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CHARACTERISTICS OF MOTORIC ACTIVITY AND FOCUS OF ATTENTION OF STUDENT ATHLETES WITH DIFFERENT INVOLVEMENT IN COMPUTER GAMES

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ABSTRACT

The aim: To investigate the prevalence of computer games among student athletes and the impact of computer game addiction on their lifestyle and cognitive functions.

Materials and methods: 125 students (age 17 to 26) took part in the study. Students were divided into groups: e-sportsmen (12 people), who have played for an average of 4,592 hours; athletes of various sports (31 people), who are fond of computer games; athletes (82 people), who do not play computer games. A lifestyle questionnaire and attention research methods based on Landolt rings (E. Landolt) were used.

Results: We did not set the task of finding reliable differences between groups, but to find out general tendencies. Athletes, who indicated, that they are fond of computer games, show a lower level of weekly motoric activity compared to athletes, who are not fond of computer games. Cyber-sportsmen demonstrated insufficient physical activity in order to maintain physical fitness and a healthy lifestyle, 17% of cyber-sportsmen did not have any physical activity, that lasted for half an hour or more at any time of the week. Cyber-athletes showed a general tendency towards worsening of indicators of quality of life (sleep duration, insomnia, headaches), deterioration of attention, if compared to the athletes of other sports.

Conclusions: Studies have shown that students, who combine computer games with a sufficient amount of motoric activity, have a tendency to better concentration of attention. Studies of the necessary parameters of motoric activity and the alternation of mental, physical activity and rest for e-athletes should be prospective.

KEY WORDS: e-sports, computer games, motoric activity, cognitive functions, focus of attention

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INTRODUCTION

Computer games are gaining more and more popularity in the modern world. The consequence of the growing popularity of this direction is the rapid development of the e-sports market as well as the development of numerous organizations engaged in e-sports [1, 2]. Video games have rapidly entered everyday life and are available to every owner of a game console or a personal computer, and for many it is a way of having a good time and an opportunity to gain new knowledge in the field of computer games and not only. An example of this can be the study by [3], it was found that 2.69 billion of the entire global population play computer games, that is, they are gamers (in this study, all people who play (digital) games on PCs, consoles, mobile device or other digital device), which makes gaming and all its manifestations a popular hobby in the world. It is also a chance for the emergence of new professions and,

interestingly, often professions that have not yet been created [1].

Scientific studies of this cultural and social phenomenon are developing as rapidly as e-sports itself. Until quite recently, it was believed that the main contingent of computer gamers are teenage boys and young men. Returning to gender roles and stereotypes, it is worth noting that the gender distribution among all gamers is 59% male to 41% female [4].

«Computer games» refers to a wide class of programs and technical devices on which they are installed. The classification of computer games should take into account the degree of complexity of the game and its content, cognitive and motor skills necessary for game activity [5, 6]. In fact, cyber athletes are often people who show skills that are not exclusively physical, but also logical-mathematical. Therefore among the frequent participants there are also those who cannot practice

traditional sports for different reasons. The introduction of sports rules and clear objectives contributes to the awareness that e-sports can be considered a discipline of body and mind [7]. The role and place of leisure in different types of society are analyzed [8]. From these data, it is obvious, that everyone plays computer games, players cannot be classified as a special sociological group, that differs from the rest of the population in certain demographic parameters.

Selected studies highlight the negative effects of e-sport on health from different perspectives [9]. It is stated that e-sports players are not physically active due to sedentary time for a long time. In some studies, it is claimed that long-term sedentary life will result in obesity [10], this is partly due to their fondness for playing games on gadgets [11]. Therefore, a pathological fascination with computer games is characterized by a significant number of negative consequences. On the other hand, computer games have positive effects on the personality and contribute to development [12] due to the emergence of new skills, operations, and ways of performing actions, new target and motivational and meaningful structures, new forms of mediation and new types of activities [12].

Thus, the authors of one of the earliest studies of the socio-psychological aspects of computer games [13] showed, that intensive computer game experience significantly affects the personal characteristics and self-awareness of players. The socio-psychological features of the formation of health-preserving competencies in the conditions of being in a virtual space are considered [14]. There are presented the research results of the positive impact of video games, that imitated sports actions, on the cognitive functions of a group of healthy elderly people, as well as on a group of people who did aerobic exercises [15]. Based on research, the authors conclude that video games, as well as the practice of physical exercises, can be considered among the possible methods of preserving mental functions and improving cognitive abilities for the elderly [15].

THE AIM

To investigate the prevalence of computer games among student-athletes and the impact of computer game addiction on their lifestyle and cognitive functions.

MATERIALS AND METHODS

From November to December 2022 there was conducted the study based on a questionnaire developed in the

Google Form format: «Description of personal qualities and state of health of students». The parameters of attention (E. Landolt) were studied using the hardware and software complex of psychological and psychophysiological diagnostics «BOS-test-Professional». 125 students (age 17 to 26) took part in the study. This sample consisted of students of various sports, such as: e-sports, basketball, volleyball, football, rhythmic gymnastics, sports ballroom dancing, karate, Greco-Roman wrestling, boxing, judo, swimming, strength fitness, tennis. For research on the impact of computer game addiction on lifestyle, motoric activity and cognitive functions, students were divided into groups: e-sportsmen (12 people), who have played for 4,592 hours in average; athletes of various sports (31 people), who are fond of computer games; athletes (82 people), who do not play computer games.

The researchers followed all protocols and procedures required by the Biomedical Research Ethics Committee and conform to the directive of the Ukrainian Legislation on health care, Helsinki Declaration 2000 and European Society Directive 86/609 on human participation in biomedical research to ensure adherence to all standards for adequate protection and well-being of participants. The following statistical parameters were determined: mean, standard deviation SD, median, lower and upper quartiles Me (25%, 75%).

RESULTS

Out of 125 respondents, 31 student-athletes were identified as the ones, who, along with playing other sports, are also fond of computer games; 12 e-athletes, who participated in various competitions and 82 student-athletes, who are not interested in and do not play computer games. So, from our sample, 34.4% of students play computer games, among which the percentage of boys is 77% and girls 23%. Studies related to video games in the field of sports science have included eSport within the framework of traditional games [16]. Typically, cybergames are first-person shooters, real-time strategies, and sports simulations. The genre is determined by the goal of the game. A game can belong to one or several genres. Like regular sports, specific games are called disciplines. The most popular of them are: CounterStrike, Dota 2, FIFA, Halo 2, Heroes of Newerth, League of Legends, Quake, Starcraft, Warcraft, World of Tanks, etc. It was found that most of the students we studied prefer the following games: CounterStrike (CS:GO). Counter-Strike: Global Offensive (CS:GO) is the most popular first-person shooter of the last decade and one of the top esports disciplines – 31%; MOBA – 5%; Survival horror – 7%; Dota 2 – 18%; World

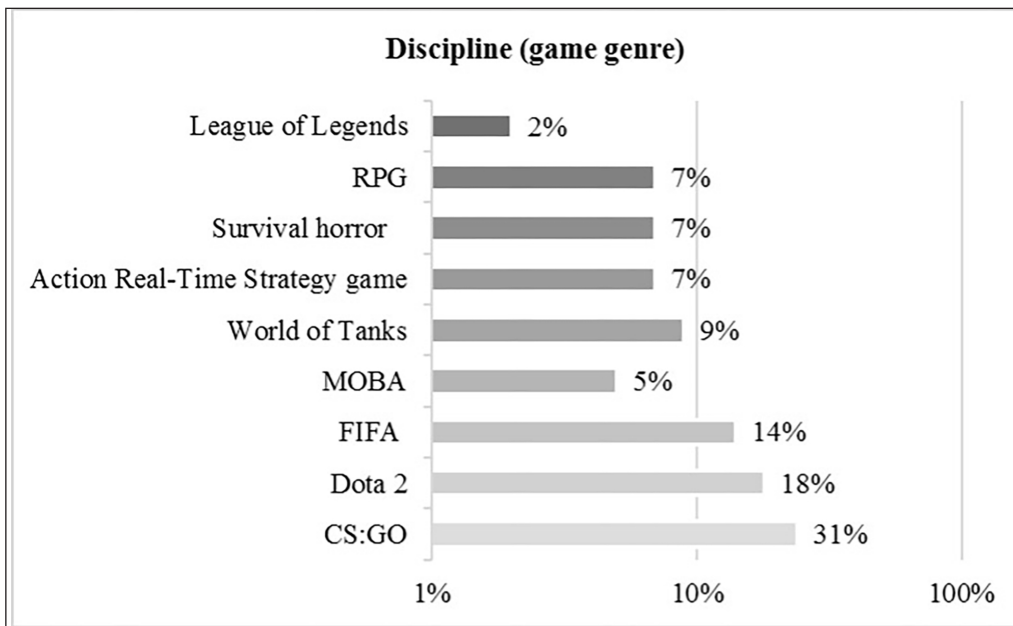


Fig. 1. Enthusiasm for computer games among student-athletes (n=43)

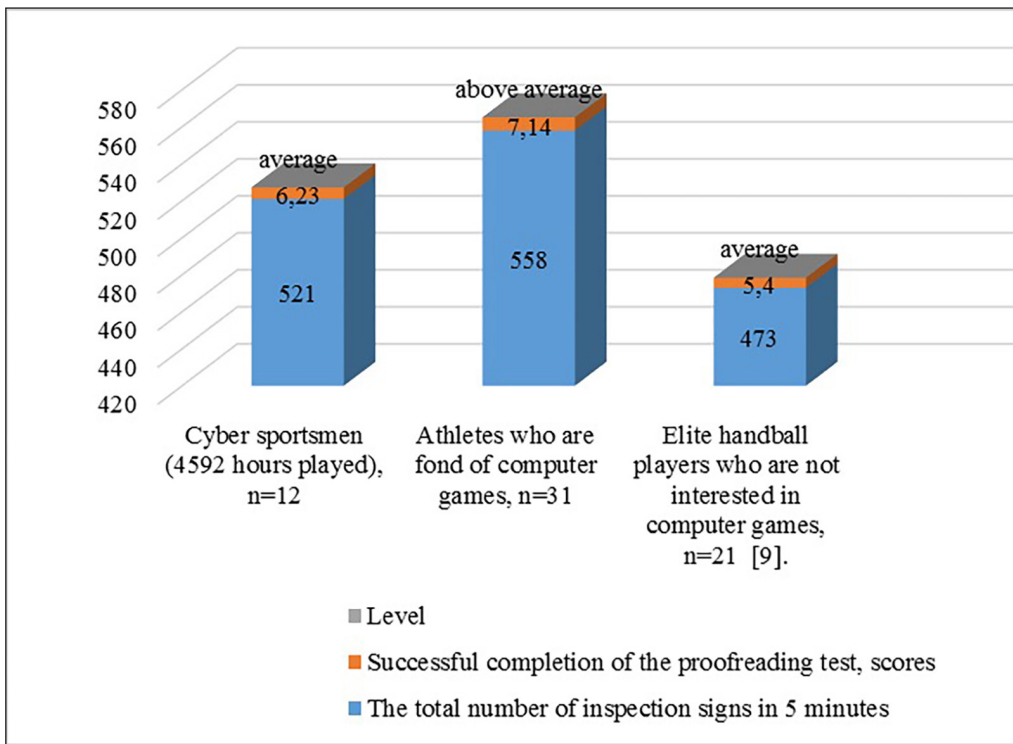


Fig. 2. Indicators of attention properties of student-athletes with different involvement in computer games

of Tanks – 9%; RPG – 7%; FIFA – 14%; Action Rial-Time Strategy game – 7%; League of Legends – 2% (Fig. 1).

The most important indicator of the degree of young people’s fascination for computer games is the time spent on them. Moreover, it is the weekly amount of this time that is important, since a significant part of it is falling on days free from studies.

Cyber sportsmen, who took part in the survey, have played for 4,592 hours in average. Most athletes, who specialize in various sports and play computer games in their free time, spend 3 to 40 hours a week on them (Table I). It is indicative, that only 5 people (16%) are

qualified athletes in this group of students. At the same time, the group of athletes, who stated, that they are not interested in and do not play computer games, includes 34 (41.5%) qualified athletes from various sports.

To compare the lifestyle, level of motoric activity, and well-being, we analyzed the respondents’ answers to the questionnaire developed by us. We were interested in finding out how passion for computer games affects motoric activity and health parameters, such as sleep, nutrition, appetite, and well-being. In the current study, we did not set the task of finding reliable differences between groups, but to find out general tendencies.

Table I. Time spent by students on computer games per week, n=31

Number of hours per week student-athletes spend playing computer games	Number of students in %
Up to 10 hours a week	65%
10-30 hours per week	29%
30-40 hours a week	6%

Table II. Peculiarities of motoric activity of students with different involvement in computer games, n=125

Motor activity that lasts half an hour or more (training, exercises, running, swimming, fitness)	Cyber sportsmen, n=12	Athletes who are fond of computer games, n=31	Athletes who are not interested in computer games, n=82
Once or twice a week	33%	32%	24%
Three or more times a week	50%	68%	76%
Not once a week	17%	0%	0%

To compare the features of motoric activity of student-athletes, we divided the respondents into three groups (Table II).

Athletes, who indicated, that they are fond of computer games, are less physically active compared to athletes who are not fond of them. One of the indicators of a healthy lifestyle is the quality and duration of sleep. 41% of e-athletes, 13% of athletes, who play and 16% of athletes, who do not play computer games, indicated that they sleep less than 7 hours a day. 58% of e-athletes, 26% of athletes, who are fond of computer games, suffer from insomnia from time to time. 42% of e-athletes and 39% of athletes, who play computer games, suffer from headaches more than twice a week.

Eat 3-4 times a day — 58% (cyberathletes), 61% (athletes playing computer games) and have a good appetite: 67% (cyberathletes) and 81% (athletes playing computer games).

DISCUSSION

The impact of computer games on a person has many aspects. One of the visible problems is that gamers and e-sports players spend too much time on the computer, which threatens to cause health problems, that are not directly related to computer games but are a consequence of them. There is a total of 246 e-sports articles published from 2006 to 2020, that sought to understand the motivation, behavior, social implications, and legal aspects of eSports [2]. However, the impact of computer games on the physical and mental health of a person is still a relevant subject of scientific research.

Despite all the advantages and prospects for the development of e-sports [1, 17], an important problem is the sedentary lifestyle of computer game players, who are mostly young people. As the results of our survey showed, 17% of e-athletes do not have any motoric activity sufficient for a healthy lifestyle, although com-

petitive activity in e-sports requires the athlete to develop certain psychological, physical and psychophysical characteristics and requires physical training [17, 18]. Athletes, who indicated that they are fond of computer games, have lower level of weekly motoric activity compared to athletes, who are not fond of computer games. Despite the presence of a large number of studies on the positive impact of computer games on the cognitive abilities and psychological qualities of players [17]; coordination of movements and reactions [19-21], mental and intellectual abilities, our studies showed a tendency to better indicators of focus of attention for students, who combine computer games with a sufficient amount of motoric activity (Fig. 2).

All athletes who play computer games in addition to their chosen sport have average to high concentration scores. At the same time, only 66% of e-athletes showed indicators of concentration of attention in this part. In our study, we investigated the tendency for better indicators of attentional activity (above average) in student-athletes who are fond of computer games, compared to elite-level female handball players [18] who do not play computer games, and female e-athletes with unsatisfactory level motor activity. Therefore, it can be assumed that, just as for the elderly [15], it is possible to increase cognitive abilities for student youth by combining the practice of motor activity with computer games. One's lifestyle plays the crucial role in health maintenance and promotion [22]. The aspects of eSports focused on are mainly psychology [23], issues about athletes' and gamers' health [24]. The conditions for the formation of a healthy lifestyle are: motor activity, balanced and good nutrition, the absence of bad habits, quenching and active rest [25]. Physical activity as a part of human lifestyle, including the physical work and sports, is one of the basic attributes of human life. It improves physical condition and health condition, reduces the risk of emergence of civilizational diseases,

and it is one of the factors extending the human lifespan [26]. Physical activity of young people is inevitable for keeping them both physically and mentally fit [27].

In our opinion, the research of the necessary parameters of motor activity and alternation of mental, physical load and rest for e-athletes should be promising.

CONCLUSIONS

The most common types of computer games among student-athletes are CS:GO and Dota 2. The 65% of student-athletes use computer games from one to ten hours per week, and 35% of students use computer games from ten to forty hours per week. Students, who are athletically qualified, use computer games less than students, who are not athletically qualified.

Student-athletes named the following as the main reasons for their fascination with computer games: a means to distract from current tasks - 58%; receiving adrenaline - 29%; calming - 13%.

Athletes, who indicated, that they are fond of computer games, have a lower level of weekly motor activity compared to athletes, who are not fond of them. 50% of cyber sportsmen had physical activity that lasted more than half an hour three times a week; 68% of

sportsmen, who play computer games, had physical activity that lasted more than half an hour three times a week; and 76% of sportsmen, who do not play games, had physical activity that lasted more than half an hour three times a week.

Cyber sportsmen demonstrated insufficient physical activity to maintain fitness and a healthy lifestyle, 17% of whom did not engage in any physical activity per week lasting half an hour or more.

Cyber sportsmen showed a general tendency towards worse quality of life indicators (sleep duration, insomnia, headaches, incidence of viral diseases and colds) compared to athletes of other sports, who enjoy and play computer games.

Studies have shown a tendency to better indicators of attention properties in students who combine computer games with sufficient motor activity. Student-athletes demonstrated the following level of overall success in performing the corrective test according to Landolt's test: cyber sportsmen - average (6.23 points); athletes, who combine sports training with playing computer games, are above average (7.14 points).

It is promising to study the necessary parameters of motor activity and alternation of mental activity, physical activity, and rest of cyber sportsmen.

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