

## OPERATIONAL MODELS USED IN THE PHYSICAL TRAINING OF A JUNIOR BASKETBALL FEMALE TEAM

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**Abstract:** The physical preparation basic component of the sports training, marks the entire training process, determining the players performance, in both training and competitions. In sports activity, the development of the general motor skills is given by the level of physical training. The level reached today by the development of sports practice, like any activity with interdisciplinary characteristics, is permanently subject to a dynamic alert, leaving aside techniques and means to operate in training, because they do not correspond to the requirements for obtaining performances. The studies took place at CSS Craiova, concerning the junior team under 16 – who participates to the national junior championship. It started the development of science -based operational model that contained standardized means of preparation that would lead to a more efficient process. To verify the level of physical training achieved, we applied the specific motility tests of the Romanian Basketball Federation. The evolution of the results obtained by the players at the final test, compared to the initial test, confirms the hypothesis formulated, the operational models used during the study period being efficient in the direction of optimizing the preparation.

**Keywords:** *physical preparation, training, operational models, juniors.*

### Introduction

Sport is considered one of the most dynamic social activities that has as its major objective the improvement of the human being. The importance of physical training has always been in attention of the sport researches and coaches, because this part of training can make the differences in performance achievement. The fulfillment of the performance objective is conditioned in a large measure by a correct physical preparation, which means all the three respects which define it: The increase and the improvement of the physical qualities; The learning and the improving of a large variety of skills for the basic movements; the development of morphological and functional index of the body. [1] The methodological line in sports games aims to bring the training effort closer to the physiological requirements of the game. The level of these requirements is reflected by the values offered by the specialized studies. It has been observed that the training effort, especially in the juniors, is below the level of the match and as such should be raised to higher physiological levels and appropriate to the specifics of the basketball game. This attitude of correction, of permanent adjustment to the "physical reality" of the field, will be a determining factor for constant progress.[2] The non-specific means are determinant for acquisition and development of the skills for talented players.[3] Sometimes training tasks seem to produce perceptual-motor skills similar to competitive events, which can support the improvement of technical skills and physical

fitness.[4] So, following team sports activities with the most appropriate methods and variables can be one of the major challenges in contemporary research. [5]

### Purpose of research

The main purpose of this study is to highlight the efficiency of using, in the physical preparation of the 2nd - U16 Juniors, the operational models proposed by us.

### Research hypotheses

The use in the U16 basketball team training of the operational models for the physical training, designed in accordance with the particularities of age, level of preparation and the material conditions, can cause a significant increase of the performance capacity of the team and implicitly obtaining superior results.

### Materials and methods

The practical importance of the work is given by the proposed strategy, by the system of means to operate and especially by the obtained results.

We used a set of operational models for the physical training of the team.

The operational models used in the physical training of the juniors:

12 operational models for developing reaction speed and execution speed; 17 operational models for developing reaction and repetition speed; 7 operational models for the development of general resilience; 11 operational models for the development of specific resilience; 12 operational models for force development; 11 operational models for skill development; 15 operational models for standing reach development.

Each operational model was codified.

**The objectives of the study were the following:**

Finding the players' level of physical training , following the Romanian Basketball Federation unique control tests;

The creation of the physical training program and of the operational models necessary in the players' process of sports training;

Arguing and verifying the efficiency of the operational models used in the preparation.

**Control tests used:**

To verify the level of physical training achieved, we applied the specific motility tests of the Romanian Basketball Federation:

TEST 1: 30 m dash –a single maximum sprint starting from a stationary position.

TEST 2: Shuttle run test

TEST 3: Repeated jumps

TEST 4: Specific move in defense

TEST 5: shoot to the basket

TEST 6: Free throw

**Discussion**

A number of 12 players from CSS Craiova, under-16 age group, who participate with the team in the national championship were tested.

The two tables below show the result of the players at six tests (initial and final tests). It is also, a table with comparison between the results of the two tests.

We analyzed the results of the two tests on each test, and we will, finally, do a comparative analysis of the two tests to highlight the evolution of the results (and implicitly of the athletes tested) and to find out to what extent the drive systems used have proven justice. In parallel with the analysis of the results obtained in the tests targeting the motor qualities, we considered it useful to refer also to the two technical tests, precisely to see the degree of stability of the technique in psycho-physical stress regime, conferred by the content of the test itself, but also of the psychic load specific to the test.

**Table no. 1  
Results obtained in the initial test**

No.	Surname /Name	Test1 30 m dash	Test2 Shuttle run test	Test 3 Repeate d jumps	TEST 4: Specific move in defense	TEST 5: shoot to the basket	TEST 6: Free throw
1	B.D.	5,1	24,4	7	18,2	6	4
2	C.L.	5,0	25,0	4	17,5	6	4
3	C.D.	4,8	24,8	2	17,9	8	5
4	D.K.	5,1	24,5	5	18,1	7	5
5	G.A.	4,9	24,8	1	18,7	10	6
6	J.A.	4,9	24,3	7	17,8	11	7
7	L.I.	4,7	24,3	4	18,8	7	6
8	M.A.	5,3	25,3	8	18,9	10	6
9	M.A.	5,3	25,4	2	18,5	9	5
10	T.S.	4,7	24,2	9	17,7	10	6
11	Z.D.	4,8	25,1	6	17,6	7	4
12	Z.L.	4,9	24,8	7	17,5	8	5
<b>X</b>		<b>4,96</b>	<b>24,74</b>	<b>5,17</b>	<b>18,10</b>	<b>8,25</b>	<b>5,25</b>
<b>S</b>		<b>0,21</b>	<b>0,41</b>	<b>2,59</b>	<b>0,52</b>	<b>1,71</b>	<b>0,97</b>
<b>Cv</b>		<b>4,17</b>	<b>1,64</b>	<b>50,09</b>	<b>2,85</b>	<b>20,75</b>	<b>18,39</b>
<b>Me</b>		<b>4,9</b>	<b>24,8</b>	<b>5,5</b>	<b>18</b>	<b>8</b>	<b>5</b>
<b>W</b>		<b>0,6</b>	<b>1,2</b>	<b>8</b>	<b>1,4</b>	<b>5</b>	<b>3</b>

**Table no. 2  
Results obtained in the final test**

No.	Surname /Name	Test1 30 m dash	Test2 Shuttle run test	Test 3 Repeated jumps	TEST 4: Specific	TEST 5: shoot to the basket	TEST 6: Free throw
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					move in defense		
1	B.D.	4,9	24,5	7	17,6	7	6
2	C.L.	4,8	24,8	4	17,5	7	5
3	C.D.	4,6	24,7	3	17,1	10	6
4	D.K.	5,0	24,5	6	18,0	9	6
5	G.A.	4,9	24,6	2	18,4	10	6
6	J.A.	4,5	24,1	8	17,4	11	7
7	L.I.	4,6	24,3	5	18,4	8	7
8	M.A.	5,2	25,2	9	18,6	11	9
9	M.A.	5,3	25,3	3	18,3	12	7
10	T.S.	4,6	24,2	9	17,0	13	7
11	Z.D.	4,7	25,2	7	17,4	7	5
12	Z.L.	4,7	24,6	8	17,4	9	6
<b>X</b>		<b>4,82</b>	<b>24,67</b>	<b>5,92</b>	<b>17,76</b>	<b>9,50</b>	<b>6,42</b>
<b>S</b>		<b>0,25</b>	<b>0,40</b>	<b>2,47</b>	<b>0,55</b>	<b>2,02</b>	<b>1,08</b>
<b>Cv</b>		<b>5,22</b>	<b>1,61</b>	<b>41,69</b>	<b>3,12</b>	<b>21,29</b>	<b>16,89</b>
<b>Me</b>		<b>4,75</b>	<b>24,6</b>	<b>6,5</b>	<b>17,55</b>	<b>9,5</b>	<b>6</b>
<b>W</b>		<b>0,8</b>	<b>1,2</b>	<b>7</b>	<b>1,6</b>	<b>6</b>	<b>4</b>

Table no. 3  
Results obtained by the athletes in the 2 tests

Test	Initial test					Final Test					Test t (Student)
	X	S	Cv	Me	W	X	S	Cv	Me	W	
Test 1 30 m dash	4,96	0,21	4,17	4,9	0,6	4,82	0,25	5,22	4,75	0,8	3,525
Test 2 Shuttle run test	24,74	0,41	1,64	24,8	1,2	24,67	0,40	1,61	24,6	1,2	2,343
Test 3 Repeated jumps	5,17	2,59	50,09	5,5	8	5,92	2,47	41,69	6,5	7	- 5,769
Test 4 Specific move in defense	18,10	0,52	2,85	18	1,4	17,76	0,55	3,12	17,55	1,6	4,802
Test 5 shoot to the basket	8,25	1,71	20,75	8	5	9,50	2,02	21,29	9,5	6	-
Test 6 Free throw	5,25	0,97	18,39	5	3	6,42	1,08	16,89	6	4	-

**Speed run- 30 m dash**—a single maximum sprint starting from a stationary position

It was found a higher average value of the final result (4.82 sec.) than the initial one (4.96 sec.) with 0.14 sec.

From the point of view of the individual results, 10 of the players obtained results superior to the initial test and 2 kept their result at the same level, for the final test.

The amplitude at the final test increased by 0.2 sec. (from initial  $W = 0.6$  sec to final  $W = 0.8$  sec).

The values of the coefficient of variability indicate a homogeneous group both at the initial test ( $Cv = 4.17$ ) and at the final test ( $Cv = 5.22$ ).

The calculated value of the index  $t$  is 3,525. This value is greater than the value of 3.10 at the 0.01 threshold at  $f = n-1$ , from Fisher's Table. The difference is significant, so the null hypothesis is rejected and we can say with a probability of over 99% that the speed has increased significantly during the period studied by us.

#### **Shuttle**

If at the initial test the mean value was 24.74 sec., at the final test a significantly higher average value was recorded at 24.67 sec.

Eight of the players obtained at the final test results superior to the initial test, three of them kept the result at the same level and only one player obtained a lower result than the initial test.

The amplitude has the same value in both tests ( $W = 1.2$  sec.).

The values of the homogeneity parameters show a homogeneous group both at the initial test ( $Cv = 1.64$ ) and at the final test ( $Cv = 1.61$ ).

The calculated value of  $t$  is 2,343. This value is greater than 2,201 at the significance threshold 0.05 at  $f = n-1$ . The difference is significant, the null hypothesis is rejected and we can say with a probability of over 95% that the athletes' speed in resistance regime increased significantly during the period studied.

#### **Repeated jumps**

Compared to the initial test, the average score obtained is higher in the final test (5.92 compared to 5.17 jumps).

From the point of view of the individual results, 10 players obtained superior results at the final test compared to the initial one and 2 maintained their result.

The amplitude decreased at the final test by 1 point (from initial  $W = 8$  to final  $W = 7$ ).

The values of the coefficient of variability indicate a lack of homogeneity both at the initial test ( $Cv = 50.09$  sec.) and at the final test ( $Cv = 41.69$  sec.).

Regarding the variable  $t$ , the calculated value is less than 0.260 at the significance threshold 0, 8 at  $f = n-1$ . We find that the difference insignificant and we can say that the force in speed did not make significant progress during the period studied.

#### **Specific movement in defense**

At the initial testing the average value was 18.10 sec., and at the final test an average value was higher than 17.76 sec. Improvements in individual performances were observed in 11 players out of 12 and one player maintained his result.

The amplitude increased from the initial  $W = 1.4$  sec. to the final  $W = 1.6$  sec.

The values of the coefficient of variability indicate a homogeneous group both at the initial test ( $Cv = 2.85$ ) and at the final test ( $Cv = 3.12$ ).

The calculated value of the index  $t$  is 4,802. This value is greater than the value of 3.10 at the 0.01 threshold at  $f = n-1$ , from Fisher's Table. The difference is significant, so the null hypothesis is rejected and we can say with a probability of over 99% that the players have made a significant progress in the specific movement test in defense

#### **Shooting to the basket**

Compared to the initial test, the average score obtained is higher in the final test (9.50 throws versus 8.25 throws). Regarding the individual results, 10 of the players obtained superior results in the final test and two maintained their result.

The amplitude increased at the final test by 1 point (from initial  $W = 5$  to final  $W = 6$ ).

The values of the coefficient of variability indicate a non-homogeneous group both at the initial test ( $Cv = 20.75$ ) and at the final test ( $Cv = 21.29$ ).

#### **Free throws**

Compared to the initial test, where the average value was 5.25, at the final test the studied players registered a higher average value of 6.42 throws.

From the point of view of the individual results 10 of the players obtained at the final test results superior to the initial test, and 2 kept their result at the same level.

The amplitude increased at the final test by 1 point (from initial  $W = 3$  to final  $W = 4$ ).

The values of the coefficient of variability indicate an average homogeneity both at the initial test ( $Cv = 18.39$ ) and at the final test ( $Cv = 16.89$ ).

#### **Conclusions**

Many authors affirm that during the basketball training, the players experienced similar physical demands and physiological answers to performed offensive or defensive exercise [6].

Improving the physical condition are essential for a good basketball performance throughout the season [7].

The evolution of the results, obtained by the players at the final test, compared to the initial test confirms the formulated hypothesis, the operational models used during the study period being efficient in the direction of optimizing the preparation.

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