# DIFFERENCIES BETWEEN BASKETBALL PLAYERS AND 15-YEAR-OLD STUDENTS IN SOME ANTHROPOMETRIC FEATURES AND MOTOR SKILLS

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## ABSTRACT

The research was conducted on a sample of 100 young pupils aged 14-15, in two schools; the first one was an elementary school and the second was a basketball club from Priština. The purpose of the study was to prove the possible difference between the basketball players and the pupils in some anthropometric characteristics, basic motor skills and situational motor skills. In order to define these changes of anthropometric characteristics, 18 variables were applied for basic motor and situational motor skills. The survey data were processed with descriptive statistical methods and through a T-test. The results show that there are statistically significant differences and that there is a statistically significant difference between basketball players and pupils, where basketball players have better results in all tests of basic motor and situational motor skills. The results have shown that the regular engagement of children in basketball schools can enhance the skills and knowledge of young players and make a significant difference.

**Keywords:** anthropometric characteristics, basic motor skills, basketball players, students, T-test.

## INTRODUCTION

Basketball is a sport that is followed by millions of spectators around the world. In our country, it also has a vast interest and viewership. The Basketball Game is consisted of many complex anthropological features where agility, explosive strength and speed, are essential in performing many motor structures. Creating a large number of basketball schools in our country, in recent years, represents additional requirements to recognize the basic principles for the development of programs that are as qualitative as possible for the players. After the acceptance of Kosovo Basketball Federation in FIBA, there is a great interest for technical-professional capacity building of our coaches and officials that are directly or indirectly involved with the basketball game. Taking into consideration the values of anthropometric and motor parameters of Kosovo youth, we selected appropriate methods, in order to transform and orientate the youth in sports tracks. Similar research in the field of basketball were done by the author Dezhman (1996), who handled the morphological system and motor status for young basketball players, which is an important information for the effectiveness of the basketball game. Šabotić & Drobnjak (2007) have verified the connectivity of predictive variables and basic-motor skills with criteria variables for the youth of 15 years of age. Salihu (2003), in his doctoral dissertation, has done similar research in the field of basic and situational motor skills with basketball players. In this project we will deal with youth – 15-year-old teens. Through this work we will try to verify the morphology and differences of basic and situational motor skills or specific skills of the basketball players, who are active members in the clubs from Priština and students of SHFMU "Faik Konica" Priština.

# METHODS

In this research the samples are taken from 100 young people, aged 14-15, males, from the municipality of Priština. The first group consisted of 50 students from Basketball Schools "M-Junior" and "Prishtina Pro-Basket". The second group consisted of 50 students from the Elementary School "Faik Konica". All the anthropometric measurements were made in the morning hours, while those of basic and situational motors skills were taken in the afternoon hours.

### The sample of variables

In this paper, eight variables of anthropometric characteristics, five basic motor skills variables and four situational motor skills variables were treated, as follows:

### Anthropometric variables

APESHA – Body weight, ALARTË – Body height, AGJKRA – Length of the arm, AGJEKR – Width of the arm, AGJKËM – Length of the leg, APEKOF – Circumference of the thigh, APEKËR – Circumference of the calf, APEKRA – Circumference of the arm.

### Basic motor skills variables

MKGJVE – Sanding Long jump, MHTMSH – Medicine ball throw (3 kg) from the laying position, MHTMUK – 3 kg medicine ball throw while sitting in the chair, MV20ML – High-start 20 m running, MV2x10L – High-start 2x10 meters running.

### Situational motor skills variables

MSD20P – Dribbling with obstacles, round-trip 20m, 4 obstacles, distance 1.5m, MSGJLI – Free throws – distance 3.37m, 5 throws, MSGJLM – Free throws from the left side – distance 2.77m, 5 throws, MSGJLD – Free throws from the right side – distance 2.77m, 5 throws.

### Statistical analysis

The results were analysed using the statistical program SPSS, version 20.00. Descriptive analysis, basic statistical parameters for each variable, as well as measures of asymmetry were applied for both groups' system of variables.

- The minimum and maximum values (R. min-R. max).
- Arithmetical average (Ma).
- Standard deviation (Ds)
- Asymmetry parameters (SKEW and KURT).
- In order to determine the difference between the two groups, in this case between basketball players and students, in both areas we will use analysis of a T-test for independent samples.

# RESULTS AND DISCUSSIONS

In Table 1, the students' anthropometric values are presented and through a descriptive analysis are given basic statistical parameters. Based on these results, it is worth mentioning that all the variables showed normal distribution, except the variable body weight, where the distribution is normal, but with a higher rate and it shows a more emphasised deviation from minimum and maximum results In other variables, the distribution is within normal limits and the group is presented as fairly homogenous in completing the assignments for fulfilling relevant tests. Also, Table 2 shows the results of basic statistical parameters in the students' basic and situational motor skills area, where it is noticed that the group is homogeneous except for the situational motor skill variable of 20m dribbling.

Table 1: Basic statistical parameters of anthropometric variables among students

| Variables | No | Min | Max | Mean | Std. Dev. | Skew | Kurt |
|---|---|---|---|---|---|---|---|
| APESHA | 50 | 39.70 | 98.50 | 64.57 | 11.254 | .598 | .713 |
| ALARTË | 50 | 159.00 | 189.00 | 174.22 | .061 | .146 | .095 |
| AGJKRA | 50 | 72.00 | 90.00 | 78.70 | .046 | .465 | -.449 |
| AGJEKR | 50 | 162.00 | 197.00 | 176.06 | .077 | .593 | .318 |
| AGJKËM | 50 | 94.00 | 112.00 | 102.52 | .044 | .263 | -.432 |
| APEKOF | 50 | 40.00 | 60.00 | 50.24 | .044 | -.062 | -.302 |
| APEKËR | 50 | 30.00 | 45.00 | 36.60 | .031 | .146 | .206 |
| APEKRA | 50 | 21.00 | 32.00 | 26.22 | .026 | .307 | -.518 |

Table 2: Basic statistical parameters of basic-situational motor skills variables among students

| Variables | No | Min. | Max. | Mean | Std. Dev. | Skew | Kurt |
|---|---|---|---|---|---|---|---|
| MKGJVE | 50 | 140.00 | 255.00 | 190.42 | .237 | .263 | .157 |
| MHTMSH | 50 | 340.00 | 605.00 | 472.62 | .783 | .018 | -1.258 |
| MHTMUK | 50 | 310.00 | 640.00 | 446.80 | .722 | .553 | .287 |
| MV20ML | 50 | 2.53 | 3.95 | 3.15 | .344 | .502 | -.268 |
| MV2x10L | 50 | 7.84 | 12.21 | 9.56 | .913 | .767 | .671 |
| MSD20P | 50 | 7.56 | 20.70 | 12.46 | 3.183 | .842 | .115 |
| MSGJLI | 50 | 1.00 | 5.00 | 2.72 | 1.069 | .386 | -.478 |
| MSGJLM | 50 | 1.00 | 5.00 | 2.74 | .964 | -.155 | -.333 |
| MSGJLD | 50 | .00 | 5.00 | 2.36 | 1.156 | .232 | -.150 |

In tables 3 and 4, anthropometric values of the basketball players' basic and situational motor skills are presented. Through a descriptive analysis, basic statistical parameters are given, and based on these results it is worth mentioning that all the variables showed normal distribution, except body weight and arm circumference variable that show a more emphasized deviation from the minimum and maximum results. Also, the distribution of their values is within the normal limits and the group is presented as fairly homogeneous, whereas, in the area of the basketball players' basic and situational motor skills, it is noticed that, even here, the group is homogeneous in all the variables.

Table 3: Basic statistical parameters of the basketball players' anthropometric variables

| | N | Min | Max | Mean | Std. Dev. | Skew | Kurt |
|---|---|---|---|---|---|---|---|
| APESHA | 50 | 47.50 | 98.00 | 65.76 | 10.629 | .889 | .860 |
| ALARTË | 50 | 155.00 | 186.00 | 172.86 | .072 | -.387 | .136 |
| AGJKRA | 50 | 69.00 | 89.00 | 79.26 | .044 | -.083 | -.200 |
| AGJEKR | 50 | 153.00 | 192.00 | 175.68 | .087 | -.070 | -.092 |
| AGJKËM | 50 | 88.00 | 112.00 | 101.04 | .051 | .065 | .090 |
| APEKOF | 50 | 35.00 | 60.00 | 50.62 | .046 | -.381 | 1.360 |
| APEKËR | 50 | 32.00 | 44.00 | 37.02 | .025 | .753 | .321 |
| APEKRA | 50 | 23.00 | 34.00 | 26.54 | .027 | .894 | .171 |

Table 4: Basic statistical parameters of the basketball players' basic motor skills-situational motor skills variables

| | N | Min | Max | Mean | Std. Dev. | Skew | Kurt |
|---|---|---|---|---|---|---|---|
| MKGJVE | 50 | 143.00 | 270.00 | 196.62 | .295 | .681 | .128 |
| MHTMSH | 50 | 390.00 | 790.00 | 522.00 | .980 | .844 | .251 |
| MHTMUK | 50 | 340.00 | 755.00 | 484.32 | .956 | .889 | .548 |
| MV20ML | 50 | 2.50 | 3.53 | 3.00 | .238 | -.068 | -.532 |
| MV2x10L | 50 | 7.46 | 9.80 | 8.54 | .545 | .113 | -.430 |
| MSD20P | 50 | 7.07 | 9.54 | 8.55 | .671 | -.643 | -.641 |
| MSGJLI | 50 | 3.00 | 5.00 | 4.50 | .580 | -.653 | -.523 |
| MSGJLM | 50 | 3.00 | 5.00 | 4.50 | .543 | -.396 | -1.052 |
| MSGJLD | 50 | 3.00 | 5.00 | 4.52 | .543 | -.479 | -.979 |

## Differences in the results of anthropometric variables, basic motor skills and situational motor skills between basketball players and students

Tables 5 and 6 present the values of the T-test through which the differences in arithmetic averages of anthropometric variables and basic and situational motor skills between basketball players and students can be noticed. The differences between basketball players and students in anthropometric characteristics show that no statistically significant differences were obtained for the variables, and that a significant difference between basketball players and pupils in anthropometric characteristics does not exist. Significant differences between basketball players and students are presented in all the basic motor skills, except in the test Standing Long Jump and Medicine Ball Throw (3 kg) from the laying position. Other results show that basketball players have better results in all the basic and situational motor skills variables applied in this paper such as: explosive force of arms, legs, running speed, running front and back. This shows a high level of the active basketball players' basic motor skills, in comparison to the category of students. Also, significant differences between the basketball players and students are presented in motor skills variables starting from the dribbling speed, agility and precision of a basketball shot, in comparison with the students.

Table 5: A T-test in anthropometric area

| Group Statistics | | | | | | Sig. |
|---|---|---|---|---|---|---|
| Groups | | N | Mean | Std. Dev. | Std. Err. Mean | |
| APESHA | Basketball players | 50 | 65.76 | 10.62 | 1.50 | 0.587 |
| | Students | 50 | 64.57 | 11.25 | 1.59 | 0.587 |
| ALARTË | Basketball players | 50 | 1.72 | 0.07 | 0.01 | 0.341 |
| | Students | 50 | 1.74 | 0.06 | 0.00 | 0.341 |
| AGJKRA | Basketball players | 50 | 0.79 | 0.04 | 0.00 | 0.541 |
| | Students | 50 | 0.78 | 0.04 | 0.00 | 0.541 |
| AGJEKR | Basketball players | 50 | 1.75 | 0.08 | 0.01 | 0.819 |
| | Students | 50 | 1.76 | 0.07 | 0.01 | 0.819 |
| AGJKËM | Basketball players | 50 | 1.01 | 0.05 | 0.00 | 0.124 |
| | Students | 50 | 1.02 | 0.04 | 0.00 | 0.124 |
| APEKOF | Basketball players | 50 | 0.50 | 0.04 | 0.00 | 0.677 |
| | Students | 50 | 0.50 | 0.04 | 0.00 | 0.677 |
| APEKËR | Basketball players | 50 | 0.37 | 0.02 | 0.00 | 0.464 |
| | Students | 50 | 0.36 | 0.03 | 0.00 | 0.464 |
| APEKRA | Basketball players | 50 | 0.26 | 0.02 | 0.00 | 0.556 |
| | Students | 50 | 0.26 | 0.02 | 0.00 | 0.556 |

Table 6: T-test in basic and situational motoric skills

| Group Statistics | | | | | | Sig.(2-tailed) |
|---|---|---|---|---|---|---|
| Variables | Groups | N | Mean | Std. Dev. | Std. Err. Mean | |
| MKGJVE | Basketball players | 50 | 1.96 | 0.96 | 0.04 | 0.251 |
| | Students | 50 | 1.90 | 0.23 | 0.03 | 0.251 |
| MHTMSH | Basketball players | 50 | 5.22 | 0.98 | 0.13 | 0.006 |
| | Students | 50 | 4.72 | 0.78 | 0.11 | 0.007 |
| MHTMUK | Basketball players | 50 | 4.84 | 0.95 | 0.13 | 0.029 |
| | Students | 50 | 4.46 | 0.72 | 0.10 | 0.029 |
| MV20ML | Basketball players | 50 | 3.00 | 0.23 | 0.03 | 0.014 |
| | Students | 50 | 3.15 | 0.34 | 0.04 | 0.014 |
| MV2x10L | Basketball players | 50 | 8.54 | 0.54 | 0.07 | 0.000 |
| | Students | 50 | 9.56 | 0.91 | 0.12 | 0.000 |
| MSD20P | Basketball players | 50 | 8.55 | 0.67 | 0.09 | 0.000 |
| | Students | 50 | 12.46 | 3.18 | 0.45 | 0.000 |
| MSGJLI | Basketball players | 50 | 4.50 | 0.58 | 0.08 | 0.000 |
| | Students | 50 | 2.72 | 1.06 | 0.15 | 0.000 |
| MSGJLM | Basketball players | 50 | 4.50 | 0.54 | 0.07 | 0.000 |
| | Students | 50 | 2.74 | 0.96 | 0.13 | 0.000 |
| MSGJLD | Basketball players | 50 | 4.52 | 0.54 | 0.07 | 0.000 |
| | Students | 50 | 2.36 | 1.15 | 0.16 | 0.000 |

# CONCLUSION

After processing, interpretation and results analysis of this research, we can conclude that the purpose set at the beginning of this paper was fully realized. The results show that basketball players have better results in the basic and situational motor skills area because there is a direct impact of the trainings performed three times a week at their club. In anthropometric area, it is noticed that the morphological growth and development is the same for basketball players and the students. Finally, we can conclude that trainings have had a positive impact on the establishment of the basketball players' basic and situational motor skills. The same was verified by other authors in their work, when dealing with the comparison between athletes and non-athletes. This once again shows how important sports activity is at the younger ages, not only in development and better growth, but also in development of motor skills, which plays a very important role in performing daily activities.

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**RAZLIKE IZMEĐU KOŠARKAŠA I UČENIKA UZRASTA 15 GODINA U NEKIM ANTROPOMETRIJSKIM KARAKTERISTIKAMA I MOTORIČKIM VJEŠTINAMA**

Istraživanje je sprovedeno na uzorku od 100 mladih učenika starosne dobi od 14 do 15 godina, u dve škole; prva je bila osnovna škola, a druga su deca iz košarkaškog kluba Prištine. Cilj studije je bio da se dokaže mogućnost razlike između košarkaša i učenika u nekim antropometrijskim karakteristikama, osnovnim motoričkim veštinama i situacionim motornim veštinama. Da bi se definisale ove promene antropometrijskih karakteristika, primenjeno je 18 varijabli za osnovne motoričke vještine i situacijske vještine. Podaci istraživanja obrađeni su deskriptivnim statističkim metodama i putem t-Testa. Rezultati pokazuju da postoje statistički značajne razlike i da postoji statistički značajna razlika između košarkaša i učenika, gdje košarkaši imaju bolje rezultate u svim testovima osnovnih motoričkih i situacionih motoričkih vještina. Rezultati su pokazali da redovno angažovanje dece u košarkaškim školama može poboljšati vještine i znanje mladih igrača i učiniti značajne razlike.

**Ključne riječi:** antropometrijske karakteristike, osnovne motoričke vještine, košarkaši, studenti, t-Test.

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