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Digital Technologies in the Organization of Sports Training of Youth in the Conditions of Additional Education in Physical Culture

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Abstract: The article considers the development of additional physical education for young people based on the use of digital technologies in the organization and content of sports training. It provides a rationale for the need to use digital technologies in the sports training of children and adolescents in order to increase their motivation and interest in physical education and sports activities, optimize the structure and content of the training process, and increase its effectiveness through timely monitoring of physical condition and other indicators that affect the achievement of sports results. The authors characterize the digital resources that are the most optimal for teachers to use in the process of additional physical education. The possibilities of modern digital applications for analyzing and improving the sports technique of students, assessing the functional state and physical potential of children with disabilities, neuropsychic status and other indicators to determine the physical and psychological readiness for sports activities and competitions, as well as to predict the athletic success of students are revealed.

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1 INTRODUCTION

In modern conditions, motor activity among the younger generation acquires unprecedented value, especially for schoolchildren, due to the saturation with gadgets and as a consequence sedentary lifestyle, which creates an acute need for increased physical activity among children and leads to an increase in cardiovascular diseases, obesity, posture disorders and many other health problems. This situation requires special attention and the need to promote conscious motor activity and healthy habits among young people. It is necessary to state the fact that it is expedient to organize the education of physically healthy and harmoniously developed, with a high level of physical culture youth on the basis of secondary school.

The key to solving this problem is the development of school sports clubs in the system of supplementary education (hereinafter referred to as SE) in physical education, the purpose of which is to develop the potential of physical culture and sports activities to prevent bad habits, antisocial behavior, as well as to provide conditions for individualization of education, sports giftedness, professional orientation, identification and support of students with disabilities.

Currently, on the basis of Federal Laws N 329-FZ of 04.12.2007 “On Physical Culture and Sports in the Russian Federation” and N 273-FZ of 29.12.2012 “On Education in the Russian Federation” a regulatory legal framework has been created for general educational organizations to create and ensure the activities of school sports clubs in order to involve students in physical culture and sports activities by educational organizations. In this way, the formation of a system of school sports clubs is an integral part of the implementation of the federal project “Every Child's Success”, the national project “Education”, the plan of the main activities carried out within the framework of the Decade of Childhood for the period until 2027 (Order of the Government of the Russian Federation dated January 23, 2021 N 122-r), the Strategy for the Development of Physical Culture and Sports in the Russian Federation for the period until 2030 (Order of the Government of the Russian Federation dated November 24, 2020 N 3081-r), the Strategy for Education in the Russian Federation (Order of the Government of the Russian Federation dated November 24, 2020 N 3081-r) The presented normative-legal base substantiates the importance of the development of the system of additional education of youth in the Russian Federation at its various levels and requires from PO organizations to develop organizational, methodological and content support of the process of education and upbringing.

In the conditions of digitalization of society, the use of information and communication technologies (ICT) in the educational process, including supplementary physical education, becomes an integral part of the formation of competencies in students. In the field of physical education and sports training, digital technologies can significantly increase the level of student engagement and motivation, as well as improve the quality of learning. Digital technologies in sports training of children and adolescents have a huge impact on the optimization of the training process, improving sports results and the emotional and psychophysical preparation of those involved. This is artificial intelligence, high-speed Internet, neural networks, biotechnology, etc. It is important that the implementation of digital transformations correlates not only with the level of implementation, but also with prevalence and the degree of user ability, so that the technological feature of their application in the field of additional education in physical education of youth is a reflection of the level of development of society and the cognitive functions of the younger generation, and therefore contributes to the achievement of a significant goal of the education system as a whole. In this way, the relevance of the study is determined by the need to explore the possibilities of using digital technologies in the organization of sports training of youth in the conditions of additional education in physical culture to increase the formation of the necessary universal competencies in students, the quality of sports training and involvement in physical culture and sports activities of more children and adolescents.

2 METHODOLOGY AND METHODS

The methodological basis of the research are fundamental works in the field of education informatization (Kuznetsov A.A., Lapchik, M.P., Mukhametzyanov I.Sh., Semyonov A.L., Sovetov B.Y., Tikhonov A.N., etc.); concepts of education informatization and works on the application of information technologies in the field of physical education and sport (P.K. Petrov, V.Y. Volkov, L.A. Khasin, P.V. Bundzen, V.V. Zaitsev, M.P. Shestakov); digital resources, catalog of sports applications and databases in the field of sports training in various sports.

3 RESULTS OF THE STUDY

The advantages of digital technologies in physical education training are presented in the studies of modern practitioners, where special attention is devoted to increasing interest in physical education and sports activities, the possibility of using multimedia materials to explain complex concepts, teaching the technique of motor actions on the basis of informational biomechanical analysis, monitoring of control over the physical condition of students, the organization of remote training and online classes on physical education and sports activities. Let's consider the most popular information tools used in sports training of students, aimed at both optimization of sports training and efficiency of educational activity in the conditions of school sports club.

Digital resources are classified according to the purpose of use and efficiency of their application. The most common among coaches-teachers who carry out sports training in the conditions of additional physical education of schoolchildren they found in the technologies of self-monitoring. These are programs for assessing the effectiveness of training, multifunctional training complexes with the function of training and self-monitoring and multimedia presentations used for both knowledge transfer and skills control; and databases (results of sports achievements), and others. A special role is played by mini-programs for mobile devices as objectively measured motor activity. For those engaged in physical culture and sports, the advantages of mobile applications are obvious, as they have high reliability without calibration, informativeness, noise immunity, the possibility of storing an individual online monitoring base, as well as quick calculation of information indicators and their interrelationships. For a schoolchild, it is very important to use wireless communication, low power consumption and interesting interfaces of fitness monitors, smart bracelets and other gadgets during training.

Digital information applications are classified according to the studied characteristics reflecting psychological and physiological state as a whole and separately (cardiorespiratory system, cardiovascular system, respiratory system, vestibular apparatus). These patented programs have been tested in the field of sports (microcardiograph-stress-tester "Sputnik", cardiac monitor with biofeedback "Vector 4", pulmonary reoplethysmograph RPG2-05, express heart rate analyzer "Olymp-TM", as well as those developed by large corporations (Google).

Among the most common types of applications coaches-teachers distinguish tools that provide round-the-clock registration of basic motor actions, notify the user by vibration about the absence of muscle reactions for a long time, which is especially important in conditions of restricted motor activity in conditions of forced isolation (RunKeeper). Applications of this type can have a function of somnological analysis, reflecting recovery processes. In applications that assess the functional state of an exerciser, pulsometry parameters are used, for example, "Orthostatic monitoring". This application is aimed at assessing the vegetative status according to the parameters of a modified orthostatic test, the result of which is used to personalize the zones of functional state: zones of fatigue; recovery zone; zone of readiness, zone of low load, zone of adaptation zone of stress reactions. In the process of data interpretation, the application program determines the dynamics of adaptation shifts in the functional state of the organism in accordance with the performed loads, sleep duration, the degree of recovery from diseases (acute respiratory viral infections, etc.), intellectual and emotional fatigue. In the same row we can distinguish the type of applications that assess motor potential (based on calculations of the power of individual locomotions). As a rule, it is used to determine the fitness level of the cardiovascular system together with the maximum oxygen consumption. Examples of such tests are professional tests in the mobile version: "LukeLeger", Cooper's Beep Test, "Jumping in place", etc.

In recent years, the Hudl Technique application has gained great popularity among basketball coaches and teachers, being a powerful tool for analyzing and improving sports technique. This model performs several functions, including: collecting data, recording video, choosing the optimal angle for the most accurate reflection of the quality of the technical element. The application's functions also include the use of slow motion for detailed analysis of movements, identifying specific technical errors, such as incorrect body position, insufficient range of motion or incorrect sequence of actions, and assessing the impact of errors on performance and the risk of injury.

As feedback, the Hudl Technique app program provides the athlete with videos of overlaid graphics (e.g., lines, arrows) to illustrate correct technique, annotations and comments explaining errors and recommendations for correction.

In this way, the use of "Hudl Technique" allows not only to improve the quality of performance of technical elements, but also to objectively assess the effectiveness of the training process. Comparison of results before and after the application of the analysis method helps to identify progress and correct further steps in training to achieve optimal results.

Accessible to the teacher at school and understandable for pedagogical analysis to the teacher of physical education and sports is a group of applications, which are based on methods that reflect the subjective assessment of the respondent's condition: surveys (the methodology "Self-Health, Activity, Mood" (SUN); questionnaire "Generalized Anxiety Disorder" (GAD 7); Eysenck's questionnaire, etc.).

In order to assess the physical potential of children with disabilities, there are applications that allow assessing the neuropsychiatric status (screening test for short-term memory (mini-COG), mental status assessment scale (MoCatest), visual-spatial skills). Their results allow us to assess psychological readiness for sports activities and competitions, as well as to predict the athletic success of students.

4 DISCUSSION OF RESULTS

As a result of the analysis of the available methodological literature and practical experience of teachers and coaches-teachers implementing their activities in the system of additional education in physical culture, as well as the wide possibilities of using digital technologies in the organization of sports training of young people in the conditions of additional education in physical culture, there is a need to improve the qualification of teachers of additional education in order to form their information competencies for the use of digital technologies in the system of additional education in physical culture The additional professional program of professional development "Creation and organization of work of school sports clubs" developed at Mininsky University is aimed at formation of professional competences of teachers of additional education in the field of creation and organization of work of a sports club in a general educational organization. This program contains modules on mastering the legal and regulatory support of sports club activities, the formation of skills to create and organize the activities of school sports clubs, as well as the formation of information competencies of sports training and competitive activities of students at different levels of additional education. The content of the last module includes topics that reveal the essence of digital resources and their use in the activity of a coach-teacher, as well as the peculiarities of the use of digital technologies and mobile applications to assess the psychological and physiological state. In order to develop the skills of teachers of additional education in physical education and sports, the course uses contextual tasks that allow to identify the necessary digital resource to solve a specific professional problem, as well as practice-oriented tasks, the implementation of which is carried out with the direct participation of students in order to obtain objective results of sports training and interpretation of the resulting data.

5 CONCLUSIONS

The analysis of the current state of development of additional physical education allows us to conclude that in order to improve the effectiveness of the educational process of sports training of students, to optimize the activity of the coach-teacher and the student is necessary to introduce digital technologies into the system of additional education and training of teachers to carry out professional activities on the basis of their effective use. Information digital support in physical education and the sphere of physical culture and sport has shown that digital transformation provides an array of data taking into account various indicators that allow to quickly and effectively solve the problems arising in the process of sports training. Due to the fact that additional physical education is a starting point for personal and professional growth in the sports career of a student, the increasing competition at the world level in top-level sports, imposes new requirements for training and scientific support of sports. The analysis has shown that the use of innovative technologies is not only quite effective, but also promising in the system of training specialists in physical culture and sports. The necessity of including digital technologies in the activity of a teacher of additional education is substantiated. The advantages of digital technologies in physical education are obvious and are an important factor in increasing the motivation of children and adolescents to physical culture and sports activities, a progressive means of assessing the results of sports training and optimizing the training process itself.

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