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CONTENTS

INTERCONNECTION OF STUDENTS' SOMATIC TYPE WITH SOMATIC HEALTH

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Vasyl Stefanyk Precarpathian National University

Abstract. *Purpose:* to study interconnection of students' somatic type with their somatic health. *Material:* in the research 106 students of 17-22 years' age participated. Anthropometric indicators were determined. *Results:* we calculated indices, which characterize reserve potentials of cardio-respiratory system. Students with micro-somatic body constitution have low values of heart beats rate and high diastolic blood pressure. In macro-somatic students we observed confidently higher heart beats rate indicator. By this indicator the students have also restricted range of organism's compensatory potentials. Macro-somatic students with high values of Robinson's index can be related to group with reduced functional reserves of cardio-vascular system. *Conclusions:* it is recommended to consider that increase of body length and heart beats rate indicators negatively impact on students' somatic health. It is recommended to distribute students, considering main anthropometric indicators.
Key words: anthropometry, somatic type, cardio-respiratory system, students.

Introduction

One of current issues of modern theory and practice of physical culture (PC) is perfection of methodic base of students' physical education. Discussion among physical culture specialists on strategy and technology of educational programs' realization shall be based on theoretical and scientific foundation and increasing of methodic techniques' share. These techniques shall permit to group students by level of heir physical condition (PhC) and somatic health (SH) [1, 3, 6, 19].

Development, implementation and further perfection of educational programs are impossible without knowledge of diagnosis methods and assessment of students' indicators. Recent years much attention has been paid by scientists to express diagnosis and different markers of organism's morphological-functional status; organism's genetically determined characteristics. These indicators reflect basic level of students' readiness for fulfillment of socially significant functions. Among modern approaches to solution of this problem analysis data of correlation between somatic indicators and somatic health take special place. Interest to somatic type indicators is not occasional. This complex of physical characteristics is genetically determined and strictly individual. It is determined by organism's morphological features. Most of such features remain unchangeable during all life [2, 5, 9.11, 14].

Recent decade, a steady trend to weakening of Ukrainian population's somatic health has been observed [7, 21]. The quantity of different diseases, connected with chromosomes' structural anomalies, sharply increased among students. It influences on somatic type (ST) of every person. In literature there is a number of works, in which the data about peculiarities of somatic type and somatic health with rheumatism, infectious-allergic diseases, vegetative-vascular dystonia congenital defects, neuropathy of different genesis are elucidated. Besides, gender and age similarity of these indicators was found [2, 4, 9]. Alongside with it there is no works, devoted to complex analysis of PhC of students of all somatic types in respect to their somatic health and physical workability. All above said determined the importance of our research.

Purpose, tasks of the work, material and methods

The purpose of the work is to study interconnection of students' somatic type with their somatic health.

The methods and organization of the research: in the research 106 students of 17-22 years' age, who studied in Vasyl Stefanyk Precarpathian National University and lived in Ivano-Frankovsk, participated. In the process of our work we measured body length (BL, cm), Body mass (BM, kg), chest circumference in breathing pause (CC, cm), heart beats rate (HBR, bpm), systolic blood pressure (SBP, mm.merc.col.) and diastolic BP (DBP, mm.merc.col.), vital capacity of lungs (VCL, ml) and muscular strength of working hand (MSH, kg). We calculated the following indices:

Weight-height index (WHI) – correspondence of body mass to body length, which was assessed by centile tables;
Life index (LI) = VCL/BV (ml/kg);
Power index (PI) = MSH/BM (%);
Robinson's index (RobI) = (HBR x SBP) : 100 (conv.un.);
Ruffiet's index (RufI) – cardio-vascular system's reaction to dozed physical load (30 squats per minute).

Determination of somatic health level was carried out by method of L. Apanasenko [2]. General assessment of somatic health was fulfilled by converting of quantitative indicator (indices) into points. Their sum corresponded to certain level of aerobic (energy potential. Distribution of students into micro-, meso-, and macro somatic groups was realized by schema [4, 14]. Somatic type was estimated by sum of centile intervals' numbers, received for body mass, length and chest circumference. For micro somatic students the sum of centile tables' corridors did not exceed 11, for meso-somatic

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group it was within from 11 to 15, in macro-somatic group it was higher than 16 [8, 18, 19]. All indicators were processed with calculation of mean values, error of mean value, Student's t-criterion. Correlation analysis was conducted.

Results of the research

Analysis of somatic types of the tested students showed that the highest specific gravity belongs to meso-somatic students (70. 4%). Girls of micro- and macro- somatic types are rather rare (17. 5% and 12.1% respectively). Mean values of morphological functional indicators of general sample and of girls with different somatic types are given in table 1.

Table 1. Morphological-functional indicators of 17-22 years' old students

Indicator	Micro-somatic type 1	Meso-somatic type 2	Macro-somatic type 3	P<0.05
BM, kg	57,5±0,7	64,8±0,3	75,0±0,6	1–2;1–3;2–3
BL, cm	146,5±1,1	155,3±0,3	161,8±0,6	1–2;1–3;2–3
CC, cm	67,6±0,5	74,5±0,3	82,6±1,0	1–2;1–3;2–3
HBR, bpm	80,2±1,2	82,7±0,6	85,4±1,2	1–2;1–3;2–3
SBP, mm.merc.col.	106,5±1,0	105,3±0,5	105,9±1,2	–
DBP, mm.merc.col.	69,3±0,7	67,4±0,4	68,2±0,9	1–2
VCL, ml	2464,0±38,1	2831,6±21,3	3422,1±65,8	1–3
MSH, kg	20,6±0,5	25,2±0,2	30,0±0,6	–
LI	61,8±1,4	52,5±0,5	44,5±1,4	1–2;1–3; 2–3
PI	55,9±1,5	45,6±0,6	36,3±1,0	1–2;1–3; 2–3
RobI	85,4±1,5	87,2±0,7	90,4±1,7	1–3; 2–3
RufI	10,5±0,4	11,1±0,2	11,9±0,5	1–3
WHI	-1,2±0,09	-0,8±0,03	-0,2±0,05	1–2;1–3; 2–3

One of the most important indicators of students' health is physical condition, for characterizing of which anthropometric indicators are measured and assessed. Results of testing showed that in the tested students' groups' body mass, length and chest circumference mean values were within age standards. Analysis, considering somatic type, witnesses that students of micro somatic type have mainly values below average. Macro-somatic students have values average and high. For students with micro- and meso-somatic type average degree of weight-height correlation is characteristic. Macro-somatic students relate to category "above average" by this indicator.

It was found that micro-somatic students have slow temp of growth, meso-somatic students – normal and macro-somatic students – accelerated temp.

Vital capacity of lungs is an important indicator of physical condition. Assessment of received results showed the trend to increase VCL absolute values with increasing of body constitution's strength. The other picture is observed if to regard this indicator per 1 kg of body mass.

Calculation of life index showed that micro-somatic students have high values of this indicator (see table 1) and it was above average. Mena group LI value of meso-somatic students corresponded to average value and of macro-somatic students – to low level. So, micro-somatic students can be related to group with slowed physical development by main indicators of physical condition (body mass and length, CC). However, they are functionally better developed than their peers, who have higher anthropometric indicators. Comparison of mean group values by muscular strength of hand of students with different somatic type showed confident differences. That is why value of power index (relation of hand's strength to body mass) is confidently higher than of macro-somatic students and was assessed as high. Meso-somatic students showed average values and PI of micro-somatic students was assessed as low.

The tested micro-somatic students have low values of heart beats rate and high diastolic blood pressure (see table 1). Macro-somatic students have confidently higher HBR. It means that in this case cardiac muscle works ineffectively, in the least saving mode and the range of organism's compensatory potentials is restricted [3]. No confident differences between SBP values of students with different somatic type were found.

Valuable criterion of organism's energy potential is condition of cardio-vascular system's condition. One of the most important indicators of this reserve is Robinson's index, which characterizes the work of systolic heart [7, 12, 17].

The received by us data witness that in micro-somatic group Robinson's index (RobI) is confidently lower, comparing with students of second somatic type (which was assessed as average). So, macro-somatic students with high Pobinson's index values can be related to group of persons with reduced functional reserves of cardio-vascular system. The received data coincide with results of students' testing in other regions of Ukraine [4, 5, 7]. As per these data macro-somatic students have reduced physical condition indicators and cardio-vascular system's reserves. Ruffiet's index (RufI) reflects adaptation potentials of cardio-vascular systems in response to dozed physical load. Students of all somatic types had reserve of cardio-vascular system's functions below average. Micro-somatic students show much better results.

Somatic health is an integral indicator and for its assessment a number of indices are used. Mean values of somatic health in all sample can be characterized as low. However, students with different body constitution types confidently differ by level of somatic health (see fig.1). Total assessment of somatic health was carried out by converting of quantitative indicators (indices) into points. Their sum corresponded to certain level of aerobic energy potential.

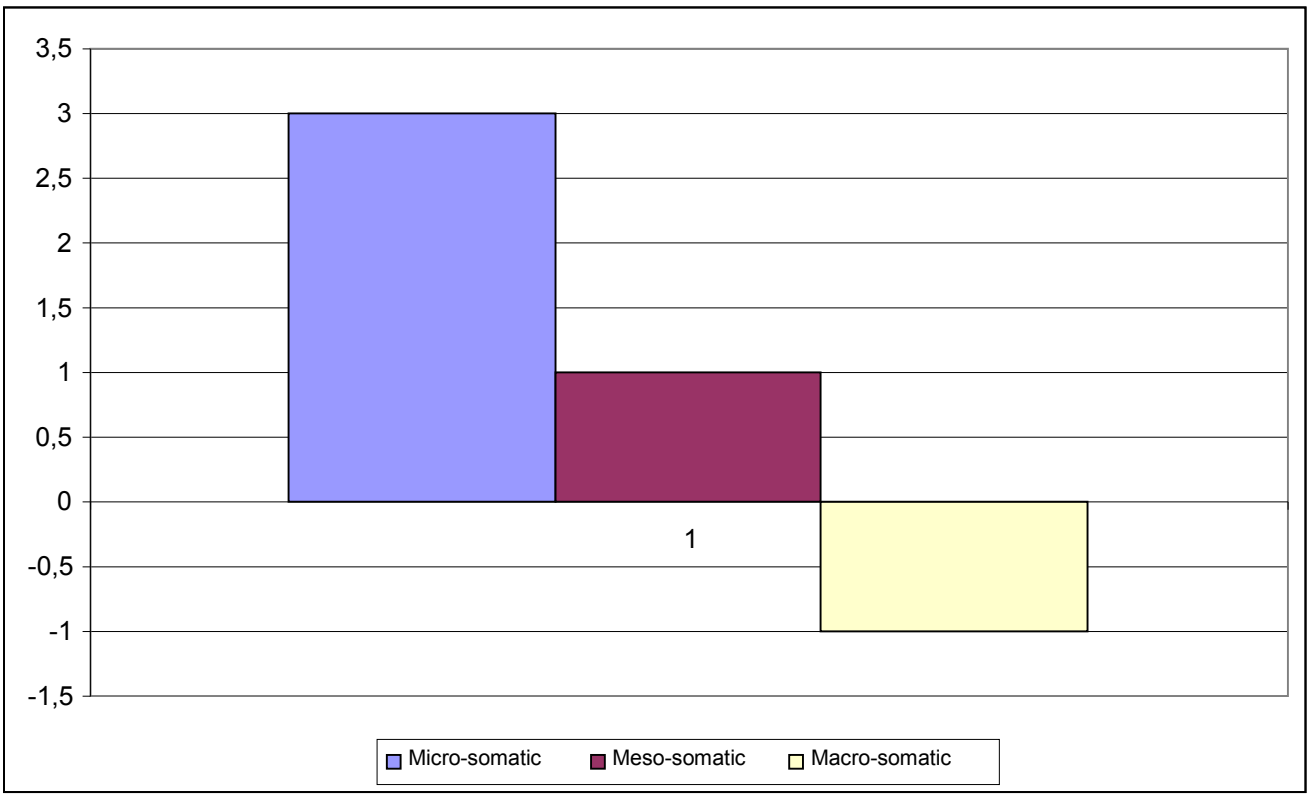

Fig.1. Level of somatic health of different somatic types' students

Micro-somatic students have higher mark of somatic health. Their level was assessed as below average. The level of meso- and macro-somatic students was assessed as low.

Individual marks of somatic health are given in table 2.

Among micro-somatic students persons with average, above average and high levels of somatic health are more frequently met. Group with favorable level consisted of micro-somatic students. Among them quantity of persons with low somatic health was less that in other somatic groups. Results of correlation analysis showed that somatic health level is not influenced by SBP and VCL. Increase of body length, mass and heart beats rate indicators negatively impacts on students' somatic health (see fig.2). Weak positive correlation was noticed between somatic health and power, life indices and Robinson's index. Strong positive correlation of these indicators was registered with Ruffiet's index.

Table 2. The level of girls' somatic health, depending on heir somatic type (quantity of tested, %)

Characteristic of group	Level of somatic health				
	High	Above average	Average	Below average	Low
All sample	66, 8	18, 6	13, 2	1, 0	3, 7
Micro-somatic type 1	86, 9	19, 1	27, 0	1, 1	–
Meso-somatic type 2	65, 7	20, 5	12, 6	0, 8	3, 4
Macro-somatic type 3	49, 4	9, 8	3, 3	0, 0	4, 0
P<0.05	1–2;1–3;2–3	2–3	1–2;1–3;2–3	–	–

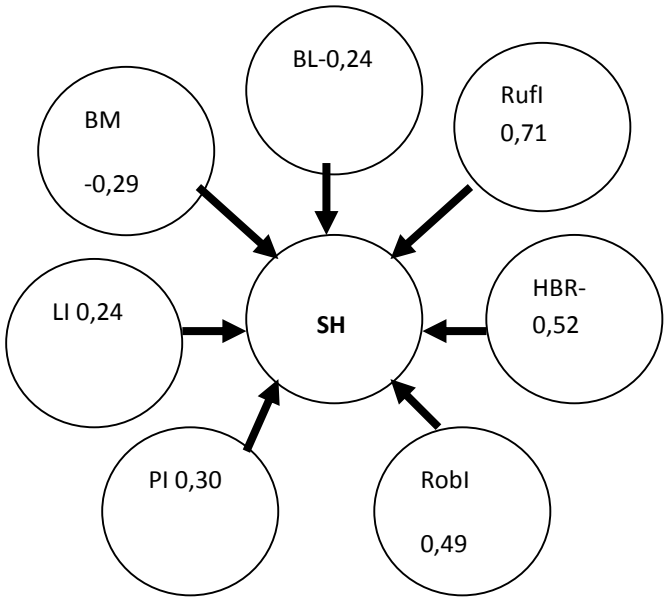

Fig.2 Factors, influencing on students' somatic health (figures are correlation coefficients with p <0. 05).

Discussion

Our data confirm results of researches of many authors 1–4], which say that somatic health level is determined by reserve potentials of cardio-vascular system and confidently differs in girls of different somatic types.

The data, permitting to distribute students, considering level of different anthropometric indicators (CC, body mass and body length) into micro-, meso- and macro somatic types seem to be rather promising.

As per traditional approach of health assessment, students' physical condition can correspond to slowed, normal and accelerated temp of development. However, the existing methodic of physical condition's assessment is imperfect. This methodic quantitatively characterizes the process of development but does not permit to judge about systemic genesis state [2]. The results of the conducted researches confirm this statement. Results of correlation analysis were a little sudden. These indicators witness that girls with slowed temp of development (micro-somatic type) have higher reserves of cardio-vascular system and functionally they are in better conditions. That is why they have better somatic health in comparison with meso- and macro-somatic types. It is confirmed in works by Z.Z. Galperin [11] and N.V. Sharipov et al. [17]. The authors note that macro-somatic boys have functional tension and reduced adaptive reserves. That is why such students are of risk group and require increased attention from medical doctors and pedagogues.

Conclusions

1. Anthropometric indicators are important indicators of students' physical condition. By them somatic health level of all somatic types' students is measured and assessed.
2. Testing results showed that in the tested group of students mean values of body mass, body length and chest circumference were within average age standards. Analysis, considering somatic type, witnesses that micro-somatic students have more values of below average; macro-somatic students – above average and high. Micro- and meso-somatic

students are characterized by average weight-height correlation. By this criterion macro-somatic students relate to above average category.

3. Calculation of life index showed that micro-somatic students had high value of this indicator (above average). Mean group LI values of meso-somatic students were at average level and meso-somatic students – at low. Micro-somatic students can be related to group with slowed tem of development. However these students functionally are in better condition than their peers with higher anthropometric indicators.

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ANALYSIS OF OLYMPIC EDUCATION THEORETICAL READINESS OF FUTURE PHYSICAL CULTURE TEACHERS

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Abstract. *Purpose:* analysis of Olympic knowledge system in future physical culture teachers. *Material:* in the research 180 4 year students of physical culture faculties participated. *Results:* it was found that students' theoretical knowledge level in the sphere of Olympic movement corresponds to low. It was confirmed that system of Olympic knowledge is an integral part of future physical culture teachers' readiness for Olympic education of schoolchildren. It was found that in the process of knowledge formation in students it is necessary to consider theoretical material on Olympic education, acting academic programs for pupils of comprehensive educational establishments. *Conclusions:* students have low level of knowledge in sphere of Olympic movement (general indicator was 57.4%). It weakens effectiveness of skills, knowledge and motivation's formation in realization of schoolchildren's Olympic education.
Key words: Olympic education, knowledge, students, test.

Introduction

At the beginning of 21st century one of the most important directions of modern Olympic movement Olympic education of children and students became. In our country, for recent decade the system of Olympic education has powerfully developed and formed; it is directed at formation of harmoniously developed personality. All it is achieved by acquiring of knowledge, skills and abilities, development of interests, value orientations. The received knowledge is based on humanistic ideals and values of Olympic movement and is a part of general education.

Implementation of Olympic education elements in educational process is studied in works of domestic authors [7, 8]. Besides, Olympic education is reflected in State standard of primary comprehensive education, in which there are requirements to the level of comprehensive education of pupils. The requirements envisage pupils' mastering of Olympic topics' problems [State standard of primary comprehensive education. (Approved by Cabinet of ministers of Ukraine, № 462, dt. April 20th, 2011).]. Analysis of existing academic programs for 1- and 5-11 forms shows that questions of Olympic education are a part of chapter "theoretical-methodic knowledge' on discipline "Physical culture". They are compulsory for pupils of every form [18].

Alongside with it results of foreign and domestic scientists (G. Polikarpov, G. Ragozin, V. Sergeyev, V. Yermolovaq) witness about low level of pupils' knowledge of Olympic topics. This fact is explained by insufficient quantity of qualified specialists in the field of children and students' Olympic education. [8, 11, 12, 14,]. This problem is mentioned not only in domestic but also in foreign scientific literature [19, 20, 21, 22, 23, 24]. Most of foreign authors are sure that effective realization of Olympic education is possible only with presence of highly qualified specialists. Such specialists shall have proper knowledge and skills in attracting of a personality to ideals and values of Olympic movement. Leading specialists [7, 8, 10, 11] note that main pedagogic specialists on implementation of Olympic movement's ideology in comprehensive educational establishments are graduates of specialized higher educational establishments and physical culture faculties of HEEs.

In such situation the problem of future physical culture knowledge of Olympic movement acquires first importance as well as their readiness for realization of Olympic education in the frames of future professional functioning. As on to day one of main criteria of future physical culture readiness for effective realization of Olympic education is formation level of their knowledge system in the field of Olympic movement. For confident assessment of physical culture faculties graduates' Olympic knowledge system alongside with analysis of special literature we carried out this research.

Purpose, tasks of the work, material and methods

The purpose of the research is to analyze Olympic knowledge system in future physical culture teachers.

The methods of the research: theoretical analysis and generalization of scientific-methodic literature data, testing, methods of mathematical analysis.

Knowledge level of students was determined with the help of test tasks, which were composed on the base of theoretical material on Olympic education. This material is a part of acting academic programs for 1-4 and 5-11 forms' pupils of comprehensive educational establishments [18].

Topics of test tasks consisted of three parts. The first part contained questions on history and development of Olympic Games in ancient Greece, the second – history and development of modern Olympic Games, the third – questions on history of Olympic movement in Ukraine [15].

The researches were conducted on the base of physical culture faculties of the following higher educational establishments of Ukraine: Kamenets-Podolskiy national university, named after Ivan Ogniyenko, Ternopol national

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pedagogic university, named after Vladimir Gnatiuk, Chernovitskiy national university, named after Yuriy Fedkovych, Kharkov national pedagogic university, named after Grygoriy Skovoroda. In the research 180 4 year students participated.

Results of the research

The received testing results showed low level of Students' knowledge about origin of Olympic Games. For example 57.7% of students knew when the first Olympic Games took place and only 42.8% knew in what town they were conducted.

Only 43.3% of the questioned knew the program of Olympic Games of ancient Greece and 61. 6% of students knew what were the awards of winners.

54.2% of respondent gave correct answer to question "who had right to participate in Olympic Games of ancient Greece?".

The reasons of prohibitions of ancient Olympic Games were known only to 20.7% of students.

Analyzing the answers to the second part of questionnaire we noted that 67.9% of students knew who founded modern Olympic Games.

It was interesting that the place of first modern Olympic Games was known to 88.8% of students. Among them only 62.6% pointed the years of their conduct correctly.

Only 23.7% of students could call correctly the name of first president of International Olympic committee. Alongside with it the name of acting president was known only to 58.8% of the questioned.

The questioning showed that students know Olympic symbolism quite good. For example 88.3% knows the meaning of five bound rings on Olympic flag. Formulation of Olympic motto was known to 87.3% of students.

Conception "Olympism" is familiar only to 19.9% of the questioned. Such low indicator witnesses about students' unawareness of ideals and values, which are the basis of Olympic movement.

Students' questioning also showed that only 51.9% knew about existence of the Olympic Charter.

The question "where the next summer and winter Olympic Games will be conducted?" was answered correctly by accordingly 52.9% and 51.2% of students. Only 24.8% of students knew how long modern Olympic Games last.

Analyzing students' answers to the third part of the questionnaire we noted high level of students' knowledge about history of Olympic movement in Ukraine.

The questioning results witness that most of students knew when National Olympic committee of Ukraine was formed; who was its first president (accordingly 74.8% and 70.3%). Acting president of NOC of Ukraine was known to 79.2% of students.

When Ukrainian team participated as teams of independent country in summer and winter Olympic Games for the first time was known to accordingly 51.6% and 68.1% of students.

The name of the first Ukrainian, who won gold Olympic medal, was pointed correctly by 74.5% of the questioned. Alongside with it the first Olympic champion of winter Games was known only to 57.9% of students.

General indicator of correct answers in the sphere of history and modern state of Olympic movement was less than 60% (table 1).

Table 1. Formation of Olympic knowledge system in students

№	Questions to be answered	Respondents' answers by HEEs, %				General indicator %
		Kamenets-Podolskiy	Ternopol	Chernovtsy	Kharkov	
1.	Which year is considered to be the birth year of ancient Greece Olympic Games?	62,3	58,2	53,1	57,2	**57,7**
2.	In what city ancient Olympic Games were conducted?	49,8	32,6	40,7	46,1	**42,8**
3.	Name please main competitions of Olympic Games in ancient Greece	45,8	36,4	44	47,1	**43,3**
4.	What awards the Olympic Games winners received?	62,1	63,9	59,3	61,2	**61,6**
5.	Who had right to participate in ancient Olympic Games?	62,8	43,7	51,9	58,4	**54,2**
6.	Why Olympic Games were prohibited?	20,3	21,8	16,8	24	**20,7**

№	Questions to be answered	Respondents' answers by HEEs, %				General indicator %
		Kamenets-Podolskiy	Ternopol	Chernovtsy	Kharkov	
7.	Who is considered to be the founder of modern Olympic Games?	74,2	69,3	54,1	73,9	**67,9**
8.	Where the first modern Olympic Games were conducted?	89,3	91,3	86,2	88,4	**88,8**
9.	Ion what year the first Olympic Games were conducted?	68,3	55,8	64,2	62,2	**62,6**
10.	Who was the first president of IOC?	24,5	21,3	19,8	29,1	**23,7**
11.	Point the name of acting president of IOC	57,7	67,1	58,3	52,0	**58,8**
12.	What is the meaning of Olympic rings?	89,1	92,3	84,5	87,4	**88,3**
13.	Write please Olympic motto	88,3	92,4	81,2	87,1	**87,3**
14.	What is the meaning of concept "Olympism"?	19,4	21,3	18,8	20,1	**19,9**
15.	What is Olympic Chart?	55	43,4	57,2	52,1	**51,9**
16.	Where will the next summer Olympic Games be conducted?	47,9	61,1	52,7	50	**52,9**
17.	Where will the next winter Olympic Games be conducted?	57,2	44,7	48,9	54,2	**51,2**
18.	What is the maximal duration of summer Olympic Games?	28	36,1	16,3	19,1	**24,8**
19.	In what year was NOC of Ukraine formed?	80,3	65,4	74,7	78,9	**74,8**
20.	Who was the first president of NOC of Ukraine?	73,2	70,7	63,1	74	**70,3**
21.	Write please the name of acting president of NOC of Ukraine	84,2	72,1	82,1	78,3	**79,2**
22.	When team of independent Ukraine took part in summer Olympic Games for the first time?	58,3	49,4	52,8	45,3	**51,6**
23.	When team of independent Ukraine took part in summer Olympic Games for the first time?	68	65,2	71,3	67,8	**68,1**
24.	Who became the first Olympic champion of independent Ukraine at summer Olympic Games?	79,1	72,3	64,2	82,2	**74,5**
25.	Who became the first Olympic champion of independent Ukraine at winter Olympic Games?	58,3	52,1	62,4	57,3	**57,9**
	General indicator %	**60,1**	**56,0**	**55,1**	**58,1**	**57,4**

Analyzing general indicators of correct answers by HEEs we noted the following results: Kamenets-Podolskiy national university, named after Ivan Ogniyenko – 60.1%, Ternopol national pedagogic university, named after Vladimir Gnatiuk - 56%, Chernovitskiy national university, named after Yuriy Fedkovych - 55,1%, Kharkov national pedagogic university, named after Grygoriy Skovoroda - 58,1%. It should be noted that difference between indicators is rather insignificant. It confirms low knowledge level of all higher educational establishments' students.

Discussion

The results of our research supplemented the data of other authors [7, 8, 11, 12] that main pedagogic specialists in schools' Olympic education system are graduates of specialized higher educational establishments and physical culture faculties of higher educational establishments.

We confirmed the data that system of knowledge in the field of "Olympism" and Olympic movement is an integral part of future physical culture teachers' readiness for schoolchildren's Olympic education.

It brings better results in formation of skills, knowledge and motivation in realization of Olympic education in comprehensive educational establishments.

We confirmed the data about students' low theoretical readiness in the field of Olympic movement [7, 8, 11, 12].

In the process of formation of future physical culture teachers' knowledge system in the field of Olympic education it is necessary to consider theoretical material on Olympic education, which is a part of acting academic programs for 1-4 and 4-11 forms of comprehensive educational establishments.

Conclusions

Results of our research showed low level of Olympic knowledge system in future physical culture teachers. General indicator of correct answers in the field of history and modern state of Olympic movement was only 57.4%.

Comparison of general indicators of correct answers by every HEE showed that difference between them is insignificant. It confirms insufficient level of students' knowledge in all HEEs, in which the research was conducted. That is why it is rather early to state that training of future physical culture teachers for realization of Olympic education in comprehensive educational establishments is effective.

The further researches will be oriented on perfection of physical culture faculties students' theoretical readiness in the field of Olympism and Olympic movement by introduction of new informational technologies and modern means of education in educational process.

Conflict of interests

The author declares that there is no conflict of interests.

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PHYSICAL CULTURE IN LIFE OF EASTERN-EUROPEAN REGION STUDENTS: MODERN STATE AND PROSPECTS OF DEVELOPMENT

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Abstract. *Purpose:* analysis of researches on physical culture problems among students in countries of Easter-European region (2013–2015). *Material:* As sources of information we chose data base of Russia, Poland and Ukraine. Besides, we used sites of the most known journals of Easter-European region. When choosing journals we based on rating of Russia (RISC), Poland (Index Copernicus) and Ukraine (bibliometryka of Ukrainian science) data bases. *Results:* thematic focus of researches on different physical education, sports and students health aspects was determined. The promising directions of researches are as follows: re-organization of system of students' physical education; interconnection of life quality and organism's resistance to environmental impacts; dependence of students' motor functioning on bad habits' presence; determination of factors, facilitating motivation for sport games in system of students' health related trainings; perceiving of life quality by disabled students; competence and professional skillfulness of specialists in physical culture and sports. *Conclusions:* it is recommended to use new, attractive forms of students' motor functioning. It is necessary to regulate students' motor functioning, considering motivation for success and for avoiding failures as well as to increase students' psycho-physiological stresses' resistance and to form students' culture of health.
Key words: student, health, physical culture, motivation, physical education.

Introduction

Practical realization of different scientific projects is important direction of physical culture and sports development in educational establishments. Some of such projects are implemented with governmental financial support. But main part of the projects is realized as initiative of educational establishments' teachers. All these, taken together, create certain scientific-research medium, which facilitates progress of physical culture – sports activity in educational establishments. Searching of ways to improve students' health, development of some kinds of sports, creation of favorable conditions for formation of youth's positive attitude to healthy life style, training of professional-applied skills of future specialists and other can be considered to be the main purpose of such researches. Demand in such works is conditioned by negative tendencies to worsening of students' health. Such tendencies are characteristic for all countries of Eastern-European region. Even in more developed countries of the region (for example in Poland) there is observed the same trend to worsening of students' health. Alongside with it, the countries of this region have many common problems, which concern development of physical culture and sports in youth medium.

It is necessary to note that countries of Eastern-European region (Ukraine, Poland, Russia, Belarus and Moldova) have equal climatic and geographic conditions. More than half of Ukrainian and Belarus territory, northern-eastern part of Poland and western part of Russia are still polluted with radiation, resulted from the accident on nuclear power plant (Ukraine, Chernobyl, 1986). This accident's after-effects have being continued to negatively influence on youth's health that requires consolidation of these countries' scientific researches in this direction. It pre-determines demand in coordination of appropriate scientific researches of scientists of these countries. All these, taken together, mark out Eastern-European countries from other countries of Europe.

Sports' development in students' medium of these countries takes place in close regional frontier cooperation of universities, institutes and academies. Characteristic feature of this region is presence of physical education departments in structure of higher educational establishments (with staff from 5 to 70 workers): approximately 300 departments in Ukraine, Poland, Russia and a little less in Belarus and Moldova. These educational establishments have discipline "Physical education" in their curriculums. In most of educational establishments this discipline is compulsory (2-4 hours a week). Now there appears a trend to making this discipline an optional one (Poland, Ukraine, Moldova and partially in Russia and Belarus). Besides, distinctive peculiarity of this region's countries is practice to conduct physical education classes, depending on students' health and their division into three health groups:

1) Main health group (consists of students, having no health problems);

2) Preparatory health group (students with insignificant health disorders); Подготовительная группа (студенты с незначительными отклонениями в уровне здоровья);

3) Special health group, consisting of students with disorders of health. From this group, the group of therapeutic physical culture is formed for students with pathologies and disabled students.

The countries of Eastern-European region have approximately equal system of coaches and teachers' training. This training if mainly conducted at faculties (or institutes) of physical education of pedagogic universities (approximately 15 in every country) and in specialized educational establishments of physical culture profile (approximately 6 in every

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country).The largest technical universities in these countries also deal with training of coaches, physical culture instructors and teachers (approximately 5 in every country). In sport competitions these educational establishments seriously compete with specialized physical culture educational establishments. Distinctive feature of this region's countries is two-step preparation of scientific staff: candidate of sciences (PhD) and doctor of sciences (PhD professor).

Finally, countries of Eastern-European region have the same problems in students' physical education, in protection and improvement of heir health, development of sports, training of scientific staff and other. Increased radiation pollution forces the scientists of these countries to search solution of problem of students' health improvement and protection. Scientific researches in these directions often duplicate each other. It results in unjustified financial losses and ineffective researchers' work in this countries. It should be noted that in this region Russian language is used: to large extent in Russia, Belarus and Ukraine and to less extent in Poland. It permits for most of scientists to communicate and present their works in easy to understand for them language. In this region there appear positive tendencies to use English in scientific sphere of educational establishments. That is why demand in concentration and coordination of scientific results of Easter-European scientists in solution of physical culture and sports problems in students' medium is evident.

Recent years researches, dealt with students' life quality and health, development of physical culture and sports in educational establishments, have been being oriented more on solution of applied tasks. Analysis of thematic focus of the researches witnesses about presence of same problems in countries of Eastern-European region in educational establishments' physical culture – sport functioning: Russia [51, 54, 55, 78, 82, 88, 100, 182 et al.); Ukraine (2–4, 86, 87, 103, 142–146, 152, 162, 189–191 и другие); Польша (65–67, 130, 147–149, 151, 157, 159–161 и другие); Belarus (50, 101, 111 et al.). It can be added with researches of scientists from neighboring countries: Lithuania (211). The authors researched wide circle of problems, which are characteristic for educational establishments of their countries and for all Eastern-European region. Most of information is concentrated in several data bases: Index Copernicus (Poland) RISC (Russia), National library of Ukraine (Ukraine). The other portion is elucidated in journals of these countries. Such distribution of information resources about scientific researches requires analysis of recent researches on physical culture and sports problems in students' medium. It will permit to mark out promising directions of these topics' development.

Purpose, tasks of the work, material and methods

The purpose of the work is analysis of researches on physical culture problems among students in countries of Easter-European region (2013–2015).

As sources of information we chose data base of Russia, Poland and Ukraine. Besides, we used sites of the most known journals of Easter-European region.

Results of the researches

The most interesting for analysis was journal "Physical education of students" (http://www.sportedu.org.ua), which is in the data base of Russia (RISC), Poland (Index Copernicus) and Ukraine (bibliometryka of Ukrainian science) (see tables 1,2,3). This journal to the largest extent presents researches' results, devoted to problems of students'; physical culture and sports. The journal takes leading positions by citation. In rating Index Copernicus the journal goes just after publications, which have impact factor.

Table 1. Rating of journals in RISC data base (Physical culture and sports; 64 journals in total) for 2014 by indicator SCIENCE INDEX (http://elibrary.ru)

№	Name of journal	Indicator
1.	Equine and horse riding	0,195
2.	Sports; economic, law, management	0,178
3.	Theory and Practice of Physical Culture	0,177
4.	Bulletin of sport science	0,133
5.	Physical culture: cultivation, education, training	0,132
6.	**Physical Education of Students**	**0,127**

Table 2. Rating of journals in Index Copernicus data base (Sciences about sports; in total 27 journals were indexed; other have no indices) for 2013 by indicator ICV (http://www.indexcopernicus.com)

№№	Journal	ISNN	Country	ICV 2013
1.	Archives of Budo	1643-8698	Poland	16.04
2.	Biology of Sport	0860-021X	Poland	13.74
3.	**Physical Education of Students**	**2308-7250**	**Ukraine**	**7.60**

Table 3. Rating of journals in data base "Bibliometryka of Ukrainian science" (TOP 200, all sciences) for 2010–2014 by indicator h5 (http://nbuviap.gov.ua)

Item number	Journal	Index h5
10	Theory and methodic of physical education	14
14	**Physical Education of Students**	**13**
23	Pedagogics, psychology, medical-biological problems of physical training and sports	11

The researches for 2013–2015 are presented by Ukrainian authors (70%) and by authors from other countries (30%). Thematic focus of the researches is presented by articles about different aspects of physical education, sports, and students' health. Topics cover also adjacent areas: bio-mechanics, kinesiology, medicine, psychology, sociology, technology of sport equipment. Besides, topics include researches of effectiveness of trainings and sport selection, workability, health protection and other interdisciplinary directions (see fig. 1).

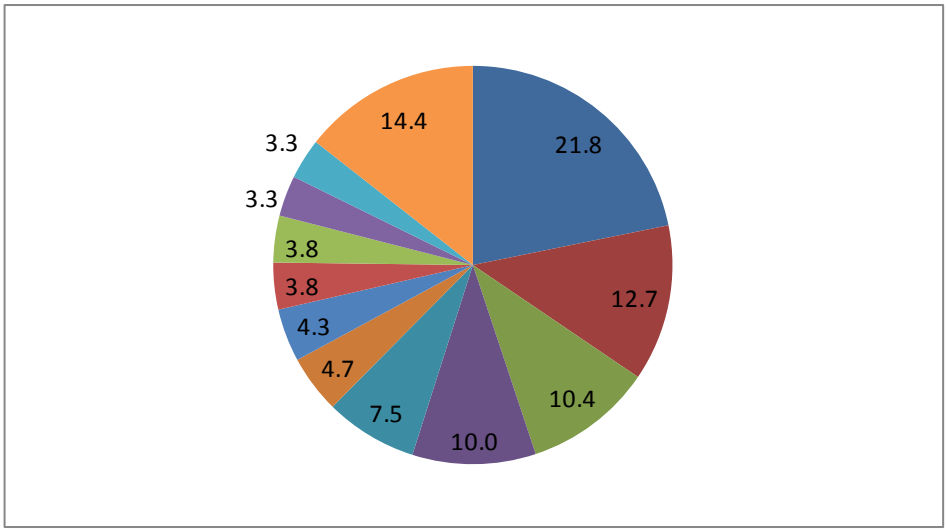

Fig.1. Topics of scientific researches of students' physical culture and sports problems, %:
1–Health and life quality, 21.8%; 2–Physical education, 12.7%; 3–Sport games, 10.4%; 4–Martial arts, 10.0%; 5–Acrobatic, gymnastic, kinds of aerobics, 7.5%; 6–Power kinds of sports, 4.7%; 7–Biomechanics, 4.3%; 8–Psychological problems, 3.8%; 9–Water and winter kinds of sports, 3.8%; 10–Cadets' training, 3.3%; 11–Teachers' training, 3.3%; 12–The rest, 14.4%.

The highest quantity of researches is presented in direction "Health and life quality" (21.8%). Authors determined general and specific components of health: motor functioning [111, 114, 123, 197–199, 207, 208]; motivation [57, 64, 68]; morphological-functional state [29]; psychological state [69, 91]; self-assessment [28, 99, 112, 163, 118–121, 135] and etc. The authors render specific recommendations on increasing of health and life quality indicators [52, 53, 56, 58].

Among above listed works there are works, characterizing modern students:

1) Absolute majority of students have resilience indicators high or within norm [140];
2) Dynamic of students' physical workability depends on period of student's studying in university. During all academic week physical condition changes are typical for first and second year students. Concerning third year students, the curve of dynamic workability has descending character. In senior students it has ascending – descending character [156];
3) Alternation and equal correlation of motor elements and sport game elements increase general level of somatic health, cardio-vascular system's functional state, self-feeling, activity and emotional state of students [82];
4) Possibility of students' division into groups by indicators of functional shifts in extreme situations is shown. The most important indicators are quickness and accuracy of psycho-physiological tests passing with different modes of signal supply as well as functional shifts before fulfillment of exercise of extreme character [87].

Among other works we can mark out researches, oriented on increasing of life quality indicators [158, 165–170, 172].

The promising direction of further researches in this direction we can consider the works, which pay attention to the following:

–Changes in social-economic way of students' life [148];
– Re-organization of students' physical education system;
– Interconnection of life quality and organism's resistance to external impacts [123];

– Interconnection of parameters of subjective life quality assessment and the factors of its formation depending on specialization; revelation of negative tendencies to reduction of students' life quality; dependence between motor functioning, positive attitude to own life quality and presence of bad habits, irrational eating, psychic overloads on students' organism [90];

– Application of new, attractive forms of physical functioning: sailing [160], rock-climbing [85, 164], hiking [34, 194]; cheer dance [155], cheer leading [108, 117], shaping [179], aerobic [15, 28, 186, 188], aqua fitness [139], sport and ballroom dances [134, 183]; some kinds of sport martial arts [13, 72, 111, 201].

In general structure of the researches "Physical education" took 12.7%.

Authors give recommendations on the following problems of students' physical education:

1) Motor functioning directly influences on students' educational progress and morbidity. Original technology of regulation of students' motor functioning on the base of control over their independent physical trainings is offered. It is recommended to practice independent training for not less than 15 minutes a day (in the morning, day and in the evening) with periodicity of not less than 3-4 times a week [55];
2) Motivation for physical culture practicing results from different demands: demand in motion, demand in fulfillment of student's obligations, demand in competition functioning. It is offered to use game and competition methods: setting of certain, feasible for a student, training tasks; usage of sufficient number of sport equipment of proper quality; urge of students to independent physical exercises through system if encouragement [39];
3) It is offered to use a system of specific forms of trainings' organization, which would meet humanistic principle "to urge but not to force". The function of such methods shall imply reconstruction of students' motivational sphere and adequately accepted by them purpose of functioning [78];
4) It was found that specially organized elective trainings on three disciplines (Pedagogic anthropology, Personality-oriented physical education, Creative valueology) formed sufficient volume of knowledge in undergraduate students. Some problems of innovative technologies' application in students' theoretical and practical trainings were outlined [17–19];

Among other researches we can note the following works: training of power abilities [171], pedagogic control of students' physical condition [11, 12], formation of personalities' physical culture of students [16, 131], individualization of physical education process [14], optimization of physical education [76, 77, 124–126, 129, 136], sport-oriented physical education [35, 133].

The promising direction of further researches in this direction we can consider the works, which pay attention to the following:

– Changes of students', having bad habits, functional indicators [141];

– Regulation of students' motor functioning, considering motivation for success and avoiding failures [49];

– Personality-oriented approach [18].

Direction of trainings "Sport games" took 10.4% in total structure of the researches.

Authors give recommendations on increasing of students' sportsmanship: basketball [27, 86, 150, 176, 180, 181]; baseball [6]; volleyball [36, 210]; handball [47]; tennis [43, 65, 83, 173]; football [1, 20, 59, 113, 200]; hockey [89]. The authors accentuate attention on consideration of peculiarities of different sides of students-sportsmen's training, considering specificities of educational environment in educational establishment, specific features of students' competitions (Universiades, students' leagues on kinds of sport games).

The authors render the following recommendations on students' sport games:

1) Analysis of basketball throws' accuracy, basketball players' logical thinking and depth of perception. It was found that ability to think logically and certain depth of perception were two main variables. These variables influence on deviations in basketball players' throw accuracy [176].
2) It was shown that the offered simulation methods permit to form optimal orientation of training process with application of specialized means at different stages of year cycle of volleyball players' training [36].
3) Analysis of different qualification female handball players' selection through interconnection of psycho-physical parameters showed that elite sportswomen are characterized by average and high degree of dependence of competition functioning successfulness on space perception indicators, on logical and space thinking [47].
4) The researches permitted to find the following correlation of rugby players' special physical training: September – special endurance is accentuated (100% of training time); October – special endurance (70%), power endurance (20%), training of strength (10%); November – accordingly 50, 30, 20%; December – 30, 40, 30% [137].

   The promising direction of further researches in this direction we can consider the works, which pay attention to the following:

– Inviting of sportsmen to educational establishments;

– Mechanisms of educational establishment's interest in development of students' sports;

– Creation of conditions for combination of academic studies with trainings of sportsmen;

– Determination of factors, facilitating motivation for sport games in system of students' health related trainings [59].

Among other researches we can note the works, devoted to practicing of sport games by disabled students [180]. It should be added with researches of problems of women football teams' training [60], students' involvement in refereeing of sport games' competitions [20,113].

Direction "Martial arts took 10 % in total structure of the researches.

The authors render the following recommendations on improvement of students' sportsmanship in the following kinds of martial arts: arm wrestling [142–146, 204], boxing [7, 73, 74, 114, 115], freestyle wrestling [25], Greco-Roman wrestling [195], Judo [66], Kick boxing [177], Thae quan do [67, 132], fencing [26, 105], other kinds [95–97].

The authors note that it is necessary to attract students to different kinds of martial arts and underline health related significance of sport martial arts.

Among the most interesting researches we would like to mark out solution of the following problems:

1) Working out of system of sportsmen's training individualization. In this case system is simulated as combination of elements and subsystems, which mutually, in controlled way, facilitate revelation, formation, development and perfection of personal martial art style [98].
2) It was found that hand dynamometry is an important and informative criterion, which determines arm wrestling training. Such criterion is characterized by maximal system-formation contribution [114].
3) It was shown that increase of sportsmanship reflects in rising of blows' density in duel. Innovations in competitions rules resulted in high intensity of combat actions in boxing. Attacking actions are fulfilled with rater higher quickness [115].
4) It was found that final part of competitions is the most informative for assessment of wrestlers' technical tactic abilities. It is determined by efficiency, effectiveness, quantity of attacks, technical arsenal. It was shown that wrestlers shall conduct duel at rapid rate. It is recommended to use movements, pulls, pushes as well as to make 1-2 actual attempts to fulfill definite technique [196].

The promising direction of further researches in this direction we can consider the works, which pay attention to the following:

1) Substantiation of approaches to development of future specialists' assertiveness by martial arts' means (sambo and judo). Means of sport martial arts are described as tools of personality's qualities training in future specialists. Potentials of assertiveness formation by martial arts' means are determined [72].
2) Analysis of different aspects of students' resistance to psycho-physiological stresses at martial arts trainings is presented. Specificity of individual psychologically-oriented methodology in modern system of martial arts is elucidated as well as its usage at physical education trainings. It is noted that the most destructive factors are excessive psychogenic stresses, caused by unfavorable psychological factors. Psychogenic stress influence in the most destructive way on health. It is the main reason of students' morbidity. Authors recommend didactically literally worked out methodic of prophylaxis [201].
3) Authors give analysis of cadets' endurance and workability rising by means of martial arts. As exercises for special endurance they recommend: throws of partner with high intensity; throws in average temp; training duels [8, 9].

"Acrobatic, gymnastic, different kinds of aerobics" took 7.5% [10, 84, 109, 110].

The authors give recommendations on the following problems:

1) Influence of health related aerobics on girls' motor fitness [175].
2) Dozing of physical loads at girl students' aerobic trainings [15].
3) Assessment of pedagogical HEEs girl students' communicative skills resulted from aerobic trainings [188].
4) Application of highly intensive training means at health related aerobic trainings [28].
5) Training of girl students' physical condition at extra curriculum cheer dance sessions [155].
6) Development of pedagogic college girl students' quickness and endurance under influence of cheer leading [117].
7) Interconnection of general and special physical fitness indicators of students cheer leaders at stage of specialized basic training [108].

The authors note high motivation of girls for health related trainings with dance exercises. Such authors' position is a **perspective direction** of organization of girl students' different motor functioning kinds.

Other researches are presented in the following directions:

1) Power kinds of sports (4.7%) [42, 102, 153, 154, 178, 185, 202, 203, 209];
2) Bio-mechanics (4.3%) [127, 128];
3) Psychological problems (3.8%) [21, 45, 46];
4) Water and winter kinds of sports (3.8%) [174];
5) Training of cadets (3.3%) [33, 44, 94];
6) Training of teacher (3.3%) [62, 63, 187];
7) Other researches (14.4%) [22, 24, 70, 71, 104, 106, 107, 116, 192, 193];

Among them researchers, devoted to protection and strengthening of students' health [29-32, 37, 48, 75, 122], and training of physical condition [79–81, 92, 93, 184, 205] can be marked out.

The promising directions in this case can be solution of the following problems with the help of modern means of health bio mechanical indicators' registration:

1) It was found that 63,3% with normal posture were in risk zone. Students with worsened posture's bio-geometric profile (scoliosis posture - 43,33%; round back– 23, 33%; slouching back– 22, 73%) got in the so-called pre-morbid state of muscular skeletal apparatus [38].
2) Quantitative indicators of bio-dynamic and coordination structure of motor qualities during aerobic training are determined. Bio-mechanical models are offered for control of motor fitness and prognostication of results [186].
3) It was found that there is objective demand in studying of bio-mechanical characteristics of free style wrestlers' technique. Such approach is required for further development of technology of athletes' sport technique formation at stage of initial basic training [206].

Ensuring of disabled students' life quality shall be considered to be **promising direction of researches:**

1) The researches proved that practicing of sports by disabled persons influence positively on their life quality. Research of aspect of life quality perception is a complex problem, but it deserves proper attention and appropriate efforts [23, 138].
2) Also organizational-methodic priorities of disabled students' physical education and sports were revealed. Application of physical education model permits their complete integration in students' medium. Students feel themselves more comfortable. They change their attitude to themselves. It is reflected in adequate perception, in finding certain masking of disability, in self presentation. The authors showed effectiveness of didactic technology of disabled students' physical education in pedagogic process [5].

Training of future teachers is not less important as well as their physical condition. In this aspect we can mark out the following problems:

1) Formation of future teacher's culture of health [61];
2) Emotional competence of future physical culture teachers [161];
3) Methodological requirements of competence approach in hiking education of future teachers [40, 41];
4) Competence and professional skillfulness of specialists in physical culture [182].

Discussion

Analysis of publications on problems of physical culture and sports in students' medium shows that most of scientists' recommendations remain out of higher educational teachers' and coaches' attention. There can be several reasons to this fact:

1) Level and quality of trainings of teachers themselves as well as their unwillingness to use modern technologies of students' health improvement in their practice.
2) Students' low motivation for physical culture and sports practicing in their every day life.
3) Insufficient material-technical provisioning of training sites as well as insufficient financing of physical culture and sports.
4) Students' overloading in week academic program. Transition from 36 hours' week to 30 hours' did not influence noticeably on students' activity.
5) Changes in higher educational establishments' curriculums, in which discipline "Physical culture" became an optional one.

The situation can be changed by proper organization of students' military patriotic education, application of more attractive physical functioning forms, usage of motivation approaches, implementation of encouragement and rating system in functioning of teachers and student.

It should be noted that it is necessary to use the above mentioned promising researches in scientific work of higher educational establishments. All these, taken together, will facilitate formation of teachers' positive attitude to their works and students' – to their health.

Conclusions

We can relate the following works to possible promising in the future researches:

1) Re-organization of students' physical education system.
2) New attractive forms of students' physical functioning.
3) Regulation of students' physical functioning, considering motivation for success and avoiding failures.
4) Inviting of students-sportsmen in educational establishments.
5) Mechanisms of educational establishments' interest in development of students' sports.
6) Creation of conditions for combination of academic classes with sport trainings for sportsmen.
7) Determination of factors, facilitating increasing of motivation for sport games in system of students' health related trainings.
8) Strengthening of students' resistance to psycho-physiological stresses.
9) Perception of life quality by disabled students.

10) Formation of student's culture of health.
11) Competence and professionalism of specialists in sphere of physical culture and sports.

Conflict of interests

The authors declare that there is no conflict of interests.

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INFLUENCE OF STIMULATED PLASTICITY TRAINING METHOD ON COORDINATION INDICATORS OF HIGH PEDAGOGIC EDUCATIONAL ESTABLESHMENTS' GIRL STUDENTS

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Abstract. *Purpose:* study of stimulated plasticity training's influence on coordination indicators of pedagogic HEEs' girl students. *Material:* 264 girl students participated in the research. Experiment was being carried out during three years. Responding abilities, static and dynamic balance, orientation in space, promptness of operative thinking, volume of mechanical memorizing, distribution of attention, accuracy, quickness and of attention re-switching, accuracy of tasks' fulfillment were assessed. *Results:* it was found that plasticity has different kinds and forms of manifestation. Creative motor tasks require different conditions for their realization. We determined rates of plasticity increment by its main kinds. Plasticity of body movements was achieved at high level of different muscular groups' coordination, optimal rhythm, rational correlation of tension and relaxation. *Conclusions:* it was found that plasticity shall be trained in compliance with its kinds and manifestations. It requires appropriated approach to content of methodic of its perfection.
Key words: physical education, coordination abilities, plasticity, girl students.

Introduction

Higher school girl students' state and physical condition is the subject of serious researches of specialists. In opinion of the researchers modern practice of girl students' physical education does not ensure proper level of their physical, mental and cognitive abilities. To day such training is required for provisioning of specialists' real competition advantages at labor market. It is stressed in publications in periodic and scientific issues. Authors point at inadmissibly low effectiveness of physical education departments' functioning in state HEEs [2, 3, 6, 19, and 24].

In system of girl students' physical education special place is taken by training and improvement of coordination abilities, which are key ones in human mastering motor skills. Coordination is ensured by appropriate level of physical qualities' development (strength, quickness, flexibility of movements) [4, 8, 9, 16, 18, 22, and 33].

Coordination training permits to expand the range of girl students' adaptive potentials, considering individual-genetic characteristics. Adaptive reactions to physical load are conditioned by its character. That is why, when training and improving coordination it is necessary to differentiate them by their kinds and manifestations [1, 7, 25, 31].

When solving the problem of coordination's training and perfection, it is also necessary to consider morphological-functional characteristics of young organism, which determine its adaptive potentials [13, 14, 28, and 29]. Mobility of regulatory mechanisms permits to build training process on the base of early outlined laws of functional systems' heterochronic development.

The problems of training of coordination abilities have always been paid sufficient attention. The researches of a number of authors are devoted to perception of youth' coordination abilities [5, 10, 15, 17, 27, 36]. Alongside with it, the authors could not elucidate to the fullest extent the problems of plasticity training in pedagogic HEEs' girl students.

Purpose, tasks of the work, material and methods

The purpose of the work is to student influence of stimulated plasticity training during three years on coordination indicators of girl students.

The methods and organization of the research: the research was being conducted in 2008-2010. 264 of 1st – 3rd year girl students from Chernigov national pedagogic university, named after T.G. Shevchenko and Kiev University named after Boris Grinchenko participated in the research. All girl students were related to main health group.

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Girl students' *accuracy* was assessed with the help of the following tests: 1) accuracy of reproduction of set force value (with hand dynamometer); 2) accuracy of reproduction of set arms movements' amplitude (with kinematic meter of M. Zhukovskiy).

Responding abilities (dexterity) was assessed with the following tests: test for quickness of reaction (Catching of rule", S.A. Dushanin, 1978); 2) test for response to moving object. For this test computer program "Prognoz", worked out by Institute of physiology, named after A.A. Bogomolets, of Ukrainian AS was used. 3) test for quickness of visual motor response (simple and complex) (test "Catching of stick" of I.V. Afanasyev, 2008); 4) complex coordination test, oriented on determination of exact, differently oriented speed-power movements for certain time (t computer program "Prognoz", worked out by Institute of physiology, named after A.A. Bogomolets, of Ukrainian AS, Kiev).

For estimation of ability to keep *balance* the following tests were used: 1) assessment of static balance (Romberg's test, "Stork" posture); 2) dynamic balance was estimated with test "Turns on gymnastic bench" (P. Khirts et al., 1985).

Orientation in space was checked with test "Labyrinth" (I.Yu. Gorskaya, 2000). *Professionally important abilities* were assessed with the following tests: 1) determination of attention distribution (test for "Finding digits", A. Sizanov, 2003); 2) volume of mechanical memorizing (test "Quantity of men figures", A. Sizankv, 2003); 3) distribution of attention and quickness of operative thinking (assembling puzzles for certain time, I.V. Afanasyev, , 2008); 4) quickness of operative thinking ("Coss's cubes", L.F. Burlachuk, 2000); 5) quickness and re-0switching of attention concentration, accuracy of task's fulfillment were determined on special device (S.I. Kirichenko, 1998).

Results of the researches

The methodic of plasticity training included complexes of motor tasks, mainly oriented on increment of some certain kind of it. Besides, we considered simultaneous impact of physical load on perfection of main characteristics of the studied coordination. For this purpose we used system of tests and assessment criteria [8, 11, 12, 26]. It permitted to sufficiently objectively measure the rates of plasticity increment by its main kinds. Great attention was paid to variability of muscular load, which was based on physical education program for pedagogic HEEs girl students. Wide usage of various physical exercises (as well as different conditions and means of their fulfillment, implementation of creative tasks) activated girl students' motor functioning, stimulated realization of their reserve potentials. In experimental groups all trainings were conducted with the help of play methods. Main attention was concentrated at development of body movements', upper girdle belt, lower limbs' and hands' plasticity.

To larger extent plasticity is intrinsic to junior age children. Natural plasticity disappears rather quickly, if it is not trained. For further its improvement special trainings are required. Materials of the research witness that usage of methodic of stimulated plasticity training permits to achieve increment of its indicators in girl students. Perfection of this coordination goes at different rates, depending on its kinds.

Analysis of *body movements' plasticity* did not show important differences between increment rates of experimental and control groups' girl students (see table 1).

Table 1. Increment of indicators (in %) of different plasticity kinds

№	Tests	Period of research	Control group		Experimental group		p
			M	±m	M	±m	
1	2	3	4	5	6	7	8
1	Plasticity in fulfillment of "forward wave"	1st year	0,52	0,03	0,62	0,04	>0,05
		2nd year	0,44	0,03	0,52	0,03	>0,05
		3rd year	0,47	0,03	0,51	0,03	>0,05
2	Plasticity in fulfillment of "wave" with arms forward"	1st year	0,84	0,06	5,86	0,40	<0,05
		2nd year	0,58	0,06	5,83	0,32	<0,05
		3rd year	0,66	0,06	6,27	0,38	<0,05
3	Plasticity in fulfillment of "wave" with hand	1st year	1,55	0,11	7,33	0,53	<0,05
		2nd year	1,46	0,10	7,39	0,54	<0,05

		3rd year	1,31	0,08	8,14	0,58	<0,05
	Plasticity in fulfillment of	1st year	4,03	0,30	7,29	0,47	<0,05
4	forward –back leg movement	2nd year	3,03	0,19	8,29	0,43	<0,05
		3rd year	3,28	0,23	8,56	0,46	<0,05
	Plasticity in keeping of set	1st year	3,55	0,18	8,25	0,44	<0,05
5	posture	2nd year	3,15	0,17	9,59	0,55	<0,05
		3rd year	3,50	0,20	9,90	0,60	<0,05

In stimulated training of *upper limbs movements' plasticity* rates of indicators' increment of experimental groups' girl students are ahead of control groups' indicators. It is connected with the fact that during rather long period of time girl students systemically fulfilled purposeful exercises. These exercises were oriented on training and strengthening of girdle belt muscles with simultaneous achievement of movements' expressiveness. Girl students were explained importance of the fulfilled exercises. Wide range of application of the received skills permitted to encourage interest to trainings.

Increment rates of *hands movements' plasticity* were lower in control groups. However, strengthening of small muscular groups with the help of special exercises and methodic permitted to sufficiently quickly influence favorably on development of this kind of plasticity.

Analysis of dynamic of indicators increment of *lower limbs'* movements showed average increment rates with natural and stimulated their development. It is connoted with gradual expansion of motor skills' range with fulfillment of different dance and choreographic exercises. Such exercises were the part of methodic of stimulated training of this kind of legibility and were characterized by higher dance fitness.

High mobility of nervous processes permits to quickly replace excitation processes by inhibition ones (alternate muscles' tension and relaxation). Application of special methodic ensured higher increment rates of *the set posture plasticity* in experimental groups' girl students

The level of their physical condition permitted to keep the set posture during required time, which achieved by regular practicing of exercises' system of play and competition methods. It permitted to strengthen back muscles and articular ligaments. Such approach is the basis for mastering different postures with accurate distinguishing of muscular tension's character. It is a necessary condition of movements' beauty and plasticity.

To master such motor actions it is necessary to have sufficient coordination: dexterity, accuracy, mobility, rhythm. Large and variable fund of motor actions permits to easier muster and extrapolate qualitatively new motor acts, which require their emotional perception and reproduction.

Discussion

Body movements' plasticity was achieved with high coordination of different muscular groups, optimal rhythm, rational correlation of tension and relaxation. It manifested in such movements as turns, bents, rotations, squatting [7, 11, and 20]. Different motor actions have specific means of expressiveness. For example, natural movements (run, jumps, throws) differ from gymnastic jumps, turns and acrobatic exercises. But all they have certain plasticity. That is why in the process of the research girl students' attention was accentuated on motor actions with maximal expressiveness, ease and grace.

Trainings' effectiveness is much higher with musical accompaniment [21, 26, 32]. Character of movements can be transmitted with the help of tambourine, different sound signals and claps. With it attention is accentuated on preparatory movements and on main link of motor action. In training great role shall be played by visual analyzer, basing on fulfillment of exercises at mirror. It permits for gi rl students to independently assess fulfillment of exercise and compare it with standard as well as to correct it, if required. Such approach helps for girl students to find the reasons of mistakes. Other important methodic technique is application of visual bench marks [23, 35]. Girl students are keen for beauty and wish to reach it in music, art and dances. They start to see and understand it in movements. That is why girl students 'involvement in beautiful is an additional stimulus for them. Opportunity to enrich motor experience with new original movements at trainings increases girl students' interest.

Plasticity is a natural basis of aesthetic of any movements. It permits to transfer all gammas of feelings and emotions. Independent on difficulty of the fulfilled movement (simple step, jump, turn, dance movement) plasticity

presents in all. At the dame time, plasticity manifestation depends on certain level of strength, quickness, endurance, dexterity, flexibility, mobility, accuracy. Depending on character and complexity of the fulfilled movement, different coordination qualities can be leading ones or additional [21, 37].

When training sport movements' technique instructors do not pay attention to special training of plasticity. The main reason of it is insufficient scientific-methodic provisioning [8, 30, 34]. That is why some instructors achieve girl students' high plasticity intuitively. Thus, it is necessary to develop natural plasticity and to improve them. Simultaneously it is required to educate girl students' strive for beauty. It will permit to assess any motor actions both by their technical complexity and by criteria of beauty.

Conclusions

Materials of our research showed that plasticity has different kinds and manifestations. Their improvement requires usage of various exercises. Creative motor tasks imply different conditions for their realization. For assessment of such tasks appropriate criteria are required. The received data witness, that plasticity shall be trained in compliance with its kinds and manifestations. It requires proper approach to content and methodic of its perfection.

Results of the research confirm that purposeful development of plasticity, considering its kinds and specific manifestations leads to improvement of its indicators with different increment rates. It positively reflected on physical fitness of experimental groups' girl students. At the same time the data of central nervous system's functional state improved.

In further publications we shall elucidate the methodic of stimulated training of girl students' other coordination qualities.

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Conflict of interests

The author declares that there is no conflict of interests.

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POSITION OF MEDICAL COLLEGES' STUDENTS IN RESPECT TO SIGNIFICANCE OF PHYSICAL EXERCISES' PRACTICING AND RESONS, CONDITIONING IT

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Abstract. *Purpose:* to create pre-conditions for rising effectiveness of physical exercises' practicing by increasing of appropriate medical colleges students' motivation and attitude to role of such trainings in health strengthening and protection. *Material:* in the research 221 students (105 boys and 116 girls) participated; all they were 3rd year students. *Results:* Extra curriculum physical exercises' training is much more interesting for boys. With it 50% of boys and girls like in-college physical culture lessons. The content of such trainings does not facilitate formation of students' position in respect to role of such exercises in health strengthening and protection. There is deficit of students' appropriate knowledge and absence of their understanding of demand in mastering of appropriate knowledge and skills. *Conclusions:* for removal of detected drawbacks it is necessary to improve organization and content of medical colleges' students' physical education, considering the received data.
Key words: knowledge, motives, physical, education, students, medical college.

Introduction

One of important aspects of normative-legal and instructive-directive documents of national educational system is connected with health strengthening and protection of students [5, 8, 9]. It becomes still more important in case with future medical workers of primary level. It is conditioned by the fact that at the stage of education formation of students' readiness for motivation of their future patients for healthy life style is not of less importance.

In this connection it is necessary to pay attention to one of the most important its components – motor functioning with optimal parameters. This functioning is realized in different forms of physical exercises' practicing [1–3, 13]. Motor functioning is ensured in medical colleges by compulsory trainings, envisaged by curriculum. Physical trainings are conducted twice a week in the form of lessons. Besides there is an opportunity to attend extra curriculum trainings in sport circles by kinds of sports, with optional attendance. In this connection the decisive condition is students' motivation as well as students' practicing of other forms of physical trainings [4, 7, 18–20]: independent individual or group sessions. That is why formation of motivation in medical colleges' students is extremely important task of physical education theory.

The available in special literature sparse data 8, 10–12] witness about 15-17 years old youth's insufficient motor functioning. It is one of reasons of other low indicators, which characterize somatic health, organism systems' functional potentials; condition of physical abilities [14–16]. Pedagogic colleges' readiness for realization of students' health related physical culture training is at level below middle (4.7±0.01 conv.un.) at the first year. Then, there appears a tendency for reduction with every following year [10]. It was found that in 54.5% of medical colleges' students vauelogic competence is at low level [8]. Such data point at demand in increasing of their physical education effectiveness. In such case the main task is formation of firm and adequate position in respect to physical exercises' practicing for health protection and strengthening (both personal and future patients').

Thus, the received information witnesses about sparse researches in the studied direction and their fragmentary character. That is why, the researches in the mentioned direction are still important.

Purpose, tasks of the work, material and methods

The purpose of the research is to create pre-conditions for rising effectiveness of physical exercises' practicing by increasing of appropriate medical colleges students' motivation and attitude to role of such trainings in health strengthening and protection.

The tasks of the research: to substantiate demand in increase of the studied trainings' effectiveness; to determine motivation of medical colleges' students for physical exercises' practicing and their position in respect to role of such trainings in health strengthening and protection; to generalize the received data. In questioning 221 students (105 boys and 116 girls) participated; all they were 3rd year students. Selection was carried out by method of random sampling. We used the worked out by us, considering recommendations of special literature, questionnaire [17].

Results of the research

The received data witness: in issue of physical exercises' practicing for health strengthening and protection students' position does not concord with specialists' position. In particular, only 27.6% girls and 65.7% of boys allocate first place to physical exercises' practicing. Analysis of the received answers showed that in opinion of 34.5% of girls and 20% of boys physical exercises' practicing does not enter in three priority kinds. Besides, 20.7% of girls and 42.8% of boys definitely consider knowledge about means and methods of organism's state and current potentials' diagnosing

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to be unnecessary. Accordingly 51.7 and 28.6% – could not answer. And it is in spite of the fact that such control is rather important component of healthy life style [1–3, 5, 6, 11, 13, 14].

Such result is to large extent conditioned by students' knowledge and their motivation for realization of such functioning in every day life. The first is proved by answers to questions, connected with future professional functioning: 46.5% girls and 42.9% of boys definitely think that knowledge about physical exercises' practicing are unnecessary; accordingly only 27.6 and 28.6% – prove importance of knowledge about means and methods of organism's diagnosing; 31.7 and 28.6% – could not answer. For girl, the reason of such knowledge importance is connected with the following: control over own organism's condition (22.4%); advices of relatives and friends (20.7%). The quantity of boys' such answers was accordingly 54.2 and 20%. 8.6% of boys called consultation of future patients as the reason. Among girls such variant was absent.

The confirmation of conclusion about students' motivation are the following data: 94.3% of boys and only 32.8% of girls practiced some kinds of sports before entering college; as on the moment of questioning accordingly 94.3 and 39.7% wanted to practice sports. At the same time only 48.3% of girls and 48.6% of boys like to attend compulsory physical culture lessons.

In first case the main reason of girls' (24.2%) and boys' (17,1%) wish to practice sports means opportunity to communicate with other students. Accordingly for 13.8% and 60% it means improvement of health. For 14.3% of boys motive is improvement of physical potentials. Absence of wish 45.6% of girls is connected with absence of demand, for 5,2% deficit of free time. For boys, such absence of wish to practice physical culture exercises is connected with deficit of free time (5,7%). Concerning physical culture curriculum lessons, the obtained girls' and boys' low results are connected to large extent with their not understanding of demand in such lessons (34.5% and 14.3% accordingly). With it one of ways of such situation's overcoming is consideration of students' preferences in content of lessons. For example for 53.5% of girls and 94.3% of boys sport games are preferable. For girls – also gymnastic (20.7%), light athletic (8.6%) exercises are attractive; for other students – other exercisesупражнения.

Thus, the received data witness about noticeably higher boys' interest to physical exercises in extra-curriculum time; approximately equal quantity of those, who like physical culture lessons (<50%). Considering it, the problem of increasing of girls' interest to physical exercises' practicing in different forms is more important. Besides, the received data show that students have no formed clear position in respect of such exercises' role in health strengthening and protection and deficit of appropriate knowledge. Besides, it should be noted that there is insufficient understanding that the mentioned knowledge and skills are extremely necessary for highly qualified medical worker.

Discussion

The received results are connected with a complex of reasons. In most general form one of them is low effectiveness of formation of girls' and boys' motivation for systemic physical exercises' practicing in different forms in comprehensive educational establishment and in period of studying in medical college. The next reason is practically complete absence in academic programs of professionally oriented and general disciplines, which could give additional knowledge about physical education process's specificities. Deficit of attention to formation of students' knowledge on the regarded aspects (in college and at previous stage of learning) is of not less importance. It concerns also usage of meaningful connections with other academic disciplines.

Demand in consideration of the above delivered is noted by many scientists [3, 5, 6, 9, 13]. The authors say about importance of healthy life style practicing: knowledge of physical exercises practicing; ability to realize motor functioning with optimal parameters; systemic realization of motor functioning and control over physical condition. To some extent the received data concord with conclusions of other authors [4, 9–11, 14-16, 18] about absence of girls' and boys' belief in following healthy life style; insufficient studying of their valuelogic education in medical colleges; poor formation of theoretical knowledge and skills for application of such knowledge in every day life [8].

Concerning meaningful interdisciplinary connections of different studied disciplines and physical education in formation of valueologic knowledge their realization facilitates strengthening of motivation for such knowledge application in practice [16]. At the same time practically all specialists point at demand in re-understanding of attitude to solution of physical education tasks, connected with formation of students' theoretical knowledge on the regarded problem.

Considering the above said the received experimental data show at demand in perfection of organization and content of physical education of medical colleges' students. Realization of such approach will facilitate achieving of the required result in formation of students' clear position in respect to physical exercises' practicing for health strengthening. Finally, it will permit to strengthen students' motivation for systemic physical functioning of health related orientation and increase their professional fitness level in this aspect.

Conclusions

1. Most of medical colleges' undergraduates believe in secondary importance of physical culture exercises' practicing for health strengthening and protection in comparison with other effective means. Boys' interest to such practicing is much higher than girls'. The knowledge about methodic of organism's condition and its potentials diagnosing are definitely considered unnecessary by 56.9% of girls and 14.3% of boys.

2. To large extent such result is conditioned by low knowledge level about physical activity of health related orientation: 46.5% of girls and 42.9% of boys definitely consider such trainings unnecessary. The second reason is absence of motivation that is reflected in students' answers; unwillingness to attend curriculum physical culture trainings (51.7% of girls); absence of demand and free time (45.6%). Absence of demand and free time was marked only by 5.7% of boys. юношей. 34.5% of girls and 14.3% of boys do not understand necessity of such trainings.

3. The received result points at need in improvement of organization and content of medical colleges' students' physical education. It is necessary to consider the received data, reflecting the following wishes: of 53.5% of girls and 94.3% of boys to practice sport games; of 20.7% and 8.6% of girls to practice gymnastic and light athletic exercises.

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The further researches shall be directed at determination of approaches to perfection of organization and content of medical colleges' students' physical education. Their realization in appropriate program will facilitate increasing of motivation for the following: systemic use of health related physical functioning in extra curriculum time; formation and practical realization of knowledge and skills of healthy life style in personal aspect and in future professional functioning.

Conflict of interests

The author declares that there is no conflict of interests.

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SUBSTANTIATION OF EFFECTIVENESS OF TRAININGS ON HEALTH RELATED METHODIC FOR STUDENTS WITH WEAKENED MOTOR FITNESS

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Abstract. *Purpose:* to work out methodic, facilitating successful conduct of health related trainings of students withy weakened motor (physical) fitness. *Material:* in the research 47 students with weakened motor fitness participated. Analysis of indicators of morbidity frequency and duration was carried out on the base of medical records' studying during all academic year. Experimental methodic consisted of three chapters: execution of specifically selected Hatha yoga static postures, breathing exercises and boxing techniques. Breathing exercises were grouped in four complexes. Every complex was fulfilled during 6 trainings, after each of them the next followed. *Results:* it was found that frequency and duration of diseases statistically confidently decreased in academic year. It was shown that formation of healthy life style skills statistically confidently improved. *Conclusions:* we have determined: increased students' interest to physical culture practicing; reduction of frequency and duration of diseases; higher level of formation of healthy life style skills.
Key words: students, health improvement, methodic, diseases, fitness.

Introduction

Health related measures, reduced as usual to formation of body health – increase of functional fitness, resistance to colds, corrections of muscular skeletal apparatus and some other aspects,- were always paid rather close attention to [2]. Alongside with it there are the data, saying that it is practically impossible to selectively improve physiological aspects of health in isolation from psychic and social-moral health [21]. It complies with law of "relative independence of adaptation", which says: high adaptability to one factor does not result in the same adaptability to other factors (and on the contrary: such adaptability can restrict adaptation due to organism's physiological-morphological characteristics). Therefore, for motor, psychic and social-moral components of health it is necessary to build certain academic programs, which can critically differ from each other [20]. Up to the present time the law of "relatively independent adaptation" has not found its proper place in learning educational process of educational establishments. It is especially important to consider this law in educational system of higher educational establishments, where students already have serious deviations in health, acquired in school years [3].

Rising of students' motivation for physical culture – sport activity is regarded as one of priority directions of educational process perfection in HEE [5, 15, 24]. A number of factors, influencing on attitude to physical culture has been found. It was determined that the most significant for development of students and youth's physical culture were: rising of youth's interest to physical culture practicing [16, 22]; effective administrating of youth's physical education and physical training [14, 18]; orientation of students' physical education of formation of healthy life style [17, 23].

Purpose, tasks of the work, material and methods

The purpose of the work: is to work out methodic, facilitating successful conduct of health related trainings of students withy weakened motor (physical) fitness.

In the research 47 students of higher educational establishments with weakened motor fitness participated.

When planning academic program for experimental group we considered recommendations of methodic literature on formation of training process for students with weakened motor functioning.

Results of the research

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The conducted by us complex researches on determination of students' social-moral health features revealed some important laws. We found correlation between the level of some motor qualities and socially significant features of students. Analysis of final results of students' fitness showed that the worked out experimental program facilitated more effective development of nearly all indicators.

Positive points of the experimental methodic is the fact that at the end of pedagogic experiment the students' studied indicators demonstrated statistically confident improvement: quantity and duration of diseases reduced; students' interest to physical culture practicing and level of healthy life style skills increased.

It can be explained by the fact that trainings with elements of boxing permits to make training of new motor skills more interesting, emotional; it shortens period of mastering of new material. Thus, it increases effectiveness of students' mastering discipline "Physical culture".

1. Determination of diseases' frequency and duration

Indicators of frequency and duration of diseases were studied on the base of medical records' analysis during academic year. We considered the quantity of diseases (see table 1) their duration (quantity of days – see table 2) during academic year.

Initial data of quantity and duration of diseases were taken by results of previous year.

Table 1. Quantity of diseases (M±m, %)

Testing		Differences	Confidence of differences	
Initial	Final		t	p
52.1 ± 3.8	41.8 ± 3.3	10.3	2.05	< 0.05

Quantity of diseases in academic year is statistically confident ($p<0.05$) below. Duration of diseases (in days) was as follows (see table 2).

Table 2. Duration of diseases (in days) (M±m, %)

Testing		Differences	Confidence of differences	
Initial	Final		t	p
113.2 ± 3.7	98.7 ± 4.8	14.5	2.39	< 0.05

Analysis of comparative data showed that students, who were trained by experimental methodic with application of boxing elements were more resistant to different diseases: by quantity of cases and by duration of diseases ($p<0.05$).

2. Formation of healthy life style skills

Final data (received in pedagogic experiment) showed statistically confident increase ($p<0.05$) of healthy life style skills' formation level (see table 3).

Table 3. Indicators of healthy life style skills' level, conv. units (M ± m)

Testing		Differences	Confidence of differences	
Initial	Final		t	p
40.3 ± 8.0	65.4 ± 8.2	25.1	2.19	<0.05

Analysis of the received data showed that application of health related methodic with boxing techniques permits to significantly increase level of healthy life style skills' formation in students with weakened motor fitness.

3. Assessment of interest to trainings

As our researches showed, initial interest of students with weakened motor fitness to physical culture and sports practicing did not exceed values, close to 3.77 points (by five-point scale).

After pedagogic experiment we found confident ($p<0.05$) data of interest increase in students with weakened motor fitness (see table 4).

Table 4. Indicators of level of interest (points) to trainings in students of control and experimental groups at the end of pedagogic experiment (M±m)

Testing		Differences	Confidence of differences	
Initial	Final		t	p
3.77 ± 0.1	4. 09 ± 0.1	0.32	2.26	< 0.05

Such positive results permit to state that interest of students to trainings can be formed for relatively short period of time (one academic year).

Discussion

At present the problem of physical education system's perfection, health strengthening and protection in period of students' studying in HEE is noticeably actualized. This system requires new scientific approaches and methodically substantiated solutions.

To day's attention of specialists to this problem to large extent is conditioned by intensive increasing of a number of negative tendencies, which accompany students' physical education. It is confirmed by the fact that the question about "aggressiveness of educational medium" has never been so acute; students' health indicators have never been so low; such low physical condition and motor fitness indicators have never been registered [10, 25–27].

Analysis of published literature showed that at present time individual features of students' physical condition, health, motor fitness, personality's characteristics (motives, strivings, self-confidence and so on) have been elucidated rather sparingly **[**13–17**]. The limit of such data seriously hinders the process of students' professional adaptation in educational medium.**

We assumed that the problems, which are faced by pedagogues and coaches in sphere of students' physical education, can be corrected with means and methods of boxing. As it was found traditional physical education system in state higher educational establishments can not realize to the fullest extent the tasks of students' motivation for physical culture activity. It is connected with absence of scientifically substantiated conception of physical education formation [11–13, 19].

The fulfilled in this direction scientific and methodic work permitted, in the whole, to rather effectively organize learning regime in higher school, to level the acuteness of problem of organism's overloading in conditions of educational process, to maintain students' workability in relatively optimal frames. The distinctive features of our research are the following:

1. We have developed the system of complex improvement of students' with weakened motor fitness indicators.

Experimental methodic consisted of three parts: execution of specially selected statics postures (asanas) of Hatha yoga system, breathing training and boxing techniques.

Breathing exercises were grouped in four complexes. Every complex was fulfilled during 6 trainings, after each of them the next followed.

Boxing part included main techniques: movements, straight and side punches, uppercuts, defenses.

2. We have worked out methodic of usage of complex system for improvement of students' with weakened motor fitness indicators.

All static exercises were fulfilled consequently one after other. After fulfillment of exercises students had passive rest in lying position.

Breathing exercises were fulfilled after Hatha yoga static postures in position sitting on heels.

Conclusions

Thus, content of auxiliary (health related) physical culture training implies some knowledge, skills and abilities, which should be mastered by students. Prevailing orientation of such trainings is orientation on health

related, developing and general recreational tasks. With it formation of physical, psychic and social-moral health should be of preference as well as personality-oriented approach to system of individual choice of physical culture means. Application of non traditional health related means, like Hatha yoga, will be highly effective in system of students' physical education. It is also important to use the principle of versatility. It permits to use knowledge and means of auxiliary health related physical culture in different regions of country and for students with different levels of physical culture literacy and fitness [4, 6–10].

The conducted pedagogic experiment with students, who have weakened motor fitness, showed the following:

1. Frequency and duration of diseases during academic year confidently ($p<0.05$) reduced accordingly from 52.1 ± 3.8 to 41.8 ± 3.3; and from 113.2 ± 3.7 to 98.7 ± 4.8 days.

2. Formation of healthy life style skills statistically confidently ($p < 0.05$) increased from 40.3 ± 8.0 to 65.4 ± 8.2 convenient units.

3. After pedagogic experiment interest for physical culture trainings confidently increased ($p<0.05$) from 3.77 ± 0.1 to 4.09 ± 0.1 points.

4. The experimental methodic is effective and has specificity – increase of interest to physical; culture trainings by students on the base of the following: reduction of frequency and duration of diseases; conscious and firm skills of healthy life style.

Conflict of interests

The authors declare that there is no conflict of interests.

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FORMATION OF STUDENT PERSONALITY'S PHYSICAL CULTURE AS SUBJECT OF PROFESSIONAL FUNCTIONING

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Abstract. *Purpose:* generalization of experience of higher educational establishments' future specialists' professional training, oriented on formation of students' personalities' physical culture. *Material:* we questioned students (n=50) and institute teachers (n=30). *Results:* it was found that for increase of future specialists' professional fitness effectiveness it was important to consider orientation of educational process on formation of student personality's physical culture. Besides, it was noticed that professional fitness of future specialists is greatly influenced by implementation of modern technologies of formation of students' physical culture in educational-learning process. Physical education means, oriented on aesthetic are of great health related and recreation significance. *Conclusions:* educational process shall be oriented on support of active motor functioning, motivation for physical exercises' and healthy life style practicing.
Key words: physical culture, teaching, students, means, professional, training, innovation, management.

Introduction

Entering of Ukraine in European educational and scientific space is conditioned by reformation of higher education and rising of requirements to professionalism of higher educational establishments' graduates in conditions of market competition [9, c. 1]. It should be stressed that at the stage of modern society's development in educational system modernization of educational teaching process, directed at personality oriented teaching is going. In this case organization of future specialists' professional training acquires the character of dialogue, cooperation, joint creation. Alongside with health problems of young generation more attention is paid to professional training of HEE specialists, in which wide opportunities are open for student to prepare for successful realization.

In modern society physical culture is regarded as the process and result of human purposeful functioning, directed at formation of person's physical and spiritual nature. In educational system of young generation physical culture is a mean of social formation of future teachers, active development of their individual and professionally significant qualities [1, pg. 32]. That is why formation of student personality's physical culture is an important component of future specialists' preparation for professional functioning.

Perfection of educational system and personality's development in educational process in sphere of physical culture has been paid attention to by such scientists as: L.P. Arefyeva [1], O.Ye. Aftimichuk [3], S.I. Belykh [2], I.M. Bykhovskaya [8], T.Yu. Krutsevich [4], L.I. Lubysheva [8], Ye.V. Otravenko [5], T.T. Roters [3], E. J. Savko [3], V.I. Stoliarov [8], S.O. Sychov [9], N.Yu. Shumakova [3]. Among other researches we can distinguish the works, oriented on problems of students' motivation for independent training [11, 13], formation of positive attitude to own health [10, 20, 27, 28], social-psychological adaptation to new conditions of learning [14, 23], professional-applied orientation of classes [21, 24-26], increase of health indicators [12, 15-19, 22].

In spite of significant quantity of researches the problem of student personality's physical culture is an urgent one. There are unsolved problems of increase of future specialists' professional training effectiveness.

Purpose, tasks of the work, material and methods

The purpose of the research is to analyze scientific methodic literature on the topic of the research; to study advanced experience of future specialists' professional training, oriented on formation of student personality's physical culture.

Material and methods: the methods of the research are analysis and generalization of scientific-methodic literature, questioning of Luhansk Taras Shevchenko National University students. In questioning 20 students of economic and business institute and 30 1st year students of physical education and sports faculty participated.

Results of the research

Continuous education ensures constant progressing, perfection and creative renewal of a specialist during all his (her) life. Objective content of education is determined by social order as well as by the tasks, which are set by society for education. Subjective content is expressed in individual-personality's sense and is bases on principles of active, systemic, individual and differentiated approaches [2].

In opinion of many authors [1-9], one of after effects of scientific-technical progress is increase of knowledge volume of mankind. The category of mental labor persons includes students as well. Recent years, the flow of scientific information has significantly increased that requires its processing in short terms. Besides, application of different means of education is being expanded. All these result in intensification of HEE educational process and set increased requirements to professional training of future specialists in sphere of physical culture and management.

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The sense of ***"personality's physical culture"*** concept in context of future specialist's professional training is regarded by us in the following way:

- Combination of demands, motives, knowledge, oriented on formation of sound, successful personality and physical perfectness;
- Formation of professionally important qualities;
- Training of motor skills;
- Ability to realize learning, scientific, motor, health related-physical culture and sport functioning for ensuring healthy life style;
- Teaching of mobilization, relaxation, body perfection techniques.

In such context there is a demand in radical changes of HEE physical education system on the base of understanding the sense, purpose, tasks and content of pedagogic process, functioning of physical culture instructors. It is caused by understanding the fact that physical education shall not be reduced to compensation of motor functioning deficit. Motor functioning deficit results in lack of individuality of educational process, averaging of requirements to students' physical fitness. The ideas of personality's progress, student with his (her) individual features as the highest value shall be in the base of educational system. With it physical education system shall create maximally favorable conditions for students' complex development (spiritual, aesthetic, motor) for their conscious practicing healthy life style.

In modern conditions regular practicing of physical culture is undoubtedly an effective mean of health strengthening, diseases prophylaxis, increase of organism's resistance. Besides, it is a mean of favorable influence on formation of young generation's active life style, development of interest to social information, expansion of information contacts.

Analysis of economic and business students' attitude to physical culture classes showed that physical exercises, as mean of workability increasing is used by insignificant quantity of students (27.4%). Only 23.8% of students attend optional "physical education" classes. For 32.3% of students, physical culture is not a component of personality's general progress. The rest of students did not think about it.

In questioning of physical culture and sports faculty students we were interested in what means of physical education are preferred by them. The answers distributed in the following way. Girls prefer the following: fitness (35.2%), aerobics (28.6%), functional training (22.7%), health related gymnastic (12.5%), swimming (12.3%), sport dances (11.4%), badminton (10.9 %), light athletic (9.4%), volleyball (9.2%), hiking and orientation (8.2%). Boys prefer the following: bodybuilding (24.9 %), oriental martial arts (23.9 %), football (22.4 %), swimming (22.3%), light athletic (12.7 %), basketball (10.9%), ping pong (10.2%), street dances (8.1%), hiking and orientation (6.8%), handball (6.4%).

When questioning physical culture instructors we found that professional training of future specialists in marketing and management is influence to large extent by implementation of different innovative technologies of students' physical culture formation in educational process. In this case aerobics, fitness, bodybuilding and so on are the means of physical and aesthetic education.

Let us compare opinions of students and teachers and see what means of physical education are preferred by students (see table 1).

Table 1. Comparative analysis of students' attitude to and teachers' opinions about physical education means

Rank place	Girls' attitude to physical education means	Boys' attitude to physical education means	Teachers' opinion about physical education means
1	Fitness	Bodybuilding	Fitness, aerobics (girls)
2	Aerobics	Oriental martial arts	Power kinds (boys)
3	Functional training	Football	Game kinds
4	Health related gymnastic	Swimming	Health related gymnastic
5	Swimming	Light athletic	Functional training
6	Sport dances	Basketball	Oriental martial arts
7	Badminton	Ping pong	Light athletic
8	Light athletic	Street dances	Swimming
9	Volleyball	Hiking and orientation	Hiking and orientation
10	Hiking and orientation	Handball	Sport dances

As we can see in students' answers the most popular and interesting were those kinds of physical exercises, which are aesthetically oriented: aerobics, fitness, bodybuilding, oriental martial arts. Thus, present time sets requirement to

implement interesting for students physical education means in educational process, as well as means, which facilitate formation of student personality's physical culture, oriented on interconnected physical and aesthetic training.

Observations over young specialists' social adaptation in working collective showed that the higher level of graduates' (providing they know foreign languages) physical culture-sport qualification facilitates better and more effective usage of their potentials in production activities.

In institute of physical education and sports in specialties "physical education", "human health", "physical rehabilitation", "Olympic and professional sports", "fitness and recreation" rather little class hour are allocated for foreign languages. Independent study of foreign languages does not attract students.

Studying this problem, employers pay special attention to high culture level and knowing of foreign languages (especially in management and marketing sphere).

Management is a system of rational managing of production activities, directed at achievement of planned results; it is a field of human knowledge, which helps to realize effective administration [5]. Innovative management is regarded by us as managing of innovative processes activity in physical culture – sport organization.

In opinion of many authors [3, 5, 6, 7], innovation is a final result of innovative activity. It is realized in the form of a new (perfected) product or technological process, or as new approach to rendering social-cultural services. It should be noted that spectrum of innovations in functioning of physical culture-sport organizations is rather various. It can be classified by different principles: technological parameters, type and degree of novelty, spheres of functioning and etc.

Discussion

Physical culture of higher educational establishments' students was researched through formation of future teachers' motivation for healthy life style and creation of the required educational medium in higher educational establishment. Such medium is directed at increase of students' interest in own health condition, student's development as personality, individuality, active subject of professional functioning.

Results of our research confirmed the data of other authors [2, 3, 4, 9], that achievement of high indicators in system of preparation of harmoniously developed specialists is impossible without scientific approach to organization of physical education at higher educational establishments. Humanistic, ethic and pedagogic ideas shall be in the base of such approach. Accordingly, humanistically oriented education shall not restrict personality's independence. Such education shall rest on internal, natural thirst of person for self-perfection and give him (her) opportunity of choice and independent solution of problems, connected with physical self-perfection.

For achievement of the above said it is necessary to change orientation of students' physical education, which is now oriented on physical training and physical fitness. Orientation of students' physical education shall imply formation of system of special knowledge, which would permit for students to consciously organize their life activity, to attach students to values of health related physical culture and recreation.

The results, received by us, also supplement our previous researches [5, 6, 7].

Conclusions

Analysis of theoretical researches and practical experience showed that formation of students' personality's physical culture, for them to be ready for creative interaction and successful self-realization envisages the following:

1) Its implementation in academic, scientific, health related-physical culture and sport functioning through independent choice of knowledge system:
    - Formation of moral, humanistic relations, development of pedagogic tact, mastering of administrative functions in sphere of physical culture and management;
    - Active participation in students' scientific practical conferences, Olympiads, competitions, master classes, forums, which create conditions for students' complex progress.
2) Teacher's and student's transition to technology of pedagogic cooperation for health strengthening, increase of workability. The system of curriculum, extra-curriculum and independent classes shall be oriented on the following:
    - Individualization and integral character of learning,
    - Proper mastering of foreign languages,
    - Implementation of modern informational and innovative technologies, means of health related physical culture and recreation.
3) Personal physical culture of a student is reflected in his (her) attitude to physical culture values. In this case main place is taken by active motor functioning, motivation for physical exercises' practicing and healthy life style. It was determined that the main methodological tools of personality's physical culture formation are physical education means, aesthetically oriented. They are the mechanisms of influence on inner essence of a man, his spirituality, emotionality, expressiveness. Such approach has great health related and recreation significance.

Conflict of interests

The author declares that there is no conflict of interests.

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CONTENT OF HEALTH RELATED SHAPING TRAINING METHODIC FOR GIRLS IN THE PROCESS OF PHYSICAL EDUCATION

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Abstract. *Purpose:* theoretical substantiation, working out and testing of health related trainings with girl students, practicing shaping in their physical education. *Material:* in the research 22 girl students of pedagogic specialties participated. Experiment stipulated usage of shaping methodic, based on computer program, during academic year. *Results:* experimental methodic of shaping permitted to bring physical condition indicators of experimental group's girls to patterns of computer program. Analysis of the received data of body circumferential sizes did not show statistically confident distinctions from ideal patterns ($p>0.05$) that witness about their similarity. Results of abdomen top and bottom, torso sides and bottom of back fat folds' measurements did not confidently differ from patterns ($p>0.05$). The above mentioned indicators were within normal values. With it difference for 5% of significance level was registered in the tested functional indicators of girl students, comparing with initial data. After experiment systolic and diastolic BP practically approached to normal value. Heart beats rate confidently approached to normative indicators. *Conclusions:* application of health related shaping methodic positively reflected on physical condition and functional state of girl students. We also proved that it was possible to use computer program for composing individualized training programs.
Key words: girl students, shaping, computer program, ideal patterns, physical condition, functional state.

Introduction

Recent years, students' health has been being of great concern, in spite of established opinion that youth is the healthiest category of population [2, 6, 9, and 14]. At present this group of population is socially vulnerable and do not have or do not use opportunity of its full development.

Only for recent decade the quantity of weakened students has been increased more than 2 times. Analysis of youth's health, physical condition and physical fitness shows that morbidity among students is increasing [3, 7], physical condition and physical fitness are weakening [3, 16]. The quantity of students released from practical physical culture lessons by health reasons increases as well as quantity of students – members of special health groups [2, 16]. In Belarus 70% of students do not practice physical culture. Students' physical inactivity reached 80%. Incorrect and irrational eating resulted in the fact that more than 30% of students have deficit of body mass. The same quantity of students has excessive weight [6, 15]. This problem is especially sharp for girls, having excessive fat. Such girls have increased body mass. All these influence on motor functioning and functioning of all organism's organs and systems, on psychic health [4, 18].

Researches of recent years show [11, 14, 16], that standard form of organization of physical culture lessons for HEE students is ineffective. It does not facilitate formation of sufficient motivation for physical functioning and does not ensure compensation of students' motor functioning deficit.

Involvement of students in physical trainings and formation of their conscious attitude to them is still an acute problem [4, 7]. Girl students to large extent are not satisfied with traditional forms of HEE physical education. They have increased interest to new non traditional kinds of health related physical culture activity.

In opinion of many authors [1, 4, 11, 13, 20-23], girls prefer physical functioning, containing exercises' complexes, which could influence on morphological functional indicators of woman's organism. In 18-21 years' age girls pay special attention to beauty, flexibility, mobility of their bodies. That is why girls wish to practice exercises, which would facilitate harmonious body constitution. It attracts attention of opposite sex. Girl students prefer methods, connected with music, plasticity, artistry. For them first of all positive emotions, possibility to aesthetically influence on organism by physical exercises are important.

In this connection education system in general and HEEs in particular face the task of maintenance of students' physical, psychic and moral health. That is why HEE shall be an initiator and organizer of purposeful and effective work on rehabilitation, protection and strengthening of students' health. At present this work is acquiring systemic character: new health related and diagnostic technologies are implemented; material-technical base of HEEs rises [10, 15].

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In many developed countries different directions of health related physical culture are intensively developing. Great number of new body correction programs, strengthening and protection of woman's health appear [11, 17].

Recent years a number of new, modern health related physical culture systems and technologies, which are practiced mainly by girls, has appeared [11]. Among many kinds of physical functioning shaping has been taking first place during more than 20 years. With it shaping quickly develops and perfects. In opinion of many specialists modern shaping permits to effectively solve tasks of physical, mental and aesthetic perfection [5, 13, and 18].

The content of shaping trainings is determined by personalities strive for beauty and harmony. The basis of the system is idea about standard of physical perfection, which is called "model" in shaping. Such "model" has main signs of woman's beauty and attractiveness. "Shaping" system is a purposeful training of separate muscular groups, which permits for every trainee to correct defects of posture in all parts as well as to reduce weight, to improve carriage, to acquire body beauty, for which all modern girls strive. Harmonious body is one of main signs of human health, as far as defects of body hinder functioning of organism's organs and functions [5, 8, and 13].

Purpose of the research, material and methods

The purpose of the research is theoretical substantiation, working out and testing of health related trainings with girl students, practicing shaping in their physical education.

The methods and materials of the research: analysis of scientific-methodic literature was carried out in order to know existing views on the studied problems, on perfection of students' physical education.

Pedagogic observations were conducted during all period of work. The object of observation was fulfillment of the worked out methodic approaches to physical education means' application by the tested. Results were assessed by express tests and by external signs of fatigue.

Girls' testing was conducted with the help of special computer program "Shaping" [11]. The program included measurement of anthropometric indicators: a) body mass and body length; b) circumferential sizes of neck, chest, breast, waist, buttocks, hips, shins, knees, wrists; c) fat folds on forearm, front and back of shoulder, top and bottom of back, top and bottom of abdomen, front and back, inside and outside of hips; change of cardio-vascular system's indicators: blood pressure and heart beats rate (HBR). All mentioned above information was processed by computer program. By results of this processing ideal values for such contingent were received.

Besides, we used commonly accepted methods of mathematical statistic. Confidence of distinctions was determined with Student's t-criterion.

Pedagogic experiment was conducted on base of Gomel health related physical culture center during academic year. Experiment was organized ob the base of generally accepted principles. In the research 22 girl students of pedagogic specialties participated. They were trained by shaping program twice a week (60 minutes – each training session). It should be noted that experimental group of girl students was formed by selection of girls with excessive fat. The purpose of trainings was to correct their figures in general and change configuration of separate parts of their bodies. In experimental group we realized methodic of shaping training, facilitating purposeful body corrections, considering ideal values for this contingent. For this purpose we used results of special computer program "Shaping".

He offered by computer program complexes of exercises and methodic of their application are directed on correction of body parts, which deviate from standard. In process of training complexes were corrected in order to individualize approaches to every girl students. Some complexes of exercises were worked out for increasing of muscular mass (increasing of body parts' volume). Other - were directed on reducing of volumes at the account of fat decreasing. Complexes of exercises were combined by prevailing influence on different muscular groups.

Practical significance of the work was assessment of deviations from ideal values. Detection of deviations served as bench mark for targeted impact on separate body parts by shaping means. To larger extent training influence was rendered on those bode parts, which had deviations from standard. Orienting on ideal values we determined direction of correction of every part of body and selected special individual programs of appropriate training.

The structure of practical work in experimental group included execution of exercises, divided into 11 blocks (series) – fore successive work of separate muscular groups (see table 1).

Table 1. Structure of shaping trainings in experimental group

STRUCTURE OF TRAININGS			
Block for working with muscular groups		Duration (minutes)_	Part of training
1	Warming up	10	I Introductory
2	Hip (front)	4	
3	Hip (back)	4	
4	Hip (inside)	4	
5	Hip (outside)	4	II Main
6	Buttocks	4	
7	Abdomen (top)	4	
8	Abdomen (bottom)	4	
9	Waist	4	
10	Individual block		
	– first zone	4	III Additional
	– second zone	4	
	– third zone	4	
11	Recreation	6	IV Finalizing

Results of the research

The received numerical values permitted to detect existing deviations from norm of anthropometric indicators at the beginning of pedagogic experiment.

Body mass of girls actually exceeded normal values at the beginning of experiment (by 6.71±0.23 kg). The highest deviations were detected in fat folds. For example abdomen (top and bottom) had deviations 7.37±0.17 cm; side of torso – 6.18±0.22 cm; bottom of back – 11.17±0.23 cm; hips (front, back, inside, outside) respectively – 12.2±0.23, 21.86±0.26, 11.91±0.20 and 27.36±0.22 cm.

By all tested indicators we registered confident difference ($p<0.05$) between physical condition indicators and standard indicators (SI).

By the end of pedagogic experiment, between experimental groups' physical condition data and ideal indicators we found confidential difference in measurements of the following fat folds: hip (front) (19.47±0.31 cm) deviation from SI– 4.47±0.27 cm; hip (back) – 26.45±0.13 cm, deviation from SI – 10.45±0.21cm; hip inside – 12.71±0.17 cm, deviation from SI – 3.21±0.18 cm; hip outside – 31.31±0.21 cm, deviation from SI – 11.31±0.27 cm. However, in comparison with the beginning of experiment deviations from standard indicators reduced significantly.

Analysis of circumferential sizes of body showed: waist – 63.93±0.36 cm, deviation from SI – 1.12±0.26 cm; buttocks – 91.27±0.34 cm, deviation from SI – 1.33±0.32 cm; hips – 52.29±0.23 cm, deviation from SI – 0.81±0.22 cm) and did not revealed confident distinctions from standard indicators ($p>005$). It witnesses about their closeness to model indicators.

Results of abdomen fat folds (top – 8.84±0.15 cm, deviation from SI – 2.32±0.14 cm, bottom – 12.84±0.21cm, deviation from SI– 2.84±0.19 cm; fat folds on side of torso - 7.75±0.24 cm, deviation from SI – 1.83±0.24 cm; fat folds on bottom of back – 19.98±0.23 cm, deviation from SI – 0.99±0.31cm also did not confidently differ from standard indicators ($p>0.05$). The delivered above indicators are within norm.

Thus, the offered by us health related shaping methodic permitted to practically approach physical condition indicators of experimental group's girls to standard indicators.

Results of research of experimental group girls' cardio-vascular system deviated from norm at the beginning of experiment. They had increased systolic BP (128.74±0.47 mm.merc.col.) and diastolic BP (87.54±0.34 mm.merc.col.).

Also, at the beginning of pedagogic experiment we registered increase of heart beats rate (73.35±0.16 with norm 60–70 b.p.m.).

After finishing of pedagogic experiment we registered confident change in the tested indicators of girl students' functional state, in comparison with initial data ($p<0.05$). Systolic and diastolic BP values were practically normal at the end of experiment (123.65±0.71 and 84.57±0.52 mm.merc.col.) Heart beats rate in rest also statistically confidently (for 5% level of significance) closed to normative indicators at the end of experiment (71.23±0.43 with norm 60–70b.p.m.).

Thus, the worked out methodic of health related shaping trainings turned out to be effective mean of formation of motor culture, physical condition , physical and functional fitness improvement for girls. Results of the research point at purposefulness of implementation of the offered health related shaping trainings methodic for girls in HEE's physical education process.

Discussion

By results of analysis of scientific-methodic literature and preliminary testing we found that girl students had low level of motor culture, of physical and theoretical fitness (that contradict to requirements of program-normative documents and scientific-methodic recommendations, regulating physical education process of girls students of not physical culture HEEs) [2, 3, 5, 8, 16]. All these are conditioned by drawbacks of HEE physical education system (orientation only on control normative indicators and body component, ignoring of motivation component of individual motor-developing impacts' application) [3, 4, 6, 7, 9, and 15]. Thus, physical education of not physical culture HEEs' girl students requires correction, considering the mentioned factors.

It should be stressed that physical education process has three vectors of impact: creation of wide circle of knowledge in field of physical culture, training of motor actions (formation of motor culture) and control of physical condition development [9, 10, 16, and 19]. All they are interconnected. Therefore wide usage of physical culture means (including non traditional) facilitates fuller physical and theoretical fitness of girl students. At the same time it is impossible to completely solve physical education tasks without positive motivation background.

As a result of "shaping" computer program every girl realized her own health related effect and could achieve more harmonious and proportional body constitution. The received results show that it is possible for girl students to influence positively on organism in process of physical education. With it perfection of external, visual status is of priority in this age. It is confirmed also by other scientists [1, 6, 8, 11, 13, and 17]. It is significant that experimental group's girl students started to actively include in independent physical exercises' practicing.

Conclusions

The conducted pedagogic experiment, health related training methodic permitted to approach every girl to indicators of shaping model. Comparing with the beginning of experiment deviations from ideal standards significantly reduced. Analysis of the received data of circumferential sizes showed that they practically correspond to ideal indicators after experiment. Sizes of fat folds are within norm.

Thus, the worked out shaping methodic permitted to substantially reduce fat component of girl students' body mass, improve functional state, rise psycho-emotional state and motivation for regular physical exercises' practicing, to form steady demand in them. All these confirmed high effectiveness of this methodic, which can be adapted to application in physical education process in conditions of other HEEs and in additional health related training of girl students.

Conflict of interests

The authors declare that there is no conflict of interests.

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