



Research Article

A Study of Selected Physiological Variables on Volleyball Referees of Gujarat

Dr. Narendrasingh R. Kshatriya

Assistant Professor, Smt. R.D. Shah Arts & Smt. V. D. Shah Comm. College, Dholka, Ahmedabad

Corresponding Author: Dr. Narendrasingh R. Kshatriya *

DOI: <https://doi.org/10.5281/zenodo.20162076>

Abstract

The purpose of the study was to assess the selected physiological variables on state level volleyball referees of Gujarat state. Gujarat state volleyball Association was conducted volleyball Referees examination in May 2012. 60 Candidates were selected to conduct the study from this examination, age ranging from 25-35 years. Selected physiological variables for the study were body mass index, basal Metabolic rate, fat percentage and lean body Mass. To calculator, Bmi and Bmr calculator software were used and also height, weight, age, gender and skin-fold measurements were taken with the help of instruments such as stadiometer, weighing machine and large skin fold caliper. Descriptive statistical analysis has been done by T-test and the significance of the result was seen on 0.05 levels. The t-test showed that significant difference was found for fat percentage among male and female volleyball referees of Gujarat state, whereas no significant difference was found for BMR, BMI and Lean body mass among male and female volleyball referees of Gujarat. The study revealed that female volleyball referees have higher percentage of fat than male volleyball referees of Gujarat.

Manuscript Information

- ISSN No: 2583-7397
- Received: 03-06-2025
- Accepted: 28-06-2025
- Published: 30-06-2025
- IJCRM:4(3); 2025: 681-683
- ©2025, All Rights Reserved
- Plagiarism Checked: Yes
- Peer Review Process: Yes

How to Cite this Article

Kshatriya N R. A Study of Selected Physiological Variables on Volleyball Referees of Gujarat. Int J Contemp Res Multidiscip. 2025;4(3):681-683.

Access this Article Online



www.multiarticlesjournal.com

KEYWORDS: Physiological variables, volleyball Referees, BMI, BMR, Gujarat state Volleyball Association (GSVA)

1. INTRODUCTION

The Physical Education plays an important role in promoting physical fitness, Character Building and Discipline among, youth child, player and official. Physical fitness is equally important for Volleyball Referees as Volleyball players. The Body Mass index is heuristic proxy for human body fat based on an individual's weight and height. Actually BMI does not measure the percentage of Body fat but it is defined as the individual's body weight divided by the square of his or her height. Basal Metabolic Rate (BMR) and the closely related resting Metabolic rate (RMR) is the amount of daily energy expended by animals at rest. Body composition can be measured in several ways.. The most common method is using a set of measurement calipers to measure the thickness of subcutaneous fat in multiple places of abdominal area, the subscapular region, arms, buttocks and thighs of the body. These measurements are then used to estimate total body fat with a Margin of error of approximately four percentage points. A person's body fat percentage is the total weight of the person's fat divided by the persons weight and consist of essential body fat is highly required for maintain human life and reproductive functions. The percentage for woman is greater than Men, due to the demands of childbearing and other hormonal functions. Essential fat is 3% - 5% for men and 8% - 12% for women. Storage body fat consists of fat accumulation in adipose tissue, part of which protects internal organs in the chest and abdomen. The minimum recommended total body fat percentage exceeds the essential fat percentage value reported above. The purpose to select the problem was to know and improvement in physical fitness and physiological conditions of state level volleyball referees of Gujarat.

2. SAMPLE & METHODOLOGY

The purpose of the study was to assess the selected physiological variables on state level volleyball referees of Gujarat. For the said purpose 60 candidates were selected to conduct the study from referee's examination held in May 2012, age ranging from 25-35 years. Selected physiological variables for the study were BMI, BMR, fat percentage and lean Body Mass. Descriptive statistics such as Mean, standard deviation, range were used to assess the selected physiological variables of state level volleyball referees as well as compare the selected physiological variables among male and female volleyball referees of Gujarat. Descriptive statistical analysis has been done by t-Test and the significance of the result was seen on 0.05 level. Entire instruments used in this research was found to be quite precised and reliable. To calculate the collected data SPSS version 16 and MS-Excel 2007 were used. The blood pressure of the subject was measured by using sphygmomanometer.

3. ANALYSIS AND DISCUSSION

The Mean, standard deviation and the t-values were calculated which were presented here from tables 1 to 5.

Table 1: Physiological Variables of State Volleyball Referees of Gujarat

PHYSIOLOGICAL VARIABLES	MEAN	S.D.	MAX.S.	MIN.S.	RANGE
BMI	21.29	2.16	27.85	16.82	11.03
BMR (K.Cal)	1590	124.90	1929	1296	633
FAT %	19.68	1.68	24.28	16.41	7.87
LEAN BODY MASS (Kg)	48.47	6.40	65.87	34.80	31.07

1. It is evident from table-1 for BMI Mean, S.D. and range were 21.29, 2.16 and 11.03. So we can say that all the subjects were normal and have ideal body weight on the basis of BMI. Normal BMI is between 18.5 to 24.9.
2. Fat% Mean, S.D. and range were 19.68, 1.68 and 7.87 which was acceptable for sedentary person and not for sportsmen. Normal fat Ratio is between 3-5% for male and 8-12% for female.
3. For lean Body mass, Mean, S.D. and range were 48.47, 6.40 and 31.07 which means subjects have 48.47 kg of mass in their bones, muscles and other organs in average.

Table-2: Comparison of Basal Metabolic Rate of State Volleyball Referees of Gujarat

BMR	MEAN	S.D.	SIGNIFICANT "t"	t-RATIO
Male Referees	1603	137.2	2.00	0.838
Female Referees	1576	112.1	2.00	

*Significant at 0.05 level.

Table-2 revealed that the calculated value of t (0.838) was lower than the significant value of t (2.00) at 0.05 level of significant. So there was no significance difference between male and female volleyball referees with respect to Basal Metabolic Rate.

Table-3: Comparison of Body Mass Index of States Volleyball Referees of Gujarat

BMR	MEAN	S.D.	SIGNIFICANT "t"	t-RATIO
Male Referees	21.63	2.21	2.00	1.21
Female Referees	20.95	2.09	2.00	

*Significant at 0.05 level.

Table-3 revealed that the calculated value of t (1.21) was lower than significant value of (2.00) at 0.05 levels. So there was no significant difference found among male and female referees of Gujarat in respect of Body mass Index.

Table-4: Comparison of the Fat Percentage of States Volleyball Referees of Gujarat

BMR	MEAN	S.D.	SIGNIFICANT "t"	t-RATIO
Male Referees	19.20	1.84	2.00	2.261*
Female Referees	20.15	1.38	2.00	

* Significant at 0.05 level.

Table-4 revealed that the calculated value of t (2.261*) was higher than the significant value of t (2.00) at 0.05 level of significance. Here in table-4 significance difference was found among male and female referees of Gujarat with respect to fat percentage.

Table-5: Comparison of Lean Body Mass of States Volleyball Referees of Gujarat

BMR	MEAN	S.D.	SIGNIFICANT "t"	t-RATIO
Male Referees	49.45	6.98	2.00	1.189
Female Referees	47.49	5.72	2.00	

* Significant at 0.05 level.

Table-5 revealed that the calculated value of t (1.189) was lower than the significant value of t (2.00) at 0.05 levels of significance. So there was no significant difference found among male and female referees of Gujarat in respect of Lean Body Mass.

4. DISCUSSION OF FINDINGS

The result of that there was no significant difference among male and female state volleyball referee's of Gujarat in respect of BMI, BMR and Lean Body Mass. Whereas study revealed that there was a significant difference found among male and female state volleyball referee's of Gujarat in respect of fat Percentage. The findings of the present study may also be attributed due to other factor such as dietary habits, geographical location, climatically condition and also due to other racial and ethnic factors and issues which require further study to substantiate the finding taking into consideration the above factor's which were not considered in the present study.

5. CONCLUSION

It can be concluded that the state level volleyball referees of Gujarat have ideal body weight on the basis of Body mass Index. Also they passed normal amount of Basal Metabolic rate. Referees have 48.47 kg of mass in their bones, muscles and other organs in average. Female state volleyball referees have higher percentage of fat than male state volleyball referees of Gujarat. Finally the result of the study revealed that there was no significant difference was found in Mean differences of BMI, BMR and Lean Body Mass, where as significant difference was found in mean difference of fat percentages among state level volleyball referees of Gujarat.

REFERENCES

- Sheldon WH. *The varieties of human physique: An introduction to constitutional psychology*. New York: Harper & Brothers; 1940.
- Sharma SS, Shukla BRK. Kinanthropometry of soccer players with respect to their field position. In: *International Congress of Sports Sciences*. Patiala: NIS; 1982.
- Eknoyan G. Adolphe Quetelet (1796–1874)—the average man and indices of obesity. *Nephrol Dial Transplant*. 2008;23(1):47-51.

- Smith DA, Dollman J, Withers RT, Brinkman M, Keeves JP, Clark DG. Relationship between maximum aerobic power and resting metabolic rate in youth adult women. *J Appl Physiol*. 1997;82(1):156.
- Carter JEL, Heath BH, Bailey DA, Clarke H. Changes in somatotypes of European males between 17 and 24 years. *Am J Phys Anthropol*. 2002;48(2).

Creative Commons (CC) License

This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY 4.0) license. This license permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.