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Compare the anthropometric variables among urban and rural cricket players of Lucknow region

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Abstract

In the present study, an attempt has been made to compare Height, Total arm length, chest circumference and subscapular skin-fold of anthropometrical component between urban and rural cricket players of Lucknow region. The study was carried out on 100 male urban cricket players and 100 male rural cricket players in the age group of 18-25 years. The subjects were selected from different urban and rural cricket academies of Lucknow region, Uttar Pradesh. The data was collected by use of measuring tape, anthropometer rod and digital skin-fold. The data was analyzed and compared with the help of SPSS in which arithmetic mean, standard deviation, t-test were employed. Urban and rural cricket players height and total arm length was found not significantly difference, chest circumference and subscapular skin-fold was found a significantly difference.

Keywords: Height, total arm length, chest circumference, subscapular skin-fold, anthropometry, urban cricket player, rural cricket player

Introduction

Physical education focuses on enhancing physical fitness, motor skills, and overall health, and anthropometry plays a key role in this field. Anthropometry is the scientific study of the measurements and proportions of the human body. In Physical Education, understanding individual body measurements helps educators assess physical development, tailor fitness programs, and monitor growth in students, making it a valuable tool for optimizing athletic performance and preventing injuries. By measuring body composition, such as height, weight, limb lengths, and body mass index (BMI), instructors can understand each student's physical capabilities and limitations.

In children and adolescents, anthropometry allows educators to track growth patterns, determine nutritional needs, and establish realistic fitness goals, promoting healthy development. For athletes, anthropometric data are used to identify physical attributes suited to particular sports, such as height in basketball or leg length in running, maximizing performance potential. Furthermore, anthropometry informs PE instructors on how to adjust training techniques for diverse body types, minimizing strain on joints and muscles. As a result, incorporating anthropometric assessment into Physical Education fosters personalized, safe, and effective physical training, ensuring that individuals of all sizes and shapes can engage in physical activity that supports their unique physical profiles.

Objective

1. To compare height among urban and rural cricket players of Lucknow region.
2. To compare total arm length among urban and rural cricket players of Lucknow region.
3. To compare chest circumference among urban and rural cricket players of Lucknow region.
4. To compare subscapular skin-fold among urban and rural cricket players of Lucknow region.

Hypothesis

1. There is no significant difference in height among urban and rural cricket players of Lucknow region.
2. There is no significant difference in total arm length among urban and rural cricket players of Lucknow region.

3. There is no significant difference in chest circumference among urban and rural cricket players of Lucknow region.
4. There is no significant difference in subscapular skin-fold among urban and rural cricket players of Lucknow region.

Methodology & Procedure

For the purpose of this study, total 200 cricket player's (100 from urban areas + 100 from rural areas) were selected from the various cricket academies of Lucknow region by using convenient purposive sampling technique. The subjects those were selected for the study are mentioned below:

- Urban and Rural Cricket Player's of Lucknow District
- Urban and Rural Cricket Player's of Hardoi District
- Urban and Rural Cricket Player's of Raebareli District
- Urban and Rural Cricket Player's of Lakhimpur Kheri District

Selection of Variables

- Height
- Total arm length
- Chest circumference
- Subcapular skin-fold

Administration of the Tests

Standing height

- **Objective:** To measure the standing height of the subjects.
- **Equipment:** Flat wall, flexible steel tape and card board.
- **Description:** To measure standing height, an upright wall without any cuts was used. Measurements were taken in centimeters. The subject stood with their heels, buttocks, and upper back in contact with the wall, arms hanging at the sides. Height was measured by placing a flat wooden plate horizontally on the top of the subject's head, where the plate touches the wall, use a pencil to mark that point on the wall. Measured the floor to the wall-mark with flexible steel tape.
- **Scoring:** Standing height was written down to the nearest centimeter.

Total arm length

- **Objective:** To measure the length of arm.
- **Equipment:** Anthropometer rod.
- **Description:** Arm length was measured using an anthropometer rod from the acromial process to the tip of the third finger.
- **Scoring:** The arm length was written down to the nearest centimeter.

Chest Circumference

- **Objective:** To measure the chest circumference of the subject.
- **Equipment:** Flexible measuring Tape.
- **Description:** Chest girth was measured using a flexible steel tape placed around the chest at the level of the nipples. The tape made light contact with the skin, making sure an even fit around the body. The subject stood in a comfortable position; the measurement was taken at the end of a normal exhalation.

- **Scoring:** The measurement was written down to the nearest centimeter.

Subscapular Skin-fold

- **Objective:** To measure the body fat percentage.
- **Equipment:** Digital skin-fold caliper, flexible steel tape, sketch pen.
- **Description:** The subscapular skin-fold measurement was used to measure body fat by pinching the skin just below the inferior angle of the scapula (Shoulder blade) on the back. The measurement was taken on a diagonal fold running downward and outward at a 45-degree angle from the spine. To conduct the measurement, the skin and underlying fat were gently pinched without including muscle tissue; a skin-fold caliper is applied perpendicular to the fold. The measurement was noted in millimeters once the caliper had stabilized after a few seconds.
- **Scoring:** The measurement was written down in millimeters.

Statistical Technique

The data needed to be presented, analyzed, and interpreted using an appropriate statistical method to ensure a thorough understanding of the underlying gaps. In this study, the researcher aimed to compare selected anthropometric variables among urban and rural cricket players. The analysis was conducted using the independent 't' test with the help of SPSS.

Data Analysis & Interpretations

This study aims to compare anthropometrical variables between urban and rural cricket players of Lucknow region. The following anthropometrical variables were considered for the analysis:

- Height
- Total arm length
- Chest circumference
- Subscapular skin-fold

The minimum and maximum scores obtained and also the range of scores were calculated and presented in Table: 1.1 to 1.4. The complete data of Urban and Rural Cricket players were arranged in a way that mean and standard deviation may be calculated and also the mean difference MD ($m_1 - m_2$) and the calculation regarding 't'-test. The tabulation was prepared for anthropometrical variables separately. The calculations in connection with 't' - test were also arranged for individual variable wise. The SPSS were followed to calculate the 't'-test. The value of calculated 't'- test was compared with the tabulated significant value at 0.05 confidence.

Table 1: Comparison of mean values between urban and rural cricket players regarding height

Players	N	Mean	Std. Dev.	D.F.	S.E.D.	't'-Ratio	p-value
Urban Players	100	169.1	6.22	198	0.821	-0.901	0.369 (NS)
Rural Players	100	169.84	5.36				

(NS) = Not Significant at level of 0.05

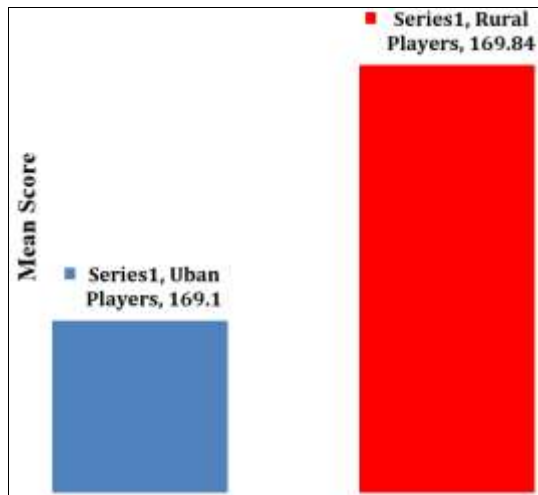


Fig 1: Height of urban and rural cricket players

Table 1.1 reveals the significance of the mean difference of Urban and Rural cricket players regarding their height. The mean values of Urban and Rural cricket players regarding height were 169.1 and 169.84, respectively. The calculated ‘t’ value is -0.901, which is not significant at the 0.05 level of significance. So there is no significant difference in height between Urban and Rural cricket players. No significant difference shows that the height of Urban and Rural cricket players is almost the same.

Table 2: Comparison of mean values between urban and rural cricket players regarding total arm length

Players	N	Mean	Std. Dev.	D.F.	S.E.D.	‘t’-Ratio	p-value
Urban Players	100	72.35	3.64	198	0.482	1.266	0.207 (NS)
Rural Players	100	71.74	3.16				

(NS) = Not Significant at level of 0.05

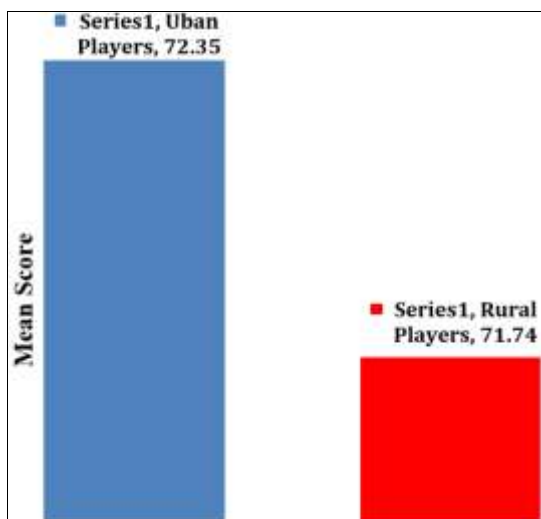


Fig 2: Total Arm Length measurement of urban and rural cricket players

Table 1.2 reveals the significance of the mean difference of Urban and Rural cricket players regarding their total arm length. The mean values of Urban and Rural cricket players regarding total arm length were 72.35 and 71.74, respectively. The calculated ‘t’ value is 1.266, which is not significant at the 0.05 level of significance. So there is no significant difference in total arm length between Urban and Rural cricket players. No significant difference shows that

the total arm length of Urban and Rural cricket players is almost the same.

Table 3: Comparison of mean values between urban and rural cricket players regarding chest circumference

Players	N	Mean	Std. Dev.	D.F.	S.E.D.	‘t’-Ratio	p-value
Urban Players	100	86.77	6.67	198	0.841	-2.021	0.045*
Rural Players	100	88.47	5.12				

* Significant at 0.05 level of significance

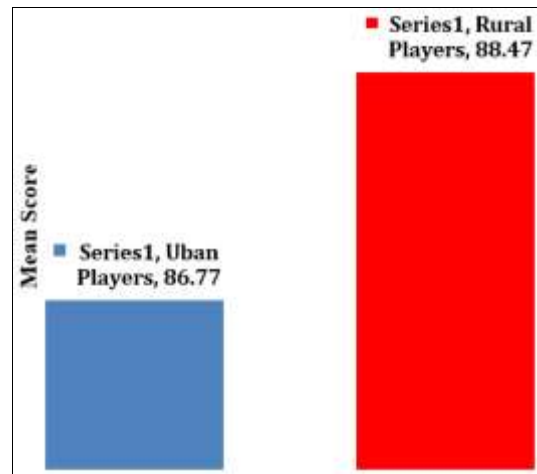


Fig 3: Chest Circumference of urban and rural cricket players

Table 1.3 reveals the significance of the mean difference of Urban and Rural cricket players regarding their chest circumference. The mean values of Urban and Rural cricket players regarding chest circumference were 86.77 and 88.47, respectively. The calculated ‘t’ value is -2.021, which is significant at the 0.05 level of significance. So there is significant difference in chest circumference between Urban and Rural cricket players. The higher mean score shows that the chest circumference of Rural cricket players is higher as compared with the chest circumference of urban cricket players.

Table 4: Comparison of mean values between urban and rural cricket players regarding subscapular skin-fold

Players	N	Mean	Std. Dev.	D.F.	S.E.D.	‘t’-Ratio	p-value
Urban Players	100	14.46	4.09	198	0.512	2.036	0.043*
Rural Players	100	13.42	3.07				

* Significant at 0.05 level of significance

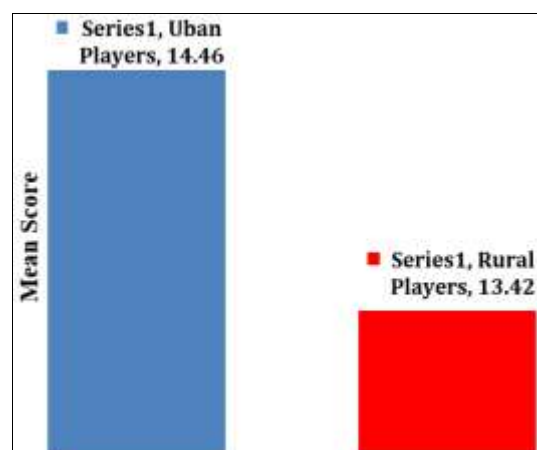


Fig 4: Subscapular skin-fold of urban and rural cricket players

Table 1.4 reveals the significance of the mean difference of Urban and Rural cricket players regarding their subscapular skin-fold. The mean values of Urban and Rural cricket players regarding subscapular skin-fold were 14.46 and 13.42, respectively. The calculated 't' value is 2.036, which is significant at the 0.05 level of significance. So there is significant difference in subscapular skin-fold between Urban and Rural cricket players. The higher mean score shows that the subscapular skin-fold of urban cricket players is higher as compared with the subscapular skin-fold of Rural cricket players.

Testing of Hypothesis

(No. 1) "There is no significant difference in height among urban and rural cricket players of Lucknow region" is accepted.

(No. 2) "There is no significant difference in total arm length among urban and rural cricket players of Lucknow region" is accepted.

(No. 1) "There is no significant difference in chest circumference among urban and rural cricket players of Lucknow region" is rejected.

(No. 1) "There is no significant difference in subscapular skin-fold among urban and rural cricket players of Lucknow region" is rejected.

Conclusion

The study concluded that there was a notable difference in anthropometric variables - chest circumference and subscapular skin-fold. Chest circumference of rural cricket players were found higher in comparison to urban cricket players, subscapular skin-fold of urban cricket players higher than rural cricket players. No significant differences were found among urban and rural cricket players height and total arm length variables.

Overall, the study demonstrates that urban and rural cricket players have many similarities in their anthropometric characteristics. However, key differences in chest circumference and subscapular measurements suggest that environmental and lifestyle factors outside of cricket training may influence certain physical attributes. The larger chest circumference observed in rural players may be attributed to greater physical activity in non-cricket contexts, while the higher subscapular measurements in urban players could be linked to different lifestyle or dietary habits. These findings highlight the complex interplay between environment, lifestyle, and athletic performance.

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