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A comparative study of anthropometric characteristics between inter university and inter-college male volleyball players

Omprakash Gangey

Department of Physical Education, Guru Ghasidas Viswavidhyalaya, Bilaspur, Chhattisgarh, India

Abstract
The purpose of this study was to find out the differences in Anthropometric Characteristics between Inter University and Inter-College Male Volleyball Players. For this study, hundred (N=100) male volleyball players in which fifty (N=50) inter-university level players and fifty (N=50) inter-college level players of age ranging from 18-25 years were selected as subjects from various colleges and universities of Chhattisgarh. The purposive sampling technique was used to select the subjects. Anthropometric Characteristics of upper extremities were selected: Upper Arm Length, Upper arm Circumference, Forearm Circumference and Chest Circumference. All the Anthropometric Characteristics of upper extremities were measured by anthropometric kit. The result revealed no significant differences between the Upper Arm Length and Upper Arm Circumference of Inter University and Inter College level volleyball players however there was significant difference between the Forearm Circumference and Chest Circumference of Inter University and Inter College level volleyball players.

Keywords: Anthropometric Characteristics, Inter-University, Inter-College, Volleyball Players

Introduction

Anthropometry comprises techniques that readily contribute to a more in-depth understanding of body composition & nutritional status, allowing the quantification of observations & the observation of changes with time. Championship performances no longer occur at random or as a result of chance alone. International sports performance in various sports & games are influenced by many factors such as level of physical, physiological & psychological abilities. Body measurements help talk about nutritional status & highlight the changes due to sports activities. (Choudhary, 2012) [1, 9]

Anthropometry has a rich tradition in sports sciences and sports medicine. Though, in different times, different terms were used like dynamic anthropometry, sports anthropometry, biometry, physiological anthropometry, anthropometrica, kinanthropometry etc. by scientists to establish some relationships between the body structure and the specialized functions required for various tasks (Koley, 2006) [11]

Material & Methods

Selection of Subjects

For the present study, hundred (N=100) male volleyball players in which fifty (N=50) inter-university level players and fifty (N=50) inter-college level players of age ranging from 18-25 years were selected as subjects from various colleges and universities of Chhattisgarh.

Selection of Variables

Following Anthropometric Characteristics of upper extremities were selected:

1. Upper Arm Length
2. Upper Arm Circumference
3. Forearm Circumference
4. Chest Circumference

Criterion Measures

Table 1

Sl. No.	Variables	Measurement Units
1.	Upper Arm Length	Centimeters
2.	Upper Arm Circumference	Centimeters
3.	Forearm Circumference	Centimeters
4.	Chest Circumference	Centimeters

Statistical Analysis

Values are presented as mean values and SD. Independent samples t test was used to test if population means estimated by two independent samples differed significantly. The level of significance was set at 0.05. Data was analyzed using SPSS Version 16.0 (Statistical Package for the Social Sciences, version 16.0, SPSS Inc, Chicago, IL, USA)

Results and Findings of the Study

Table 2: Descriptive Statistics of Selected Anthropometric Characteristics of Upper Extremities

Variables	Groups	N	Mean	Standard Deviation	Std. Error Mean
Upper Arm Length	Inter University Players	50	32.2596	2.39814	.33915
	Inter-College Players	50	31.9116	2.39396	.33856
Upper Art Circumference	Inter University Players	50	25.9948	2.51887	.35622
	Inter-College Players	50	25.4332	2.63801	.37307
Forearm Circumference	Inter University Players	50	23.9338	1.63979	.23190
	Inter-College Players	50	23.2672	1.68768	.23867
Chest Circumference	Inter University Players	50	89.5858	3.17575	.44912
	Inter-College Players	50	88.0008	2.88198	.40757

Table 3: Comparison of Anthropometric Characteristics between Inter-University and Inter-College volleyball Player in relation to Upper Arm Length

Groups/level	N	Mean	Standard Deviation	Mean Difference	p-value	t- value
Inter University Players	50	32.2596	2.39814	.34800	.469	.726
Inter College Players	50	31.9116	2.39396			

*Significant at 0.05 level

Obtained 't' value .726 is lower than the tabled t- value (1.96) for df. 98 and at 0.05 level of significance. Therefore there is a Significance difference was not observe between Inter University and Inter College level volleyball players in comparison to Upper Arm Length. The comparison of mean values indicates that the mean of Inter University Players is greater than Inter College Players. It is further concluded that Upper Arm Length of Inter University Payers is higher than the Inter College Players.

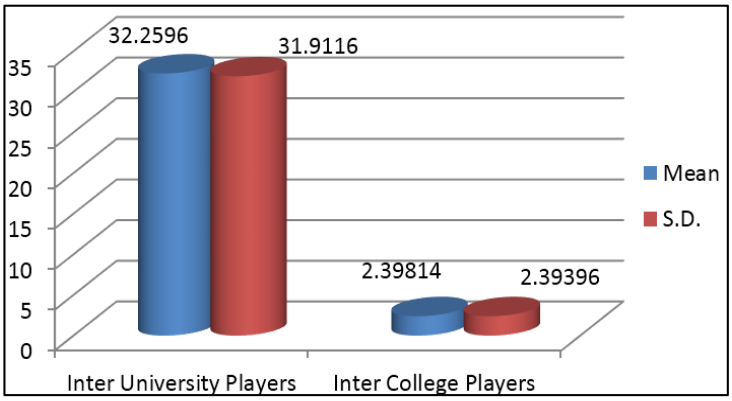

Fig 1: Comparison of Inter University and Inter College Players with respect to their Upper Arm Length

Table 4: Comparison of Anthropometric Characteristics between Inter-University and Inter-College volleyball Player in relation to Upper Arm Circumference

Groups/level	N	Mean	Standard Deviation	Difference Difference	p-value	t- value
Inter University Players	50	25.9948	2.51887	.56160	.279	.684
Inter College Players	50	25.4332	2.63801			

*Significant at 0.05 level

Obtained 't' value .684 is lower than the tabled t- value (1.96) for df. 98 and at 0.05 level of significance. Therefore there is a Significance difference was not observe between Inter University and Inter College level volleyball players in comparison to Upper Arm Circumference. The comparison of mean values indicates that the mean of Inter University Players is greater than Inter College Players. It is further concluded that Upper Arm Circumference of Inter University Payers is higher than the Inter College Players.

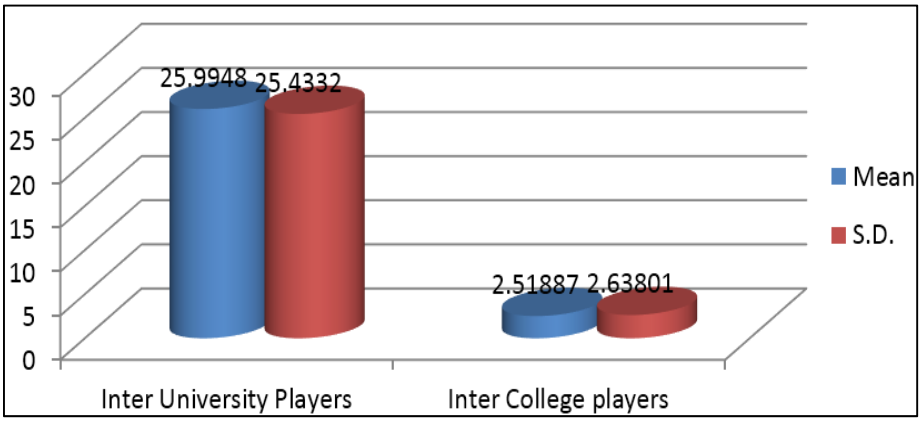

Fig 2: Comparison of Inter University and Inter College Players with respect to their Upper Arm Circumference

Table-5: Comparison of Anthropometric Characteristics between Inter-University and Inter-College volleyball Player in relation to Forearm Circumference

Groups/level	N	Mean	Standard Deviation	Mean Difference	p-value	t- value
Inter University Players	50	23.9338	1.63979	.66660	.048	2.003
Inter College Players	50	23.2672	1.68768			

*Significant at 0.05 level

Obtained 't' value 2.003 is higher than the tabled t- value (1.96) for df. 98 and at 0.05 level of significance. Therefore there is a Significance difference was observe between Inter University and Inter College level volleyball players in comparison to Forearm Circumference. The comparison of mean values indicates that the mean of Inter University Players is greater than Inter College Players. It is further concluded that Forearm Circumference of Inter University Payers is higher than the Inter College Players.

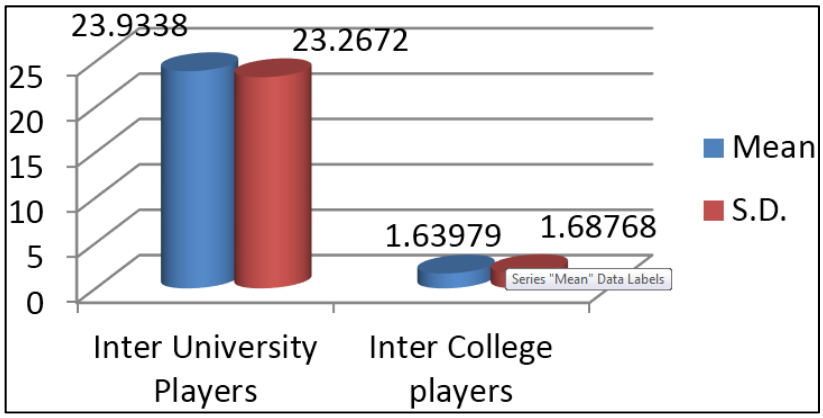

Fig 3: Comparison of Inter University and Inter College Players with respect to their Forearm Circumference

Table-6: Comparison of Anthropometric Characteristics between Inter-University and Inter-College volleyball Player in relation to Chest Circumference

Groups/level	N	Mean	Standard Deviation	Mean Difference	p-value	t-value
Inter University Players	50	89.5858	3.17575	1.58500	.010	2.613
Inter College Players	50	88.0008	2.88198			

*Significant at 0.05 level

Obtained 't' value 2.613 is higher than the tabled t- value (1.96) for df. 98 and at 0.05 level of significance. Therefore there is a Significance difference was observe between Inter University and Inter College level volleyball players in comparison to Chest Circumference. The comparison of mean values indicates that the mean of Inter University Players is greater than Inter College Players. It is further concluded that Chest Circumference of Inter University Payers is higher than the Inter College Players.

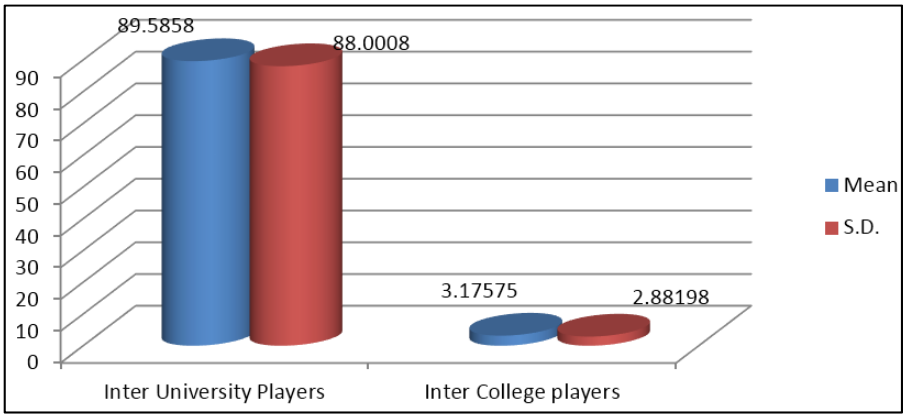

Fig 4: Comparison of Inter University and Inter College Players with respect to their Chest Circumference

Discussion

In the present study the anthropometric characteristics of the volleyball players have been evaluated in relation to their performance level (i.e., inter-university and inter-college). This study indicates the existence of differences between interuniversity and inter-college players. The overall results show that inter-university volleyball players were taller and heavier as compared to the inter-college volleyball players. The result revealed no significant differences between the Upper Arm Length and Upper Arm Circumference of Inter University and Inter College level volleyball players however there was significant difference between the Forearm Circumference and Chest Circumference of Inter University and Inter College level volleyball players. Considering that in most of the variables there were significant differences between inter-university and inter-college volleyball players and the interuniversity players showed better anthropometric measurements, it is concluded that various anthropometric characteristics has clear impact on the performance of the volleyball players. This study indicate the need for further research regarding playing position-by-playing position analysis of anthropometric characteristics of volleyball players including correlations with players' physical performance.

Conclusion

Within the frame-work of the present investigation, the following conclusions may be drawn:

1. There is no significant difference between Inter University and Inter College level volleyball players in comparison to Upper Arm Length.
2. There is no significant difference between Inter University and Inter College level volleyball players in comparison to Upper Arm Circumference.
3. There is significant difference between Inter University and Inter College level volleyball players in comparison to Forearm Circumference.
4. There is significant difference between Inter University and Inter College level volleyball players in comparison to Chest Circumference.

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