49	0,6	p>0,05	4,47
Speed and strength endurance (vertical jump from sitting position), number of repetitions	45,5 ±1,60	48,3 ± 2,19	1,0	p>0,05	5,84

Thus, during the module "volleyball" for students under study the improvement of test results took place in 30m run, shuttle run and vertical jumps from sitting position. There were developed the motor abilities which satisfy the specific of sport games. So, for first year students, the execution of movements in sports ground, elements of attacking and defensive technique leads to speed, agility, speed and strength endurance development. Because the game of volleyball is different from other playing kinds of sports by considerable percentage of upward jumps, for example, in the third zone (near the wall) the most of jumps are performed in order to simulate or to perform the attacking strike or block, in the second and forth – attacking strikes are performed. It is the great number of jumps and speed-ups is a basic characteristic of motor competitive activity for young volleyball players.

In order to ascertain the connection between student's test results we used the correlation analysis. After initial measurement of boys, there was revealed a strong correlation connection between strength dynamical endurance and rapidity (r=-0.74), strength dynamical endurance and flexibility (r=-0.75), strength dynamic endurance and agility (r=-0.70), strength dynamic endurance and strength static endurance (r=-0.88). during the ascertaining of correlation between strength static endurance and other motor abilities, there were revealed strong correlation connections between strength static endurance and flexibility (r=0,75).

This testifies that the strength dynamic endurance development of first year boys (17-18) can support the development of rapidity, agility and strength static endurance. That is to say, during the educational process planning, there is a need to develop the rapidity and strength dynamic endurance in particular classes. Strength dynamic and strength static endurance should be developed at the same class period, in consecutive order by performing exercises of static and dynamic character.

Between received results of second test for boys, there were revealed more strong, compare to first measurement, correlative connections between strength dynamic endurance and speed (r=-0.79). Between strength static and strength dynamic endurance there were revealed strong correlative connections (r=0,87). Between strength dynamic and speed and strength endurance was also revealed strong correlative connection (r=0,74) in contrast to first measurement. During the ascertainment of connection between strength static endurance and other motor abilities, there were revealed strong correlative connections between strength static endurance and speed (r=-0,85), between strength static endurance and agility (r=-0.73). Average statistical correlations were revealed between strength static endurance and flexibility (r=0,57), between strength static and speed and strength endurance (r=0,54). During the ascertainment of correlation between speed and strength endurance and other motor abilities, there were revealed strong correlative connections between speed and strength and strength dynamic endurance (r=0,74).

Due to results of correlation analysis facts of first measurement for girl's pedagogical testing, we ascertained that first year girl's indices of strength dynamic endurance have strong correlation with strength (r=0,80), agility (r=-0,81),speed and strength abilities (r=0,72), strength static endurance (r=0,84) and speed and strength endurance (r=0,60). Indices of strength static endurance have strong correlation with strength (r=0,693), flexibility (r=0,71), agility (r=-0,82). There was also revealed the correlation between speed and strength endurance and speed (r=0,69), strength (r=0,69), speed and strength abilities (r=0,70).

After analysis of second measurement results for girls, there was revealed the more stronger correlative connection, compare to first results of correlative analysis, between strength dynamic endurance and strength (r=0,85), agility (r=-0,97), speed and strength abilities (r=0,74), strength static endurance (r=0,95) and flexibility (r=0,88), between strength static endurance and strength (r=0,75), between strength static endurance and flexibility (r=0,92), strength static endurance and agility (r=-0,93), strength static endurance and speed and strength abilities (r=0,72). During the ascertaining of correlation between speed and strength endurance and other motor abilities, there were revealed strong correlative connections between speed and strength endurance and speed and strength abilities (r=0,88).

Hereby, while studying the educational module "volleyball" by first year students there was revealed not only development of specific endurance but also the development of all motor abilities in a varying degree of priority. Received results allow to resume that manifestation and development of motor abilities are correlative. The strength is a functional basis for development of other abilities, the flexibility is a mechanical basis of all motion. It is impossible

to develop the endurance without development of strength, speed, coordinating abilities. That is why it is unsuitable and wrong to get unidirectional development only for specific endurance (Strength dynamic and static, speed and strength). The achievement of organism's functional specialization in the direction which is necessary for manifestation level of certain motor ability is possible.

Conclusion:

1. Conducted research allowed to determine the dynamic of specific endurance development for first year students during the physical education classes.
2. Analysis of received results demonstrated that during the studying of the module "volleyball", the students under study (girls and boys) got statistically trustworthy increase of motor abilities, which fulfill the purpose of sport games, especially agility and speed and strength endurance.

In a perspective of following researches we are planning to design a program for endurance development of first year students. In our opinion, programming is an effective and rational form for organization of educational and training process in the University. Purpose-oriented model will allow to concretize the concept, to find the means, methods, the volume and intensity of loads adequately to individual peculiarities for first year students. The programming will allow us to bring to effect the plan (to reach the planned level of endurance) with taking into account the specific conditions and present condition of students, to increase their activity towards physical education classes, to realize the contribution to effectiveness of educational management, will allow to individualize the educational and training process for group method of class conducting.

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MAIN MODERN PROBLEMS OF DOPING IN SPORT

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Annotation. *Purpose*: to identify and substantiate medico-biological, psychological and social problems of doping in sport. *Material:* Theoretical study is based on analysis of more than 50 scientific and methodical literatures. *Results:* it was shown that doping is one of the serious problems of modern sport and society in general. Defines important questions regarding anti-doping rules and the anti-doping control in sport. Installed the use of performance enhancing drugs in professional sports for children and youth. Given the promising solutions to the problems of doping in Ukraine. Conclusions: Among the problems of modern sport is becoming increasingly important issue of doping. It is an extremely complex because it involves the interrelated medical, legal, political, moral, organizational, social and pedagogical aspects. Socio-pedagogical factors of anti-doping policy in sports scientists comprehensively still not addressed. Certain aspects of anti-doping policy presented in scientific papers, which can be divided into two groups. The first group of papers is devoted to doping in sport as a social event. The second group of papers devoted to the problems of doping control. Today there is a need and objective preconditions for the development and adoption of a General concept, which would be generalized numerical amount of data received and served as a basis for developing an effective anti-doping control at the expense of improvement of legislative and normative-legal base and infrastructure of the anti-doping policy in Ukraine, which should be brought in line with modern international standards.
Key words: doping, athlete, sport, anti-doping measures.

Introduction

Nowadays cruel conditions of survival in modern sports force athletes to work nearly behind the limits of organism's physiological potentials. Necessary condition of sportsmen's successful functioning at present shall be nearly constant very high level their fitness and results [1, 2, 3, 14]. The problem is intensified by commercialization and professionalization of elite sports and is reflected in increasing of quantity of both commercial and official competitions and tournaments at international level. High price of a victory in modern sport results in a number of negative after effects, among which doping or taking prohibited in sports preparations or methods is especially troubling [3, 10, 12]. From medical points of view taking of such preparations as well as using of some physical methods and manipulations, often not grounded and not controlled, is vain and sometimes dangerous for health and life of athlete. In modern sports mortal cases, resulted from athlete's using prohibited substances, are often [11, 14, 20].

Except substantial harm for sportsmen's health and life, application of such means contradicts to moral ethic standards of sports and sport movement and main task of modern sports, as S,N. Bubka said, is to permanently continue uninterrupted struggle against doping that proves the words of president Jacques Porre, who said: "Doping is, surely, the strongest threat to sports in 21st century. It undermines sportsmen's health and deprives of faith in sportsmen. Though it is impossible to achieve zero level of doping, I can say we made a big step ahead. We made struggle against doping to be of first priority" [7]. Thus, one of the heaviest problems of modern Olympic sports is, as it was earlier, fight with doping. Specialists from different countries of the world are united by idea that policy of World anti-doping agency (WADA) is to large extent contradictory. Even definition of doping ("doping – is violation of one or several anti-doping rules", as it was written in Anti-doping code of 2009) is not logic and is not scientific. Sport science is developing to day in its own way, which is actually independent on WADA functioning [7, 11, 14, 15].

A lot of works of domestic and foreign authors are devoted to theory and methodic of anti-doping measures [6, 8, 10, 11, 12, 14, 17]. Scientists note that this problem includes close interconnection of medical, social, pedagogic, political, moral-ethic, economic and jurisdictional aspects.

Main efforts of sport and medical science are oriented, in general, on studying of influence of prohibited in sports substances and methods on sportsman's organism, on searching and improvement of means of its detecting, of bio-chemical components and on cheapening of doping control, determination of its simple and more effective procedures [5, 10, 11, 12, 14, 16, 17, 20]. Such approach is conditioned by demand in determination, first, of influence and after-effects of doping and then only solution of pedagogic, jurisdictional and other problems of struggle with doping in sports.

Purpose, tasks of the work, material and methods

The purpose of the work is to determine and ground medical-biological, psychological and social doping problems in sports.

The research if based on analysis of scientific and methodic literature. The following *methods* were used: analysis, synthesis, generalization, comparing and analogy.

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Results of the research

Level of modern sports' development and overloads, endured by sportsmen in the process of training and competition functioning are so high that attempts to reject medical preparations at all reflect ideas of even not yesterday but of the day before yesterday. Pharmacological world market is so large that it is rather difficult to select maximally effective and necessary for some or other period of sport functioning medical preparations. It should be noted that using of some preparations as well as physical methods and manipulations, prohibited in sports first of all from medical point of view, often is not grounded and out of control and brings substantial danger for health; as per a number of registered cases – result in disablement and even death. In this connection, during several decades, international sports and medical organizations have been conducting active struggle with doping. With it, this struggle often does not bring the desired results; in spite of increasing of doping control laboratories' quantity and improvement of their equipment, practice of taking chemical substances does not disappear; sportsmen, risking their health and career use prohibited in sports means and methods, the list of which is increasing with every passing year. Taking of preparations and using of methods, included in International standard of WADA "List of prohibitions", by sportsmen is a violation of anti-doping rules in sports. With it, doping taking surely stimulates organism's workability but at the accounted of "untouchable" reserves and removal of protective inhibition. Pharmacological means of recreation shall, on the contrary, correct changes caused by tiredness and be oriented on replenishment of organism's functional reserves without stresses and sharp excitation (inhibition). Analysis of medical-biological provisioning of sportsmen shows that in Ukrainian elite sports there exists a difficult situation concerning effective using of pharmacological preparations [5, 11, 14]. It is necessary to ensure highly qualified work of sport doctors, who shall have knowledge about pharmacological dynamic parameters, i.e. individual mechanisms of separate preparations' effect, their pharmacological kinetic characteristics, portion of medical substance in organism (transport, connection with proteins, receptive molecules, bio-transformation, ways of elimination) as well as peculiarities of rational combinations of preparations from one or several groups. They shall be able to consider that as on to day there exists rather big list of "non-doping" preparations, which shall be used for influencing on factors, limiting sportsmen's workability, as well as on 6those, who practice physical culture or on disabled sportsmen, or population. These preparations are first of all those, which can be recommended for taking by healthy person for improvement of life quality, widening of adaptation to great physical loads limits: adaptogens of vegetation or animal's origin; some noothrops; preparations of energetic and plastic effect; immune modulators; anti-oxidants and anti- hypoxants; vitamins and vitamin complexes; exogenous natural intermediates of carbo-hydrate, protein, lipid, mineral metabolism; tested biologically active adds to meal.

Sportsmen's taking of doping preparations is dangerous for people, surrounding them. Authors note that taking of a number of preparations results in changing of sportsmen's behavior (for example increasing of aggressiveness) not motivated actions and it can result in creation of socially dangerous situations [1, 3, 4, 8, 9, 13]. Doping problem is not restricted by doping taking by professional sportsmen; it concerns young people and sportsmen-amateurs in different kinds of sports that, as on present time, has become a serious problem for health protection of Ukrainian population.

First of all penetration of doping in children-junior sports causes anxiety [8, 13]. Firstly, long term negative after effects of prohibited preparations' taking by sportsmen of this age are the most expressive than in completely formed organism. Secondly, sportsman-beginner, taking doping, actually deprives himself of further strategic perspectives in sports, because usual training means after taking doping will not give proper results. Thirdly, such facts extremely strongly influence on image of sports in public opinion. For example, in some kinds of sports coaches face parents' refusal to permit children to attend sport circles. They motivate it by opinion that in sport circle there is only "chemicals" and they do not want to kill their children's health [8]. Also quantity of cases of muscle pills'taking has increased for improvement of sportsmen's appearance and sometimes for increasing of workability. Authors note that industry of specialized eating adds for loosing weight, different anti ageing and recreational "miracle herbs", body-building, fitness, extreme kinds of sports, which are popular among youth have become a powerful market for different doping [1, 2, 5, 8]. Millions of users, inspired with idea of quick transformation are risking their health. Sport is a part of society and reflects processes, which occur in human life. Problem of doping taking by sportsmen is closely connected with drug taking, which is widely spread especially among young people [9, 13, 19]. Social workers and psychologists are sure that model of "doping behavior", when a person solves problems with the help of injection or a tablet, is a direct way to model of "drug-taking behavior".

Thus, negative after-effects for athlete's health, especially junior sportsmen, violation of sports' moral principles and substantial harm to its image characterize sharpness of doping problem in sports.

This problem has not been solved completed from jurisdictional point of view, as far as legal system of punishment for drug taking both in international sports movement and in different countries either is not sufficiently effective, or is absent at all (legislations of some countries do not stipulate punishment for doping). The outlined problem is sharpened by the fact that certain category of people is, to some extent, connected with physical culture and sports, first of all for satisfaction of own demands pushes teenagers for doping taking or are drug pushers.

So, problem of struggle against involving of teenagers in drug (doping) taking is one of the most urgent not only in physical culture and sports but also in criminal science and legal practice both in Ukraine [13] and abroad [19].

Significant aspect of struggle against doping in sports is a pedagogic one, in which educational work is rather important [1, 2, 8, 17]. However this aspect was not paid proper attention to for long time. As on present time, in compliance with document of international sports s movement working out and implementation of anti-doping educational programs is on one of main places, but in many countries it is on low level and effective practical and

technological solution of this problem is even practically absent. It is necessary to implement more actively educational programs of primary prophylaxis of drug (doping) taking in sports among Ukrainian youth, considering age heredity and, according to educational tasks, ensure social adaptation of junior sportsmen, their integration in sport environment. The program shall envisage not only preventive means in society but also means of struggle with sportsmen's violations of anti-doping rules.

Thus, doping is one of the most serious problems of modern sports and society in general and includes closely interconnected medical, jurisdictional, political, moral, organizational, social and pedagogic aspects. Effectiveness of struggle against doping in sports to large extent depends on system of its organization. However, it should be noted that organizational principles of struggle against doping were not practically paid attention to by scientists. Creation of anti-doping efficient system in Ukraine, which would ensure effective restriction and prevention from doping, requires solution of a number of tasks. It should be noted that there is a demand and objective pre-conditions for development and adopting of general conception, which would generalize the received data and serve as the basis for working out of effective anti-doping measures at the account of improvement of legislative and legal basis and infrastructure of Ukrainian anti-doping policy, which shall be brought in compliance with modern international standards.

Conclusions:

Among problems of modern sports problem of doping has been being more and more important. It is significantly complex as far as it includes interconnected medical, jurisdictional, political, moral, organizational, social and pedagogic aspects. Medical aspects are conditioned by the fact that using of doping by sportsmen results in negative and in a number of cases in mortal after effects. In this connection international sport and medical organizations for long period of time have been struggling against doping. However, this struggle does not bring desired results: doping using by sportsmen is continuing. The problem of doping has not been solved legally as well. The problem of doping has also a moral aspect. Using of doping preparations contradicts to essence of sport, creates unequal conditions for achieving of sport result, is harmful for image of country and team, for international sports in general. Problem of taking doping by sportsmen is closely connected with drug taking, which is widely spread among youth recent time. Substantial aspect in struggle against doping in sports is pedagogic one, with educational work as its important component. Analysis of literature showed that social-pedagogic factors of anti-doping policy in sports have not been regarded by domestic and foreign scientists in complex. Some aspects of anti-doping police, elucidated in scientific works, can be divided in two groups. The first group consists of works, in which doping in sports is regarded as social phenomenon (V.V. Stolbov 1987; Yu.A. Fomin, 1989; Ye.K. Goncharova, 1994; S.A. Oliynyk, 2005, V.M. Platonov, 2005, T.V. Mikhaylova, 2009; V.P. Korzh 2006 – 2010, Ye. Rachieva, 2010, I.M. Bashkin 2006 – 2011et al.) The other group of works is devoted to problems of doping control. They are the works by A.G. Dembo (1984), V.A. Vasin (1999), V.V. Matova (2002); G.M. Rodchenkova (1990-2010), V.V. Balakhnichieva, S.N. Portugalova (2003).

The prospects of further researches imply searching of new anti-doping measures in sports.

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AEROBIC AND ANAEROBIC ORGANISM PRODUCTIVITY AS FACTORS THAT DETERMINE THE LEVEL OF PHYSICAL HEALTH

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Annotation. *Purpose*: to identify and assess the level of physical health of men of the first coming of age 21-23 years. *Material*: the study involved 413 students and 17 teachers and sports doctors. *Results*: the influence of cross-country training aerobic and anaerobic focus on physical performance, aerobic and anaerobic performance of the student body. The efficiency impact exercises using running loads of aerobic and anaerobic focus on the physical health of students. It is proved that the level of aerobic performance drops to safe limits and requires correction. To correct the body's aerobic performance is recommended to use for running load. *Conclusions:* found that the correction would be the most efficient and effective through the development and implementation of health technologies based on the use of extracurricular classes jogging exercises. It should take into account the frequency and methods of learning, physical work mode power supply and energy value of each class.
Keywords: aerobic, anaerobic, lactate, productivity, physical health, jogging workout.

Introduction

Today the requirement of health improvement with students' youth is of the greatest importance. Here one of the most prospective ways of the problem solution is to develop health improving technologies and to introduce them into educational process. The best reserves for such technologies implementation are represented in effective arrangement of extracurricular lessons for students [11; 25].

We investigated the influence effectiveness of lessons using run loads of aerobic and anaerobic direction upon physical health of male students of the first mature age (21-23 years old). The choice of such cohort for study in run programs under investigation was conditioned by availability of scientific information on the fact that the level of physical health with men of the given age represented as relative index $VO_{2\ max}$ at the average is lower than with women. The average $VO_{2\ max}$ value with men is lower than the safe health level while with women it substantially exceeds the level [15; 23].

Purpose, tasks of the work, material and methods

Aim of the study was to determine and estimate the level of physical health of men of the first mature age 21-23 years old.

Task of the study was to study the influence of run training of aerobic and anaerobic direction upon physical working capacity, aerobic and anaerobic (lactate) organism's productivity with students 21-23 years old.

Methods of the study: increase of physiological processes under the influence of physical training is of phase character and demonstrated in the form of immediate, delayed and cumulative effect [24]. Immediate training effect is determined through amount and character of biochemical and functional changes arising in organism during physical load execution, as well as after its termination up to the full elimination of oxygen debt. Delayed training effect is characterized by restoration of organism's functions altered in the course of the organism functions' activity as well as restoration or super-restoration of energy resources and protein structures of the organism. In its turn cumulative training effect arises as a consequence of traces summarization of great number of immediate and delayed training effects, and is characterized by intensification of synthesis of nucleic acids, high-energy compounds, and specific albumens. As a result of such changes energy and functional reserves of an organism grow the fact being demonstrated through their economical utilization in the status of relative muscular rest and standard physical loads.

Experimental and research work was conducted at Lugansk National University named after Taras Shevchenko Governmental Institution. The total number of 21-23 years old male students who took part in the study was 413, with 17 sports educators and doctors.

Results of the research

Health can be characterized in terms of quantity. It is established that among known methods of quantitative estimation of health level the highest diagnostic importance belongs to those allowing determination of bio-system's energy potential [13; 18]. The foundation of this concept of physical health includes the idea based on the second law of thermodynamics, and namely the higher bio-system's energy potential the higher its stability. Its reduction results in entropy growing and degradation of the system. Energy potential is characterized by maximal aerobic capabilities of an individual that is maximal oxygen utilization. Scientific literature represents numerous proofs of the fact that the value of maximal oxygen consumption means resistance of an organism against multiple factors of external and internal environment, from hypoxia and blood losses to penetrating radiation [14; 19]. It is the simple system of tests developed by G.L. Apanasenko [4] which implementation is practicable by middle medical staff: it does not require any complicate devices and has the high correlation coefficient with indices of maximal oxygen consumption ($r = 0.8$).

Wide approval of the method allowed description of the phenomenon of the safe level of health as health reserve characterized in quantitative terms preventing formation of endogenous factors of risk of diseases development or manifestation. It is logical to state that the safe health level means scientific ground of primary prophylaxis of

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chronic non-infectious diseases. For individuals of male sex it corresponds to 42 ml min^{-1} kg^{-1} of the value of maximal oxygen consumption.

When an organism leaves the safe health zone then the phenomenon of self- development of pathologic process appears without the change of the acting factor force. Transient or the third conditions is characterized by the health level that borders upon the safe health level on the one hand and manifestation commencement of a pathologic process on the other hand. The mechanism of health reserves accumulation is developed to allow the organism turn towards the safe health zone that are united under the same title of preventive rehabilitation. Individual health control is the controlled process of health improvement of a certain person taking into account the abovementioned phenomena allowing positioning of primary prophylaxis of chronic non-infectious diseases onto exclusively scientific basis.

Phenomenon of the safe health level described by G.L. Apanasenko gives us the opportunity to discover direct reason of epidemic development of chronic non-infectious diseases in the second half of the previous century. This reason is reduction of maximal aerobic human opportunities on the level of population thus exceeding the frames of the safe health level. Considering the above any quantitative estimation of physical state requires determination of indices characterizing aerobic productivity of an organism especially the index of maximal oxygen consumption. Though physical health of a human depends on values of maximal oxygen consumption [2; 17; 22; 23; 26] the important role in the physical health formation also belongs to anaerobic lactate processes of metabolism [1; 5]. T. Kostka with coauthors emphasizes the fact of depending of physical health on anaerobic productivity of an organism. The level increase of anaerobic lactate productivity results in myocardium immunity against hypoxia [10]. Findings of studies by O.A. Pirogova with coauthors [16] demonstrate positive interconnection between data of heart activity, and the status of aerobic and anaerobic metabolism. On the ground of comparative analysis conducted with practically healthy people who do not go in for sports it appeared that the higher data of subendocardial blood flow, transport of oxygen to myocardium, and its lower consumption by heart muscle with relatively similar values of organism's aerobic productivity was noted with persons whose level of anaerobic lactate productivity was higher.

Thus, we must estimate physical health considering not only aerobic but also anaerobic productivity of an organism.

Information on age dynamics of aerobic productivity of an organism for human physical health estimation is contradictory.

Some of researchers emphasize the growth of absolute value $VO_{2\ max}$ till 25 years old, stabilization from 25 to 33 years old, and gradual decrease after 38 [6; 20]. There exist data demonstrating the growth of the absolute index $VO_{2\ max}$ up to full completion of sexual maturity [21].

The highest increment of the index is detected in the age of 13-14 years old with male individuals (by 28%) and in the age of 12-13 years old with representatives of female sex. However beginning with the age of 16 years old with boys and 14 years old with girls there is no detected growth of the $VO_{2\ max}$ value. Besides, with representatives of female sex the absolute value $VO_{2\ max}$ in average is some lower than with boys thus comprising in the age of 12 to 15 years old 90.25 of male index, in 16 to 20 years old 82.5%, and in the age of 21 to 24 years old 82.1% [6; 25]. As for age changes of the $VO_{2\ max}$ index some authors insist on its permanence while other on its reduction. Making analysis of age dynamics of $VO_{2\ max\ relative}$ indices J. Rutenfranz and T. Hettinger emphasize its stability till 17 years old while K.L. Andersen with coauthors – till 35-40 years old. L.G. Yevseyev and O.A. Yakovlev [8] state that the relative index $VO_{2\ max}$ is practically stable from 6 to 25 years old comprising in average 50 ml min^{-1} kg^{-1}.

In accordance with information by H. Mellerovicz when we suppose the values

$VO_{2\ max\ relative}$ in the age of 20-30 years old be 100% then in the age of 40-50 years old they comprise 82.5%, and 65% in the age of 60-70 years old. The similar age change the $VO_{2\ max}$ index is permissible in accordance with criteria of its estimation by Ya.P. Pyarnat and I. Astrand.

Findings of the study by O.O. Bekas [5] indicate the real reduction of the index

$VO_{2\ max\ relative}$ beginning with 16 years old, either with male and female sex provided their body mass does not exceed the norm. Besides, in the period from 16 to 20 years old there is no sex difference in the average index $VO_{2\ max\ relative.}$ But in accordance with all existing criteria of physical health estimation in terms of the $VO_{2\ max\ relative}$ value men are substantially worse than women [7]. S.V. Khrushchyov points out the reduction of the relative index $VO_{2\ max}$ after the age of 16 years old with individuals of female sex.

As for information on age dynamics of anaerobic productivity of an organism it is also contradictory.

There exists information demonstrating the growth of anaerobic a-lactate and lactate productivity till 18 years old and its stability till 30 years old. With persons before 18 years old and after 30 years old the anaerobic productivity is reducing 1-2 per cent per a year of the life [9]. K. Bushar with coauthors specifies the uniform age dependent reduction of anaerobic productivity. As they state such reduction equals to approximately 6% per a decade, and the reduction dynamics is not connected with sex.

As other authors state, with young people of 10 to 14 years old the value of anaerobic lactate productivity that is recognized to be a relative index of outside mechanical activity during 30 seconds does not differ from that with adults. Here there is no any detected substantial sex difference of the index [26]. However the results of research by C.A. Gaul with coauthors get us convinced that lactate and a-lactate anaerobic productivity with children before pubertal period completion is much lower than with adults.

Results of examinations conducted by J. Jacobs among students of physical training department demonstrate the presence of difference in indices of lactate and a-lactate anaerobic productivity with representatives of both male

and female sex. Thus male students' maximal value of outside mechanical activity during 10 seconds comprises in average 61.8 ± 3.6 kgm min^{-1} kg^{-1} while during 30 second 51.0 ± 3.2 kgm min^{-1} kg^{-1}. Female students have correspondingly 54.6 ± 4.8 kgm min^{-1} kg^{-1} and 45.0 ± 3.0 kgm min^{-1} kg^{-1}.

Conclusions

In the process of analysis of materials from literature, and generalization of practical experience by leading experts we established the following things. It was found that physical condition represents dynamic health of a human that must be estimated based on the level of functional and physical preparedness. Aerobic and anaerobic metabolic processes play the great role in forming physical health. On the modern stage of development of Ukrainian society the issue of physical health improvement of male students of the first mature age is critical. The problem solution could be provided due to correction of an organism aerobic and anaerobic productivity through improvement of mechanisms of specific adaptation to physical loads of those systems that limit aerobic and anaerobic processes of energy supply. It is expedient to make correction of physical health of male students of the first mature age using extracurricular lessons with cyclic exercises, in particular run loads. However one should take into account periodicity and methods of lessons conduct, energy supply mode, and energy consumption at each lesson.

Besides, for correction of aerobic productivity of an organism we could use run load stimulating not only aerobic but anaerobic processes of energy supply. To increase anaerobic productivity we must use loads that stimulate also anaerobic processes of energy supply. For better growth of aerobic productivity with male students of the first mature age it is expedient to use run exercises with stimulation of anaerobic processes of energy supply.

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THE FORMATION OF YOUNG ATHLETES' SPECIALIZATION ON THE EXAMPLE OF RHYTHMIC GYMNASTICS GROUP EXERCISES

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Annotation. *Purpose*: to substantiate the approach to the formation of specializations gymnasts in the initial stages and preliminary basic training. On this basis, to develop the technology selection, orientation and training of athletes in rhythmic gymnastics group exercises. *Material*: an expert survey of 46 coaches and judges of Ukraine calisthenics different skills training for gymnasts to group exercise. The study involved 50 athletes who are at the initial stages and preliminary basic training. *Results*: the necessity of forming specialization. Presented educational technology selection, orientation and training gymnasts in group calisthenics exercises. Investigated the components and benefits of the proposed technology. Systematized criteria for selecting gymnasts to group exercise. *Conclusions:* experimentally proven technology selection, orientation and training of athletes in the group exercise. The main results of the study have been practically implemented in the training process of training young athletes.
Keywords: formation, specialization, selection, orientation, group exercises, calisthenics.

Introduction

Modern development of calisthenics' group exercises is characterized by constant perfection of competition compositions at the account of increasing of complexity, interaction and tricks [1]. Every motion task in group exercise is solved by team collectively and elements are much more difficult by character of motion actions than in individual exercises [2, 3].

Complexity of motion actions' structure requires from female gymnasts accuracy of space and power parameters of motion, quickness of response to moving object, attention and thinking [4, 5, 6]. For achievement of high competition results teams have to demonstrate perfect technique of motion interactions, connected with overthrows, throws, passes of objects one to another, coordinated synchronous or asynchronous work, ability to fulfill exercises with single amplitude in one temp and rhythm [7, 8, 9**]**.

Numerous victories of teams from Russia, Italy, Byelorussia during recent three Olympic cycles (2004–2012) witness about efficient system of many years training of group exercises [10]. The existing system of female gymnasts' training in Ukraine does not reflect processes of their specialization's formation in group exercises. In programs of ChJSS [11] and curriculums it is absent that, in its turn, reflects in non-compliance of requirements of this kind of Olympic sports with female gymnasts', participating in group exercises, training in the process of many years' perfection. In spite of this fact, group exercises take 50% of all competition programs, and competitions of junior female gymnasts in Ukraine admit participation in them, starting from 2nd junior sport degree.

In Ukraine calisthenics group exercises' training of sportswomen is carried out directly before competitions; there is no their targeted orientation in many years process. The main reason is in absence of grounded approach to formation of specialization "group exercise" in many years process of training; also there is no system of selection, orientation and training of female gymnasts that all condition urgency of our research.

The work has been fulfilled as per "Combined plan of SRW in sphere of physical culture and sports for 2011-2015" of Ministry of Ukraine of family, youth and sports by topic 2.12 "Formation of system of many years' selection and orientation of sportsmen", state registration № 0111U001725.

Purpose, tasks of the work, material and methods

The purpose of the research is to give grounds for approach to formation of gymnasts' specialization "group exercises" on stages of initial and preliminary basic training and, on this base, to develop technology of selection, orientation and training of sportswomen in group exercises.

The methods of the research: analysis of scientific-methodic and special literature, official documents, questioning, pedagogic observation, analysis of video-records, pedagogic testing and experiment, methods of mathematical statistics.

Results of the research

In the fulfilled analysis of scientific-methodic and special literature we considered specificities of competition functioning in complex-coordinated kinds of sports and calisthenics [12, 13]; formation of specialization in structure of sportsmen's many-years training [14, 15, 16]; organization of selection and orientation of training as a component of effective control on different stages of many-years' perfection [17, 18, 19, 20, 21]; training of female gymnasts in group exercises [22, 23, 24]. It permitted to determine insufficiency of this problem's studying, concerning specialization at initial stags of training and creation of holistic system of training, selection and orientation of female gymnasts in group exercises. Gymnasts' training of group exercises is not regarded in scientific literature; modern trends in sports' development, scopes of work, required for achievement of technically complex elements are not considered, criteria of selection and orientation of female gymnasts' training in this kind of competitions are absent.

Analysis of curriculums on calisthenics in sport schools showed that they completely do not contain methodic instructions on evaluation and control of female gymnasts' fitness indicators, oriented on group exercises. Training of

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teams in group exercises is carried out during several months before starts. System of sport selection and orientation, its elements are not connected with specificities of female gymnasts' training on different stages in practice. It does not permit to timely carry out determination of promising sportswomen, to determine their specialization, considering individual features and tasks of training process.

The fulfilled analysis of the strongest in the world and in Ukraine teams in group exercises permitted to determine peculiarities, components, correlations of structural elements, which influence to the largest extent on competition results in group exercises. At present, for group exercises it is characteristic increasing of scope of work with an object and body that is connected with significant quantity of time required for improvement, mastering of elements of interaction and cooperation. The mentioned motion actions are complexly coordinated combination of movements of different body links with different objects. Their fulfillment under musical accompaniment requires from sportswomen not only significant physical fitness but also sufficient level of special motion skills, ability to demonstrate elements vividly and artistically [8, 9]. Technically correct movements, formed at initial stages, which will be continuously develop and improved at next stages, ensure increasing of sportsmanship [17]. Even the least deviation from them result in significant quantity of mistakes, which, then, will be transferred to more difficult elements [5]. That is why formation of specialization in group exercises shall be organized at initial stages of many-years perfection, starting from groups of preliminary training.

We understood formation of specialization as process of development of discipline "group exercises in calisthenics" that differs by certain solution of specialization tasks. Main property of specialization "group exercises" is fulfillment of calisthenics competition program in team as separate independent element, in which gymnasts' training is concentrated on fulfillment of mutual actions in good coordination and cooperation, synchronous and asynchronous character of gymnasts' work with objects; all these is achieved by commonality of interests, motivation, coordination of team's members and etc.

Specialization "group exercises" in calisthenics is characterized by sequence of actions, which principally differ from individual training but it is built on base of calisthenics' school and does not come out of its content. In the base of approach to formation of junior female gymnasts' specialization there is theoretical knowledge and practical experience of calisthenics and adjoining disciplines. Its elements, which combine process of specialization's formation and create prospects of many-years gymnasts' improvement are regularities of age and starting of specialization as well as indicators of sport orientation and selection, considering natural sportswomen's bents to fulfillment of group exercises, means and methods of sport training, criteria and components of special fitness (see fig.1). Considering the fact that specialization is formed with consideration of wholeness of processes of selection, orientation and direct training of female gymnasts, we applied systemic approach, which permitted regarding of all components of specialization's formation as combination of interacting elements, which form holistic system. Formation of specialization also includes interconnected components, in which tasks are solved stage-by-stage during many years training; conditions further training of female gymnasts and put forward special requirements to selection and further orientation of training process. All system of sport training of group exercises is built as many years and continuous process with interconnected elements and components, which subordinate to the task of achievement of maximal sport result and their interaction permits to create system, which would be naturally connected both with stages of many years training and with levels of selection and orientation.

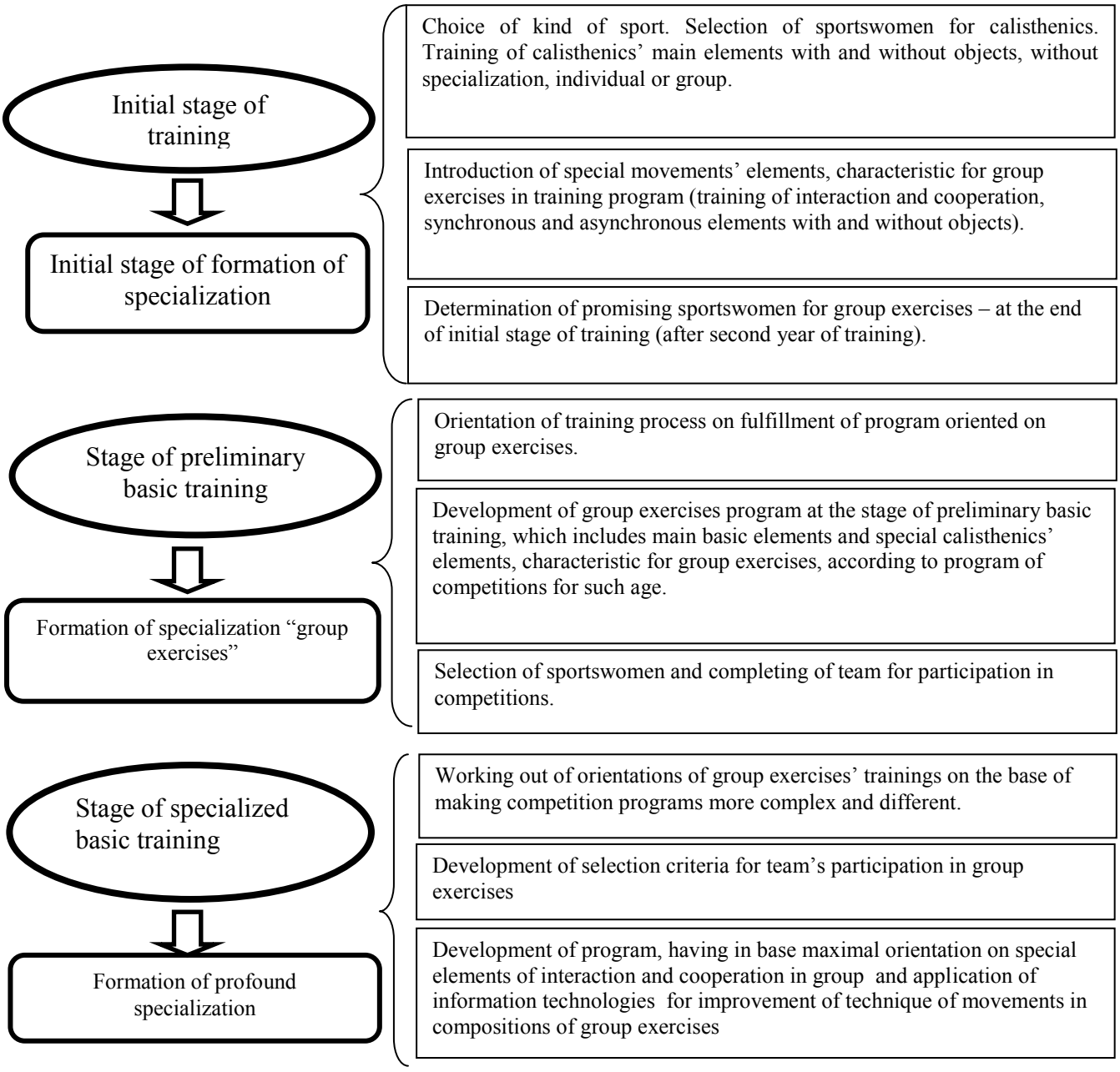


Fig.1. Structural diagram of formation of specialization "group exercises" in calisthenics

Realizing the purpose of the research we provided ground for technology of selection, orientation and training of reserve in calisthenics. It is regarded as arranged combination of actions, operations and procedures, which ensure achievement of predicted result, presented in the form of diagram (see fig.2).

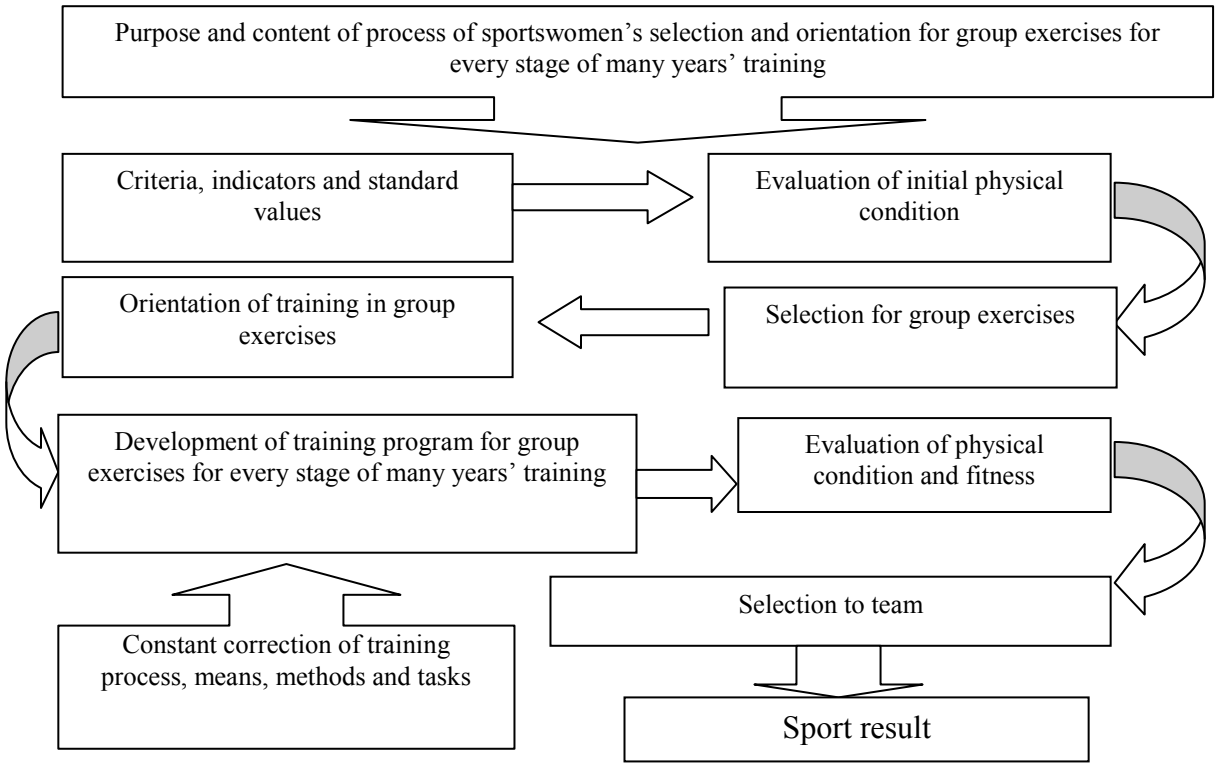


Fig.2. Structural diagram of selection technology, orientation and training of sportswomen for group exercises

Function of technology implies construction selection and orientation of sportswomen's training orientation in group exercises, which ensures the predicted result. The components of technology determine purpose and content of process of sportswomen's selection for group exercises for every stage of many years training; criteria, indicators andf standard values; evaluation of out-coming and current state of female gymnasts' fitness; development of training programs for group exercises, selection for group exercises and further orientation of their training.

Leading coaches of Ukraine (n = 46, W = 0,77) determined eight criteria of selection, which it is necessary to consider at initial stage of training: state of health; anthropometric indicators (length and mass of body, circumference of chest, size of foot); level of physical fitness, motivation; quality of movements' mastering and evaluation of movements' skills; social indicators (parents' and child's attitude and interest to sport); optimal age for starting of trainings. The determined criteria were used during selection to group of initial training and evaluation of children's fitness in first years of training. Also these criteria were used for determination of female gymnasts' contingent, who took part in experiment at stage of initial training.

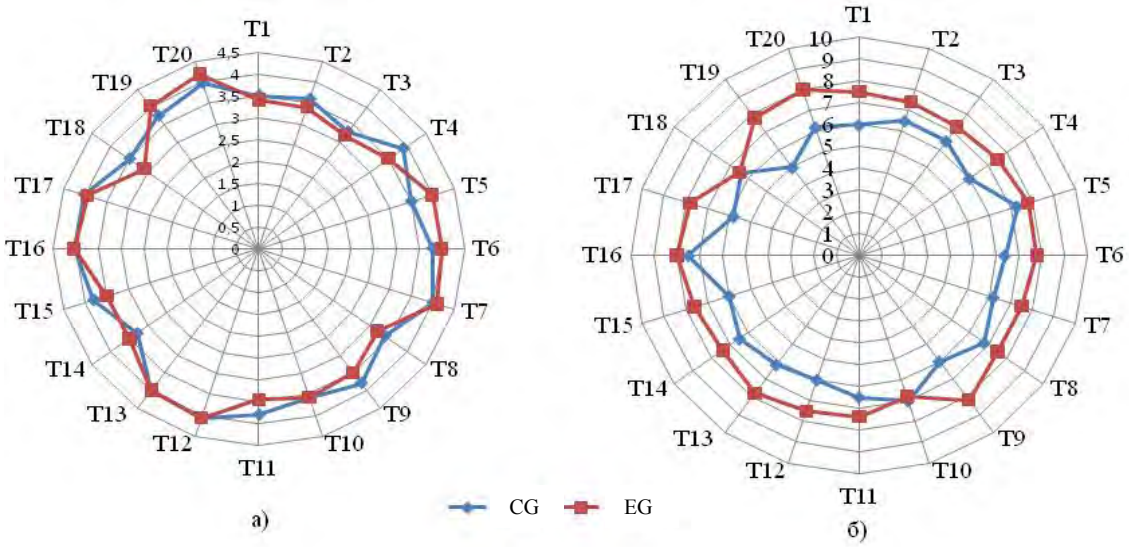
The researches resulted in development of evaluation scales, which permit to evaluate potentials of junior female gymnasts for further orientation of their training in group exercises. Within informative criteria we also determined control tests for evaluation of children's skills with orientation on group exercises. By results of the conducted questioning (n = 46, W = 0,77) we included into significant criteria of female gymnasts' fitness for group exercises at initial stage the following: coordination abilities, flexibility (mobility of backbone, ball and shoulder joints), power endurance, quickness and jumping abilities.

We carried out comparative pedagogic experiment from September 2011 to May 2012 on base of SChJSOR in Kiyev, during which we formed two groups of girls of initial training stage (second-third year of training), 10 persons in every of it. Control group (CG) and experimental group (EG) did not have any confident differences ($p<0.05$). Trainings in control group were conducted as per standard program of ChJSS [12], in experimental group trainings were carried out by developed by us program. As the base we took group method of training of mutual motion elements of interaction and cooperation, synchronous education of choreographic elements, which are required for work in group exercises. As the basis of trainings we took organizational form of training – work in pairs, threes and fours, i.e. in variable couples. Training of children in pairs, threes and fours, i.e. in variable couples in combination with mastering of elements' techniques, which are executed individually, influence positively on expansion of range of gymnasts' motion skills, development of arms' motor qualities, facilitate increasing of technical level. For explanation of tasks we used visualization – vivid imagination of material, reviewing of elements, combinations and interactions on the base of video-materials of elements' fulfillment by leading female gymnasts of the school that facilitated mastering of elements by junior female gymnasts.

At intermediate stage of experiment we fulfilled testing of female gymnasts by 20 tests as per 10-points scale, Results of CG girls improved from 1.15 ± 0.16, ($\overline{x} \pm S$) to 1.56 ± 0.12 points, ($p<0.05$), in EG – from 2.10 ± 0.14 to 2.44 ± 0.12 points, ($p<0.05$). After testing (December 2011) promising female gymnasts were oriented on group

exercises. Formation of summarizing marks was complex, considering informative criteria of children's selection for group exercises at initial stage of training by worked out evaluation scales: 56–69 points – high level, 49–55 – level above middle, 38–48 – middle level, 31–37 – below middle, 21–31 points – low level. Thus, we determined main staff of CG (n = 5) and EG (n = 5), the rest of sportswomen were included in reserve.

At next stage of experiment we carried out formation and training of group exercises without objects and with balls. At the end of experiment analysis of testing results (April 2012) proved increment of indicators by 20 tests in both groups ($p<0.05$). Testing results of general and physical fitness in EG were confidently better than in CG by most of indicators. Implementation of the offered experimental program of group exercises' trainings permitted improve EG gymnasts' results in average from 3.20 ± 0.14 to 8.20 ± 0.12 points, ($p<0.05$), indicators of CG gymnasts increased from 3.35 ± 0.18 to 7.35 ± 0.11 points (see fig.3). Also on this stage of experiment indicators of EG gymnast of first team (V = 8,35 %), that is one of important indicators of interactions' development. In CG marks for technical fitness also increased, but discrepancy of results was rather high (V = 16,91 %). Also effectiveness of technology of selection and orientation of female gymnasts as per out program was proved by increasing of physical fitness's indicators and competition results of teams by program of group exercises without objects and with balls. In the course of competitions for school championship by 3rd junior sport degree, EG first team took first place, while CG team – fifth.



a) b)

Fig.1. Dynamic of general physical and technical fitness of control and experimental groups' female gymnasts in the course of experiment, points: T1, T2, T6 – flexibility and mobility of joints; T3 – power endurance; T4 – general endurance; T5, T7 – quickness; T8 – speed-power abilities; T9 – stability of vestibular responses; T10 – accuracy; T11 – dynamic balance; T12 – static balance; T13 – quick-motion response; T14 – space orientation; T15 – reconstruction of movements; T16 –explosive power; T17 – coordination of movements; T18 – "sense of object"; T19 – "sense of time", "sense of rhythm and temp"; T20 – virtuosity;

a) – at the beginning of experiment; b) – at the end of experiment.

It permits to affirm that it is necessary to form specialization "group exercises" at the end of initial stage of many-years' training.

Targeted training of tardy reserve and formation of specialization "group exercises" take place also at stages of preliminary basic training. Improvement of physical skills and formation of coordinated motion skills (interaction and cooperation) are of great importance for successful specialization in group exercises. Increment of physical and technical fitness's indicators permits to estimate potentials for achievement of high sportsmanship in certain kinds of competitions. Indicators of selection and orientation of female gymnasts fro group exercises at stage of preliminary basic training, in opinion of coaches-respondents, are , in order of importance,: state of health, anthropometric parameters, physical fitness, specialized perception, psycho-physiological indicators, ability for mastering of technical elements, competition result, social indicators (n = 46; $W = 0{,}70$). Also they noted as important components of fitness for group exercises the following characteristics: coordination abilities, choreographic fitness, quickness and endurance, dexterity, virtuosity and flexibility (n = 46, $W = 0{,}68$).

For foundation of indicators in the course of experiment, in groups of preliminary basic training (in three age groups, 10 persons in each group), during 2009-2012, twice a week we determined: state of health, anthropometric parameters, physical qualities; we evaluated specialized perception; ability for mastering of technical elements, choreographic fitness; psycho-physiological indicators. For three training years female gymnasts showed confidently

better results by all indicators. Increment of pedagogic indicators was observed in all age groups; as example: gymnasts of 9 years old showed mean group indicators of increment of ability for space-time actions for 2 years as follows: from 0.15 to 0.20 points; female gymnasts of 10-11 years old – from 0.98 to 1.17 points; female gymnasts of 12-13 years old – from 2.17 to 2.37 points, ($p<0.05$). The obtained data witness that motion skills are formed unevenly, in compliance with age periods.

In period of training of female gymnasts for group exercises by norms of 1st sport degree we tested technology of selection and orientation of female gymnasts, which permitted to form first team for group exercises with good quality, to win prize places and all these are foundations for statement that the offered approach is effective.

Conclusions:

1. We grounded approach to formation of female gymnasts' specialization at stages of initial and preliminary basic training. The elements, which combine process of specialization's formation and which create prospects of many years' perfection, are regularities of age development and starting of specialization, indicators of selection and sport orientation of sportswomen for fulfillment of group exercises, means and methods of sport trainings, components and criteria of special fitness.
2. Specialization "group exercises" is characterized by sequence of actions, which differ from individual training but is built on the base of calisthenics' school and does not come out of its content basis.
3. The developed technology of selection and orientation of calisthenics' group exercises training is characterized by stage character of methods and contains organizational and methodic components, system of tests, program of training of main elements of mutual interactions of female gymnasts in group, programs of selection, criteria and evaluation scales.
4. We systemized criteria of sportswomen's selection for calisthenics' group exercises at initial stages of training: anthropometric parameters, quickness and quality of movements' and technical elements' mastering, level of development of specialized senses ("sense of rhythm", "sense of temp", "sense of time"), physical fitness, state of health, psycho-physiological indicators, social indicators.
5. Indicators of selection and orientation of female gymnasts for group exercises at stage of preliminary basic training are: state of health, anthropometric parameters, physical fitness, specialized senses, psycho-physiological indicators, ability for mastering of technical elements, competition result, social indicators.
6. Results of carried out experiment witness about effectiveness of the offered approach to formation of specialization "group exercises", starting from third year of training.

The prospects of further researches in this direction will be oriented on development of system of selection, orientation and training of female gymnasts in group exercises at stages of specialized basic training and preparation for higher achievements.

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THEORETICAL FOUNDATIONS OF FORMING VALUE ORIENTATION OF PUPILS BY MEANS OF SCHOOL SPORTS ABROAD

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Annotation. *Purpose:* to determine the theoretical basis for the formation of value orientations of pupils by means of school sports facilities abroad. *Material:* detailed analysis of 14 published sources. *Results:* found that in a foreign academic and journalistic literature dominates positive appreciation of cultural values of humanistic school sports in the formation of value orientations of pupils. Found that school sport abroad plays an important role not only as a means of forming the basic values – health, but also an important area of communication, the manifestations of social activity. As well as physical and mental form of organization and leisure facilities, excellent vehicle impacts on other values of human life: the authority and position in society, work, the structure of moral and volitional characteristics, aesthetic ideals and other value orientations. *Conclusions:* confirmed that the global experience of formation values pupil means school sports deserves attention and requires selective introduction into the domestic education system.
Keywords: *school, sports, abroad, meaning, objectives, value, pupil.*

Introduction

In governmental program "Health – 2020: Ukrainian dimension" it is noted that health is a permanent value,; it is of great importance for life of every person; it is a key aspect of national security; it determines possibilities of achievement of individual and social welfare, prospects of steady progressing. In modern conditions significance of health is substantially re-understood, considering its understanding as integral right of a person, considering existing threats and challenges, increasing requirements to quality of health, technological, financial potentials for its ensuring. Solution of public health problem requires improving of its determinants, shortening of risk factors implementation of modern strategies of prophylaxis and formation of healthy life style [http://www.moz.gov.ua/ua/portal/Pro_20120316_1.html].

Declaration of World summit on physical culture and WHPO (Berlin, November 3-5th) declare that physical culture itself is a key integrative mean of health strengthening and prophylaxis of diseases (including mental diseases), that it leads to significant shortening of negative phenomena among rising generation (stresses, hypo-dynamia, drug-taking and so on). It is a powerful factor and mechanism of personality's socialization and, as it was underlined at 1st International conference of ministers and chief functionaries in physical culture and sports field (Paris, April 5-10th, 1976) it is general factor of balancing, it is a carrier of ethic values, facilitates moral conditioning, educating brevity, self-control, initiative, sense of solidarity, collectivism, friendship, respect to rules and nobleness in sports. It was also stated that purpose and task of children's and teenagers' physical education shall be directed on formation of social and personal values.

On the contrary, in concept of Governmental targeted social program of development of physical culture and sports for 2012-2016 it is noted that way of life of Ukrainian population and state of physical culture and sports create threat and are substantial challenge for Ukraine at modern stage of its development. One of main factors of existing situation is absence of traditions and motivations for physical education and mass sports as important factors of physical and social welfare, health strengthening, healthy life style and increasing of life span. The situation is worsened also by limited motion functioning, irrational or imbalanced eating, factors of asocial behavior [http://www.kmu.gov.ua/sport/control/uk/publish/article].

However, realized domestic projects, devoted to increasing of physical education's effectiveness have no prospects. Increasing of quantity of hours for physical culture lessons, providing of pupils with opportunity to choose kinds of physical activity by interests, daily "health hour", independent extra-curriculum trainings and health related physical culture at place of residence often have purely declarative character. Most of pupils, even those, who need motion functioning, have little chances to enter children's sport school, because this educational establishment is interested in sport talents, with it in talents in such kinds of sports, which are practiced on its departments. Not every child or teenager can admit expensive services of different shaping clubs, body building or fitness centers and so on.

Global character of these problems conditions demand in searching of new alternative forms of physical education, which would facilitate formation of main human value – health and facilitate creation of spiritual bench marks, values and moral principles.

Considering the above said, specialists face the task of more profound determination of values' attractiveness, first of all of health; values, which are formed among pupils owing to physical culture and sports trainings. For example in philosophical- sociological works of domestic scientists (M.M. Sayinchuk, 2012; T.Yu. Krutsevych, 2011; M.M. Ibragimova, 2011; N.V. Moskalenko, 2010; O.Yu. Marchenko, 2010; S.O. Sychova, 2009; G.V. Bezverkhia, 2010, 2004; S.A,. Zakopaylo, 2003 et al..); specialists of CIS (L.I. Lubysheva, 2012; V.I. Stoliarova, 2011; D.A. Salgakov, 2005; L.P. Matveyeva, 2008; V.K. Baltsevych, 2006; M.M. Vizitey, 2005; et al.) and foreign scientists (S. Karvonen 2012; A. Budreikaite, 2011; by Zhu, Xihe, 2009; J. Burdzicka-Wołowik, 2008; D. Šertvytienė, 2008; et al.) it was determined that targeted physical education and sports trainings ensure formation of personality, personality's bio-

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social principles, substantial characteristics of body and mental human nature with potentials for realization of person's demands, interests and ambitions.

Analysis of scientific works of recent decade witnesses that axiological problems in physical culture-sports field has been noticeably activated, however, as a rule, researches touch only stating of axio-sphere and are connected with students, while formation of value orientations of school children in sports are not paid sufficient attention to and till now has not been a subject of special studying.

At the same time, in opinion of many specialists, just sports [5, 6, 8, 14 et al.], including school physical culture, is a powerful mean of formation of pupil's values. Because it has great opportunities of positive influence not only on health and physical condition but also on mental levels, on culture of a person and, at last, on person's positive world-vision. Pupil, being included in sport society, masters skills of communication; he feels sense of belonging to common activity, responsibility for sport result, for honor of school collective. Important function of school sports is also that it permits for personality to work out correct answers to problems of modern life, orients on creative solution of urgent problems, gives correct understanding of social development's prospects.

Recent years in Ukraine comparative researches have been becoming especially important. Strategic document – National doctrine of development of education (2002) declares importance of scientific provisioning of modernization processes in domestic education from position of compliance with modern world transformations; it accentuates demand in joining with foreign achievements in educational field. Besides, the task of priority of educational system is training of person's proper attitude to own health and health of surrounding people and formation of other individual and social values.

The subject of our research is a part of plan of scientific-research works of general pedagogic and pre-school education department of Drogobytsk state pedagogic university, named after Ivan Franko as a component of complex scientific problem "Ukrainian education in context of transformational social processes" (state registration number 01084007644).

Purpose, tasks of the work, material and methods

The purpose of the research is to determine theoretical principles of value orientations' formation of pupils by means of school sports in foreign countries, on the base of analysis of literature sources.

The following *methods of the research* were used in the course of our work: theoretical, retrospective analysis, comparative methods and generalization of scientific-methodic literature and official documents' data.

Results of the research

Importance of sports in formation of human values was numerously underlined at many specially organized topical meetings. In our opinion the most important of them was organized in 1988 by Institute of international sports and was called international symposium "Peace and consensus through sports" as well as international conference under patronage of UNESCO "Education and sports for world culture" (Paris, June 5-7th, 1999). At conference they regarded problem of development and propaganda of of conceptions of world culture; they elucidated contribution of sports in realization of this culture's values. Personality's values in process of trainings were discussed in Lisbon at conference of sports ministers (1995) where European manifest "Young people and sports" was adopted [http://www.sportvia.ru/76-evropejskij-manifest-molodye-lyudi-i-sport.html]. This manifest declares that opportunities, provided by society for sports trainings shall result not only in constructive using of free time but also in solution of such social problems as intolerance, aggressiveness, alcoholism and in solution of other social diseases. It was underlined that strive for new partner relationships for involving of young people in self perfection and self expressing though sports shall be encouraged.

Also importance of school sports in social life is witnessed by the fact that European Council and European parliament declared 2004 European year of education through sports (EYES 2004). It purpose was facilitating of educational values of travelling and school exchanges, especially in inter-cultural environment with the help of different sport and cultural measures, exchange of positive experience in place and organization of school sports in national educational systems for determination of optimal proportions between mental and physical lessons [13].

It should be noted that problem of humanistic sport's development was a part of programs of different international scientific and Olympic congresses: 10th Olympic congress (Varna, 1973), 11th Olympic congress (Baden-Baden, 1981) and 12th Olympic congress (Paris, 1994); Olympic and scientific congresses in Oregon (USA, 1984) and Seoul (South Korea, 1988); scientific congress "Sports in modern world" (Munich, 1972); scientific symposiums in Munich (1077, 1979, 1980) and Baden-Baden (1981); World scientific congresses "Sports in modern society" (Moscow, 1974; Tbilisi, 1980), International scientific congress "Sports and international consensus" (Helsinki, 1982); a number of sessions of International Olympic academy and other.

Association of physical education of Great Britain and Northern Ireland in 1992 marked out main reasons, which, in their opinion, condition importance of school sports: 1) it facilitates strengthening of pupil's health; 2) school sports has great educational importance for development of not only body but mind as well, as far as mastering of any level of physical condition and motion skills requires significant will efforts and self-discipline; 3) sport interests, which appeared at schools, can develop after leaving school at sport clubs or other sport centers; 4) sports facilitate strengthening of unity of school collective; 5) though the first task of school sports is provisioning of opportunity for all children to train sports independent of their sport talents, school sports is considered also to be first step on way to important sport achievements; that is why high level of its organization is a basis for future successes in sports both on national and international levels [1].

Known modern Holland specialists in field of physical culture and sports B. Crum thinks [9], that if pupils accept main principles of sports and understand them, they will be in state:

- Quick adaptation of actions to variable situations;
- Ability to organize and evaluate trainings oriented on improvement of physical condition and health;
- Ability to work out own creative approach to sp[orts trainings and critical attitude to different kinds oif sport information, received from mass media.

Slavonic scientist Petrovic K. [12], thinks that youth's sport is an important component of sports in general and it is necessary in the most responsible period of young life as world cultural phenomenon of all known civilizations. Because young people want to have such adult and personal image, which can be formed only with the help of sports.

Russian scientists S. Guskov and A. Zotov, on the base of analysis of aims and tasks of physical education and sports in different countries of world, render main reasons, which, in their opinion, condition importance of trainings: [1]: sports and physical education facilitate strengthening of pupil's health and form demand in physical functioning; sports is exclusively important for development of not only body but mind as well, for formation of young person's character; achievement of certain level of physical fitness and mastering of any motion skills require significant will efforts and self discipline; participation in outdoor games implies ability for cooperation and collective actions, manifestation of competition spirit; sports facilitate strengthening of unity, make school collective stronger; sport interests, which appear at school, can progress in local sport clubs or other sport centers. Though first task of school sports is provision of opportunity for all children independent on their talents, school sport is also first step on way to future sport achievements. That is why high level of organization of school sports is the basis for future successes in sports both on national and international levels.

In opinion of A.P. Zotov [2] children physical culture-sport movement, which partially can be associated with school sports, acquires more expressive, democratic, humanistic character. It is more oriented on the following principles:

- volunteer character of participation in the movement;
- priority of common human, spiritual-moral values, prohibition of any race, religious or political discrimination;
- active cooperation of children and adults in sports, their mutual functioning, considering priority of children's interests;
- combination (on organizational-methodic, standard and social-psychological levels), pedagogic control and children's self-control, creation of conditions for self education and self-realization of personality;
- pluralism of different approaches, which naturally supplement each other in one movement.

American scientists Eitzen S. and Sage G also have interesting ideas concerning role and significance of school sports in formation of values of pupil's personality [10]. It should be noted that just in USA it is of most priority in pupils' educational process, comparing with other countries of the world. Scientists first of all underline its positive influence on school in general; in their opinion any organization, including school, requires unity and self-devotion of members. Pupils-members of certain team associate themselves with school and defend its interests. Sport competitions cause enthusiasm and unite school collective for struggle with adversary. Besides, school sports fulfill function of social control. It engages free time, distracts from unnecessary thoughts and doubts. Permission for participation in competitions is received only by those pupils, who have sufficient level of academic progress. That is why, as usual, pupils-sportsmen are disciplined and are example for other. In opinion of Eitzen S. and Sage G. important role of sports lies in the fact that it as if neutralizes severe competition forms between cities, districts and schools. Besides, school sports render positive influence on surrounding people. Scientists note that sport combines independent on profession, education, race or religion of different inhabitants of one district by their wish to support school team of the district. Thus, sport is a certain unifying link between different generations. School sports practicing positively influences also on separate individuality – facilitates development of both physical and mental condition of a pupil.

Nevertheless it is necessary to note that there are opposite ideas about school sports practicing. One of the most known is position of known Russian scientist Lesgaft [3, 4]. In his opinion sport, as competition of both sides, always facilitates progressing of sense of superiority; school children shall not be offered games, facilitating wish to be winner; sport as competition, shall not be included in educational process. In his works Lesgaft often underlined thesis that during organization of games for school children it is necessary to define rules, not permitting any contest.

Similar opinion can be met in works by F. Fielding:"I reject application in schools of the following: competitions as social ideas is disgusting; they are inadmissible in moral aspect" [7].

Conclusions:

It has been determined that in foreign scientific and social literature positive, high evaluation of humanistic, cultural importance of school sports in formation of pupil's value orientation dominates. Analysis of literature sources resulted in understanding that school sports in foreign countries takes important place not only as mean of formation of health as the main value, but also as important sphere of communication and demonstration of social position, reasonable form of person's organization and leisure, mean of influence on other values of human life: authority and position in society, labor functioning, on structure of moral-will characteristics, aesthetic ideals and other value orientations. We have proved that world experience of values' formation of a pupil by means of school sports should be paid attention to and, probably, will require implementation in domestic system of education.

The prospects of further researches imply studying of school sports' organization in foreign countries, determination of positive features, which can be implemented in educational process of Ukrainian schools.

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INFLUENCE OF EXTRACURRICULAR PHYSICAL TRAINING ON MOTOR PREPAREDNESS OF ADOLESCENTS LIVING IN RURAL AREAS

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Annotation. *Purpose*: the problem of motor readiness of younger students. *Material*: in the formative pedagogical experiment involved 32 rural students thirteen years, control group consisted of 223 rural schoolchildren. *Results*: the trend of deterioration of physical fitness of students in rural schools indicates a problem and the lack of software development and methodological support of physical education of younger students. Developed and put into practice the procedure elective physical training for adolescents in rural schools to improve their physical condition. In the experimental group increased significantly in children dynamic and static strength endurance and speed of movement of the upper limbs. Girls involved in elective classes in physical education, were shrewd they also tend to improve explosive power and flexibility. *Conclusions*: it was established that the introduction of electives in the process of physical education is one of the most effective means of improving their motor readiness.
Keywords: fitness, motor, elective, rural, schoolchildren.

Introduction

Urbanization, climatic-geographical and social-economic conditions of children's and teenagers' living influence on their adaptation to environment and on motion condition, which require differentiated approach to organizational methodic principles of physical education [15]. In compliance with scientific data and results of our researches of countryside schoolchildren in comparison with urban ones there was found a number of functional, morphological and motional peculiarities of development [1, 20, 21, 26, 27]. V.V. Veselova and O.V. Pidvalna [6] determined that only 10% of girl students, who study at pedagogic university, practiced sports in schools and all of them were urban residents. That is why, searching, working out and application of effective forms, means and methods of physical education, who would facilitate health strengthening, progressing of countryside pupils' motion skills, to day require attention of scientists.

Analysis of available works shows, that a number of authors [9, 23] did not find serious distinctions in physical condition of countryside and urban schoolchildren. Other authors [2, 4, 8, 14, 20 et al.] proves presence od such distinctions.

If in 60-s – 80-s years of the past century such scientists as T.S. Kryvoruchko [12], Ye.A. [22], G.I. Yakovenko [24], Yu. Ye. Savosin [17], wrote about approaching of indicators by main features in physical development of urban and countryside schoolchildren, then up-to-date data witness expressive opposite trend [15; 20, 26, 27, 28]. In particular, excessive mass is higher among countryside children in USA (25%, $p < 0.001$), comparing urban children (19%) [26]. Inveterate material-technical base, absence of modern sport facilities, unavailability of choosing of sport circle, material and social problems of countryside schoolchildren do not facilitate forming of interests, demands and motives of countryside schoolchildren for practicing of physical exercises and healthy life style in future [26; 27]. Countryside schoolchildren have problem of season activity: they are more active in summer, while urban pupils are more active in winter [27]. V. Khakhulia and O. Burla [20] basing on results of researches, on example of pupils from Sumskaya region, point at trend of worsening of countryside pupils' physical condition. S Prymak and L. Kuziomko [15] in their researches also stress that physical condition of countryside children is relatively on low level in opposite to urban children.

Testing of Sumskaya region pupils V. Khakhulia and O. Burla [20] came to conclusion that trend to worsening of countryside schoolchildren's physical condition points at presence of problem and insufficient level of program and methodic provisioning of countryside pupils' physical education.

Parallel studying of physical condition of urban and countryside schoolchildren's physical condition in one region, fulfilled by the same researches are of great interest. Though in our country there is quite a little of such researches [1, 3, 14, 19,et al.]. It is noted that existing pedagogic approaches to physical education of countryside schoolchildren do not consider age and sex peculiarities of countryside children [20].

So, strengthening of countryside pupils' health by optimization of training process is, as on to day, one of urgent tasks. Besides, the problem of countryside schoolchildren's motivation for physical exercises' training also requires its solution. It is noted that physical culture trainings can be made more attractive and interesting at the account of optional (group, circle) work [11]. That is why study of influence of optional trainings on motion fitness of countryside teenagers is urgent and requires special attention.

The work has been fulfilled in compliance with combined plan of scientific-research work in sphere of physical culture and sports for 2006-2010 of Ministry of Ukraine of family, youth and sports by topic 3.2.7.1 "Physical workability and somatic vegetative and motor provisioning of different contingents of children and teenagers" (state registration number 0107U001186).

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Purpose, tasks of the work, material and methods

The purpose of the research is to study influence of author's methodic of physical culture optional trainings on countryside teenagers' motion fitness.

The methods and organization of the research: in forming pedagogic experiment 32 pupils of 13 years old age from village Vyderta Kamin (Kashpirskiy district, Volynskaya region) participated. Control group considted of 223 schoolchildren of Kamin-Kashpirsliy, Ratnivskiy and Rozhyschenskiy districts.

Teenagers, who were the members of experimental group, besides two and half hours of compulsory physical training weekly, trained additionally once a week in extra-curriculum time, in free of physical culture days. The program of additional trainings of experimental group included mainly exercises for aerobic abilities – long, low intensive run, track and field elements, cross-country, skiing, outdoor games. Duration of aerobic work gradually increased from 5 minutes at the beginning to 30 minutes at the end of academic year. Load was with pulse 130-150 b.p.m. Such work ensures intensity of energetic processes of teenagers approximately 50% of МПК and relates to zone of moderate intensity, which is recommended for development of teenagers' endurance [10, 13]. Before training, after the most intensive work and at the end of training pupils independently controlled pulse, then they repeated it 5 minutes after training. In compliance with obtained in such a way data, we promptly corrected individual intensity of loads in process of training.

Physical fitness of schoolchildren was analyzed with the help of tests "Eurofit" [25]. We used the following methods of teenagers' physical fitness testing. Test "Frequency of knocking" was used for measuring of quickness of upper limb's movement and by its results we evaluated frequency of local movements. Test for balance "Flamingo" was used for measuring of static balance. It implies balancing on one leg on support of certain dimension. Results of tests were quantity of attempts made by schoolchild for keeping steady balance on support during 1 minute. Tests "Mobility in ball joint" (Sit and Reach – SAR) were used for measuring of flexibility. The tested, bending in ball joint, moved arms forward, putting them on plank, moving a rule. Result of test was evaluated in cm. For testing of dexterity we used test "Shuttle run (10[5m)". It was fulfilled as jerk at maximal speed from high start with turn at limiting lines. Evaluation: time of fulfillment of full 5 cycles (to and fro) in seconds. Test "Keeping of body on horizontal bar" was fulfilled in the following way: from position "hanging on straightened arms on horizontal bar" bend arms in elbows and touch the bar with chin. Evaluation: time of position with bent arms (in seconds). Test "Long jump from the spot" was fulfilled in three attempts; the best attempt was estimated. For measuring of dynamic power endurance of torso muscles we used test "Rising in sitting position, lying on back". During 30 seconds it is necessary to make maximal quantity of repetitions. Quantity of full cycles (lying – rising) during 30 seconds is to be estimated. For example 15 full cycles is evaluated as 15.

Results of the research

It is known that level of children and teenagers organism's physical workability depends on complex of factors. The most important of them are physical education and way of life. Implementation of additional trainings in schoolchildren's physical education creates conditions for improvement of physical workability and state of health that is proved by V. Romaniuk on implementation of additional football trainings [16].

Test "Rising in sitting position, lying on back" is intended for measuring of strength and power endurance of torso muscles. Determination of dynamic power endurance by results of this test, applied for 13 years old pupils of countryside comprehensive schools, who had optional physical culture trainings, showed its confident increasing ($p<0.05$) in both experimental groups by 9.2% (boys) and 16.6% (girls) (see table 1, fig.1).

Confident improvement by 18.8% ($p<0.05$) of boys and highly confident improvement by 45.9 % ($p<0.01$) of girls' static power endurance by results of test "Hanging on bent arms" were demonstrated by experimental groups in comparison with control one (see table 1, fig.1).

Progressing of speed-power qualities was evaluated by results of long jump from the spot. In this test final result depends on power of movement at the moment of take off, i.e. on greater force, demonstrated for short period of time. By result of this test there were found no significant difference in experimental and control groups of teenagers ($p>0.05$), though experimental group girls showed trend to increasing of explosive power by 4.9% (see table 1, fig.2).

Test "Frequency of knocking", used for measuring of upper limb's quickness, permitted to evaluate frequency of local movements. Quickness of upper limb's movement as per this test was statistically confidently higher at experimental group (boys – by 12.3% ($p<0.001$) and girls – by 13.7% ($p<0.001$) (see table 1, fig.2). Static balance, measures with test "Flamingo" (see table 1, fig.3) showed absence of difference between control and experimental groups ($p>0.05$).

Flexibility is a motion quality, which is characterized by human ability to fulfill movements with high amplitude. On the base of test "Forward bent from sitting position" we determined that flexibility of experimental group girls showed trend to improvement by 8.2% (see table 1, fig.3). As per data of I.D. Glazyrin [7] age of 13 years old is a sensitive period for development of flexibility and endurance of both boys and girls, of coordination of boys and strength of girls.

Table1

Development of motion abilities and sensor-motor functions of countryside teenagers of 7th form in experimental and control groups after forming research

Indicator	Sex	Group	n	X	Sx	S	V %	± %	t	P
"Risinf in sitting position from lying" for 30 seconds, *quantity of times*	boys	Control	112	24.5	3.6	0.3	14.5	9.2	2.072	<0.05
		Experimental	18	26.7	4.4	1.0	16.4			
	girls	Control	111	17.8	3.3	0.5	18.8	16.6	2.153	<0.05
		Experimental	14	20.7	4.7	1.3	22.7			
Static power endurance by test "Hanging on bent arms" , *seconds*	boys	Control	112	19.7	9.2	0.87	46.97	18.8	2.359	<0.05
		Experimental	18	23.4	5.5	1.30	23.68			
	girls	Control	111	6.5	4.7	0.77	71.71	45.9	2.763	<0.01
		Experimental	14	9.5	2.9	0.76	29.98			
Explosive power by test "long jump from the spot ", *cm*	boys	Control	112	176.4	21.2	2.01	12.04	–1.8	–0.810	>0.05
		Experimental	18	173.2	14.1	3.33	8.16			
	girls	Control	111	153.6	24.4	4.00	15.86	4.9	1.161	>0.05
		Experimental	14	161.1	18.8	5.03	11.69			
Quickness of upper limb by test "Frequency of knocking ", *seconds*	boys	Control	112	15.2	2.0	0.19	12.94	–12.3	–4.133	<0.001
		Experimental	18	13.3	1.7	0.41	13.09			
	girls	Control	111	15.2	2.5	0.40	16.12	–13.7	–3.040	<0.01
		Experimental	14	13.1	2.1	0.55	15.78			
Flexibility by test "Forward bent from sitting position", *cm*	boys	Control	112	21.3	6.3	0..60	29.68	1.3	0.386	>0.05
		Experimental	18	21.6	1.7	0.41	8.05			
	girls	Control	111	24.6	4.0	0.66	16.21	8.2	1.498	>0.05
		Experimental	14	26.6	4.4	1.18	16.56			
Balance by test "Flamingo" , *quantity of times*	boys	Control	112	14.4	4.4	0.41	30.19	2.7	0.626	>0.05
		Experimental	18	14.8	2.0	0.47	13.35			
	girls	Control	111	11.1	3.5	0.58	32.01	–0.5	–0.054	>0.05
		Experimental	14	11.0	3.5	0.95	32.18			
Dexterity by test "Shuttle run" 4x9 m, *seconds*	boys	Control	112	16.9	1.2	0.11	7.03	–1.4	–1.008	>0.05
		Experimental	18	16.7	0.9	0.21	5.33			
	girls	Control	111	18.4	1.2	0.20	6.47	–3.9	–2.369	<0.05
		Experimental	14	17.7	0.9	0.23	4.92			

Dexterity takes special place among motion skills. It is connected with other abilities, especially with motion skills, that is why it has complex character. Dexterity is combination and interaction of functions of central and periphery nervous systems of control in quick changes of organism's functioning in compliance with changes, connected with solution of motion tasks.

Dexterity is ability to master new movements and reconstruct motion functioning in compliance with requirements of external variable circumstances. Dexterity is a complex motion ability, which has no single criteria of evaluation. They are chosen depending on circumstances and conditions of action [18]. Analysis of dexterity by results of test "Shuttle run" showed that statistically confidently better by 3.9% indicators belonged to girls from experimental group with optional trainings ($p<0.05$); concerning boys' group we found no substantial differences in indicators ($p>0.$ (see table 1, fig.4).

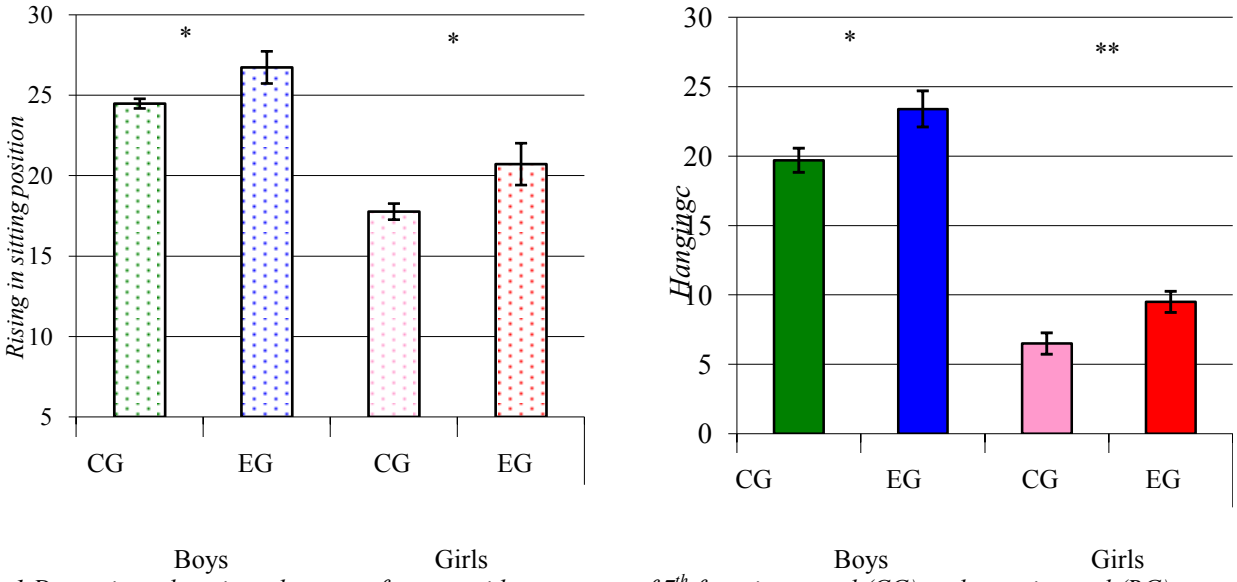

Fig.1 Dynamic and static endurance of countryside teenagers of 7th form in control (CG) and experimental (RG) groups after forming research

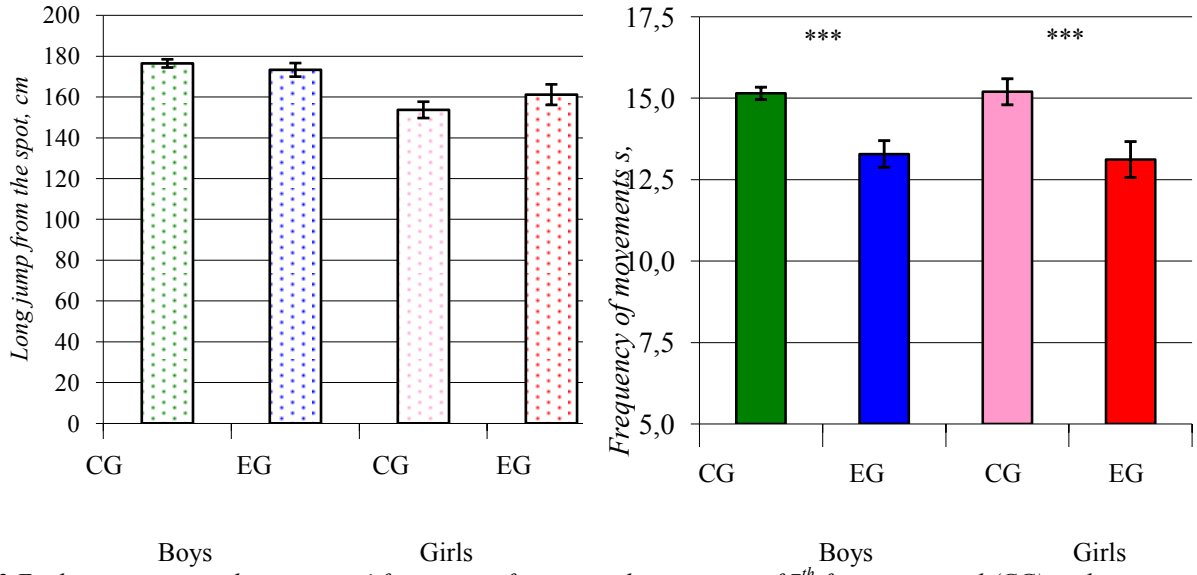

Fig.2 Explosive power and movements' frequency of countryside teenagers of 7th form in control (CG) and experimental (RG) groups after forming research

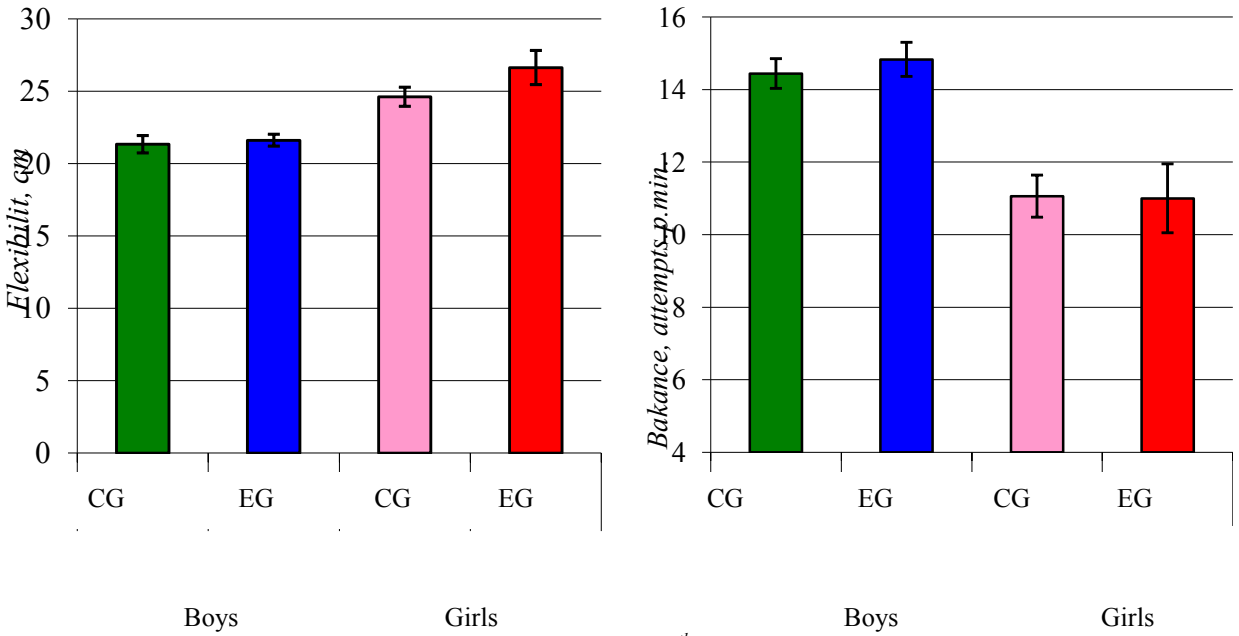

Fig.3 Flexibility and static balance of countryside teenagers of 7th form in control (CG) and experimental (RG) groups after forming research

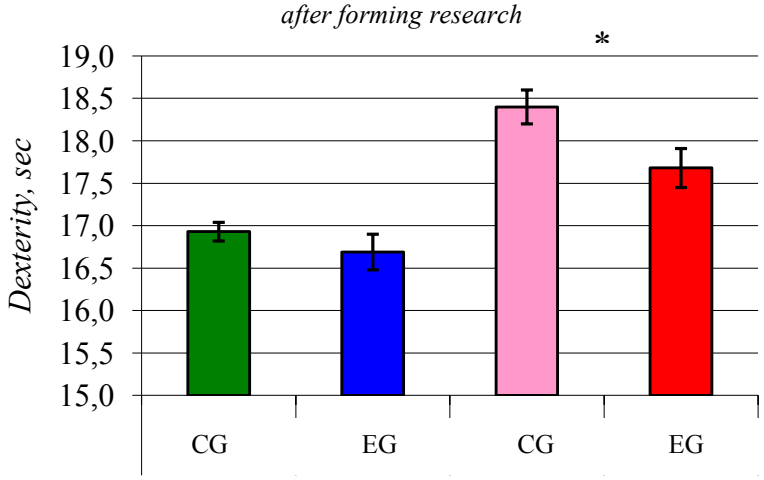

Fig.4 Dexterity of countryside teenagers of 7th form in control (CG) and experimental (RG) groups after forming research by test "Shuttle run 4x9m

So, forming research showed that boys and girls of experimental group had confidently better dynamic and static power endurance. Teenagers from experimental group showed statistically confidently better quickness of upper limb. Confidently higher dexterity was demonstrated by girls from experimental group, who had optional; trainings. This group's girls showed trend to improvement of explosive power and flexibility. Thus, we can note that above said witness effectiveness of experimental methodic of optional physical culture trainings.

Conclusions:

1. Optional physical culture trainings positively influence on motion fitness of countryside teenagers.
2. Countryside boys and girls had confidently better dynamic and static power endurance, quickness of upper limb.
3. Countryside girls of experimental group had confidently better dexterity and showed trend to improvement of explosive power and flexibility.

Further researches in this direction can be oriented on searching of new methodic approaches to programming of optional trainings of health related character. Besides, it is necessary to have systemic works on optimization of countryside schoolchildren's physical condition because physical culture lessons, as main form of physical education of comprehensive schools' pupils can not ensure organism with required scope of motion functioning.

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THE CONSTRUCTION OF PHYSICAL REHABILITATION PROGRAMS IN THE PREOPERATIVE PERIOD FOR PATIENTS THAT WILL REMOVE OF INTERVERTEBRAL DISC' PROLAPSE IN THE LUMBAR SPINE

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Annotation. The ineffectiveness of conservative treatment will make the need for surgery in 4-5% of patients suffering from low back pain with hernias of the lumbar and sacral spine. Despite the surgical removal of the source of compressed roots, nerves and blood vessels, require a comprehensive system of rehabilitation therapy in order to eliminate manifestations of disease and relief of disease progression. *The aim of the work* is to substantiate the general approaches for the using of physical rehabilitation and diagnostics static component of the dynamic stereotype in the preoperative period in patients to remove intervertebral disc prolapse. *The materials and methods*. There was examined 96 with low back pain. Methods are applied in this research: analysis of a literature, observation methods. *Results*. In conjunction with the physician was determined "diagnosis for rehabilitation" and "prognosis of the rehabilitation". The formulation of the basis of the diagnosis for rehabilitation was performed through the examination during the rehabilitation (as a taking an anamnestic data, examination and palpation), studies of intact sensory and motor functions, the results of objective research tool. *Conclusions*. The identification of preserved anatomical and functional entities, the definition of the initial level of compensation for lost functions and forecast further recovery is a fundamental approach to program development in the preoperative period in patients with low back pain aimed at the removal of intervertebral disc herniations.
Keywords: low back pain, diagnosis for rehabilitation, prognosis.

Introduction

According to the statistics from the World Health Organization, approximately 80% of the world's population suffering from back pain [1, 4, 13]. One of the causes of back pain may be prolapse of the intervertebral disc, that's manifested polymorphic neurological syndromes (as a reflexive, compression, compression-reflexive and compression-reflexive etc.). The rising pathology brings to acute pain, some changing in muscle, changes in the biomechanical area are important in the formation of postural balance, these all change static and dynamic stereotype, disruption of perception of body position in space and in the synthesis of arbitrary motor response, which gives the loss or disruption of motor function and social maladjustment home patient [2, 5, 13]. Patients often have abnormal strain curves of the spine (as a reflexive scoliosis, hyperlordosis, lumbar kyphosis, or a "flatback" [3, 5, 11]), it connected with free time during the programming of restorative treatment, it is necessary not for only to stop pain and strengthen the muscular system, but also to hold events directed to correct reflex strain of lumbar spine, after surgery especially, that had not drawn some attention of specialists [10, 12].

The ineffectiveness of conservative treatment will make the need for surgery in 4-5% of patients suffering from low back pain with hernias of the lumbar and sacral spine. Despite the surgical removal of the source of compressed roots, nerves and blood vessels, require a comprehensive system of rehabilitation therapy in order to eliminate manifestations of disease and relief of disease progression [7, 12].

Purpose, tasks of the work, material and methods

The hypothesis of the work: there is assumed that the preoperative planning process of physical rehabilitation, taking into account the deformation of the reflex correction in the lumbar spine for patients to remove intervertebral disc prolapsed, reduce the recovery period, help to reduce the number of relapses and a more complete recovery of motor function and social adaptation of patients.

The aim of the work is to substantiate the general approaches for the using of physical rehabilitation and diagnostics static component of the dynamic stereotype in the preoperative period in patients to remove intervertebral disc prolapse.

The methods are applied in this research: analysis of a literature, observation methods.

Results and discussion.

In the case with some features of the motor system pathology in patients with intervertebral disc prolaps, we require specialized strategical approach, as in the assessment of compensation of the lost functions, and in the principles of recovery.

In conjunction with the physician was determined "**diagnosis for rehabilitation**" and "**prognosis of the rehabilitation**". The formulation of the basis of the diagnosis for rehabilitation was performed through the examination during the rehabilitation (as a taking an anamnestic data, examination and palpation), studies of intact sensory and motor functions, the results of objective research tool. The main objective of rehabilitation is identification of intact anatomical and functional entities and the definition of the initial level of compensation for lost functions and prognosis

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for the further recovery. A figurative expression of L.D.Potehin [6], rehabilitation should be identified as a "is not what is not, and what's left."

Before starting the rehabilitation measures aimed at the restoring of lost motor function as were imagined as a paralysis or paresis, motor function was assessed the possibility of the patient, the presence of refined sensory impairments and mobility of joints and determine the reasons for limitation of movement.

Particular attention was paid to indices of social and household mobility and intensity of pain. Also, there was evaluated the quantitative biogeometrical profile of posture and viscoelastic properties of muscles, aimed at identifying the predominant type of reflex spinal deformity, pathology of static and motor stereotypes that may hinder the success of the rehabilitation measures, and determine the "prognosis of rehabilitation" and "patient's rehabilitation potential."

Prognosis of rehabilitation is a reasonable likelihood of achieving the goals of rehabilitation in a certain period of time, given to the nature of the disease, its course, individual resources and compensatory possibilities patient that is a sufficient rehabilitation potential.

Rehabilitation potential of the patient is a scientifically based recovery of the deficit limit of lost physiological functions in a particular clinical case.

Based on the rehabilitation diagnosis, prognosis and potential, was constructed an individual physical rehabilitation program for the patient with back pain aimed at removal at the intervertebral discs herniation, including the appropriate volume of rehabilitation with quantitative indices of the biogeometrical profile of the posture; severity of neuromuscular disorders; musculoskeletal functional disorders , disorders of the static stereotype ; postoperative course, quality of life, general condition, age, sex and exercise tolerance.

On the basis of periods of clinical course, characteristics of operations on the spine were identified following rehabilitation periods: the preoperative, early postoperative period, the late postoperative period, the recovery period.

The preoperative, early and late postoperative periods partially held in stationary conditions (from 3 days before surgery to 7-16th day after surgery). Accordingly, the length of staying in hospital after various operations ranged from 5 to 18 days.

After hospital discharge, patients were at home, they continued course of rehabilitation and restorative and late postoperative periods up to 12 weeks. Further, if necessary, in patients with different levels of rehabilitation potential was carried out a rehabilitation plan with learning new movements and exercises for differentiated programs.

Rehabilitation activities started immediately after diagnosis or decision about the upcoming surgery.

The aim of the preoperative period was the complete preparation of the patient for the upcoming surgical treatment and the further implementation of rehabilitation measures.

The problems of preoperative preparation are:

1. The compensation of cardio-pulmonary failure caused by prolonged painful syndrome.
2. An improvement of the psycho-emotional status of the patient;
3. A preparation for the anesthesia;
4. The conversation and acquaintance with the patient's recovery program for the early postoperative period, self-service skills.
5. The training exercises of an early postoperative period.
6. An education turns, rise out of bed and walking to the preservation of correct postural synergies.

Patients were trained in basic motor locomotion: as an active turns in bed, getting up, standing up, walking according to the method of Nekrasov A.D. [9], thus significantly expand the range of physical activity of patients after surgery and reduce the risk of neurological complications. Stabilization of the lumbar spine was performed on the basis of the formation of a new motor stereotype, precluding bending, straightening of the lumbar spine in all planes, as well as twisting, by performing a set of physical exercises designed to develop motor skills are there follows:

"Turning from back to side on a horizontal surface";

"Transition from vertical to horizontal position";

"Turning from back to side with the transition into a sitting position";

"Turning from laying on a stomach to side with the transition into a sitting position";

"Landing on a chair";

"Transition from a seated position in the standing position."

The motions were performed at the stabilization of the lumbar spine in all planes due to concomitant tensing the muscles of the trunk.

The content and amount of an exercise in the main part of the procedure of therapeutic exercises were chosen through the including the basic and variable parts.

An exercise of the basic part are follows: a generally developmental, exercises for the prevention of common postoperative complications, to prevent contractures, joint stiffness, muscle atrophy, to improve the static endurance of the back and abdominal muscles, to enhance collateral circulation, facilitating the mobility of the spinal membranes, aimed at relaxing "sound" gymnastics.

An exercises of the variable part are follows: exercises for the eliminating a postoperative complications to improve mobility in the non-operated spine, in the presence of functional units and the absence of events instability; corrective exercises are for restoring the static component of the dynamic stereotype; an individually selected exercises for the posture correction, for increase the strength of the paretic muscle groups and muscle hardness with low voltage, depending on the level and extent of damage , for restoring the functional capacity of the damaged joints of the lower

limbs to increase the strength of the muscles that stabilize the damaged joints of the lower limb; also there was respiratory exercises performed considering surgical access and muscles stretching with high hardness alone.

Patients were taught active turns in bed, while maintaining spinal immobilization of a single block. Hand, the same name turn, pulled up with the opposite hand found a foothold on the side of the turn, tossed the opposite rotation of the cross leg, the supporting arm flexing the forearm was carried out and made the turn - to roll back hard on the stomach.

In the formation of a new motor stereotype hold the position of the body so that the line connecting the acromion and the line connecting the great trochanter, located in the frontal plane and the distance between points on both sides of the torso, with the projection of the center of mass of the body combined with the center square feet.

Patients will form the motor skills to implement the principle of stability of the lumbar spine at the exit of the car, at an inclination of the body. The way to compensate for functional impairment of the spine by ligaments stabilizes was performed through the functional muscle on a regular basis. Patients were explained the need to implement rules of conduct in the postoperative period. Not recommended for the following motor acts:

- Start out sitting,
- Lift the legs straight up from the supine position,
- Sudden movements,
- Torsion of spine,
- Bending forward and sideways,
- Lifting weight,
- A long ride in the car.

Patients should be aware that can not tilt the body and in a sitting position no need to sit only on the basis. When reducing the pain the patient should be instructed about the inadmissibility of standing poses with the body tilted forward. Later, with the increasing burden of therapeutic exercises, motor mode to provide optimum opportunity affected in the intervertebral disc. It should be permanently excluded sudden movement.

Patients create a positive psycho-emotional attitude, the installation of a successful outcome, explained the aims and objectives of the forthcoming post-operative treatment. The main means of risk factors were:

1. Breathing exercises are static and dynamic (without involvement of the affected segment of the motor act of spine);
2. Passive and ideomotor exercises;
3. Active-facilitated exercises for the lower extremities;
4. Active exercises for the upper limb girdle (except for patients with lesions of the cervical spine);
5. Active exercises with little resistance;
6. Active tension and relaxation of the pelvic floor muscles;
7. Massage of the limbs;
8. Orthosis;

Method of training was an individual.

Due to the fact that the nature of the clinical manifestations of the disease depended on the location and extent of the pathological process, the technique of restorative treatment in this period was based on an individual rehabilitation plan.

Conclusions

The identification of preserved anatomical and functional entities, the definition of the initial level of compensation for lost functions and forecast further recovery is a fundamental approach to program development in the preoperative period in patients with low back pain aimed at the removal of intervertebral disc herniations.

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LIFESTYLE AND PHYSICAL FITNESS IN EARLY SCHOOL-AGE CHILDREN

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Annotation. *Aim of the study:* the aim of the study was determining relation between selected health behaviour aspects and level of physical fitness in 1st – 3rd grade pupils at primary school in Malbork (Pomorskie province). *Materials and Methods:* the research was conducted in 2009 among 153 children aged 7-10 years. The research group consisted of 80 girls and 73 boys. The diagnostic survey method with use of a questionnaire technique and a set of indirect motor trials was applied. *Results:* the research has shown that the health behaviours of young Polish children do not differ from their peers in other countries. The largest percentage of early school-age children in Malbork achieved the average level of physical fitness (57.0%), while the percentage of students with low (22.0%) and high (21.0%) level was similar. *Conclusions:* the connection between pro-health attitudes of early school-age children (i.e., leisure activities, own health condition, nutrition and the use of drugs) and the level of their physical fitness was not ascertained.
Keywords: pupils, early school age, health behaviour, physical fitness.

Introduction

The issues concerning threats to public health are vital and as a consequence they have become a world-wide discussed phenomenon (Salmond et al., 1994; Francis, 1999). Findings of presented dissertations emphasize the importance and purposefulness of pro-health education in a broad sense. These results based on facts clearly evidence the unsatisfactory and constantly deteriorating health conditions of the majority of human population. (Méeszáros et al., 2008; Starosta, 2010). This undesirable occurrence has particularly intensified in highly developed countries (Hollar et al., 2010). As the research shows, man is not capable of achieving an optimal quality of life as well as happiness, without a psychophysical health in general (Puchalski, 2005). In a group of basic health conditioning, such health measures as: leisure activities, proper nutrition, the use of drugs as well as knowledge and opinion about own health condition have been indicated for many years as essential health factors (Breslow, 2001). Hence, the Canadian Minister of Health claims, these factors, which are directly responsible for lifestyle, seriously affect human health (from 50% up to 60%) (Hancock, 1986). All of the unwanted habits connected with improper lifestyle result in both, unfavorable consequences of human health and the causes of the vast majority of lifestyle diseases (Duvigneaud et al., 2007; Bolton & Rodriguez, 2009).

The above-presented arguments indicate the need of deeper analysis of health behavior from the early childhood, for instance among early school-age children, learning and growing up in small towns (up to 30 thousand citizens) in Pomorskie province. Moreover, the study concentrated mostly on certain community, gives a possibility of deeper analysis, among others based on socio-economic conditions that govern this area.

This dissertation accounts for the continuation of the research which is related to association between health posture and the level of physical fitness of early school-age children attending selected primary schools in Pomorskie province. The first part of the observations conducted at the Primary School No. 2 in Malbork was mostly devoted to the relationship between the level of physical fitness in children and their declared physical activity either within school programme or outside school (Podstawski & Borowska 2011). In present article, the attention has been given to aspects of lifestyle of children aged 7-10, which should have a visible connection with the level of physical fitness among those being examined.

Aim of the study

The aim of the study was determining relation between some health behavior aspects on the basis of the opinion of 1st – 3rd grade pupils at the Primary School No. 2 in Malbork and their level of physical fitness. The attempt to answer the following questions has become the way to realize previously stated aim of study:

1. What is the physical fitness in 1st – 3rd grade pupils?
2. Does the level of physical fitness in 1st – 3rd grade pupils is significantly correlated with their opinions on the ways of spending free time, own health conditions, the way of nutrition and using drugs?

Material and methods

The research was conducted in 2009 among 153 children aged 7-10 years at The Ignacy Krasicki Primary School No. 2 in Malbork. The research group consisted of 80 girls and 73 boys. Every child attending this school took part in the research. The participation of the subjects of the survey (%), their age (class) and sex is shown in figure 1.

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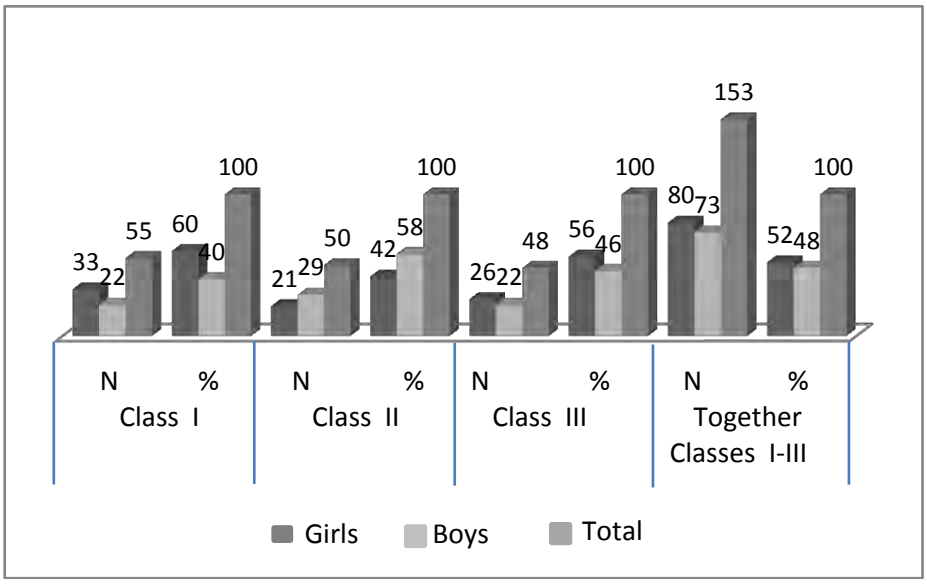

Figure 1. Proportional participation of the subjects including class and sex

In present research the diagnostic survey method with the use of a questionnaire technique and a set of indirect motor trials was applied. The tool used in the physical fitness tests was the set of 11 motor tests. However, the interviewer questionnaire served as a tool to assess children"s health behaviors. The assessment of physical fitness level was conducted by means of the criteria suggested by J. Szopa (1998). The following motor tests were applied: „standing broad jump [cm]", „sit ups – 30 s [number of sit ups]", „4x10m shuttle run [s]", „a-skip with hand clap – 8 s [number of hand claps]", „1 nad 3 min. Burpee test [number of squats in a row]", „downward bend from standing position[cm]", „sit and reach [cm]", „backward medicine ball throw [cm]", „forward medicine ball throw [cm]" and „bend arm hang [s]". All of the applied motor tests are scientifically accurate and reliable (Pilicz, 1997; Szopa et al., 1998; Osiński, 2003). Each child was instructed how to perform the motor tests properly. What is more, every subject of the survey practiced the technique of previously acknowledged tests, depending on the needs in required time during the lesson preceding the assessment. Prior to the test the children took part in a 10-minute warm up.

Estimation in statistics

The results of the research were prepared by means of Statistica PL v. 10 computer program, with the use of graphic statistics. In order to estimate the level of physical fitness in a child, each child"s points were added and all the results obtained in the motor tests were divided into 3 groups excluding gender division (results below average, average and above average) with the use of χ^2.

Results

Table 1 shows the average score of children in the individual motor tests.

Table 1

The level of physical fitness among the early school-age children in the individual motor tests including the subjects' gender

Motor test	**Sex**	**Results**		
		$\overline{X}$	**s**	**V(%)**
Standing long jump [cm]	Girls	97.5	25.83	26.49
	Boys	103.0	21.73	21.10
Sit ups - 30s [number of sit ups]	Girls	14.5	6.53	45.03
	Boys	15.5	5.43	35.03
4x10 m shuttle run [s]	Girls	11.2	2.16	19.29
	Boys	11.3	1.56	13.81
Skipping with clapping of hands - 8 s [number of claps]	Girls	16.7	3.93	23.53
	Boys	18.1	4.00	22.10
Downward bend from standing position [cm]	Girls	4.0	4.53	113.25
	Boys	-0.8	5.90	737.50
Sit and reach [cm]	Girls	2.6	5.23	201.15
	Boys	0.7	5.93	741.25
Medicine ball 2 kg backward throw [cm]	Girls	192.7	71.23	36.96
	Boys	222.8	54.03	24.25
Medicine ball 2 kg forward throw [cm]	Girls	192.2	57.36	29.84

	Boys	250.7	53.70	20.89
Bend arm hang on bar [s]	Girls	5.1	3.13	61.37
	Boys	5.7	4.93	86.49
1 min. Burpee test [number of cycles]	Girls	21.7	3.13	14.42
	Boys	22.2	3.93	17.70
3 min. Burpee test [number of cycles]	Girls	46.6	2.91	6.24
	Boys	46.9	3.95	8.42

Table key: $\overline{X}$ - arithmetic mean, s- standard deviation, V- variation coefficient

In Table 1 the variety of physical fitness level among boys and girls is observed, namely the boys achieved better results in most of the performed exercises. The only exception included flexibility exercises such as: „downward bend from standing position" as well as „sit and reach" trials in which the girls achieved better results. It has been claimed that the majority of pupils in the 1st – 3rd grade can be classified to a group of average physical fitness level (57%), however the percentage of pupils with the high (22%) and the low (21%) level was similar (Tab. 1).

The questionnaire answers provided by the pupils were correlated with the pupils" physical fitness level. The results were based on the whole population of the subjects, excluding gender division because in early childhood sexual dimorphism is not as clearly showed as in later development ages. Moreover, partition of the studied children into two groups would result in reduction of external categories numbers what, successively, would negatively influence results reliability and possibility to achieve statistically significant differences. For all the analyzed relationships probability p of exceeding the calculated value of chi-square statistics amounted to < 0.05 confirming significant differences.

Table 2

Physical activity of children in free time and their physical fitness

Questions	**Answers**	**Total**		**Physical fitness**					
				Low level		**Average level**		**High level**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Spending time off school outdoors	Daily	**115**	**75.2**	27	23.5	67	58.3	21	18.3
	2-3 times a week	**25**	**16.3**	5	20.0	13	52.0	7	28.0
	Seldom	**6**	**3.9**	0	0.0	5	83.3	1	16.7
	Never	**2**	**1.3**	0	0.0	1	50.0	1	50.0
	Other answers	**5**	**3.3**	2	40.0	1	20.0	2	40.0
What do you do outside in your free time?	I do cycling	**97**	**63.4**	23	23.7	50	51.5	24	24.7
	I play different games	**52**	**34.0**	13	25.0	32	61.5	7	13.5
	I go for walks	**34**	**22.2**	8	23.5	18	52.9	8	23.5
	I play hopscotch	**24**	**15.7**	4	16.7	16	66.7	4	16.7
	I play jump rope	**27**	**17.6**	4	14.8	19	70.4	4	14.8
	I do jogging	**61**	**39.9**	12	19.7	39	63.9	10	16.4
	Other	**15**	**9.8**	4	26.7	9	60.0	2	13.3
Playmates during free time	Classmates	**71**	**46.4**	17	23.9	43	60.6	12	16.9
	Friends from the neighbourhood	**88**	**57.5**	23	26.1	45	51.1	20	22.7
	Parents	**22**	**14.4**	3	13.6	18	81.8	1	4.5
	Siblings	**59**	**38.6**	12	20.3	34	57.6	13	22.0
	Other persons	**13**	**8.5**	3	23.0	7	53.8	3	23.0
How do you prefer spending your free time?	Television and video	**33**	**21.6**	5	15.1	23	69.7	5	15.1
	Computer games	**63**	**41.2**	14	22.2	35	55.5	14	22.2
	Reading, for example, books	**24**	**15.7**	6	25.0	12	50.0	6	25.0
	Painting, drawing	**56**	**36.6**	15	26.8	32	57.1	9	16.1
	Walks	**40**	**26.1**	10	25.0	22	55.0	8	20.0
	Outdoor activities	**103**	**67.3**	28	27.2	54	52.4	21	20.4
	Other ways	**8**	**5.2**	1	12.5	5	62.5	2	25.0

As for the results between the opinions of pupils on leisure activities and their level of motor skills, a vast majority of children (75.2%) spent their spare time outdoors, but many fewer declared that they stayed outside 2-3 times a week (16.3%). A small percentage accounted for children staying rarely (3.9%) or never (1.3%) outdoors. Children spending time in the backyard most of all liked cycling (63.4%), running (39.9%) or playing different games (34.0%). Playing a jump rope (17.6%) and playing hopscotch (15.7%) were ranked as the most popular games by the subjects. The group of playmates on fresh air included mostly friends from the neighborhood (57.5%) or classmates (46.4%) and siblings (38.6%). Parents accounted for only 14.4% of persons spending time with their children outdoors. The fourth question was the verification of the declaration previously submitted by the respondents. The answers to the question on how the children like to spend their free time most have confirmed the opinions that *'playing different games outdoors'* (67.3%). Popular leisure activities included also: computer games (41.2%), painting and drawing (36.6%) and walking (26.1%). In the vast majority of the answers analyzed, the children with an average level of physical fitness comprised the biggest percentage (Table 2).

Table 3

Own health condition assessment and physical fitness in children

Questions	Answers	Total		Physical fitness					
				Low level		Average level		High level	
		N	%	N	%	N	%	N	%
Are you a healthy child?	Yes	**128**	**83.7**	27	21.1	72	56.3	27	21.7
	No	**5**	**3.3**	0	0.0	4	80.0	1	20.0
	I do not know	**20**	**13.1**	7	35.0	11	55.0	4	20.0
Have you suffered before?	Yes	**13**	**8.5**	4	30.8	6	46.2	3	23.1
	Yes but I do not know from what	**85**	**55.5**	19	22.4	46	54.1	20	23.5
	No	**55**	**35.9**	11	20.0	35	63.6	9	16.4

The vast majority of children considered themselves to be healthy (83.7%), while 20.0% of the respondents were unable to determine the status of their health. Only 5.0% of the children said they did not feel healthy. More than half of the children (55.5%) said they had suffered before, but did not know from what, and 39.9% did not suffer at all. The vast majority of the respondents in each question categories was characterized by an average level of physical fitness (Table 3).

Table 4

Nutrition and physical fitness in children

Questions	Answers	Total		Physical fitness					
				Low level		Average level		High level	
		N	%	N	%	N	%	N	%
Do you have breakfast at home?	Yes	**108**	**70.6**	26	24.1	58	53.7	24	22.2
	No	**45**	**29.4**	8	17.8	29	64.4	8	17.8
What do you eat when you are in school?	Second breakfast brought from home	**119**	**77.8**	31	26.0	66	55.5	22	18.5
	Lunch at a school canteen	**31**	**20.3**	3	9.7	18	58.1	10	32.3
	Food bought in a shop	**11**	**7.2**	3	27.3	6	54.6	2	18.2
	Food bought in a school shop	**27**	**17.6**	6	22.2	17	63.0	4	14.8
	I do not eat anything	**5**	**3.3**	1	20.0	3	60.0	1	20.0
	Other answers	**3**	**2.0**	0	0.0	1	33.3	2	66.7
How often do you have sweets?	Daily	**21**	**13.7**	2	9.5	16	76.2	3	14.3
	Almost every day	**46**	**30.1**	9	19.6	25	54.3	12	26.1
	2-3 times a week	**47**	**30.7**	13	27.7	29	61.7	5	10.6

	Once a week	**13**	**8.5**	4	30.8	6	46.2	3	23.0
	Less than once a week	**9**	**5.9**	0	0.0	7	77.8	2	22.2
	Very rarely	**15**	**9.8**	4	26.7	4	26.7	7	46.7
	I never do	**2**	**1.3**	2	100.0	0	0.0	0	0.0
How often do you have fruit?	Daily	**80**	**52.3**	17	21.3	48	60.0	15	18.7
	Almost every day	**60**	**39.2**	12	20.0	31	51.7	17	28.3
	2-3 times a week	**9**	**5.9**	2	22.2	7	77.8	0	0.0
	Once a week	**0**	**0.0**	0	0.0	0	0.0	0	0.0
	Less than once a week	**1**	**0.6**	1	100.0	0	0.0	0	0.0
	Very rarely	**3**	**2.0**	2	66.6	1	33.3	0	0.0
	I never do	**0**	**0.0**	0	0.0	0	0.0	0	0.0

Most children (70.6%) had their breakfast at school. The children rated the breakfast brought from home as the meal most often consumed in school (70.6%), and 20.3% respondents consumed their lunch in a school canteen. The highest percentage of children consumed sweets 2-3 times a week (30.7%) or daily (30.1%). Only 1.3% of the respondents did not eat sweets at all. More than half of the children declared that they ate fruit daily (52.3%) or almost every day (39.2%). Among the children whose nutrition style was recognized as the most correct, the children with an average level of physical fitness comprised the highest percentage (Table 4).

Table 5

Using drugs and physical fitness in children

Questions	**Answers**	**Total**		**Physical fitness**					
				Low level		**Average level**		**High level**	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Have you happened to smoke a cigarette?	Yes	**4**	**2.6**	1	25.0	2	50.0	1	25.0
	No	**137**	**89.5**	29	21.2	78	56.9	30	21.9
	I will not answer	**12**	**7.8**	4	33.3	7	58.3	1	8.3
If yes, where was it?	At a birthday party	**2**	**1.3**	0	0.0	2	100.0	0	0.0
	With friends in a park	**1**	**0.6**	1	100.0	0	0.0	0	0.0
	At home	**1**	**0.6**	0	0.0	0	0.0	1	100.0
Have you happened to drink alcohol?	Yes	**11**	**7.2**	3	27.3	7	63.6	1	9.1
	No	**127**	**83.0**	25	19.7	72	56.7	30	23.6
	I will not answer	**15**	**9.8**	6	40.0	8	53.3	1	6.7
If yes, where was it?	I drank leftovers	**4**	**2.6**	1	25.0	2	50.0	1	25.0
	Beer with my father	**5**	**3.3**	2	40.0	3	60.0	0	0.0
	During holiday	**2**	**1.3**	0	0.0	2	100.0	0	0.0

Table 5 summarizes the pupils' responses on their use of drugs, taking into account the level of physical fitness. Of all the children, 89.5% said they never happened to light a cigarette, while 2.6% claimed to have contact with a cigarette. 7.8% respondents did not answer this question. Among the children who declared contact with a cigarette, some of them mentioned birth celebration (1.3%), park and house (0.6% each). 83.0% of children declared no contact with alcohol, while 9.8% of respondents refused to answer this question. In the group of children who came into contact with alcohol the most (3.3%) drank beer *in the company of their father*, slightly less (2.6) *drank alcohol leftovers*. The vast majority of the respondents in each question categories represented the average level of physical fitness (Table 5).

Discussion

The results presented in this study confirmed the desirability of conducting research on the relationship between pro-health attitudes declared by early school-age children and their level of physical fitness. The most critical

factor determining physical fitness of a man is his physical activity. In the case of children, however, the expert opinions are divided. Some believe that there is a link between an active lifestyle and the level of physical fitness of children (Nettlefold et al., 2011; Daley, 2009; Epstein et al., 2001), while the second group of researchers is calling such assertion into question (Stodden et al., 2008; Fisher et al., 2005; Wrotniak et al., 2006; Monyeki & Kemper, 2007) indicating that it is still not clear which aspect of children's physical activity governs their physical fitness and body weight most critically (Must & Strauss, 1999; Sothern & Gordon, 2003). Fisher et al. (2005) suggest that children characterized by a low level of physical fitness and fine motor skills lead a more sedentary lifestyle as opposed to the children with a higher level of coordination who are more physically active.

The results of our studies have confirmed the validity of the „second approach" in this issue by showing that, despite oral declarations of daily outdoor activities by the vast majority of children, their active participation in physical activities has not found its reflection in the level of motor abilities they represent. Since the answers given by the respondents did not confirm this relationship, it is believed that not all the pieces of information provided by the respondents are true. Studies conducted on 6-7- year-old children in the United States confirm such assumption by showing that, despite the relatively high motor activity of children during the day, less than 2% of the time is devoted to intense physical exercise, whereas 80% of the time is used for the physical activity of low intensity (Gilliam et al., 1981). A similar picture of the phenomenon regarding the lack of relationships has been demonstrated in studies conducted on the same group of children, by assessing the impact of the broadly understood physical activity of the subjects on the level of their physical fitness (Podstawski & Borowska 2011), what is more, almost identical situation occurred also in the studies of early school-age children living in the countryside (Podstawski & Mroczkowska, 2011). The presented declarations do not correspond well with nationwide results. They show that only 30% of Polish children and young people are engaged in some forms of movement, of which the type and exercise intensity meet the physiological needs of the body (Lelonek & Jopkiewicz, 2011). In contrast to the presented phenomenon of self-stimulation in early school-age children (Przewęda & Dobosz, 2007), the proportion of physically inactive young people in Poland continues to increase (Simovska et al., 2012). A reduced level of physical activity and clear changes related to over-eating in children are occurring around the world (Weinsier et al., 1998; Chiolero et al., 2009).

The attitudes toward the use of drugs by children (alcohol, tobacco and drugs) are largely a form of imitation the behavior of their parents (Dalton et al., 2005), which was also confirmed in this study.

It should be noted that early school-age children mention specific actions and situations related to health in a piecemeal manner, focusing on their exteriors (Lisicki & Wilk, 1998). An example for this was the opinion expressed by the vast majority of children who considered themselves to be healthy. Perhaps, that is also why their oral declarations were not reflected in the level of their physical fitness. The study also showed the desirability of concomitant use of the methods of subjective (lifestyle interview) and objective (testing physical fitness) assessment of the level of biological condition (health) of the entity or a particular social group (Kornafel et al., 2000). The both techniques applied by us should complement each other, and in case of an absence of accurate answers from the respondent, the results obtained in motor tests correct them automatically. This assumption stems from the fact that a questionnaire is not a sufficiently precise tool for the study of preschool children (Mota et al., 2003), and therefore it should be supplemented by other research technique used for testing physical fitness, that is a measurement made on the basis of accurate and reliable motor test.

The results may also provide a frame of reference for the corresponding observations from this area, carried out in other regions of the country and abroad, especially as the number of works devoted to subjective self-assessment of health is much smaller in comparison to the extensive bibliography concerning its objective assessment.

Conclusions

On the basis of the research study and its analysis, following conclusions have been formulated:

1. The largest percentage of early school-age children from the Primary School No. 2 in Malbork, achieved the average level of physical fitness (57.0%), while the percentage of pupils with low (22.0%) and high (21.0%) level was similar.
2. There were no relations between early school-age children's pro-health attitudes in the following areas: leisure activities, the state of their own health, nutrition and the use of drugs, and the level of the physical fitness they represent.

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