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## Comparison of flexibility and vertical jumping ability between basketball and football players

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### Abstract

The purpose of the study was to compare the flexibility and vertical jumping ability between intercollegiate men basketball and football players. To achieve this purpose, 30 men players (Basketball= 15 and Football= 15) were selected randomly as the subjects from Schools of Thoothukudi District. The age of the subjects were ranged from 13-16 years. Flexibility and vertical jumping ability were selected as dependent variables for this study. Flexibility was measured by using sit and reach test and vertical jumping ability was measured by using Sargent jump test. The experimental design used for this study was static group comparison design. The collected data were statistically analyzed for significant difference by using independent 't' test. In all the cases 0.05 level of significance was used to test the hypothesis. It was concluded that, there was no significant difference was found among the basketball and football players on flexibility and vertical jumping ability. Football players showed better performance on flexibility and vertical jumping ability when compared to basketball players.

**Keywords:** Comparison flexibility vertical jumping ability between basketball football players

### 1. Introduction

There is a great number of athletes that play basketball and soccer today, which leads to the assumption that these two sports are among the most popular in the world. Basketball and soccer are dynamic sports that demand an intensive load of training to satisfy the high demands placed. The training program of these two sports theoretically is different, based on the fact that during action, basketball and soccer appear different. Additionally, some somatomorphic characteristics that affect performance are evident in each sport, such as for example height, or hand-eye coordination in basketball (Berg & Latin, 1995) [1].

Another important factor that describes an athlete's physical condition is also flexibility. Besides the fact that flexibility is very important for athletic performance, it is also highly correlated to athletes jumping ability and as a result with lower limbs strength (Lee, Etnyre, Poindexter, Sokol, & Toon, 1989) [7] and therefore the reason that flexibility is a factor concluded in most research studies that describe physical condition (Naughton, & Carlson, 1991, Nig & Maitland, 2001, Tamer *et al.*, 1997, Roesch, *et al.*, 2000, Stone, & Steingard, 1993, Bisschop, *et al.*, 1998) [8, 9, 14, 11, 13, 2].

### 2. Statement of the problem

The purpose of the study was to compare the flexibility and vertical jumping ability between intercollegiate men basketball and football players.

### 3. Methodology

To achieve this purpose, 30 men players (Basketball= 15 and Football= 15) were selected randomly as the subjects from Schools of Thoothukudi District. The age of the subjects were ranged from 13-16 years. Flexibility and vertical jumping ability were selected as dependent variables for this study. Flexibility was measured by using sit and reach test and vertical jumping ability was measured by using Sargent jump test. The experimental design used for this study was static group comparison design. The collected data were statistically analyzed for significant difference by using independent 't' test. In all the cases 0.05 level of significance was used to test the hypothesis.

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#### 4. Analysis of Data

The analysis of independent 't' test on the data obtained for

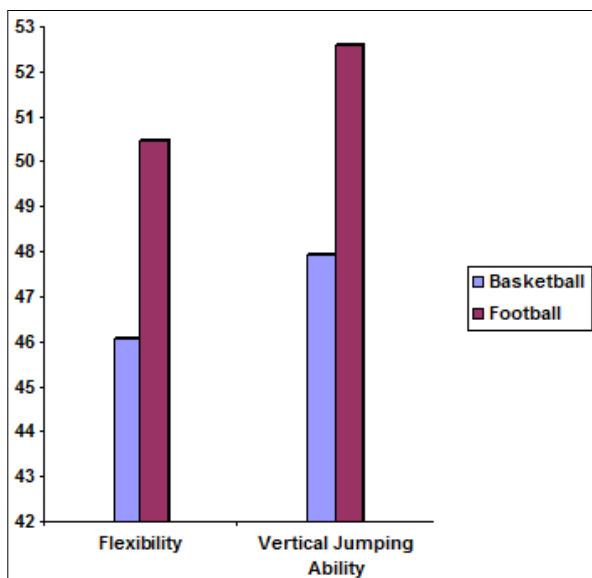
men basketball and football players on flexibility and vertical jumping ability have been analysed and presented in Table I.

**Table 1:** The summary of mean and independent 't' test for men basketball and football players on flexibility and vertical jumping ability

Variables	Groups	Number	Mean	SD	Obtained t-ratio
Flexibility	Basketball Players	15	46.07	8.17	2.62*
	Football Players	15	50.47	6.66	
Vertical Jumping Ability	Basketball Players	15	47.92	10.46	2.49*
	Football Players	15	52.58	9.29	

The table value required for .05 level of significance with df 28 is 2.048

The table I shows that, the mean values of basketball and football players on flexibility and vertical jumping ability are 46.07, 50.47, 47.92 and 52.58 respectively. The obtained independent t-ratio value between Basketball and football players on flexibility and vertical jumping ability is 2.62 and 2.49 respectively. The table value required for significant difference with df 28 at 0.05 level is 2.048. Since, the obtained 't' ratio value is greater than the table value, it is understood that basketball and football players had significant difference on flexibility and vertical jumping ability. The mean values of basketball and football players on flexibility and vertical jumping ability were graphically represented in Figure I.



**Fig 1:** Mean values of men basketball and football players on flexibility and vertical jumping ability

#### 5. Discussion on findings

Despite the fact that basketball and football seem to have several similarities during competition in parameters such as jumping, starting, sprinting for small distances and conditioning, demands in athletic abilities such as speed, power, agility and coordination, present differences in training. Until now it could not have been said that this difference could affect the level of athletes' physical condition in those sports, especially in the ages that this study is concerned with.

For flexibility alone, the greatest differences that were observed in the present study between basketball and football players, may lead to the conclusion that little concern is given for flexibility improvement through practice in young basketball players. Even though the test values present some improvement as the athletes become older (Docherty & Beel, 1985) [3], the mean values for basketball players performing the sit and reach test are considered to be generally low.

A low flexibility level of basketball players was recorded in previous studies testing professional athletes and/or adults in other sports (Nig, & Maitland, 2001, Dopsaj, 1993, Bisschop, *et al.*, 1998) [2]. Naughton & Carlson (1991) [9, 4, 8] also, demonstrated that basketball players showed the smallest improvement from any other athlete after a program with emphasis on flexibility.

A factor that should not be overlooked is that the somatomorphic characteristics of the players play an important role in flexibility. Height is of greatest importance in this case, since basketball players probably present the highest mean values compared to most sports.

It is also known that height plays a suppressive role in the improvement of flexibility in basketball. This phenomenon is more immense during adolescence, which is the focus of this study. Growth factors in the age of 15 present rapid changes, something that influences muscles' strength and flexibility. (O' Neil & Micheli, 1988) [10]. Especially in basketball this phenomenon seems to play a greater role, as it appears from the results of the present study.

It was stated earlier that flexibility has a positive correlation with players jumping ability (Lee *et al.*, 1989) [7]. The results of this study seem to agree with aforementioned statement, since significant differences appeared also for jumping ability values between basketball and soccer athletes, mainly at the age group of 15 year olds.

It has been proved in the past with the use of isokinetic tests at slow velocities testing lower limb strength, that basketball players were more powerful than any other athlete (Imwold, *et al.*, 1983, Zakas, *et al.*, 1995, Zakas, *et al.*, 1993) [5, 16, 15]. Based on their somatomorphic characteristics that seem to be quite logical (big athletes).

On the contrary, in some other studies, basketball and soccer athletes presented lower values in lower limbs' strength compared to other sports (Bisschop, *et al.*, 1998, Berg, & Latin, 1995, Kinr Kendall, 1986) [2, 1, 6]. In those studies the sample population was adults and not children.

In the present study, it is evident that training may affect lower limb muscle strength in these two sports, especially, in the ages of 14 and 15, where the values of the jumping ability were in favor of soccer players.

Soccer players appeared to be stronger also in a study by Sidhu & Badhot (1991), except that in this case the sample consisted of professional athletes.

Jumping ability describes power-speed ability and not relative strength. Based on Zaka, (1993), it appears that this ability cannot be affected dramatically by the training practices. As a conclusion the results of this study may not become because of training exclusively

It is possible that the inhibiting factor that affects these results is no other than the "rapid growth" of basketball players at those ages. Growth combined with low flexibility levels leads to low values of power-speed ability especially when compared to soccer players.

#### 4. Conclusions

From the analysis of the data, the following conclusions were drawn.

1. The significant difference was found among the basketball and football players on flexibility and vertical jumping ability.
2. Football players showed better performance on flexibility and vertical jumping ability when compared to basketball players.

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