

Improving the efficiency of the railway industry as a result of employees engaging in physical culture and sports

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Abstract. If railway workers have an optimal motor regime, they increase the efficiency of the whole organism and improve the quality of performing their professional duties. Systematic sports and physical education contribute to the formation of people's desire for a healthy lifestyle. As a result of the formation of students of railway specialties striving for independent exercise and sports in the future, when they become employees of the railway industry, this will provide additional opportunities for involving the personnel of railway industry enterprises in physical culture and a healthy lifestyle. Regular sports activities by employees of the railway industry are of paramount importance not only for these employees, but also for the state as a whole. The increased size of the intellectual load at railway enterprises can have a significant impact on the level of efficiency of employees and their state of health. The use of information technology elements in sports creates conditions for increasing the effectiveness of sports and physical exercises. Keywords: Railway industry, sports, information technology, augmented reality, swimming technique training.

1 Introduction

In railway transport, a person interacts with technical means directly in the process of managing railway transport, during its repair and maintenance, as well as during remote control of railway transportation.

Recently, the speed, as well as the volume of goods transported by rail, has increased significantly, which in turn has a negative impact on the psychological and physiological load of railway workers.

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According to [1], the work of a railway transport driver is a complex type of work activity. The external situation during the movement can constantly change, constant monitoring of the readings of various devices is required, responsibility for the safety of the delivered cargo or the safety of passengers affects, while there is little time left for making a decision.

As a result of intense physiological and psychological stress, employees of the railway industry experience fatigue in the process of performing their work duties, which leads to a decrease in labor productivity, as well as reduces the level of motivation.

According to [2], the decrease in the body's ability to work is associated with its protective reaction against overload.

According to [3], the production load on an employee has the following components (Figure 1):

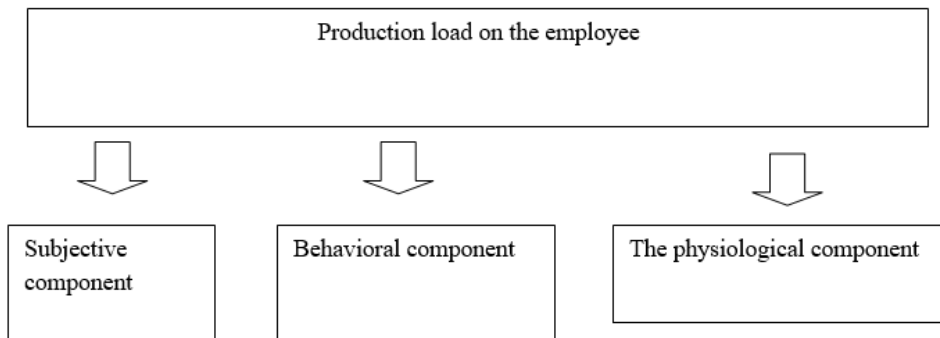


Fig. 1. Production load on the employee.

According to [4], the effectiveness of the performance of their professional duties by employees of a railway enterprise depends on the level of their work load and fatigue. Ra

According to [5], the development of fatigue largely depends on the general condition of the human body, the duration and type of work performed.

Thus, in our opinion, in order to improve the efficiency of the railway industry, it is necessary to pay special attention to the issue of using physical culture and sports to increase the working capacity of employees in this industry. We believe that the process of introducing employees of the railway industry should begin with higher educational institutions that train specialists for railway enterprises. Since it is these specialists who will become leaders in the railway industry in the future.

According to [6] sport and physical culture penetrates into all spheres of modern society, having a significant impact on aspects of its functioning. Sport influences the position in society, business life, is a determining factor that shapes the individual lifestyle of modern people and their ethical values.

According to [7] sport has always been, is and will be the main factor of mental, physical, mental and labor development of a person. It acquires a particularly important role in the modern information society, when people spend more and more time at the computer.

According to [8], modern living conditions place increased demands on human social and biological capabilities. Harmonious physical development of a person allows him to use the internal resources of his body most effectively to implement the tasks set, strengthens the state of health and increases the level of working capacity.

According to [9], the process of introducing students to sports and physical culture has an important impact on their lifestyle, but it is also important for the whole society. The high intellectual load that students of higher educational institutions are exposed to during

their studies requires the improvement and expansion of the variety of forms of sports and physical culture, among which, independent studies should be given great importance.

According to [10], for the effective formation of motivation for physical improvement and sports, physical culture and sports should be considered as the most important factor contributing to the formation of professional and universal culture among students.

According to [11], regular sports and physical education in the process of educational activities in an educational institution contribute to reducing the level of mental and nervous tension in students, allow strengthening the mental and physical stability of the student's body to strenuous educational activities, is an important factor determining their vital activity.

According to [12], one of the problems of attracting students to sports is their lack of appropriate motivation.

According to [13], physical culture and sport are not only a social phenomenon, but also a property of the personality of a modern person. Sport can have a significant impact on the mechanism of formation of mental abilities, spirituality and morality of the student, but affects the social behavior of the individual.

According to [14], the formation of a system of values of a healthy lifestyle in a modern person is closely correlated with active and systematic sports and physical culture.

According to [15], sports and physical culture contribute to the transformation of a person into a biosocial being, and also contribute to the formation of his health-saving potential, the ability to independently strengthen health.

According to [16], the most effective formation of values of a healthy lifestyle is possible, first of all, on the basis of the use of personality-oriented technologies of upbringing and education.

According to [17], the most important task of physical education, as the most important and integral part of the educational process, is to build up the health-saving potential of modern youth.

According to [18], it is necessary to pay more attention to the formation of students' positive attitude to self-employment in physical culture and sports, taking into account their upcoming professional activities.

According to [19], when organizing students' physical education classes, an individual approach can be achieved in two ways: personal or typical individualization. The typical individualization of physical education of students is based on the organization of physical education classes with similar: gender, level of physical fitness, age and health status.

According to [20], an individual approach in the educational process can be implemented through a differential approach to conducting training sessions, as well as the norms of physical activity on trainees, pedagogical techniques and methods used in the framework of the training session. An individual approach to physical education classes for physically well-prepared students gives them additional opportunities to develop their motor abilities and physical qualities.

According to [21] individualization of the educational process is possible within the framework of group training sessions. At the same time, both group and conventional forms of training are more effective at the early stages of training.

According to [22], for the most effective assimilation of the curriculum in physical education classes, students should assimilate it with various methods of education and training.

According to [23], the process of individualization of physical education is a practical implementation of the implementation and organization of the educational process based on the use of an individual approach to students, which is based on the optimal improvement of their individual abilities.

According to [24], a differentiated approach in physical education classes helps in making an informed choice of the sport that best suits the personal interests of students.

According to [25], the level of effectiveness of physical education of students is closely correlated with an individual approach in the educational process.

According to [26], an individual approach to physical education classes can best be achieved if the same teacher conducts classes for all the years of students' education.

According to [27], when teaching the discipline "Physical Education", it is possible to widely use various technical means, including multimedia technologies. Multimedia tools are convenient and easy to use

According to [28], when teaching the discipline "Physical Education", the following electronic resources can be used (Figure 2):

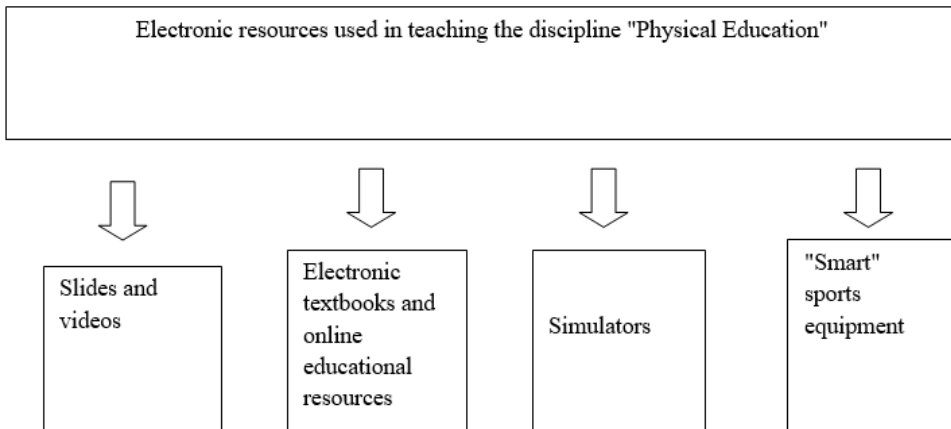


Fig. 2. Electronic resources used in teaching the discipline "Physical Education".

According to [29] the introduction of information technologies in the process of teaching the course "Physical Education" can be practically implemented in the following areas

1. Remote monitoring of students' health status.
2. Using mathematical models for biomechanical analysis.
3. Creation of tests to determine the degree of physical fitness of trainees.
4. Creation of various electronic information and reference systems.

2 Methods

In the process of carrying out this scientific research, the authors used an analytical method that allowed us to study the problems studied in the article in their unity and development.

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

As a result, the authors were able to consider a number of problems related to improving the efficiency of the railway industry as a result of physical education and sports by industry workers.

3 Results

The prerequisite for writing this study is the appeal to us of the teachers of the Department of Physical Education of the Dnepropetrovsk University of Railway Engineers. They asked to develop a smartphone application for teaching swimming to students of the

Dnepropetrovsk University of Railway Engineers. Some of the first-year students do not know how to swim, at the same time swimming can have a significant positive effect on the human body. Mastering the correct technique of arm and leg movement during swimming allows you not only to learn to swim, but also to achieve some progress in sports results.

The augmented reality Swimming application developed by us for tablet and smartphone based on the use of augmented reality technologies allows you to teach techniques of various styles in swimming. Through the use of a virtual instructor, as well as interactive prompts on the tablet screen, it is possible to study the technique of swimming movements, as well as their sequence. Although the application developed by us cannot fully replace a professional trainer, however, it can be used as a tool for additional training.

Using the Swimming application allowed us to apply an individualized approach to teaching students to swim, taking into account their preferences regarding the style of swimming. This made it possible to optimize the process of physical development of students to a certain extent.

The use of the augmented reality Swimming application made it possible to introduce new educational technologies into the educational process.

The use of augmented reality technology is a qualitatively new step compared to traditional multimedia technologies. This allows us to give new opportunities for self-control and control of the development of the students of the training course "Physical Education".

The use of modern information technologies based on augmented reality can be important not only in the preparation of professional athletes, but also be useful for the general population.

At the end of the study, we conducted a survey of students regarding their use of the application developed by us.

27% of students reported that this app helped them improve their swimming technique and improve athletic performance. 25% of students noted that the application developed by us allowed students to independently master the technique of various styles of swimming.

4 Discussion

The optimal motor regime for employees of the railway industry makes it possible to have a beneficial effect on the efficiency of their body in the process of performing their professional duties. In addition, regular physical education and sports increase people's motivation for a healthy lifestyle.

The formation of a positive attitude among students of railway specialties to self-employment in sports and physical exercises in the future will make it possible to more effectively solve the problem of involving employees of the railway industry in regular sports.

5 Conclusions

The involvement of railway industry workers in sports and physical culture is important not only for the employee himself, but for the entire railway industry and the state as a whole. The size of the intellectual load that employees of railway enterprises have been subjected to recently has a significant impact on their health and working capacity.

The use of information technology in sports makes it possible to increase the effectiveness of physical exercises.

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