FORMATION OF PHYSICAL CULTURE OF STUDENTS BASED ON VARIOUS EDUCATION MODELS

[1,*]Roman S. Nagovitsyn, [2,3,4]Aleksander Y. Osipov, [2,4,5]Mikhail D. Kudryavtsev, [2]Larisa V. Zakharova, [2,6]Natal'ya V. Lyulina

[1]Department of Physical Culture, Methodology and Sports, Glazov State Pedagogical Institute, Glazov, Russia, e-mail: gto18@mail.ru
[2]Department of Physical Culture, Siberian Federal University**, Krasnoyarsk, Russia, e-mail: ale44132272@ya.ru**
[3]Department of Physical Culture, Voyno-Yasenetsky Krasnoyarsk State Medical University**, Krasnoyarsk, Russia, e-mail: info@krasgmu.ru**
[4]Department of Physical Culture, Siberian Law Institute of the MIA of Russia**, Krasnoyarsk, Russia, e-mail: kumid@yandex.ru**
[5]Department of Physical Culture and Valeology, Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia, e-mail: priemsibsau@sibsau.ru
[6]Department of Physical Culture, Krasnoyarsk State Pedagogical University of V.P. Astafyev, Krasnoyarsk, Russia, e-mail: natali6503@mail.ru

*** Corresponding author: Roman S. Nagovitsyn**
Department of Physical Culture, Methodology and Sports, Glazov State Pedagogical Institute, 427621, Pervomaiskaya St., 25, Glazov, Russia,; gto18@mail.ru ;

Abstract
The aim of the study: to develop various training models and experimentally prove the effectiveness of their implementation in the formation of physical education of students of a pedagogical university. The study was conducted at the Pedagogical University for 10 months. The study involved 331 full-time students in the first undergraduate courses. All participants were divided into four experimental groups by faculty. In each experimental group, the educational process in physical education was carried out according to an individual learning model. Implementation of monitoring on the formation of students' physical culture was carried out according to five indicators: motivational, psychological, physical, wellness and pedagogical. As a result of the theoretical analysis, four training models for the formation of students' physical culture were identified: health saving, socially oriented, professionally differentiated and health developing models. At the end of the experiment, the effectiveness of conducting individual-differentiated classes at each faculty based on the development of various models of physical education training was reliably confirmed ($p<0.01$ and $p<0.05$). The results of the work create the basis for the modernization of the physical culture sphere in the aspects of improving the content, structure and monitoring of the two compulsory subjects of the university "Physical Culture and Sports" and "Elective Courses in Physical Culture and Sports".

Keywords: learning models, physical education, formation, differentiation, students, pedagogical university

INTRODUCTION

Students of a higher educational institution are the main reserve of any state, this is the intellectual elite and future parents, and their physical development, culture and health is the key to the well-being of the society in which the citizen lives [1]. In this regard, it is necessary to solve the problem of improving the physical education of students in order to increase the level of youth physical education at any faculty, institute and university by modernizing the content of the subject "Physical Culture" [2; 3]. As an educational discipline aimed at physical development, maintaining health at an appropriate level, as well as improving fitness and health knowledge and skills for the full development of a harmoniously developed member of society [4; 5].

Today, under the influence of reforms, modern education has entered the next stage of reform - the formation of innovative mechanisms to ensure the quality of education, based on current changes [6]. During the introduction of federal educational standards in the higher education system, real physical education and health innovations in the training of any specialist at the university are important [7]. The study of innovative processes in the formation of students' physical culture in the process of professional education was widely reflected in pedagogical theory and practice [4; 8]. In this direction, the main reference point of the directed formation of physical culture for students is precisely the teacher of a higher educational institution [9; 10].

The teacher of higher education is the main subject of innovation in the field of physical education in an integrated system of vocational education [11]. His readiness for fitness activities is considered as a necessary personal quality, the main condition for effective professional activity in a modern innovative society [10]. However, despite the use of the traditional approach to teaching, he must in practice design, experiment and practically introduce non-traditional technologies into the pedagogical system [12]. To achieve these goals in the higher education system, it is necessary to create full-scale resource support for the scientific and educational process, conditions for attracting talented, highly qualified teaching staff and create a system for developing the necessary scientific and methodological literature and access to modern information resources [13; 14]. In addition, important and promising areas for the development of physical culture are the development of pedagogical models that stimulate students and teachers to develop new ideas, the desire for active interaction in solving professional problems in the formation of skills in active physical fitness activities [15; 16].

Currently, among the basic approaches to modernizing the process of forming the physical culture of students of pedagogical profiles, an individually-differentiated approach is distinguished within the framework of a competency-based and activity-based approach based on the basic professional competencies of future pedagogical workers [17; 18]. On the basis of generalization and analysis of the results of public and professional scientific discussion and testing of modeling

technology in training under the conditions of real certification of teachers, the main indicators of professional qualifications in the field of physical education formation are determined: motivational, psychological, physical, health and pedagogical characteristics [9; 15; 19].

A physical education teacher at a university should know and understand those factors and the behavior that students expect from him and arouse their positive perception of the educational process in physical education [20]. Increasingly, in university practice, there are classes that replace traditional classes, which use modern diverse learning models based on all available communication technologies [21]. In this case, the applied aspect dominates with the aim of practicing effective professional actions, developing concepts, patterns, approaches suitable for use in real pedagogical activity [22]. In this direction, the learning model is understood as a descriptive pedagogical model that defines a holistic continuous physical education of students [1]. The training model allows us to simplify this process, to focus on its main aspects and is a combination of structural and functional components [23].

Thus, pedagogical models of training can have various components, properties, characteristics and from different sides describe the processes of training, education and training [10]. The theoretical provisions presented above were the basis for the development of various training models for the purposeful formation of students' physical culture [3]. The following guidelines were taken as basic aspects: motivational, psychological, physical, health and pedagogical indicators of the formation of students' physical culture [4; 15; 24].

In this regard, the main hypothesis of the study was posed in the work: if various learning models are identified and introduced into the process of forming students' physical culture, then on the basis of experimental comparative analysis, it is possible to identify the effectiveness of student preparation in motivational, psychological, physical, health-improving and pedagogical directions. In this regard, the goal was set in the study: to develop various training models and experimentally prove the effectiveness of their implementation in the formation of physical education of students of a pedagogical university.

MATERIAL AND METHODS

The study was conducted at the Pedagogical university (Glazov) for 10 months from September 2018 to June 2019. The study involved 331 full-time students of the first undergraduate courses from 18 to 22 years old, regardless of gender. Before the start of the study, all participants in the experiment had experience in physical education in high school or in a secondary vocational educational institution. Each participant in the experiment received written consent to participate in the study. Before the start of the study, all students were divided into four experimental groups (EG) by faculty: computer science, physics and mathematics - EG1 (n=69), social communications and philology - EG2 (n=92), teacher and art education - EG3 (n=108), historical-linguistic EG4 (n=72). In each experimental group, the educational process in physical education was carried out according to an individual learning model. The experiment was conducted in the process of educational activities in two compulsory subjects: “Physical Culture and Sport” in the basic part of the bachelor’s curriculum and “Elective courses in physical culture and sports” in the variable part of the bachelor’s curriculum. At the faculties, four teachers taught these disciplines, one teacher - one faculty. Each teacher used an individual learning model in their professional activities. A health saving training model was implemented at the Faculty of Informatics, Physics and Mathematics, a socially oriented model at the Faculty of Social Communications and Philology, a professionally differentiated model at the Faculty of Pedagogical and Art Education, and a health developing model at the Faculty of History and Linguistics.

As a theoretical and methodological research paradigm, an individually differentiated approach to modeling teaching models was applied. The implementation of the comparative experiment was based on a synergistic system of theoretical methods for the analysis of domestic and foreign pedagogical theory, practice and experience in the field of students' physical education; general scientific methods such as classification, modeling, comparison, comparison and generalization; experimental methods involving criteria-indicator monitoring, mathematical and statistical processing of the obtained data.

Implementation of monitoring on the formation of students' physical culture was carried out in five directions. The motivational indicator was evaluated by analyzing the determination of the presence of students with a physical culture-oriented conviction, need and physical thinking based on the author's methodology for determining the physical culture worldview based on data analysis in the social network “Vkontakte” [18]. The mental indicator was evaluated by determining the students' mental readiness to exercise through the level of stress resistance, resistance to emotional exhaustion and the level of aggression by analyzing self-esteem-aggressiveness-stress tolerance [1]. The physical indicator was diagnosed by revealing the level of development of strength, speed, endurance, dexterity and flexibility in students on the basis of testing “Ready for work and defense” [13]. The health indicator was diagnosed by revealing the students 'health level, based on the assessment of the indicator of the body’s functional characteristics on the effect of dosed physical activity [20]. The pedagogical indicator was assessed by identifying physical fitness knowledge, determining students' understanding and proficiency in using them in practical activities based on a modified system of levels of training in educational taxonomy [24].

Statistical analysis. The obtained comparative indicators were processed using SPSS Statistics 20 before the experimental work (September 2018) and after its implementation (June 2019). The significance of differences in the results was determined using a chi-square (X2) at $p<0.01$ and $p<0.05$. Mathematical and statistical processing was performed between the data for each indicator of the formation of the physical culture of students in each experimental group. Mathematical and statistical comparative analysis was carried out according to the following three levels: high, average and low, in accordance with the state of formation of the student’s physical culture for each indicator.

RESULTS

In the process of implementing vocational training in university practice, one of the important conditions is the individualization and differentiation of traditional and innovative teaching technologies [15; 19]. In the direction of teaching physical education, various models of interaction between teacher and student were developed in the second half of the XIX - early XX centuries in various educational institutions [7]. Since that time, four basic learning models for the formation of students' physical culture begin to differentiate. By the beginning of the second decade of the XXI century, these models adopted clear and concretized criteria, features and characteristics in the process of physical education in a higher educational institution [9; 14].

The health saving model of teaching physical education is based on the principles of nature-conforming content and optimizing the interaction of subjects of the educational process. The focus in the implementation of this model when teaching physical education for students is focused on health indicators and self-monitoring of the physical health of each student at the university [12; 15]. The development of a socially oriented model of teaching physical education in a higher educational institution is determined by the needs of social reality and is determined by its motivational paradigm. When implementing this model, a student is considered as a means of achieving socially objectives and goals [6; 17]. The main emphasis in the professionally differentiated model of

physical education is made on the formation of a holistic person and the harmonization of his spiritual potential. The target reference point of this learning model is the implementation in the educational space of the university of conditions for the development of physical culture values [3; 10]. The formation of a health developing model of teaching physical education at the university is associated with the formation of a physical culture and sports lifestyle and physical culture and sports competencies of the younger generation. The principles of openness and coherence of the sports and recreation space of the faculty and university, as well as the variability of the educational process of students, become the main ones when introducing this model of training [11; 16]. The main characteristics and criteria for the implementation of training models for the formation of students' physical culture are presented in Table 1

Table 1: Main characteristics and criteria for the implementation of training models

Learning models	The main purpose of training	Reasons for practical implementation	Implementation criteria
Health saving	Improving students, achieving a level of physical development for normal life	Nature conformity of content and optimization of interaction between subjects of the educational process	Optimal state of health, normal physical development, fitness and health knowledge, skills
Socially oriented	It is determined by the needs of society, and is determined by its worldview platform, a person is considered as a means of achieving socially significant goals	The principles of unification of the content of patriotic education, and the formation of citizenship with the maintenance of strict discipline	The knowledge, skills and physical fitness of students, which in mass practice actually comes down to the pursuit of normative physical development of youth
Professionally differentiated	The formation of a holistic person, the harmonization of his spiritual and bodily potential, the creation in the environment of an educational institution of conditions for mastering the values of physical culture	Associated with the anthropological idea, the principles of cultural content of the content, individualization and differentiation of education	Positive motivation for classes, a favorable psychophysical state of students, the development of spiritual and moral space, independence and activity in the creative application of physical education technologies
Health developing	The formation of physical culture and sports lifestyle and physical culture and sports competencies of the younger generation	The openness and coherence of the physical culture and sports space, the variability of the educational process	Motivational-value attitude to physical culture and sport, physical culture and sports competencies, independence and activity in building a physical culture lifestyle

After the implementation of the experimental period at each faculty, data were collected for each experimental group and for each indicator of the formation of the student's physical culture identified for the experiment. The data obtained before (September 2018) and after (June 2019) the experiment were mathematically compared among themselves for each experimental group. Due to the fact that the number of students in the experimental groups was not equal, the numerical values were translated in % and shown at three levels: high, average and low (Fig. 1-5):

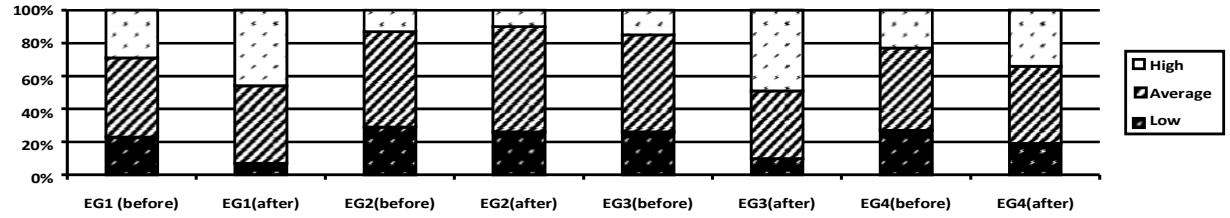

Fig. 1. The results of the formation of students' physical culture by a motivational indicator

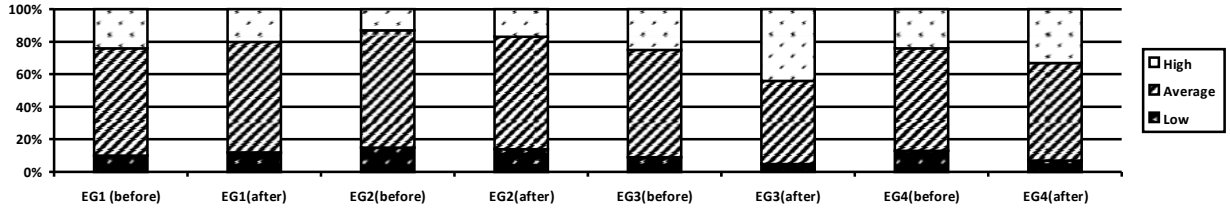

Fig. 2. The results of the formation of students' physical culture according to a psychological indicator

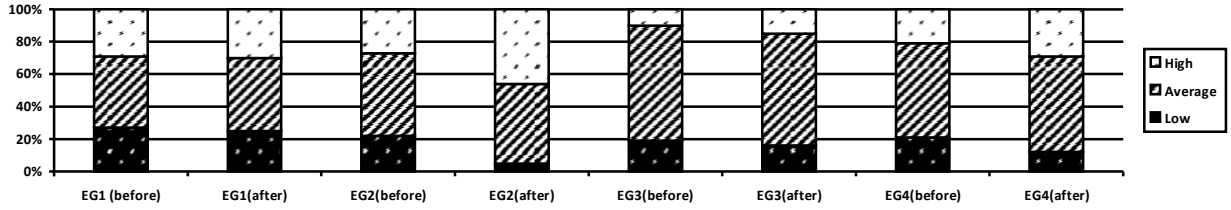

Fig. 3. The results of the formation of students' physical culture according to a physical indicator

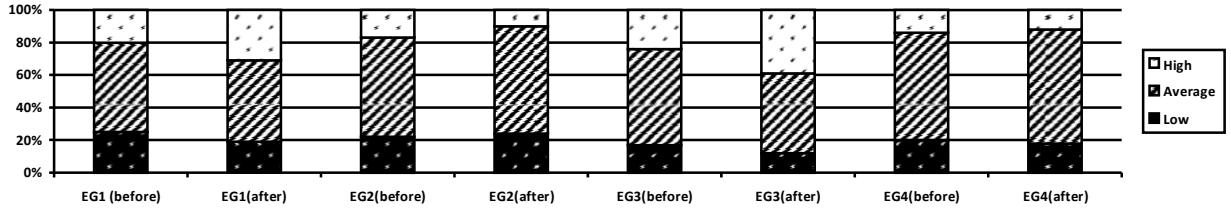

Fig. 4. The results of the formation of students' physical culture by the health indicator

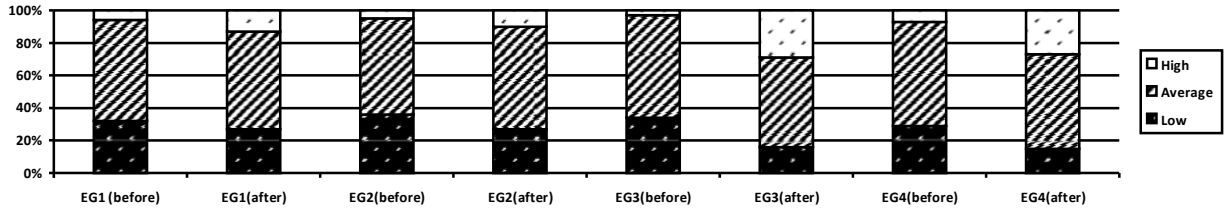

Fig. 5. The results of the formation of students' physical culture according to the pedagogical indicator

DISCUSSION

The results of the study, obtained during the experimental work, complement the results of research on the experimental introduction of various technologies in the formation of students' physical culture [3; 8]. Experts prove the need to form a motivational component of physical education for the effectiveness of the process of professional training of students [6; 14]. As the present study proves, after the introduction of health saving and professionally differentiated training models, the results on motivating students to implement motor activity significantly decreased (lower students to a higher level). To a lesser degree, reliability ($p<0.05$) was revealed when introducing a health developing model of education in the educational process of the university. And as the analysis of the introduction of a socially oriented model of learning shows, the results remained the same ($p>0.05$), which is consistent with a number of researchers proving the opposite effect in student motivation when focusing on a physical result [12; 16].

In the direction of the psychological indicator of students' physical culture, the obtained statistical results are consistent with the conclusions of research on the difficulty of obtaining a psychological result within one or two years of study [3; 23]. Researchers argue that improving psychological characteristics is a complex process that requires more significant integrated intervention not only in educational, but also extracurricular activities [4; 14]. Comparative results before and after the experimental work revealed an insignificant reliable result ($p<0.05$) when implementing a professionally differentiated and health developing learning model. In other faculties where health-saving and socially oriented teaching models were introduced, an unreliable mathematical-statistical result ($p>0.05$) was obtained.

When implementing a physical indicator of students 'physical culture, the obtained statistical data supplement the results of research work on improving students' physical qualities by means of systematic physical exercises [2; 10; 21]. As the present study showed, the orientation of the educational process towards the diversified education of patriotism, morality and ensuring continuity in the implementation of physical education and sports education contributes to the physical development of youth [11; 17]. Based on the introduction of a socially-oriented model of training, a positive statistical result was revealed ($p<0.01$). To a lesser degree, the reliability ($p<0.05$) of the comparison before and after the experimental work was revealed at the historical-linguistic faculty, where a health developing model of education was implemented. However, the introduction of other training models did not have a significant effect ($p>0.05$) on increasing students' development of strength, speed, endurance, dexterity and flexibility among students based on the “Ready for Labor and Defense” test.

Experts substantiate a positive correlation of systematic motor activity and an increase in the level of vital activity of the cardiovascular and respiratory systems of the body of people of different ages [3; 4]. Namely, from the perspective of the health improving direction, the experiment being carried out proved the effectiveness of introducing health-saving and professionally differentiated training models. The implementation of classes in the subjects “Physical Culture and Sports” and “Elective Courses in Physical Culture and Sports” by the teacher in these training modules proved a statistical increase ($p<0.05$) in increasing the functional characteristics of students' bodies. However, at the two faculties there was no statistical significance of differences in the experimental groups before and after the study on the health indicator ($p>0.05$). This result is consistent with a number of studies that prove that the effectiveness of motor activity can be not only in improving performance, but also in proving its stability at the age of 18-25 years [2; 15].

In the pedagogical aspect, the study revealed positive results for all the moles of teaching physical education of students. When implementing health developing and professionally differentiated models, reliability was determined at $p<0.01$. In

turn, at the faculties of computer science, physics and mathematics, and the faculty of social communications and philology, comparative mathematical-statistical reliability was obtained at $p<0.05$. The positive results obtained during the experimental work complement the research results, which also prove reliability through substantiation of the educational content of educational subjects [14]. Due to the fact that the studied disciplines contain not only a practical component, but also a lecture one, the study obtained the highest result of the dynamics of increase during the experiment [10; 19]. However, this effect depends on a number of objective and subjective conditions, therefore, their implementation in the educational process should bring to the educational process the possibility of achieving the desired result [9]. Undoubtedly, they should become the object of further scientific research and organizational and managerial educational decisions.

LIMITATIONS

The results of the presented experiment are limited to a sample of study participants, encompassing students of only pedagogical university. The study within the limited sample of students does not allow to cover the entire focus group of young people studying at various universities and training profiles. For further more reliable collection of statistical data, it is necessary to implement a comparative analysis of a more reliable sample, differentiated by various profiles of undergraduate and graduate programs in social and technical sciences.

CONCLUSION

As a result of the study, model foundations for organizing the active physical activity of students of a humanitarian orientation at a pedagogical university are proposed, tested and scientifically substantiated. The results of the study reliably confirmed the effectiveness of individual-differentiated classes based on the development of various model characteristics of physical education training. The main hypothesis posed before the study was achieved through the identification and implementation of four learning models in the process of forming students' physical culture, as well as positive statistically reliable comparative results on motivational, health-improving, physical, psychological and pedagogical indicators. The results of scientific work create the basis for the modernization of physical education and training in the aspects of improving the content, structure and monitoring in two compulsory subjects “Physical Culture and Sport” in the basic part of the bachelor’s curriculum and “Elective courses in physical culture and sports” in the variable part of the educational undergraduate plan.

Ethical Clearance

The Institute Committee for Medical and Health Research Ethics approved the study (2018/06), which was conducted in accordance with the Helsinki declaration. All results were treated anonymously.

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The work was done without attracting additional funding.

Conflict of interests

The authors declares the absence of obvious and potential conflicts of interest related to the publication of this article.

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