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**Dr. Amarpreet Singh**
Assistant Professor, Department of Physical Education, Punjabi University, Patiala.

**Baljinder Singh**
Assistant Professor, Department of Physical Education, Punjabi University, Patiala.

**Correspondence**
**Dr. Amarpreet Singh**
Assistant Professor, Department of Physical Education, Punjabi University, Patiala.

# Comparative study of selected anthropometric variables between defenders and midfielders in football

**Amarpreet Singh, Baljinder Singh**

**Abstract**
The purpose of the study was to compare the Anthropometric variables between Defenders and Midfielders in Football. The subjects for this study were thirty four male (17- Defenders and 17- Midfielders) inter college Football players from Punjabi University Patiala. The age of the subjects ranged between 18 to 25 years. The variables selected for the study under Anthropometric measurements were Height, Humerus bicondylar diameter, Femur bicondylar diameter, Biceps muscle girth and Calf muscle girth. After the collection of relevant data, it was processed and analyzed with descriptive statistics. To compare the Anthropometric variables of subjects, Mean, standard deviation and t-test was employed with the help of statistical package of SPSS. To test the hypothesis the significance level was set at 0.05 percent. After statistical treatment, result showed that there were insignificant differences for Humerus bicondylar diameter, Femur bicondylar diameter, Biceps muscle girth and Calf muscle girth variables and significance difference were shown in Height variable between Defenders and Midfielders in Football.

**Keywords:** Football, Position, Defender, Midfielder and Anthropometric.

## Introduction
Football, which is also known as Soccer is probably world's most popular sports, played in practically every nation at varying levels of competence. Football may be played competitively or for fun, as a career, a means of keeping fit or simply a recreational pursuit. The physical education seems to have taken a new turn in the form of sports science. The sports science in turn has their substance and methodology from various sports basic. Soccer is the most popular sport in the world because it is performed by the man and women, children and adults with deferent level of expertise. The popularity of the game is reflected in the millions who participate in Soccer in lower level of play. Soccer is now being played in more than 210 countries throughout the world. Soccer is popular because of the fact it is a simple game requiring very minimum infrastructure and equipments Stepnicka (1974) [7].

Anthropometry is the science that deals with measurements of size, weight and proportions of human body. It provides scientific methods and observations on the living humans. Anthropometric techniques (skinfold fat, circumference and diameter measurements) are popular for predicting body composition because they are not much expensive, require little space and can be performed easily (Behenke and Willmore, 1974 [1], and Pollock and Willmore, 1990) [4]. Anthropometry is often used in physical education, sports science, physical activity and biomedical sciences. Anthropometry is often used in physical education, sports science, physical activity and biomedical sciences. Anthropometric measurements can be divided into height, weight and lengths, breadth or width, circumferences or girths, depths and skinfolds. All measurements of individual are external dimensions of the body.

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 the success of sportspersons (Rico-Sanz, 1998; [5], Wilmore and Costill, 1999; Keogh, 1999) [3]. Anthropometric measurement may be different between footballers of various playing positions for instance defender and mid fielder. Consequently, difference in Investigating. Anthropometry is the branch of anthropology that is concerned with the measurement of human body. The definition has confined to the kind of measurements

commonly used in associating physical performance with body build. Anthropometry involves the measurement of external part of the body, including body diameters, body circumferences somatotypes.

Anthropometry is the systematized measurements that express the dimensions of human body. The research on anthropometric measurements may be useful in selecting the suitable game or sport 17 for any individual. The idea behind the choice of a game or event by an individual of his interest is to give out the best possible abilities. For this purpose, the role of anthropometric measurements in any game or event is most important.

**Statement of the Problem**

The title of the problem considered for analysis was stated as "Comparative study of selected Anthropometric variables between Defenders and Midfielders in Football".

**Objectives of the Study**

To find out the Anthropometric Variables (Height, Humerus bicondylar diameter, Femur bicondylar diameter, Biceps muscle girth and Calf muscle girth) between Defenders and Midfielders in Football.

**Hypotheses**

There will be significant difference of Anthropometric variables between Defenders and Midfielders in Football.

**Methodology**

The study was conducted 34 male football players (Inter College level) from Punjabi university Patiala (17- Defenders and 17- Midfielders). The age of subjects ranged between 18 to 25 years.

**Selection of Variables**

In consultation with the experts of the field, minutely going through the literature available and especially the availability of equipment's the following Anthropometric variables were selected: Height, Humerus bicondylar diameter, Femur bicondylar diameter, Biceps muscle girth and Calf muscle girth.

**Tools**

In this study investigator used the following instruments: Anthropometric rod, Sliding caliper and Steel tape.

**Statistical Analysis**

After the collection of relevant data, it was processed and analyzed with descriptive statistics. To compare the data t-test was employed. The level of significance was set at 0.05 percent.

**Result and Finding**

**Table No 1.1:** Mean and Standard Deviation of Selected Anthropometric between Defender and Midfielder players playing positions in Football

| Variables | Group | Mean | Standard Divation | T-Value |
|---|---|---|---|---|
| Height(cm) | Defender players | 176.77 | 6.09 | 2.65* |
| | Midfielder players | 170.69 | 5.09 | |
| Humerus bicondylar diameter(cm) | Defender players | 7.02 | 0.52 | 2.01 |
| | Midfielder players | 9.40 | 0.26 | |
| Femur bicondylar diameter (cm) | Defender players | 6.62 | 0.45 | 0.56 |
| | Midfielder players | 9.25 | 0.91 | |
| Biceps muscle girth(cm) | Defender players | 28.40 | 1.40 | 0.58 |
| | Midfielder players | 7.55 | 4.82 | |
| Calf muscle girth (cm) | Defender players | 34.41 | 1.85 | 1.41 |
| | Midfielder players | 37.05 | 6.19 | |

Level of significance=0.05,*=Significant df. = 32,
Tabulated t-value=-2.02

Table-1.1& figure no 1.1 : statistically represent that the mean and standard deviation between Defender and Midfielder players anthropometric variables in Height (cm) has been found 176.77±6.09 and170.69 ± 5.09 , in Humerus bicondylar diameter(cm) has been found 7.02 ±0.52 and 9.40 ± 0.26 ,in Femur bicondylar diameter (cm) has been found 6.62 ± 0.45and 9.25 ±0.91 ,in Biceps muscle girth(cm) has been found 28.40 ±1.40 and 7.55 ± 4.82,in Calf muscle girth (cm) has been found 34.41 ± 1.85and 37.05 ±6.19.The't' value of Height 2.65, Humerus bicondylar diameter2.01, Femur bicondylar diameter 0.56, Biceps muscle girth 0.58,and Calf muscle girth 1.41.

So it clearly indicates that there is significant difference in Height variable between Defender and Midfielder players at 0.05 level of significance. On the other hand table &figure also indicates that there is no significant difference in Humerus bicondylar diameter, Femur bicondylar diameter, Biceps muscle girth and Calf muscle girth between Defender and Midfielder players playing positions in Football.

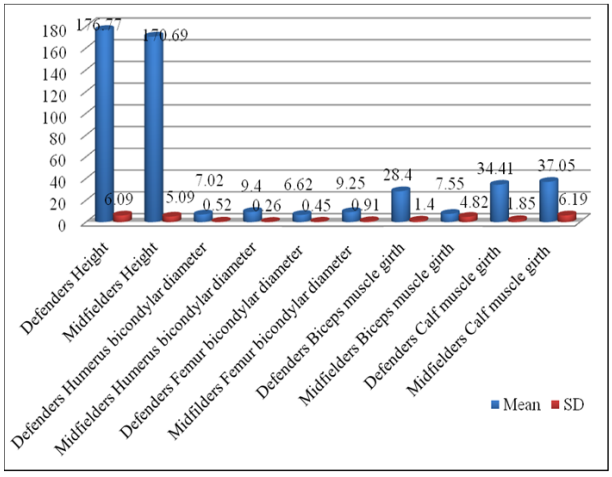


**Fig 1.1:** Mean and Standard Deviation of Selected Anthropometric Variable between Defender and Midfielder players playing positions in Football

**Discussion**

Descriptive statistics indicated the differences of selected anthropometric variables between Defender and Midfielder players playing positions in Football. Analysis of student t-test showed the significant difference between Defender and Midfielder players playing positions in Football. In anthropometric variables Football Defenders players are better than Midfielder players viz Height and Biceps muscle girth but in Humerus bicondylar diameter, Femur bicondylar diameter and Calf muscle girth variables Midfielder players are best. The basis of analysis of the data, investigator found that the earlier studys of Vishaw G. (2010), Saha GC (2012), Singh, P (2013)supported the this study.

**Discussion of Hypotheses**

There will be significant difference of Anthropometric variables between Defender and Midfielder players playing positions in Football. This hypothesis is accepted because significant differences were found in Height variable and rejected in Humerus bicondylar diameter, Femur bicondylar diameter and Calf muscle girth variables because insignificant differences were found between Defender and Midfielder players playing positions in Football.

**Conclusions**

Based on the results of the study the following conclusions were drawn by the investigator:

1. The results prove that, a significant difference was found in Height variable between Defender and Midfielder players playing positions in Football.
2. The results show that, insignificant difference was found in Humerus bicondylar diameter variable between Defender and Midfielder players playing positions in Football.
3. The results substantiate that, insignificant difference was found in Femur bicondylar diameter variable between Defender and Midfielder players playing positions in Football.
4. The results show that, insignificant difference was found in Biceps muscle girth variable between Defender and Midfielder players playing positions in Football.
5. The results demonstrate that, insignificant difference was found in Calf muscle girth variable between Defender and Midfielder players playing positions in Football.

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