Vertical Jump in National Women's Volleyball & Basketball Team in Albania

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Abstract

Volleyball and Basketball women have different performances from each other due to their special specifics of the game. From the specificity of their training, there are differences in the physical qualities of individual and team sports performance, where one of the elements is vertical jumping. This study is concentrated on two teams: Women's Volleyball Team (V) and Women's Basketball Team (B) 15 members each, focusing on 30 subjects. Players were measured in physical parameters; Age (V-24: B-27), Body Height (V-180.4cm; B-173.4cm), Body Weight (V-70.37kg; B-63.88kg), BMI (V-21.67%; B-20.93%). The players performed the test DJ60cm in the platform Leonardo® Ground Force Reaction Plate (GRFP) which expresses Force max (kN), Power max (w/kg), Time Contact (TCs), Air Time (TAs), TA/TCs. The results obtained by GRFP showed different team values of the two sports in the parameters of Fmax V65.19<B74.07n/kg, Pmax V31.26>B23.06w/kg, TCs V0.231>B0.198, TAs V0.436>B0.34 and TA/TCsec V1.96s>B1.71sec. Results revealed that V players jumped higher (p, 0.001) than B players. Finally, the Drop Jump60cm test has different performance between individual players, despite the fact that in the team average it turned out that Volleyball players is higher in this test. Drop Jump is the typical plyometric test. Furthermore, tests such as DJ can be a useful method for assessing differences and monitoring vertical jump training programs from collective sports.

Keywords: drop jump, volleyball, basketball, players, air time

1. Introduction

In Albania, the sports of volleyball and basketball are quite populated in all age groups. Volleyball and Basketball sports have a different performance from each other due to their special specifics of the game. Regardless of the specifics of the way of playing, players must develop vertical jump during the game. A volleyball player during a game or a match alongside the technical elements - should develop tactical

and technical elements such as; attack, block, service and/or following by vetrtical jumping. Basketball players in addition to running on the field and technical elements must also jump during a tribulation or the realization of the shot. The best perfection of a vertical jump is achieved through acertain training in order to increase the height of jump. Several scholars have shown that jumps in height can be greatly improved through plyometric exercises. To assess the vertical jump is needed the application of Bosco tests such as Drop Jump (1) that made possible the definition of the height of the optimum fall from which the player takes \ wins the maximum jumping and the connection between the height of the fall, the time of contact and flight-time. Some authors have reported (2) that commanded plyometric training shows that exercises are effective to increase the jumping, speed and skill of players. Plyometry is a form of resistance exercise that refers to the stretch-shortening cycle (SSC) such as jumps or doing vertical or horizontal jumps (3). Plyometric training(4) is widely used in order to improve jumping ability, especially in sports such as volleyball and basketball (5, 6, 7, 8, 9).Coaches need exercises less time consuming and help to improve the vertical jumping ability of their players. Individual differences in physical fitness parameters among players have been attributed to long-term sport training specificity (10). Furthermore, a comparison of drop jumping performance (DJP) among athletes, using the achieved jump height normalized to the stretch load as a criterion, revealed that volleyball players surpassed track and field jumpers, soccer players, and physical education students (12).

2. Methodology

This study is concentrated on two teams: Women's Volleyball Team (V) and Women's Basketball Team (B) 15 members each, focusing on 30 subjects. Players were measured in physical parameters;

Table1 Anthropometric Measurements (Volleyball&Basketball players)

Team	Nr	Age	BH (cm)	BW(kg)	BMI(kg/m^2)
Volleyball	15	24	180.4	70.37	21.67%
Basketball	15	27	173.4	63.88	20.93%

2.1. Protocols of the Test Performed

After were conducted anthropometric measurements and later on the tests in vertical jump performance of the protocol tests .The players performed the test DJ60cm in the system platform Leonardo® Ground Force Reaction Plate (GRFP) which expresses Force max (kN), Power max (w/kg), Time Contact (TCs), Air Time (TAs), TA/TCs in University of Sports, Tirana. The players one by one performed on the cube height 60cm, with their hands on their loins. Through a free fall from the height of the cube they leave themselves falling into GRFP platform and rapidly the reaction after contacting with GRFP they should jump in vertical as high as possible. The test has

been developed 3 times and we got the best measure of the contact time and the time in the air.

Drop Jump Test

Table2. Data obtained from GRFP (Volleyball&Basketball players)

Nr.	Fmax N/kg		Pmax w/kg		Time Contact TCs		Air Time TAs		TA/TC	
V15-B15	Vboll	Bboll	Vboll	Bboll	Vboll	Bboll	Vboll	Bboll	Vboll	Bboll
Average	65.19	74.07	31.26	23.06	0.231	0.198	0.436	0.34	1.96	1.71
Min	84.61	98.04	40.6	36.12	0.298	0.226	0.505	0.452	2.83	2.32
Max	53.34	66.31	19.57	3.75	0.149	0.155	0.309	0.096	1.49	0.62

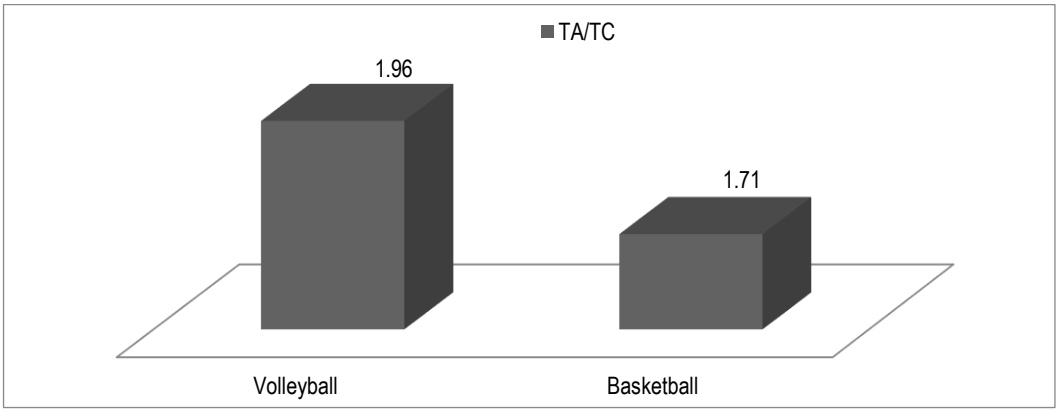
2.2. Statistical analyses

A unilateral analysis of variance (ANOVA) on data from 30 athletes was performed in order to identify changes in the parameters of the DJ60cm test; Scheffe post hoc analysis was run to show differences between groups. T-tests of paired samples were performed to compare DJ60cm parameters. Moreover, a PCA with a Varimax rotation was executed to examine a possible tendency towards the dependence of temporary force or peak between groups of athletes when executing DJ60cm test. All statistical procedures were performed using the Package Statistics for Social Sciences 10.0.1 software (SPSS) Inc., Chicago, IL). An alpha level of 0.05 was used.

3. Results

The results obtained by GRFP showed different team values of the two sports in the parameters of Fmax V65.19<B74.07n/kg, Pmax V31.26>B23.06w/kg, TCs V0.231>B0.198, TAs V0.436>B0.34 and TA/TCsec V1.96s>B1.71sec. Results revealed that V players jumped higher (p, 0.001) than B players. Finally, the Drop Jump60cm test has different performance between individual players, despite the fact that in the team average it turned out that Volleyball players is higher in this test.

Graphic.1: Drop Jump test at measurement.



4. Discussion

The correlation between the tests was measured according to the Pearson's moment product. The results showed a high correlation coefficient (r = 0,924) and statistically significant (sig. <0.05).Results revealed that V players jumped higher (p, 0.001) than B players. Finally, the Drop Jump60cm test has different performance between individual players, despite the fact that in the team average it turned out that Volleyball players is higher in this test. Drop Jump is the typical plyometric test. Furthermore, tests such as DJ can be a useful method for assessing differences and monitoring vertical jump training programs from collective sports. It is held an analysis to determine whether the test and measurement methods used were available to identify whether the groups did achieve high or poor performance. Data were used to calculate force parameters such as peak power output is normalized for body weight (FMAX) and maximum power output is normalized for body weight (PMAX). The rate of force development during the ascending phase to the duration of ground contact (Tc) and the time to reach the peak force, expressed as the percentage of TA / TCs. Some training studies have found that plyometric training based on DJs does not significantly enhance jump height or lower limb power, while other reports showed a large variability in the magnitude of such enhancement. Several factors, including a training program design (the type of exercises, training duration, training frequency, volume and intensity of training), subject characteristics (age, gender, fitness level, sport practice) and methods of testing different types of vertical jumps may be responsible for the conflicting findings concerning plyometric training. However, potentially inconsistent effects of DJ training may result from the differences in the DJ technique employed (11). Determining the optimal DJ jump height is important in player training. Vertical jumping can be assessed not only by the height of its development, not only by the height of the body and the height of the arm or detachment from the ground by touching the object, but also by the phase of stay in the air where enabled by GRFP. In this study were observed the differences between the two groups at the time of contact during the fall and the air time during

the jump. ANOVA variation revealed significant changes (f, 0.001) regarding the age, height, and body mass of the female players examined.

Conclusion

According to the data obtained and presented above, they showed that the level of jump of volleyball and basketball players is at a low level of interpretation. Improving the ability to jump is a major training goal for many sports, and drop jump is the well-known training method used to achieve this improvemen. However, an players in team games should be thrown higher than his or her opponent, and this jump should be executed faster than the opponent's jump. Individually the players need to improve their jump performance in order to achieve a better personal record. Compared to the reference table of the Reactive Forces Index (1.5-2.0RSI) for the Drop Jump test, we came to the conclusion that the level of Volleyball & Basketball players in Albania obtained in the result of the TA / TCs Index represents a moderate level of training, at the level of players prepared for moderate plyometric intensity.

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