

COMPARATIVE ANALYSIS OF PHYSICAL FITNESS AND MOTOR COORDINATION ABILITIES OF STUDENTS OF THE FIRST AND SECOND COURSES OF HIGHER EDUCATIONAL INSTITUTIONS ENGAGED IN AEROBICS

Fomenko O.V.

Kharkov Humanitarian Pedagogical Academy

Annotation. *Purpose:* to analyze the method of applying modern health technologies, taking into account varying degrees of motivation and physical condition of students. *Material:* 358 students aged 16-19 years took part in the experiment. The analysis of more than 50 references, studies devoted to the peculiarities of the female body health forming technologies. *Results:* significant increase of interest in physical education classes using the suggested health forming technologies. Established that the main ways to improve physical education students can be formed needs in health promotion by means of aerobics, shaping, Pilates, Callanetics. *Conclusions:* The identified prospect of improvement of physical education students, which allows the structured problems they need to develop options and solutions to the successful implementation of health- education strategy.

Keywords: *health -forming technology, students, motor, coordination, abilities, morphofunctional.*

Introduction

Physical education in educational process of higher educational establishments (HEE) is a mean, which solves one of sides of students' professional preparation; it facilitates their individual creative development, formation and perfection of students' professionally important skills and qualities in interconnection with their physical and mental progress (On reconsideration of Law of Ukraine "On physical culture and sports" and other legislative documents of Ukraine: Law of Ukraine Np.1724-VI, dt. November 17, 2009 "On approval of Principles of organization of physical education and mass sports at higher educational establishments: order of Ministry of education and science of Ukraine No.4, dt. 11.01.2006; On approval of measures, oriented on system of physical education of pupils and students of Ukrainian educational establishments: order of Ministry of education and science of Ukraine, dt. 27.11.2008).

Strengthening of population's health is main governmental task, which is solved by means of motion functioning with the help of different gymnastic exercises (run, outdoor games, tourism, gymnastic exercises and other kinds of motion functioning) [7, 9].

Different interpretation of different systems of gymnastics [6, 8] is oriented on effective application of their opportunities in educational process. Devotion to one or another kind of motion functioning passes very quickly; attention is attracted to other aspects of fitness and components of health that creates additional problems for HEE instructors [11].

As per data of questioning, fulfilled in our research, the most popular for first and second year girl students are comparatively new kinds of gymnastics: aerobics, shaping., callatenics, pilates and other.

Perfection and development of pedagogic technologies of physical education trainings' building with the help of non traditional gymnastics and their influence on organism practically have not been regarded yet. Therefore seeking of new ways of improvement of students' physical education is important aspect of our research and this topic is rather urgent [12, 13].

The work has been fulfilled in compliance with "Combined plan of SRW in sphere of physical culture and sports for 2011-2015" by topic 2.4 "Theoretical-methodic principles of individualization of teaching-training process in physical education and sports" (state registration No. 0112U002001), and in compliance with state-financed scientific-research work for 2013-2014 – "Theoretical-methodic principles of application of informational, pedagogic and medical biological technologies for formation of healthy life style" (state registration No. 0113U002003).

Purpose, tasks of the work, material and methods

The purpose of the work is improvement of methodic of application of modern health related technologies for first and second year girl students of pedagogic HEEs with different degree of motivation and physical condition.

The contingent of the tested consists of first and second year girl students of Municipal establishment "Kharkov humanitarian-pedagogic academy7" of Kharkov region council. 358 girl students of 16-19 years old age participated in experiment.

We formed experimental and control groups. Every group consisted of 25 girl students. Distribution of girl students in groups was carried out by results of fulfilled questioning, devoted to choosing of motion functioning at physical culture lessons. That is why in experimental group we included non traditional kinds of gymnastics: aerobics, pilates, shaping, callanetic [1,2]. Control group trained by typical academic program on physical education for Ukrainian HEEs of 3rd and 4th levels of accreditation.

The role of the author implied working out of data about influencing of physical exercises in non traditional kinds of gymnastics on morphological functional state of first and second year girl students of pedagogic HEEs.

In order to study main problems of modern pedagogic educational establishments and ways of their solution, which would be oriented on strengthening of rising generation's health, we carried out expert questioning of first and

second year girl students. The questioning of girl students facilitated their wider involving in application of health related technologies (aerobics, pilates, shaping, callanetic) [4,5,14].

For solution of our tasks we used the most popular methods, which are applied in physical education of HEE students.

Motion-coordination abilities (MCA) were determined by accuracy of realization of muscular efforts; characterizing MCA was determined by degree of efforts' dozing.

Quickness of motion response was evaluated with the help of test "quickness of catching by stronger hand of falling down rule (40 cm length).

Quickness of actions was measured by time (sec.) of fulfillment of 20 claps with straitened above head arms and then claps on thighs. One attempt is fulfilled.

Physical fitness was determined by the following group of tests: jumps for 20 sec. (dexterity), forward bents in sitting (legs apart) position (flexibility), long jumps from the spot (explosive power), pressing ups in lying position (strength).

Morphological functional indicators were determined by the following: WHI (weight-height indicator); VCL (vital capacity of lungs; HBR (heart beats rate).

Anthropometric data were measured by the following anthropometric indicators: length of body, mass of body, circumference of chest, waist, thighs, shins. The measuring procedures were carried out as per methodic of E.G. Martirosov [3].

Pulse metering in our research was fulfilled by dynamic of HBR indicators. HBR was studied for determination of functional state of girl students' cardio vascular systems, for evaluation of intensity of health related gymnastics' training, for comparing of different structural blocks of experimental trainings.

Results of the research

Studying of literature sources showed that with age human physical and coordination abilities significantly change [10]. In researches of recent years there have been received data, which witness about positive influence of physical exercises on physical condition of trainees, including morphological functional of people and their coordination abilities [12]. Basing on this information, one of particular tasks was determination of dynamic of involution changes of physical condition and motion-coordination abilities of first and second year HEE girl students, who trained in experimental group.

Results of testing of girl students, who trained in experimental groups, witness that at age of 16-19 years old the tested indicators were better than in control groups (see table 1).

Table 1

Confidence of changes of first and second year girls students', training in experimental groups, indicators

№	Indicators	16-17 Years old (25 persons)	18-19 Years old (25 persons)	p	t
Morphological functional indicators					
1	Height (cm)	164.9±3.4	165.8±4.2	< 0.05	0.41
2	Mass, kg	55.4±2.6	63.7±2.9	< 0.05	2.13
3	Vital capacity of lungs (m)	2950±96.3	2770±101.7	< 0.05	1.28
4	Weight height indicators WHI (g.p.cm)	335.96±12.3	384.2±15.4	< 0.05	2.44
5	Heart beats rate (b.p.m.)	59.1±1.46	59.6±1.84	< 0.05	0.25
Physical fitness					
1	Quantity of jumps per 20 sec (times)	61.4±2.81	59.2±3.12	< 0.05	0.3
2	Flexibility (cm)	13.32±1.84	9.97±2.03	< 0.05	1.22
Motion-coordination abilities					
1	Quickness of motion response (sec.)	9.86±0.86	13.2±1.02	< 0.05	2.51
2	20 claps (sec.)	13.8±1.03	14.41±1.12	< 0.05	0.4

In connection with introducing of new kinds of motion functioning there appeared certain load on girl students' cardio vascular systems, while functional abilities of these systems were limited and with age manifest trend to worsening. Heart beats rate, with age, increases, on the contrary (see table 1). For example pulse of experimental group girl students became more frequent, but insignificantly. At the same time pulse of control group girl students increased significantly.

Measurements of motion response's quickness with the help of test «catching of falling down rule by stronger hand» showed, that this quality started worsening quicker in senior experimental group. For example, in first group this indicator was 9.86±0.86 sec. in senior – 13.2±1,02 sec. (t=2.51).

Evaluation of flexibility by commonly known methodic witnesses that its quality without proper maintenance reduces rather quickly in control groups, while in experimental groups it increases up to 13.32±1.84 cm (t=1,22).

Indicators of speed power endurance, measured with maximal quantity of jumps up at the spot for 20 seconds with age confidently reduce that is witnessed by data in table 1.

Thus, comparative analysis of results of physical condition's and motion coordination abilities' testing of experimental groups' girl students showed substantial changes in their organisms in comparison with control group's girl students.

Conclusions:

1. Analysis of scientific-methodic literature showed that little attention is paid to maintenance and improvement of girls' coordination abilities; methodic approach to composing of programs on physical education in respect to development of their motion coordination abilities has not been sufficiently worked out. In this connection seeking of opportunities for rehabilitation and development of girls' coordination abilities is interesting both in theoretical and practical aspects.

2. In the course of the research we also specified a prospect of improvement of girl students' physical education. It permits to structuralize problems by their necessity, to work out variants of solutions in order to successfully realize educational health related strategy.

3. Comparative analysis of physical fitness and motion-coordination abilities of first and second year girl students of higher pedagogic educational establishments showed that with introducing of new health related technologies in educational process on physical culture in experimental groups these indicators significantly improved. Besides, owing to interest to such trainings girl students' attendance also increased.

The further researches will be oriented on studying of comparative characteristics of physical condition and motion-coordination abilities of third and fourth year girl students, who train aerobics.

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Information about the author:

Fomenko E.V.: ORCID: 0000-0003-0929-807X; lena.fomenko.78@mail.ru; Kharkov Humanitarian Pedagogical Academy; Sh.Rustaveli alley 7, Kharkov, 61000, Ukraine.

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