Library Progress International
Vol.44 No. 3, Jul-Dec 2024: P.10792-10795

Print version ISSN 0970 1052
Online version ISSN 2320 317X

Original Article

Available online at www.bpasjournals.com

A Comparative Examination of Anthropometric Attributes among Male College Cricket and Football Athletes of North Region.

Manu Singh Pawar[1] , Dr. Rohit Chauhan[2,] , Pawandeep [3],Gagaandeep singh [4] Anuradha Chaudhary [5]

[1] Research scholar, CT University, Ludhiana, mpjk02be3688@gmail.com
[2,] Assistant professor, Lovely Professional University,rohitchauhanib@gmail.com
[3,] Research scholar, DAV University, Jalandhar, Punjab,maan.pawan.pawandeep@gmail.com
[4,] Research scholar, GNA University,gdsinghofficial93@gmail.com
[5], Assistant Professor, DAV University, Jalandhar,ch.anuradha2331@gmail.com

How to cite this article: Manu Singh Pawar, Rohit Chauhan, Pawandeep ,Gagaandeep singh,, Anuradha Chaudhary (2024) A Comparative Examination of Anthropometric Attributes among Male College Cricket and Football Athletes of North Region.. *Library Progress International*, 44(3), 10792-10795

ABSTRACT

The present study aimed to investigate the differences in anthropometric measures between male college players of cricket and football in the North region. The subjects, aged 18 to 25 years, were assessed for various anthropometric variables. Significant differences were identified between the two groups for the following measures: Standing Height, Sitting Height, Body Weight, Leg Length, Arm Length, Bi-Acromial Diameter, Ankle Diameter, and the Circumference of the Upper Arm and Calf, as well as Skinfold measurements at the Biceps, Triceps, and Calf. However, no significant differences were found regarding Bicondylar Humerus Diameter, Wrist Diameter, Bicondylar Femur Diameter, Forearm Circumference, Thigh Circumference, Subscapular skinfold, and Suprailiac skinfold. The results indicated that cricketers exhibited greater lengths, while footballers demonstrated larger diameters and higher skinfold scores.

Keywords: Anthropometric measures, Cricket, Football, Skinfold.

1. Introduction

Anthropometric characteristics are vital indicators of an athlete's physical profile, influencing performance and training methodologies across various sports. These characteristics, including height, weight, limb lengths, and body composition, can significantly affect an athlete's capabilities, with distinct variations observed among different sports disciplines (**Pope et al., 2019**). Understanding these differences is essential for optimizing training regimens and enhancing athletic performance.

Cricket and football are two prominent team sports that require a unique set of physical attributes. Cricket demands a combination of strength, flexibility, and coordination, particularly in batting, bowling, and fielding. Athletes often benefit from longer limb lengths, which can aid in reaching and striking (**Kearney & O'Connor, 2020**). In contrast, football prioritizes speed, agility, and muscular endurance, where lower body strength and explosive power are critical for performance (**Kraemer et al., 2020**).

Previous studies have highlighted the significance of sport-specific physical traits, revealing that athletes from different sports exhibit distinct anthropometric profiles. For example, research has shown that football players generally possess greater muscularity and lower body fat percentages compared to cricketers, who may have longer limbs and different body compositions suited to their sport (**De Luca et al., 2021**). These findings suggest that tailored training programs that consider these anthropometric differences can enhance performance outcomes and reduce injury risks.

In the context of the North region, where both cricket and football are immensely popular, understanding the anthropometric differences between male college players in these sports is particularly relevant. This study aims to investigate these differences by examining various anthropometric measurements, including standing and

sitting height, body weight, leg length, arm length, diameters (such as bi-acromial and ankle), and skinfold measurements (such as biceps, triceps, and calf). By comparing these characteristics, the research seeks to provide insights into the specific physical demands placed on athletes in cricket and football, thereby contributing to the body of knowledge regarding sport-specific training and performance enhancement.

2. Methodology

2.1 Participants

The study involved male college athletes aged 18 to 25 years from the North region. A total of 100 participants were recruited, with 50 cricket players and 50 football players, all of whom were actively competing at the college level. Participants were selected based on their involvement in their respective sports for at least two years to ensure adequate experience.

2.2 Anthropometric Measurements

A series of anthropometric measurements were taken to assess various physical characteristics. These included:

Standing Height: Measured using a stadiometer, with participants standing barefoot and looking straight ahead.

Sitting Height: Measured from a seated position, ensuring a straight back and feet flat on the ground.

Body Weight: Recorded using a calibrated digital scale while participants were dressed in light clothing.

Leg Length: Measured from the anterior superior iliac spine to the floor.

Arm Length: Measured from the acromion process to the tip of the middle finger.

Bi-Acromial Diameter: Measured across the shoulders using a spreading caliper.

Ankle Diameter: Measured using a tape measure around the narrowest part of the ankle.

Circumference Measurements: Taken at the upper arm and calf using a flexible measuring tape.

Skinfold Measurements: Measured using calipers at the biceps, triceps, and calf to assess body fat percentage.

2.3 Data Collection

All measurements were conducted by trained professionals to ensure accuracy and consistency. Each participant underwent a brief orientation session prior to the measurements to familiarize them with the process. Data collection took place over two weeks, ensuring a controlled environment to minimize variability due to external factors such as time of day or clothing.

2.4 Ethical Considerations

Informed consent was obtained from all participants prior to data collection. The study was approved by the Institutional Review Board (IRB) of the affiliated college, ensuring that all ethical guidelines regarding human subjects were followed.

2.5 Limitations

The study acknowledges potential limitations, such as the small sample size and the focus on male athletes only, which may limit the generalizability of the findings. Future research could expand the demographic to include female athletes and a broader age range to provide a more comprehensive understanding of anthropometric characteristics across sports.

3. Statistical Analysis

Descriptive statistics (mean and standard deviation) were calculated for each anthropometric variable. To determine significant differences between the two groups (cricket players and football players), independent t-tests were performed. A significance level of $p < 0.05$ was established for all tests. Additionally, effect sizes were calculated to understand the magnitude of differences observed.

Table 1: Comparisons of Anthropometric Attributes among Male College Cricket and Football Athletes of North Region

Variable	Cricket Players (Mean ± SD)	Football Players (Mean ± SD)	P-Value
Height (cm)	175.54 ± 4.17	165.44 ± 6.34	0.001*
Sitting Height (cm)	86.46 ± 3.12	86.55 ± 1.14	0.004*
Body Weight (kg)	74.13 ± 6.31	72.76 ± (not provided)	0.005*
Leg Length (cm)	90.15 ± 6.12	88.61 ± (not provided)	0.004*
Arm Length (cm)	74.51 ± 2.67	72.98 ± 36.57	0.001*
Biacromial Diameter (cm)	37.56 ± 1.73	36.68 ± 2.26	0.001*
Bicondylar Humerus Diameter	5.76 ± 0.89	5.80 ± 0.87	0.489

(cm)			
Ankle Diameter (cm)	5.15 ± 1.28	6.26 ± 1.32	0.001*
Wrist Diameter (cm)	4.86 ± 0.82	5.06 ± 0.76	0.350
Bicondylar Femur Diameter (cm)	8.76 ± 0.86	8.97 ± 0.80	0.878
Chest Circumference (cm)	79.46 ± 5.88	79.71 ± 5.50	0.311
Upper Arm Circumference (cm)	22.12 ± 2.10	23.41 ± 2.33	0.003*
Calf Circumference (cm)	28.77 ± 2.11	30.48 ± 2.71	0.003*
Forearm Circumference (cm)	22.10 ± 3.67	22.46 ± 4.11	0.274
Thigh Circumference (cm)	45.65 ± 3.88	45.66 ± 4.20	0.800
Biceps Skinfold (mm)	6.05 ± 1.11	6.80 ± 2.07	0.001*
Triceps Skinfold (mm)	10.25 ± 1.22	10.70 ± 2.33	0.003*
Subscapular Skinfold (mm)	11.68 ± 2.46	10.80 ± 2.66	0.789*
Suprailiac Skinfold (mm)	13.62 ± 2.56	12.02 ± 2.44	0.379
Calf Skinfold (mm)	9.22 ± 2.33	8.71 ± 2.21	0.005*

*Significant at 0.05 level.

Table-1 shows the findings from the comparison of cricket and football players reveal several significant physical differences that reflect the unique demands of each sport.

Firstly, cricket players have a markedly greater average height of 175.54 cm compared to football players, who average 165.44 cm. This difference is statistically significant, as indicated by a p-value of 0.001. In terms of body weight, cricket players also surpass their football counterparts, averaging 74.13 kg versus 72.76 kg, with a significant p-value of 0.005. Such differences in height and weight may relate to the physical requirements of cricket, which often emphasizes height for bowling and batting reach.

Further analysis of body measurements shows that cricket players possess longer leg lengths, averaging 90.15 cm, compared to 88.61 cm for football players (p-value of 0.004). Similarly, cricket players have greater arm lengths at 74.51 cm, whereas football players average 72.98 cm (p-value of 0.001). These attributes may enhance performance in cricket, where long limbs can facilitate both batting and bowling techniques.

Interestingly, while cricket players exhibit smaller ankle diameters (5.15 cm) than football players (6.26 cm), which is significant (p-value of 0.001), they have a wider biacromial diameter of 37.56 cm compared to 36.68 cm in football players (p-value of 0.001). This suggests that cricket players may have broader shoulders, contributing to their strength in upper body performance.

When examining skinfold measurements, cricket players show a smaller biceps skinfold (6.05 mm) than football players (6.80 mm), with a significant difference (p-value of 0.001), indicating a leaner muscle profile. Similarly, cricket players also have lower triceps skinfold measurements (10.25 mm) compared to football players (10.70 mm), which is significant (p-value of 0.003). However, cricket players have greater calf skinfold thickness at 9.22 mm compared to 8.71 mm in football players, which is also statistically significant (p-value of 0.005). This suggests differences in body fat distribution and muscle mass between the two groups.

In contrast, no significant differences were found in bicondylar humerus diameter (p-value of 0.489), wrist diameter (p-value of 0.350), and thigh circumference (p-value of 0.800). These measurements indicate that certain upper body dimensions may not vary significantly between players of the two sports.

4. Conclusion

In conclusion, the findings reveal significant differences in the physical characteristics of cricket and football players, indicating that cricket players are generally taller, heavier, and possess specific body dimensions suited to their sport's demands. Cricketers typically show greater lengths in key measurements, which may enhance their performance. In contrast, football players exhibit larger diameters and higher skinfold scores, reflecting distinct body composition profiles that cater to the physical requirements of football. However, no significant differences were found in bicondylar humerus diameter, wrist diameter, bicondylar femur diameter, forearm circumference, thigh circumference, subscapular skinfold, and suprailiac skinfold, suggesting that certain anatomical traits remain similar across both groups. Overall, these findings emphasize the unique physical adaptations and requirements of cricket and football, enhancing our understanding of how body composition impacts athletic performance in each sport. Additionally, the differences in muscular and fat distribution profiles suggest that football players are likely optimized for agility and endurance, highlighting the importance of tailoring body composition to the

specific demands of each game.

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