



The physical activities of generation z and the use of digital technologies in the training of boxing students

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Abstract

Objective of the study was to discern the unique characteristics of Generation Z students' preferences in sports at the university, and to assess the impact of incorporating innovative technologies into the training process for boxing students.

Methods and structure of the study. The study examines the prevalence of esports and digital sports among students at Ufa State Petroleum Technical University (USPTU). The study compares the effectiveness of training athletes in boxing using innovative technologies (digital sports) with a control group of athletes who use traditional methods. The study measures the performance of athletes in the tapping test, sensorimotor reaction time, and the correction test.

Results and conclusions. Based on the research and analysis of USPTU students' perspectives, it is evident that competitions in digital disciplines, which incorporate the use of cutting-edge technologies in e-sports, robotics, IT, and AI, are gaining popularity among young people. The integration of digital sports technology into the training regimen of boxers in AFP classes has been shown to enhance their reaction time and focus, resulting in improved performance.

Keywords: *athletes-boxers, esports, digital sports, innovative computer technologies in sports, reaction speed, concentration of attention.*

Introduction. Historically, sport has always been a form of leisure. At the same time, leisure of modern youth, as a rule, reflects their own interests and is always closely connected with the latest trends in society, for example, mastering types of activities and physical activity based on computer technologies. Young people want to make their sporting lifestyle as free as possible. As V.V. Kasyanov and co-authors note: «... social adaptation of young people presupposes optimal functioning of the individual in interaction with the environment, optimal self-realization in interaction with the environment, the degree of personal integration in the interaction of the individual with the social environment» [4]. The rapid development of communication and information technologies entails changes in the forms and methods of functional activity of young people. A major breakthrough is observed in switching the attention of young people, namely student youth, from traditional sports activities to participation in eSports and sports games in the «phygital sports» format.

Objective of the study was to discern the unique characteristics of Generation Z students' preferences in sports at the university, and to assess the impact of incorporating innovative technologies into the training process for boxing students.

Methods and structure of the study. The analysis of the popularity of eSports and phygital sports among young people was conducted based on the data of scientific literature and on the opinion study of students of the Ufa State Petroleum Technological University by means of a questionnaire. Along with this, the effectiveness of the application of innovative technologies (phygital sports) in the training process of boxers aged 18-21 with the sports qualification of the 1st category and a candidate for master of sports, who were divided into a control and experimental group, was assessed. During the study, the indicators of reaction speed and attention concentration were determined according to the tapping test, sensorimotor reaction and correction test in the experimental group (12 people) and boxers



(12 people) in the control group, engaged in standard training methods. The general physical training program for the experimental group during the 1st month included a game in the format of Godof War, Halo, Unreal Tournament, Grand Theft Auto and Call of Duty, on a computer for 40 minutes during a training session, in the next room to the gym (on three computers alternately). The reaction speed and attention concentration indicators for the tapping test, sensorimotor reaction and proofreading test were recorded for five days before the experiment and a month later, for five days after the experiment. The statistical significance of the differences in the indicators in the dynamics in the groups and between the groups was assessed using the Mann-Whitney criterion (unrelated samples) and the Wilcoxon criterion (related samples). Differences were considered reliable at $p < 0,05$.

Results of the study and discussion. There are certain problems of adaptation of young people to a rapidly changing society. «The most typical problems of young people include unrealistic life aspirations, mismatch of expectations and real possibilities. Therefore, too often in case of difficulties on the way to the set goal, they have such a tendency as the need to distance themselves, to immerse themselves in the world of illusions and fantasies», says M.P. Chelombitskaya [6]. The most common form of escape from negative emotions and stress of the younger generation is immersion in virtual reality. There is a certain opinion of psychologists who consider absolute immersion in the virtual world for a young person undesirable and dangerous because he can no longer live in the ordinary world, interact

with ordinary people. Further ordinary life may seem hopeless to him, there will be a shift in value orientations, spiritual devastation. However, there is another point of view, indicating that the full social adaptation of young people, which occurs as a result of successful interaction in online communications, is beneficial for shy people, those with a hidden inferiority complex, those who are unable to create real personal contacts, etc. Modern youth, or generation Z, people of the era of information and digital technologies, do not distinguish between real and virtual spaces - in their view, these are complementary worlds, if not even a single, integral world. Faced with a large flow of information every day, they have learned to quickly analyze and process it, cutting off all unnecessary information and leaving the essence. Their life priorities are maximum comfort and safety, in conditions in which self-identification and self-realization are possible for them [8].

The official website of the eSports federation provides a definition of the term «computer sports»: «eSports», electronic sports (English esports) is a type of competitive activity and special practice of preparation for competitions based on computer and/or video games, where the game provides an environment for interaction of control objects, ensuring equal conditions for competitions between people or teams.

Special software superimposes virtual elements on the real world, mixing digital content with the user's physical environment. These technological advances have opened up new opportunities for integrating digital elements into traditional sports and expanded the range of impressions received from competitions.

Table 1. Results of the proofreading test in boxing athletes

Observation group	Proofreading test indicators (M±m)			
	Number of errors		Working time, min.	
	Before training	After training	Before training	After training
Martial arts (boxing)	6,4 ± 1,4	7,2 ± 1,3	4,1 ± 0,9	5,8 ± 0,8*
Control	5,3 ± 1,2	9,6 ± 1,3	3,8 ± 0,8	9,6 ± 0,7

Note: Here and in Table 2. The differences are statistically significant: * – after training between the main and control groups $p < 0,05$.

Table 2. Tapping test and simple sensorimotor reaction indicators in boxing athletes

Observation group	Test results (M±m)			
	Tapping test, touch frequency		PSMR, time, ms	
	Before training	After training	Before training	After training
Martial arts (boxing)	7,8 ± 1,0	6,8 ± 0,9*	190,4 ± 11,0	220,5 ± 9,9*
Control	8,0 ± 1,3	4,2 ± 1,1	207,9 ± 10,2	256,1 ± 10,8



We studied the opinion of student youth on the importance of sports activities based on computer technologies for them. Among the student youth of USPTU, 300 students aged 18-21, boys and girls of various fields of study, were interviewed. Of these, 205 people (68,3%) note that they fully accept the philosophy of eSports, 16 people of whom have repeatedly participated in eSports games, the rest – 189 people, plan to participate in such games in the future. 29 people (9,7%) do not see the need to engage in «such nonsense», the rest – 66 people (22%), have not decided on this issue, but do not refuse to be spectators, if there is pleasant company. In phygital sports, it is important that competitions include not only interaction with the digital environment, but also the transition to real competitions. Thus, players can initially compete in a video game format, and then go to the site intended for competitions in football, basketball, hockey or martial arts. One way or another, at present, eSports is a world where virtual battles become real events, uniting millions of spectators and fans around the globe [7]. Specialists in the field of physical culture and sports try to creatively change the general physical training program for training athletes in order to increase the effectiveness of the training process. Thus, coaches A.B. Dashiev and M.O. Aksenov suggest using the CrossFit system for training martial artists, «as a system of general physical training (GPT), functional training, the introduction of a variety of exercise types into the training system, which make the training process much more interesting and effective. The system is designed to cause the widest possible adaptive response of the body. The athlete receives uniform and complete physical development of many body systems at the same time» [2]. V.L. Dementyev and S.V. Sizyaev attach great importance to ideomotor training, based on the use of emotionally charged images of combat to regulate the psychological pre-start states of a martial artist [3]. Yu.A. Aleksandrov notes the importance of developing the strength and variability of motor skills as one of the leading conditions for the stability and reliability of competitive activity, which can be significantly reinforced by the formation of a stable dynamic stereotype of combat techniques [1].

In the context of the general development of innovative technologies, the use of eSports in training sessions for boxers is gaining a certain interest. An action game requires fast processing of sensory

information and quick actions, which forces players to make decisions and perform reactions much faster than is usually the case in everyday life and the format of a regular training session [5]. Virtual combat involves effective psychological preparation of the athlete and earlier formation of a dynamic stereotype of combat techniques. In our studies, phygital sports technologies were included in the training process of the experimental group of boxers, in which the athletes first fought virtually for 40 minutes in the format of the games *God of War*, *Halo*, *Unreal Tournament*, *Grand Theft Auto* and *Call of Duty*, then conducted regular physical training sessions. In the control group, all physical training sessions were conducted using the standard training method. Background indicators of reaction speed and concentration were recorded for 5 days before the experiment and 5 days after the experiment of boxers in both groups. The average indicators of athletes in the experimental and control groups were compared (Tables 1, 2).

The athletes in the experimental group showed a significant increase in reaction speed and concentration according to the results of the tapping test, simple sensorimotor reaction and correction test after the first month of training.

Conclusions. Sports classes in phygital disciplines, which involve the use of developments in the field of cybersport, robotics, information technology, are widely supported by the youth environment; the majority of surveyed USPTU students support the choice of sports activities of modern youth in the form of cybersport and phygital sports. The conducted studies have shown the effectiveness of the use of phygital sports technology in the process of training boxers.

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