Methodological approach in the development of the cognitive-volitional component of e-sportsmans

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PhD, Associate Professor **E.A. Kosmina**[1]
Dr. Hab., Professor **Yu.M. Makarov**[1]
PhD, Associate Professor **K.Yu. Shubin**[1]
[1]Lesgaft National State University of Physical Education, Sport and Health, St. Petersburg

Corresponding author: e.kosmina@lesgaft.spb.ru

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Abstract

Objective of the study was to justification for the use of a scientific and methodological approach in the development of the cognitive-volitional component of cybersportsmen.

Methods and structure of the study. The development of the cognitive-volitional component was carried out within the framework of integral training, based on the developed scientific and methodological approach. The experiment, which lasted 18 months, involved 52 e-sportsmen aged 18-25. Control testing of the level of cognitive-volitional indicators of the subjects was carried out every six months according to the following indicators: index of volitional self-regulation, perseverance, self-control, cognitive errors in sports based on situational awareness, awareness, control.

Results and conclusions. The use of a scientific and methodological approach in the educational and training process of e-sportsmen involved in various disciplines of computer sports makes it possible to increase the level of development of the cognitive-volitional component, which is confirmed by experimental studies. During the experiment, the level of volitional self-regulation of those involved in various disciplines of computer sports increased to 12,3%, self-control – to 10,8%, perseverance – to 15,5%, the number of cognitive errors decreased, based on situationality – to 20,4%, awareness – up to 23,4%, control – 28,7%.

Keywords: *computer sports, cognitive-volitional component, situational ability, perseverance, self-control, cognitive errors.*

Introduction. In foreign literature, cybersportsmen are considered as cognitive athletes, since their competitive activity largely depends on the level of development of cognitive skills. Theoretical analysis revealed the lack of objective data assessing the impact of psychological activities on the level of development of the cognitive-volitional component of e-sportsmen, from the point of view of training and competitive performance. The development of the cognitive-volitional component in computer sports is an important aspect that requires in-depth analytical and scientific research, careful selection of tools and their integration with all types of sports training [1].

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Results of the study and discussion. In order to substantiate the use of a scientific and methodologi-

cal approach in the development of the cognitive-volitional component of cybersportsmen, a formative experiment was conducted. 52 e-sportsmen aged 18-25 years took part in the study («battle arena» - 15 people, «tactical 3D combat» - 15 people, «competitive puzzles» - 12 people, «real-time strategy» - 10 people) . The development of the cognitive-volitional component was carried out within the framework of integral training.

Table 1. Results of testing volitional self-control of cybersportsmen

Period	M±m	p-value	Shift %
Index of volitional self-regulation			
Combat Arena			
Before	21,1±0,5	**<0,05**	5,7
After	22,3±0,4		
Tactical 3D combat			
Before	21,1±0,5	>0,05	6,2
After	22,4±0,4		
Competitive puzzles			
Before	20,3±0,6	<0,05	8,9
After	22,1±0,5		
Real-time strategy			
Before	20,4±0,7	<0,05	12,3
After	22,9±0,6		
Self-control index			
Combat Arena			
Before	10,7±0,4	**>0,05**	6,5
After	11,4±0,3		
Tactical 3D combat			
Before	11,3±0,4	**>0,05**	7,1
After	12,1±0,3		
Competitive puzzles			
Before	11,1±0,5	<0,05	10,8
After	12,3±0,2		
Real-time strategy			
Before	10,8±0,6	>0,05	7,4
After	11,6±0,4		
Perseverance Index			
Combat Arena			
Before	12,9±0,4	**>0,05**	6,2
After	13,7±0,5		
Tactical 3D combat			
Before	12,8±0,4	**<0,05**	13,3
After	14,5±0,3		
Competitive puzzles			
Before	13,0±0,5	**<0,05**	10,8
After	14,4±0,5		
Real-time strategy			
Before	12,9±0,6	**<0,05**	15,5
After	14,9±0,5		

The developed scientific and methodological approach included: software and methodological support, differentiation of special tools and methods for solving local problems, sets of warm-up exercises, training devices, educational and training portals, formation of groups taking into account the level of adaptability and organization of the technical training process in real and virtual environments in the mode of conjugate influence [2].

Testing of the studied indicators (index of volitional self-regulation, index of perseverance, index of self-control according to A.G. Zverkov E.V., cognitive errors in sports, based on situational awareness, awareness, control according to A.Yu. Girinskaya) was carried out every six months.

The volitional self-regulation index in eSports reflects the athletes ability to control his thoughts, emotions and behavior in order to achieve his goals. The Perseverance Index measures the level of perseverance, resilience to stress, and willingness to overcome difficulties in achieving athletic goals. A high self-control index indicates a high level of emotional stability, focus and discipline, which contributes to the achievement of optimal athletic performance. A high level of cognitive abilities facilitates adaptation to rapidly changing game conditions, allows you to quickly assess the situation, make informed decisions and formulate an effective response to the rapidly changing conditions of the playing space.

The results of testing volitional self-control in the studied computer sports disciplines are presented in table 1.

The use of a scientific and methodological approach in the development of the cognitive-volitional component of cybersportsmen made it possible to significantly ($p<0,05$) increase: the index of volitional self-regulation - from 20,7±0,7 to 22,9±0,6 and the index of perseverance - from 12,9±0,6 to 14,9±0,5 for those involved in «real-time strategy». The self-control index for those involved in «competitive puzzles» ranges from 11,1±0,5 to 12,3±0,2 points. In the discipline «tactical three-dimensional combat», significant differences were revealed in the indicator of perseverance, “combat arena” in the self-regulation index.

In table 2 presents the results of testing the cognitive resource of cybersportsmen.

During the experiment, the number of cognitive errors based on situationality in those involved in the

«battle arena» decreased from 23,5 ± 1,1 to 18,7 ± 0,9 and based on awareness - from 19,4 ± 1,6 to 15,7 ± 0,9. Based on the control, the number of cognitive errors decreased in all disciplines studied: «combat arena» - from 15,7 ± 1,8 to 11,3 ± 1,4, «tactical three-dimensional combat» - from 16,1 ± 1,6 to 13,2±1,1, «competitive puzzles» - from 17,8±1,6 to 12,7±1,2, in «real-time strategy» - from 16,3±1,8 to 13,6± 1,2, the differences are statistically significant (p<0,05).

Table 2. Results of testing the cognitive resource of e-sportsmen

Period	M±m	p-value	Shift %
Situational			
Combat Arena			
Before	23,5±1,1	**<0,05**	-20,4
After	18,7±0,9		
Tactical 3D combat			
Before	20,6±0,9	>0,05	-6,8
After	19,2±0,7		
Competitive puzzles			
Before	20,3±1,2	>0,05	-7,9
After	18,7±0,7		
Real-time strategy			
Before	20,7±1,3	>0,05	-7,7
After	19,1±0,7		
Mindfulness			
Combat Arena			
Before	19,4±1,6	**<0,05**	-19,1
After	15,7±0,9		
Tactical 3D combat			
Before	20,9±1,8	**<0,05**	-22,5
After	16,2±1		
Competitive puzzles			
Before	15,8±2,1	>0,05	-23,4
After	12,1±1,1		
Real-time strategy			
Before	21,1±2,2	>0,05	-18,5
After	17,2±1,2		
Control			
Combat Arena			
Before	15,7±1,8	**<0,05**	-28,0
After	11,3±1,4		
Tactical 3D combat			
Before	16,1±1,6	**<0,05**	-24,8
After	13,2±1,1		
Competitive puzzles			
Before	17,8±1,6	**<0,05**	-28,7
After	12,7±1,2		
Real-time strategy			
Before	16,3±1,8	**<0,05**	-27,0
After	13,6±1,2		

The «awareness» scale in this test includes questions about repeated technical errors in training and competitions, understanding the correctness of elements performed after instructions from the coach, as well as thoughts about winning while performing movements or elements. It is based on continuous monitoring of current experiences and focusing on the present moment, without involving thoughts about the past or future. A high score indicates an athlete's tendency to focus on past events or future prospects, making it difficult to comprehend current events. The «control» indicator when studying the cognitive resources of athletes reflects the ability to rationalize thinking.

Conclusions. The use of a scientific and methodological approach in the educational and training process of e-sportsmen involved in various disciplines of computer sports makes it possible to increase the level of development of the cognitive-volitional component, which is confirmed by experimental studies. During the experiment, the level of volitional self-regulation of those involved in various disciplines of computer sports increased to 12,3%, self-control - to 10,8%, perseverance - to 15,5%, the number of cognitive errors decreased, based on situationality - to 20,4%, awareness - up to 23,4%, control - 28,7%.

References

1. Kosmina E.A., Makarov Yu.M. Soderzhaniye razlichnykh vidov sportivnoy podgotovki v kompyuternom. Natsionalnyy gosudarstvennyy universitet fizicheskoy kultury, sporta i zdorovya im. P.F. Lesgafta, Sankt-Peterburg. Sankt-Peterburg: LEMA publ., 2022. 185 p.
2. KosminaE.A.Vliyaniyenauchno-metodologicheskogo podkhoda k integralnoy podgotovke na intellektualnuyu podgotovlennost kibersportsmenov 18-25 let. Tsifrovaya transformatsiya fizkulturnogo obrazovaniya i sfery fizicheskoy kultury i sporta: Proceedings national scientific-practical conference with international participation Izhevsk, October 19–20, 2023. Izhevsk: Udmurtskiy gosudarstvennyy universitet publ., 2023. pp. 267-273.