

Substantiation of the effectiveness of the use of interactive learning tools at the stage of initial training in sports games

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Abstract

Objective of the study was to substantiate rational schemes for the use of interactive teaching aids at the stage of initial training of athletes using the example of football.

Methods and structure of the study. According to the idea of the study, at the 1st stage, the main aspects of the use of information technologies in the system of reserve training in sports games are summarized. At the 2nd stage, during a 10-month pedagogical experiment with the participation of two groups of athletes, 20 people each. (8-9-year-old boys, two years of training experience; at the beginning of the experiment, there were no significant differences in indicators) revealed patterns of using interactive teaching aids in weekly training cycles for athletes.

Results and conclusions. Within the framework of the pedagogical experiment, the optimal schemes for the use of multimedia teaching aids in weekly training cycles of 8–9-year-old athletes are substantiated, which provide an increase in cognitive abilities, technical skills and psychophysiological qualities. It has been established that 8–9-year-old athletes are recommended to use interactive textbooks three times a week at the beginning of a lesson (duration up to 15 minutes); this scheme of using interactive programs in combination with traditional training means provides a statistical increase in indicators of technical skill, distribution of attention and cognitive abilities. Work with textbooks should be supervised and accompanied by a trainer; the volume of mastered material is determined by the requirements of the Federal standard for the sport.

Keywords: *interactive textbook, cognitive abilities, sports games, football players.*

Introduction. One of the ways to increase the effectiveness of long-term training of the reserve in sports games is the need to use multimedia training programs [1–3] developed with innovative technologies that ensure the implementation of the principles of cognitive training.

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experiment with the participation of two groups of athletes, 20 people each. (8-9-year-old boys, two years of training experience; at the beginning of the experiment, there were no significant differences in indicators) revealed patterns of using interactive teaching aids in weekly training cycles for athletes.

Based on a theoretical analysis of information sources on the research topic, two aspects of the use of interactive technologies at the 1st-3rd stages of long-term training in sports games are highlighted:

- use of interactive textbooks to improve the quality of teaching technique, tactics of the chosen sport and improve the cognitive abilities of athletes. Emphasis is placed on the use of image visualization, ideomotor



training and the combined development of cognitive abilities and the development of technology;

- management of the training process based on determining the reactions of the athlete's body to different loads using automated programs: registration and analysis of the characteristics of the internal side of the load, ensuring the implementation in practice of an individual approach to the construction of classes.

To solve the research problems, an electronic textbook by I.G. Maksimenko "Fundamentals of selection, education and training of football players", which includes theoretical (interactive material on teaching technique, tactics and development of motor qualities) and test (tests for assessing knowledge) components.

During the first part of the experiment (lasting two months), the time intervals of the most active perception of the textbook material by 8-9-year-old football players were determined (see table): twice a week, 45-minute lessons were conducted with a textbook on tablets, dividing them into 15-minute segments. At the same time, the values of heart rate, Quasi-stationary potential of the cerebral cortex (QSP) and energy consumption (based on the Polar Team System and the QSP measurement device) were recorded. It was revealed that the material is most actively perceived by children during the first 15 minutes of each lesson, when their increased mental activity and mobilization of mental performance are manifested.

During the second eight-month experiment, the schemes for using the textbook in the weekly cycle of 8-9-year-old football players were substantiated. Athletes of the control and experimental groups worked out four times a week according to a typical program for the Youth Sports School for 70-90 minutes. Football players from the experimental group three times a week at the beginning of the lesson worked for 15 minutes with a textbook on tablets under the guidance

of a coach. At the beginning and at the end of the experiment, they tested technical readiness, indicators of distribution and stability of attention, and also assessed the level of elementary theoretical knowledge.

Results of the study and their discussion. At the end of the experiment, a significant advantage ($p < 0.05$) of the athletes of the experimental group over the athletes from the control group was recorded in most of the results in the tests: dribbling, stroking the racks, hitting the goal - 6.1 ± 0.03 s; throwing the ball - 9.8 ± 0.54 m; ball juggling - 15.7 ± 0.45 times; hits on accuracy - 8.9 ± 0.34 times; distribution of attention - 9.14 ± 0.17 numbers. Also, the children from the experimental group were ahead ($p < 0.05$) of their peers according to the test of elementary knowledge based on the study of theoretical material from the textbook, which, along with acquiring the skills of visualizing images, increasing the volume of motor memory, characterizes the level of cognitive abilities developed under the condition of literate use of interactive teaching aids.

In the course of a 10-month pedagogical experiment on the example of football, it was found that 8-9-year-old athletes are recommended to use interactive textbooks three times a week at the beginning of a lesson (duration up to 15 minutes); this scheme of using interactive programs in combination with traditional training means provides a statistical increase ($p < 0.05$) in indicators of technical skill, distribution of attention and cognitive abilities. Work with textbooks should be supervised and accompanied by a trainer; the volume of mastered material is determined by the requirements of the Federal standard for the sport.

Conclusions. In the course of the pedagogical experiment, the optimal schemes for the use of multimedia teaching aids in weekly training cycles of 8-9-year-old athletes were substantiated, which provide an increase in cognitive abilities, technical skills

Activity indicators of information perception by 8-9-year-old athletes (n=20)

Time periods, min	Indicators of activity of perception of information by children					
	Limits of indicator changes				Energy consumption, kcal	
	Heart rate, bpm ⁻¹		QSP, conv. units			
	min	max	min	max	\bar{X}	m
0 – 15	90,0±6,2	107,3±5,9	42,5±3,8	60,4±3,3	35,4	2,1
15 – 30	79,9±4,5	92,8±5,7	32,8±3,7	41,3±3,0	22,4	1,7
30 – 45	75,4±3,6	84,1±4,7	20,8±2,9	26,1±3,1	17,0	1,6



and psychophysiological qualities. Prospects for further research in this direction is the search for rational schemes for the use of multimedia teaching aids at the 2nd and 3rd stages of the long-term training of young athletes in various types of sports games.

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