

“A Comparative Analysis of Anthropometric Characteristics and Physical Fitness Parameters among Rural and Urban Volleyball Players in Telangana”

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ABSTRACT

The purpose of the present study was to compare anthropometric characteristics and physical fitness parameters among rural and urban volleyball players in Telangana. A total of 60 male volleyball players (30 rural and 30 urban), aged between 18–25 years, were selected randomly. Anthropometric variables such as height, weight, and BMI, and physical fitness parameters including speed, agility, vertical jump, and endurance were measured. Independent t-test was used to determine the significant differences between groups. The results revealed significant differences in agility, vertical jump, and endurance, favoring rural players, while urban players showed better BMI and speed performance. The study concludes that environmental and lifestyle factors influence performance variables.

Keywords: Anthropometry, Physical Fitness, Rural Players, Urban Players, Volleyball, Telangana

INTRODUCTION

Volleyball is a dynamic and highly competitive sport that demands a combination of physical fitness, technical skills, and optimal body composition. In recent years, scientific approaches to sports performance have increasingly emphasized the importance of kinanthropometric characteristics and physical fitness variables in determining athletic success. Kinanthropometry, a specialized branch of human biology, focuses on the measurement of body size, shape, proportion, composition, and maturation, and its relationship with movement and performance.

Anthropometric variables such as height, body weight, Body Mass Index (BMI), arm length, and leg length play a significant role in volleyball performance. Taller players with longer limb lengths often have advantages in spiking, blocking, and overall reach, while appropriate body composition contributes to agility, endurance, and explosive power. Therefore, the assessment of these physical characteristics provides valuable insights into talent identification, training optimization, and performance enhancement.

Alongside anthropometric factors, physical fitness components such as muscular strength, speed, agility, flexibility, and cardiovascular endurance are equally essential for volleyball players. The nature of the game, which involves rapid directional changes, jumping, diving, and sustained rallies, requires players to maintain a high level of physical preparedness. Hence, evaluating these fitness variables is crucial in understanding the overall performance capacity of athletes.

In the context of India, particularly in Telangana state, volleyball is widely played in both rural and urban settings. However, there exists a noticeable disparity in terms of access to training facilities, coaching expertise, nutritional support, and sports infrastructure between rural and urban regions. Rural players often rely on natural

physical activity and traditional training methods, whereas urban players benefit from structured training programs, modern equipment, and scientific coaching techniques. These differences may significantly influence both anthropometric development and physical fitness levels.

Despite the popularity of volleyball, limited research has been conducted to compare the kinanthropometric and physical fitness profiles of rural and urban volleyball players within Telangana. Understanding these differences is essential for developing targeted training programs, bridging performance gaps, and promoting equitable sports development across regions.

Therefore, the present study aims to conduct a comparative analysis of kinanthropometric characteristics (height, weight, BMI, arm length, and leg length) and physical fitness variables among rural and urban volleyball players in Telangana state. The findings of this study are expected to contribute to the existing body of knowledge in sports science and provide practical implications for coaches, trainers, sports authorities, and policymakers in enhancing volleyball performance at both grassroots and competitive levels

Objectives of the Study

1. To compare speed between rural and urban players
2. To compare muscular strength
3. To evaluate agility differences
4. To analyze endurance levels
5. To assess flexibility

Hypothesis

Significant differences in physical fitness variables between rural and urban volleyball players.

There is significant difference in anthropometric variables (height, weight, BMI, arm length, and leg length) between rural and urban volleyball players.

METHODOLOGY

Sample

- 60 volleyball players
- Rural, 30
- Urban 30
- Age group: 18–25 year

Anthropometric Variables

- Height (cm)
- Weight (kg)
- BMI (kg/m²)
- Arm Length (cm)
- Leg Length (cm)

Physical Fitness Variables:

- Explosive Strength (Standing Broad Jump in meters)
- Agility (Shuttle Run in seconds)
- Speed (50m Dash in seconds)
- Flexibility (Sit and Reach)
- Endurance (12 Min Cooper Run)

Statistical Analysis

1. Mean
2. Standard Deviation
3. Independent t-test

RESULTS AND ANALYSIS

Table 1: Anthropometric Variables Comparison

Table 1: Anthropometric Variables

Variable

Variables	Group	Men	SD	T Value	Table Value
Height (cm)	Rural	174.2	5.1	2.45	2.00
	Urban	177.8	4.8		
Weight (kg)	Rural	65.4	6.2	2.10	2.00
	Urban	69.1	5.7		
BMI	Rural	21.5	1.8	1.95	2.00
	Urban	22.3	1.6		
Arm Leg (cm)	Rural	74.3	3.2	2.30	2.00
	Urban	76.8	3.0		
Leg Lenth(cm)	Rural	92.5	3.0	2.60	2.00
	Urban	96.2	4.5		

(Significant at 0.05 level)

Urban players are significantly superior in anthropometric characteristics.

Table 2: Physical Fitness Variables

Variable

Variables	Group	Men	SD	T Value
Explosive Strenth	Rural	48.2	5.3	2.75
	Urban	52.6	4.9	
Egility 4x10	Rural	10.8	0.9	2.40
	Urban	10.01	0.8	
Speed 50 m Dash	Rural	6.5	0.5	2.20
	Urban	6.1	0.4	
Flexibility Sit and Reach	Rural	21.4	3.1	1.10
	Urban	22.8	3.1	
Endurance 12min Cooper Run	Rural	12.8	1.5	2.55
	Urban	14.2	1.3	

(Significant at 0.05 level)

Urban players perform better in explosive strength, speed, and agility.

DISCUSSION

The findings of the study indicate that urban volleyball players possess better anthropometric advantages such as height and limb length, which are essential for volleyball performance. This supports earlier findings where taller players with longer limbs perform better in volleyball.

Research Gate

Urban players also demonstrated superior performance in explosive strength and agility due to better access to training facilities, coaching, and nutrition.

However, rural players showed better flexibility, possibly due to their active lifestyle and natural physical Activities.

CONCLUSION

Urban volleyball players are superior in anthropometric and most physical fitness variables.

Rural players show better flexibility.

Training facilities, nutrition, and exposure significantly influence performance.

RECOMMENDATIONS

Provide better training facilities in rural areas.

Conduct regular fitness training programs.

Improve nutrition awareness among rural players.

Coaches should focus on scientific training methods.

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