



Explosive Power in Young Female Soccer Players in Tirana, Albania.

¹Luan Pinari, ²Ermal Seriani.

^{1,2}Teachers in School Mastery Sports "LoroBorici" Tirana, Albania.

Corresponding Author

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ABSTRACT: Training involves more than simple growth and maturation and, of course, the highest levels of performance are relative to the athlete's current status and genetic endowments. The purpose of this study is to identify the level of vertical jump among 16-17 year old female soccer players in three team Tirana, Albania. Method; Measurements anthropometric such as: body weight, body height, BMI and the vertical jump test was developed; SJ and CMJ. Results; The values obtained from the measurements showed significant differences between the groups. In the entirety of the football players' sports performance, there are clear differences between individuals but also according to the 3 teams in all the parameters taken in the study. The correlation between the tests used is strongly positive $r=0.9389$, but the variables are weak. Conclusions; the rational and scientific planning of a sports training can be programmed if we know the workload but also the effectiveness of the performance of the training. Also, significant statistics have observed a parallel increase with the age of individuals. The values obtained from the tests suggest that the practice of playing football favours an improvement of the neuromuscular characteristics of the lower extensor limbs and the growth of these improvements is parallel to the years of sports practice.

KEYWORDS: Football, squat jump, countermovement jump, explosive power.

I. INTRODUCTION

The identification and measurement of sport performance and fitness are essential for elite soccer and will provide benchmarks and foundations for future coaches, players and researchers. Even in football, it is important and necessary to improve the parameters of power, strength, speed, endurance as well as the basic physical skills of athletes. The height of the jump measured with the CMJ test depends on the take-off speed [11], which is dependent on the athlete's

ability to brake and suddenly accelerate [4]. Diagnosing the physical capacity of football players is a necessary part of the training process carried out professionally. Nowadays, the levels of functional capacity required to meet the needs of high-level sports are becoming ever greater, even in situations related to football. Performance in football depends on many aspects, such as technical, tactical, physical and mental parameters. As with other sports, soccer is not a science, but science can help improve performance [1]. Sport and exercise researchers engaged in researching the sport of soccer are interested in the variety of factors that determine a player's performance, as well as the underlying phenomena that explain how each factor affects that performance. Understanding profiles as rules and methods can be used to prepare a player or team to compete professionally. Profiles are important for coaches to understand the needs of competitive soccer players in order to maximize performance and minimize the chance of failure. Typically, football players are classified into four groups: goalkeepers, defenders, midfielders and forwards [7,15], although another classification system has been used, grouping players into goalkeepers, centre-backs, full-backs, central midfielders, wide midfielders and strikers [3]. These studies have revealed differences in physical abilities depending on the position of the players. Several studies have revealed differences between physiological characteristics depending on the position of the players. It has been shown that defenders possess a better aerobic capacity than goalkeepers from running speed to anaerobic threshold [10]. The [13] have shown that between players' positions there are differences in body composition (higher percentage of body fat in goalkeepers) and flexibility (lower score in goalkeepers). Furthermore, most of these studies have assessed physical fitness using laboratory tests performed on ergometers [5,6,7,8,12], which is not specific to the sport of football. There are many studies and data related to anthropometric profiling and physical fitness characteristics of



soccer players in most parts of Europe, America and Asia which are available [2, 8,9, 14,15], but according to our knowledge, there are no studies investigating these characteristics of football, especially in Albania.

II. METHODOLOGY

The subjects are 48 soccer players female aged 16-17 years. In understanding with coaches of the football teams we based our study on the football team "Tirana", "Dinamo" and "Partizani" in Tiranë Albania. The teams train regularly 5 times a week with the model of their coaches and 1 match at the end of the week. During the study players have been under our observation for the performance of the training program with their coaches. Anthropometric measurements of body height (BH), body weight (BW) and BMI kg²/m² have been developed.

Protocol Tests

SJ (squat jump); the vertical jump from the initial position starts when the athlete has his/her legs refracted to 90° and hands positioned on the waist. There have been realized 3 jumps and has been taken the best.

CMJ (Countermovement Jump); is similar to SJ, but the athlete begins the testing by staying right and then he/she takes off by refracting his/her lower limb to 90 ° and hands placed on the waist (3 jumps). Tests were developed on (Ergojump-Bosco System).

Calculation; (CMJ-SJ)– the difference between these two tests. By processing the SJ and CMJ we can calculate the coefficient of elastic reuse of force which is the percentage difference between the SJ and the CMJ.

Calculation; (CMJ-SJ) x 100/CMJ -the capacity to reuse the accumulated energy as a result of the elastic pull that precedes the muscular contraction (elasticity percentage).

During squat jumps with a knee flexion to 90° players were instructed to perform a maximal vertical jump and were not allowed to use any motion, forward flexion before jumping. All football players were tested in the same conditions, with a preliminary general stretching of 10 min.

III. RESULTS

Table 1 shows the average data of female football players taken under this study. The values obtained clearly show the level of the players in three team Tirana in Albania.

Table1. Data obtained from Test and measurements Football players.

Team	BW kg	BH cm	BMI%	SJ cm	CMJ cm	CMJ-SJ	(CMJ-SJ)X 100/CMJ
PARTIZAN	67.7	177.1	21.66%	32.6	38.2	5.3	14.02
SD	6.8	4.9	1.9	3.9	4.1	2.1	5.1
DINAMO	70.4	177.8	22.26%	30.3	36.5	4.24	16.98
SD	9.2	4.3	2.5	3.5	4.1	2	5.1
TIRANA	61.39	172	20.64%	29.6	34.1	4.57	13.38
SD	8.02	8.5	1.3	5	5.4	2	3.4

In the table above, we have presented in a general way the data of the tests practiced on soccer players aged 16-17 years. The tests of researcher [4]; Squat Jump (SJ), Counter Movement Jump (CMJ) were practiced. Table 1 shows the average team values of the anthropometric measurements of football players' teams, as well as the values obtained from the SJ and CMJ tests.

IV. DISCUSSION

Squat-Jump (SJ) The test provides a measure of quick jump ability to develop quick explosive strength. The above table shows the average performance of team jumps after collecting the individual data of each soccer player. From the measurements made by comparing it with the references of taken from the literature, we have differences at the team level for these ages team Partizani 32.6 cm, Dinamo 30.3 cm and Tirana 29.6cm. So the differences between the teams are ± 2cm but compared to the references of various studies, the values of football players are low. Counter Movement (CMJ). For a long time it has



been thought that this type of jump will provide a measure of muscle elasticity, while today it has been found that this test provides a measure of the quick strength of the jump. From the measurements made and referring to the literature, the differences at the team level for these ages team Partizani 38.2 cm, Dinamo 36.5 cm and Tirana 34.1cm. So the differences between the teams are ± 3 cm but compared to the references of various studies, the values of football players are low. The difference between tests CMJ-SJ difference the researcher [4] has proposed the evaluation of the "elastic quality" of athletes in teams using the concept of "elasticity index" which comes from the difference between CMJ and SJ. Good capacity used by elastic energy corresponds to 8-10 cm. The difference between these two tests is called the quick power index. The difference between tests CMJ-SJ difference the researcher [4] has proposed the evaluation of the "elastic quality" of athletes in teams using the concept of "elasticity index" which comes from the difference between CMJ and SJ. Good capacity used by elastic energy corresponds to 8-10 cm. The difference between these two tests is called the quick power index. From the data presented in table 1, we notice that football players in the age group of 16-17 years present a low elastic energy capacity of the lower extremities average up to 5%. The 16-17 year old footballers of the three teams in Tirana show values in the levels of capacity of fast and low strength. CMJ and SJ type jumps are needed and if these athletes do not demonstrate these types of characteristics, then you are in for a good workout to develop your quick power index. From the calculations made, using the formula $(\text{CMJ-SJ}) \times 100 / \text{CMJ}$ we have also derived the coefficient of elasticity. The coefficient of elasticity is expressed in % and is an indicator of the energy capacity accumulated as a result of the elastic elongation of the muscle that precedes the muscle contraction. By processing SJ and CMJ we have managed to calculate the coefficient of elastic reuse of force which is the percentage difference of the jump between SJ and CMJ. This index indicates unused reserves of elastic muscle energy from the soccer player taken in this study.

V.CONCLUSION

This study evaluated some of the details of the football players. The obtained results suggest changes in sporting performance of "vertical jump" in the force settings, speed and power. These tests are necessary for each coach and athlete. This study aimed to identify of physical performance of 16-17

years old female soccer players Tirana in Albania. The results of this study showed that coordination produced adaptations in the power and agility capacities of young soccer players. The results show low team values but not individual values.Coaches can use coordination training to improve their players' physical fitness with other training methods such as strength and plyometric.

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