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Comparison of anthropometric measurement among school soccer players representing different regions

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Abstract

The purpose of this study is to compare anthropometric measurement among school soccer players on the basis of different regions. There are five different regions Indore, Jabalpur, Bhopal, Gwalior, and Ujjain. For this study 500 male soccer players were randomly selected. The results of the study reveal that there is significant difference in weight, leg length, fore-leg length, thigh girth, calf girth and foot length of soccer players representing different region. Thus hypothesis is accepted. The results of the study reveal that there is no significant difference in height and arm length of soccer players representing different region. Thus hypothesis is rejected. This study is done for the same.

Keywords: anthropometric, measurement, representing, regions

Introduction

All physical and anthropometric measure is required for offensive and defensive football-players without it is impossible for a player to play efficiently. It may be said that the dominance of different fitness factors of various players to players. Generally, it is assumed that defensive football players should be tall and heavy with more muscular power, whereas ideal offensive players should be short, light, agile and fast have more endurance. Offensive players need agility to dodge the opponents, speed to reach the ball, strength for performing the skill efficiently and good height and weight to keep them steady in the field ^[1].

Weight and height standards had been frequently used by the insurance companies and the military authorities to assess the desirable body weights. However, Professor Dr. Albert Behnke during the forties exposed the fallacy of such weight for height standards in designating overweight and fatty subjects. He studied the body composition of elite football players who were designated as too fat and overweight on the basis of weight for height standards but who in fact had relatively low amounts of body fat. Their overweight was mainly due to their large muscular size. These findings suggested the need to fractionate the body weight quantitatively into different components.

The division of body weight into various components can well be conceived of by considering the major tissue of the body, e.g. fatty tissue, muscular tissue, skeletal tissue.

The studies on body composition would therefore assess quantitatively the amounts or proportion would therefore assess quantitatively the amounts or proportions of these tissues of the body. How much is the contribution of each tissue to the body mass? The scientific research in this field is based on direct and indirect methods of assessing the body composition. Human cadavers and animals can become the subjects for direct analysis of body composition but in living beings the indirect method have to be applied to find out body composition. The direct methods serve as the basis of standardizing various methods. The division of body weight can begin from a minimum of two compartments (fat and non fat) to a maximum of as many as possible entities (fat, muscle, bone, water, minerals etc.). The fractionation must depend upon how accurately various assessments can be made and what is to be achieved by the study.

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¹ Bobby Moffat, Intermediate Soccer (Mountain view, Ca 94043, Anderson World, Inc.1982), pp.44,45.

Body fat can be divided into two parts, storage fat and the essential fat. The essential fat is stored in lungs, bones marrow, heart, liver, muscles, kidney, spleen, intestine and the nervous system. This essential fat is important in normal functioning of the body and its parts. The storage fat is that which comprises the adipose tissue or adipocytes. The number of adipocytes generally becomes fixed around 9 to 12 months after birth of the child. Later on only the size of the adipocytes changes the function of the storage fat, to provide energy reserves and to protect the internal organs from injury [2].

Procedure: The groups of subjects were asked to assemble in a class room of their school and the purpose and significance of the study was explained to them to get their whole hearted cooperation.

For this study 500 male school soccer team players from the Madhya Pradesh C.B.S.E. Schools were randomly selected who have been feeding their teams in the recognized tournaments for last three years.

Aim: Aim of the study is to compare anthropometric measurements of among soccer players on the basis of different region.

Hypothesis

1. There will be significant difference on weight of soccer players representing different regions.
2. There will be significant difference on height of soccer players representing different regions.
3. There will be significant difference on arm length of soccer players representing different regions.
4. There will be significant difference on leg length of soccer players representing different regions.
5. There will be significant difference on fore leg length of soccer players representing different regions.
6. There will be significant difference on thigh girth of soccer players representing different regions.
7. There will be significant difference on calf girth of soccer players representing different regions.
8. There will be significant difference on foot length of soccer players representing different regions.

Selection of Variables

- Anthropometric Measurements
 - a. Body Weight
 - b. Standing Height
 - c. Arm Length
 - d. Leg Length
 - e. Fore Leg Length
 - f. Thigh Girth
 - g. Calf Girth
 - h. Foot Length

Statistical technique

To compare the significance of the differences between the group means in intelligence for the C.B.S.E. higher secondary school soccer players on the basis of different region, the ONE WAY analysis of variance (F-ratio) is used. The significant was set at 0.05 level of confident.

Analysis of data and results of the study

Table 1: One Way Anova Comparison of Weight among Soccer Players Representing Different Regions

City	N	Mean	S.D.	S.E. OF Mean
Indore	116	56.60	2.96	0.27
Jabalpur	96	56.38	2.64	0.27
Bhopal	96	55.05	2.41	0.24
Gwalior	96	54.83	6.59	0.67
Ujjain	96	55.13	2.39	0.24

Anova Summary

Source	D.F	Sum of Squares	Mean Squares	F Ratio
Between Group	4	281.107	70.27	5.04
Within Groups	495	6901.811	13.94	
Total	499	7182.918		

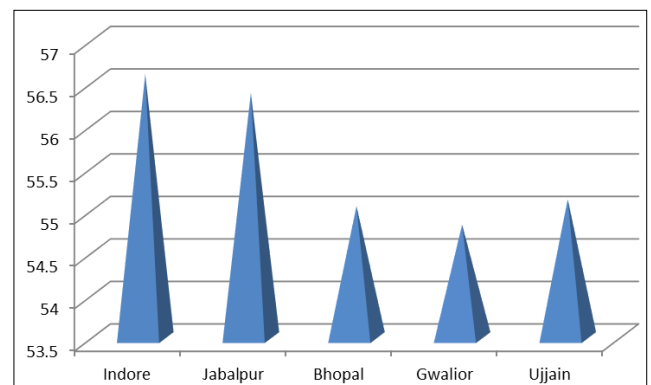


Fig 1: Comparison of Weight among soccer players representing different regions

Table 2: One way anova comparison of height among soccer players representing different regions

City	N	Mean	S.D.	S.E. OF Mean
Indore	116	6.12	4.76	0.44
Jabalpur	96	5.67	0.14	0.02
Bhopal	96	5.62	0.13	0.02
Gwalior	96	5.5	0.23	0.02
Ujjain	96	6.75	7.36	0.75

Anova Summary

Source	D.F	Sum of Squares	Mean Squares	F Ratio
Between Group	4	100.94	25.23	1.60
Within Groups	495	7781.13	15.71	
Total	499	7882.07		

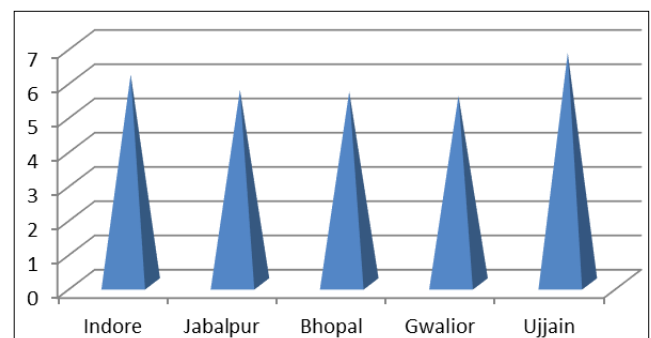


Fig 2: Comparison of Height among soccer players representing different regions

²S. P. Singh Malhotra, P. : Kinanthropometric, Lunar Publication Malhotra Textiles, Chowk Fort, Patiala, 1989.

Table 3: One Way Anova Comparison of Arm Length among Soccer Players Representing Different Regions

City	N	Mean	S.D.	S.E. of Mean
Indore	116	76.10	1.92	0.17
Jabalpur	96	76.08	1.81	0.18
Bhopal	96	75.56	1.70	0.17
Gwalior	96	75.21	4.59	0.46
Ujjain	96	76.06	1.39	0.14

Anova Summary

Source	D.F	Sum of Squares	Mean Squares	F Ratio
Between Group	4	62.69	15.67	2.42
Within Groups	495	3199.74	6.46	
Total	499	3262.43		

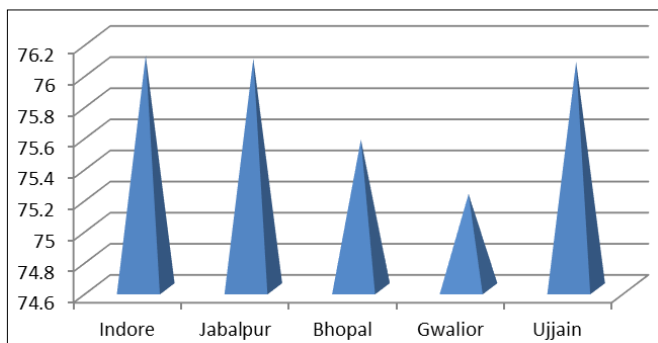


Fig 3: Comparison of Arm Length among soccer players representing different regions

Table 5: One Way Anova Comparison of Fore Leg Length among Soccer Players Representing Different Regions

City	N	Mean	S.D.	S.E. of Mean
Indore	116	45.92	1.77	0.16
Jabalpur	96	44.26	1.76	0.17
Bhopal	96	43.73	2.24	0.22
Gwalior	96	39.40	4.62	0.47
Ujjain	96	44.53	2.14	0.21

Anova Summary

Source	D.F	Sum of Squares	Mean Squares	F Ratio
Between Group	4	2438.87	609.72	83.73
Within Groups	495	3604.34	7.28	
Total	499	6043.22		

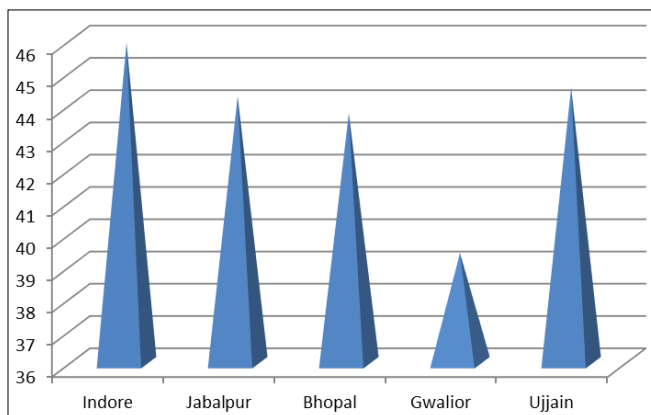


Fig 5: Comparison of Fore Leg Length among soccer players representing different regions

Table 4: One Way Anova Comparison of Leg Length among Soccer Players Representing Different Regions

City	N	Mean	S.D.	S.E. of Mean
Indore	116	97.26	1.90	0.17
Jabalpur	96	96.46	1.75	0.17
Bhopal	96	95.07	3.39	0.34
Gwalior	96	85.68	10.07	1.02
Ujjain	96	96.18	1.63	0.16

Anova Summary

Source	D.F	Sum of Squares	Mean Squares	F Ratio
Between Group	4	8992.31	2248.07	95.02
Within Groups	495	11710.36	23.65	
Total	499	20702.67		

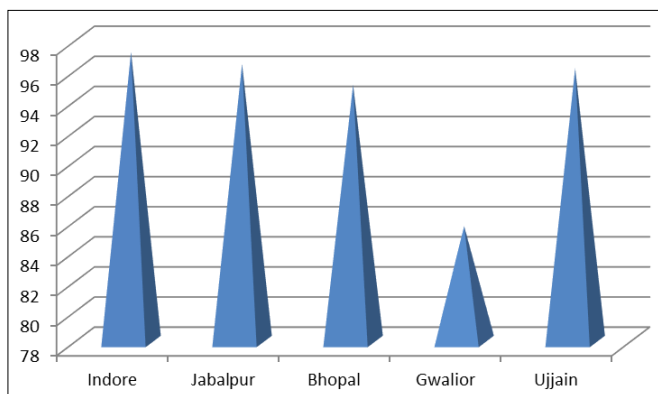


Fig 4: Comparison of Leg Length among soccer players representing different regions

Table 6: One way Anova comparison of thigh girth among soccer players representing different regions

City	N	Mean	S.D.	S.E. of Mean
Indore	116	44.51	2.76	0.25
Jabalpur	96	44.77	2.55	0.26
Bhopal	96	45.27	2.93	0.30
Gwalior	96	41.26	2.82	0.28
Ujjain	96	43.85	2.02	0.20

Anova Summary

Source	D.F	Sum of Squares	Mean Squares	F Ratio
Between Group	4	964.78	241.19	34.41
Within Groups	495	3469.33	7.00	
Total	499	4434.11		

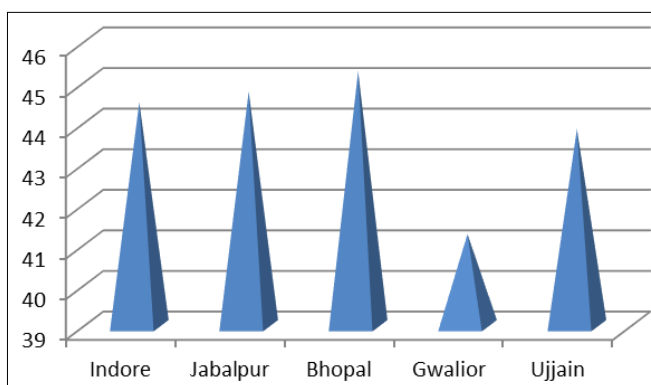


Fig 6: Comparison of Thigh Girth among soccer players representing different regions

Table 7: One way anova Comparison of calf girth among soccer players representing different regions

City	N	Mean	S.D.	S.E. of Mean
Indore	116	30.83	2.02	0.18
Jabalpur	96	25.98	3.63	0.37
Bhopal	96	23.39	2.69	0.27
Gwalior	96	28.46	3.53	0.36
Ujjain	96	23.55	4.08	0.41

Anova Summary

Source	D.F	Sum of Squares	Mean Squares	F Ratio
Between Group	4	4329.83	1082.45	103.37
Within Groups	495	5183.48	10.47	
Total	499	9513.31		

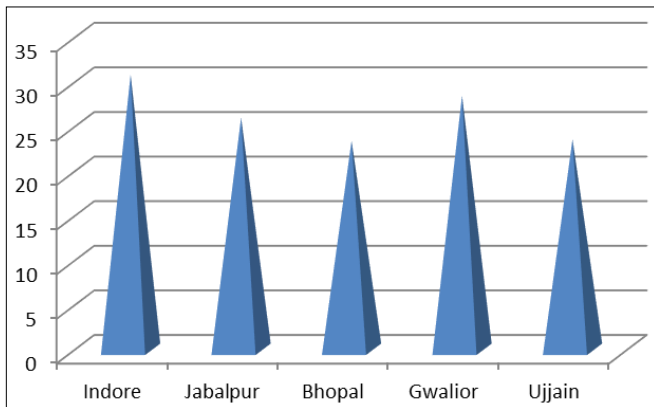


Fig 7: Comparison of Calf Girth among soccer players representing different regions

Table 8: One way anova Comparison of foot length among soccer players representing different regions

City	N	Mean	S.D.	S.E. of Mean
Indore	116	9.76	0.44	0.02
Jabalpur	96	9.03	0.58	0.02
Bhopal	96	9.18	0.52	0.02
Gwalior	96	9.26	0.68	0.02
Ujjain	96	9.34	0.47	0.02

Anova Summary

D.F	Sum of Squares	Mean Squares	Source	F Ratio
4	33.15	8.29	Between Group	27.65
495	148.39	0.30	Within Groups	
499	181.55		Total	

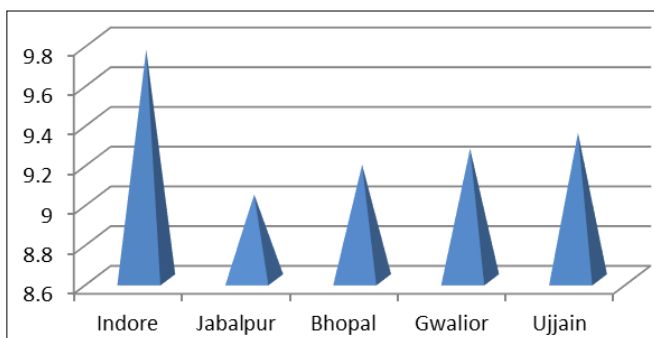


Fig 8: Comparison of Foot length among soccer players representing different regions

Results & Conclusion

1. Soccer players of different region have shown significant difference at 0.01 levels on Weight.
2. Soccer players of different region have not shown significant difference on Height.
3. Soccer players of different region have not shown significant difference on Arm length.
4. Soccer players of different region have shown significant difference on Leg length at 0.01 levels.
5. Soccer players of different region have shown significant difference on fore leg length at 0.01 level.
6. Soccer players of different region have shown significant difference at 0.01 levels on Thigh girth.
7. Soccer players of different region have shown significant difference at 0.01 levels on Calf girth.
8. Soccer players of different region have shown significant difference at 0.01 level on Foot length.

Recommendations for further research

1. This type of study may be conducted on players of different games and sports.
2. This type of study may be conducted on college going male and female players.
3. This type of study may be conducted on somatotyping and different environmental conditions.
4. This type of study may be conducted on tribal and non tribal players.
5. This type of study may be conducted on rural and urban players.

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