Comparative Study on Selected Anthropometric Measurement Between Footballer & Hockey Players of Manipur

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ABSTRACT

Anthropometric characteristics are essential determinants of athletic performance and play a significant role in distinguishing the physical profiles required for different sports. The study aimed to compare selected anthropometric measurements between male football and hockey players of Manipur. A total of 120 (n = 120) state-level male players were randomly selected for the study, comprising 60 football male players from the Sports Authority of India (SAI) Centre, Takyel, and 60 hockey male players from regular coaching centres under the Department of Youth Affairs and Sports, Manipur. The selected anthropometric variables included body mass, stretch stature (standing height), sitting height, and arm span, measured using standardized anthropometric instruments. Descriptive statistics such as mean, standard deviation were used to summarize the data. To examine the significance of differences between football and hockey players, Analysis of Variance (ANOVA) was applied at the 0.05 level of significance. The results revealed noticeable variations in selected anthropometric measurements between football and hockey players, reflecting the sport-specific physical demands of each game. These findings suggest that anthropometric characteristics differ according to the nature of the sport and may influence performance and training adaptations.

Keywords: Anthropometric measurements, Football players, Hockey players, Body composition, Manipur

INTRODUCTION

Anthropometric characteristics play a vital role in predicting athletic performance, as body composition, size, and shape directly influence strength, speed, endurance, and movement efficiency. In modern sports science, anthropometric measurements are widely employed to identify sport-specific physical profiles, assess potential, and design training programs tailored to the physiological demands of different sports. Understanding these characteristics is particularly important in team sports, where players' physical attributes often align with positional requirements and tactical strategies.

Football and hockey are two highly competitive team sports in Manipur, each requiring distinct physical, technical, and physiological qualities. Football demands continuous running, agility, lower-body strength, and muscular endurance to execute sprints, kicks, and directional changes effectively. In contrast, hockey emphasizes quick reflexes, coordination between upper and lower limbs, flexibility, and sustained speed while maintaining precise control over the stick and ball. Consequently, athletes in these sports tend to develop sport-specific anthropometric traits over time.

Despite Manipur producing numerous talented footballers and hockey players competing at state and national levels, there is limited scientific research comparing the anthropometric profiles of athletes in these sports within the region. Therefore, the present study aims to compare selected anthropometric measurements between footballers and hockey players of Manipur. The results are expected to support coaches, physical educators, and sports scientists in optimizing training programs, enhancing talent identification, and improving overall athletic performance.

METHODOLOGY

For the present study, 120 (n = 120) state-level male players from Manipur were selected through random sampling, comprising 60 hockey players from state training centres under the Department of Youth Affairs and

Sports and 60 football players from the Sports Authority of India (SAI) Centre, Takyel. Selected anthropometric variables viz. body mass, stretch stature, sitting height, and arm span were measured using standardized instruments following established anthropometric procedures.

The collected data were analysed using descriptive statistics (mean, standard deviation). Analysis of Variance (ANOVA) was employed to determine significant differences between football and hockey players, with the level of significance set at 0.05.

Result Of The Study

The descriptive statistics revealed means, standard deviation, and ANOVA on body measurement among male State-level football and hockey players from Manipur are presented in Table 1 and Figure 1.

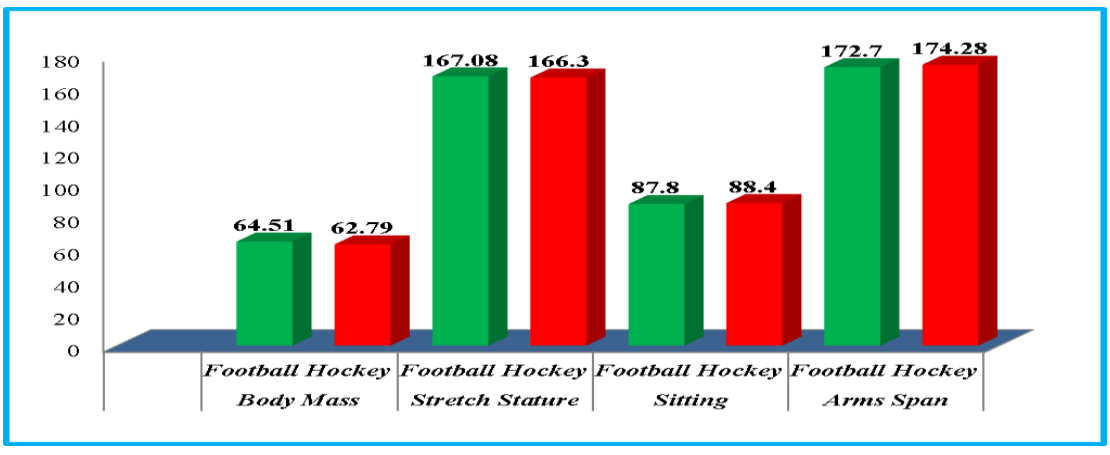
Table 1: Comparative analysed of selected anthropometric variables among State-level male football and hockey players of Manipur

Parameter	**Player**	**Mean**	**Std. Deviation**	**F**
Body Mass	Football	64.51	10.97	0.81
	Hockey	62.79	9.92	
Stretch Stature	Football	167.08	8.33	0.28
	Hockey	166.3	8.07	
Sitting	Football	87.8	3.65	0.95
	Hockey	88.4	3.045	
Arms Span	Football	172.7	9.24	0.98
	Hockey	174.28	8.18	

*****Significant at 0.05 level of confidence.

Table 1 presented the descriptive statistics of selected anthropometric variables for football and hockey players (n = 60 each). Football players showed a slightly higher body mass (64.51) compared to hockey players (62.79). Stretch stature also revealed higher to football players (167.08) than hockey players (166.30). Sitting height and arm span highlighted marginally higher toward hockey players (88.40) and (174.28) accordingly than football players (87.80) and (172.70) respectively. Standard deviations indicated comparable variability across groups, suggesting similar anthropometric profiles. Figure 1 illustrated the mean body measurements of both groups.

Figure 1: Bar Graph showing the Means on Body Measurement



The data collected from male state-level football and hockey players from Manipur on body measurement statistically analysed by ANOVA and the results are presented in Table 1.

The ANOVA revealed that there were no statistically significant differences between football and hockey players in body mass, stretch stature, sitting height, and arm span. Body mass ($F = 0.81$), Stretch Stature ($F = 0.28$), Sitting Height ($F = 0.95$), and Arm Span ($F = 0.98$) all showed p-values lesser than 0.05, indicating that the observed mean differences were not statistically meaningful. Overall, the findings suggest that football and hockey players possess similar anthropometric characteristics.

DISCUSSION OF FINDINGS

The anthropometric characteristics of state-level football and hockey players from Manipur show sport-specific variations reflecting the biomechanical demands and physical conditioning of each sport. Football players tend to have greater body mass, longer limbs, and a stronger trunk to support kicking, running, and physical confrontations, whereas hockey players exhibit a leaner body, lower center of gravity, and compact limb proportions to enhance agility, stick control, and movement efficiency. These differences illustrate morphological adaptations shaped by the repeated demands of each sport, supporting the principle of biomechanical specialization.

CONCLUSION

The findings indicate that while many anthropometric variables are similar between football and hockey players, sport-specific differences reflect their distinct biomechanical and physiological demands. Football players show greater lower-body development (thigh, calf, hip, and core) to support running, sprinting, and kicking, whereas hockey players exhibit stronger upper-limb dimensions and higher skinfold values, aiding stick handling and upper-body movement. Some differences were not statistically significant ($p > 0.05$), while others were meaningful, highlighting distinct structural and functional profiles. These insights can guide talent identification, individualized conditioning, and sport-specific training to optimize performance.

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