



Comparative Study of Body Mass Index among Male Soccer Players at Different Playing Positions

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Received Aug 12, 2024; Accepted Aug 23, 2024; Published Sep 01, 2024

Abstract

Objective: To compare the Body Mass Index among Male Soccer Players at Different Playing Positions i.e. Goal Keepers, Defenders, Central Midfielders & Forwards players.

Method: To compare the Body Mass Index (B.M.I.) among Male Soccer Players at Different Playing Positions: i.e. Goal Keepers, Defenders, Central Midfielders & Forwards. The total numbers of 80 subjects (20 each from Goal Keepers, Defenders, Central Midfielders & Forwards) were selected from among Male national level Soccer Players. The age group ranged between 18 to 25 years. who were attend the national level tournaments. While selecting the variables, the literature and the opinions of the experts, test conduction facilities, availabilities of the equipment's, etc. were taken into consideration. The Body Mass Index (B.M.I.) was selected for the purpose of the present study. In order to find-out significant difference among of Body Mass Index among Male Soccer Players at Different Playing Positions on Body Mass Index ANOVA was used. To know more about the pattern of differences existing within a set of population means, Least Significant Difference (LSD) Post-hoc test was used. The significance was tested at 0.05 level. All the statistical procedure was performed with the help of SPSS (V.19).

Result: The result of the study reveals that there was a significant difference in the mean score of Body Mass Index. among Selected national level Male Soccer Players at Different Playing Positions. The reported mean scores and standard deviation of Body Mass Index. (kg/m²) in relation to national level goal keeper is 19.21 and 1.51. The mean and standard deviation of Body Mass Index (kg/m²) in relation to national level Defenders is 19.62 and 1.41. The mean and standard deviation of Body Mass Index (kg/m²) in relation to national level Central Midfielders is 18.58 and .81. The mean and standard deviation of Body Mass Index (kg/m²) in relation to national level Forwards is 20.08 and 1.73.

Key words: Body Mass Index, Goal Keepers, Defenders, Central Midfielders & Forwards Players.

1. Introduction:

The body mass index is a value derived from the mass and height of an individual. The BMI is defined as the body mass divided by the square of the body height, and is universally expressed in units of kg/m², resulting from mass in kilograms and height in metres.

Body Mass Index (BMI) has emerged as an important metric in soccer research, serving as a key indicator for assessing body composition and its implications for athletic performance. Calculated by the formula:

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m)}^2}$$

BMI categorizes individuals into various weight classes—underweight, normal weight, overweight, and obese. While this metric is useful for general population studies, its application in sports, particularly soccer, raises important considerations due to the unique demands of the game.

Body Mass Index (BMI) is a widely used measure to assess body composition by comparing an individual's weight to their height. While BMI provides a general idea of whether a person has a healthy weight, it does not account for muscle mass, bone density, or fat distribution, making it less reliable for athletes, particularly in sports like soccer where body composition varies significantly by position.

In soccer, different positions have unique physical demands that influence the ideal body composition for players. For example, forwards may require a leaner physique for speed and agility, while defenders might benefit from a more muscular build for strength and stability.

2. Materials and Method:

2.1 Selection of Subjects:

To compare the Body Mass Index (B.M.I.) among Male Soccer Players at Different Playing Positions: i.e. Goal Keepers, Defenders, Central Midfielders & Forwards. The total numbers of 80 subjects (20 each from Goal Keepers, Defenders, Central Midfielders & Forwards) were selected from among Male national level Soccer Players. The age group ranged between 18 to 25 years. who were attend the national level tournaments.

2.2 Selection of Variables:

While selecting the variables, the literature and the opinions of the experts, test conduction facilities, availabilities of the equipment's, etc. were taken into consideration. The Body Mass Index (B.M.I.) was selected for the purpose of the present study.

2.3 Criterion Measures:

Body Mass Index was recorded by measuring height with the help of Stadiometer and weight by weighing machine after applying the following equation (Collins, 1990).

$$BMI = \frac{\text{Body Weight (in k. g.)}}{(\text{Standing Height in Meters})^2}$$

2.4 Administration of Test: Body Mass Index:

- **Purpose:** To assess the status of body weight relative to the height.
- **Equipment:** Stadiometer and Weighing machine.
- **Procedure:** Height and weight were measured as mentioned above. BMI is simply a measure of weight relative to height. The formula adopted to assess BMI is Weight in kilogram / Height in Metres²
- **Scoring:** An Index was recorded using above formula of BMI.

2.5 Statistical Procedure:

In order to find-out significant difference among of Body Mass Index among Male Soccer Players at Different Playing Positions on Body Mass Index ANOVA was used. To know more about the pattern of differences existing within a set of population means, Least Significant Difference (LSD) Post-hoc test was used. The significance was tested at 0.05 level. All the statistical procedure was performed with the help of SPSS (V.19).

3. Data analysis and Interpretation:

Table: 1

Descriptive Statistics of Body Mass Index in Relation to Selected Goal Keepers, Defenders, Central Midfielders & Forwards Players

Groups	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Goal Keepers	20	19.21	1.51	.33863	17.23	22.31
Defenders	20	19.62	1.41	.31669	17.29	22.39
Central Midfielders	20	18.58	0.81	.18163	17.01	19.71
Forwards Players	20	20.08	1.73	.38880	17.02	22.65
TOTAL	80	19.37	1.49	.16687	17.01	22.65

The above mentioned table no. 1 reflected that the mean and standard deviation of body mass index (BMI) in relation to national level goal keeper is 19.21 and 1.51. The mean and standard deviation of body mass index (BMI) in relation to national level defenders is 19.62 and 1.41. The mean and standard deviation of body mass index (BMI) in relation to national level central midfielders is 18.58 and .81. The mean and standard deviation of body mass index in relation to national level forward is 20.08 and 1.73.

Table: 2

Analysis of Variance of the Means of Players of Selected Goal keeper, Defenders, Central Midfielders and forwards

Source of Variance	Sum of Squares	df	Mean Square	F
Between Groups	24.309	3	8.103	
Within Groups	151.666	76	1.996	4.060*
TOTAL	175.974	79		

Critical F-Value = 4.060

***Significant at 0.05 level. Tab F .05 (3, 76) = 2.73**

It is evident from table no. 2 that F-value 4.060 which is significant at 0.05 level with degree freedom (3,76) calculated value is higher than tabulated value 2.73. It's indicated that there is significant difference in the mean score of goal keeper, Defenders, Central Midfielders and Forwards players.

Since, F-ratio is found significant. Least Significance Difference (L.S.D.) Post- Hoc test is employed to find out the paired mean difference among Selected Male Soccer Players at Different Playing Positions: i.e. Goal Keepers, Defenders, Central Midfielders & Forwards. It has been shown in table no. 3.

Table: 3

Analysis of Least Significant Difference (L

SD) Post-Hoc Test Among Selected Male Soccer Players at Different Playing Positions: i.e. Goal Keepers, Defenders, Central Midfielders & Forwards Players in Relation to Body Mass Index (BMI) (Multiple Comparisons)

(I) GROUP	(J) GROUP	Mean Difference (I-J)	Std. Error	Sig.
GOAL KEEPERS	DEFENDERS	-.40650	.44672	.366
	CENTRAL MIDFIELDERS	.63100	.44672	.162
	FORWARDS	-.86950	.44672	.055
DEFENDERS	CENTRAL MIDFIELDERS	1.03750*	.44672	.023
	FORWARDS	-.46300	.44672	.303
CENTRAL MIDFIELDERS	FORWARDS	-1.50050*	.44672	.001
*. The mean difference is significant at the 0.05 level.				

From the table-3, it shows that there is significant on Body Mass Index difference when compared between: Defenders and Central Midfielders (023), Central Midfielders and Forwards (001), since their significant values are less than 0.05 level of significance. And, it shows that there are insignificant differences on Body Mass Index (BMI) when compared between: Goal Keepers and Defenders (.366), Goal Keepers and Central Midfielders (.162), Goal Keepers and Forwards (.055), Defenders and Forwards (.303), since their significant values are higher than 0.05 level of significance.

Figure:1
Mean Difference of Selected goal keeper, Defenders, Central Midfielders and Forwards Players in Relation to Body Mass Index

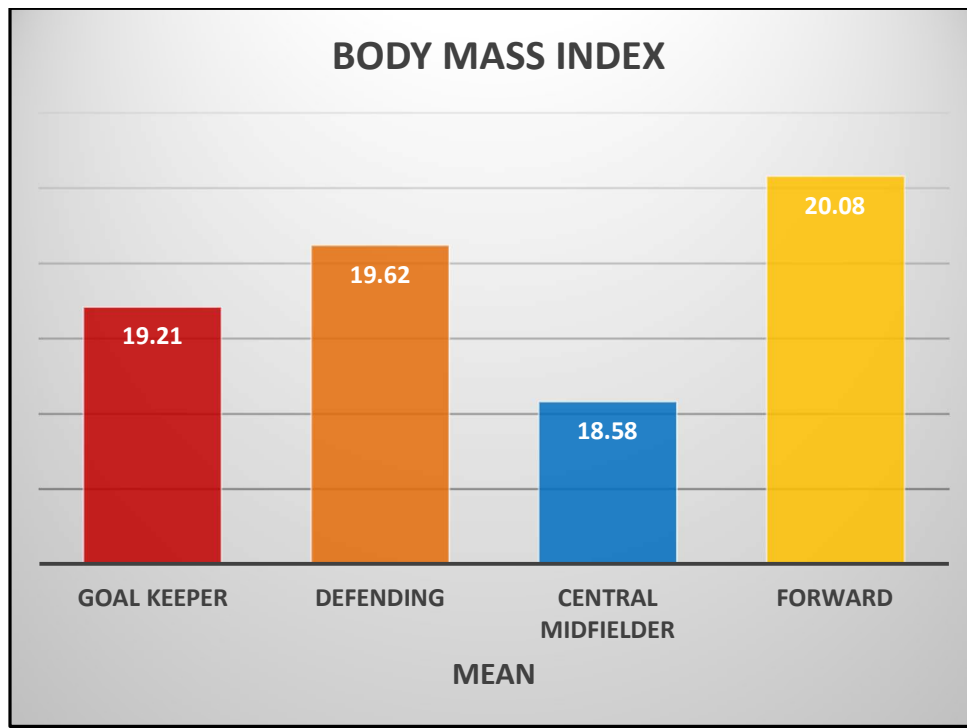
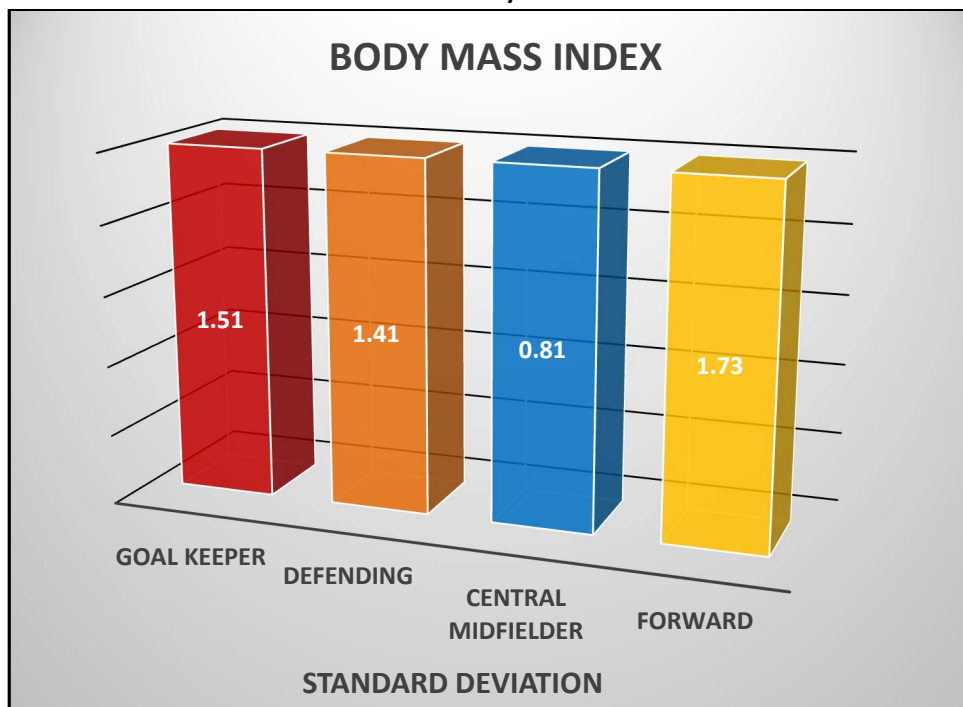


Figure: 2
Standard Deviation Difference of Selected goal keeper, Defenders, Central Midfielders and Forwards Players in Relation to Body Mass Index



4. Discussion of the Findings:

The result of the study reveals that there was a significant difference in the mean score of Body Mass Index among Selected national level Male Soccer Players at Different Playing Positions. The reported mean scores and standard deviation of Body Mass Index in relation to national level goal keeper is 19.21 and 1.51. The mean and standard deviation of Body Mass Index in relation to national level Defenders is 19.62 and 1.41. The mean and standard deviation of Body Mass Index in relation to national level Central Midfielders is 18.58 and .81. The mean and standard deviation of Body Mass Index in relation to national level Forwards is 20.08 and 1.73.

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