

Health related applied technology of special health group girl students' physical training

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Abstract

Purpose: to work out health related applied technology for special health girl students (with health problems) and assess its influence on their physical condition.

Material: 1st-3rd year girl students were the object of the research. All girl students were trained by discipline "Physical culture". Somatic (body length and mass) and physiometrical (vital capacity of lungs) indicators were studied.

Results: confident changes in morphological indicators (body mass and vital capacity of lungs) were determined. We also noted demand in change of students' approaches to assessment their physical condition. Principally new methods of students' health protection and strengthening are offered. In its base there is methodology of human individual health, person's deeply motivated social demands in being healthy.

Conclusions: For strengthening girl students' physical condition we recommend the following: prophylaxis health related physical culture measures; new approaches to assessment of own health; teachers' pedagogic control; working out individual recommendations on correction of health related applied trainings.

Keywords: physical condition, girl students, physical culture, healthy life style, health related, applied, technology.

Introduction

In higher educational establishments health strengthening of girl students, who have health problems (special health groups – SHG) is of great pedagogic importance. Recent years there has appeared a contradiction between demand in intensification girl students' motor activity and absence of any opportunities for university to create all required for this purpose organizational-pedagogic condition. All these push to find more effective ways and approaches to solution of the mentioned problem [1, 2]. Some authors offer to form knowledge for projecting special health group girl students' physical culture on the base of the following: acquiring practical skills [29]; theoretical knowledge about physical exercises' practicing on the base of specially created programs [35]; prophylaxis and health strengthening in the future [36]. Other authors put forward idea about health protection and strengthening of rising generation through physical education in universities. An integral part of physical education shall be the following games and exercises: run, wrestling, riding, fencing [13].

The problem of youth's health protection and strengthening has been bringing up to concern since long ago. Ya. A. Komenskiy worked out main questions of educational work's organization with principles of hygiene and everyday safe exercises [7]. John Lock in his pedagogic theory of education put aims of physical and moral education in context "discipline of body" and "discipline of spirit". The author preferred physically healthy "gentleman". He was a follower of severe regime

and hardening of organism [11]. J.J. Rousseau also expressed his view on health protection and strengthening of pupils in natural conditions. He thought that the basis of growing organism's development is hardening in the nature in combination with physical, labor, mental and moral education. Pestalocci I.G. paid special attention to run and jumping in the fresh air in intervals between lessons [13].

In context of already existing researches on students' health strengthening we can assume some other approaches to effective solution of this problem. Increase of informational, psycho-emotional loads in the process of students studying does not facilitate their health improvement. Besides, immobility, irrationally organized way of life, harmful habits result in worsening students' physical condition and health [6, 12, 14, 16]. The problem of health related education of special health group students is aggravated by their chronic diseases. May be this problem can be solved with the help of the most feasible activity, directed on health improvement: regular physical exercises' practicing. The importance of the present work is resulted from the following: understanding, high social significance of physical culture; insufficient effectiveness of pedagogic maintenance of special health group students' health related education.

At present time role of physical culture in formation of students' general culture, in their resistance to harmful computer habits is still increasing [10, 32, 34]. The authors consequently develop the topic of students' involvement in common human values and healthy life style [8, 9]. Of not less importance is implementation of students' (with different nosologies) physical education pedagogic technology in teaching process [17]. Such

technology implies solution of teaching, health related and educational tasks. It is possible through creation of conditions for motor skills' training during all period of study. In other work approaches to solution the problems of gender stereotypes and imbalance in adolescents' physical education [37]. The author thinks that it is necessary to develop a concept of gender approach to education. It will permit to facilitate development of individual bents and abilities in different sex pupils; to overcome sex-role stereotypes; more effective formation of physical culture values.

The studies of many authors are oriented on formation of students' active life position in the following directions:

- Health strengthening [31, 33, 38];
- Healthy life style practicing with the help of different means of sports and physical culture [27, 42].

Among other researches we can mark out several approaches to solution of students' health strengthening and protection problems:

- Optimization of physical loads in different orientation trainings [23, 24, 40];
- Formation of active attitude to own health [18, 21];
- Special aspects of endured tension under loads of game character [30];
- Application of modified tests for functional potentials of students with health problems [28];
- Substantiation of pedagogic control over youth's health state [25, 26];
- Influence of physical exercises on students' physical and psychic health [19, 22, 41];
- Trainings of specialists for health protection and physical education fields [39] and their professional maturity [20].

Such researches present the importance of physical development process itself, as very significant component in complex structure of human health. In students' age this process is determined by hereditary factors, life conditions and physical education. This process is manifested in quantitative and qualitative changes. Assessment of physical condition with the help of anthropometric measurements permits to determine: its level and specific features; its correspondence to sex and age; improvement or worsening of physical conditions, resulted from physical exercises [1-4].

Analysis of scientific works showed that there is great number of opinions about students' health worsening. That is why we offer to concentrate attention on problem of successful physical development of special health group girl students with the help of health related applied technology.

Hypothesis: the author assumes that successful solution of girl students' physical training problem will be facilitated by introduction of specially worked out health related applied technology in physical culture program. We assume that application of this technology will substantially improve girl students' physical condition. Trainings by this technology can improve most of the tested indicators of students' physical condition.

The purpose of the research: is to work out health

related applied technology for special health girl students (with health problems) and assess its influence on their physical condition.

Material and methods

Participants: 1st-3rd year girl students of pedagogic university special health group were the object of the research. All girl students were divided into two groups: experimental (EG) and control (CG).

Organization of the research: somatic (body length and mass) and physiometrical (vital capacity of lungs) as well as anthropometric indicators were studied.

Realization of experimental technology in semesters was fulfilled as per the following algorithm:

- First semester included: preliminary control – complex diagnosis of physical condition; lectures, talks, discussions, disputes; questioning, interviewing, pedagogic observation; different general health related exercises; teaching to feasible methodic of physical condition self-diagnostic and self control; working out of individual health related applied program by girl students; pedagogue's control of educational process (operative, current, final).
- Second semester consisted of: further perfection of motor skills and physical abilities; prophylaxis health related physical culture measures; girl students' assessment of own physical condition; presentation of program "Healthy life style of SHG girl student"; pedagogic control; summarizing the results; working out of individual recommendations on correction of girl students' health related applied trainings.

Theoretical and practical content of health related applied technology in SHG girl students' physical education was designed for 128 academic hours a year. Theoretical part is 10 hours. Practical part consists of 108 academic hours: methodic-practical portion – 10 hours, practical-training – 98 hours and control (tests) – 10 hours.

Statistical analysis: the research's results were processed with method of variation statistic, with determination of mean arithmetic (M), arithmetic error (m), mean square deviation (σ) and confidence of differences by Student's criterion (p).

Results

Before the beginning of experiment we measured EG and CG girl students' physical condition indicators. In EG they were: body length (166.47 ± 1.26 cm), body mass (65.02 ± 5.05 kg), and vital capacity of lungs (3080.00 ± 74.41 ml). In CG they were: 163.07 ± 2.08 cm, 65.80 ± 4.46 kg, 2926.67 ± 81.85 ml. (see table 1).

Physical condition indicators of EG and CG girl students before experiment showed that there was no confidence difference ($P < 0.05$) between groups. Both groups were homogenous ($P > 0.05$) by physical condition indicators (see table 1).

After pedagogic experiment we fulfilled testing of girl students' physical condition. Comparative analysis of experimental and control groups' data showed that there appeared confident changes ($P < 0.05$) in morphological

indicators – body mass and vital capacity of lungs. Changes of girl students’ body length indicators were insignificant ($P>0.05$).

In experimental group we observed a little increase of body length parameters up to 166.87 ± 1.26 cm, reduction of body mass – 62.33 ± 4.69 kg and increase of vital capacity of lungs – 3466.67 ± 148.82 ml. Increment of indicators was 0.24%; 4.19%; 11.81% accordingly. In control group we also registered insignificant changes of body length indicators (163.40 ± 2.01 cm), body mass (66.06 ± 1.26 kg) and vital capacity of lungs (3060.00 ± 59.53 ml). Indicators increment in this group was 0.20 %; 0.40 % and 4.45 % accordingly.

Discussion

Comparative analysis of girl students body length indicators after experiment showed that in EG and CG there is no confident difference ($P>0.05$). It is known that physical exercises impact on a person deeply and comprehensively. When practicing physical exercises, in human organisms a number of physiological, biological and other processes, causing corresponding changes in vegetative sphere, take place. Systemic practicing of physical exercises facilitates positive reconstructions in organism’s work. However, favorable influence of physical exercises on body height is difficult to be proved [5]. Besides, in scientific literature [15] it is mentioned that from 16 to 18 years age (girls) and up to 18-19 years (boys) body height, in the whole, is formed finally. However, other physical condition indicators can be increased. That is why such theoretical statement is a proof of minimal body length increment in EG and CG (0.24% and 0.20%, accordingly).

In period of biological formation of young organism’s morphological properties body mass is rather plastic, variable and instable. Effectiveness of EG girl students’ application of specially oriented physical culture means

(dozed walking, light run, health related physical culture exercises, exercises on step-platforms, skipping, exercises with hula-hoop) was assessed by changed body mass indicators. For example, body mass reduced by 2.69 kg (from 65.02 ± 5.05 to 62.33 ± 4.69 kg). Body weight changed confidently ($P<0.05$). It witnesses about influence of physical exercises. Reduction of experimental group girl students’ body mass can be considered quite logical. It is connected with the fact that with systemic muscular functioning metabolism intensifies and on this base energy processes activate. At the same time variability of physical exercises in combination with other means created unlimited opportunities for body mass optimization in experimental group.

Body mass testing in CG showed increase by 260 g (from 65.80 ± 4.46 to 66.06 ± 1.26 kg). We did not find any confident difference between mean values of body mass in CG ($p>0.05$). Insignificant increase of girl students’ body mass is connected with reduction of motor functioning share (week physical load). Optimization of girl students motor functioning implies creation of normal conditions for body mass decreasing and health preservation.

It is known that 16-21 years’ age is connected with period of organism’s maturity formation. In this time all organism’s organs and systems reach their morphological functional maturity. However, body mass can change under influence of physical education means and their correct application. It is proved by comparative analysis of experimental and control groups’ body mass indicators, which permitted to find confident difference ($p<0.05$) by the end of experiment (see table 1 and fig.1).

Vital capacity of lungs (VCL) is of not less importance as indicator of health, adaptation to physical loads. Practice shows that breathing in conditions of relative muscular relaxation have the so-called “expenses of civilization” in most of girl students: long sitting at table restrict chest excursion. Only systemic muscular work

Table 1. Dynamic of control and experimental girl students’ indicators in pedagogic experiment (3rd year)

Indicators		Girls	Significance level p		
		CG (n=60) X±m	EG (n=15) X±m		
Somatic indication	Body length (cm)	Before experiment	163.07±2.08	166.47±1.26	>0.05
		After experiment	163.40±2.01	166.87±1.26	>0.05
	Increment (%)	0.20	0.24	>0.05	
	P	>0.05	>0.05	>0.05	
	Body mass (kg)	Before experiment	65.80±4.46	65.02±5.05	>0.05
		After experiment	66.06±1.26	62.33±4.69	<0.05
Increment, %	0.40	-4.19	<0.05		
p	>0.05	<0.05	<0.05		
Physiometric indicators	Vital capacity of lungs (ml)	Before experiment	2926.67±81.85	3080.60±74.41	>0.05
		After experiment	3060.00±59.53	3466.67±148.82	<0.05
	Increment (%)	4.45	11.81	<0.05	
	p	>0.05	<0.05	<0.05	

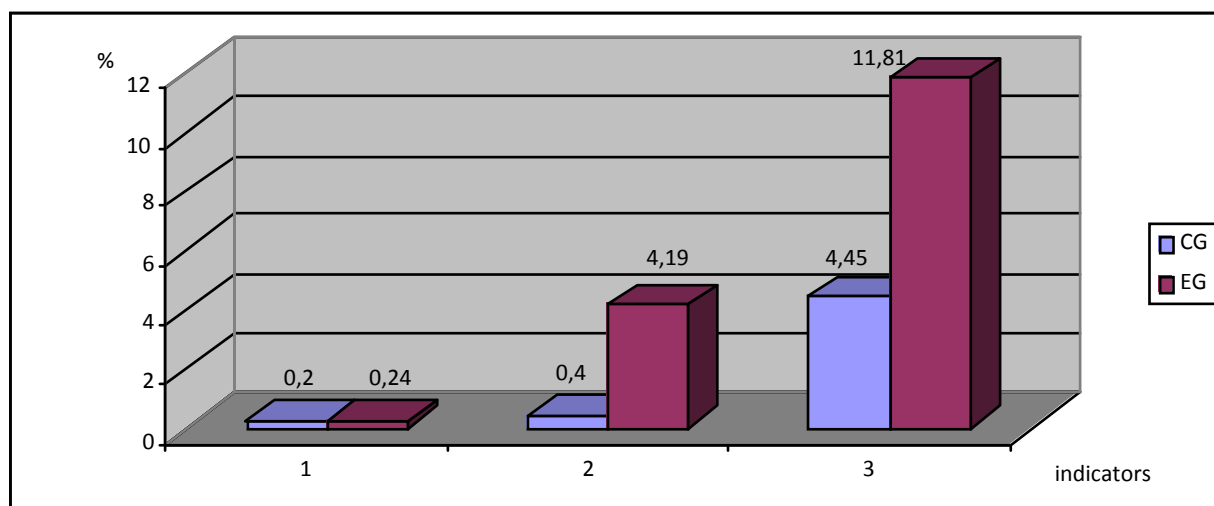


Fig.1. Dynamic of CG and EG girl students' physical condition indicators in pedagogic experiment (3rd year). Note: 1 – body length (cm); 2- body mass (kg); 3 – vital capacity of lungs (ml).

can form rational, physiologically perfect breathing type, which increase lung, alveolar ventilation and VCL [15].

In experimental group we found improvement of VCL (from 3080.00 ± 74.41 to 3466.67 ± 148.82 l), that was statistically confident ($p < 0.05$). Increment of indicators was 11.81%. In our opinion change of VCL parameters in experimental group is a result of systemic health related applied functioning. It proves the data of V.V. Gorinevskiy [4]. He says that different muscular groups participate in movements, especially legs' muscles. It increases organism's demand in oxygen. For breathing improvement and VCL increase such exercises are the most useful and valuable.

In control group VCL indicators did not change confidently after experiment ($p > 0.05$): before experiment it was 2926.67 ± 81.85 and after it - 3060.00 ± 59.53 l. Our research proved that involvement of large muscular group in work, accurate rhythm of movements, being in the fresh air favorably influenced on breathing function (deep inhale, forced exhale).

Comparative analysis of final testing of experimental and control group girl students' VCL permitted to determine difference of VCL increment. In EG results are higher than in CG by 7.36%. In table 1 we can see that there is confident difference between groups ($p < 0.05$).

Results of our research show that conducted pedagogic experiment opens qualitatively new pedagogic process of cognitive and health related applied activity with students. For ensuring health related orientation of SHG girl students' physical education it is necessary to purposefully orient them for the following: formation of motivated demand in health protection; understanding of health's psycho-physical base; continuous acquiring of skills in individual and independent trainings. Health related orientation in SHG girl students' physical education includes: demand-motivational, valuable-reflexive and acting-transforming components.

In prospects' aspect health related applied orientation in SHG girl students' physical education is regarded as targeted process of their health protection. Such approach can be introduced also in educational spheres of children and adolescents with health problems. The novelty of our research implies also that students will be targeted at the following: actualization of individual health protection; continuous acquiring of health protection skills by means of physical culture; monitoring and self diagnostic of own physical condition; change of approaches to self assessment of own physical status. Such approach implies principally new solution of students' health protection and improvement tasks. In its base there is methodology of human individual health, its deeply socially motivated demand in being healthy. It permits to regard goal setting of health related education and mechanisms of its practical realization under other angle [14].

The sense of this situation's problem is that in universities students are from the very beginning oriented on passing physical culture test. It means that success of SHG students' health related education to large extent depends on their individual physical condition.

Conclusions

For strengthening of girl students' physical condition it is recommended: prophylaxis health related physical culture measures; new approaches to assessment of own physical status; pedagogic control by instructors; working out of individual recommendations on correction health related applied trainings.

Positive changes in experimental group girl students' physical condition indicators witness about effectiveness of health related applied technology in physical education.

Conflict of interests

The author declares that there is no conflict of interests.

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