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Relationship of Foot Diameter in Relation to the Playing Ability of Female Basketball Players

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Abstract: This study investigated the association between female basketball players' anthropometric characteristics and their skill level. Hundred and fifty-two (N=152) female basketball players from the Punjab region who were 18–25 years old and held state-level positions were picked as subjects. One anthropometric measure—foot diameter—was chosen as the study's independent variable. Basketball coaches with the appropriate credentials subjectively analyzed the playing skill, which was considered- the dependent variable and the performance factor. The speed shot shooting test, passing test, control dribbling test, and defensive movement tests are the four dependent variables in this study. Purposive sampling was the method employed for selecting the subjects, who were all female basketball players from the Punjab region who attained state-level positions. The Pearson product-moment correlation was utilized to gauge the link between basketball paying skill and the chosen anthropometric characteristic. According to the results, the independent variable that was selected had a significant connection with the two dependent variables and an insignificant correlation with the other two dependent variables. A degree of confidence of 0.05 was considered appropriate for testing significance in every instance.

Keywords: Anthropometric variables, dependent variables, correlation, measurements

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INTRODUCTION

The desire to engage in sports has led in a boom in the number of athletic competitions. Measurements of body components and physiological traits have been deemed essential in the selection of athletes (Meszaros et al., 2000) {1}. Player's physical appearances have an enormous impact on their performance and potential. The anthropometric variable in this study was crucial for interpreting the respondents' physical attributes. A stadiometer's measurement of height provided information on the subjects' stature. A scale or balance was used to determine their weight, which revealed information about their bulk. A comprehensive assessment of bodily dimensions was further assisted by the lengths and diameters of different body components, which were obtained with an anthropometer or caliper. In order to analyze the patients' physical characteristics and other parameters, a thorough examination of the links and exact measurements of these factors were crucial.

The systematic measurement of the human body's physical composition, with the focus on size, shape, and dimensions, is commonly referred to as anthropometry. Alphonse Bertillon developed the field of anthropometry and is often referred to as its founder. Within anthropometrics, a subfield called morphometrics emerged in the 20th century with the goal for clarifying differences in human size and shape among various populations. Significant variations have been detected in the anthropometric deviations and performance of high school basketball players, according to prominent research like Joseph et al. (1998). When it applies to female athletes in basketball, Ahmad and Nahid (2016) observed a significant

correlation among anthropometric traits and jump shot ability. Significant variations in anthropometric attributes across players from various clubs and positions were identified by Basinac et al. (2009).

REVIEW OF LITERATURE

1 . Ahmad and Nahid (2016) conducted a study investigating the correlation between anthropometric attributes and proficiency in jump shooting among adolescent female basketball athletes in Zahedan. The research focused on 30 participants ranged 15-18 years, selected through convenient sampling. The research involved the evaluation of several anthropometric factors. However, no statistically significant differences were found for the remaining variables concerning shot skill scores.

2 . Bujar et al. (2018) investigated the role of anthropometric attributes on the succeeding completion of agility tests among 14-15 years old basketball competitors who were men. The study involved testing 84 basketball participants from 7 active cadet teams (groups) of males. The results, presented in basic parameters, revealed a homogeneous distribution between anthropometric factors and quickness test and also concluded that anthropometric variables had no major effect on tests among basketball players.

3 . Emre et al. (2014) conducted a comparison of the anthropometric, physiological, and motor components among experienced young basketball players classified into three basic playing positions. The study involved 30 elite young men basketballers, aged 13 to 14. The primary result showed that guards were notably shorter and lighter compared to forwards and centers, with these differences being more pronounced than in previous research.

4. Karol and colleagues (2018) carried out investigation to expose the correlation between body builders and playing positions among both young and adult elite Basketballers who were men. The work involved 35 young and 35 adult professional players, who were evaluated for a range of anthropometric characteristics, encompassing body mass, height, skinfolds, somatotypes, girths, and breadths. The results highlighted strong differences in height and weight between centers, forwards, and guards in both age groups. Young players exhibited a more ectomorphic profile, while professional players were more mesomorphic.

5 . Milena and colleagues (2016) embarked on a study to examine the anthropometric characteristics of elite male basketball players, elucidating differences based on their specific playing positions. The research encompassed 335 participants, categorized into guards, forwards, and centers in accordance with their on-court roles. Results elucidated a significant divergence in anthropometric characteristics among players across distinct playing positions. The findings underscored the influence of factors such as age, playing style, and competitive level in shaping these variances.

6 . Nikolaos & Emmanouil (2015) aimed to confirm the relationship between anthropometric characteristics, handgrip strength, and selected technical skills in young basketball players aged 13-14 years. The study involved 106 young players with a minimum training experience of two years. The study concluded that coaches should take into account these anthropometric characteristics when recruiting and categorizing players.

7 . Rakesh and Pramod (2013) aimed to investigate the relationship between body measurements and

physical conditioning factors and basketball proficiency. The research comprised 45 men participating. Independent variables encompassed six anthropometric parameters and 7 physical fitness characteristics. The findings illuminated a significant association between anthropometric variables and most of the physical fitness components with performance.

8 . Viswanathan et al. (2010) undertook a study focusing on the anthropometric traits of elite national basketball players, particularly examining the contribution of various playing positions on various body measurements. The research sample included 44 participants from national championship basketball squad, who voluntarily consented to participate. Employing accredited methods from the International Society of This research not only unveiled noticeable variations in anthropometric features among players in various playing positions but also underscored the significant influence of specific anthropometric characteristics on playing ability within the domain of elite national basketball.

RESEARCH METHODOLOGY

A total of 152 (N=152) female basketball players from the Punjab province ranging within the ages of 18 and 25 with State Level rankings had been picked for inclusion as participants. Those willing to participate who accepted to take part in the research were the selected participants. Foot width was picked as the determining factor, and the Speed Shot Shooting Test, Passing Test, Control Dribble Test, and Defensive Movement Test were utilized as the contributing factors. Expandable steel tape has been picked as a measuring object for foot width. The objectives and importance of the study were described to the players prior to the measurements to motivate them and to get their cooperation during the tests. The AAHPERD Basketball Skill Test elements and the chosen physiological characteristic were the only elements incorporated into the study. A certain level of confidence of 0.05 was deemed to be optimal to assess significance.The procedure of the test taken is mentioned below:

Objective: To determine the range between the most posterior point of the heel and the tip of the longest toe.

Equipments: Flexible steel tape, plan paper, pen and a notebook.

Procedure: The individual was instructed to place their foot on a sheet of paper while standing erect, and marks were made with a pen in front of the largest toe and at the back of the heel. Utilizing a flexible steel tape, the distance between the largest toe and the heel was then measured.

RESULTS AND DISCUSSIONS

The results showed that foot diameter was having negatively significantly related with speed shot shooting test and passing test but negatively insignificant correlation with control dribble test and defensive movement test.

Table-1: Relationship of foot width in connection to female basketball professionals proficiency:

S. No.	Variables	N	Speed Shot Shooting	Passing Test	Control Dribble Test	Defensive Movement Test

			Pearson Correla-tion	Sig. (2-tailed)	Pearson Correla-tion	Sig. (2-tailed)	Pearson Correla-tion	Sig. (2-tailed)	Pearson Correla-tion	Sig. (2-tailed)
1.	Foot Diameter	152	-0.314	0.000	-0.259	0.001	-0.016	0.845	-0.049	0.549

The studies demonstrated that the selected anthropometric componenet (foot diameter) selected was negatively significantly related with speed shot shooting test and passing test but negatively insignificant correlation with control dribble test and defensive movement test.

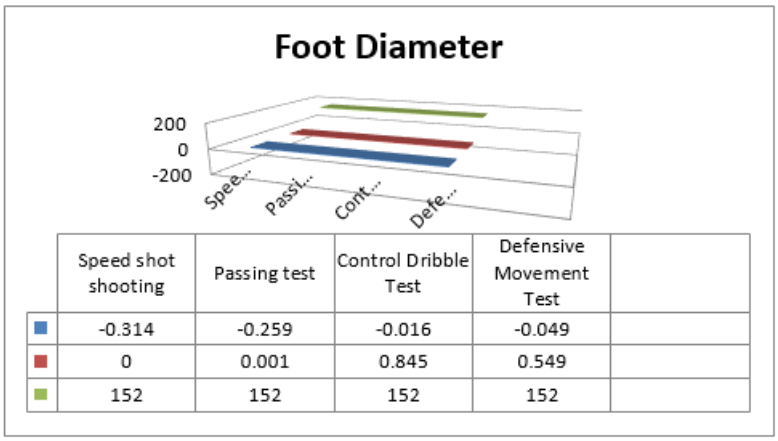

Figure 1: Graphical representation of relationship of foot diameter in relation to the playing ability of female basketball players.

STATISTICAL TECHNIQUE

1. SPSS edition 16.0 for Windows (SPSS Inc., Chicago, IL, USA) had been employed to execute the statistical evaluation.

2. To gauge the association, Karl Pearson's product moment coefficient was derived for physical fitness variables with various basketball skill abilities among the basketball players.

CONCLUSION

From the above results, we can conclude that the anthropometric variable i.e. foot diameter has negatively significant relation with speed shot shooting test (-0.314) and passing test (-0.259) but negatively insignificant relation with control dribble test (-0.016) and defensive movement test (-0.049). Therefore, this parameter might be taken into consideration with respect to selection and performance of the players.

References

1. Meszaros, J., Mohacsi, J., Szabo, T., & Szmodis, I. (2000). Anthropometry and competitive sport in Hungary. Acta Biologica Szegediensis, 44(1-4), 189-192.

2. Joseph, G., Timothy, A., Glen, L., & Thomas, M. (1998). Anthropometric and Performance Measures for High School Basketball Players. Journal of athletic training, 33(3), 229-32.

3. Ahmad, S., & Nahid, A. (2016). Relationship between anthropometric characteristics and jump shot skill in female basketball players. European Journal of Physical Education and Sports Medicine, 2(6).

4. Bašinac, I., Branimir, M., & Haris, P. (2009). Morphological characteristics of bosnian first league female basketball players. Faculty of physical education and sport Original scientific paper, 6(1-2), 20-25.

5. Archana, C., Sushma, G., & Vijay, C. (2012). Predicting excellence in basketball: anthropometric and physiological attributes in elite indian female players. International Quarterly of Sport Science.

6. Ahmad, S., & Nahid, A. (2016). Relationship between anthropometric characteristics and jump shot skill in female basketball players. European Journal of Physical Education and Sports Medicine, 2(6).

7. Bujar, B., Artan, R., & Abedin, B. (2018). The influence of anthropometric variables in agility abilities of young basketball players. Sports Science, 11(1), 57-60.

8. Emre, E., Gokmen, O., & Hurmuz, K. (2014). General Anthropometric and Selected Motor Skills of Elite Young Male Basketball Players According to Position on the Court of Players. Journal of Athletic Performance and Nutrition, 1(1).

9. Karol, G., Anna, K., Kazimierz, M., Petr, S., & Martin, M. (2018). Anthropometric Variables and Somatotype of Young and Professional Male Basketball Players. Journal of Sports, 6(1), 9.

10. Milena, T., Djordje, B., Slavica, D., & Milena, A. (2016). P-91 Anthropometric features of elite male basketball players regarding their playing position. British Journal of Sports Medicine, 50(1).

11. Nikolaos, A., & Emmanouil, Z. (2015). The influence of the anthropometric characteristics and handgrip strength on the technical skills of young basketball players. Journal of Physical Education and Sport, 15(2), 330-337.

12. Viswanathan, J., Nageswara, A., & Baskar, S. (2010). Anthropometric assessment of youth national championship basketball players in relation to playing position. British Journal of Sports Medicine, 44(1).