Advances in Economics, Business and Management Research, volume 114
First International Volga Region Conference on Economics, Humanities and Sports (FICEHS 19)

Differentiated Methodology of Specific Coordinating Abilities Development Among 10–11 Year-Old Athletes at the Stage of Initial Training

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***Abstract*—Accuracy development study of spatial-temporal movements estimation plays a great role in a varied motor activity of young athletes at the stage of initial training in athletics. Within the age range 7 - 15 years old functional sensory motor system and the main mechanisms of voluntary motions are formed and maximum level of all analyzers interaction is achieved. The value of the mistake in any motor action depends not only on the sensitivity of involved perceptual systems, but also on the athlete's ability to be conscious of perceiving his sensations and to control them accurately. Conscious control of the accuracy and rationality of movements distribution in time and space determines the effectiveness of the athlete's exercise. The developed differentiated methodology for the development of specific coordination abilities of 10-11 years old boys going in for athletics was provided by the methodological principle of developing pedagogy.**

It determines the unity of the intellectual and motor components in the process of physical education, based on individual abilities in the process of mastering various types of physical exercises, as well as in the process of mastering the basic types of athletics exercises aimed not only on the knowledge of the ways of their implementation, but also on the ways of assimilation of thinking, on the development of student`s cognitive and creative capabilities. In the framework of the pedagogical experiment, methods of motor actions teaching (holistic exercises, physical and technical effects, game and competition game) were selected. Means of the training process were also found out.

The creative approach, including methods of creative tasks, problem situations, the formation of initiative and independence, creative thinking in the process of development, conscious adjustment of actions to achieve a higher result was applied. The results of the held experiment showed high effectiveness of the created methodology, the realization of which provided considerable specific coordinating abilities indices increase in young athletes (10-11 years-old).

Keywords*—*specific coordinating abilities; young 10–11 year-old athletes; initial training.

I. INTRODUCTION

In modern conditions training sports reserve in athletics is not just simple physical qualities reproductive development. Motor actions teaching becomes the main factor of young athletes' motor activity formation.

Principle questions, connected with specific coordinating abilities study, such as spatial, temporal and strength oriented parameters taking into account during different kinds of physical exercises mastering, are constantly studied by biomechanics, physiologists, psychologists and physical culture and sport specialists [2, 5, 9].

The most important features of motor actions feeling and perception are the following: the accuracy of reproduction, spatial, temporal and strength oriented parameters differentiation and estimation, which belongs to specific coordinating abilities of an individual and conditions quickness and effectiveness of motor activity transformation [4,6,10,11,12].

Nowadays specialists pay great attention to the realized motor actions mastering by athletes, who have transfer from tactile-motor to visual and cognitive orientation, as a result the subject creates dynamically specific plan of movements [2, 5, 8].

The aim of the research is to create and experimentally substantiate differentiated methodology of specific coordinating abilities development, which provides realized and effective exercises fulfillment by young athletes at the age of 10-11 at the stage of initial training.

A purposeful motor sensitivity development during initial training of young athletes, while mastering different kinds of athletic exercises, as a sensory phenomenon, would

provide correct technical structure of a motor act formation and it would improve the quality of motor actions teaching [4].

II. RESEARCH METHODOLOGY

In our research work we took into consideration the most steady general notions of coordinating abilities, according to which this notion is considered as the ability to create (form, co-ordinate, connect) integral motor acts and transform the created forms of actions or switch from one to another in accordance with the demands of the changing conditions.

We formed two groups: experimental and control, which included 10-11 year-old boys, who go in for athletics.

In the experimental methodology the selected means for specific coordinating abilities development, their combination, were realized in a connected system of educational-training block.

In the first block of lessons the exercises for specific coordinating abilities improvement were used (time, spatial accuracy and muscular estimation of movements [7].

In order to realize the method of play activity we created the program of special outdoor games, directed towards specific coordinating abilities development. The program included quick reaction to the signals, running from the start from different initial positions, triple and quintuple standing jumps on the right and the left leg, jumping exercises with a skipping rope standing and moving, on one and two legs, accuracy jumps. Games included preconditions for creative self-development and the studied motor actions realization. The duration of each game was from 5 to 10 minutes.

Cognitive activity in a training process included the factors of personal motivation for success achievement and competitiveness between the groups of young athletes. Athletes' cognitive activity helped to understand movements in terms of practical fulfillment with the help of outdoor games.

III. RESULTS

The held pedagogical experiment showed that within the same time period of different educational-training methodologies use it was possible to get different motor effect of specific coordinating abilities development among the respondents from the experimental and control groups of young 10-11 year-old athletes. At the beginning of the experiment all groups were relatively equal according to the indices and didn't have statistical differences ($p<0,05$).

The indices of control-pedagogical tests comparison helped to reveal different accuracy changes of the set time, spatial and muscular efforts reproduction among boys and girls of the experimental groups. During the received results analysis it was revealed that the indices increase in a long jump (which characterize speed-power abilities and spatial accuracy of the differentiated muscular efforts) among the respondents from the experimental groups considerably exceeds the indices in the control group ($p<0,05$).

It should be noted that the results of spatial accuracy of muscular efforts differentiation were better in a long jump in boys from the experimental group, for 8,9 cm ($p<0,05$). Among the respondents from the control group the results change was insignificant- 0,7 cm ($p>0,05$).

The initial and final results comparison of muscular efforts (carpal dynamometry) of the right and the left hands in young athletes of the experimental group showed valid differences ($p<0,05$). The results change of hand power accuracy in boys from the experimental group were the following: the right hand -6,6%, the left hand - 2,7% ($p<0,05$). In the control group these changes were 2,4% and 0,9% ($p>0,05$).

Time part measuring in young athletes was based on the results of accuracy of time part reproduction (5s). It was stated that young athletes from the experimental group better measured 5-second interval, than the respondents from the control group. This fact was registered among boys from the experimental group 0,3s (6,7%) ($p<0,05$), and in control group respondents- 0,1s (2,3%) ($p>0,05$).

It was revealed that in the boys from the experimental group the index of time part differentiation (15s) improved for 3,7%, in the respondents from the control group - 0,6% ($p<0,05$).

Before the forming experiment start the results of running to an enumerated ball in the experimental group were the following: among boys - 10,2s, after the experiment - 9,2s ($p<0,05$). In the control group the changes were considerably lower - 0,3c ($p>0,05$).

The results of own research works showed that for specific coordinating abilities development among young 10-11 year-old athletes in the training process it is reasonable to fulfill first the exercises for maximum possible result(macrointerval 100% of the result), and then work for motor sensitivity development in different intervals from maximal one (50% or 70% from the result).

IV. CONCLUSION

Realized motor actions mastering provided students' nervous-muscular efforts development, their ability to fell, own movements analysis and on this basis movements management realization. The results of the forming pedagogical experiment showed that, the used means and methods for the accuracy of temporal, spatial and muscular efforts differentiation helped to get considerable difference in specific coordinating abilities indices increase among young 10-12 year-old athletes at the stage of initial training.

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