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Original article

PSIHOMOTRIC TRAINING MODEL FOR HANDBALL PLAYERS – JUNIORS, LEVEL 3

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Abstract

Aim. The aim of this study is to develop a psychomotoric training program for junior handball players in order to obtain an advantage for achieving high performances.

Methods. We used 36 athletes, divided into 2 groups - experimental (N = 18) and control (N = 18). The tests aimed the assessing of the level of ambidexterity, spatial orientation, temporal kinaesthesia, laterality. The tests were: shoot on goal through the circle of gymnastics. We assessed the number of successes from 10 attempts: 1. Shoot at the goal from 9 m; 2. Shoot at the goal from 6 m; 3. Shoot at the goal with turning to the left 4. Shoot at the goal with turning to the right.

Results. The proposed tests proved that there were appropriate selected, applied and dosaged. The experimental group clearly progressed from initial testing to final testing.

Conclusions. We can consider that after the research and application of the proposed new program for the experimental group, the research hypotheses were confirmed.

Key words: Psychomotricity, handball, training program, athletes

Introduction

The game model represents an authentic, real form for the manifestation of the sports characteristics. It is the essential "pattern" for the coach, for directing sports training, as the game model integrates all the other possible models used in team sports. It can be considered, in fact, an integrated model of the game. Colibaba and Bota (1998) have strong arguments on model of the game as a dominant model, as a necessity for the success if a team.

The game should include and be guided by: the team model, attack and defense tactical model, training model, physical capacity model, technical model, theoretical, psychological and social environment model.

Handball is a collective game practiced in competitions by both boys and girls, differentiated by age and levels of athletic mastery. Handball is a relatively simple game, accessible to all students. The techniques are executed by hand, with a small ball which can be easily mastered; running, catching and throwing, basic elements used in the game are natural forms of human motor acts; rules of the game are simple and easy to implement. „A specific characteristic is the competitive activities between only *two rivals* (individuals, couples, teams) in *homogenous space and time* in which each party

tries to demonstrate the superiority to the opponent by better manipulating the *common playing object* (ball, puck, flying disk...). In historical surveys, among other sport games (which are included in the programme of the Olympic Games), Handball appears to be the youngest but apparently fastest developing sport" Taborsky (2011)

The game of handball has evolved in recent years towards sports show performed using high speeds, the speed of reaction and execution and surprising throws executed from awkward difficult positions (from the back, over the shoulder, with divings, with pirouettes, with the back to goal, with pirouette (tour) in the phase of flight, between the legs, etc.). In other words, the performance reached the upper levels, with a high technical level.

We note, as a distinctive note, that the psychomotricity training in handball for a beginner child is imperative. Psychomotricity is defined by Epuran quoted by Albu et al. (2006) as "the expression of maturation and integration of motor and mental individual functions at the level of functional integration in a good ambience." Lafon quoted Epuran 1976 and Albu (1999), defines psychomotricity as "the result of integrating the interaction of education and maturation synergy and conjugation motor control and mental, not only in terms of movements, but also what determines and

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accompanies them: will, emotionality, needs and impulses. "

Epuran quoted by Grosu (2002) states that the components of psychomotricity are: body scheme; laterality; rapidity of movements; segmental and overall dynamic coordination; static coordination - balance; coordination perceptive - motor (perception of space, rhythm and its movements); ideomotricity as dynamic synthesis scheme to coordination body and perceptive - motoric. EA Fleishman quoted by Epuran (1976) and Grosu (2002), specifies as part of psychomotoric domain : precision control, the ability to execute appropriate movements, putting into action major muscle groups; the possibility of combining the action of several body segments; choosing the answer, possibility to select the desired response; simple and fast response time; speed movement, especially of the arms; the capacity of appreciation for speed of movement of an object; manual dexterity, the possibility of handling very small objects; arm and hand stability during an exercise; ,, tapping ", the possibility of rapid and accurate execution of the movements of the wrist, the ability to achieve a particular ocular-manual adjustments by sighting.

In this regard, we appreciate as the premise of the research, the following: 1. Training in the game of handball must be oriented in order to training psychomotoric components, basic and specific motor skills, technical, tactical, theoretical and psychological preparation 2. Developing a model of

training and evaluation of psychomotricity components since junior age will ensure the generation of superior performance both in the team and at individual level. 3. Psychomotor training of beginners in sports training can be an advantage for achieving high performances.

Methods

The sample investigated included a total of 36 athletes, divided into 2 groups - experimental (N = 18) and control (N = 18). The experimental group was represented by Sport Club School No.1 Constanta team, control group was represented by Sport Club School Medgidia team. The age of athletes of the two groups falls into the category - juniors 12-13 years old. We applied a test (Damian 2005) to evaluate the laterality of the handball players. For the experimental group we identify 14 subjects with right laterality preference and 4 preferred left side. For the control group 17 subjects manifested their preference for the right hand and one for the left hand. This preference was similiary for the eyesight, and hearing for the both groups. For the feet (support foot), 4 subjects preferred right foot and 14 the leftone in experimental group, and for the control group, 17 subjects preferred left foot, and only one preferred right foot.

The research was conducted over a period of 12 months from July 2014 to June 2015 and included two preparatory periods, five pre-competitive and 5 competitive periods.

Table 1. Table summarizing the volume conducted in macrocycle 2014-2015

Periods	No.microcycle	No. trainings	Total hours
Preparatory	33 weeks	242	484
Pre-competitive	5 weeks	35	70
Competitive	5 weeks	35	70+games
Tranzition	1 weeks	7	14
Vacantion	2 weeks	***	***
TOTAL	46	313	638+games

The research hypothesis. Application of a psychomotricity training program specifically designed for juniors, 12-13 years old will lead to the achievement of notable performances. The tests aimed the assessing of the level of ambidexterity, spatial orientation, temporal kinaesthesia, laterality.

Test: shot on goal through the circle of gymnastics. We assessed the number of successes from 10 attempts: 1.Shoot at the goal from 9 m; 2.Shoot at the goal from 6 m; 3. Shoot at the goal with turning to the left 4. Shoot at the goal with turning to the right.

Training programme

1. Shooting at the goal through a circle held by another athlete who is standing at the semicircle of 6 m.

Dosage: 8-10 rep P Active with slow running



2. Shooting at the goal through a circle supported by the keeper in different positions; the athlete who is shooting doesn't know in advance where the circle will be located

Dosage: 8-10 rep P Active with slow running



3. Shooting at the goal from 9m with jumping with added steps, with crossed steps, from running, through a circle held in different positions by the keeper

Dosage: 8-10 rep P Active with slow running





4. Shooting at the goal from 6 m with jumping with added steps, with crossed steps, from running, through a circle held in different positions by the keeper

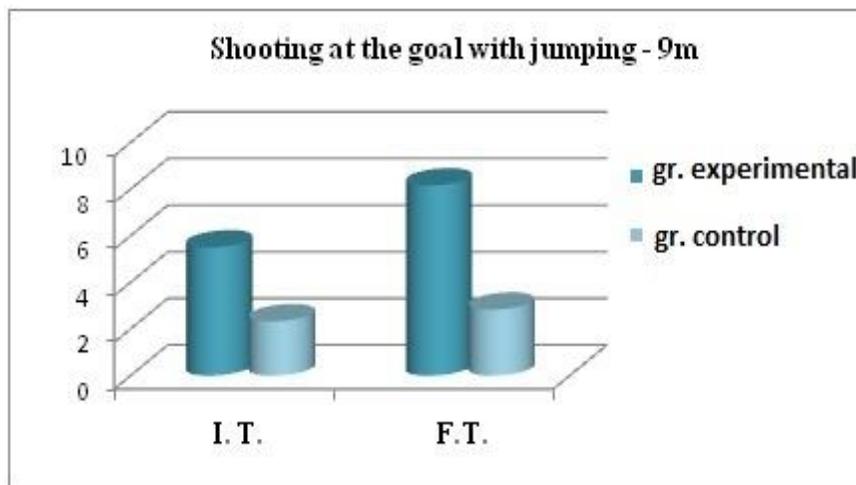
Dosage: 8-10 rep P Active with slow running



Results

Table no.2 Table summarizing the averages from experimental group and the control group to shooting at the goal with jumping through the circle of gymnastics - 9m.

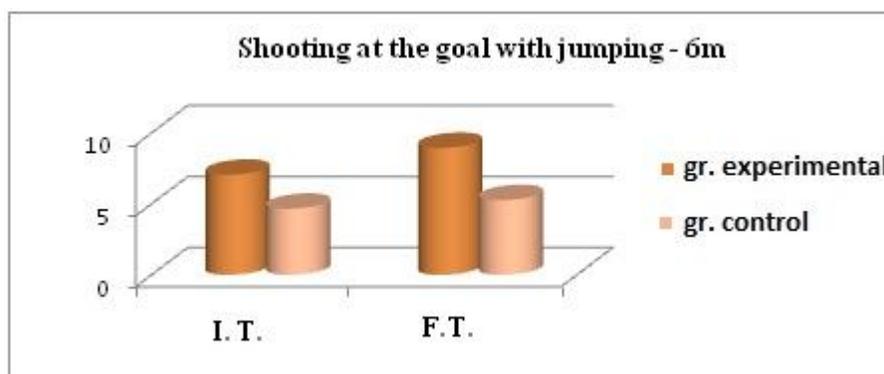
NO.	SHOOTING AT THE GOAL WITH JUMPING - 9 m (10 attempts)			
	EXPERIMENTAL GROUP		CONTROL GROUP	
Groups	I.T.	F.T.	I.T.	F.T.
Tests	5.5±2.149	8.16±71.425	2.33±1.534	2.83±1.383
$\bar{x} \pm s$	39.073	17.448	65.752	48.818
Cv%				
T dependent	10.995		2.431	
P	p<0.0005		p>0.005	
T independent	11.396		p<0.0005	



Graphic no.1 Representative graphic with the averages of the experimental and control group from shooting with jumping through the circle of gymnastics - 9m test

Table no.3 Table summarizing the averages from experimental group and the control group to shooting at the goal with jumping through the circle of gymnastics - 6m.

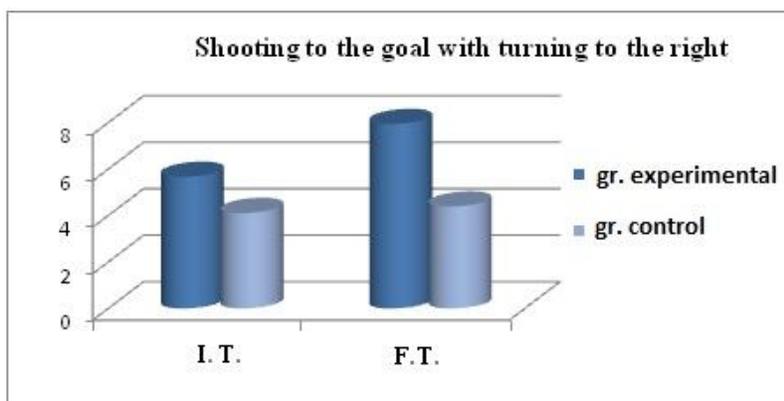
NO.	SHOOTING AT THE GOAL WITH JUMPING - 6 m (10 attempts)			
	group experimental		group control	
Tests	I.T.	F.T.	I.T.	F.T.
$\bar{x} \pm s$	7.056±1.92	10.944±1.305	4.66±1.68	5.27±1.526
Cv%	27.268	14.591	35.997	28.912
T dependent	9.628		3.335	
P	p<0.0005		p<0.005	
T independent	7.746		p<0.0005	



Graphic no.2. Representative graphic with the averages of the experimental and control group from shooting with jumping through the circle of gymnastics - 6m test

Table no.4 Table summarizing the averages from experimental group and the control group to shooting at the goal with turning to the right

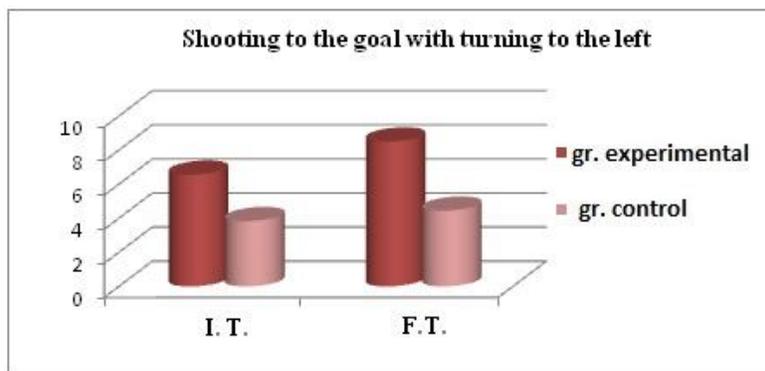
NO	SHOOTING TO THE GOAL WITH TURNING TO THE RIGHT (10 attempts)			
	GROUP EXPERIMENTAL		GROUP CONTROL	
Groups				
Tests	I.T.	F.T.	I.T.	F.T.
$\bar{x} \pm s$	5.667 \pm 1.815	7.944 \pm 1.434	4.111 \pm 1.711	4.389 \pm 1.42
Cv%	32.028	18.051	41.62	32.354
T dependent	11.693		1.426	
P	p<0.0005		p>0.05	
T independent	7.474		p<0.0005	



Graphic no.3. Representative graphic with the averages of the experimental and control group from shooting to the goal with turning to the right test

Table no.5 Table summarizing the averages from experimental group and the control group to shooting at the goal with turning to the left

NR CRT	SHOOTING TO THE GOAL WITH TURNING TO THE LEFT (10 attempts)			
	EXPERIMENTAL GROUP		CONTROL GROUP	
Groups				
Tests	I.T.	F.T.	I.T.	F.T.
$\bar{x} \pm s$	6.556 \pm 1.79	8.5 \pm 1.465	3.833 \pm 1.917	4.444 \pm 1.723
Cv%	27.303	17.235	50.013	38.771
T dependent	11.373		3.716	
P	p<0.0005		p<0.005	
T independent	7.609		p<0.0005	



Graphic no.4. Representative graphic with the averages of the experimental and control group from shooting to the goal with turning to the left test

Discussions

A lot of specialists in handball analyzed the technical efficiency during the games or in training situations (Foretic, et al., 2011; Ichimura, et al., 2011; Hianik, 2011; Wagner, et al., 2011). They appreciated that the most important in technical efficiency is the level of abilities training, the correct biomechanical movement, and the physical training. There is lack of studies in the field of psychomotricity regarding the handball game.

Test 1. Experimental group stands at the shooting at the goal with jumping from a distance of 9m. (semicircle 9m.) through a progress from initial testing to the final testing of 5.66 throws, statistically significant at $p < 0.0005$. The coefficient of variation indicates a lack of homogeneity of the group. Control group has only a positive numbers development. The statistically mathematical difference between the averages from initial testing to final testing is insignificant. Analyzing the groups, the experimental group clearly evidences by the number of successful attempts made at final testing. The difference between the averages of the two groups of 5.33 is statistically significant at $p < 0.0005$.

Test 2. In this test, shooting on goal with jumping from the semi-circle of 6m. as shown in the summary tables the increases of averages from one testing to another are not spectacular. We have in sight the difficulty of the test, the fact that scoring from shooting with jumping, only through the suspended circle, coordination imposed, disruptive movement, generally difficult conditions, do not prompt a great progress. Thus the experimental group has a average increase of 3.878 throws and 0,667 for the control group (no throw). The difference between the averages of the two groups is statistically significant at $p < 0.0005$.

Test 3. At this test the throwing is executed from standing with the back to goal, (pivot). Turning to the right for right handed athletes is done on the preferred foot and not on support foot. The difficult execution is frequently done in the game, therefore training is required in this direction. The execution requires a whole complex of motoric qualities and especially psychomotoric qualities: static and dynamic balance, kinesthetic, spatial orientation, hand eye coordination, hand-foot coordination, speed reaction and execution, etc. The difference between the averages from initial testing to final testing, though small, at experimental group shows a statistical significance at $p < 0.0005$. In the control group the difference between the averages has no statistical significance. The analysis of the averages from the research groups highlighted the progress of the experimental group that highlights the efficiency of our program. Data variability is high for both teams so there is a little homogeneity.

Test 4. This test is preferably executed with the support foot and with the preferred throwing arm. The conditions of training for the experimental group led to a statistically significant progress ($p < 0.0005$). The control group also recorded a statistically significant progress, the threshold being lower ($p < 0.005$) and must note that for this group the working frequency is high for the technical process. Superiority of our programme for the experimental group stand out ($p < 0.0005$).

Conclusions

After the research and application of the proposed new program for the experimental group we can say that research hypotheses were confirmed. The proposed tests that targeted education / development of the psychomotoric components proved that there were appropriate selected, applied and



dosaged. Thus, the experimental group after applying a battery of comprehensive tests clearly progressed from initial testing to final testing. Control group from initial testing to final testing achieves quite small increases of the performances, statistical insignificant for the applied tests that aimed shooting to the goal through a circle of gymnastics, with handball usual techniques.

Acknowledgments

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