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Correlation Study Of Body Fat Percentage With The Playing Ability Of Basketball Players

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Abstract: The purpose of the study is to determine the correlation of the body fat percentage with the playing ability of Basketball Players and to assess it. 20 male intercollege Basketball players whose age ranging from 18-27 years of Shree Hanuman Vyayam Prasarak Mandal's Degree College of Physical Education. Body fat % was measured using a skinfold caliper in four sites i.e., triceps, abdomen, suprailiac and thigh. Playing ability was measured by Johnson Basketball Test. To determine the correlation of the body fat percentage and the basketball playing ability, Pearson's correlation of coefficient was employed at 0.05 level of significance. The result shows that body fat percentage with shooting, passing and dribbling were calculated with a value of 0.273,0.080 & 0.638 respectively. There was significant relationship of Body Fat Percentage with Dribbling and no significant relation with Shooting and Passing. As dribbling skills require a good agility and agility decreases with higher body fat percentage.

Index Terms - Basketball, Body Fat Percentage, Dribbling, Passing, Shooting.

INTRODUCTION

Basketball is a widely played team sport that demands a combination of physical, technical, tactical, and psychological skills. A player's anthropometric characteristics significantly influence their performance. From the mid-to-late 20th century, the average height of NBA players increased considerably, highlighting the importance of body structure in talent selection. Body composition is a key factor frequently assessed in basketball and other sports. Due to the game's intense physical demands, maintaining an optimal body composition, particularly lower fat mass, can be advantageous for athletes. Excess body fat has been found to hinder explosive movements such as vertical jumps and rapid directional changes, both of which are crucial in basketball, where players typically jump about once per minute and change activity every 1–3 seconds. Additionally, higher body fat percentages are associated with an increased risk of overuse injuries like patellar tendinopathy, which is common among basketball and volleyball players. Given the demanding nature of training and competition throughout the season, closely monitoring body fat levels is essential for maximizing performance and maintaining overall health. Body composition directly affects an athlete's ability to excel in physical performance tests, as excess fat increases body weight, making movements more challenging and reducing efficiency. The added biomechanical inertia from higher fat percentages slows down acceleration and agility, making it less compatible with elite-level performance. Conversely, lower body fat percentages contribute to faster sprinting, quicker acceleration, improved agility, and better jumping ability, all of which are critical for success in basketball. Therefore, maintaining an optimal body composition is a fundamental aspect of enhancing athletic performance and reducing injury risks. The purpose of the study was to determine the correlation of the body fat percentage with the playing ability of Basketball Players. The study is significant as the result of this study highlights the direct relation of playing ability with respect to the body fat percentage of Basketball players. For this study, with the help of simple random sampling method 20 intercollegiate male basketball players were selected and were delimited to the players of H..V.P.M Degree College of Physical Education, Amravati only whose age was ranging from 18-27 years. Based on literature

and scholar's understanding, it is hypothesized that there will be a significant relationship between the body fat percentage and the playing ability of Basketball players.

Methodology

The criterion measure selected for body fat percentage was body fat percentage assessment and Johnson Basketball test for Basketball playing ability. The data were collected by giving prior information about the purpose of the study and the test used in study. Further the raw data collected were tabulated in a systematic manner and statistic calculations were calculated using SPSS and MS excel software.

Result of the Study

To test the hypothesis, the level of significance was chosen at 0.05 which is considered appropriate for the present study. To investigate the relation of the body fat percentage and Basketball playing ability Pearson correlation coefficient analysis was deployed using SPSS Software.

Correlations of body fat percentage and basketball playing ability				
		Shooting	Passing	Dribbling
Fat%	Pearson Correlation	0.273	0.080	0.638**
	P value	0.245	0.738	0.002
**. Correlation is significant at the 0.05 level (2-tailed). N=20				

Table No.: 1
Correlation of body fat percentage with playing ability of Basketball players

The findings of Table-1 revels that the correlation between body fat percentage and dribbling (r = .638) was statistically significant as the obtained coefficient values was greater than the tabulated R-value of .432 at 0.05 level of confidence for the 19 degrees of freedom. Whereas there was no significant relation of shooting and passing since the R-value .273 & .080 respectively was smaller than the tabulated R-value.
Since the P value of Shooting (.245) and Passing (.738) was greater than the level of significance, which reveals that there was no significant relation between shooting and passing ability with fat percentage. P value > 0.05, whereas the P value of Dribbling (.002) is smaller than the level of significance, which reveals that there was significant relation between the dribbling and the fat percentage. P value < 0.05.

SCATTER PLOT REPRESENTATION

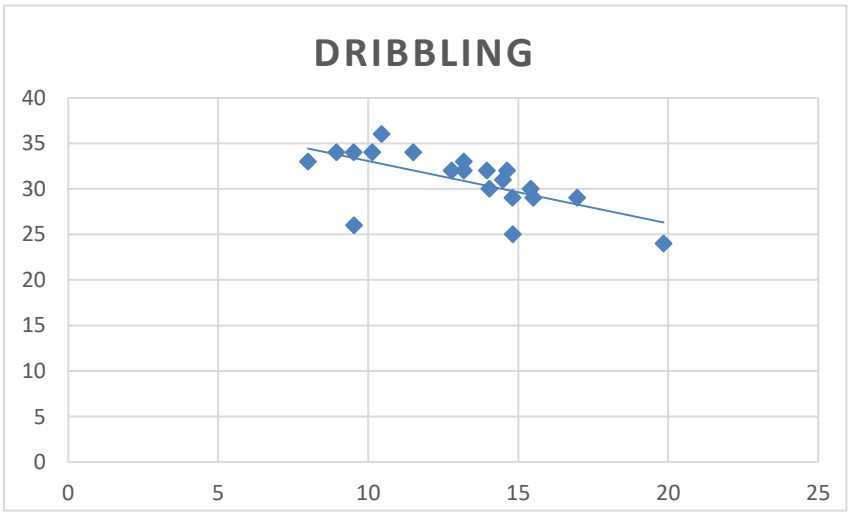

Figure No.: 1
Body fat percentage with Dribbling

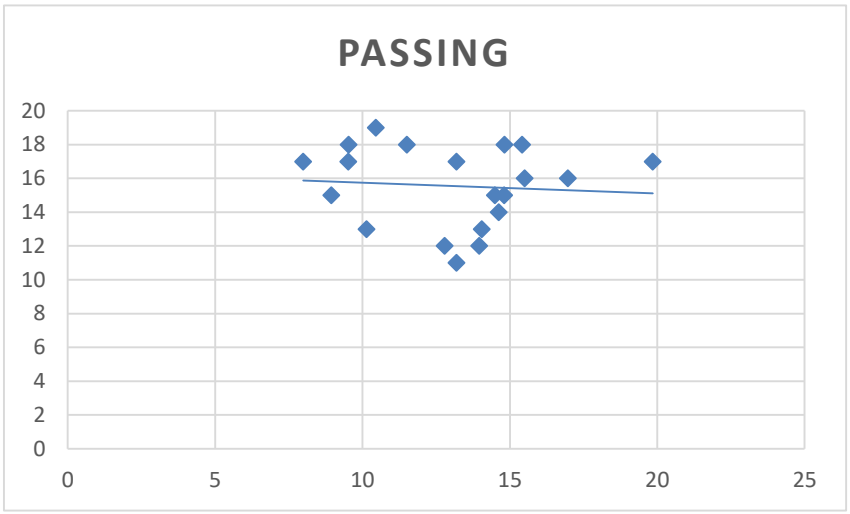

Figure No.: 2
Body fat percentage with Passing

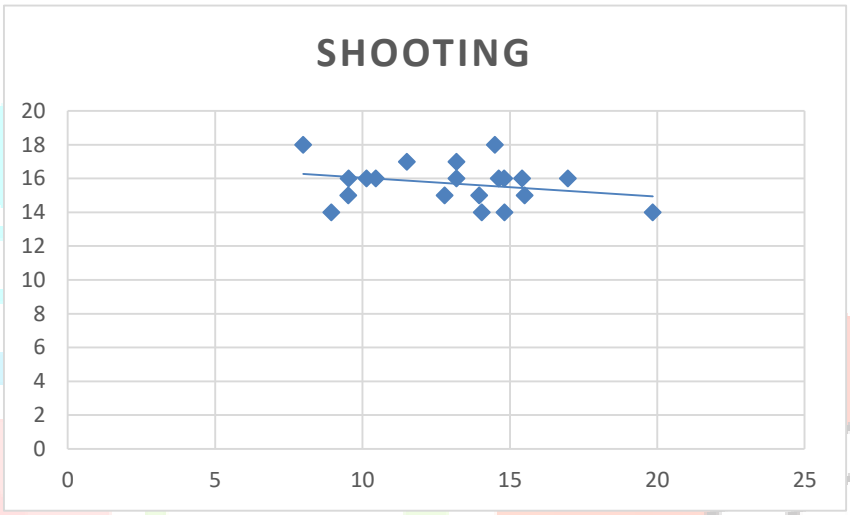

Figure No.: 3
Body fat percentage with Shooting

Figure No. 1 also reveals that there is significant correlation as the data points are closer to the line with respect to Dribbling and Body Fat Percentage. But Figure No. 2 and 3 shows scattered data points away from the line which reveals no/low relationship of Shooting and Passing with Body Fat Percentage.

Discussion on Findings

The findings of the study indicated that there was no significant relationship of Shooting and Passing to the Body Fat Percentage. Whereas it was indicated that there was significant relationship of Dribbling. There were no statistically significant relationship of Shooting and Passing as the obtained co-efficient values were less than the tabulated R-value of .432 at 0.05 level of confidence for the 19^{th} degree of freedom. Whereas there was significant relationship with dribbling as the co-efficient value was greater than the tabulated R-value.

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