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Strength Component Assessment in Female Soccer Players

Prof. Assoc. Arben Kaçurri[1]*, Mark Dodaj[2], Enkeleida Lleshi[3]
[1,2,3]*Department of Sports Performance, Sports Research Institute, Sports University of Tirana, Albania*
**Corresponding Author*

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ABSTRACT: There are no studies for the identification and measurement of sports performance and physical skills in women's football in Albania. Explosive power is an important component in the game of football in the performance of players. Our goal is to evaluate explosive strength and identify training programs for this component. Methods; Subjects are two Associations Women's soccer in total No. 34 players. Measurements: Body Height, Body Weight, Body Mass Index kg/m^2, Countermovement Jump (CMJ) and Flexibility in the roles of Goalkeeper, Defender, Midfielder and Attacker. Results; obtained data show the differences between the roles of the female soccer players. For CMJ test, the offensive players have resulted in a higher jump between the specific roles of players, had a value of 31.4 cm and the female goalkeepers 28.2 cm. Conclusions; The results showed that female soccer players present low values in explosive force compared to the references of female soccer players in different countries. At the end of this study, the obtained data showed that the physical activity profiles of the female soccer players of the National Championship in Albania differ from the specific positions of the game.

KEYWORDS: explosive, countermovement jump, flexibility, performance.

I. INTRODUCTION

There are 99,553 female football players, according to the most recent statistics provided by UEFA. Even in recent years, this sport has gained attention in Albania as something new for our nation. More than 800 females of all ages have been recognized as participating in football today. But in Albania, like in Europe or the rest of the globe, the proportion of women who play football is quite low when compared to the number of males. There are no studies in Albania that identify and quantify the physical prowess and athletic performance of top women's soccer players. Because women's football is becoming more and more popular across the globe, there are a lot of research on the subject of player characteristics in the game, albeit they are not as many as scientific studies on men's football [1]. Soccer is not a science, like other sports, although science may help players perform better [2]. Although another classification system has been used, which groups players into goalkeepers, central defenders, full backs, central midfielders, wide midfielders, and strikers [3], soccer players are typically divided into four groups: goalkeepers, defenders, midfielders, and forwards [4]. Despite the fact that numerous authors have extensively examined the physical fitness and anthropometric traits of female soccer players across various teams worldwide [5; 6;7], it has been noted that the strength, aerobic capacity, running ability, flexibility, muscle strength, body height, mass, and body fat percentage of female players differ considerably depending on the position they play. From sprinting speed to anaerobic threshold, it has been shown that defenders have a higher aerobic capacity than goalkeepers [8]. According to research by a group of academics [9], anthropometric profiles vary depending on the position played in the first Tunisian women's football league. They said that defensive players stood out from outfield players due to their remarkable physical attributes. However, the authors of a research conducted among female soccer players in Brazil [10] found that the anthropometric characteristics and physical ability of the various positions in the game varied significantly. Our objective is to use the CMJ test to assess the vertical leap of Albanian female soccer players competing in the National Championship based on the designated game profiles.

II. MATERIALS AND METHODS

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Participants;Participants are two women's football teams of the National Championship in Albania. Association "Tirana Female" No. 17 players and Association "Kinostudio Female" No. 17 female players will be evaluated according to their specified positions. Female football teams will be evaluated on anthropometric characteristics; Body Height cm, Body Weight kg, BMI kg/m^2. Goalkeeper, Defender, Midfielder and Attacker.

Test Protocol; Flexibility Test and CounterMovement Jump Test – CMJ***;*** To ensure safe and appropriate preparation for the fitness tests, the players participated in uniform for approximately 15 minutes of warm-up and dynamic stretching exercises. The tests were completed in the following order, with 3 minutes of passive rest time between tests. Each player performed 3 trials of the test. The best performance for each test was recorded for data analysis as follows. Each participant was encouraged to perform maximally during the 2 tests.

Instrument Used; The "OptoJump" Platform, which is located in the laboratory at the Tirana University of Sports, was used. It is a platform with an optical measurement system consisting of a transmitter and receiver bar. Based on these basic data, the dedicated software makes it possible to obtain a series of parameters related to the performance of athletes with maximum accuracy and in real time.

III. RESULTS

Below we will present by means of graphs the obtained data of the anthropometric measurements of the female soccer players of the two teams participating in the study. The table will clearly show us the changes and differences between the specific roles that the female players of both "Tirana Female" and "Kinostudio Female" teams have in Goalkeeping, Defence, Midfield and Attack.

Tab.1 Anthropometric data of "Tirana Female" football players according to playing position

"TIRANA	Goalkeepers	Defender	Midfielder	Forward
Age	21.6±2.2	18.8±2*	20.3±2.3*	23.6±2.1*
BH (cm)	169.3±1.7	167.8±1.2*	166.6±1.7*	168.5±2.4*
BW (kg)	67.3±1.4	64.5±2.5*	63.6±2.2*	61±2.9*
BMI(kg/m^2%)	21±2.6	20.7±2.1*	21.6±3.3*	18.8±1.7**

Table 2. Anthropometric data of "Kinostudio Female" football players according to playing position

"KINOSTUDIO	Goalkeepers	Defender	Midfielder	Forward
Age	21.2±1.2	19.8±2*	19.3±2.3*	21.6±2.1*
BH (cm)	170.3±1.7	165.8±1.2*	161.6±1.7*	167.5±2.4*
BW (kg)	69.3±2.5	61.5±1.5*	60.6±3.2*	63±1.9*
BMI(kg/m^2%)	20±2.6	19.7±3.1*	19.5±3.3*	19.3±1.7**

The findings of the data in Tables 1 and 2 indicate that female soccer players who play goalie are older than players in every other position. However, the only players on the "Tirana Female" squad who were older than the offensive football players on the "Kinostudios Female" team were the attackers. In contrast to any other designated position of football players, the data indicates that female goalkeepers for the "Kinostudios Female" squad are taller. However, we observed that, on average, the female football players on the "Tirana Female" squad were taller. The data indicates that, depending on their playing responsibilities, the female soccer players in the research had an estimated body weight but not an approximate body mass (BMI%) kg/m2. Between off-field playing positions, no discernible variations in BMI percentage were found.

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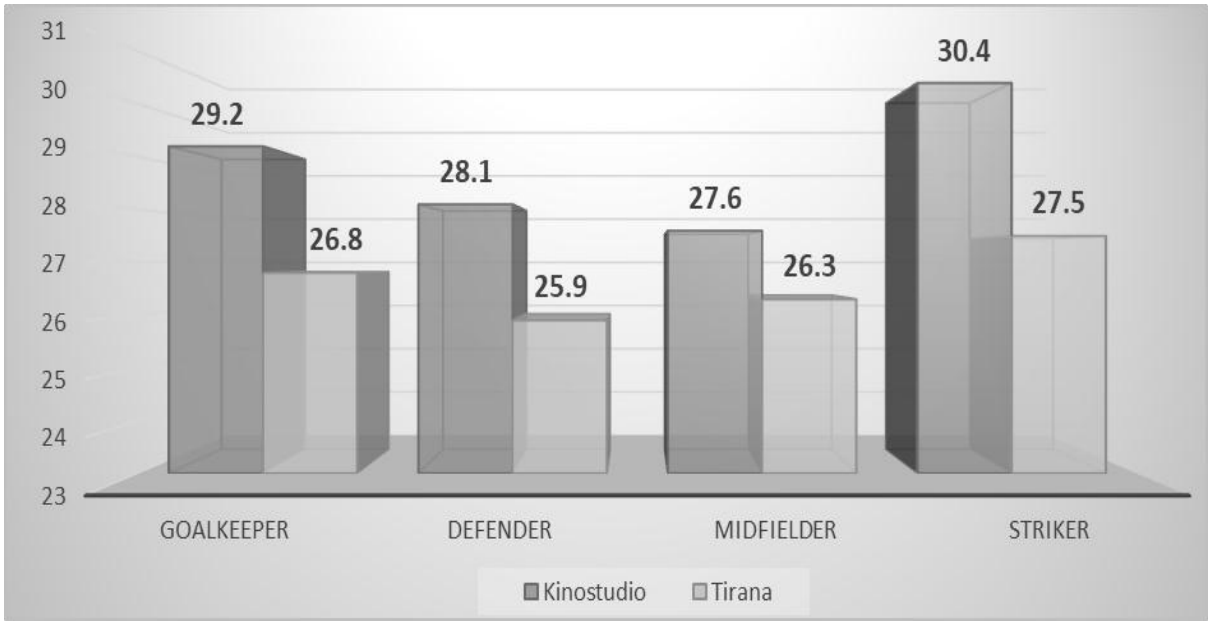
Table.3. The data of physical tests of football "Tirana Female" according to roles.

Tirana	Goalkeepers	Defender	Midfielder	Forward
CMJ (cm)	26.8 cm	25.9cm	26.3cm	27.5 cm
Fleksibiliteti	14.4	25.8	24.3	19.1

Table.4. The data of physical tests of football "Kinostudio Female" according to roles

Kinostudio	Goalkeepers	Defender	Midfielder	Forward
CMJ (cm)	29.2cm	28.1 cm	27.6 cm	30.4 cm
Fleksibiliteti	21.6	17.7	18.3	17.1



Graphic.1

The results of the Flexibility test and the Arm-Free CounterMovement Jump (CMJ) test are shown in Tables 3 and 4. This CMJ test was created at the UST Biomechanics Laboratory using the OptoJump platform. Even when considering the distinct responsibilities of the two teams, the attacking players of "Kinostudio Femra" produced a greater leap than the team of "Tirana Female" on the CMJ test. According to graph 5, female goalkeepers measured 29.2 cm and "Kinostudio Female" attackers 30.4 cm. Thus, across all positions, female goalkeepers and female attackers performed the best. According to the Flexibility test results shown above, the defensive football players on the "Tirana Female" squad perform better than those on the "Kinostudio Female" team, with 25.8> 17.7 cm. Even the midfielders of the "Tirana Female" squad outperform the "Kinostudio Female" team, as seen by the statistics collected (24.3>18.3cm).

IV. DISCUSSIONS

Anthropometric measures and physical ability profiles of female soccer players in various nations have been assessed in earlier research. As stated at the outset of this research, the primary objective was to assess the anthropometric and physical fitness characteristics of female athletes based on their designated roles in two Super League clubs participating in the Albanian National Championship during the 2022–2023 season. Female goalkeepers are taller than other players in

certain positions, according to a number of studies. Our two teams were also included in the research as a consequence of this data; the goalkeepers on the "Tirana Female" squad are 167.2 cm away, and the goalkeepers on the "Kino studio Female" team are 170.3 cm away. The two women's soccer teams' BMI% disparities based on playing roles were ±1.5%, as the data showed no discernible variances in body mass BMI% across positions on the field. Although graph 3 shows a different body weight, the goalkeepers on the "Kinostudio Female" squad were heavier than those on the "Tirana Female" team, with values ranging from 57.5 kg to 69.3 kg. Our study's findings were lower than those of Norwegian and Australian research, according to [11] and [12], respectively, when comparing our data on female soccer players with those published in other studies within women's soccer. As we described in the study's methodology section, we used the Countermovement Jump (CMJ) test tool—which measures leaping without the use of arms—in conjunction with the Flexibility test to assess jumping in Albanian female soccer players. Even when considering the distinct responsibilities of the two teams, the offensive players of "Kinostudio Female" produced a greater leap than the team of "Tirana Female" on the CMJ test. According to graph 5, female goalkeepers measured 29.2 cm and "Kinostudio Female" attackers 30.4 cm. Thus, across all positions, female goalkeepers and female attackers performed the best. On the other hand, there was no discernible difference between the two study teams' female midfielders and runners. A Japanese collegiate female soccer team's female goalkeepers and forwards had CMJ scores of 40.9 ± 4.4 cm and 42.7 ± 5.5 cm, respectively, according to a prior study [13]. This is around 11 cm higher than our Albanian female football players. According to graph 6 above, which displays the Flexibility test results, the defensive football players on the "Tirana Female" squad perform better than those on the "Kinostudio Female" team in terms of values, measuring 25.8> 17.7 cm. Even the midfielders of the "Tirana Female" squad outperform the "Kinostudio Female" team, as shown by the data collected and the graph 6 presentation (24.3>18.3cm). Studies on women's football's adaptability are few, nevertheless, particularly in Albania. It is noteworthy that soccer players' lower limb muscular flexibility has significant real-world applications: Lack of muscular flexibility raises the risk of muscle injuries, whereas more muscle elasticity improves movement efficiency.

V. CONCLUSION

The findings demonstrated that, in comparison to references of female soccer players in other nations, female soccer players have low explosive force values. The results of this research demonstrated that the physical activity profiles of the Albanian women's soccer players competing in the National Championship vary depending on the position of the game. Nevertheless, there are currently very few and unpublished comparisons between Albanian male and female athletes, particularly with regard to anthropometric traits and physical fitness. I believe that our study, which used laboratory techniques to present data on the physical activity profiles of Albanian female soccer players, may help guide future research. Based on game characteristics and the physical activity of female soccer players, trainers may utilize this data to enhance their training regimens.

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