



Application of the monitoring module in the educational process of universities

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Abstract

Objective of the study is substantiation and implementation of the module for monitoring the level of physical fitness of university students in the educational process.

Methods and structure of the study. Within the framework of this study, a comprehensive methodological toolkit was used to achieve the set goals, including a review of specialized literature and legal acts, a questionnaire survey, and analytical modeling. The study was conducted in two consecutive stages. In the first stage, a detailed analysis of the use of digital technologies in educational activities by leading universities in St. Petersburg was conducted. In the second stage, the need for the development and implementation of a module for monitoring students' physical fitness was identified, and a methodological framework for its operation was developed.

Results and conclusions. The implementation of a module for monitoring the physical fitness level of university students is an innovative approach to optimizing the physical education process. This module, integrated into the educational program system, aims to enhance the effectiveness of physical training and transition from traditional normative methods to individualized, person-centered strategies, which not only improves the physical condition of students but also fosters a conscious attitude towards a healthy lifestyle.

Keywords: *module, analysis and monitoring, physical training, educational process, higher education institutions, accounting, teaching, methodology.*

Introduction. In 2024, the Government of the Russian Federation approved the State Program "Development of Physical Culture and Sports," which covers the period up to 2030 and provides for strategic planning until 2036 (hereinafter referred to as the Program). The main target indicators of the Program include increasing the proportion of citizens who regularly engage in physical activity to 70%, improving the satisfaction level of the population with the created conditions for sports activities to 70%, and achieving a 74% provision of sports facilities for the population.

One of the key areas of implementation of the State Program "Development of Physical Culture and Sports in the Russian Federation", approved by the Decree of the Government of the Russian Federation dated September 30, 2021, No. 1661, is the digital transformation of the management system of the physical culture and sports sphere.

When determining the indicators of the Program, students of higher educational institutions are included in the category of citizens who systematically engage in physical culture. Four years of study under bachelor's programs and five years under specialist programs represent a long period during which the priority task of students is educational activities, which take up a significant part of their time. Attendance at physical education classes integrated into the curriculum allows students to participate in physical activity on a regular basis. If the educational institution has a well-developed sports infrastructure, including rented facilities, students are likely to be satisfied with the conditions for physical activity during their studies. In light of the requirements of the State Program, the implementation of digital technologies for monitoring the physical fitness level of university students has become an urgent task.

The relevance of the study is determined by the urgent need for systematic monitoring of the physical



fitness level of students in higher education institutions. This aspect becomes particularly important in the context of current trends in education and health-care, which aim to improve the quality of professional training and enhance the physical health of students.

Objective of the study is substantiation and implementation of the module for monitoring the level of physical fitness of university students in the educational process.

Methods and structure of the study. The organization of research work was carried out in two consecutive stages, each of which had its own specific goal and methodological focus. The first stage involved a detailed analysis of the use of digital information technologies in the process of physical education for students, with a focus on studying the best practices of leading educational institutions in the country. During this stage, innovative approaches were examined in prestigious educational institutions such as the Russian Presidential Academy of National Economy, the Herzen State Pedagogical University of Russia, the Military Academy of Communications, and the Military Institute of Physical Education. The main objective of the first stage was to systematically identify and classify software products used in the educational processes of higher education institutions, as well as to determine the need for the development of specialized software for monitoring the physical fitness level of students.

The second stage of the study focused on the justification and development of a methodology for monitoring the physical fitness level of students. When developing this methodology and organizing the study, it was taken into account that in order to increase the attractiveness of physical education and motivate students, it is necessary to have a comprehensive impact on the cognitive and creative aspects of the physical development process. The cognitive component implies the conscious and meaningful assimilation of the educational material, while the creative component implies the creative assimilation of the educational material. This approach can be effectively implemented by involving students in the independent monitoring of their physical condition, which is achieved through a comparative analysis of the dynamics of the development of physical qualities [2]. The form of monitoring plays a key role in the educational process, as its methodology should be aimed at stimulating the cognitive activity of students. In addition, the introduction of advanced technologies into the education-

al process is driven by current trends and increased requirements for the level of professional competence of graduates of higher education institutions [1]. This format can be an electronic software product that provides access to its functionality through various computing devices, including personal computers, tablet computers, and mobile phones.

Results of the study and discussion. The analysis of scientific literature and the study of best practices by leading universities, as well as legal acts, conducted as part of the first stage of the study, demonstrated that currently, only in the context of military educational organizations, there are a number of software products designed to analyze the level of physical development and physical fitness of military personnel. These include, for example, the "Military Personnel Passport" and the "Software Module for Systematization and Control of the Physical Fitness Level of Military Personnel," developed by the Military Academy of Communications and the Military Institute of Physical Culture, respectively. Although these software solutions are limited in scope, they are nevertheless used in a number of other military educational institutions. In contrast, higher education institutions typically use electronic packages, databases, and resources recommended by the Ministry of Science and Higher Education of the Russian Federation. These resources include "Portfolio", "Abiturient" and various electronic library systems such as "Lan", "Urait", "Znaniy", "IPRSMART" and Google Academy. However, these resources are not designed for analyzing and effectively influencing the level of physical fitness of students, which significantly limits their functionality in this context.

There are several approaches to recording attendance, academic performance, and evaluating students' compliance with standards. One approach, used by several universities, involves using tablets to capture relevant information. These tablets may have separate sections for each student, academic group, or course. However, while they offer the ability to store data, they lack the functionality to accumulate information, determine grades based on exercise performance, and conduct monitoring. In most cases, information about attendance and academic performance is recorded by teachers in handwritten journals, and grades for completing нормативов are assigned based on comparing the results with printed tables. It is important to note that there are currently no methodological recommendations for developing physical



qualities in students in the form of electronic products. Although most universities have developed and use electronic journals, video lessons, and presentation materials for physical education, these resources typically mimic paper journals for tracking attendance and academic performance of study groups and provide information only at the group level. There is no summary information on study groups, courses, years of study, and the level of physical development. This information would be extremely useful for analytical accounting, comparative analysis, and control and management of the physical training process for students.

Based on the analysis conducted in the first stage, it can be concluded that there is an urgent need to develop and implement an electronic software module for monitoring the physical fitness level of students in higher education institutions. This module should be integrated into the existing educational management system and contribute to improving the effectiveness of students' physical training.

The second stage of the study focused on developing a methodology for the module's operation and evaluating its potential effectiveness. During this stage, a questionnaire was conducted among faculty members of physical education departments in two educational institutions. A total of 34 employees participated in the survey. The results of the survey showed that 84% of respondents support the idea of introducing a monitoring module into the educational process. The main arguments in favor of this innovation include the need to encourage students' physical activity and the fact that teachers are already entering data into the university's electronic database when filling out electronic journals.

The monitoring module is a comprehensive system of electronic software products for computers that functions based on the integration of hardware and software components. This system provides processing and structuring of the entered data according to the specified parameters, as well as allows determining key indicators of students' physical fitness in accordance with the technical requirements [3].

The module for monitoring the level of physical fitness of students can function as a standalone electronic product or be integrated into a more extensive module for systematizing and monitoring physical training, which was discussed in detail in a previous publication.

At the first stage of the study, it was found that in a number of military educational institutions, the module

for monitoring physical training is integrated into comprehensive software solutions such as the "Military Personnel Passport". Physical education teachers, both in military and civilian universities, are required to maintain electronic journals that, in addition to attendance records, also include the results of exercises that reflect the development of students' physical qualities. One of the significant advantages of using this module is a significant reduction in the teacher's time spent on administrative functions. This time savings is achieved through automated data processing, where the program calculates the scores automatically after entering the exercise results, eliminating the need for manual comparison with the normative tables. Additionally, the module provides comprehensive analytical information, including the group's average score, the percentage of positive and negative scores for each physical quality, the overall course average score, and the assessment of the development level of each physical parameter. Research conducted in military educational institutions has shown that the implementation of such technological solutions can reduce a teacher's time requirements by 10-15% compared to traditional paper-based accounting methods.

The study found that the implementation of a module for monitoring students' physical fitness levels will contribute to:

- academic performance should be monitored individually for each student, as well as for academic groups, courses, and faculties;
- monitoring students' academic performance for each semester and academic year;
- effective planning of the educational process;
- objective and individual control of the level of knowledge acquisition, as well as the formation of skills and abilities;
- systematic adjustment of means and methods of developing physical qualities;
- promoting the participants' motivation to achieve positive results in their activities;
- making adjustments to the exercise scores as needed;
- conducting a comparative analysis of the dynamics of physical quality development, academic performance, and student attendance during semesters and academic years;
- prompt response to the insufficient level of physical training among students and appropriate adjustments to the educational process, including individualization of educational methods.



For heads of physical education departments, it is crucial to provide quick and easy access to information about teachers' activities, as well as the ability to conduct a comprehensive assessment of their performance. The implementation of a module that meets the requirements of the teaching staff (such as providing students with access at least once a month) involves the integration of modern learning technologies. Students can use mobile devices like smartphones, tablets, or laptops to access the digital module's data. The information presented in the module provides teachers and students with the opportunity to not only receive, but also compare their results with those achieved in other groups and courses. The automatic data processing implemented in the module contributes to significant time savings and reduced physical effort on the part of the teacher, which is an important aspect of optimizing the learning process and increasing its efficiency.

Conclusions. The introduction of electronic software products into the educational process in the discipline "Physical Education" is a significant factor contributing to the improvement of the quality of education. The module for monitoring the level of physical fitness of students in higher education institutions, although it is not a mandatory element of the educational and methodological complex of the departments, has the potential to transform the educational activities in the discipline "Physical Training" to a qualitatively new level. The main goal of digital electronic programs is to expand the range of opportunities for teachers, which contributes to the more effective achievement

of educational goals. In the context of using the monitoring module for teaching staff, its task is to optimize the time spent on processing information, which in turn allows teachers to focus on better preparation for classes, as well as to increase the time allocated for scientific and methodological activities, as well as for conducting individual work with students. For students, the monitoring module serves as an incentive to improve their physical fitness levels, which is an important aspect in the context of their physical health and overall physical culture. Thus, the integration of electronic software products and a monitoring module into the physical education educational process is an innovative approach aimed at improving the efficiency and quality of teaching, as well as encouraging students to actively participate in the physical education process.

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