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*Original article*

## THE IMPORTANCE OF PREPARATION OF PSIHOMOTRIC COMPONENTS TO JUNIOR HANDBALL PLAYERS AGED 11-12 YEARS OLD

DAMIAN ROXANA<sup>1</sup>, IONESCU-BONDOC DRAGOȘ<sup>1</sup>

### Abstract

*Objectives.* Intervention in sport training of junior handball players aged 11-12 years old with a program developed to drive psihomotric components. Analysis and interpretation of data recorded in the experiment, reorientation and completing tests and system drives in the sight of good development of the basic experiment.

### *Methods of research.*

The research was based on an ameliorative experiment which took into account the psihomotric development of junior handball players aged 11 to 12 years. Selected athletes to achieve research were established in the experimental group and the control group.

The women handball players, composing the experiment group represents team from No.1 School Sports Club in Constanta(n = 18) - and control group was represented by School Sports Club team from Medgidia (n = 18)

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### *Results.*

Comparative analysis of indexes registered to the dribble among poles test on 20m., between the experimental and control group indicates that the proposed and applied program to experiment group is superior and the differences in averages of both groups are superior to final testing for the experimental group to significance  $p < 0.0005$ . As we have seen in the control group, the passing behind the back and over the shoulder tests, are toughest and have even lower materiality threshold of  $p < 0.005$  in the first test and  $p < 0.01$  for passing over the shoulder, but in favor of the experiment group.

### *Conclusions.*

Comparative analysis between the experimental and control group revealed that the difference between the average initial testing to final testing is in favor for the experimental group for all indicators investigated, with strong statistical significance. Experimental group has qualified for the finals, played the final for the nationals and won the silver medal.

Keywords: handball, junior, psychomotor, training.

### Introduction

Albu C. et al. (2006) defined psychomotricity as "expression of maturation and integration of motor and mental functions at the level claimed by the functional integration of each person in good ambience" Paunescu (1983) defines motor development as "a comprehensive direction for the development of man, resulting from the interaction and interconnection of neuropsychological devices that ensure the development and implementation of movement and the mental and emotional processes, all under the direction of conscience." Over time many prestigious researchers Ozerețki, Veron,

Fleishman, Golu, Baptism, Călcăianu, etc. have studied the psycho-motor skills. There is an unanimous opinion that between motility and mentally exists a close interdependence, influencing each other in almost all stages of life (first, second and third childhood, adolescence, even adulthood) (Horghidan, 2000). There are countless examples that underlines our interaction and mutual causality between motility and psychology, both neurophysiological and the physio-psychopathological plan. Psychomotricity is a key issue that must not be neglected in handball training (Massenz, Simonetta, 2002). At this time, the technique of

<sup>1</sup> Clubul Sportiv Scolar Nr. 2 Constanta.  
E-mail: roxyy\_damian@yahoo.com  
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handball reached limits close to perfection. The technique skills were very much diversified. The athletes use the right hand as well as the left hand to pass the ball, to the right or to the left, to the back, over the shoulder, with pirouettes and with divings. Throws to the goal are made with pirouettes and different turns, between the legs, with turns in the flight phase, with side diving, and with printed effects for the ball that dodges the goalkeeper or the opponent, driving the ball with the right hand and left hand is now complemented by dribbling between his legs from basketball and examples do not stop there. Evolution of the game is going increasingly further and rapidly increasing higher.

**PSYCHOMOTORIC COMPONENTS**

- - body scheme;
- laterality;
- speed of movement;
- segmental and overall dynamic coordination;
- static coordination - balance;
- perceptive - motoric coordinating (perception of space, rhythm and their movements);
- ideomotricity as dynamic synthesis for body scheme and for the body and perceptive -

#### **Methods of research**

The research was conducted within the Sports Club School No.1 in Constanta, in the Albatros High school sports hall in Constanta for the experimental group and Medgidia School Sports Club sports hall for the control group. Both teams benefited from optimal training conditions and similar ones. Tests have complied with the research conditions and were applied in the same periods, the same hours, with rested and medically fit subjects. The research was conducted over a period of 11 months, from August 2013 to June 2014. The macrocycle included 33 preparatory periods, 5 pre-competitive periods and 5 competitive periods.

During the preparatory period in summer recess, in August and September, held place a mezocycle of 8 weeks with 2 daily training sessions (6 days a week), so a total of 96 workouts. In this period the team played preparatory matches held in the beach-handball competitions for two days, thus adding another 2 training sessions- preparatory games. In October zonal competition was held. A preparatory week, one pre-competitive week and one competitive week with one workout per day. They totaled 12 training sessions and 5 held games. After the competition period another 2 preparatory weeks followed with 1 training session per day (6 days) which accounted 12 training sessions. In November were three weeks of training sessions with one workout per day (6 days), totaled 18 workouts. There followed another pre-competitive week and a competitive one with 12 training sessions and 5 held

motoric coordination with motoric load. (Horghidan, 2000, Epuran, 2002, Damian, 2003 )

According to the authors A. Albu and Albu C. (1999, p. 7) psychomotoric objectives fall into. - general objectives and particular objectives.

The general objectives targeted are: - Knowledge and understanding the components of psychomotricity - Knowledge and understanding of the tools by which to act (for developing psychomotricity) - Knowledge, understanding and mastery of basic psychomotoric behaviors - The early identification of psychomotor disorders - Increasing the psychomotoric potential of the child

Particular objectives targeted are: -kinesthetic development of complex perception of the motion - Development of the ability to move - Assessment of the psychomotoric potential of the child - Development of basic and practical motor abilities and skills - Proper development of basic motor skills

games - team qualified for the Euro-regional tournament.

December continued with three weeks of training with one workout per day, 6 days a week, totaling 18 workouts. In December and January were foreshadowed two weeks of vacation. In January, February and March were 8 weeks of preparation for the Euro-zone tournament, so another 48 workouts. In March it was held a pre-competitive week and competitive week with 12 workouts and 5 games. The team qualified for the semifinal tournament. Next in March, April and May were 6 preparatory weeks with one training session per day, so a total of 36 workouts were held. In May was a pre-competitive week and a competition week with 10 training sessions and 6 games. The team qualified for the final tournament. There followed two preparatory weeks with one training per day, so 12 workouts were held. In June, the final tournament took place. A pre-competition week and a competition week with 10 training sessions and 6 games.

In this research the applied education program aimed the manual coordination exercises and consisted of the following:

1. Standing dribbling with a tennis ball, alternating right hand, left hand, left foot and right foot Idem 1 with a handball ball (2 x 10 rep P - active with walking and shaking arms and legs)
2. Standing dribbling with a handball ball, alternating right hand, left hand, left foot and right foot Idem 1 with a handball ball (2 x 10 rep P - active with walking and shaking arms and legs)



3. Standing dribbling with two tennis balls with one hand (2 x 30 sec P –active with walking and shaking arms)
4. Standing dribbling two handball balls with one hand (2 x 30 sec P –active with walking and shaking arms)
5. Standing dribbling with two tennis balls with both hands simultaneously (2 x30 sec P - active with walking and shaking arms)
6. Standing dribbling two handball balls (2 x30 sec P - active with walking and shaking arms)
7. Walking and dribbling with a tennis ball with one hand/two hands. (2 x rep P - active with running)
8. Walking and dribbling with two tennis balls with one hand/two hands. (2 x rep P - active with running)
9. Walking and dribbling with one handball ball with one hand/two hands. (2 x rep P - active with running)
10. Walking and dribbling with two handball balls with one hand/two hands. (2 x rep P - active with running)
11. Running with dribbling with a tennis ball, with one hand. (2 x rep P - active with running)
12. Running with dribbling with two tennis balls, with two hands. (2 x rep P - active with running)
13. Running with dribbling a handball ball, with one hand. (2 x rep P - active with running)
14. Running with dribbling two handball balls with two hands. (2 x rep P - active with running)
15. Standing dribbling with a tennis ball, passing the foot over the ball and continue dribbling with the other hand (2 x 10 rep P - active with walking and shaking arms and legs)

2. Dribbling with non-preferred hand//left. The same test is performed with non-preferred hand.

3. Alternative dribbling with right and left hand. The same test executed alternative with both hands

16. Standing dribbling with a with a handball ball, passing the foot over the ball and continue dribbling with the other hand (2 x 10 rep P - active with walking and shaking arms and legs)
17. Standing, dribbling with two tennis balls and passing the legs one by one over the balls (2 x 20 rep P 1min)
18. Standing, dribbling with two handball balls and passing the legs one by one over the balls (2 x 20 rep P 1min)
19. Three athletes, each one with a ball at the semicircle of 6m; in the other half of the field two defender athletes without ball; at the beep, the three athletes tries to pass with dribbling the two defenders, to shoot on goal. (4-6 rep P- active with running)
20. Two athletes standing each placed at the 6 m line, the ball sitting on the ground at the center of the court, at the beep they run to the ball; first one that arrives to the ball becomes attacker and dribbles the ball to the goal. (2 x rep P - active with running)
21. Some athletes are dribbling the ball with the preferred arm; they are trying to remove from dribbling another athlete's ball without losing their own ball. The game ends when only one player remains dribbling the ball (hitting hand is not allowed)

Tests applied to assess athletes for manual coordination are the following:

1. Dribbling with preferred hand/right. Athletes leave from the start line and travel a distance of 20 m performing dribbling with favorite hand among the cones placed at 2 m between them.

Analysis and statistical interpretation of DATAS was conducted under the rules and regulations of research methodology (Damian, M., 2005 Tudos, S., 1987) and with the program SPSS16.

### **I. Comparative analysis of indexes registered for the dribbling through cones test for 20m., between the experimental group and the control group**

**Table No.1. Dribbling through cones test for 20m experimental group**

		Dribbling with preferred hand/right(sec.)		Dribbling with non-preferred hand//left.(sec.)		Alternative dribbling with right and left hand (sec.)	
		TI	TF	TI	TF	TI	TF
Experiment group (n=18)	x±s	7,285±0,7	6,435±0,57	7,454±0,51	6,516±0,537	7,033±0,42	6,012±0,56
	CV%	7,824	8,904	6,842	8,241	6,086	9,415
	T test		19,609		24,349		14,02
	P		p<0.0005		p<0.0005		p<0.0005
Control group(n=18)	x±s	7,411±0,44	7,152±0,45	7,538±0,38	7,259±0,45	7,292±0,40	7,032±0,41
	CV%	6,045	6,292	5,134	6,254	5,609	5,902
	T test		7,546		9,553		6,267
	P		p<0.0005		p<0.0005		p<0.0005

**Table No. 2. Dribbling through cones test for 20m experimental-control group**

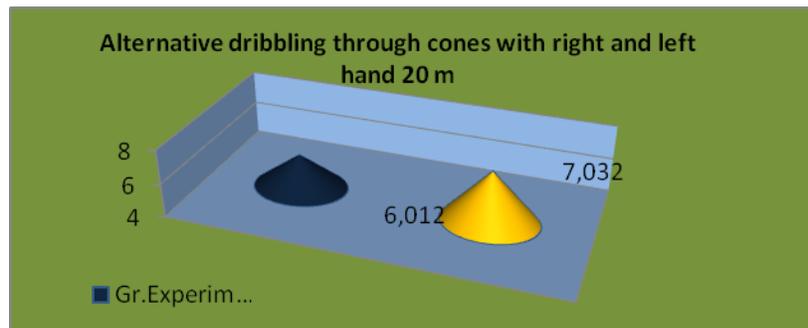
experimental group (n=18)	Dribbling with preferred hand/right(sec.)	Dribbling with non-preferred hand//left.(sec.)	Alternative dribbling with right and left hand (sec.)
	TF	TF	TF
experimental gr	<b>6,435±0,573</b>	<b>6,516±0,537</b>	<b>6,012±0,56</b>
control gr	<b>7,152±0,45</b>	<b>7,259±0,454</b>	<b>7,032±0,41</b>
Test t Student independent	<b>4,175</b>	<b>4,483</b>	<b>6,166</b>
Significance	<b>p&lt;0.0005</b>	<b>p&lt;0.0005</b>	<b>p&lt;0.0005</b>
Omega square - ω <sup>2</sup>	<b>0,313-31,35%</b>	<b>0,347-34,7%</b>	<b>0,507- 50,7%</b>
Standard deviation mediated - DSP	<b>0,515</b>	<b>0,497</b>	<b>0,496</b>
Effect size - ES	<b>1,392 ES is big</b>	<b>1,495 ES is big</b>	<b>2,056 ES is big</b>



Graphic No. 1. Dribbling with preferred hand/right 20 m- experiment gr. -control gr.



Graphic No. 2 Dribbling with non-preferred hand//left. 20 m - experiment gr. - control gr.



Graphic No. 3 Alternative dribbling through cones with right and left hand 20 m- experiment gr. -control gr.



## Discussions

### Cones test on 20m.

#### Dribbling with preferred hand/ right (sec.)

**Experiment Group.** After the application of the proposed program a significant progress was registered from initial testing to final testing at all three tests that checks: speed, dynamic coordination, hand-eye coordination, spatial orientation kinaesthesia and specific conditions, with handball ball - implementation of the technical skill - dribbling. At the first test of dribbling with preferred hand through cones on 20 meters, athletes achieved a statistically significant improvement from initial testing to final testing, the difference between the average of 0.85 sec, being materiality significant at  $p < 0.0005$ .

**Group control** registers also a statistically significant progress from initial testing to final testing at considerable significance -  $p < 0.0005$ . Thus, to dribbling among cones with preferred hand on 20 m, control group is progressing from the average  $x \pm s = 7.411 \pm 0.448$  sec. to the average  $x + s = 7.152 \pm 0.45$ . The difference between average 0.25 is statistically significant at the significance  $p < 0.0005$ .

A study made on 33 athletes (Badau, D., 2006) divided into 2 groups- experimental group ( $n = 16$ ) and control group ( $n = 17$ ), junior III showed that game actions symmetrization through a specific methodology of ambidextrous education determine the technical and tactical arsenal enrichment of each player and increases efficiency for each position. Thereby at simple dribbling on 30m. with the preferred hand, the experiment group at final testing, has obtained an average of 5 "67sec.  $\pm 0.096$  compared to the control group 5 "71  $\pm 0.080$ .

#### The dribbling through cones with non-preferred

**Experiment Group.** The dribbling through cones with non-preferred hand test has registered a statistically significant progress, the difference between averages 0.938 between the two tests is statistically significant at  $p < 0.0005$ .

**Group control** At the dribbling through cones test with non-preferred hand, the control group has a progress statistically significant at  $p < 0.0005$ , with the difference between the averages of 0.27.

In the study made by Badau, D., 2006 at non-preferred hand dribbling test, the experimental group gets better times compared to control group, with 0 "06sec. difference. Compared to our group, which is approximately 2 years younger, times

recorded are clearly superior. However it identifies, that the applied program which targeted the ambidextrous education has positive effects on sports performance in both research.

#### At dribbling through cones test alternating hands,

**Experiment Group.** The dribbling through cones test with alternating hands has registered a statistically significant progress, the difference between the averages 1,021, between the two tests is statistically significant at  $p < 0.0005$ .

**Group control** The ambidextrous test under specific handball conditions shows increases of speed movement under ball handling conditions, smaller, but statistically speaking, significant all the same significance  $p$ . The difference between averages of 0,26sec demonstrates that this group works in these conditions

At dribbling through cones, final testing, the comparison between the data obtained by the group from our research where the average is  $x + s = 6.012 + 0.56$  sec. with the one from the research conducted by Badau, D., 2006, where the average is  $x + s = 6,092 + 0.125$ , we find that they are close; this shows our program is superior and has an increased effect on bimanual coordination.

**Comparative analysis** of indexes registered to the dribbling trough cones test on 20m, between the experimental group and the control group indicates that the proposed and applied program to the experimental group is superior by far and the differences between the averages of both groups to final testing are superior for the experimental group for the materiality threshold of  $p < 0.0005$ . The effect size increases the difference in favor of the experiment group, ES is "high". Omega square -  $\omega^2$  expressing what percentage of the difference between the averages of the two groups can be attributed to progress by applying the independent variable this also strengthens the fact.

Thus, after applying the proposed program at the final testing at dribbling trough cones with the preferred hand, the experiment group recorded a progress compared to the control group , of 0.71 sec. at significance  $p < 0.0005$ .

The dribbling through cones test with the non-preferred hand, highlights the progress of experiment group compared to the control group with an average of 0.74 sec. at significance  $p < 0.0005$ . .the difference between the averages of two groups, at the final testing is 1.02, which shows again the progress of the experiment group and the efficiency of the proposed program.



The comparative analysis between the groups highlights the effectiveness of the proposed new program. It is noted that the first three tests the experimental group is superior, and the difference between the average to the final testing, is statistically significant at the threshold of significance  $p < 0.0005$ .

### Conclusions

Psychomotricity tests revealed:

Experiment group progressed from one testing to another. Control group has progressed too; we must accentuate that at this age are working anyway for technical and tactical elements and processes necessary to the game. The control team who represented the control group qualified only to the

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As we have seen in the control group, passing behind the back and over the shoulder, that are toughest, have lower threshold of significance than  $p < 0.005$  in the first test and than  $p < 0.01$  for passing over the shoulder, but in favor of experimental group.

semifinal tournament. Comparative analysis between the experimental and control group revealed that the difference between the initial testing average to final testing is in favor for the experimental group for all indicators investigated, with strong statistical significance. Experiment group has qualified for the finals and won the silver medal at the nationals.

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