

DOI: <http://dx.doi.org/10.34069/AI/2020.28.04.22>

## The program for the formation of physical education of students at the Pedagogical University

### Программа формирования физической культуры студентов в педагогическом университете

Received: March 8, 2020

Accepted: April 11, 2020

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#### Abstract

This article presents the author's vision of the content of the formation of the student's physical culture, which consists of three main areas: motivational, activity-related and cognitive. The purpose of the study: to develop an original program for the formation of students' physical education at a pedagogical university and experimentally prove the effectiveness of its implementation in practical activities. The scientific novelty of the author's program is contained in its main blocks: mobile, theoretical, methodological and practical block. With the continuous impact of the innovations presented in the study by mobile technologies and traditional approaches, such as improving various teaching models, a higher level of formation of students' physical culture of the

#### Аннотация

В данной статье представлено авторское видение содержания формирования физической культуры студента, состоящее из трех основных направлений: мотивационное, деятельностное и когнитивное. Цель исследования: разработать авторскую программу формирования физической культуры студентов в педагогическом университете и экспериментально доказать эффективность ее реализации в практической деятельности. Научная новизна авторской программы заключена в ее основных блоках: мобильный, теоретический, теоретико-методический и практический блок. При непрерывном воздействии инноваций, представленных в исследовании мобильными технологиями, и традиционных подходов,

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person was statistically reliably achieved. The results of the study contribute to improving the quality of education and, in general, the effectiveness of the training system for future teachers.

**Keywords:** physical education, student, mobile learning, motivation, pedagogical university.

## Introduction

Modern society has entered the age of information and communication technologies in all spheres of life, from industrial and economic to socio-cultural and educational (Tkachenko, 2017). The mobile age, which is based on constantly updated technological capabilities, requires a person to have qualities such as mobility, creativity and activity (Baykalova, 2015; Lima & Neira, 2019; Silva et al., 2011). A harmonious combination of recreational, athletic and sports activities in the physical, spiritual, moral and creative development of student youth undoubtedly contributes to the formation of such personality traits (Kudryavtsev et al., 2018; Nagovitsyn et al., 2017; Tkachenko, 2017).

An urgent problem of professional pedagogy is teaching students using mobile devices and innovative educational Internet technologies (John & Govender, 2020; Osipov et al., 2018; Vaganova et al., 2019). The formation of students' physical culture in the educational space of a humanitarian university based on mobile learning ensures the quality of training of a future specialist (Nagovitsyn et al., 2020; Silva et al., 2011; Steinberg et al., 2019) both in sports and pedagogical, and in particular methodological professionalization (Kudryavtsev et al., 2018; Martinez & Rivero, 2019; Nagovitsyn et al., 2018).

However, the development of the foundations for the formation of students' physical culture at the university on the basis of innovative approaches, such as mobile training according to a special system of physical-health-improving physical exercises taking into account the development of professionally important qualities of students of various specialties, has not been implemented to date.

таких как совершенствование различных моделей преподавания, был статистически достоверно достигнут более высокий уровень сформированности у студентов физической культуры личности. Результаты исследования содействуют повышению показателей качества образования и в целом эффективности системы подготовки будущих педагогов.

**Ключевые слова:** физическая культура, студент, мобильное обучение, мотивация, педагогический университет.

## Literature review

An analysis of special scientific and methodological literature, including Russian and foreign sources (Baykalova, 2015; Dereka, 2016; Martinez & Rivero, 2019), revealed that there is a correlation between the level of formation of the student's physical culture and the integral level of the quality of professional training of students of various specialties in Institute (Kudryavtsev et al., 2018; Lima & Neira, 2019; Santos & Soares, 2016). A theoretical analysis determined that in the current situation of professional teacher education, a key contradiction is found between the objective need to improve the physical education of students (Halian et al., 2018; Nagovitsyn et al., 2019; Silva et al., 2011) and the lack of theoretical and methodological grounds the formation of students' physical culture (Baykalova, 2015; Nagovitsyn et al., 2018; Tkachenko, 2017). Some experts (Lima & Neira, 2019; Nagovitsyn et al., 2019; Santos & Soares, 2016), studying the improvement of the physical education of a future specialist, prove the lack of development of non-traditional methods of forming students' physical culture based on mobile learning using innovative information and communication technologies (John & Govender, 2020; Osipov et al., 2018).

According to researchers (Martinez & Rivero, 2019; Nagovitsyn et al., 2019; Santos & Soares, 2016), despite public awareness of the need for physical, intellectual and spiritual development of a modern mobile personality, maintaining an optimal level of health through the formation of physical culture of students in practical activities, there are no necessary socio-pedagogical conditions for its formation (Dereka, 2016; Nagovitsyn et al., 2019; Tkachenko, 2017). Despite the rapidly changing life activity of young people, the increasing pace of scientific and technological progress, the intensification of

social changes that influence it (Baykalova, 2015; Nagovitsyn et al., 2018), the education system cannot fully respond to social changes and satisfy educational needs modern students (Halian et al., 2018; Osipov et al., 2018). According to specialists (Li & Peng, 2019; Nagovitsyn et al., 2019; Santos & Soares, 2016), the imperfection of the traditional methodological base for the formation of students' physical culture can enrich the introduction of innovative technologies through the development of mobile physical education content, non-traditional sports and fitness methods, meeting current youth needs (Osipov et al., 2018; Steinberg et al., 2019). Which are focused on the humanization of the educational process, taking into account the innovations, creativity, initiative and interests of the teacher and students (Baykalova, 2015; Vaganova et al., 2019; Yermakova & Podolski, 2019).

Despite the relevance and development of the declared topics, a number of problems associated with the formation of students' physical culture and the design of pedagogical technologies in a pedagogical institute saturated with mobile devices remain beyond the interest of researchers and developers.

Thus, the purpose of the study: to develop an author's program for the formation of students' physical education at a pedagogical university and experimentally prove the effectiveness of its implementation in practical activities.

## Materials and Methods

In modern conditions of modernization of Russian education, the search for objective methodological foundations is being actualized. The methodological basis for the formation of students' physical culture is the culturological approach, system-activity and personality-oriented, competency-based and innovative-technological approaches, combined into a single methodological system. These methodological approaches focus on determining the goals of professional training of students and mechanisms for their achievement.

Within the framework of the main culturological approach, which appears in our study as the methodological basis for the formation of physical culture and based on the entire cultural experience of mankind, the humanistic strategy for the development of material and spiritual culture is becoming relevant (Dereka, 2016). Physical activity, viewed through the prism of this methodological approach, is determined by

human significance and value only when it becomes a factor in the true cultural development of a person (Baykalova, 2015; Silva et al., 2011), harmonization of physical and spiritual, steady attachment to physical culture (Martinez & Rivero, 2019; Nagovitsyn et al., 2019). The culturological approach is presented in the study in the following aspects:

- axiological in the context of the pedagogical process focusing on the analysis and formation of value orientations of the person as a stable physical education worldview and the student's stable behavior (Nagovitsyn et al., 2018; Tkachenko, 2017; Yermakova & Podolski, 2019);
- technological from the point of view of understanding culture as a specific way of human activity and the formation in the process of cultural development of ways of physical activity, and vice versa (Kudryavtsev et al., 2018; Martinez & Rivero, 2019);
- creative in the perspective of understanding the implementation of cultural development as an improvement of the individual (Baykalova, 2015; Dereka, 2016), its formation as a creative person based on the relationship of culture with creative physical education activities (Lima & Neira, 2019; Santos & Soares, 2016).

The study used the basic principle of mobile learning: reflection and transformation of virtual activity into physical activity and health-improving activity (Nagovitsyn et al., 2019). This principle is based on the fact that reality, when comprehended by students, is reflected in his imagination, and mental manipulation of material (virtual activity) allows you to transfer the results to real practical activities (Osipov et al., 2018; Steinberg et al., 2019). In the context of the study of mobile content, it should be noted that the mobile game and, in general, work with mobile applications related to the activity of the imagination expresses the trend, the need of the student to transform the surrounding reality (John & Govender, 2020). Manifesting in this activity, this ability for creative transformation begins to form through the feelings, desires, ideas that are played out in it, and the reality of the issues that are addressed there (John & Govender, 2020; Steinberg et al., 2019). In the context of the scientific justification of mobile learning from the perspective of this principle, it should be noted the need for a systematic and holistic understanding of the proposed mobile

content in Internet resources (Osipov et al., 2018). The information that students receive, forming into knowledge, should be scientific, facilitating learning, and not vice versa, so students need to be able to think systematically and distinguish between true scientific knowledge and pseudo-scientific knowledge (Lima & Neira, 2019).

The study was implemented in three stages: worldview, activity and creativity. The results of the process of formation of the student's physical

culture at each stage are determined, the structural components of the author's program and their holistic content are developed in blocks: mobile, theoretical, theoretical and methodological and practical.

Based on the identification of the stages, determination of their target setting and result, the content of the program for the formation of students' physical culture at the pedagogical institute is developed, which is holistically presented in Table 1.

**Table 1.**

*The content of the program for the formation of physical education of students at the Pedagogical university*

Stage	Content	
1. Worldview	<p><i>Mobile:</i></p> <ol style="list-style-type: none"> <li>1. Audio courses in mobile phones and music players for extracurricular activities of students: "Physical education and sport", "Life safety", "Fundamentals of medical knowledge and a healthy lifestyle", "Age anatomy, physiology and hygiene".</li> <li>2. Virtual mobile competitions and e-sports.</li> </ol> <p><i>Theoretical:</i></p> <ol style="list-style-type: none"> <li>1. Integration theoretical module course in the academic disciplines "Physical Culture", "Life Safety", "Fundamentals of Medical Knowledge and Healthy Lifestyle", "Age Anatomy, Physiology and Hygiene".</li> </ol> <p><i>Theoretical and methodological:</i></p> <ol style="list-style-type: none"> <li>1. Webinars with leading athletes of the republic and the Volga Federal District.</li> <li>2. The inclusion of students in the institute program "Health".</li> <li>3. Implementation of the theoretical and methodological part of the experimental program "Preparing the future teacher as a class teacher using physical culture and sports"</li> </ol> <p><i>Practical:</i></p> <ol style="list-style-type: none"> <li>1. Psychological support in the framework of the university program "Freshmen Adaptation"</li> <li>2. Implementation of a program for monitoring psychophysical readiness for future professional activities and the level of health in the framework of the Health program</li> </ol>	
	2. Activity	<p><i>Mobile:</i></p> <ol style="list-style-type: none"> <li>1. Consulting and training through mobile devices in the discipline "Physical Culture and Sports".</li> <li>2. Organization of physical education activities using a special site.</li> <li>3. Preparation for compliance with the standards of the All-Russian sports complex "Ready for work and defense" based on mobile technologies.</li> </ol> <p><i>Theoretical:</i></p> <ol style="list-style-type: none"> <li>1. Participation of students exempted from physical education in project activities on physical education topics and in the work of the Student Scientific Forum, discussion and commentary on reports.</li> </ol> <p><i>Theoretical and methodological:</i></p> <ol style="list-style-type: none"> <li>1. The program of chess and drafts game activity at the Pedagogical Institute.</li> </ol> <p><i>Practical unit:</i></p> <ol style="list-style-type: none"> <li>1. The author's program for the development of professionally important qualities of teachers of various specialties by means of non-traditional and national types of physical exercises.</li> <li>2. The practical part of the module "Preparing the future teacher as a class teacher using physical education and sports."</li> <li>3. Implementation of an experimental program for the implementation of various models of physical education in the educational and extracurricular activities of students.</li> </ol>
		3. Creative

2. Trainings of fitness and health-improving skills and abilities, special seminars, webinars and conferences "Fitness and fitness activities of students" and "Formation of physical culture".

*Practical:*

1. The author's program for the development of professionally important qualities of teachers of various specialties by means of non-traditional and national types of physical exercises.
2. Professionally-oriented part of the module "Preparing the future teacher as a class teacher using physical education and sports" of the discipline "Physical Education".
3. Organization of sports and recreational activities of students based on the implementation of the institute program "Health".

For a systematic identification of the effectiveness of the author's program at a pedagogical institute, the study identified the main components of the formation of students' physical culture: motivational, activity-oriented

and cognitive. In turn, the components were meaningfully differentiated into indicators of the formation of students' physical culture and goals and methods for their achievement (Table 2).

**Table 2.**

*The content of the program for the formation of physical education of students at the Pedagogical university*

Com- po- nents	Indicators	Learning Objective	Methods
Motivational	Sports-oriented worldview	Determine the presence of sports-oriented beliefs, needs and sports thinking	The author's methodology for determining sports culture based on data analysis in the social network "In Contact"
	Motivational-value attitude	Determine the formation of motivation for physical education activities	The author's method of choosing a group of motivations for physical education
	Emotional	To fix the emotional readiness for physical activity, to determine the level of development of the emotional state during physical activity and emotional comfort	1. Methodology for assessing the emotional state by the type of color sensitivity shift. 2. SAN test (Well-being, activity, mood). 3. The modified technique of emotions according to K. Isard.
Active	Mental	To determine mental readiness based on the analysis of self-esteem, determination of the level of stress resistance, resistance to emotional exhaustion and the level of aggression	1. Questionnaire on self-esteem analysis S. V. Kovaleva. 2. Test for determining the level of aggressiveness by A. Assinger. 3. Questionnaire survey according to the method of stress tolerance level according to T.A. Nemchin
	Physical	Identify the level of development of strength, speed, endurance, dexterity and flexibility	Tests for determining the level of physical development by 100 - point system
	Wellness	Determine the level of somatic health based on an assessment of an indicator of functional characteristics	Assessment of physical health according to N. M. Amosov
Cognitive	Operational	Identify sports and fitness knowledge, determine the understanding and possession of sports and fitness knowledge and the skill to apply them in practice	A modified system of levels of training in B. Bloom's taxonomy in terms of levels of training (knowledge, understanding, application)
	Reflective	Record the ability to analyze fitness and fitness skills, the skill and creative use of fitness skills, the systemic ability to evaluate and adjust the results	A modified system of levels of training in B. Bloom's taxonomy based on the identification of the mental operations necessary to achieve them (analysis, synthesis, evaluation)
	Behavioral	Determine the level of maintaining physical culture and a healthy lifestyle	Methodology "Healthy lifestyle" by D.N. Davidenko and V.P. Petlenko

The experimental study was attended by full-time, part-time and evening students (n=436) of the faculty of pedagogical and art education of the Glazov State Pedagogical Institute. In turn, this focus group was divided into two groups: experimental (EG) and control group (CG). The EG (n=215) included full-time students studying in the Pedagogical direction. Students of this group during the 2018-2019 academic year implemented the author's program for the formation of students' physical culture in three stages of implementation. The CG (n = 221) included students of correspondence and evening departments studying in the Pedagogical and Psychological-pedagogical direction. Students of this group during the 2018-2019 academic year implemented the author's program for the formation of students' physical culture only fragmentarily or did not participate at all in its implementation.

Statistical analysis: Processing the results of the study was carried out using the statistical

program SPSS Statistics 20. The significance of differences in the results was determined using Chi-square ( $X^2$ ) at  $p < 0.05$ . Mathematical and statistical processing was carried out between the indicators of experimental and control groups for each indicator proposed in the study before the experiment (September 2018) and after the experiment (July 2019).

### Results

To identify the impact of the program for the formation of students' physical culture at a pedagogical institute on practical activities, all students from the experimental and control samples were tested. The data obtained were analyzed by comparing student performance before and after the experiment at three levels: high, medium and low. Depending on the values obtained, the participants in the study were enrolled in different tier groups for each component of physical education and indicator (Table 3).

**Table 3.**

*The content of the program for the formation of physical education of students at the Pedagogical university*

Com- ponents	Indicators	Stage	Number of participants						P
			High		Medium		Low		
			EG	CG	EG	CG	EG	CG	
Motivational	Sports-oriented worldview	Before	12	14	118	125	85	82	> 0,05
		After	79	23	93	161	43	37	< <b>0,05</b>
	Motivational-value attitude	Before	22	19	116	127	77	75	> 0,05
		After	111	35	76	131	28	55	< <b>0,05</b>
	Emotional	Before	19	24	96	101	100	96	> 0,05
		After	97	33	103	108	15	80	< <b>0,05</b>
Mental	Before	43	45	141	147	31	29	> 0,05	
	After	57	61	150	149	8	15	> 0,05	
Physical	Before	59	55	99	125	57	41	> 0,05	
	After	114	58	100	131	1	32	< <b>0,05</b>	
Active	Wellness	Before	44	39	127	125	44	57	> 0,05
		After	51	53	130	129	34	39	> 0,05
Cognitive	Operational	Before	43	48	106	111	66	62	> 0,05
		After	124	58	69	100	22	63	< <b>0,05</b>
	Reflective	Before	21	43	49	18	145	52	< <b>0,05</b>
		After	43	46	72	76	100	99	> 0,05
	Behavioral	Before	96	101	87	93	32	27	> 0,05
		After	147	105	66	90	2	26	< <b>0,05</b>

Based on the obtained comparative results, prior to the experiment, a statistical uncertainty between the EG and the CG was revealed for all indicators of the formation of students' physical culture ( $p > 0.05$ ). Only one indicator before the experiment revealed the significance of differences ( $p < 0.05$ ) - according to the reflexive indicator. According to it, the CG has higher level characteristics in comparison with the EG.

This can be explained by the fact that part-time and evening students have extensive professional experience and reflective ability.

Thus, it can be summarized that before the start of the experimental work, the focus groups (EG and CG) were statistically significantly equal. This means that the participants in the

experiment before the study was carried out were at the same level of physical education.

After the experiment, the data obtained showed an increase in level characteristics in both groups. However, statistical reliability between the EG and the CG ( $p < 0.05$ ) was recorded according to worldview, motivational-value, emotional, mental, operational and behavioral indicators. According to the physical, reflective, and health indicators, statistical uncertainty ( $p > 0.05$ ) of the differences between the EG and the CG after the experiment was revealed.

### Discussion

The results obtained are consistent with a number of research works that prove that the introduction of information technologies in the process of fitness activities significantly contributes to the improvement of professional training (Nagovitsyn et al., 2019; Osipov et al., 2018; Santos & Soares, 2016). When implementing the adjustment of the educational process of a higher educational institution based on the implementation of a block-modular system, a positive result is possible (Baykalova, 2015; Lima & Neira, 2019; Yermakova & Podolski, 2019). As the statistical results of this study show, the synergistic interaction of the action blocks: mobile, theoretical, theoretical and methodological and practical, allows us to put a reliable result in the formation of the physical culture of students of the pedagogical institute. With the continuous impact of the innovations presented in the study by mobile technologies and traditional approaches, such as improving various teaching models, a higher level of formation of students' physical culture of the person is achieved.

The study complements the review and research work that reveals the substantial characteristics of the formation of the physical culture of a person (Baykalova, 2015; Martinez & Rivero, 2019; Tkachenko, 2017). Some researchers place particular emphasis on the mental and physical content of this process (Martinez & Rivero, 2019; Nagovitsyn et al. 2017). These scientists prove that the experimental effect on the psycho-physical direction of students' physical culture is crucial in the effectiveness and basis of the effectiveness of vocational training through physical education at the university (Santos & Soares, 2016; Silva et al., 2011). Other experts have experimentally confirmed the need to increase students' fitness-oriented beliefs, needs and physical thinking (Dereka, 2016; Tkachenko, 2017). Due to the increase in positive emotional

states of students during the implementation of motor activity, the complex formation of students' physical culture is possible (Halian et al., 2018; Nagovitsyn et al., 2019). In turn, our experiment combines previous studies and supplements a new direction in the formation of physical culture: the cognitive component. Only in a targeted effect on the motivational, physical and cognitive component of the personality of a student of a pedagogical university can a reliable positive result be possible.

The study confirms studies that experimentally prove that, despite the complexity of the exposure program, it is impossible to integrate a personality (Baykalova, 2015; Halian et al., 2018). In support of this, it should be noted a number of researchers who also did not receive effectiveness in the health component of the physical culture of a person (Silva et al., 2011). These components require not only pedagogical intervention, but also psychological and medical impact (Li & Peng, 2019; Steinberg et al., 2019). The obtained inaccurate results ( $p > 0.05$ ) in the present study in terms of the physical indicator can be explained by the slow implementation of the experiment. This statement will require further research over a longer period. Nevertheless, the recorded non-reliability ( $p > 0.05$ ) in terms of reflective index after the experiment shows the effectiveness of the author's program. Since before the experiment, comparative statistical processing revealed the significance of differences ( $p < 0.05$ ) in increasing the effectiveness of the CG.

### Limitations

The presented experimental study was limited to a sample of students of the faculty of pedagogical and art education of one pedagogical institute. In this regard, the number of study participants in each focus group was heterogeneous in size. The sample obtained does not make it possible to cover the entire target audience, since the study was conducted at only one institute. In accordance with this, the results can be determined as initial, and for further more detailed analysis it is necessary to conduct a comparative analysis of several higher educational institutions of the region and the federal district. A larger focus group in the future will provide more statistically reliable information on solving this problem.

### Conclusion

Thus, the experimental study presents the author's vision of the content of the formation of

the student's physical culture, which consists of three main areas: motivational, activity-related and cognitive. Each direction, in turn, is represented by three composite indicators: physical culture-oriented worldview, motivational-value attitude to physical culture activity, emotional, mental, physical, wellness, operational, reflective-evaluative, behavioral. The study developed the author's program for the formation of students' physical culture at a pedagogical institute, which includes three synergistically interconnected stages: worldview, activity, and creativity. The work experimentally proved the effectiveness of its implementation in practice by means of the main directions of the author's program in blocks: mobile, theoretical, theoretical and methodological block and practical block.

The study obtained a fundamentally new result in the strategy of planning to increase the indicators of physical culture of the personality of students in humanitarian, natural-scientific and physical-sports directions of pedagogical education. New scientific data on the processes of increasing motivational-value, psycho-physical and reflective-evaluative activities of students and patterns existing in the pedagogical science under study on this issue are revealed. What ultimately, may be one of the key conditions for improving the quality indicators of professional training and the overall effectiveness of the training system for future teachers.

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