

**CONTRIBUTIONS REGARDING THE IMPROVEMENT  
OF PHYSICAL CONDITION ON HANDBALL PLAYERS  
(JUNIORS III FEMALE)**

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**Keywords:** handball, physical training, modeling, driving model.

**Abstract:** Intensive worldwide sports performance requires continuous improvement of organizational forms and methodological training of athletes at this level.

The attention is focused not only on professionals improve sports training methodology at high performance but also on system of sports training improving.

By modeling we understand the study phenomena with models. The model is a theoretical material that reproduce, in another scale, structure (elements and relations between them) to another system that we intend to know it.

**Introduction:** Adolescence is an important period of human development that have profound changes during the numerous systems of the body: biological, physical, mental, moral, etc. The development period, in which childhood traits disappear, instead of some rich and complex features, some specific individual psychological manifestations.

Physical training aims to improve driving performance elements, as motor qualities: force, speed, skill, resistance, also means capacity of coordination and control, somatic and psychological development of biological components of the athlete.

Physical training is an essential part of training in handball and "is the process of physical education in handball.

Physical training for handball players has two sides: the general physical training and special physical training.

Physical training is an essential part of training in handball at all ages, because it is an important factor of progress on trends and performance stage, coming years in view indicates the increasing this factor importance.

A methodically booklet new developed, defines "modeling" as a theoretical discipline compartment containing the conceptual framework

of management principles, methods and techniques of sports training. The content and form addresses not just the overall management and sports but also the specialists in this field, having as main purpose the assimilation of basic theoretical concepts that are specific to sports training management based on a number of specialized models for achieve superior athletic performance.

Somatic model of handball performance is as follows:

**Table 1.** *Somatic model of handball players performance*

Anthropometric indices	Optimal index of extreme	Admitted Odds	Optimal index for pivot	Admitted Odds	Optimal index for Inter	Admitted Odds	Optimal index for center	Admitted Odds
Waist (cm)	168	165-172	168	163-172	175	172-182	172	165-176
Weight (kg)	64	61-67	67	62-71	74	70-80	69	65 -73
Report Waist-10 / G	106	106	101	101	101	102	104	104
Hand opening (cm)	21	20	21	20	22	20	22	20
Wingspan (cm)	176	173-180	173	167-171	184	180-191	178	174-183
Biacromial diameter (cm)	37	36	38	37	30	37	38	37
Bitrohan terian diameter (cm)	33	31-35	34	32-36	34	32-37	34	32-36

Thus, modeling sports training has enabled the development of operational models and also the algorithms for the main technical elements of training, on training levels (taking account of age and sex peculiarities of subjects).

**Materials and methods:** This study was conducted on a sample of 14 subjects, handball players, juniors III female. Their average age is 14 years (changes in age of 13, 14, 15).

Subjects included in this experimental research are athletes of LPS - CSS Suceava, participants in the Junior National Championship III 'A' series.

Material base, support facilities and equipment were provided by the endowment Sports High School - CSS Suceava (poles, balls, whistles, equipment, stopwatch, metric tape, etc.).

The venue was the sports research of LPS Suceava (dull outdoor gym) where the experimental method of physical training of junior from

experimental group to optimize physical preparation of players has been applied.

Lot of subjects consisted of 14 subjects, divided into:

➤ Experimental group (Group A), consists of seven players for which initial and final samples were applied, and also sports training program to optimize the physical preparation proposed.

➤ Control group (Group B), consists also seven players for which were applied only evidence for the initial and final test.

**Table 2.** *Sample of subjects included in research*

No.	Name	No.	Name
1.	AP	8.	HV
2.	BD	9.	AA
3.	JA	10.	HM
4.	DI	11.	DA
5.	EC	12.	PI
6.	NP	13.	IA
7.	CD	14.	DP

Handball game was and is the subject for various categories of professionals (coaches, doctors, psychologists, computer, etc.) regarding some landmarks references and some dynamic factors of performance capacity.

Through this work I propose to confirm the following statement: if the development and practical application of a system of specific means, spread into the technical preparation of the sports training of junior III handball players can shape and encourage their training level by:

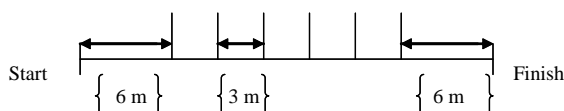
- improving general and specific physical preparation;
- technical training improvement;
- improving the quality of their game.

Research goal is to determine by experiment the best way to schedule training objectives in order to optimize the physical preparation of handball players, junior III.

Regarding the methodology of experimental work evaluation in an objective way we have chosen a set of samples for developing motor qualities.

**Sample 1** - to develop quality driven "speed": running speed over a distance of 30 meters.

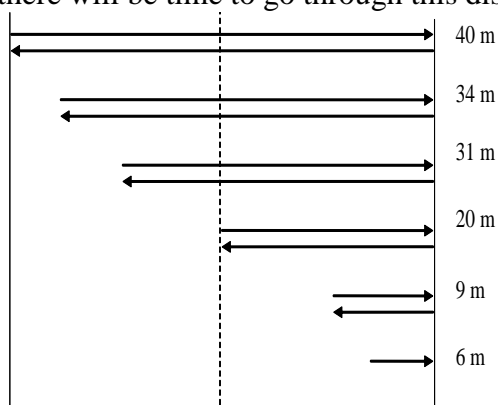
**Sample 2** - driving quality development, "skill": 1. Running among the six milestones dribble. In this test, each player will have the task of moving to dribble with both hands, alternately, including six stakes placed 3 and 6 meters apart from each other.



**Image 1**  
*Schedule route 1*

2. Handball ball throwing and catching up to her back. It will perform 10 repetitions and will record only the correct (balls that were caught from behind with both hands).

**Sample 3** - to develop quality driven "resistance": great marathon. In this "marathon", each player will have to travel a distance of 280 meters race, but there will be time to go through this distance.



**Image 2**  
*Schedule route 3*

**Sample 4** - the development of quality driving "force": 30 abdomens.

Between initial and final testing, handball players followed a program of exercises, routes and games especially chosen to develop motor qualities chosen to improve general and special physical preparation.

The results obtained in control samples in the initial test on experimental group:

**Table 3.** *The results obtained in control samples in the initial test on experimental group.*

Nr.	Name	3 m run	Dribbling among six benchmarks	Throwing the ball up	Great Marathon	30 abdomens
1.	AP	5,11"	11"	8	1'23"	25
2.	BD	5,30"	15"	6	1'27"	23
3.	JI	5,20"	13"	6	1'25"	23
4.	DI	5,12"	12"	7	1'22"	24
5.	EC	5,29"	16"	6	1'28"	21
6.	NP	5,21"	14"	7	1'26"	24
7.	CD	5,28"	15"	5	1'29"	22
	X	5,22	14"	6,43	1'26	23
	S	0,08	1,80	0,98	0,03	1,35
	Cv	0,02	0,13	0,15	0,2	0,6

X – arithmetic mean, S – standard deviation, Cv – coefficient of variability

The results obtained in control samples in the initial test on control group:

**Table 4.,** *The results obtained in control samples in the initial test on control group.*

Nr.	Name	30 m run	Dribbling among six benchmarks	Throwing the ball up	Great Marathon	30 abdomens
1.	HC	5,13"	11"	8	1'23"	26
2.	AA	5,31"	15"	5	1'30"	22
3.	HM	5,30"	15"	6	1'30"	21
4.	DA	5,22"	14"	7	1'24"	23
5.	PI	5,14"	11"	8	1'22"	25
6.	IA	5,32"	14"	5	1'28"	21
7.	DP	5,23"	13"	6	1'24"	22
	X	5,24	13	6,43	1,26	23
	S	0,08	2	1,27	0,03	2
	Cv	0,02	0	0,19	0,03	0

The results obtained in control samples in the final test on experimental group:

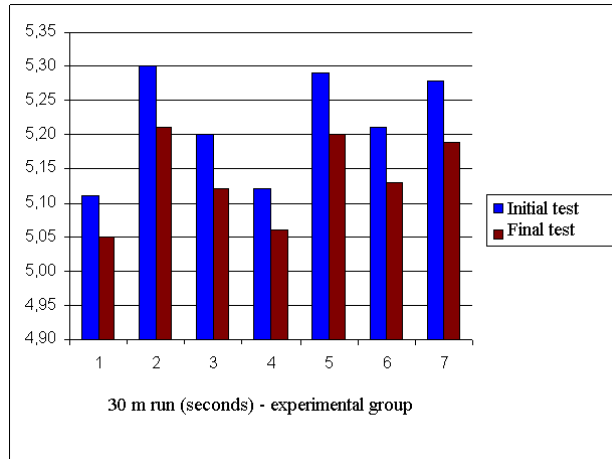
**Table 5.** *The results obtained in control samples in the final test on experimental group.*

Nr.	Name	30 m run	Dribbling among six benchmarks	Throwing the ball up	Great Marathon	30 abdomen
1.	AP	5,05"	9"	10	1'00"	30
2.	BD	5,21"	13"	8	1'04"	27
3.	JI	5,12"	10"	9	1'02"	29
4.	DI	5,06"	9"	10	1'01"	30
5.	EC	5,20"	14"	7	1'05"	26
6.	NP	5,13"	11"	9	1'04"	28
7.	CD	5,19"	13"	7	1'02"	27
	X	5,14	11	8,57	1,03	1
	S	0,07	2,06	1,27	0,02	1,57
	Cv	0,01	0,11	0,15	0,02	0,06

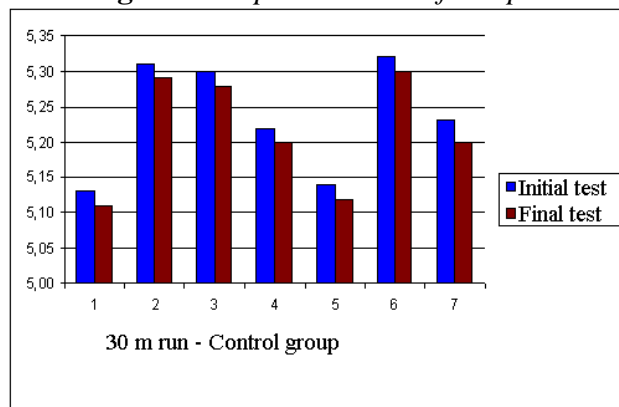
The results obtained in control samples in the final test on control group:

**Table 6.** *The results obtained in control samples in the final test on control group.*

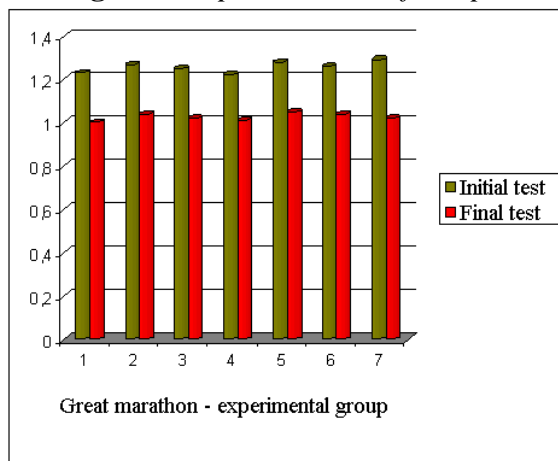
Nr.	Name	30 m run	Dribbling among six benchmarks	Throwing the ball up	Great Marathon	30 abdomens
1.	HC	5,11"	10"	9 9	1'21"	26
2.	AA	5,29"	13"	7 7	1'29"	24
3.	HM	5,28"	13"	7 7	1'28"	23
4.	DA	5,20"	12"	8 8	1'22"	25
5.	PI	5,12"	10"	9 9	1'2"	27
6.	IA	5,30"	12"	6 6	1'26"	24
7.	DP	5,20"	11"	7 7	1'23"	25
	X	5,21	11,57	7,57	1,24	24,86
	S	0,08	1,27	1,13	0,04	1,35
	Cv	0,02	0,11	0,15	0,03	0,05



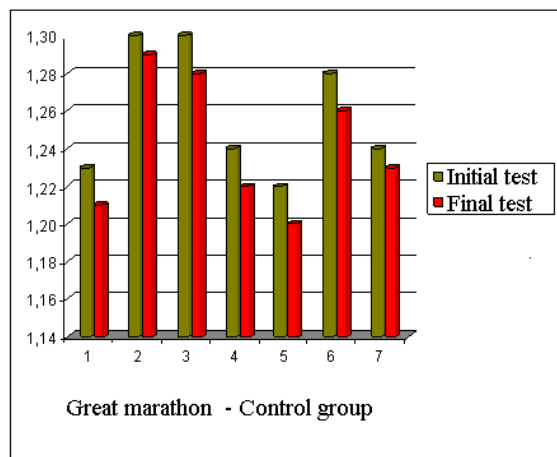
**Diagram 1** Representation of sample 1



**Diagram 2** Representation of sample 1



**Diagram 3** Representation of sample 3



**Diagram 4** Representation of sample 3

Addressing this issue was caused by the finding that handball activity in Romania is crossed by an acute crisis of results, evidenced by the performance of increasingly weak especial at junior III, female.

Conclusions largely capture the order in which scientific investigations were conducted and are central elements of the working hypotheses that abundantly confirms.

A solid physical training underlying technical skill, tactical ability, mental preparation, context in witch can not be neglected relationship between physical training and other training components.

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**Titlu:** Contribuții privind îmbunătățirea pregătirii fizice la jucătoarele de handbal la nivel de juniori III.

**Cuvinte cheie:** handbal, pregătire fizică, modelare, model motric.

**Rezumat:** Creșterea intensă a performanțelor sportive pe plan mondial presupune perfecționarea permanentă a formelor organizatorice și metodologice de pregătire a sportivilor la acest nivel. În consecință, atenția specialiștilor este concentrată nu numai asupra perfecționării metodologiei antrenamentului sportiv la nivel de înaltă performanță, ci și asupra îmbunătățirii sistemului de pregătire a bazei de masă sportive, care asigură completarea fondului de selecție necesar reprezentativelor naționale.

Prin modelare înțelegem operația de studiere a fenomenelor cu ajutorul modelelor. Modelul este un sistem material sau teoretic care reproduce, la altă scară, structura (elemente și relații dintre ele) unui alt sistem pe care ne propunem să-l cunoaștem.

**Titre:** Contributions à l'amélioration de physique joueurs de handball de formation à la III Junior

**Mots-clés:** handball, l'entraînement physique, la modélisation, dirigée par les modèles.

**Résumé:** dans le monde entier intensif de sport de performance nécessite une amélioration continue des formes d'organisation et de la formation méthodologique des athlètes à ce niveau. En conséquence, l'attention est axée non seulement sur les professionnels à améliorer la méthodologie d'entraînement sportif à haute performance, mais aussi sur l'amélioration du système de formation des sportifs de table de base, qui prévoit l'achèvement représentativelor nécessaires sélection de fonds nationaux.

En modélisant le fonctionnement de comprendre l'étude des phénomènes avec des modèles. Le modèle est un matériau théorique ou de reproduire, dans une autre échelle, la structure (éléments et relations entre eux) à un autre système que nous avons l'intention de le connaître.