

## PROFESSIONAL ARTICLE

**Dejan Ceremidzic,**

Faculty of Physical Education and Sport; Pale

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### DIFFERENCES IN MOTOR ABILITIES OF BASKETBALL AND FOOTBALL CADET SELECTION

#### Summary

*This research was conducted in order to determine the current level of motor skills of basketball players selected in the cadet representation of Bosnia and Herzegovina and the football cadets of the School of Football "Olimp" from Pale who play in the cantonal league of BiH, as well as the differences between the two groups of respondents. The research included basketball players from the best basketball clubs from the Republic of Srpska and the Federation of Bosnia and Herzegovina. The total sample of the respondents is 16 selected basketball players and 12 selected players. After statistical data processing, the results of the study showed that there are statistically significant differences in all motor skills between the two groups of subjects. The results of the cadet basketball team of BiH are compared with the cadet selection of OKK Zvezda and cadets of lower rank of the competition. Comparative inspection of the results of the cadets of BiH with the selection of the combined cadet and junior selection of OKK Zvezda found that the results at a similar level ie, that they do not differ, while the difference between cadets of BiH and cadets of the lower rank of the competition is statistically significant.*

**Key words:** motor skills, basketball players, football players, differences

#### INTRODUCTION

Cadets are called young men aged 14 to 16, and this is the period of middle age, the period of puberty and adolescence. In this period, growth and development are slower. Growth in height slows down, and growth grows in width, and the body proportions are equalized. Grafting is nearing completion, muscle tone increases, functional muscle properties become similar to the characteristics of an adult person. The heart muscle becomes stronger, decreasing the discrepancy between the mass and the volume of the heart. The balance in the development of individual organs and organic systems is established. In this period, the foreseen model of football and basketball games should be adopted in the most basic elements. In physical preparation, the work is focused on the development of motor and functional abilities, especially those whose sensitive phases are in progress (speed, coordination, balance). Aerobic and anaerobic endurance are developing, and the development of endurance in speed and strength begins.

When it comes to the topic of this paper which analyzes the aptness and speed of young basketball players and footballers and research on this topic, we have consulted some similar works, for example, Jukić et al. (2003) report that one player on average jumps 30 to 65 times

during a single match. Ercul et al. (2004) quotes Gorjan's findings that jumps of both legs are dominant in basketball and are used in 86% of cases. One-off jumps, according to Gorjan's results, are used in 14% of cases. Jump up from the legs of both legs is used mainly after a shot from the opponent or after a free throw from the opponent, in the event of a jump from the spot and attempts to block the shot (Erčulj et al., 2004).

A jump with both legs from a snap to two contacts is a jump performance in a specific way, characteristic of basketball, although a similar jump technique is used in football when switching to a duel game with head-to-head strokes. The basic characteristics of this jump are higher: one step ahead, mostly in advance; drawing the other leg into the jump position only when the leg with which the spike was made has reached contact with the ground; reflects both legs after attracting the other leg and making contact with the ground with the other leg. The advantage of this jump is good jump control and a bit longer preparation time for the jump that allows the situation to be assessed. The main drawback of this jump is quitting a reactive muscular contraction. This type of jump is used after a shot from the game or after a free throw, in the case of a jump of shot, attempts to block the shot and after the referee's failure (Erčulj et al., 2004). A jump high with both legs from a snap in one contact is another, for a basketball very characteristic jump up. In football it is used in golman techniques as well as in a duel game at break. Its basic properties are: Running with one foot in a shot, mostly in advance; attracting the other leg already during the flight phase to the position of the spin-throw; simultaneously making contact with the ground with both feet just before the jump up; jump up immediately after reaching both legs simultaneously. The advantage of this jump is the use of reflex muscular contraction and, therefore, a somewhat stronger jump up. The disadvantage of this jump is that due to the very short phase of contact with the ground before the jump is high, slightly weaker control of the jump (balance) and lack of time to assess the situation. Practically, the situation must be assessed before starting the preliminary rebound in advance. This type of jump is mainly used in the case of a jump for a ball after a previously failed jump, a jump for a ball after a missed shot under the basket, in case of a jump of jumps and jumps in order to arrive in the possession of the ball after a halting stop (Erčulj et al., 2004). Jump with one foot from running is used in basketball when shooting after a break, or when jumping right after running (Erčulj et al., 2004). In football, this kind of jump technique is used for head-to-head scrambling.

Similar research was conducted by Fratric and Starovlah (2008) in the work of the difference in the functional and motor skills of young footballers, basketball players and volleyball players, Vukotić and Mušović (2011) in the work of the difference in motor and functional abilities for football players and handball players aged 13 to 15 years.

The subject of this paper is the motor skills of the basketball cadet representation of Bosnia and Herzegovina and the selected footballers who perform in the cantonal league of BiH.

The aim of the research was to determine the differences between footballers and cadet cadets.

## **METHOD OF WORK**

### **Sample respondents**

The sample of the respondents consisted of 16 basketball players from the cadet national team of Bosnia and Herzegovina and 12 cadets playing in the cantonal league of Bosnia and Herzegovina. All respondents are in the training process for at least five years and the tests, which form an integral part of any more serious plan and program of work, have been done voluntarily.

### **Sample variables**

The choice of variables was based on the object and purpose of the research. For the assessment of the motor skills of these selected basketball players and cadet footballers in

this study, five tests of motor skills and three specific test capabilities were used. The following areas were tested:

- Acceleration at 20 m expressed in squares.
- Speed of change of direction and direction of movement expressed in scandals.
- Speed of change of direction and direction of movement with aspects of aerobic endurance expressed in scandals.
- Maximum height when jumping in height expressed in centimeters
- The maximum height of the ordinary jump upwards after the spike in two contacts expressed in centimeters;
- The maximum height of the ordinary jump upwards after the spike in one contact expressed in centimeters;
- The maximum jumping height is one, with dominant legs up from the run expressed in centimeters;

The test battery is made up of standardized tests that were used in earlier research into the energetic and motor skills of athletes. The applied tests are divided into the group Basic tests and group Specific tests: M 20-running with 20m high start, TT-T test, K-kamikaze, ST-Vertical jump - Sardžent test, MSDM-Jump in long, SK2-Jump up from the nasa in two contacts, SK1-Jump up from the slip in one contact, SZ-Jump up one leg from the run

Tips and instructions given to respondents

Instructions for carrying out basic tests are common and standard and as for instructions for specific tests, all three tests are explained as an element of basketball game. Considering that the Jump jumps up from one of the two injuries in one or two contacts and jumps up one foot from the run, frequent basketball moves, respondents are told to jump naturally, that is, as during the game itself, while the footballers needed a little more repetition for reasons of less use of this structure of movement and jumping during the football game itself and, consequently, a lesser level of training in this way of preparation for jumping, because the technique in football is not limited and related to the rules of the game, as is the case in basketball. In relation to the test Jump up from the nascent to the two contacts, it is noted that one step is made first with a leg, and then after drawing the other leg, the jump is higher with the use of a swinging arm. It was noted that every respondent himself chooses with his foot to make a step forward, depending on the style, or individual habits. In relation to the test Jump up from the back of one contact, the respondents noted that the test is performed with both legs at the same time, and then the jump is performed higher and lower. In relation to the test Jump up with one leg from the start it was noted that the reflection is performed after a few steps of the run. The run was performed at an angle of about 40 ° with respect to the frontline of the terrain. Attention has been paid to the possibility of using a swing leg during the reflection.

## **RESULTS AND DISCUSSION**

### **Basic statistical parameters**

Table 1 shows the descriptive statistical parameters of the motor skills of basketball cadet selection in Bosnia and Herzegovina.

Table 1. Descriptive statistical parameters of motor skills of cadet basketball

Varijabla	N	Mean	Min.	Max.	Std.Dev.	Skew.	Kurt.
<b>M20</b>	16	3,25	3,00	3,72	0,20	0,93	0,32
<b>MTT</b>	16	10,20	9,44	10,95	0,44	-0,20	-0,97
<b>MKAM</b>	16	29,77	27,50	35,07	2,20	1,62	2,27
<b>MSAR</b>	16	52,62	39,00	70,00	7,68	0,50	0,65
<b>SZ</b>	16	71,25	53,00	85,00	9,66	-0,07	-0,85
<b>MSDM</b>	16	237,93	215,00	269,00	18,40	0,49	-1,16
<b>SK1</b>	16	50,06	35,00	70,00	8,60	0,34	0,85
<b>SK2</b>	16	54,00	45,00	80,00	9,27	0,92	0,60

Legend: N- number of respondents; Mean - arithmetic mean; Min. - minimum score; Max. - maximum score; Std.Dev. - standard deviation of the arithmetic mean; Skew - the asymmetry of the distribution curve; Kurt. - Flexibility of the results distribution curve..

Table 2 presents the descriptive statistical parameters of the motor skills of the football team cadet selection of the School of Football "Olimp".

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Table 2. Descriptive statistical parameters of the motor skills of cadet footballers

Varijabla	N	Mean	Min.	Max.	Std.Dev.	Skew.	Kurt.
<b>M20</b>	12	3,05	3,01	3,14	0,04	0,75	-0,43
<b>MTT</b>	12	9,89	9,05	10,23	0,46	-0,70	-1,32
<b>MKAM</b>	12	26,60	25,13	28,17	1,25	-0,16	-1,89
<b>MSAR</b>	12	45,40	40,00	50,00	4,29	-0,00	-1,93
<b>SZ</b>	12	61,20	56,00	70,00	5,09	1,06	0,08
<b>MSDM</b>	12	224,00	220,00	230,00	3,94	0,40	-1,07
<b>SK1</b>	12	45,60	41,00	53,00	4,69	0,57	-0,83
<b>SK2</b>	12	46,20	42,00	53,00	4,34	0,58	-0,93

Legend: N- number of respondents; Mean - arithmetic mean; Min. - minimum score; Max. - maximum score; Std.Dev. - standard deviation of the arithmetic mean; Skew - the asymmetry of the distribution curve; Kurt. - Flexibility of the results distribution curve..

By inspecting the above tables 1 and 2, based on the asymmetry value (Skew.) and flattening (Kurt.) distribution curve results, one can conclude that the results of all motor abilities are normally distributed, which is the basic precondition for further statistical analysis for determining the differences in motor skills between the above groups.

Negative values of the scans (measures of the Gaussian curve asymmetry) indicate that the result distribution curve is negatively acceptable asymmetric, ie inclined to the side of better results, as in this case, we have two tests in basketball, a jump with one leg out of run (SZ) and T test (MTT), and in three tests with the football player, T test (MTT), kamikaze test (MKAM) and Sardine test (MSAR). Positive values of the scans indicate that the distribution result curve is inclined to the side of the worse results we have in all other variables. The kamikaze test (MKAM) has a value of over  $\pm 1$ , indicating a significant distribution asymmetry for basketball players. Negative values of kurtosis (Gaussian curve homogeneity measure) we have in the T test, (MTT), a jump higher by one leg from the run (SZ) and long jump (MSDM) in the basketball player, and in most of the variables in the soccer players pointing to the platonic curve, that is, the results in these tests are heterogeneous, i.e. have reduced distribution homogeneity. In other variables, the positive values of kurtosis indicate that this is a significant leptocorticity or homogeneity.

## Students t-test

After calculating the arithmetic meanings of all motor and situational motor skills using the Student's T-test for independent samples, the difference of parameters between the cadets that were previously divided into two groups, external and internal players, was calculated.

Table 3. Differences in the motor skills of basketball players and soccer players

Varijabla	Mean košarkaši	Mean fudbaleri	t- value	Df	p
<b>M20</b>	3,25	3,05	2,85	26	0,00
<b>MTT</b>	10,20	9,89	2,09	26	0,04
<b>MKAM</b>	29,77	26,60	4,11	26	0,00
<b>MSAR</b>	52,62	45,40	2,70	26	0,01
<b>SZ</b>	71,25	61,20	3,02	26	0,00
<b>MSDM</b>	237,93	224,00	2,34	26	0,02
<b>SK1</b>	50,06	45,60	2,17	26	0,04
<b>SK2</b>	54,00	46,20	4,07	26	0,00

Legend: Mean basketball players - the arithmetic mean of the basketball team; Mean footballers - the arithmetic mean of a group of footballers; t value - the value of the t-test coefficient for testing the significance of the differences; Df - degrees of freedom; p is the coefficient of significance of differences in arithmetic meanings;

Inspection of Table 3. where the results of the Student T-test for the calculation of differences between basketball players and footballers in motor skills are presented, shows that there is a statistically significant difference in all variables. We can conclude that cadet footballers have achieved better results than cadets in cadets in speed, agility and anaerobic endurance tests, while basketball players have achieved better results in all skip tests.

Table 4. Discrimination analysis

	Eigen-val	Canonici-R	Wilk's-Lambda	Chi-Sqr	df	p-value
0	4,75	0,90	0,17	37,78	8,00	0,00

Table 4 shows the results of a discriminatory analysis that determined a statistically significant difference (p-0.00) among the respondents who deal with various sports games, basketball and football.

## CONCLUSION

The obtained results of the differences between footballers and basketball players showed statistically significant differences in favor of the basketball players of the cadet team of BiH when it comes to tests that measured hockey and explosiveness, and in favor of the footballers when it comes to the areas of agility, speed and anaerobic endurance. Significant differences have been established between the groups of footballers and basketball players in all three specific pop-up tests (SZ, S2K and S1K). Basketball players achieved better results in all three tests compared to football players. It turned out that, after analyzing the results, using these three specific tests or using one of them, certain differences in the quality of the motor space can be diagnosed, depending on the sport the respondents are dealing with. From this research we can see that footballers had better results in tests for speed and agility tests that could be expected with regard to their constitution and the training process they underwent. By the fact that football is not one of the most important things in football, it gives the players more agility and agility, so the results in these tests are better. In the basketball player we can

see that they showed better results in the tests of explosive power of the lower limbs, which was expected by the fact that in this sport jumps are used as one of the main characteristics for achieving the best result, and they are very important for individual statistics of basketball players. This research can contribute to better monitoring, planning and programming of basketball or football training by serving as a comparison with a similar study in the area of motor skills, and in addition it can be repeated on the same sample of respondents and see if there is progress or stagnation in the space of motor skills. The data obtained by this research can also be useful in terms of individual tracking of footballers and basketball players, determining their current form and predicting results.

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Correspondence:

Dejan Ceremidzic, PhD Associate Professor  
Faculty of Physical Education and Sport, Pale  
Strase Stambulcic nono, 71420 Pale,  
e-mail: [dorapet@teol.net](mailto:dorapet@teol.net)