

## SHORT REPORT

# Morphological Characteristics and Body Composition of the Winners of the Soccer Cup of Bosnia and Herzegovina and Kosovo

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## Abstract

This research aimed to determine the differences among the top soccer players of a club in Bosnia and Herzegovina, FC Siroki Brijeg, and the top soccer players of a club in Kosovo, FC Besa Peje, the winners of the Soccer Cup in their countries, in the morphological characteristics and body composition. A sample of 40 subjects was divided into two sub-samples. The first sub-sample consisted of 22 players FC Siroki Brijeg, the average age of  $24.00 \pm 6.22$ , the winner of the Cup of Bosnia and Herzegovina in the season 2016/17, while the other sub-sample consisted of 18 players of FC Besa Peje of the average age of  $21.83 \pm 3.17$ , the winner of the Cup of Kosovo in the 2016/17 season. Soccer players were tested immediately after the end of the 2016/17 competition season. Morphological characteristics were evaluated using a battery of seven variables: body height, body weight, waist circumference, triceps skinfold, biceps skinfold, skinfold of the back, and abdominal skinfold. The body composition was evaluated using a battery of three variables: body mass index, fat percentage, and muscle mass. The standard central and dispersion parameters of all variables were calculated. The significance of the differences between the players of the top two soccer clubs in the morphological characteristics and variables for assessing body composition was determined using a t-test for independent samples. The t-test results showed a statistically significant difference only in two variables waist circumference and triceps skinfold.

**Keywords:** soccer, morphological characteristics, body composition

## Introduction

A soccer game is said to be the most important secondary thing in the world; it gathers huge masses at stadiums and in front of TVs (Gardasevic, Bjelica, & Vasiljevic, 2019). It is a highly dynamic and fast team game that, with its richness of movement, belongs to the category of polystructural sports games (Gardasevic, Bjelica, & Corluka, 2018; Bjelica, Popovic, Gardasevic, & Krivokapic, 2016). Soccer is a sport that is characterized by numerous and various complex and dynamic kinesiological activities, which are then characterized by either

cyclical (Sermahaj, Popovic, Bjelica, Gardasevic, & Arifi, 2017; Gardasevic, Bjelica, & Vasiljevic, 2017) or acyclical movement (Gardasevic, Bjelica, & Vasiljevic, 2016; Gardasevic, Bjelica, Milasinovic & Vasiljevic, 2016; Gardasevic, Popovic, & Bjelica, 2016). In sport, top scores can be achieved only under conditions of well-programmed training processes (Gardasevic, Akpinar, Popovic, & Bjelica, 2019; Gardasevic & Bjelica, 2019; Bjelica, Popovic, Tanase, & Gardasevic, 2017; Bojanic, Petkovic, Gardasevic, Muratovic, & Vasiljevic, 2015). Various studies are to be done to establish certain principles and norms for the



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transformational processes of the anthropological characteristics essential for soccer (Bjelica & Gardasevic, 2018; Bjelica, Popovic, & Gardasevic, 2016a; Bjelica, Popovic, & Gardasevic, 2016b); with morphological characteristics and body composition among them as expected (Vasiljevic, Bjelica, & Gardasevic, 2018; Corluka, Bjelica, & Gardasevic, 2018; Vasiljevic, Bjelica, Popovic, & Gardasevic, 2015; Gardasevic, Vasiljevic, Bjelica, & Popovic, 2015). Findings regarding morphological characteristics and body composition are of crucial importance for complex sports such as soccer (Milasinovic, Gardasevic, & Bjelica, 2017; Gardasevic, Rasidagic, Krivokapic, Corluka, & Bjelica, 2017). Research on morphological characteristics and body composition among athletes of different sports indicates that such athletes have their own specific characteristics (Gardasevic, 2019; Gardasevic, 2018; Gardasevic, Masanovic, & Arifi, 2018; Masanovic, Gardasevic, & Arifi, 2018a; Masanovic, Gardasevic, & Arifi, 2018b; Arifi, Sermahhaj, Gardasevic, Alaj, & Metaj, 2018; Arifi, Gardasevic, & Masanovic, 2018; Arifi et al., 2017).

Today, soccer is undoubtedly the number one sport in the world in popularity (Gardasevic, Georgiev, & Bjelica, 2012), and the same applies to Bosnia and Herzegovina and Kosovo (Bjelica, Gardasevic, Vasiljevic, Arifi, & Sermahhaj, 2019; Gardasevic, Bjelica, Vasiljevic, Arifi, & Sermahhaj, 2019).

In the 2016/17 competitive season, FC Siroki Brijeg was the winner of the Cup of Bosnia and Herzegovina, and FC Besa Peje was the winner of the Cup of Kosovo. This research aimed to analyse the differences in some morphological characteristics and body composition among top soccer players of FC Siroki Brijeg and FC Besa Peje.

## Methods

A sample of the subjects consists of a total of 40 top-level soccer players, divided into two sub-samples. The first one

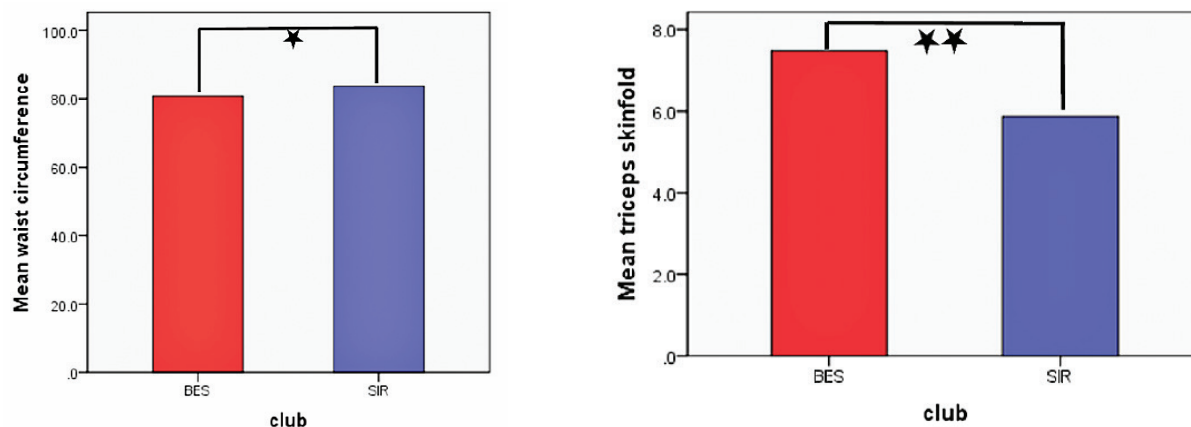
consists of 22 players of FC Siroki Brijeg, the average age of  $24.00 \pm 6.22$ , the winner of the Cup of Bosnia and Herzegovina, and the second one that consists of 18 players of FC Besa Peje of the average age of  $21.83 \pm 3.17$ , the winner of the Cup of Kosovo in the season 2016/17.

Morphological research has been carried out with respect to the basic rules and principles related to the selection of measuring instruments and measurement techniques standardized in accordance with the International Biological Program guidelines. For this study, seven morphological measures have been taken (body height, body weight, waist circumference, triceps skinfold, biceps skinfold, skinfold of the back, and abdominal skinfold) and three body composition assessment variables (body mass index, fat percentage, and muscle mass). An anthropometer, calliper, and measuring tape were used for morphological measurements. To evaluate the body composition, Tanita body fat scale - model BC-418MA, was used.

Differences in morphological characteristics and the composition of the body of the players of these two clubs were determined by using a discriminatory parametric procedure with t-test for small independent samples, with statistical significance of  $p < 0.05$ .

## Results

Based on the obtained values of t-test results, it can be noted that there are statistically significant differences in two variables at  $p < 0.05$ . It is two morphological measures waist circumference and triceps skinfold. It can be stated that the soccer players of FC Siroki Brijeg have statistically significantly higher waist circumference and smaller triceps skinfold than the players of FC Besa Peje do (Figure 1). In all other variables, the differences are negligible and not statistically significant.



**Figure 1.** Statistically significant differences between soccer players FC Siroki Brijeg (SIR) and FC Besa Peje (BES) in two variables (\* $p < .05$ ; \*\* $p < .01$ )

## Discussion

It can be observed that the players of both clubs are of the approximately similar mean values of the variables analysed, which is not surprising because these are the top two clubs in Bosnia and Herzegovina and Kosovo. Gardasevic, Bjelica, and Vasiljevic (2019) found similar results on a sample of soccer players from Montenegro. Very similar anthropometric characteristics of soccer players were obtained, which shows that they have similar characteristics and body composition throughout the region (Gardasevic, Bjelica, Popovic, Vasiljevic, & Milosevic, 2018; Corluka & Vasiljevic, 2018). The t-test results showed a statistically significant dif-

ference only in two variables: waist circumference and triceps skinfold. For other variables, some values are better for players of FC Siroki Brijeg and some for players of FC Besa Peje, although, insignificantly for statistics, which indicates that these players have very similar body composition and anthropometric parameters. The values obtained in this research can be useful for coaches of these clubs for making a comparison of their players with others and formulate their work in a way that enables a reduction of those parameters that are not beneficial and raising those that are to a higher level. That will surely make their soccer players even better and more successful. Furthermore, both clubs should turn

to other research studies and check the functional-motoric status, psychological preparation, and tactical training of

their players and analyse whether there is room for their improvement.

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#### Conflict of Interest

The authors declare that there are no conflicts of interest.

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