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Psychological and Pedagogical Approaches in Training Young Athletes to Increase the Level of Motivation to Exercise Regularly

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ABSTRACT

Children's increased motivation to exercise regularly is a requirement for organization of the training and competitive process in any sports discipline. Nowadays psychological and pedagogical approaches to organization of necessary motivation in the training process of young athletes do not correspond to modern requirements of Sport pedagogy. the development of an experimental methodology for the application of new psychological and pedagogical approaches in training young athletes in order to increase their level of motivation to do sports. The methods of the research: a sports-pedagogical testing, a questioning, a modeling, a pedagogical experiment, which allowed to reveal the initial level of motivation and cognitive mental processes of young basketball players with further increase of these indicators experimentally. The results of the final questioning and testing of young athletes are revealed in the article, children's causes of insufficient motivation are established, the substantive model of the experimental method has been developed and the results of the forming pedagogical experiment have been scientifically substantiated. The experimental model of the application of new psychological and pedagogical approaches in training young athletes makes it possible to raise the level of children's motivation towards sports practically. The practical value is an opportunity to manage the proposed means and methods of experimental methodology for trainers, working with a sports reserve, as well as young researchers and practicing sports psychologists.

Keywords: young athletes, education, motivation, sports training

INTRODUCTION

The fundamentals of scientific, theoretical and practical researches in the field of the influence of various types of motor activity on children's mental development are systematically reflected in the desire of trainers to unite physical and mental development of young athletes [1].

As early as 1951 the outstanding soviet scientist P. F. Lesgaft [2] proved with his psychological studies that "a child learns not only to manage his movements due to muscular sensations, but also learns to analyze his/her impression and senses, mentally comparing and combining them into unified notions and conceptsin the process of doing physical exercises."

At the same time, imagination and representation are a kind of qualitative characteristics of thinking, as the most complex cognitive mental process [3].

The creation of necessary conditions for the maximum successful development of individual cognitive abilities, inclinations, cognitive needs and interests is the main direction in the process of differentiated training of athletes, allowing them to have a positive effect on increasing their motivation to do sports [4].

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The results of numerous scientific studies [5, 6, 7, 8, 9, 10, 11, 12] confirm conclusion about the advisability of using psychological and pedagogical approaches in organization of the training process of young athletes both on the basis of age, morphofunctional, psychoemotional signs and specific features of sports specialization and taking into account the integration of educational material by types of training: general, special physical and technical-tactical.

At the same time the authors point to the qualitative relation between the development of young athletes' physical abilities and the basic cognitive mental processes (memory, thinking, attention) [13, 14, 15, 16, 17, 18].

However, nowadays psychological and pedagogical approaches to formation of necessary motivation in the organization of the training process of young athletes do not fully correspond modern requirements. Some studies in this sphere are devoted to organization of sports training of qualified athletes, others devoted to psychological characteristics in the development of physical qualities only in individual kinds of sports, or trainings with children and adolescents who do not go in for sports [19, 20].

On the bases of theoretical analysis and generalization of scientific and methodological literature devoted to improvement of young athletes' training the following contradictions have been revealed:

- between the existing scientific approaches to the development of the basic mental processes and physical abilities of young athletes and the lack of unity in specialists' views on differentiating means and methods of psychological and pedagogical influence in the process of training;
- between modern requirements to increase the effectiveness of young athletes due to personal psychological qualities and the lack of scientifically based methods of recording and classifying children's motives towards sports.

As a result, the effectiveness of the training process in sports clubs should depend on the coach's professionally skilled activity aimed at improving and managing the motivational sphere of young athletes.

MATERIALS AND METHODS

Methods of the Research

The following psychodiagnostic methods of investigation were used to achieve the prospects of the experimental method:

1) Express diagnostics "Tepping-Test" [4]. The determination of the typological properties of nervous system (NS) in the process of excitation.

The purpose of the test: to determine the participants of control (CG, n=20) and experimental (EG, n=20) groups' "force-weakness" of the NS by the excitation process, with the subsequent division of basketball players into subgroups (S) with "strong" NS (CS-1, ES-1) and "weak" NS (CS-2, ES-2). The testing was held in the control and experimental groups before the beginning of the pedagogical experiment.

2) "Studying the motives of doing sports" according to Tropnikova's methodology [21]. Identifying the motivational focus for doing sports.

The purpose of the test: to determine the degree of importance of various motives and needs (situations, circumstances) that prompted and encouraged young athlete to go in for sports and basketball, in particular. In total, thirteen subgroups of motives were singled out in the test. The testing was held in the control and experimental groups before the beginning of the pedagogical experiment.

3) "Schulte's digital tables" [22]. Testing the intensity, switching and stability of attention.

The purpose of the test: the study of attentional shift in conditions of active selection of useful information. The interpretation of test results allowed to reflect the degree of attentional shift or work efficiency, intensity of attention or degree of workability and degree of mental stability. The testing was held in the control and experimental groups before the beginning of the pedagogical experiment.

4) "Simple analogies" [23].

The purpose of the test: to determine the level of operational thinking, revealing the nature of logical connections and relations between concepts.

The task was to choose one word from the proposed words in order to establish the correct connections between words. The result of the test was determined after calculating the correct answers. The testing was held in the control and experimental groups before the beginning of the pedagogical experiment.

5) "Image Memory" [24].

The purpose of the test: to study short-term memory. For the participants it was suggested to remember the maximum number of images from the presented table for 20 seconds. Then, he had to reproduce the memorized

objects (write or draw) for one minute. The testing was held in the control and experimental groups before the beginning of the pedagogical experiment.

Experimental Research Base

Experiential and experimental work was held on the basis of two sports schools of the Kirov region, in which a control and experimental groups were formed: Municipal State-financed Institution of Additional Education "Children and Youth Sports School" in Slobodskoy city - control group n = 20 (CG) and Municipal State-financed Institution of Additional Education "Children and Youth Sports School" of Slobodskoy District in Vakhrushi settlement - experimental group n = 20 (EG). These groups were subdivided: CS-1, ES-1 – basketball players with "strong" NS; CS-2, ES-2 – basketball players with "weak" NS.

The Stages of Research

At the first stage, the analysis of sports scientific and methodological literature was conducted, the state of the problem was studied, and the trainers' opinions were summarized. The general direction of the scientific work, the conditions of organization were determined. The objectives, the prospects and the working hypothesis of the research were formulated. The selection of scientific methods of research and testing of the basic mental processes and motives to do sports was carried out.

*At the second stag*e, a pedagogical experiment was organized, which included psychodiagnostics of the young athletes' initial states and indicators.

At the third stage, the formative pedagogical experiment was conducted (actual experimentation), which implied the introduction of the methodology of using psychological and pedagogical approaches in training young athletes in order to increase the level of motivation to do sports, as well as the re-measurement of the young athletes' test scores.

RESULTS AND DISCUSSIONS

The Principles of the Experimental Training System for Young Athletes

One of the ways to improve approaches to increasing the motivation for young athletes is to use a differentiated approach to selecting the means and methods of the training process, which creates the conditions for increasing the effectiveness of their competitive activities [1].

In the pedagogical experiment devoted to the formation of the necessary motivational base to do sports, 40 basketball players from the groups of initial sports training took part.

The objective of the experimental model of the system of sports training for young basketball players was to increase the effectiveness of their competitive activities by differentiating psychological and pedagogical approaches on the basis of the principle of the conjugate impact, aimed at increasing the motivational orientation towards sports and improving the indices of the basic mental processes.

The achievement of the set objective became possible when solving the following prospects:

1. To develop an experimental model of the system of sports training for young basketball players, taking into account the typological properties of their nervous system (NS).
2. Within the experimental model of the system of sports trainings for young basketball players having different typological properties of NS, we should develop the content of trainings with the aim:
   - increasing the effectiveness of basketball players' competitive activities;
   - increasing the level of motivation to do sports;
   - improving the basic mental processes.
3. To specify and supplement the content of special principles of sports training.
4. To develop a methodology for a differentiated approach to the choice of psychological and pedagogical means and methods in the training process of young basketball players.

The substantial content of special principles of sports training [25] was specified and concretized [1].

The principle of the differentiated approach

The essence of the principle: the uniting young basketball players into subgroups, taking into account the typological properties of their nervous system, for the purpose of individual selection of psychological and pedagogical means and methods of forming necessary motivational base to do sports.

The requirements for implementation:

1) The division of young basketball players into CG and EG into two subgroups: with "strong" NS, with "weak" NS in the process of excitation;
2) The differentiation of psychological and pedagogical approaches, taking into account the typological properties of basketball players' NS;
3) The individualization in the selection of physical exercises and specialized psychological tasks for the development of thinking processes and increasing the motivation of young basketball players.

The principle of the conjugate impact

The essence of the principle: the development of physical abilities has an impact on improving the course of mental processes and the formation of a motivational base to do sports among young basketball players.

The requirements for implementation:

1) The integration of the types of training: physical, game training and psychological - in the content of the "developing" and "game" blocks of the training process of young basketball players;
2) The selection of psychological and pedagogical means and methods for the formation of motives to do sports, with a goal to conjugate the development of the young basketball players' basic mental processes;
3) The conjugate-sequential increase in physical and mental loads.

The principle of the rational combination and distribution within time of psychological and pedagogical influence of different nature

The essence of the principle: the observation of interrelation and the order of various loads on a separate educational-training lesson and on a series of lessons of basketball.

The requirements for implementation:

1) Taking into account the patterns of "transferring" physical abilities and regularities underlying the alternation of load and rest;
2) The complex nature of physical loads and psychological and pedagogical influences should ensure the consistent and parallel development of physical abilities and increase motivation to do sports among young basketball players.

The Content and Modeling of the Experimental Training System for Young Basketball Players

Figure 1 presents the experimental model of training young basketball players with a "strong" and "weak" NS, using tools and methods to develop basic physical qualities, cognitive mental processes, as well as psychological and pedagogical approaches focused on increasing the effectiveness of basketball players' competitive activity and increasing their motivation to do sports.

The conceptual foundations of the presented experimental model differ from the generally accepted and acting nowadays "Exemplary program of sports training of basketball players for the Youth and Sports School" (2006). Such differences are:

1. Gathering of training subgroups of basketball players of 10-11 years was carried out taking into the account the typological properties of their nervous system - "strong NS", "weak NS".
2. Specification and substantive addition of the following principles of development of physical abilities in basketball players of 10-11 years were held:
   - The differentiated approach;
   - The conjugate influences;
   - The rational combination and distribution within time of pedagogical influences of various character.

The theoretical analysis and generalization of literary sources on the research problem, the results of the ascertaining pedagogical experiment and correlation analysis confirmed the assumptions about possible directions in the improvement of the training process of young basketball players having various typological properties of the nervous system with the aim of increasing their motivational orientation towards sports.

In a one-year macrocycle, the training load for EG basketball players was included in the content of the experimental blocks: training, extensive, game units [7, 26].

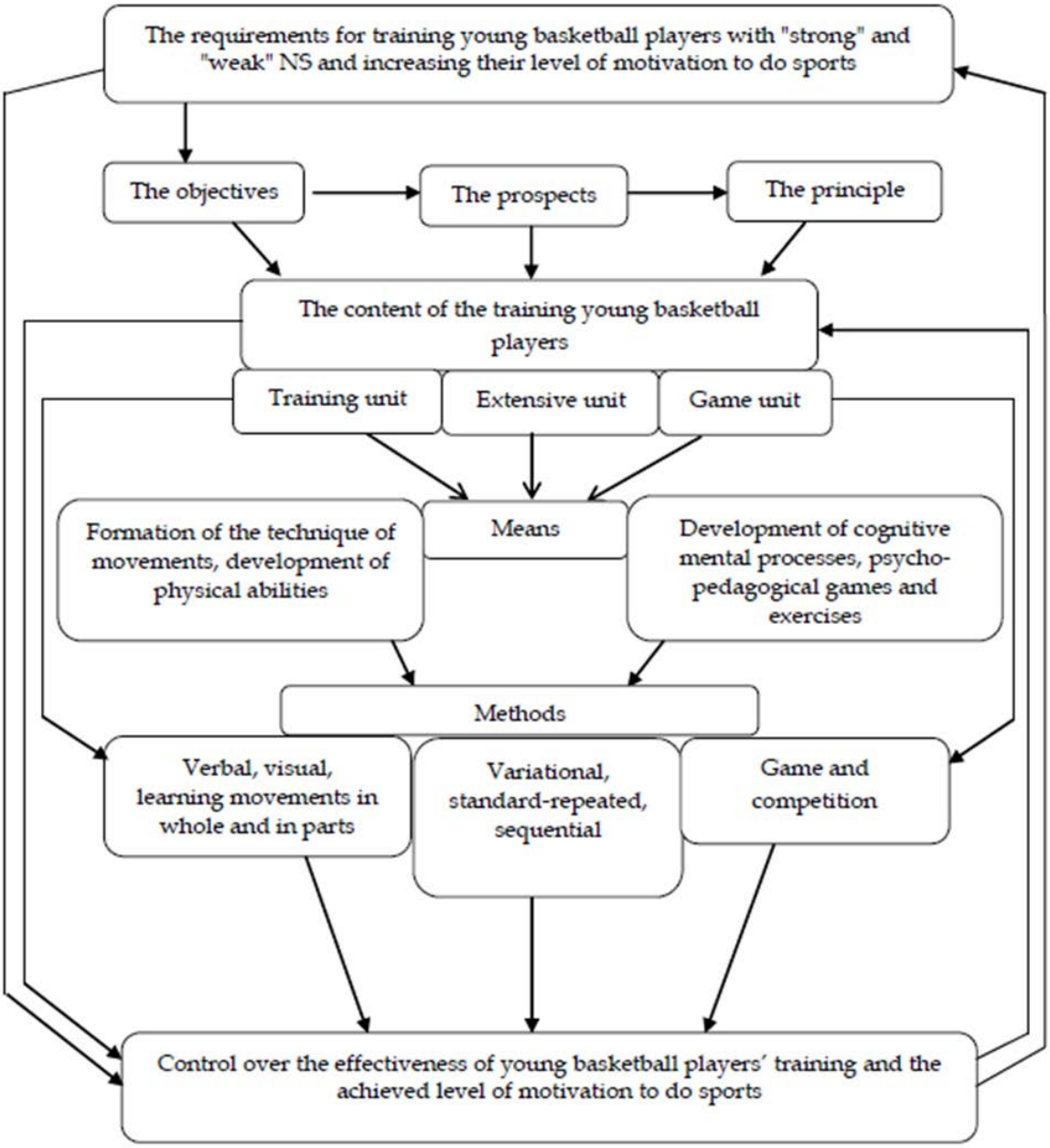

Figure 1. The experimental model of the training system for young basketball players with "strong" and "weak" NS

At the same time the experimental blocks - training, extensive, game - not only combined the training and training load according to the types of training for the macrocycle, but were also included in the content of each individual training of the basketball players from EG.

The main types of training in the content of the experimental blocks:

1. The training unit is the development of basketball technical and tactical skills, in accordance with the requirements of the existing Program.
2. The extensive unit is the development of conditioning abilities, basic cognitive mental processes, increasing motivation to do sports.
3. The game unit is mobile, sporty and specialized psychological games and exercises.

Out of the total amount of time of the annual training process for basketball players from EG (414 hours), the following was assigned: for the types of training in the content of experimental units - 368 hours, for control and calendar games - 30 hours, for control tests (testing) - 16 hours per year.

"Specialized psychological games and exercises" [27] aimed at the development of mental processes, increasing the level of motivational orientation to regular sports activities and the use of "special" psychological games and

exercises were used in the content of the "game unit" of the training process for basketball players of 10-11 years with "strong" and "weak" NS.

Further you can see the examples of specialized psychological games and exercises.

The exercise "Interview" with simultaneous juggling of the ball

Instruction: the participants are divided into pairs. The task is to get to know each other, alternately acting as an interviewer. You can ask each other about what you think is possible, interesting and necessary for the acquaintance.

During 6 or 8 minutes, an interview is taken by one person, and then the participants change their roles. At the end of the conversation, everyone is introduced to each other. An approximate list of questions can be:

1. What's your name?
2. Where do you live?
3. What is your favorite subject at school?
4. What is your favorite season?
5. What is your favorite technical element in basketball?

Questions for discussion: what has prevented you from doing the exercise; what difficulties have you come across? What helped you to fulfill the conditions of the exercise?

The exercise "Story in a chain" with simultaneous juggling of the ball

Instruction: the participants come up with one sentence so that to create the story: "Once at a competition ..."

Questions for discussion: what have you learnt from this exercise? What has helped you to come up with the continuation of the story?

The exercise "Living obstacle"

Instruction: Participants are asked to form a "living obstacle" - standing in a dense group, take such poses to make it difficult to pass through it. But at the same time, the obstacle should be fundamentally surmountable, and should not represent a solid impenetrable "living wall". A volunteer with a blindfold overcomes this "living obstacle". He should not use physical force (pushing, taking away other participants, etc.), but he needs to find the opportunity to "squeeze" between them. The form of the "living obstacle" changes before every new volunteer.

Questions for discussion: what options did the participants use to overcome the "living obstacles" and what was more effective? What was difficult in the task?

The Results of the Research

Let us consider the results of the forming pedagogical experiment, which were expressed in the final testing of the indices of motives and mental processes of 10-11 year old basketball players, who have strong (ES-1, CS-1) and weak (ES-2, CS-2) NS, in control and experimental subgroups and compare them with the results of testing at the beginning of the pedagogical experiment.

Table 1 shows that before the beginning of the pedagogical experiment, there are no significant differences between the indicators of motivational orientation toward sporting activity of basketball players ES-1 and CS-1 ($P > 0.05$). This suggests that at the beginning of the pedagogical experiment, ES-1 and CS-1 were homogeneous.

Table 1. Changes in the average group indices of the motivational orientation towards sports in ES-1 and CS-1 from the beginning to the end of the pedagogical experiment (M ± m)

Motives and needs (in points)	ES-1 (n=10)		CS-1 (n=10)		The comparison of data by Student's t-test	
	The beginning	The end	The beginning	The end		
	1	2	3	4	1 – 3	2 – 4
The need for communication	29,0 ±1,61	29,9 ±1,46	28,1 ±1,04	27,8 ±0,99	t=0,47 P>0,05	t=1,19 P>0,05
	t=0,41; P>0,05		t=0,21; P>0,05			
The motive of knowledge	10,8 ±0,49	13,9 ±0,48	10,4 ±0,5	10,6 ±0,59	t=0,57 P>0,05	t=4,32 P<0,01
	t=4,5;P<0,01		t=0,29; P>0,05			
Material wealth	34,9 ±0,43	35,5 ±0,36	34,6 ±1,35	35,4 ±0,42	t=0,48 P>0,05	t=0,18 P>0,05
	t=1,07; P>0,05		t=1,3; P>0,05			
The development character and mental qualities	20,3 ±0,59	30,9 ±0,64	20,6 ±0,53	20,6 ±0,53	t=0,38 P>0,05	t=12,47 P<0,01
	t=12,21;P<0,01		t=0,0; P>0,05			
The motive of physical perfection	41,4 ±0,76	44,7 ±0,5	42,1 ±0,78	42,7 ±0,75	t=0,65 P>0,05	t=2,21 P<0,05
	t=3,64;P<0,01		t=0,55; P>0,05			
The need for better health	19,8 ±1,05	20,6 ±0,95	20,5 ±1	20,5 ±1	t=0,48 P>0,05	t=0,07 P>0,05
	t=0,57; P>0,05		t=0,00; P>0,05			
The desire of aesthetic pleasure	35,6 ±1,22	35,0 ±1,31	34,4 ±1,42	33,8 ±4,29	t=0,64 P>0,05	t=0,62 P>0,05
	t=0,34; P>0,05		t=0,3; P>0,05			
The motive of useful skills and knowledge	14,4 ±0,48	22,0 ±0,54	15,4 ±0,55	15,4 ±0,55	t=1,38 P>0,05	t=8,54 P<0,01
	t=10,5; P<0,01		t=0,0; P>0,05			
The need for approval	23,7 ±0,27	24,6 ±0,17	23,4 ±0,39	23,8 ±0,26	t=0,63 P>0,05	t=2,55 P<0,05
	t=2,78; P<0,05		t=0,85; P>0,05			
The increase of prestige	39,7 ±0,57	44,4 ±0,45	40,8 ±0,62	42,4 ±0,77	t=1,3 P>0,05	t=2,24 P<0,05
	t=6,49; P<0,01		t=1,61; P>0,05			
The collectivist orientation	28,6 ±0,86	32 ±0,59	29,2 ±0,93	29,2 ±0,93	t=0,47 P>0,05	t=2,55 P<0,05
	t=4,54; P<0,01		t=0,00; P>0,05			
The motive ofgoing in for sport	59,4 ±1,5	68,1 ±1,19	58,9 ±1,48	57,7 ±1,44	t=0,24 P>0,05	t=5,56 P<0,01
	t=4,54; P<0,01		t=0,58; P>0,05			
The desire to play basketball	40,1 ±0,85	42,8 ±0,38	39,3 ±1,03	39,8 ±0,78	t=0,6 P>0,05	t=3,45 P<0,01
	t=2,89; P<0,01		t=0,39; P>0,05			

The indices' changes of the motivational orientation toward sport within the sub-groups ES-1 and CS-1 from the beginning to the end of the pedagogical experiment indicate that in EP-1 the changes are authentic in nine out of thirteen motives (P <0.05, 0.01). In CS-1 the indicators have positive and negative changes, while all of them are not reliable (P> 0.05).

The comparison of the testing results of motivational orientation to sports between ES-1 and CS-1 at the end of the pedagogical experiment testifies to higher indices in ES-1, having authentic differences in nine out of thirteen motives (P <0,05, 0,01).

The analysis of the changes in the motivational orientation indicators to the sporting activity of the basketball players from ES-1 after the pedagogical experiment showed points' increase in the following motives and needs: "The motive of knowledge" - 3.1 points; "The development character and mental qualities " - 10.6 points; "The motive of physical perfection" - 3.3 points; "The motive of useful skills and knowledge" - 7.6 points; "The need for approval" - 0.9 points; "The increase of prestige" - 4.7 points; "The collectivist orientation" - 3.4 points; "The motive of going in for sport " - 8.7 points; "The desire to play basketball " - 2.7 points.

Table 2. Changes in the average group indices of the motivational orientation towards sport in ES-2 and CS-2 from the beginning to the end of the pedagogical experiment (M ± m)

Motives and needs (in points)	ES-2 (n=10)		CS-2 (n=10)		The comparison of data by Student's t-test	
	The beginning	The end	The beginning	The end		
	1	2	3	4	1 – 3	2 – 4
The need for communication	30,1 ±0,37	31,5 ±0,45	30,8 ±0,38	31,3 ±0,69	t=1,33 P>0,05	t=0,24 P>0,05
	t=2,41; P<0,01		t=0,64; P>0,05			
The motive of knowledge	10,7 ±0,35	12 ±0,27	10,3 ±0,39	11,1 ±0,48	t=0,76 P>0,05	t=1,62 P>0,05
	t=2,92; P<0,01		t=1,29; P>0,05			
Material wealth	33,7 ±0,42	34,7 ±0,42	34,4 ±0,63	35,7 ±0,52	t=0,92 P>0,05	t=1,5 P>0,05
	t=1,69; P>0,05		t=1,58; P>0,05			
The development character and mental qualities	23,2 ±0,77	30,8 ±1,17	22,1 ±0,78	22,3 ±0,77	t=1,01 P>0,05	t=6,05 P<0,01
	t=5,42; P<0,01		t=0,18; P>0,05			
The motive of physical perfection	40,9 ±0,90	43,1 ±0,48	41,3 ±0,80	42,2 ±0,64	t=0,33 P>0,05	t=1,12 P>0,05
	t=2,16; P>0,05		t=0,87; P>0,05			
The need for better health	21,2 ±0,68	21,96 ±0,53	21,1 ±0,67	21,7 ±0,74	t=0,10 P>0,05	t=0,22 P>0,05
	t=0,81; P>0,05		t=0,6; P>0,05			
The desire of aesthetic pleasure	31,8 ±0,44	31,1 ±0,53	30,3 ±0,67	29,5 ±0,53	t=1,88 P>0,05	t=2,14 P>0,05
	t=1,02; P>0,05		t=0,94; P>0,05			
The motive of useful skills and knowledge	17,5 ±1,09	21,8 ±0,52	17,1 ±1,58	18,8 ±1,26	t=0,21 P>0,05	t=2,31 P<0,05
	t=3,56; P<0,01		t=0,84; P>0,05			
The need for approval	23,6±0,28	24,4±0,17	22,5±0,57	23,7±0,22	t=1,73 P>0,05	t=2,47 P<0,01
	t=2,43; P<0,01		t=1,95; P>0,05			
The increase of prestige	39 ±0,57	42,4 ±0,39	40,4 ±0,53	41,6 ±0,5	t=1,81 P>0,05	t=1,26 P>0,05
	t=4,94; P<0,01		t=1,65; P>0,05			
The collectivist orientation	29,6 ±0,55	31,6 ±0,39	29,6 ±0,57	30,2 ±0,31	t=0,0 P>0,05	t=2,82 P<0,01
	t=2,97; P<0,01		t=0,93; P>0,05			
The motive of going in for sport	59,6 ±1,04	59,4 ±1,11	59,9 ±0,97	58,9 ±1,39	t=0,21 P>0,05	t=0,28 P>0,05
	t=0,13; P>0,05		t=0,59; P>0,05			
The desire to play basketball	38,1 ±0,85	41,4 ±0,38	37,3 ±0,89	38,4 ±0,74	t=1,31 P>0,05	t=3,12 P<0,01
	t=2,34; P<0,01		t=0,95; P>0,05			

In CS-1, changes in motivational orientation to sports of 10-11 years old basketball players had minor improvements in six out of thirteen motives ranging from 0.2 to 1.6 points, with no authentic differences (P> 0.05). For the rest seven motives, the scores either remained unchanged or decreased.

Thus, there are significant changes in the indices of the motivational orientation towards sports of 10-11 years old basketball players, which occurred in the ES-1 in comparison with the CS-1 indicators from the beginning to the end of the pedagogical experiment, inside the subgroups as well as in comparison between the ES -1 and CS-1 at the end of the pedagogical experiment.

Table 2 shows the changes in the average group indicators of the motivational orientation to sports of basketball players ES-2 and CS-2 from the beginning to the end of the pedagogical experiment.

It can be seen from **Table 2** that before the beginning of the pedagogical experiment between the indicators of motivational orientation to sports, basketball players ES-2 and CS-2 have no authentic differences (P> 0.05). This indicates that at the beginning of the pedagogical experiment, ES-2 and CS-2 were homogeneous.

Table 3. Changes in the average group indicators of the main cognitive mental processesin ES-1 and CS-1 from the beginning to the end of the pedagogical experiment (M ± m)

Cognitive mental processes	ES-1 (n=10)		CS-1 (n=10)		The comparison of data by Student's t-test	
	The beginning	The end	The beginning	The end		
	1	2	3	4	1 – 3	2 – 4
AttentionEW* (sec.)	60,6 ±2,27	53 ±1,98	61, 2 ±2,32	59,9 ±2,21	t=0,18 P>0,05	t=2,33 P<0,05
	t=2,52; P<0,05		t=0,41; P>0,05			
AttentionWA* (sec.)	0,98 ±0,03	0,92 ±0,02	0,94 ±0,04	0,97 ±0,03	t=0,93 P>0,05	t=1,37 P>0,05
	t=1,76; P>0,05		t=0,63; P>0,05			
AttentionMS* (conventional units)	1,02 ±0,02	0,95 ±0,01	1,01 ±0,02	1,02 ±0,02	t=0,12 P>0,05	t=3,71 P<0,01
	t=4,20; P<0,01		t=0,15; P>0,05			
Intellection (number of correct answers)	24,1 ±0,51	27,4 ±0,45	23,4 ±0,55	24,1 ±0,43	t=0,94 P>0,05	t=5,31 P<0,01
	t=4,86; P<0,01		t=1,00; P>0,05			
Memory (points)	5,0 ±0,27	7,0 ±0,27	4,5 ±0,28	5,1 ±0,25	t=1,27 P>0,05	t=5,18 P<0,01
	t=5,2; P<0,01		t=1,6; P>0,05			

* EW – the efficiency of work "for attention"; WA - degree of workability while switching attention; MS - mental stability.

Changes in the indices of the motivational orientation to sports within the sub-groups ES-2 and CS-2 from the beginning to the end of the pedagogical experiment indicate that in the ES-2 the changes are reliable in eight out of thirteen motives (P <0.01). In the CS-2, the indicators have minor changes and all of them are not authentic (P> 0.05).

The comparison of the testing results of motivational orientation to sports between the ES-2 and CS-2 at the end of the pedagogical experiment testifies to higher indices in the EP-2, having significant differences in five out of thirteen motives (P <0.05, 0.01).

The analysis of changes in the motivational orientation to sports of basketball players from EP-2 after the pedagogical experiment showed an increase in scores in the following motives and needs: "The need for communication" - 1.4 points; "The motive of knowledge" - 1.3 points; "The development character and mental qualities " - 7.6 points; "The motive of useful skills and knowledge" - 4.3 points; "The need for approval" - 0.8 points; "The increasing prestige" - 3.4 points; "The collectivist orientation" - 2 points; "The desire to engage in basketball" - 3.3 points.

Thus, there are significant changes in the indices of the motivational orientation towards sports of 10-11 years' basketball players, which occurred in the ES-2 in comparison with the CS-2 indicators from the beginning to the end of the pedagogical experiment, inside the subgroups and as well as in comparison between the ES -2 and CS-2 at the end of the pedagogical experiment.

Table 3 shows the changes in the average group indicators of the main cognitive mental processes of 10-11 years' basketball players with a strong NS (ES-1 and CS-1) from the beginning to the end of the pedagogical experiment.

Table 3 shows that, before the beginning of the pedagogical experiment between the indicators of the basic cognitive mental processes of 10-11 years' basketball players in the ES-1 and CS-1, there are no significant differences, which indicates the homogeneity of the subgroups (P> 0.05).

The analysis of changes in the average group indicators of the main cognitive mental processes after the pedagogical experiment revealed slight changes in the CS-1, but more progressive changes in the ES-1.

Changes in the indices of the main cognitive mental processes in the subgroups ES-1 and CS-1 from the beginning to the end of the pedagogical experiment show that in the ES-1 there have been significant improvements in four out of five indicators (P <0.05), in the CS-1 there are no significant differences (P> 0.05).

The comparison of the testing results of the main cognitive mental processes between the ES-1 and CS-1 at the end of the pedagogical experiment indicates higher values in the ES-1, having authentic differences in four out of five tests (P <0.05, 0.01).

The analysis of changes in the average group indicators of the main cognitive mental processes after the pedagogical experiment in the ES-1 and CS-1 showed the following: in the test "Efficiency of work for attention» basketball players from the ES-1 at the end of the pedagogical experiment have improved the time on 7.6 seconds. in comparison with the CS-1, where the decrease occurred only on 1.3 seconds; when determining the "degree of

Table 4. Changes in the average group indicators of the main cognitive mental processes in ES-2 and CS-2 from the beginning to the end of the pedagogical experiment (M ± m)

Cognitive mental Processes (conventional units)	ES-2 (n=10)		CS-2 (n=10)		The comparison of data by Student's t-test	
	The beginning	The end	The beginning	The end		
	1	2	3	4	1 – 3	2 – 4
AttentionEW* (sec.)	64,4 ±1,64	54,8 ±1,09	65,3 ±1,86	64,6 ±1,77	t=0,36 P>0,05	t=4,71 P<0,01
	t=4,88; P<0,01		t=0,27; P>0,05			
AttentionWA* (sec.)	0,95 ±0,02	0,86 ±0,01	0,9 ±0,03	0,97 ±0,03	t=1,09 P>0,05	t=3,42 P<0,01
	t=3,88; P<0,01		t=1,42; P>0,05			
AttentionMS* (conventional units)	1,03 ±0,00	0,93 ±0,00	1,04 ±0,01	1,06 ±0,00	t=1,57 P>0,05	t=21,93 P<0,01
	t=17,36; P<0,01		t=2,42; P<0,05			
Intellection (number of correct answers)	22,4 ±0,23	28,2 ±0,34	21,7 ±0,32	22,6 ±0,39	t=1,78 P>0,05	t=10,75 P<0,01
	t=13,95; P<0,01		t=2,42; P<0,05			
Memory (points)	5,8 ±0,21	6,9 ±0,29	4,9 ±0,40	5,7 ±0,32	t=1,99 P>0,05	t=2,79 P<0,05
	t=3,06; P<0,01		t=1,57; P>0,05			

workability" of significant differences in the subgroups and at the end of the pedagogical experiment were not established (P> 0.05); the testing indicators of "Mental stability" improved in the ES-1 on 0,7 conv. units, in the CS-1 - slightly deteriorated.

In the test, which determines the level of thinking, in the ES-1, the number of correct answers increased by 3.3, in the CS-1 - by only 0.7. When studying short-term memory, the number of correct answers also increased in the ES-1 - by 2, in the CS-1 - by only 0.6.

It is likely that the higher ES-1 values in comparison with the CS-1 indices indicate that the use of specialized psychological games and exercises in every sport lesson contributes to the development of the basic cognitive mental processes of young EG basketball players, allowing them to improve greatly their attention, thinking and memory, simultaneously raising the level of their motivational orientation to regular sports activities.

Table 4 shows the changes in the average group indicators of the main cognitive mental processes of 10-11 years' basketball players with a weak nervous system (ES-2 and CS-2) from the beginning to the end of the pedagogical experiment.

Table 4 shows that before the beginning of the pedagogical experiment between the indicators of the basic cognitive mental processes of 10-11 years' basketball players in the ES-2 and CS-2, there are no significant differences, which indicates the homogeneity of the subgroups (P> 0.05).

The analysis of changes in the average group indicators of the main cognitive mental processes after the pedagogical experiment revealed slight changes in the CS-2, with more progressive changes that occurred in the ES-2.

The indices' changes of the main cognitive mental processes in the subgroups ES-2 and CS-2 from the beginning to the end of the pedagogical experiment indicate that in the *ES-2* there have been improvements in all five indices with the reliability of differences (P <0.01), in CS- 2, the improvement in the indices is observed in two out of five tests with authentic differences (P <0.05).

The comparison of the testing results of the main cognitive mental processes between the ES-2 and CS-2 at the end of the pedagogical experiment indicates higher values in the ES-2, having authentic differences in all five tests (P <0.05, 0.01).

The analysis of changes in the average group indicators of the main cognitive mental processes after the pedagogical experiment in the ES-2 and CS-2 showed the following: at the end of the pedagogical experiment in the test "Efficiency of work for attention" basketball players from the ES-2 have improved the time on 9.6 seconds, in comparison with the CS-2, where the decrease occurred only by 0.7 seconds; determining the "degree of workability" in the ES-2, the indices improved on 0.9 conv. units, in the CS-2 there were no authentic differences (P> 0.05); the testing indices of "Mental stability" in the ES-2 have significant differences (P <0.01), in the CS-2 the indices slightly worsened.

In the test, this determines the level of thinking, in the EP-2, the number of correct answers increased by 5.8, in the KP-2 - by only 0.9. When studying short-term memory, the number of correct answers also increased in the ES-2 - by 1.1, in the CS-2 - by 0.8.

Apparently, the higher ES-2 values at the end of the pedagogical experiment, in comparison with the CS-2 indicators, also suggest that the use of specialized psychological games and exercises in every sport lesson contributes to the development of basic cognitive mental processes young EG basketball players, allowing to significantly improve their attention, thinking and memory, simultaneously increasing the level of their motivational orientation to regular sports activities.

CONCLUSION

Thus, at the beginning of the pedagogical experiment, having determined the typological properties of the nervous system of young basketball players, we also conducted initial and final testing of cognitive mental processes-attention, thinking, memory, in the subgroups with "strong" NS (ES-1, CS-1), as well as in the subgroups with a "weak" NS (ES-2, CS-2).

The Final Comparison of the Results of Psychodiagnostics of Young Basketball Players who have a "Strong" NS

The analysis of the changes in the motivational orientation indicators to the sporting activity of the basketball players from the ES-1 after the pedagogical experiment showed an increase in points in the following motives and needs: "The motive of knowledge" - 3.1 points; "The development character and mental qualities " - 10.6 points; "The motive of physical perfection" - 3.3 points; "The motive of useful skills and knowledge" - 7.6 points; "The need for approval" - 0.9 points; "The increase of prestige" - 4.7 points; "The collectivist orientation" - 3.4 points; "The motive of going in for sport " - 8.7 points; "The desire to engage in basketball" - 2.7 points.

In the CS-1, changes in motivational orientation to sports of 10-11 years' basketball players had minor improvements in six out of thirteen motives ranging from 0.2 to 1.6 points, without significant differences (P> 0.05). For the rest seven motives, the scores either remained unchanged or decreased.

The analysis of changes in the average group indicators of the main cognitive mental processes after the pedagogical experiment in the ES-1 and CS-1 showed the following: at the end of the pedagogical experiment in the test "Efficiency of work for attention" basketball players from the ES-1 have improved the time on 7.6 seconds. in comparison with the CS-1, where the decrease occurred only by 1.3 seconds; when determining the "degree of workability" the significant differences in the subgroups and at the end of the pedagogical experiment are not established (P> 0.05); the testing indicators of "Mental stability" in the ES-1 improved on 0,7 conv. units, in the CS-1 - slightly deteriorated.

In the test, which determines the level of thinking, in the ES-1, the number of correct answers increased by 3.3, in the CS-1 - by only 0.7. When studying short-term memory, the number of correct answers also increased in the ES-1 - by 2, in the CS-1 - by only 0.6.

The final comparison of the results of psychodiagnostics of young basketball players with a "weak" NS.

Changes in the indices of the motivational orientation to sports in the sub-groups ES-2 and CS-2 from the beginning to the end of the pedagogical experiment indicate that in the ES-2 the changes are authentic in eight out of thirteen motives (P <0.01). In CS-2, the indicators have minor changes and all of them are not reliable (P> 0.05).

The comparison of the testing results of motivational orientation to sports between ES-2 and CS-2 at the end of the pedagogical experiment testifies to higher indices in the ES-2, having significant differences in five out of thirteen motives (P <0.05, 0.01).

The changes' analysis of the average group indicators of the main cognitive mental processes after the pedagogical experiment in the ES-2 and CS-2 showed the following: at the end of the pedagogical experiment in the test "Efficiency of work for attention" basketball players from the ES-2 have improved the time on 9.6 seconds, in comparison with the Cs-2, where the decrease occurred only by 0.7 seconds; when determining the "degree of workability" in the ES-2, the indices improved on 0.9 conv. units, in the CS-2 there were no authentic differences (P> 0.05); the testing indices of "Mental stability" in the ES-2 have significant differences (P <0.01), in the CS-2 the indices slightly worsened.

In the test, which determines the level of thinking, in the ES-2, the number of correct answers increased by 5.8, in the CS-2 - by only 0.9. When studying short-term memory, the number of correct answers also increased in the ES-2 - by 1.1, in the CS-2 - by 0.8.

It means that the higher test scores of those engaged in the ES-1 and ES-2 in comparison with the indicators of the CS-1 and CS-2at the end of the pedagogical experiment, indicate the effectiveness of the proposed experimental methodology. The use of specialized psychological games and exercises in every activity in the "game" block, the absence of mental tension in the "training" block, contributed to the development of the basic cognitive mental processes of young EG basketball players, allowing them to improve their attention, thinking and memory, simultaneously with the motivational orientation to regular sports.

RECOMMENDATIONS

The materials of the article can be of practical value for trainers-teachers who work with the sports reserve, as well as for young researchers and practicing sports psychologists, for the purpose of using them in various types of educational institutions for the formation of motor skills and attainments, for increasing their motivation and interest in regular physical culture and sports. In addition, the results of the research can be used for the further improvement of the system of the young athletes and children's teaching process, for creating the programs in physical education for various types of educational institutions, also to improve the skills of specialists in the field of physical culture and sports.

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