

Anthropometric Profiles and Competition Anxiety in University Team Sport Athletes

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INTRODUCTION

Sports play an important role in improving physical fitness, mental well-being, and personality development. Regular participation enhances cardiovascular health, strengthens bones and muscles, improves self-confidence, and reduces stress and anxiety.

Anthropometry involves the measurement of body dimensions and is widely used in sports to assess physical characteristics and performance potential. Common measures include Body Mass Index (BMI) and Waist-to-Hip Ratio (WHR), which help evaluate body composition and health status.

Sports anxiety can affect athletic performance and is commonly assessed using standardized tools such as the Sports Competition Anxiety Test (SCAT).

Football, Handball, and Volleyball are popular team sports that promote physical fitness, teamwork, discipline, and social interaction. These sports are globally recognized and contribute significantly to individual development and community engagement.

Overall, sports are essential for maintaining health, enhancing performance, and fostering personal and social growth.

Methods

A total of 45 male Football, Handball, and Volleyball players (18–25 years) who participated in East Zone Inter-University tournaments were selected for the study. The players belonged to different socio-economic backgrounds and had several years of competitive experience in their respective sports. Data were collected over five consecutive days during evening hours under standardized conditions. Participants were briefed about the testing procedures before data collection. Anthropometric measurements included standing height (stadiometer, nearest 0.1 cm), body weight (weighing machine, in kg), and waist circumference (anthropometric tape, nearest 0.1 cm). Psychological data were assessed using the Sports Competition Anxiety Test (SCAT) to measure competitive anxiety levels.

Statistical analysis

In the present study, the level of significance was established at 0.05. Which is a common threshold in statistical analysis. Descriptive statistic were employed to summarize the data. The mean was used to calculate the average value for each groups. The stander deviation was use to assess the variability or dispersion of the scores around the mean. To determine whether three groups were statistically significant differences among the three groups. For each variable studied, a One-way Analysis of Variance (ANOVA) was conducted. One-way ANOVA is a statistical test used when comparing the means of three or more groups.

Results

Table -1

Descriptive analysis of BMI, WHR & SCAT

SL. NO.	Variables	Mean $\pm$ Standard Deviation		
		Handball (n=15)	Volleyball (n=15)	Football (n=15)
	BMI	22.45 $\pm$ 2.98	23.31 $\pm$ 3.05	21.13 $\pm$ 2.78
	WHR	0.86 $\pm$ 0.03	0.85 $\pm$ 0.03	0.85 $\pm$ 0.04
	SCAT	18.50 $\pm$ 3.47	17.00 $\pm$ 2.67	23.00 $\pm$ 2.40

It is evident from the above Table - 1, that mean and standard deviation of BMI Handball players are having 22.45 $\pm$ 2.98 kg/m², Volleyball players 23.31 $\pm$ 3.05 kg/m² and Football players 21.13 $\pm$ 2.78 kg/m². Above noted table displayed BMI of the volleyball players are higher than that of football players.

Fig- 1

Graphical Representation of BMI

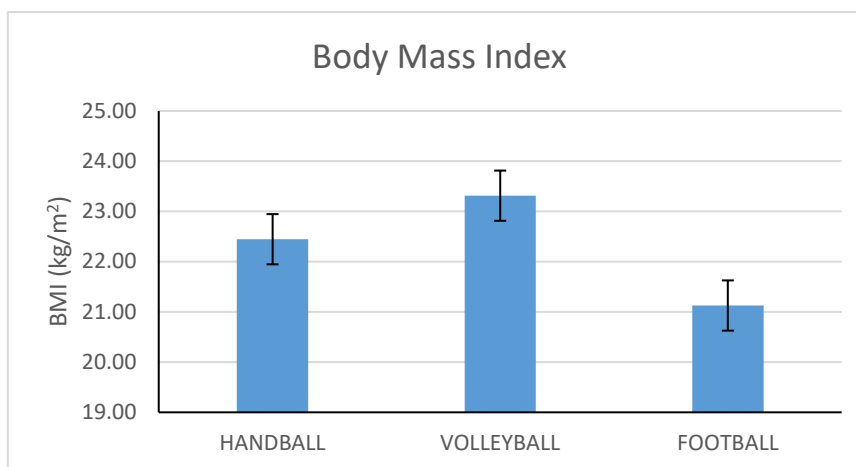


Figure -1, shows that the volleyball players have the highest BMI 23.31 among the three groups. Handball players have a BMI 22.45. Football players have the lowest BMI among the groups with a value of 21.13. According to the BMI clasification all three groups are normal weight range 18.5 to 24.9. among the three groups they all maintain a healthy BMI.

Table - 2

ANOVA table of BMI

Source of Variation	Sum of square (SS)	DF	Mean square(MS)	F	P- value	F crit
Between Groups	36.38	2	18.19	2.11	0.13	3.22
Within Groups	362.464	42	8.63			
Total	398.84	44				

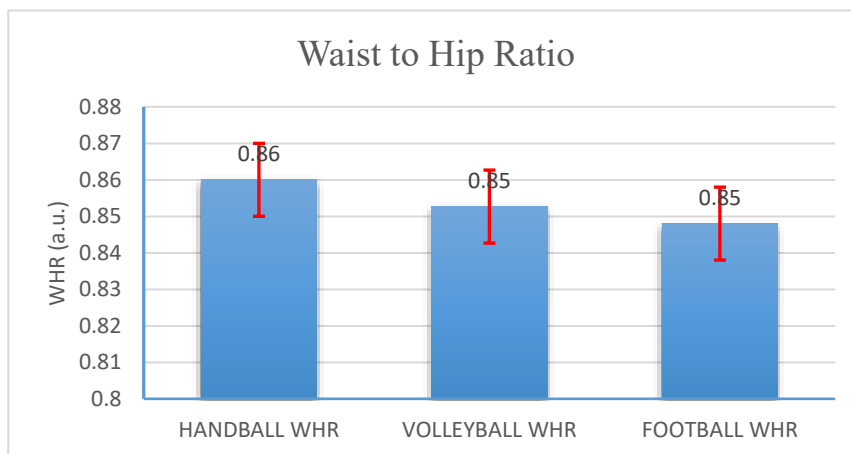
** Significance at 0.05 level

The ANOVA table 4.2 showed there is no significant difference among the teams of BMI level at 0.05 level of confidence based the tabulated F value which is 2.11, is smaller than the critical value.

It is evident from table -1 that the mean and standard deviation of scores of WHR Handball players are having 0.86 ± 0.03 Volleyball 0.85 ± 0.03 Football 0.85 ± 0.04 . From the above table we get a significance that the WHR of the handball players are higher than that of the volleyball and football players.

Fig- 2

Graphical Representation of WHR



The graph shows that the handball players have a slightly higher ratio compare to the other groups. Volleyball players are have a 0.85 ratio. Football players have similar to volleyball players 0.85. according to the WHR clasification all three groups are having good waist-to-hip ratio 0.85 to 0.89.

Table-3

ANOVA table of WHR

Source of Variation	Sum of square(SS)	df	Mean square(MS)	F	P- value	F- value
Between Groups	0.00	2	0.001	0.47	0.63	3.22
Within Groups	0.05	42	0.001			
Total	0.05	44				

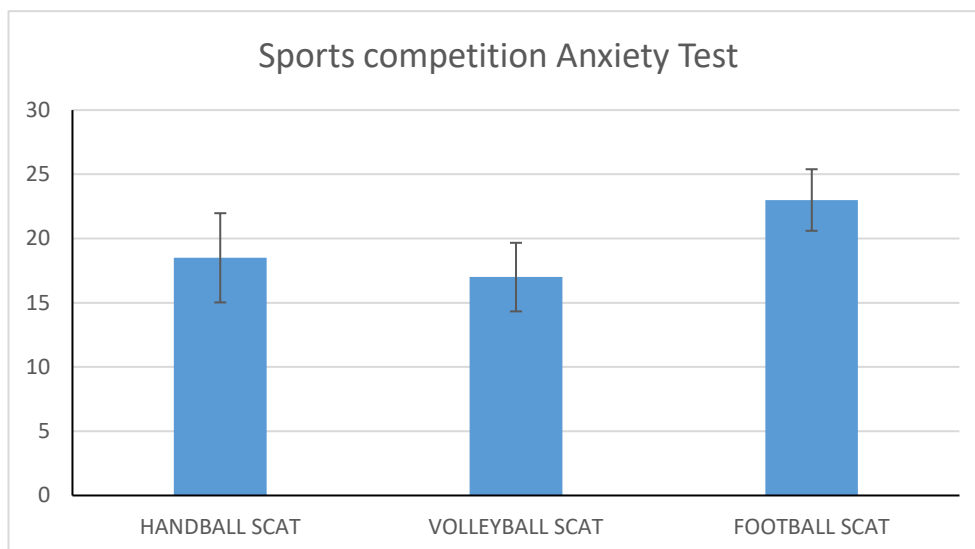
** Significance at 0.05 level

The ANOVA table-3 showed there is no significant difference among the teams of WHR level at 0.05 level of confidence based the tabulated F value is 0.47 smaller than the critical value.

It is evident from the above Table- 1 that mean and standard deviation of scores of SCAT Handball players are having 18.27 ± 3.47 Volleyball players 19.13 ± 2.67 and Football players 18.8 ± 2.40 from the above table. This table revels that the SCAT of the SCAT of football players are higher than that of the handball and volleyball players.

Fig-3

Graphical Representation of SCAT



The graph no- 3, showed that the football players have the highest level of Sports Competition Anxiety among the three groups with a score of 23. Handball players have a moderate level of sports competition Anxiety with a score 18.5. While their anxiety is lower than the football players. Volleyball players have the lowest level of sports competition Anxiety with a score of 17. This indicates they generally feel less anxious in competitive settings compare to handball and volleyball players. According to the SCAT score of less than 17 indicate low level of anxiety, 17 to 24 an average level of anxiety and more than 24 is high level of anxiety.

Table 4
ANOVA table of SCAT

Source of Variation	Sum of square (SS)	DF	Mean square(MS)	F	P - value	F crit
Between Groups	5.74	2	2.87	0.34	0.71	3.22
Within Groups	349.07	42	8.31			
Total	354.8	44				

** Significance at 0.05 level

The ANOVA table 4.6 showed there is no significant difference among the teams of SCAT level at 0.05 level of confidence based the tabulated F value which is 0.34 is smaller than the critical value.

Discussion

The demographic characteristics of Handball, Volleyball, and Football players were largely similar in terms of age, height, and body mass, indicating a homogeneous sample. Therefore, any observed differences are likely due to sport-specific factors rather than demographic variations.

BMI analysis showed differences among the groups. Volleyball players had the highest average BMI, Handball players demonstrated a moderate BMI, and Football players recorded the lowest BMI. These variations may reflect the unique physical and training demands of each sport. Similar findings by **K. Palanisamy** reported higher BMI in Handball players, lower BMI in Kabaddi players, and intermediate BMI in Volleyball players.

The Waist-to-Hip Ratio (WHR) values were similar across all groups, with Handball players showing a slightly higher mean than Volleyball and Football players. The low variability indicates a consistent body fat distribution among athletes, suggesting comparable fitness levels.

SCAT results revealed differences in competition anxiety. Football players exhibited the highest anxiety levels, Handball players showed moderate anxiety with greater variability, and Volleyball players demonstrated the lowest and most consistent anxiety levels. These findings highlight the need for sport-specific psychological interventions. Similar results were reported by **Singh and Kerketta**, who found higher pre-competition anxiety among Volleyball players compared to Handball players.

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