# PHYSICAL TRAINING OPTIMIZATION STRATEGIES FOR JUNIOUR BASKETBALL PLAYERS U13

**Sorin TURCU[1], Dorina ORŢĂNESCU[2], Marian Costin NANU[2]**
[1]*National University of Physical Education and Sports, Bucharest, Romania*
[2] *University of Craiova, Romania*

**Abstract:** Introduction.Good physical preparation ensures proper development of all crucial motor abilities for future value realization in a women's basketball player. Initially, specific motor skills will develop by means of multilateral and specific physical preparation in accordance with the needs of movement during gameplay. It is recommended that most means of physical training should be focused on specific implementation structure elements or similar structure elements. The coach must train those particular muscles that are required in basketball but differentiated according to the needs mainly determined by the time evolution of the athlete.
Results. Introducing new motor control tests lead to an increase of the physical training level inwomen's junior basketball players and standardization to the requirements imposed by the RBF.
Conclusions.A continuous increase in the level of basketball performance ever since junior level requires careful monitoring, in particular of the level of physical training, which must be in line with continuous technical and tactical changes in the game.
**Keywords:** basketball, junior, physical training, motor skills

***Introduction***

The level of sports practice development reached today, like any activity with interdisciplinary characteristics, is subject to dynamics alerts, leaving aside techniques and means with which training are performed, because they no longer meet today's requirements for obtaining high performance (Simon, G. Mikhail, I Stanculescu, G., 2011).

We may say that the trend of technical and tactical value levelling currentlyobserved in high-performance sport and owed to training methods prevalence, gives physical value its original size only to the extent that it can make a difference. The base of the specific content of training is the physical training of the athlete (Tudor, V., 1999). After its exact orientation, it is a process of physical education required in sports. Meanwhile, the physical training of athletes is inextricably linked to the increase in the general level of functional possibilities of the body and multilateral physical development.

A basketball player must have all motor skills joined together as harmoniously as possible, or compensated. This follows throughout the training process. If the time is insufficient or the athlete is lacking certain qualities, the focus will be on improving skills and speed in close correlation with the ability to acquire necessary motor gameskills (technicality).

Anyway we look at the basketball game with its tactics, it is primarily a contest of physical possibilities and then of other possibilities, which it conditions (Predescu, T., Ghițescu, G., 2001). The originality of motor skills forms of expression and combination (conditional: speed, strength, stamina, coordinative, intermediate: flexibility) specific to the game must be found in its motor structure, in the specific of the competition or of every motor skill, that is in every sole technique.

In basketball, some authors argue that specific effort is supported by resistance which should act as a matter of speed, strength and skill, while others claim that coordinative skills are important as in speed, strength, force.

Predescu, T., Ghițescu, G. (2001) believes that force is an important factor in certain phases of the game, e.g.counterattack (speed is still prevailing) and is indispensable during other phases, like defence. The same authors identify and confirm the need ofstrength optimal indices for each position in the team (the centre: accuracy and spatial orientation as in speed and force, and for the positions ofthe small forward and point guard: speed as in skill and strength).

Mr.Colibaba-Evuleț (2007) argues that "underlying strength is the quality of basketball players' specific physical preparation".

***Method***

For our efforts we started from the following hypothesis: assessing the level of development of motor skills in women's junior basketball players by motor tests configures a full and

objective picture about individually or in general acting directions of the team.

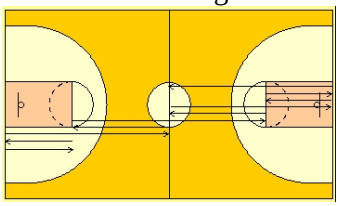
The research was conducted within the training lessons of the CSS Craiova. I hereby mention that five workouts were performed each week, throughout the period of the experiment. The research included a sample composed of 24 subjects, female, aged 12-13 years old, without health problems. An experimental and a control groupwere established.

Mandatory RBFcontrol tests are represented by 5 tests that evaluate both motor and technical and tactical players' potential. These tests are also effective means of athlete training and should be used during practice.

**1.Speed** - Running 30 m flat with standing start.

**2. Vertical detention** - Measuring the height of the athlete with her arm extended, the athlete standing with her back attached to the wall and her arm sticking up. You measure the detention place with detachment on two legs. The result is given in centimetres difference between the points touched with your fingers and outstretched arm height.

**3. Little marathon** - the player must complete the route described in the figure:



**4. Specific on site test**

**5. Free throwing**

12 free throws are done. The player starts the race from the bottom line and runs to the centre line and back to the free throw line, throwing two sets of 3-2-1 throws. Between series the player runs to the centre and back. The final result of the test is the number of hits scored. The testis done once.

Besides these RF imposed basketball tests, we found it necessary to complete the series of tests with 4 tests to help increase the level of development of motor skills.

**1. Standing Long Jump**

**2. Speed race with change of direction**

Trace a route as a rhombuswitha 3 m side. The test is as follows: at the signal the performer runs from point 1 to point 2,3,4 found at the rhomb tips changing direction each time; when getting back to point 1, the athlete will pivot and resume the race in reverse, passing successively through points 5,6,7 and 8. Timing is carried round trip.

**3. Shuttle**

Draw two lines 10m away from one another and tangent to each line, two circles with a diameter of 0.50 m. In a couple of circles the athlete is placed with his soles in each circle. In each circles in fronta 15-20 cm cube is placed. At the signal, the athlete speeds for one of the circles, raises the cube and puts it in the starting circle, goes back, lifts the other cube and places it in the empty circle. Timing is made from the start to theplacement of the second cube. The cubes should not be discarded but arranged inside the circles.

**4. Dribbling running through poles with slam dunk while running**

From the bottom line, while dribbling, the athleteruns to a group of three poles placed at 2m from the side line and disposed 3 m one from the other. Then crossesthe field dribbling passing through another three poles group, arranged at the same distance apart as the first group; drives toward the basket and throws a shot. Timing is done from the first movement of the student until the ball touches the basketball backboard.

***Results***

***Tableno 1Results obtained at the standard tests (RBF) by the experimental sport group***

| No | Year of birth | Size | Position | 30 m sec | Detentioncm | Small marathon sec | Specific test | Free throws |
|---|---|---|---|---|---|---|---|---|
| 1 | 2001 | 165 | E | 5,1 | 31 | 26,7 | 8 | 6 |
| 2 | 2001 | 167 | E | 5,1 | 28 | 27,5 | 9 | 5 |
| 3 | 2002 | 164 | E | 4,9 | 35 | 26,8 | 7 | 7 |
| 4 | 2001 | 165 | E | 5,0 | 34 | 26,4 | 8 | 3 |
| 5 | 2001 | 162 | E | 5,2 | 27 | 27,5 | 9 | 9 |
| 6 | 2001 | 163 | F | 5,0 | 35 | 25,8 | 8 | 6 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 7 | 2002 | 160 | F | 5,1 | 30 | 24,9 | 9 | 6 |
| 8 | 2002 | 162 | F | 4,7 | 33 | 25,9 | 10 | 9 |
| 9 | 2001 | 168 | F | 4,7 | 33 | 26,6 | 8 | 8 |
| 10 | 2003 | 180 | P | 6,0 | 24 | 27,9 | 8 | 2 |
| 11 | 2001 | 173 | P | 5,7 | 29 | 27,5 | 5 | 7 |
| 12 | 2002 | 172 | P | 5,3 | 33 | 26,9 | 7 | 4 |

***Table no 2Results obtained at the standard tests (RBF) by thecontrol sport group***

| No | Year of birth | Size | Position | 30 m sec | Detentioncm | Small marathon sec | Specific test | Free throws |
|---|---|---|---|---|---|---|---|---|
| 1 | 2001 | 167 | E | 5,2 | 28 | 28,3 | 7 | 4 |
| 2 | 2002 | 163 | E | 5,2 | 31 | 27,8 | 6 | 4 |
| 3 | 2001 | 166 | E | 5,0 | 34 | 26,7 | 4 | 3 |
| 4 | 2002 | 165 | E | 5,2 | 27 | 28,4 | 7 | 5 |
| 5 | 2002 | 162 | E | 5,3 | 28 | 29,5 | 5 | 6 |
| 6 | 2001 | 164 | F | 5,1 | 27 | 25,3 | 4 | 4 |
| 7 | 2002 | 158 | F | 5,1 | 28 | 28,5 | 2 | 6 |
| 8 | 2002 | 161 | F | 5,0 | 24 | 26,4 | 3 | 1 |
| 9 | 2001 | 164 | F | 4,8 | 28 | 26,5 | 5 | 4 |
| 10 | 2002 | 172 | P | 5,8 | 25 | 32,6 | 7 | 4 |
| 11 | 2001 | 175 | P | 6,0 | 26 | 31,8 | 6 | 4 |
| 12 | 2001 | 169 | P | 5,4 | 30 | 30,2 | 4 | 3 |

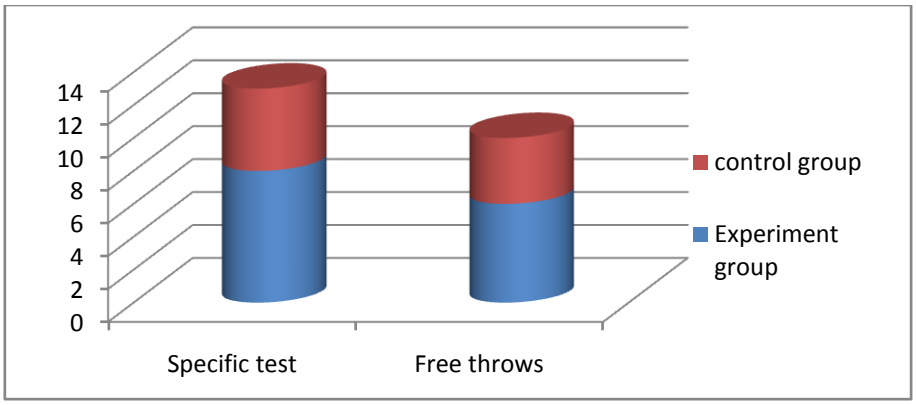



*Fig.1. Comparative results in motor tests: Specific test, free throws (Experiment group – control group)*

For the two groups to undergo experiment (the experimental group and the control group) the main statistical indicators were calculated (arithmetic degree, standard deviation, variability coefficient) for standard tests, the ones proposed by the RBF:

**1. Speed 30m**. The arithmetic average degree of the experimental group at the initial testing is 5.15 sec and of the control group is 5.26 sec, recording a difference of 0.11 sec. Standard deviations for this test is $S_e$ = ±0.38, respectively $S_c$ = ± 0.34. The coefficient of variation, through its values in the experimental group (Cv = 7%) and control group (Cv = 6%) indicate a small scattering of the results from the average, thus a high homogeneity of the group.

**2. Detention**. The arithmetic average degree of the experimental group at the initial testingis 31 cm and of the control group is 28 cm, recording a difference of 3 cm. Standard deviations for this test is $S_e$ =± 3.46, respectively $S_c$ = ± 2.70. The coefficient of variation, throughits values in the experimental group (CV = 11%) and control group (CV = 10%) indicate a rather small scattering of results from the average, thus a fairly large group homogeneity.

**3. Little marathon**. The arithmetic average degree of the experimental group at the initial testingis 26.70 sec and of the control group is

28.50 seconds, recording a difference of 1.8 sec. Standard deviations for this test is$S_e$ = ± 0.86, respectively $S_c$ = ± 0.22. The coefficient of variation, throughits values in the experimental group (Cv = 3%) and control group (Cv = 8%) indicate a small scattering of results from the average, thusa high homogeneity of the group.

**4. Specific evidence**. The arithmetic average degree of the experimental group at the initial testingis 8 points, while for the control group was 5 points, registering a difference of 3 points. Standard deviations for this test is $S_e$ = ±1.28, respectively $S_c$ = ± 1.65. The coefficient of variation, throughits values in the experimental group (CV = 16%) and control group (CV = 33%) indicate a scattering medium or high results from the average, thus a homogeneous medium or small group.

**5. Free throws**. The arithmetic average degree of the experimental group at the initial testingis 6 and for the control group is 4, registering a difference of 2 successful throws. Standard deviations for this test is $S_e$ = ± 2.22, respectively $S_c$ = ± 1.35. The coefficient of variation, throughits values in the experimental group (CV = 37%) and control group (CV = 34%) indicates a high degree of dispersion of results from the average, thus a small group homogeneity.

***Table no 3Results obtained at the non-standard tests (RBF) by the experimental sport group***

| No | Year of birth | Size | Position | Standing Long Jump cm | Speed race with change of direction sec | Shuttle sec | Dribbling through poles with slam dunk Sec |
|---|---|---|---|---|---|---|---|
| 1 | 2001 | 165 | E | 168 | 25,2 | 11,3 | 27,5 |
| 2 | 2001 | 167 | E | 177 | 25,0 | 11,1 | 28,1 |
| 3 | 2002 | 164 | E | 171 | 25,4 | 10,9 | 27,4 |
| 4 | 2001 | 165 | E | 176 | 26,3 | 11,6 | 26,3 |
| 5 | 2001 | 162 | E | 164 | 25.0 | 11,5 | 26,1 |
| 6 | 2001 | 163 | F | 173 | 24,2 | 9,8 | 25,3 |
| 7 | 2002 | 160 | F | 173 | 24,1 | 10,7 | 28,0 |
| 8 | 2002 | 162 | F | 159 | 25,5 | 11,7 | 27,0 |
| 9 | 2001 | 168 | F | 174 | 23,9 | 10,8 | 27,4 |
| 10 | 2003 | 180 | P | 158 | 26,1 | 13,0 | 29,5 |
| 11 | 2001 | 173 | P | 163 | 25,4 | 11,9 | 28,3 |
| 12 | 2002 | 172 | P | 160 | 26,3 | 12,5 | 29,1 |

***Table no 4Results obtained at the non-standard tests (RBF) by thecontrol sport group***

| No | Year of birth | Size | Position | Standing Long Jump cm | Speed race with change of direction sec | Shuttle sec | Dribbling through poles with slam dunk sec |
|---|---|---|---|---|---|---|---|
| 1 | 2001 | 167 | E | 160 | 26,5 | 12,25 | 28,1 |
| 2 | 2002 | 163 | E | 157 | 27.1 | 12,7 | 27,9 |
| 3 | 2001 | 166 | E | 167 | 26.7 | 12,2 | 28,4 |
| 4 | 2002 | 165 | E | 170 | 27.1 | 12,8 | 27,5 |
| 5 | 2002 | 162 | E | 160 | 26.4 | 12,9 | 26,7 |
| 6 | 2001 | 164 | F | 155 | 26,1 | 10,25 | 28,8 |
| 7 | 2002 | 158 | F | 164 | 24,5 | 10,5 | 26,7 |
| 8 | 2002 | 161 | F | 152 | 25,3 | 11,25 | 27,6 |
| 9 | 2001 | 164 | F | 160 | 24,5 | 12,1 | 27,8 |
| 10 | 2002 | 172 | P | 158 | 27,7 | 13,75 | 28,7 |
| 11 | 2001 | 175 | P | 155 | 28,0 | 13,2 | 29,9 |
| 12 | 2001 | 169 | P | 162 | 28,1 | 13,1 | 29,1 |

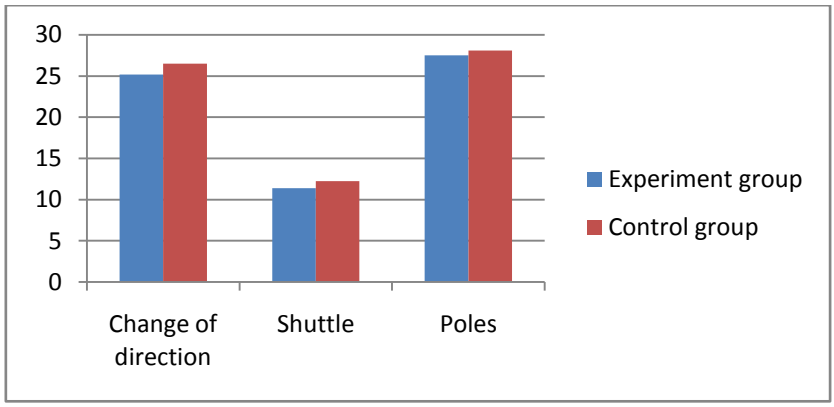



*Fig.2. Comparative results during non-standard motor tests (experiment group – control group)*

For the two groups to undergo experiment (the experimental group and the control group) the main statistical indicators were calculated (arithmetic degree, standard deviation, variability coefficient) for non-standard tests:

**1. Standing Long Jump**. The arithmetic average degree of the experimental group at the initial testingis 168 cm and for the control group is 160 cm, recording a difference of 8 cm. Standard deviations for this test is $S_e$ = ± 6.92, respectively $S_c$ = ± 5.19. The coefficient of variationthrough its values in the experimental group (CV = 4%) and control group (Cv = 3%) indicate a small scattering of results from the average, thus a high homogeneity of the group.

**2. Speed race with changes of direction**. The arithmetic average degree of the experimental group at the initial testingis 25.2 sec and for the control group is 26.5 sec, registering a difference of 1.3 sec. Standard deviations for this test is $S_e$ = ± 0.82, respectively $S_c$ = ± 1.23. The coefficient of variationthroughits values in the experimental group (Cv = 3%) and control group (CV = 5%) indicate a small scattering of results from the average, thus a high homogeneity of the group.

**3. Shuttle**. The arithmetic average degree of the experimental group at the initial testingis 11.4 sec and for the control group is 12.25 sec, registering a difference of 0.85 sec. Standard deviations for this test is $S_e$ = ± 0.85 respectively $S_c$ =± 1.08. The coefficient of variationthroughits values in the experimental group (Cv = 7%) and control group (Cv = 9%) indicate a small scattering of results from the average, thus a high homogeneity of the group.

**4. Dribbling through poles with slam dunk**. The arithmetic average degree of the experimental group at the initial testingis 27.5 sec and for the control group is 28.1 sec, registering a difference of 0.6 sec. Standard deviations for this test is $S_e$ = ± 1.22, respectively $S_c$ = ± 0.95. The coefficient of variation throughits values in the experimental group (CV = 4%) and control group (Cv = 3%) indicate a small scattering of results from the average, thus a high homogeneity of the group.

***Conclusions***

Substantiating and reconsidering future basketballplayers training methodology, from junior level can currently be achieved only based on an interdisciplinary research that can provide practice with more effective horizons and operational strategies. The continuous increase in the level of performance in basketball since junior level and the extent that this discipline currently has requires careful studies to assess and monitor developments, especially in the physical training that need to be consistent with technical and tactical continuouschanges in the game.

***References:***

[1]. Colibaba, Evuleț, D., (2007), Praxiologieşiproiectarecurricularăîneducaţiefizicăşi sport, EdituraUniversitaria, Craiova (Praxiology and curriculum design in physical education and sport)

[2]. Predescu, T., Ghițescu, G., (2001), *Baschet – Pregătirea echipelor de performanță,* Editura Semne,
Bucureşti(Basketball – Training performance teams)

[3]. Simion, G., Mihăilă, I, Stănculescu, G., (2011), *Antrenamentsportiv. Concept sistemic*, Editura University Press, Constanța (Sports practice. Systemic concept)

[4]. Tudor, V. (1999),
*Capacităţile condiţionale, coordinative şi intermediare – componente ale capacităţiimotrice*, Editura RAI, Bucureşti (Conditional, coordinative and intermediary skills – components of motor skills)