

## COMPARATIVE STUDY OF SELECTED ANTHROPOMETRIC VARIABLES BETWEEN HOCKEY AND FOOTBALL UNIVERSITY PLAYERS

Mahesh Singh Dhapola<sup>1</sup> and Sandeep Sharma<sup>2</sup>

<sup>1</sup>Assistant Professor, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) India.

<sup>2</sup>Ph.D scholar, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) India.

### Abstract:

*The purpose of the study was to compare selected anthropometric variables between hockey and football university male players. The subjects for this study were (N=32) male were 16 each from hockey and football players and age ranged from 19 to 25 were purposive selected from Guru Ghasidas Vishwavidyalaya , Bilaspur (C.G.). The selected anthropometric measurements like biceps skin fold width, triceps skin fold width, sub scapular width, suprailiac skin fold width, thigh skin fold width, calf skin fold width, chest skin fold width, abdominal skin fold width. The statistical technique employed for this study was independent 't'-test at 0.05 level of significance. As per the statistical analysis insignificant difference was found between hockey and football players in respected to selected anthropometric variables biceps skin fold width, triceps skin fold width, sub scapular width, suprailiac skin fold width, thigh skin fold width, calf skin fold width, chest skin fold width, abdominal skin fold width at ( $p < 0.05$ ).*

### KEY WORDS:

Anthropometric, skin fold, hockey, football.

### INTRODUCTION

Anthropometry is the branch of anthropology that is concerned with the measurement of human body. Anthropometry involves the measurement of external part of the body, including body diameters, body circumferences somato types. Anthropometric measurements were central concerns of the first phase of the scientific era of measurements which were initiated in the 1960s. Anthropometric characteristics play a vital role in determining sports performance (Rico-Sanz, 1998; Wilmore and Costill, 1999; Keogh, 1999). Specific physical characteristics or anthropometric profiles are required for the highest level of performance in a specific sport (Claessens et al., 1999; Bourgois et al; Slater et al., 2005). Anthropometric data have also varied uses in public health including the assessment of nutritional status, cancer studies, as a risk factor for coronary heart disease (CHD) (Wang, 2003), type-2diabetes and hypertension (HT). Hockey and football is a popular team game in most Commonwealth countries and worldwide. In past it was played solely in a specific season (in Asian countries it was winter and in western countries it was summer). But its popularity has gained tremendous momentum since last three decades and now it is played throughout the year. Hockey is an intermittent endurance sport involving short sprinting as well as movement with and without ball (Manna et al. 2009). Successful performance in hockey is influenced by morphological and anthropometric characteristics such as body size and composition, functional parameters (physical capacity) (Withers and Roberts 1981; Bale et al. 1975). Soccer players have to adapt to the requirements of the game to compete at the highest standard. Thus, the physical capacity of top-class players may give an indication of the physiological demands of the game. This review focuses on the anthropometric and

Please cite this Article as : Mahesh Singh Dhapola<sup>1</sup> and Sandeep Sharma<sup>2</sup>, "COMPARATIVE STUDY OF SELECTED ANTHROPOMETRIC VARIABLES BETWEEN HOCKEY AND FOOTBALL UNIVERSITY PLAYERS": Academic Sports Scholar (Sept ; 2014)

physiological characteristics of elite soccer players. This multi factorial are sketched from observations on anthropometric, physiological and performance measures. Knowledge of these characteristics can give clues as to the existence of biological prerequisites for playing at the highest standard. To excel in a physically competitive sport, the player must possess such dimensions of body characteristics are known to be of fundamental importance for individual development to achieve Olympic level performance in a sport. The tasks in some events, such as throwing, hitting or high jump, are quite specific and different from each other and so are the successful physiques. This process whereby the physical demands of a sport lead to selection of body types best suited to that sport is known as "morphological optimization" (Bloomfield et al., 1995) Measurements of body include such descriptive information as height, weight and surface area, while measure of body proportion describes the relation between the height and weight among length, widths and circumference of various body segments. It has been found that the top athletes in some sports tend to have those proportions that biomechanically aid the particular performance required (Zeigler, 1982). As a result, physique which includes the evaluation of size, shape and form of an individual is of prime importance as to know how far an individual can succeed in becoming a top athlete. Studies have also shown that champion's of different sports require different qualities with respect to their events. Morphological parameters are an essential part of the evaluation and selection of sports persons for diverse fields of sports, standard data on such parameters are still lacking in the Indian context. Therefore, observing the felt requirement, we consider it necessary to attempt a compare selected anthropometric variables between cricket and football players.

Keeping in mind the purpose of the study it was hypothesized that there might be insignificant differences between hockey and football players in respected to selected anthropometric variables.

### **OBJECTIVE OF THE STUDY**

The objective of the study was planned with the aim to compare selected anthropometric variables between hockey and football male players.

### **METHODOLOGY**

#### **MATERIALS AND METHODS**

The subjects in this study were (N=32) male hockey and football players belongs from Guru Ghasidas University , Bilaspur (C.G.) and 100% provided permission to use data from class project for research purpose. To compare selected anthropometric variables between hockey and football players, t-test was applied at the significance level of 0.05.

#### **ANTHROPOMETRIC MEASUREMENT**

All anthropometric measurements are based on standard methodology adopted from Harpendon, Lange and Layaffatte, The equipment used for measuring selected skin fold by Harpendon skin fold calipers (British indicators Ltd., West Sussex, UK), to the nearest 0.1 mm at a standard pressure of 10 gm/mm square on the skin fold.

These measurements were as follows:

1. Biceps skin fold width
2. Triceps skin fold width
3. Sub scapular width
4. Suprailiac skin fold width
5. Thigh skin fold width
6. Calf skin fold width
7. Chest skin fold width
8. Abdominal skin fold width

#### **DATA ANALYSIS**

For data analysis responses were expressed as mean and standard deviation. Independent test were performed for comparisons between two group (hockey and football game),  $p < 0.05$  was considered statistically significant. Data analysis was performed using SPSS 17.0 software under windows.

**RESULTS AND FINDING**

The minimum and maximum ages were similar in both the groups and the mean age of the hockey player was 22.6 and for football player was 21.7. The means and standard deviation (SD) of the anthropometric variables of the two groups along with the significance of difference by way of 't' test has been presented in table-1.

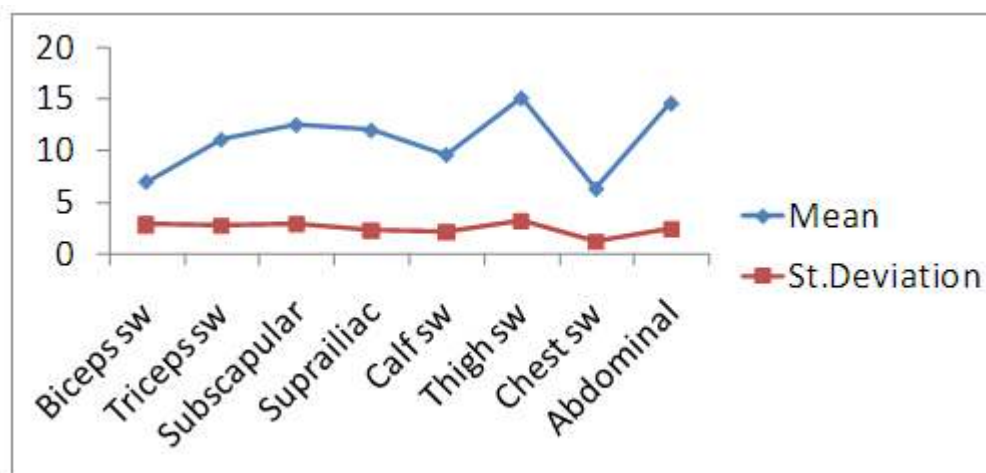
**TABLE-1  
SIGNIFICANCE DIFFERENCE OF MEAN OF ANTHROPOMETRIC VARIABLES  
BETWEEN HOCKEY AND FOOTBALL PLAYERS**

SR. NO.	ANTHROPOMETRIC VARIABLES	HOCKEY PLAYER (N=16)		FOOTBALL PLAYER (N=16)		'T' VALUE
		MEAN	S.D	MEAN	S.D	
1	Biceps skin fold width	6.95	2.80	5.71	1.26	1.59
2	Triceps skin fold width	10.09	2.69	12.33	2.99	1.33
3	Sub scapular skin fold width	12.67	2.93	13.06	1.63	.548
4	Suprailiac skin fold width	11.99	2.38	13.83	3.19	1.73
5	Calf skin fold width	9.99	2.06	9.27	1.33	.519
6	Thigh skin fold width	14.12	3.17	14.23	2.83	.657
7	Chest skin fold width	6.37	1.18	7.47	2.09	1.87
8	Abdominal skin fold width	14.52	2.34	15.23	2.08	1.05

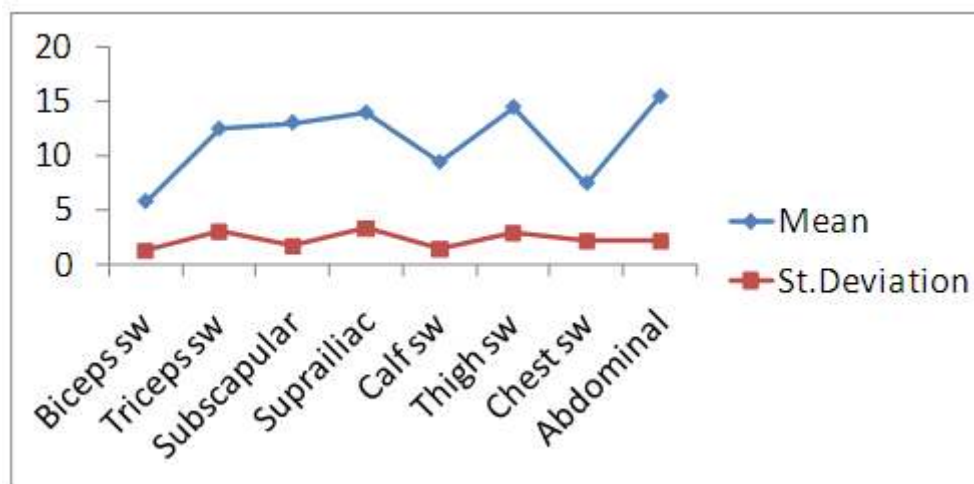
\*Value of "t" at the level of 0.05= (2.045)

Table- 1 describes the statistical attributes of anthropometric data of Players (19-25 years) of hockey and football players. From the results of the distribution of 't' value of the eight-anthropometric measurements, insignificant differences were noted in the biceps skin fold width (1.59), triceps skin fold width (1.33), sub scapular skin fold width (.548), suprailiac skin fold width (1.73), thigh skin fold width (.657), calf skin fold width (.519), chest skin fold width (1.87), and abdominal skin fold (1.05) width at level ( $p < 0.05$ ) between the hockey and the football players were found. The graphical representation of mean differences is shown in figure.

**Graphical representation of selected anthropometric variables for hockey players.**



**Graphical representation of selected anthropometric variables for football players.**



**DISCUSSION OF FINDINGS**

Hockey and football is an endurance game and requires potential stamina to excel the performance. The game is gaining tremendous popularity worldwide. Although every player of the team is required to give better performance during the match, generally, each player possesses specific skills that defines their role and contributes to overall performance of the game (Stuelcken et al., 2007).

The results of the study indicate that there was insignificant difference in anthropometric variables of hockey and football players in respected to (biceps, triceps, sub scapular, supriliac, thigh calf, chest and abdominal skin fold). Mean of respected anthropometric variables of hockey and football players' minor difference, which indicate that nature of training, physical appearance and physiological demand are some were same which reflect in the anthropometric variables. It may be due to the training effect the football and hockey players developed these variables equally. Physical characteristics and body composition have been known to be fundamental to excellence in athlete's performance and it has relationship with the anthropometric characteristic of body (Mathur & Salokun, 1985). It has been found that the athletes with lower body fat percentage had higher maximum oxygen uptake (VO<sub>2</sub>max). In other words, the athletes with lower body fat percentage seemed to utilize oxygen most efficiently (Heck, 1980), while the excess of body fat was reported to be a deterrent to physical performance. Further result also estimates that body fat percentage has no difference because selected variables are found insignificant which the marker of body fat is.

**CONCLUSIONS**

Present study enumerate that hockey and football players have some same morphological characteristics and trends of sports demand regards to their physical, physiological and training emphasized. Hence, the selected anthropometric variables i.e. biceps skin fold width, triceps skin fold width, sub scapular width, supriliac skin fold width, thigh skin fold width, calf skin fold width, chest skin fold width, abdominal skin fold width measurement are found insignificant were closely associated with each other in between hockey and football university male players. It may be conclude that application of talent identification and training programme for both game players will be considered as same in future.

**RECOMMENDATIONS**

The data of this study is useful in preparing the training program for players, which may be designed to suit the particular need of the players of the country at every level.  
 The same study can be repeated with some more variables.  
 The same study can be repeated with some other games and sports.  
 The results of this study would help the coaches and administrators in planning and training of Players for the upliftment of standard of game.

## ACKNOWLEDGEMENT

It is my real pleasure that, I record my indebtedness to my teacher Prof. V. S. Rathore (Dean & Head of the Department of Physical Education, G.G.V. Bilapur C.G.) for his Counsel and guidance during the preparation of this research paper. My thanks are due to all the students who acted as a subject for the study for his kind support during the data collection. With their voluntary and wholehearted support could not have been completed.

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**Sandeep Sharma**

Ph.D scholar, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) India.