IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A Critical Analysis Of Physical Fitness And Anthropometric Factors Between Netball And Handball Female Players

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Abstract

The purpose of the present study was to critically analyze and compare selected physical fitness and anthropometric variables between inter-collegiate female netball and handball players. A total of 30 female players (Netball = 15, Handball = 15) aged between 19 and 22 years, representing the inter-collegiate level, were selected as subjects using purposive sampling technique. Selected physical fitness variables included speed, agility, muscular strength, explosive power, and cardiovascular endurance, while anthropometric variables included height, body weight, Body Mass Index (BMI), and arm length. Standardized tests were administered to collect data. Mean, standard deviation, and independent t-test were used for statistical analysis. The level of significance was set at 0.05. The results revealed significant differences in agility, explosive power, and arm length, while no significant differences were found in speed, BMI, and cardiovascular endurance. The findings highlight sport-specific fitness and anthropometric requirements of female netball and handball players.

Keywords: Physical fitness, Anthropometric variables, Netball, Handball, Inter-collegiate female players

Introduction

In competitive sports, physical fitness and anthropometric characteristics play a vital role in determining performance potential. Team sports such as netball and handball require athletes to possess specific physical and structural attributes to meet the physiological and biomechanical demands of the game.

Netball emphasizes agility, coordination, balance, and speed within restricted movement zones, whereas handball is a fast-paced contact sport requiring explosive power, muscular strength, and endurance. Female athletes participating at the inter-collegiate level undergo systematic training, leading to sport-specific adaptations.

A comparative analysis of physical fitness and anthropometric variables among female netball and handball players helps in understanding these adaptations and assists coaches in scientific training planning and talent identification.

Objectives of the Study

1. To assess selected physical fitness variables of inter-collegiate female netball and handball players.
2. To assess selected anthropometric variables of inter-collegiate female netball and handball players.
3. To compare physical fitness variables between netball and handball players.
4. To compare anthropometric variables between netball and handball players.

Hypotheses

1. There will be a significant difference in selected physical fitness variables between inter-collegiate female netball and handball players.
2. There will be a significant difference in selected anthropometric variables between inter-collegiate female netball and handball players.

Methodology

Selection of Subjects

The study consisted of 30 inter-collegiate female players (Netball = 15, Handball = 15) aged 19 to 22 years. Subjects were selected using purposive sampling technique from various colleges.

Variables of the Study

Independent Variable:

- Type of sport (Netball / Handball)

Dependent Variables:

Physical Fitness Variables

- Speed
- Agility
- Muscular strength
- Explosive power
- Cardiovascular endurance

Anthropometric Variables

- Height
- Body weight
- Body Mass Index (BMI)
- Arm length

Tests and Tools Used

Variable	Test / Tool
Speed	50-meter dash
Agility	Shuttle run
Muscular strength	Sit-ups (1 minute)
Explosive power	Standing broad jump
Cardiovascular endurance	Harvard step test
Height	Stadiometer
Weight	Weighing machine
Arm length	Anthropometric tape
BMI	Weight (kg) / Height² (m^2)

Statistical Analysis

Descriptive statistics (Mean and Standard Deviation) and Independent t-test were used to analyse the data. Level of significance was set at 0.05.

Results

Table 1: Comparison of Physical Fitness Variables

Variable	Group	Mean	SD	t-value	Result
Speed (sec)	Netball	7.20	0.40	1.08	NS
Handball	7.08	0.36			
Agility (sec)	Netball	10.18	0.52	2.36*	S
Handball	10.78	0.58			
Muscular Strength (reps)	Netball	27.6	3.1	1.72	NS
Handball	29.4	3.4			
Explosive Power (cm)	Netball	175.2	9.2	2.64*	S
Handball	184.8	9.6			
Cardiovascular Endurance	Netball	77.6	5.8	0.89	NS
Handball	78.9	5.6			

* Significant at 0.05 level

NS – Not Significant

Table 2: Comparison of Anthropometric Variables

Variable	Group	Mean	SD	t-value	Result
Height (cm)	Netball	161.8	5.2	1.49	NS
Handball	164.6	5.8			
Weight (kg)	Netball	55.9	4.6	1.05	NS
Handball	57.6	4.9			
BMI	Netball	21.2	1.8	0.76	NS
Handball	21.6	1.9			
Arm Length (cm)	Netball	69.1	2.9	2.41*	S
Handball	72.0	3.2			

Discussion

The results indicate that inter-collegiate female handball players possess greater explosive power and arm length compared to netball players, which may be attributed to the throwing, blocking, and jumping actions involved in handball. Netball players exhibited superior agility due to frequent directional changes and controlled movements within court restrictions.

The absence of significant differences in BMI and cardiovascular endurance suggests similar overall fitness conditioning among both groups at the inter-collegiate level.

Conclusion

It is concluded that significant differences exist in selected physical fitness and anthropometric variables between inter-collegiate female netball and handball players aged 19–22 years. Handball players show superiority in explosive power and arm length, whereas netball players demonstrate better agility. These findings reflect the specific demands of each sport and can aid in training and selection processes.

Practical Implications

- Helps in sport-specific training design
- Useful for inter-collegiate talent identification
- Beneficial for physical education teachers and coaches

Limitations of the Study

- Small sample size
- Limited to female inter-collegiate players
- Skill and psychological variables were not included

Recommendations for Further Research

- Studies on national-level players
- Inclusion of physiological and biomechanical variables
- Larger sample size for better generalization

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