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COMPARATIVE STUDY ON SELECTED HEALTH-RELATED FITNESS COMPONENTS BETWEEN BADMINTON AND BALL BADMINTON PLAYERS

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ABSTRACT

The purpose of this study was to compare selected health-related fitness components—cardiovascular endurance, muscular strength, and flexibility—between Badminton and Ball Badminton players aged 18 to 25 years. A total of 60 male players (30 from each sport) were assessed using standardized fitness tests: the 12-minute run/walk test for endurance, the standing broad jump for muscular strength, and the sit and reach test for flexibility. The data were statistically analyzed using independent t-tests to determine significant differences between the groups.

The results indicated that Badminton players performed significantly better in cardiovascular endurance and muscular strength, while flexibility scores showed moderate differences, favoring Badminton players. These findings suggest that the dynamic and high-intensity nature of Badminton may contribute more effectively to the development of overall fitness when compared to Ball Badminton, which involves more controlled and less continuous movement patterns.

This study highlights the importance of sport-specific training in influencing fitness profiles and suggests that Ball Badminton players may benefit from incorporating additional endurance and strength training into their routines. The results can help coaches, trainers, and sports scientists design better fitness programs tailored to each sport's physical demands.

Keywords: Badminton, Ball Badminton, Health-related fitness, Endurance, Muscular Strength and Flexibility.

INTRODUCTION

Physical fitness is a foundational component in the field of sports and physical education. It refers to an individual's ability to perform daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure pursuits and respond to emergencies. Over the years, fitness has evolved from being a general health requirement to a specialized necessity, particularly in the field of competitive sports. Today, fitness is not only essential for enhancing performance but also for ensuring the overall well-being of athletes. In the domain of sports, fitness is broadly classified into two categories:

Health-related fitness, which includes cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition.

Skill-related fitness, which includes agility, balance, coordination, power, reaction time, and speed.

This study focuses on health-related fitness components, as they are crucial for sustaining performance over time and preventing injuries.

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An athlete's success often hinges not only on skill and strategy but also on the strength and efficiency of their physical systems. For instance, a player with good cardiovascular endurance can maintain high-intensity performance for longer durations, while good flexibility helps in executing complex movements and reducing injury risk. With the increasing competitiveness in sports, there has been a growing emphasis on developing sport-specific fitness training programs. Athletes across all disciplines, from individual to team sports, undergo rigorous fitness regimes that are tailored to the demands of their sport. In racket sports like badminton and ball badminton, fitness plays an even more critical role due to the high physical demands involving rapid directional changes, powerful strokes, endurance, and agility.

Badminton is a highly popular racket sport played at both recreational and competitive levels across the globe. It is an Olympic sport governed internationally by the Badminton World Federation (BWF). The game is played either in singles (one player per side) or doubles (two players per side) format. The objective is to score points by hitting a shuttlecock over the net and into the opponent's court in such a way that it cannot be returned. The game demands a high level of aerobic fitness, agility, explosive strength, hand-eye coordination, and quick reflexes. Due to the shuttle's light weight and rapid movements, players must be quick on their feet and capable of making fast, multidirectional moves. Rallies can be short and explosive or long and endurance-based, requiring a blend of speed and stamina. Professional badminton players undergo intense training routines focusing on cardiovascular endurance, muscular strength, flexibility, and mental focus.

Ball Badminton is a traditional Indian sport that originated in the southern part of India, particularly Tamil Nadu, and is governed by the Ball Badminton Federation of India (BBFI). It is played with a ball made of wool and a racket, on a court slightly smaller than a badminton court. The game is played both indoors and outdoors, usually in doubles or team formats. Though not as internationally widespread as badminton, ball badminton is recognized for its fast-paced rallies and continuous play, requiring high endurance, hand-eye coordination, and team strategy. The woolen ball used in the game travels at high speed, and players need to be agile and responsive. The nature of the game allows for fewer breaks, demanding better cardiovascular fitness and sustained concentration over longer durations.

Badminton and Ball Badminton are two dynamic and competitive racket sports that, despite their similarities in basic game play structure, differ significantly in terms of intensity, movement patterns, equipment used, and physical demands. Both sports require quick reflexes, speed, endurance, and agility, but the nature of their game play places varying emphasis on specific health-related fitness components. Badminton, being a globally recognized Olympic sport, is characterized by high-speed rallies, powerful strokes, and short bursts of explosive movement. It places a significant demand on cardiovascular endurance, muscular power, agility, and flexibility. On the other hand, Ball Badminton, a traditional Indian sport, is typically played with longer rallies, requiring sustained effort and continuous play, thus emphasizing stamina, muscular endurance, and team coordination.

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METHODOLOGY

The primary objective of this study is to compare selected health-related fitness components between Badminton and Ball Badminton players. This research aims to assess and analyze differences in physical fitness attributes that are crucial for athletic performance in both sports. The present study follows a comparative research design aimed at evaluating and analyzing the differences in selected health-related fitness components between Badminton and Ball Badminton players. This design is appropriate as it allows for the systematic comparison of physical fitness variables across two distinct groups engaged in similar, yet uniquely demanding, racket sports. The study adopts a quantitative approach, utilizing standardized fitness tests to measure specific components of health-related fitness. The data collected will be subjected to statistical analysis to determine the significance of differences between the two groups.

Group A: Badminton Players

Group B: Ball Badminton Players

Fitness Components Studied:

i. Strength
ii. Cardiovascular Endurance
iii. Flexibility

Participants

- Number of participants – 60 (30 From Each Game)
- Age range – (18-25)
- Selection criteria – (State Level, University Level Players Male Players)

Statistical Techniques

Tests used for comparison - (t-test)

Level of Significance – 0.05

RESULTS

TABLE No: 02
DESCRIPTIVE STATISTICS OF STRENGTH, ENDURANCE & FLEXIBILITY OF BADMINTON AND BALL BADMINTON MALE PLAYERS

Variable	Group	Mean	S.D.	P-value
Strength	Badminton	226.17	6040.17	0.015
	Ball badminton	219.27	2435.87	
Endurance	Badminton	2644.00	595520.00	0.043
	Ball badminton	2588.67	288346.67	
Flexibility	Badminton	30.10	534.70	0.021
	Ball badminton	28.23	167.37	

Level of significance -0.05 (2, 58) (2.11)

Table 1 shows that the mean of Strength of Badminton Players (M=226.17, SD=6040.17) was significantly than those of Ball badminton Players (M=219.27, SD=2435.87) as the obtained P-ratio (P=0.015) was significant beyond 0.05 level of confidence. It shows that the mean score of the Strength of Badminton and Ball badminton players were significantly different.

And Table 1 shows that the mean of Endurance of Badminton Players (M=2644.00, SD=595520.00) was significantly than those of Ball badminton Players (M=2588.67, SD=288346.67) as the obtained P-ratio (P=0.043) was significant beyond 0.05 level of confidence. It shows that the mean score of the Endurance of Badminton and Ball badminton players were significantly different.

Table 1 shows that the mean of Flexibility of Badminton Players (M=30.10, SD=534.70) was significantly than those of Ball badminton Players (M=28.23, SD=167.37) as the obtained

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P-ratio (P=0.021) was significant beyond 0.05 level of confidence. It shows that the mean score of the Flexibility of Badminton and Ball badminton players were significantly different.

The purpose of this study was to compare selected health-related fitness components—endurance, strength, and flexibility—between Badminton and Ball Badminton players aged 18 to 25 years. The results indicated noticeable differences in performance across the two groups for each component.

Discussion of Findings

i. Endurance: Badminton players generally demonstrated higher endurance levels than Ball Badminton players. This may be attributed to the more dynamic and continuous nature of badminton, which demands frequent high-intensity rallies and rapid movements across a larger court area. These demands contribute to better cardiovascular conditioning over time.
ii. Muscular Strength (Standing Broad Jump): Badminton players outperformed their Ball Badminton counterparts in the standing broad jump test, suggesting greater lower-body explosive power. This can be linked to the repetitive jumping, lunging, and smashing actions in badminton, which require strong leg muscles and contribute to improved strength performance.
iii. Flexibility (Sit and Reach Test): Badminton players also exhibited slightly higher flexibility scores compared to Ball Badminton players. This difference may stem from the varied and extensive range of motion required in badminton, including overhead smashes, drop shots, and defensive stretches, which can promote enhanced joint and muscle flexibility.

The findings are consistent with previous research suggesting that different racket sports place varying physiological demands on players. While both sports require agility and coordination, the intensity and movement patterns in badminton seem to contribute more significantly to the development of endurance, strength, and flexibility.

CONCLUSION

This comparative study reveals that Badminton players possess superior health-related fitness levels in terms of endurance, lower-body strength, and flexibility compared to Ball Badminton players. The nature and physical demands of the two sports likely account for these differences.

Implications:

- Coaches and trainers may consider integrating cross-training strategies to address the relative weaknesses observed in Ball Badminton players.
- Flexibility and endurance training could be emphasized more in Ball Badminton training regimens to bridge the performance gap.
- Sport-specific fitness assessments are essential in designing tailored conditioning programs for athletes.
- Future Research Recommendations:
- Larger sample sizes and inclusion of other fitness components (agility, coordination, reaction time).
- Comparative studies across different age groups and competitive levels.
- Longitudinal studies to assess how regular training in each sport influences health-related fitness over time.

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