



# Comparative assessment of sports activity in real and virtual space

UDC 796.015



**Yu.A. Karvounis**<sup>1</sup>

**N.A. Karvounis**<sup>1</sup>

Dr. Med., Professor **L.V. Kapilevich**<sup>1</sup>

<sup>1</sup>National Research Tomsk State University, Tomsk

Corresponding author: juliakarvounis@gmail.com

## Abstract

**Objective of the study** was to conduct a comparative assessment of the sports activities of kart drivers in real and virtual space.

**Methods and structure of the study.** In total, 40 athletes took part in the experiment - 20 of them are e-sportsmen and 20 athletes of the technical type - the traditional motorsport direction "karting". At the first stage, a survey and additional interviews of the project participants were conducted to identify the motivation to engage in this sport, the features of the organization of the training process and the structure of recreational time, the assessment of eating behavior and self-awareness. At the second stage, an experiment was simulated, which consisted in the mutual exchange of types of training: karting drivers performed a training exercise in virtual reality, and cybersportsmen on a real circuit.

**Results and conclusions.** A certain similarity of e-sports with other technical sports is shown. The priority elements in these areas are the formation of psychological stability, the development of technical skills, hand-eye coordination and speed. In cybersports, developments in the organization of physical training from technical sports can be effectively used. In turn, in motor sports, some elements of cybersports can also be applied to increase the effectiveness of the training process.

**Keywords:** cybersport, virtual sports, karting.

**Introduction.** In recent years, the popularity of eSports has been growing among the youth. However, there is a lack of methodological developments and analysis of the experience of training approaches [3, 5]. A comparative analysis cybersport and technical sports is relevant to assess the possibility of using existing methodological developments [1, 2, 4].

**Objective of the study** was to conduct a comparative assessment of the sports activities of kart drivers in real and virtual space.

**Methods and structure of the study.** In total, 40 athletes took part in the study, of which 20 people are e-sportsmen and 20 athletes are representatives of the technical type - the traditional motorsport direction "karting". Despite the absence of discriminatory gender attitudes, the gender composition reflected the main trend in these sports, only four girls (20%) cybersportswomen and two racers (10%) were represented

in the sample. The survey was conducted among those involved in cybersports and technical sports clubs, in particular, karting sections in the city of Tomsk and the Tomsk region. The age category of respondents is from 16 to 25 years. All athletes have been practicing for at least two years, most of the respondents in these types of sports had achievements at the regional and interregional level. The predominant sports disciplines of cybersport players participating in the survey were: battle arena, real-time strategy, fighting and competitive puzzles. A technical simulator was introduced, but to a small extent. Athletes involved in karting drove vehicles of category KZ-2.

At the first stage, questionnaires were developed, a survey and additional interviews of project participants were conducted. Questionnaire questions contained blocks to identify the motivation to engage in this sport, general questions of the organization of the



training process, self-awareness and quality of life, eating behavior, the structure of recreational time, and others. Answers to some questions that require deeper disclosure were obtained as a result of additional interviews, combined with observation of the training process.

At the second stage, an experiment was modeled, which consisted in the mutual exchange of types of training. Six people from each group took part in a training exercise, while karting performed it in virtual reality, and e-sportsmen on a real circuit. To ensure the safety of young people with no real driving experience, the class of racing vehicles was lowered, which did not have a significant impact on most of the characteristics, the restrictions affected only the maximum possible speed. As a control group, six people were also invited from among students who are not involved in sports or eSports clubs. The expected results of the assignments were formulated in criteria that had similar elements both on the virtual and on the real site of the autodrome and were announced to the study participants before the start of the experiment.

**Results of the study and their discussion.** The analysis of the survey results showed that the main motives for choosing e-sports in this sample are: the possibility of using gaming and sports knowledge, gaining skills for other types of professional activities, social interaction, developing fantasy, avoiding everyday life, raising adrenaline, excitement, emotions, enjoyment realistic design and graphics, the availability of this sport. The choice of motorsport, including karting, is largely due to similar motives, such as gaining skills, including driving, making decisions in difficult situations that can be applied in other areas of professional activity. The organization of leisure, communication with peers, the emotional component and the rise of adrenaline were also present as motives for the choice of riders.

In many ways, the goals of the training process in these types also coincide. So, the main goal of esports game training is to develop technical skills and psychological stability in the game mode, this also includes high motor skills, such as hand-eye coordination and speed. All these elements are present to a large extent in the training process of motor sports.

The importance of physical activity and keeping fit for promoting a sports career was noted by 60% of cybersportsmen, 40% indicated that they are engaged in order to maintain their own health. For race car drivers, these figures were 80 and 20%, respectively, which indicates a more conscious role of physical

training in the context of sports improvement among motorsport representatives in relation to cybersport.

On the issue of the leading role of a person or a technical device to achieve results, a significant part of cybersportsmen (80%) noted a computer and other equipment, while race car drivers (70%) pointed to the predominance of the human factor to ensure the results of competitive activity. There were some differences in the question of the importance of the role of the coach in preparing for sports events, for example, 90% of the racers emphasized the significant influence of the coach in preparing for the competition and the importance of communication with him at all stages of training activities, while e-sportsmen indicated the predominant role in only 60% of the answers. trainer, and 20% emphasized that they can prepare themselves to achieve significant results.

An important role in the effectiveness of the training of athletes in both groups is played by the recreational component. On average, esports players spend five or more hours playing on training days, while racing drivers spend about two hours driving. This is due to the limited resources of karting (fuels and lubricants, tire wear) and the need for time spent on the preparation and maintenance of sports equipment.

Of particular interest are data on the daily routine and nutrition of athletes. Cybersportsmen spend an average of 6-7 hours on sleep (excluding weekends), while there were single answers for less than 5 hours of sleep. Kart racers indicated the average duration of sleep in the range from 7 to 9 hours and noted higher satisfaction with the quality of night rest, in relation to the indicators of satisfaction with rest among e-sportsmen. In the structure of the recreational time of the riders, in general, active forms of leisure and recreation prevailed both in the weekly period and in the vacation period. Whereas only 20% of e-sportsmen displayed preferences for active forms of leisure and recreation, but 80% of respondents from this group indicated the predominance of passive forms of recreation in their free time.

In these groups, the use of specially designed nutrition systems was not recorded, moreover, nutrition in connection with the training process is given minimal attention in both groups, and here we see an opportunity to conduct relevant and appropriate research in this area to improve the efficiency of training athletes.

All respondents are students of higher educational, secondary special or general educational institutions. An analysis of academic results for the last two semesters also showed some differences. In the group



*Assessing the potential positive and negative effects of cybersports and karting*

Potential positive impact			Potential negative impact		
	Cyber	Auto		Cyber	Auto
Stress tolerance	+	+	Injury risk	-	+
Self control	+	+	Addiction	+	-
Hand-eye coordination	+	+	Sedentary lifestyle	+	-
High attention level	+	+	Physiological stress and tension	+	+
Task Switching Efficiency	+	+	Increased aggressiveness	+	+

of e-sportsmen, the average attestation score for the specified period was 4.3, and in the group of riders - 3.8. Whereas a great responsibility in attending educational institutions was noted by karting players, and a significant part of e-sportsmen admitted to systematic non-attendance of classes without good reason. These indicators may indirectly indicate a higher level of intellectual training of cybersportsmen in comparison with racers, but the latter demonstrate a higher level of discipline, including in training.

In the study, some positive and negative factors of influence on athletes in both types were identified and a comparison was made between them (see table).

Negative effects can largely be prevented due to professionally selected pedagogical approaches in the training process, while the benefits of positive aspects for athletes will also increase.

The experimental study made it possible to draw some conclusions about the relationship between virtual and real training of athletes. All riders, unlike the students of the control group, coped with the task in a virtual environment and achieved the stipulated result. But in the future, with the complication of the conditions of the task, they could not show significant achievements due to the lack of specialized skills and knowledge. The e-sportsmen also showed good results when completing the task on the autodrome. At the same time, one significant feature was established, these athletes, to a lesser extent than students from the control group, adhered to all safety conditions, which was recorded by objective assessments (displacement of restrictive cones, fixation of speedometer indicators), which may indicate an incomplete game switch from virtual reality.

**Conclusion.** Based on the results of the study, it can be concluded that cybersports is significantly similar to other technical sports. The priority elements

in these areas are the formation of psychological stability, the development of technical skills, hand-eye coordination and speed. In this context, developments in the organization of physical training from technical sports can be effectively used in e-sports. In turn, in motor sports, some elements of cybersports can also be applied to increase the effectiveness of the training process.

*The study was supported by the Development Program of Tomsk State University ("Priority 2030").*

#### References

1. Rubtsov A.V., Rubtsova N.O. Psikhomotornyye osobennosti kibersportsmenov, spetsializiruyushchikhsya v zhanre «shutery» [Psychomotor features of e-sportsmen specializing in the "shooters" genre]. *Chelovek. Sport. Meditsina*. 2021. Vol. 21. No. 3. pp. 108-115.
2. Goebeler L., Standaert W., Xiao X. Hybrid sport configurations: The intertwining of the physical and the digital. *Proceedings of the Annual Hawaii International Conference on System Sciences*. 2020, pp. 5841-5850.
3. Haponen A., Minshkina D. Professionalism in Esport: Benefits in Skills and Health & Possible Downsides, LUT Reports series. report, 2019. No. 90. p. 36.
4. Hwang Y.; Watanabe N.M.; Nagel M. Effects of in-game brand congruity on esports consumers' implicit and explicit memory. *International Journal of Sports Marketing and Sponsorship*. 2022. DOI 10.1108/IJSMS-03-2022-0085.
5. Maldonado-Murciano L., Guilera G. Montag C. Pontes H. Disordered gaming in esports: Comparing professional and non-professional gamers. *Addictive Behaviors*. 2022. V.132 - 107342.