



## A Comparative Study of Anthropometric Characteristics between Inter-University and Inter-College Male Baseball players

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### Abstract

The purpose of this study was to find out the differences in Anthropometric Characteristics of Baseball players in relation to their performance level (i.e. Inter-University level and Inter-College level). A sample of sixty (N=60) male baseball players of age ranging from 18-25 years, which includes Inter-University level (N<sub>1</sub>=30) and Inter-College level (N<sub>2</sub>=30), was selected from various colleges and universities. The purposive sampling technique was used to select the subjects. All the subjects were assessed for height, weight, lengths, width and girths. The independent samples t-test was applied to assess the differences of various anthropometric characteristics between inter-university and inter-college level baseball players. The level of significance was set at 0.05. Significant differences were found between Inter-University and Inter-College level baseball players with regard to Standing Height ( $p < 0.05$ ), Body Weight ( $p < 0.05$ ), Lower Leg length ( $p < 0.05$ ), Arm Length ( $p > 0.05$ ), Upper Arm Length ( $p > 0.05$ ), Lower Arm Length ( $p > 0.05$ ), Chest Width and Calf, Thigh, Chest, Upper Arm and Lower Arm Girths ( $p < 0.05$ ). While comparing the means, it revealed that Inter-University level baseball players were taller and had more Body Weight, Longer Leg Length, Longer Arm and also more Chest Width and Calf, Thigh and Chest, Upper Arm, Lower Arm Girths than their Inter-College level baseball players.

**Keywords:** Anthropometric characteristics, inter-university, inter-college, baseball players.

### Introduction

Baseball is physically demanding sport comprised of several specialism requiring different skills and types of fitness. The sport requires technical and tactical abilities as well as a high degree of physical fitness and anthropometric characteristics for optimal performance in baseball. Anthropometric characteristics of players has been an interest of sports trainers, exercise scientists, physical education and sport medicine professionals for years and many of them assumed the practicing players might be expected to exhibited structural and functional characteristics that are specifically favorable for the sport<sup>1</sup>. The knowledge of anthropometric characteristics is necessary to establish their importance for the success in competitive sport<sup>2</sup>. The game of baseball entail throwing, fielding, pitching, catching, base running and hitting. The baseball is mostly played by the males in the western countries, China, Japan, Korea etc. In India, both male and female players play baseball at school, college, university and national levels. A plethora of research work is available on the physical and physiological characteristics of baseball players belonging to different nations<sup>3,4,5,6</sup>. Moreover, to our knowledge, there were no study has compared the anthropometric characteristics of baseball players at inter-university and inter-college performance level. Hence, the purpose of this study was to compare the Anthropometric Characteristics of baseball players in relation to inter-university and inter-college.

### Material and Methods

**Participants:** Subjects have been randomly selected for the study, the age ranged 18-25 years for the subjects. total number of subjects was sixty (N=60) male baseball players (inter-university level, N<sub>1</sub>=30, inter-college level, N<sub>2</sub>=30) from various colleges and universities of North India. The purposive sampling technique was used to select the subjects.

**Statistical Analysis:** In order to examine the hypothesis of the present study Mean, SD and independent sample t-test were employed to compare the mean scores of inter college and inter university baseball Players. Level of significance was set at 0.05. The SPSS statistics software was used to analyzed the collected data.

### Results and Discussion

Table-1. Results of the present study revealed that inter-university baseball players had significantly higher height ( $p < 0.05$ ), weight ( $p < 0.05$ ), lower leg length ( $p < 0.05$ ), arm length ( $p > 0.05$ ), upper arm length ( $p > 0.05$ ), lower arm length ( $p > 0.05$ ), chest width and calf, thigh, chest, upper arm and lower arm girths ( $p < 0.05$ ). While comparing the means, it revealed that inter-university level baseball players were taller and had more weight, longer leg length, longer arm and also more chest width and calf, thigh and chest, upper arm, lower arm girths than their inter-college level counterparts.

**Table-1**  
**Comparison of Anthropometric Characteristics between Inter-University and Inter-College Baseball Players**

Variables	Inter University Players		Inter College Players		Difference	't' value
	Mean	SD	Mean	SD		
Standing Height	174.96	4.48	172.73	6.00	2.23	1.632
Body Weight	71.73	3.13	70.33	5.26	1.40	1.250
Leg Length	101.43	4.04	100.68	6.24	0.75	0.552
Upper Leg Length	50.98	2.22	50.11	2.36	0.86	1.460
Lower Lag Length	50.58	1.83	49.23	2.13	1.35	2.629*
Arm Length	82.28	2.12	80.83	3.33	1.45	2.012*
Upper Arm Length	47.91	4.07	35.70	1.52	12.21	15.374*
Lower Arm Length	47.91	4.07	45.00	1.77	2.91	3.594*
Hip Width	31.13	2.78	30.86	2.14	0.26	0.415
Shoulder Width	35.70	1.94	34.86	1.37	0.83	1.915
Chest Width	31.33	1.41	30.18	1.63	1.15	2.915*
Calf Girth	38.83	1.81	32.47	1.42	6.36	15.071*
Thigh Girth	55.41	2.14	51.43	2.34	3.98	6.867*
Chest Girth	90.61	2.94	88.50	4.15	2.11	2.270*
Upper Arm girth	29.40	2.41	25.70	1.17	3.69	7.534*
Lower Arm Girth	26.04	1.14	24.87	1.11	1.17	4.018*

**Discussion:** In the present study the anthropometric characteristics of the baseball 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 inter-university and inter-college players. It has been well established that specific physical characteristics or an anthropometric profile indicate whether a player would be suitable for the competition at the highest level in a specific sport<sup>7,8,9,10</sup>. The inter-university level baseball players were taller and had more weight, longer leg length, longer arm and also more chest width and calf, thigh and chest, upper arm, lower arm girths than their inter-college level counterparts. This might be due to the higher level of the competition of the inter-university level baseball players. Significant differences were found between inter-university and inter-college level baseball players with regard to standing height ( $p < 0.05$ ), body weight ( $p < 0.05$ ), lower leg length ( $p < 0.05$ ), arm length ( $p > 0.05$ ), upper arm length ( $p > 0.05$ ), lower arm length ( $p > 0.05$ ), chest width and calf, thigh, chest, upper arm and lower arm girths ( $p < 0.05$ ). While comparing the means, it revealed that inter-university level baseball players were taller and had more weight, longer leg length, longer arm and also more chest width and calf, thigh and chest, upper arm, lower arm girths than their inter-college level baseball players. These differences might be due to regular training program of inter-university baseball

players. Results revealed that inter-university level baseball players had longer arm and also more chest width and upper arm, lower arm girths than inter-college level baseball players. suggested that strength of the arms are necessary for hitting and throwing the ball. As for strength training, studies have shown that baseball-specific program can significantly increase batting speed and striking power as well as throwing velocity. Considering that in most of the variables there were significant differences between inter-university and inter-college baseball players and the inter-university players showed better anthropometric measurements, it is concluded that various anthropometric characteristics has clear impact on the performance of the baseball players.

**Conclusion**

Significant differences were found between inter university and inter college level male baseball players on the account of standing height, body weight, lower leg length, arm length, upper arm length, lower arm length, chest width, calf, thigh, chest, upper arm and lower arm girths. Finding of the study suggest that the inter university level players were significantly higher standing height, body weight, lower leg length, arm length, upper arm length, lower arm length, chest width, calf, thigh, chest, upper arm and lower arm girths than inter college

level players .the result shows insignificant differences in respect to leg length upper leg length ,Hip and shoulder width.

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