

# The use of digital technologies in physical education classes for students with a weakened state of health

*Sergey Yekimov*<sup>1\*</sup>, *Nadezda Firsova*<sup>1</sup>, *Vadym Tynnyi*<sup>2</sup>, *Inna Mashkova*<sup>2</sup>, *Tamara Ishchenko*<sup>2</sup>, *Diana Kuzmenko*<sup>2</sup>, and *Olga Belyakova*<sup>2</sup>

<sup>1</sup>Department of Trade and Finance, Faculty of Economics and Management, Czech University of Life Sciences Prague, Kamycka 129, 16500, Praha - Suchdol, Czech Republic

<sup>2</sup>Vadym Hetman National Economic University, Kyiv, Ukraine

**Abstract.** The most important task of physical education classes is the education of intellectually and physically developed youth. Sports and physical education contribute to the formation of students' general and professional culture. Physical culture is reflected in the way of human life, as well as in the attitude to one's health. Independent work of students with weakened health to strengthen their health plays an important role in the formation of these students' desire for a healthy lifestyle. In physical education classes for students with impaired health, it is important to properly dose the level of physical activity and monitor the health of students during these classes. For this study, we used Smart Watch. The use of this watch allowed us to quickly measure the pulse, blood pressure level and respiratory rate of the subjects. This allowed us to analyze these indicators in real time. The state of health and study of students are closely interrelated. In order for students to actively increase their intellectual baggage, regular sports activities and a healthy lifestyle are necessary. The process of digitalization of physical culture and sports requires the training of specialists who have the skills to work with the digital environment.

## 1 Introduction

Modern conditions of human life put forward increased demands on the social and biological capabilities of a person. The development of students' level of physical fitness during physical education and sports contributes to the mobilization of the internal resources of the human body to achieve the goals set, strengthens the state of health and improves working capacity.

The main task of physical education classes in higher educational institutions is to maintain the proper level of health of students.

The problem of physical development of a student is no less important than the development of their intellectual potential. Modern students often have health disorders

---

\* Corresponding author: [rusnauka@email.cz](mailto:rusnauka@email.cz)

associated with diseases of the digestive, nervous, cardiovascular and endocrine systems , the musculoskeletal system and a decrease in the level of vision.

According to [1], physical education lessons contribute to the solution of a complex of educational, educational and health-improving tasks aimed at preserving and strengthening the health of students, as well as creating prerequisites for harmonious physical improvement of students.

According to [2], physical education teachers should take into account and put into practice modern social and medical innovations, monitor the well-being of students, instill in them a love of physical culture and sports.

According to [3], physical education is an important component of the comprehensive development of the human personality.

According to [4], physical education is a complex of social and pedagogical measures aimed at hardening and strengthening health, harmonious development of a person and improving his physical abilities, the formation of important skills and abilities.

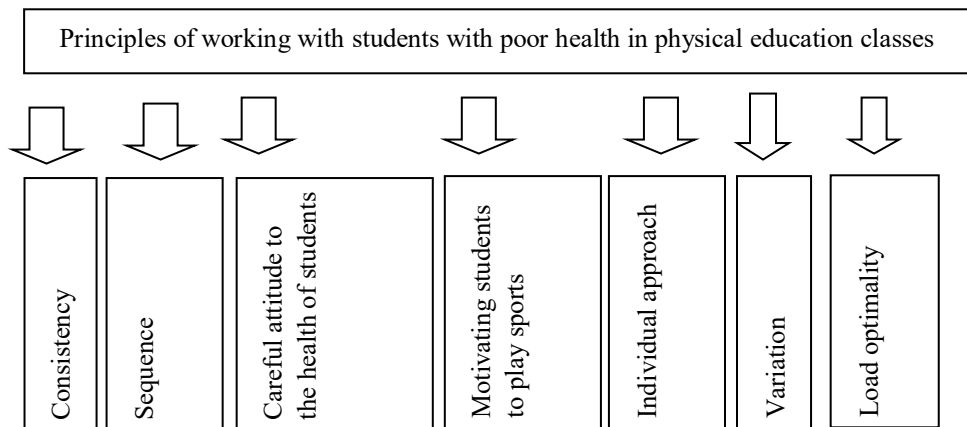
According to [5], as a result of insufficient physical activity, people are more susceptible to various diseases.

In our opinion, the problem of conducting physical education lessons for students who are enrolled in a special medical group due to their state of health is of great importance.

According to [6], the regular physical education curriculum is not suitable for students with a weakened state of health , since they cannot master it due to health problems.

According to [7], physical education classes for students who are members of special medical groups should differ from therapeutic physical culture. Physical education of students with weakened health should not only be sparing to the sick system or organ , but also at the same time increase the physical capabilities of the student's body.

According to [8] in physical education classes with students with poor health, the following principles should be followed (Fig. 1):



**Fig. 1.** Principles of working with students with poor health in physical education classes.

According to [9], for students engaged in physical education classes as part of special medical groups, it is necessary to ensure the optimal level of their motor activity and the formation of the need and interest in their physical improvement based on an understanding of the importance of this process.

According to [10] for the effective provision of the educational process in the lessons of physical culture, it is necessary to:

1) Purposeful work to improve performance and harden the body, as well as strengthen health.

2) Education of basic physical properties (speed , strength , agility , endurance , flexibility) based on the capabilities of the student's body.

3) Targeted activities to eliminate physical disabilities and the consequences of past illnesses.

4) Increase the body's resistance to external influences.

5) Formation in the minds of students of a stable need for regular physical education and sports.

6) Formation of students ' need for a healthy lifestyle.

According to [11], the process of the educational process in physical education classes for students who are part of special medical groups requires an individually differentiated approach. To do this, it is advisable:

1) To divide students into separate groups based on their level of physical fitness and health status.

2) A thorough study of the physiological characteristics of each of the students to determine the necessary dosage of physical activity.

According to [12] during the training session on physical education for students with poor health, it is necessary to:

1) Take care of the student's health.

2) To carry out constant monitoring of the well-being of students.

3) Use a variety of techniques and sets of sports exercises.

4) The amount of physical activity should be adequate to the capabilities of the student.

According to [13], it is important to monitor your health and well-being during regular physical training and sports. The most convenient form of control can be the use of a special diary.

According to [14], indicators of monitoring the state of human health can be divided into objective and subjective.

Subjective indicators include sleep , appetite, well-being, and performance . Objective indicators include blood pressure , pulse , weight , muscle strength, and lung volume.

According to [15], when sending a student to a special medical group , it is necessary to be guided by the student's diagnosis and the level of his physical fitness. In some cases, and in the presence of adequate medical and pedagogical control, students could perform physical activities corresponding to the main group of students without harming their health. The physical education teacher and the doctor need to jointly decide in which group each particular student should and can be engaged.

## 2 Methods

In the implementation of this study, we used an analytical method by which the problems studied were studied in their development and unity.

Taking into account the goals and objectives of the research, a functional and structural method of performing scientific research was used.

This allowed us to consider a number of issues related to the use of digital technologies in physical education classes for students with a weakened state of health.

## 3 Results

The use of digital technologies penetrates into professional and amateur sports, which contributes to greater motivation to lead a healthy lifestyle. Smart gadgets and mobile apps help you organize proper nutrition, daily routine, and individual training regimen .

Innovative digital technologies make it possible to collect , transmit and process information much more efficiently and faster.

This has had a significant impact on the forms and methods of training students and conducting health work with citizens.

The reason for writing this research paper was the appeal to us of teachers of the Department of Physical Education of the Dnipro National University.

The teachers were interested in the possibility of conducting physical education classes with students included in special medical groups during the Covid-19 pandemic .

During the pandemic, the educational institution switched to distance learning and students were deprived of the opportunity to attend physical education classes. It was necessary to suggest a way to conduct these classes remotely.

The staff of the department developed a special set of exercises for students with poor health, but in the absence of medical and pedagogical control over the health of students when performing this complex, it created difficulties in its application. The teachers did not want to risk the health of the students.

To solve this problem, we suggested using a Smart Watch in remote physical education classes.

This watch allows you to measure your heart rate, respiratory rate and blood pressure, and all the information in real time can be transmitted via the Bluetooth interface to your smartphone or tablet.

The use of this technology in remote physical education classes allowed teachers to remotely monitor the health of students, as well as individually adjust the level of physical activity for each student.

The data obtained from the Smart Watch was entered into a database and periodically analyzed by teachers in order to advise students about the permissible level of physical activity.

After the end of the quarantine and the transition of students from distance to full-time training, control tests were performed for students in running for 60 meters, jumping from a place , flexing and extending their arms in the prone position from the gym bench.

The results showed that the majority of students were able to improve some of their indicators compared to those that were at the time of switching to distance learning.

## **4 Discussion**

The main goal of physical training of students of higher educational institutions is the education of physically and intellectually developed, adapted to modern conditions of youth.

To achieve this goal, it is advisable to educate students to understand the importance of the role of physical culture and sports in the comprehensive development of the individual, as well as to prepare the individual for the upcoming work.

Physical culture and sports contribute to the formation of students ' professional and general culture and create the basis for their cultural and social life. Physical culture finds its expression in a person's lifestyle, attitude to their health and their physical abilities and capabilities.

Physical culture and sports contribute to improving the mental and physical stability of the human body and help to relieve nervous tension during strenuous mental activity while studying at a higher educational institution, and therefore physical culture and sports should be an integral component of their life activity.

There is a need to form students ' needs for physical self-improvement, including those of them who have certain health problems.

Independent work of students with poor health to strengthen their health is of great

importance in the formation of these students' healthy lifestyle.

The study and the state of health of students are closely correlated and mutually conditioned. In order for students to actively increase their intellectual potential, a healthy lifestyle and regular physical education and sports are necessary.

The process of digitalization of sports and physical culture requires the training of specialists with competence in working with the digital environment.

## 5 Conclusions

Physical education contributes to the development of mental abilities, education of spirituality, morality and social behavior of students.

When practicing physical culture and sports, it is necessary to monitor the state of the body in order to correctly select the necessary intensity of physical activity, their duration and rhythm.

Systematic monitoring of the level of physical fitness and the state of health of students when playing sports allows you to achieve maximum efficiency from these classes.

The formation of students' needs for a healthy lifestyle and physical education and sports is one of the most important pedagogical problems of our time.

## References

1. Alexandru, Muresan, The Sportivization of the Physical Education Classes, 420-429 (2016) DOI: 10.15405/epsbs.2016.12.51.
2. Y. Jang, J. Song, Mediation Effect of Commitment to Physical Education Class between Physical Education Class Awareness and Future Sport Participate Will of Adolescent. Korean Association for Learner-Centered Curriculum and Instruction **20**, 1189-1209 (2020) DOI: 10.22251/jlcci.2020.20.24.1189.
3. D. Oliveira, L. Gonçalves, L. Carlos, A. Magalhães-Neto, N. Araújo, Brazilian Journal of Development **6**, 27385-27391 (2020) DOI: 10.34117/bjdv6n5-258.
4. M. Borkovits, Journal of Novel Physiotherapies, 03 (2013) DOI: 10.4172/2165-7025.1000142.
5. J. Haegele, W. J. Wilson, S. Holland, Are Integrated Physical Education Classes Inclusive? (2019) DOI: 10.4324/9780367824488-11.
6. E. Behrman, Journal of Physical Education, Recreation & Dance **75**, 22-26 (2004) DOI: 10.1080/07303084.2004.10607285.
7. S. Sharov, S. Tereshchuk, A. Tereshchuk et al., International Journal of Emerging Technologies in Learning (IJET) **18**, 17-32 (2023) DOI: 10.3991/ijet.v18i02.36431.
8. Yu. – Ch. Park, Journal of the Korea Entertainment Industry Association **13**, 187-202 (2019) DOI: 10.21184/jkeia.2019.8.13.6.187.
9. I. Makszin, L. Laki, International Review for The Sociology of Sport - INT REV SOCIOL SPORT **22**, 317-328 (1987) DOI: 10.1177/101269028702200408.
10. G. Woelper, Scheduling Physical Education Classes. Nassp Bulletin **44**, 57-59 (1960) DOI : 10.1177/019263656004425612.
11. J. Yuste Lucas, J. García-Jiménez, J. Garcia-Pellicer, Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte **15**, 309-323 (2015)
12. S. Oh, The intrinsic principle of physical education class experience as aesthetic education. Korean Journal of Sport Pedagogy **28**, 1-26 (2021) DOI: 10.21812/kjsp.2021.4.28.2.1.

13. S. Yekimov, E. Kulyk, M. Nosko et al., E3S Web of Conf. **376**, 04035 (2023) DOI: <https://doi.org/10.1051/e3sconf/202337604035>.
14. S. Lambach, *Strategies: A Journal for Physical and Sport Educators* **15**, 23-27 (2013) DOI: 10.1080/08924562.2002.10591552.
15. E. Cruz, G. Fiamenghi-Jr, The meaning of Physical Education classes for adolescents. *Motriz. Revista de Educação Física* **16**, 425-431 (2010)