

## IDENTIFICATION THE LEVEL OF DEVELOPMENT OF MOTOR INDICES AT THE LEVEL OF JUNIORS FEMALE HANDBALL TEAMS

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### **Abstract**

Puberty represents the period in which athletes go through many changes from a physical, morpho-functional and psychological point of view. Also, in the age range between 13-14 years, the training of athletes registers a gradual increase in the volume and intensity of training, which determines special attention on the methods and means used during training. This study was carried out with the aim of identifying the level of development of the motor indices directly involved in the practice of the handball game. The research methods used during this study were: the method of analyzing specialized and interdisciplinary literature, the pedagogical observation method, the statistical-mathematical method and the tabular method. Following the study, we would like to emphasize the urgent need to update the performance scales specific to the game of handball and develop unitary training models, from the perspective of the content of the training process for each age group.

**Keywords:** *handball, motor potential, physical training, puberty*

### **Introduction**

Currently, sports performance is the field with the highest level of interest in terms of the dynamics of international scientific research in the field of sports, it being possible to expose multiple approaches in this direction (Dobre, Mereuță, & Grigore, 2019).

The constantly changing ideals of the modern society in which we live can generate negative influences among children on mental health, characterized by a high

degree of stress, exaggerated emotional reactions, reduced cognitive activity, inappropriate behaviors in the educational and social environment (Burlui & Moiescu, 2022).

The subject of "puberty" has been analyzed by a number of authors, being considered a particularly complex phenomenon, each expressing their own conceptions of what puberty is, at what age it occurs, its duration and the changes it produces in the body with her debut.

Amber, G. (2013), describes puberty as a process in which children undergo physical and sexual maturation that includes primary and secondary sexual development, accelerated growth in height and weight, and body changes. The same author (2013) points out that, crucially, these biological changes occur in the context of a complex process of psychosocial and cognitive maturation.

From a biological point of view, the events that occur during this period are complex and include changes in the nervous and endocrine system, coordinating anthropometric and physiological changes, athletes requiring increased attention to morpho-functional development, due to the multiple transformations of the human body (Backes & Bonnie, 2019; Jordan, Mocanu, Mereuță, et al., 2021; Seger & Thorstensson, 2000).

Athletes during puberty require increased attention on morpho-functional development, due to the multiple transformations of the human body.

At the same time, Jordan, D. A., Mocanu, G. D., Mocanu, M. D. et al. (2021), characterizes the age range between 11-14 years as an aggressive one, and if the rapid growth of the bone system is not symmetrical and associated with the development of soft tissues, serious postural deficiencies may develop.

From a motor point of view, the pubertal period is favorable for the acquisition of motor structures, being considered one of the most favorable stages for the development of motor qualities.

The training of juniors during this period, specific to sports training, registers a gradual increase in the volume and intensity of training. In this sense, Epuran, M. (2003) recommends that at this stage the focus should be on the development of: mobility, coordination capacities and balance, general strength in order to create a

solid base for future accumulations of strength and power, endurance by continuing to develop aerobic capacity.

## Material and methods

*The purpose:* this study was carried out with the aim of identifying the level of development of the motor indices directly involved in the practice of the handball game by applying control samples with a high degree of applicability to the junior level.

*Hypotheses of the research:* we believe that by detecting the level of development of motor qualities in the segment of junior performance athletes III, we can obtain information regarding training programs in order to improve physical training and, implicitly, the training process customized to the motor structure specific to the game of handball.

*Subjects of research:* a number of 71 female subjects aged between 13-14 years old, members of 4 teams participating in the III National Junior Handball Championship, participated in the research. They supported a series of control tests in order to evaluate and establish the level of development of motor skills.

### Results:

Table 1. Performance of the research subjects in control tests to assess the motor indices

Control test	N	Arithmetic mean ( $\bar{X}$ )	Standard deviation (S)	Coefficient of variability ( $C_v$ )	ShapiroWilk Test	
					p > $\alpha$ ( $\alpha = 0.05$ )	W
<b>DMDOM (kgf)</b>	71	18.45	3.60	19.56%	0.00	0.86
<b>DMNON (kgf)</b>	71	14.56	2.72	18.74%	0.00	0.83

<b>ARMHD (m)</b>	71	27.38	2.75	10.08%	0.28	0.97
<b>FSG(no. repeat)</b>	71	18.50	2.56	13.88%	0.01	0.958
<b>RTCD (no. repeat)</b>	71	17.94	1.83	10.23%	0.00	0.93
<b>RTCF(no. repeat)</b>	71	27.80	2.12	7.63%	0.02	0.96
<b>SLL (cm)</b>	71	180.02	13.96	7.76%	0.72	0.98
<b>PNT (m)</b>	71	9.94	1.31	13.28%	0.09	0.97
<b>CMB (s)</b>	71	18.08	0.75	4.19	0.59	0.98
<b>TS (s)</b>	71	24.68	0.77	3.12%	0.05	0.96
<b>ALV30m (s)</b>	71	5.61	0.29	5.17%	0.51	0.98
<b>DTR (s)</b>	71	22.88	2.32	10.16%	0.01	0.95
<b>DRBJ30m (s)</b>	62	7.97	0.28	3.63%	0.04	0.93
<b>PCPT(s)</b>	9	16.51	0.49	3.01%	0.52	0.93

DMDOM - Dynamometry, dominant hand; DMNON - Dynamometry, non-dominant hand; ARMHD - Throwing the handball ball at distance; FSG - Pushups; RTCD – Crunches; RTCF-Extensions; SLL - Long jump from the spot; PNT - Pentasalt; CMB - "Combined"; TS - The sprint test; ALV30m-Speed running 30 m; DTR - Triangle movement; DRBJ30m- Dribbling between milestones 30 m; PCPT - Envelope"(goalkeepers only)

## Discussion

Taking into account the fact that in the handball the physical training it marks the entire training process, directly influencing the athletes' efficiency in training and competitions (Mihăilă, 2014), we must give special importance to physical training at this stage, this from being one of the most important factors in achieving sports performance.

After holding the control tests whose purpose was to identify the level of development of motor indices in 13-14-year-old sportswomen, we highlight the following:

- the control tests taken by the 71 sportswomen had a high degree of applicability;
- regarding the fulfillment of the performance scales, mentioned in the specialized literature for this age category, the research subjects failed to reach these values in three of the seven tests;
- regarding the motor indices, it was found that in six of the twelve control tests, the values of the coefficient of variability indicate an average level of homogeneity of the tested group, which represents a medium to high degree of scattering of the data around the average;
- the values of the Shapiro Wilk test, following the initial testing ( $p < 0.05$ ), reject the null hypothesis that the data are normally distributed, in the case of seven control samples (dynamometry, dominant hand; dynamometry, non-dominant hand; pushups, crunches, extensions, triangle movement, dribbling between milestones 30 m).

## **Conclusion**

Establishing a set of control tests that highlight the level of development of the indices corresponding to the basic motor qualities must be a permanent concern of the coaches, regardless of the performance segment in which they are active.

Also, the periodic evaluation of sportswomen provides us with objective data related to their training level, but also regarding the quality of the instructional-educational process, thus giving us the opportunity to intervene whenever necessary on the structure of the training plan.

Within the training program, the weight assigned to the development of dominant motor qualities for this age group differs according to the training period and stage.

We emphasize the imperative need to update the performance scales and develop unitary training models, from the perspective of the content of the training process for

each echelon, in relation to the requirements of current high-performance handball and the new game regulations.

Taking into account the information gathered from the specialized literature, as well as the aspects noticed in this study, we consider that didactic strategies for the development of motor skills represent a defining element of the practical activity in the training process for athletes in the sports training period.

Addressing all motor qualities in the training process is a strategy that can successfully contribute to ensuring a continuity of the instructional process, which will lead to the achievement of notable performances over time, not immediately, and lasting.

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