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A Comparative Analysis of Leg Explosive Power and Shoulder Strength between Inter-Collegiate Volleyball and Basketball Players

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Abstract

This study compared the shoulder strength and leg explosive powers of Bharathiar University inter collegiate volleyball and basketball players. Forty volunteers (N=20 from each sport) between the ages of 18 and 24 were chosen for this study. An independent t-test with a 0.05 confidence level and descriptive statistics were used to assess the leg explosive power and shoulder strength data that had been gathered. The findings showed no discernible difference in shoulder strength or leg explosive power between Bharathiar University's men basketball and volleyball players.

Keywords: leg explosive power, shoulder strength, Volleyball and basketball

Introduction

Volleyball

Two teams, each with six players on the court, compete in the ball sport of volleyball. Twelve players make up a team. A net and two antennae are needed to play the game. It uses a rally scoring system, and each match is played to 25 points. A set is won by the first team to reach twenty-five points; if both teams do so, the set goes on until one side takes a two-point advantage. Keeping the ball moving above the net by hitting it with the hands before it hits the ground is the aim of the game (Leveage, 1933).

Basketball

The sport of basketball is very physically demanding. In basketball, muscle strength is essential because it improves speed, stamina, and ligament and tendon strength, which lowers the chance of sprains and tears. Enhancing balance and stability through core strengthening allows for improved body coordination and support, which maximizes arm and leg strength. Originally, a soccer ball was used to play basketball. In order to improve visibility, Tony Hinkle invented the now-common orange basketball in the late 1950s, although the originals were brown. Except for the "bounce pass" to teammates, dribbling was not a feature of the game at first. As rounder ball production increased in the 1950s, it started to play a significant role in the game.

In order to keep spectators from tampering with shots, metal hoops with backboards took the place of peach baskets as goals in 1906. Rebound shots were also made possible by this. According to Naismith's handwritten journals, which his granddaughter discovered in 2006, he was worried about the new game he had created because it was modeled after the kid's game "Duck on a Rock." After Naismith, the game was dubbed "Basket Ball." On January 20, 1892, nine players participated in the first-ever game, which took place on a court half the size of a contemporary basketball court in the YMCA gymnasium in Albany, New York, and ended in a 1-0 victory from a 25-foot shot. Teams were composed of five players by 1897-1898. During its first 20 years, the game received no promotion (James, 1976).

Hypothesis

It was hypothesized that there will be significant difference between male volleyball and basketball players on leg explosive power.
It was hypothesized that there will be significant difference between male volleyball and basketball players on shoulder strength.

Selection of variables

In order to choose the variables, the researcher looked through books, journals, and research papers. As a result, shoulder strength and leg explosive power were chosen as study variables.

Criterion Measures

1. To evaluate the subjects explosive strength, the Standing Broad Jump test was utilized, and the results were reported in meters.
2. To evaluate the subjects shoulder strength, pull-ups were utilized, and the results were recorded in numerical form.

Test Administration

The administration of test was explained as follows.

Test-I

Leg Explosive Power (Standing Broad Jump)

Purpose: To measure the leg explosive power of the subject.

Tool: Tape Measure and a mat. Space on the floor or an outdoor jumping pit

Procedure: The athlete stands behind a line marked on the ground with feet slightly apart. A two-foot take-off and landing was used, with swinging of the arms and bending of the knees to provide forward drive. The subject attempted to jump as far as possible, landing on both feet without falling backwards. Three attempts are allowed.

Scoring:

The measurement was taken from take-off line to the nearest point of Contact on the landing. Record the longest distance jumped, the best of three attempts.

Test-II

Shoulder Strength (pull ups)

Purpose: To Measure the Shoulder Strength of the subjects.

Tool: Pull ups bar and score sheet.

Procedure: The subjects hang from the bar by hands with forward grip and pull himself up until his chin over for bar. Then the body until his arms is straight. He should not kick, jerk, or use a kip motion. Four half counts are permitted if the subject does so pull all the way up, if he does not straighten his arms completely when lowering the body or if he kicks, jerks or kips in performing the movement.

Scoring: The result of scoring is the person who getting pull-ups in one minute (60 second).

Statistical Technique

In the first step descriptive statistics were used to examine the status of the variables used in this study. Mean and SD were calculated. To conduct the necessary statistical calculations, SPSS software was utilized. In order to investigate the dominance of the game's nature, an Independent "t" test was used. The significance level was established at the 0.05 level of confidence.

Leg Explosive Power

Table 1 displays the analysis of the mean, standard deviation, and t-ratio data on leg explosive power comparing basketball and volleyball players.

Table – 1

The Mean Standard Deviation and t- Ratio Values on Leg Explosive Power of Volleyball and Basketball Players

Groups	Mean	Standard Deviation	t-ratio
Volleyball Players	1.96	1.17	2.30*
Basketball Players	1.80	0.25	

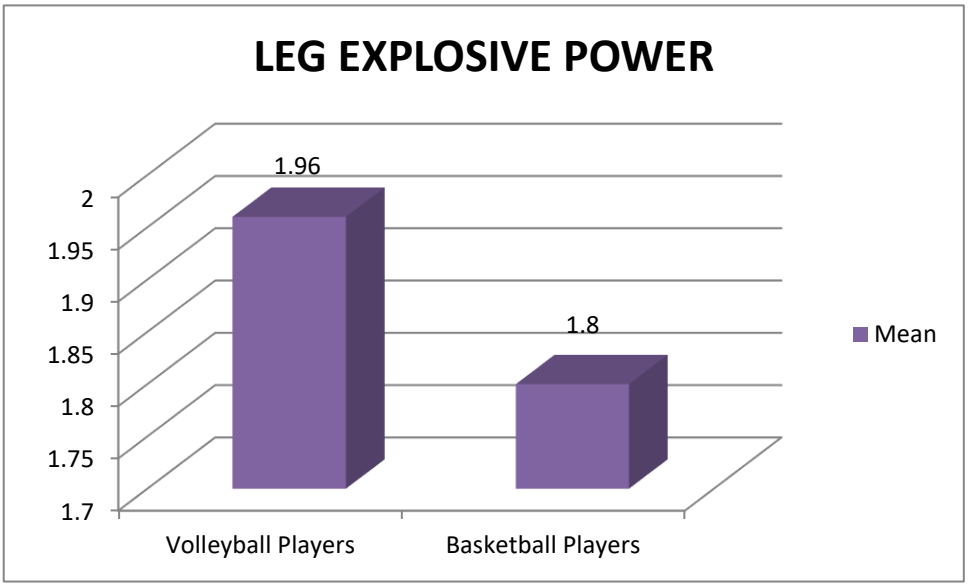
*****Significant at .05 level of confidence.

(The table value needed to be significant with df 1 and 38 at the.05 level of confidence was 2.02).Basketball and volleyball players' mean leg explosive power scores were 1.80 and 1.96, respectively, according to Table 1. With df 1 and 38, the calculated t-ratio value of 2.30 was higher than the necessary table value 2.02 for significance at the.05 level of confidence. The study findings demonstrated that basketball and volleyball players differed significantly in their leg explosive power. Basketball players were shown to be inferior than volleyball players in terms of leg explosive power.

Figure-I show a graphic representation of the average shoulder strength values of basketball and volleyball players.

Figure – I

Bar Diagram Showing the Mean Values of Volleyball Players and Basketball Players on Leg Explosive Power



Shoulder Strength

Table 1 displays the analysis of the mean, standard deviation, and t-ratio data on shoulder strength comparing basketball and volleyball players.

Table -2

The Mean Standard Deviation and T-Ratio Values on shoulder strength of Volleyball and Basketball Players

Groups	Mean	Standard Deviation	t- ratio
Volleyball Player	30.75	1.83	3.10
Basketball Players	28.65	2.41	

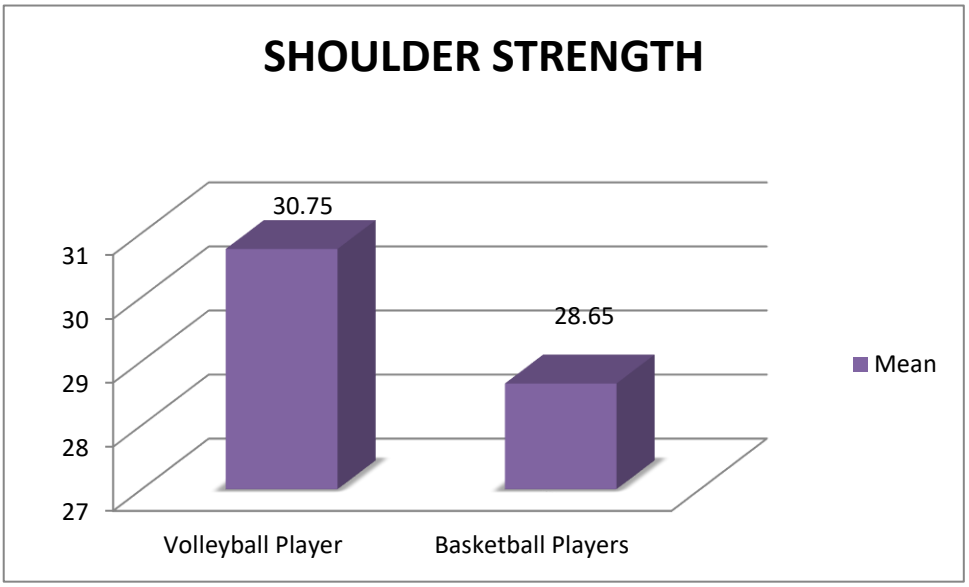
*****Significant at .05 level of confidence.

(The table value needed to be significant with df 1 and 38 at the.05 level of confidence was 2.02).Basketball and volleyball players' mean shoulder strength scores were 28.65 and 30.75, respectively, according to Table 1. With df 1 and 38, the computed t-ratio value of 3.10 was higher than the necessary table value 2.02 for significance at the.05 level of confidence. In terms of shoulder strength, the study's findings demonstrated a notable distinction between basketball and volleyball players. Basketball players were shown to be inferior than volleyball players in terms of shoulder strength performance.

Figure II shows a graphic representation of the average shoulder strength values of basketball and volleyball players.

Figure - II

Bar Diagram Showing the Mean Values of Volleyball and Basketball Players on Shoulder Strength



Results

The comparison of basketball and volleyball players' shoulder strength and leg explosive power was the main focus of the analysis. To ascertain if the differences between the groups were statistically significant, the evaluation employed the mean, standard deviation, and t-ratio values. The average leg explosive power of volleyball players was 1.96, with a standard deviation of 1.17. Conversely, the mean and standard deviation for basketball players were 1.80 and 0.25, respectively. With a t-ratio of 2.30, it appears that there is a statistically significant difference in leg explosive power between the two groups. According to these findings, volleyball players often possess greater leg explosive power than basketball players. Volleyball players had a higher average score of 30.75 with a standard deviation of 1.83 when comparing shoulder strength. With a mean score of 28.65 and a standard deviation of 2.41, basketball players had lower scores.There is a substantial difference between the groups, as indicated by the t-ratio of 3.10. This suggests that compared to basketball players, volleyball players typically have stronger shoulders.

Discussion on Findings

The study's findings demonstrated that volleyball and basketball players differed significantly on average in terms of shoulder strength and leg explosive power. The results show that, in comparison to basketball, volleyball dominates in terms of explosive power and shoulder strength. Furthermore, this negligible difference in explosive strength may also be due to the respondents' comparable levels of activity in both NCAA basketball and volleyball. However, Mane and Jyoti (2018) also provided support for these findings. Who discovered a negligible difference in the explosive strength of female basketball and volleyball players? Additionally, Dhake (2017) discovered that volleyball and basketball players share similar explosive strengths. Additionally, it was determined that the intercollegiate basketball and volleyball players at Bharathiar University had negligible differences in shoulder and leg explosive strength.

Conclusion

The following conclusions have been drawn in light of the findings. Comparing volleyball to basketball, the current study indicated that volleyball's characteristics had a greater impact on players' performance in terms of leg explosive power. Basketball players outperformed volleyball players when it came to shoulder strength performance. The basic techniques of passing, blocking, and smashing are essential in volleyball in order to primarily improve shoulder strength and leg explosive force. Basketball players need to possess basic skills like arm strength and explosive force in order to pass, shoot, throw, and rebound. It was determined that volleyball players may have outperformed basketball players in terms of shoulder strength and leg explosive power based on the team's composition and skill usage. As a result, the current study found a high amount of gaming influence.

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