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Effect of Conventional Training and Resistance Training on selected Skill Performance Variables among Badminton Players.

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KEYWORDS

Conventional Training, Resistance Training, Short Service Accuracy, Long Service Accuracy, Smash Accuracy and Footwork Efficiency.

ABSTRACT

This study was designed to investigate the effect of conventional training and resistance training on selected skill performance variables among badminton players. To achieve the purpose of the study (N=45) forty five men badminton players were selected from Affiliated Colleges of Bharathidasan University, Tiruchirappalli, Tamilnadu, India as subjects. The age of the subjects ranged from 19 to 25 years. The selected subjects were divided into three equal groups (N=15). Group I underwent conventional training, Group II underwent resistance training and Group III acted as control group who did not undergo any specialized training program other than their daily routine. The skill performance variables such as short service accuracy, long service accuracy, smash accuracy and footwork efficiency were selected as dependent variables and they were assessed by short service accuracy test (target-based badminton service test), long service accuracy test, smash accuracy test (target smash test) and footwork efficiency test (timed movement test) respectively. The subjects were concerned with their particular training for a period of twelve weeks, three days per week. The collected data from three groups prior to and immediately after the training program on selected criterion variables were statistically analyzed with analysis of covariance (ANCOVA). The level of confidence was fixed at 0.05 for all the cases to test the hypothesis. The result of the study reveals that the conventional training groups and resistance training group achieved significant improvement on selected skill performance variables such as short service accuracy, long service accuracy, smash accuracy and footwork efficiency of badminton players...

1. INTRODUCTION

Conventional training in physical education refers to the traditional methods of developing physical fitness, motor skills, and sports performance through structured, systematic, and instructor-led activities. For many decades, this approach has formed the foundation of physical education programs in schools, colleges, universities, and sports academies around the world. Conventional training emphasizes the regular practice of fundamental exercises, including running, jumping, stretching, strength training, endurance exercises, flexibility drills, and sport-specific skill development. These activities are organized according to a planned curriculum that progresses from simple to complex movements, allowing students to gradually improve their physical abilities and overall fitness. The primary objective of conventional training is to promote physical health, enhance athletic performance, develop coordination and balance, improve muscular strength and cardiovascular endurance, and encourage lifelong participation in physical activity. It also contributes to the development of discipline, teamwork, leadership, self-confidence, perseverance, and respect for rules through organized games and competitive sports. In this training approach, teachers and coaches play a central role by demonstrating techniques, supervising practice sessions, correcting errors, and evaluating student performance using standardized fitness tests and skill assessments. Conventional training generally follows fixed schedules and relies on repetitive practice, progressive overload, and consistent participation to achieve measurable improvements in physical performance. Common training...

methods include circuit training, interval training, continuous training, resistance training, and flexibility exercises, each designed to target specific components of physical fitness. Although conventional training has proven highly effective in improving physical health and athletic skills, it has certain limitations, such as reduced individualization, limited use of technology, and less emphasis on personalized feedback compared with modern training approaches. Nevertheless, it remains one of the most reliable and widely accepted methods for building a strong foundation in physical fitness, motor learning, and sports education. By providing structured guidance and scientifically based exercise principles, conventional training continues to play a vital role in achieving the educational, health, and performance objectives of physical education across diverse age groups and skill levels (Bompa, 2019).

Resistance training is a systematic form of physical exercise in which muscles work against an external force to improve strength, endurance, power, and overall physical fitness. The resistance may be provided by free weights, weight machines, resistance bands, body weight, or other specialized equipment. During resistance training, skeletal muscles contract against the applied load, creating mechanical tension that stimulates muscle fibers to adapt and become stronger over time. These physiological adaptations include increased muscle mass (hypertrophy), enhanced bone mineral density, improved joint stability, and greater neuromuscular coordination. In addition to promoting muscular fitness, resistance training plays a vital role in improving metabolic health by increasing resting metabolic rate, enhancing insulin sensitivity, and supporting healthy body composition through the reduction of body fat. It is widely recommended for individuals of all ages, from children and adolescents to older adults, because it contributes to functional independence, injury prevention, and improved quality of life. Regular participation in resistance training has also been associated with reduced risks of chronic diseases such as obesity, type 2 diabetes, cardiovascular disease, osteoporosis, and sarcopenia. Furthermore, it provides psychological benefits by reducing symptoms of anxiety and depression, improving self-esteem, and enhancing cognitive function. When performed with appropriate technique, progressive overload, and adequate recovery, resistance training is considered a safe and effective component of a comprehensive fitness program, complementing aerobic exercise and flexibility training to promote lifelong health and physical performance (Gregory, 2025).

Sports training is a systematic and scientifically planned process designed to improve an athlete's physical, technical, tactical, and psychological abilities to achieve optimal performance in a particular sport. It involves a structured program of exercises, skill development, conditioning, nutrition, recovery, and mental preparation that enables athletes to enhance their overall fitness and competitive capabilities. Sports training is not merely about practicing a sport repeatedly; rather, it integrates principles of exercise science, biomechanics, physiology, psychology, and nutrition to maximize performance while minimizing the risk of injury. Effective training programs are individualized according to the athlete's age, fitness level, sport-specific requirements, and performance goals. The process includes progressive overload, specificity, periodization, and adequate recovery to ensure continuous improvement and long-term athletic development. In the modern era, sports training has evolved significantly due to advances in sports science and technology. Coaches and sports scientists employ various assessment techniques, performance analytics, wearable devices, and biomechanical evaluations to monitor athletes' progress and optimize training outcomes. Physical conditioning focuses on developing strength, endurance, flexibility, speed, agility, balance, and coordination, while technical and tactical training enhances sport-specific skills and strategic decision-making. Equally important is psychological training, which helps athletes build confidence, concentration, motivation, emotional control, and resilience under competitive pressure. Nutrition and hydration also play a crucial role in supporting energy production, muscle recovery, and overall health, ensuring that athletes can perform consistently at their highest level. Sports training benefits individuals beyond competitive success by promoting physical fitness, mental well-being, discipline, teamwork, leadership, and healthy lifestyle habits. Regular participation in well-designed training programs contributes to the prevention of lifestyle-related diseases, improves cardiovascular health, strengthens muscles and bones, and enhances cognitive function. Whether in recreational, amateur, or elite sports, effective training serves as the foundation for improving athletic performance and achieving personal excellence. Therefore, sports training is considered a comprehensive and continuous process that combines scientific knowledge, practical application, and consistent effort to help athletes reach their full potential while maintaining their health and well-being (Baghel, 2025).

Badminton is one of the most popular and widely played racket sports in the world. It is a fast-paced game that requires speed, agility, precision, endurance, and strategic thinking. The sport is played either between two players (singles) or two teams of two players each (doubles). Players use lightweight rackets to hit a shuttlecock over a net, aiming to land it within the opponent's court while preventing the opponent from returning it successfully. Unlike most racket sports that use a ball, badminton uses a shuttlecock, whose unique aerodynamic design creates a distinctive flight pattern, making the game both challenging and exciting. The origins of badminton can be traced back to ancient games played in Asia and Europe. However, the modern version of the sport was developed in the mid-19th century by British military officers stationed in

India. The game gained its name from Badminton House, the estate of the Duke of Beaufort in England, where it was first played socially in 1873. Since then, badminton has evolved into a highly competitive international sport governed by the Badminton World Federation (BWF)**.** It became an official Olympic sport at the 1992 Barcelona Olympic Games and has continued to grow in popularity across the globe. Badminton is enjoyed by people of all ages because it is easy to learn, affordable, and can be played both recreationally and professionally. The sport offers numerous physical and mental health benefits, including improved cardiovascular fitness, muscular strength, flexibility, coordination, reflexes, and concentration. It also promotes discipline, teamwork, sportsmanship, and quick decision-making, making it an excellent activity for maintaining overall health and well-being. Today, badminton is particularly popular in countries such as China, Indonesia, India, Malaysia, Japan, Denmark, and South Korea, where players regularly achieve success in international tournaments. Prestigious competitions, including the BWF World Championships, Thomas Cup, Uber Cup, Sudirman Cup, and the Olympic Games, showcase the highest level of badminton talent and inspire millions of aspiring athletes worldwide. With its combination of athleticism, skill, and entertainment, badminton continues to be one of the fastest and most exciting sports, attracting participants and spectators from every corner of the world (Hammes, 2024).

OBJECTIVES

The study's goal was to determine the effect of conventional training and resistance training on selected skill performance variables of badminton players.

METHODOLOGY

To achieve the purpose of the study (N=45) forty five men badminton players were selected from Affiliated Colleges of Bharathidasan University, Tiruchirappalli, Tamilnadu, India as subjects. The age of the subjects ranged from 19 to 25 years. The selected subjects were divided into three equal groups (N=15). Group I underwent conventional training, Group II underwent resistance training and Group III acted as control group who did not undergo any specialized training program other than their daily routine. The skill performance variables such as short service accuracy, long service accuracy, smash accuracy and footwork efficiency were selected as dependent variables and they were assessed by short service accuracy test (target-based badminton service test), long service accuracy test, smash accuracy test (target smash test) and footwork efficiency test (timed movement test) respectively. The subjects were concerned with their particular training for a period of twelve weeks, three days per week. The collected data from three groups prior to and immediately after the training programme on selected criterion variables were statistically analyzed with analysis of covariance (ANCOVA). The level of confidence was fixed at 0.05 for all the cases to test the hypothesis.

RESULTS

The skill performance variables such as short service accuracy, long service accuracy, smash accuracy and footwork efficiency were selected as dependent variables and they were assessed by short service accuracy test (target-based badminton service test), long service accuracy test, smash accuracy test (target smash test) and footwork efficiency test (timed movement test) respectively. The subjects were concerned with their particular training for a period of twelve weeks, three days per week. This study conducted analysis of co – variance (ANCOVA) to determine the independent and influences on certain skill performance variables among badminton players of conventional training and resistance training. The significance level was selected at 0.05 since it was considered to be a suitable degree of confidence for this investigation. Scheffe's post hoc test had been employed to evaluate paired mean significant difference when 'F' ratio was determined to be significant.

Table 1: Computation of Analysis of Covariance of Means of Conventional Training, Resistance Training and Control Groups on Short Service Accuracy, Long Service Accuracy, Smash Accuracy and Footwork Efficiency

Variables	Test	Conventional Training Group (CTG)	Resistance Training Group (RTG)	Control Group (CG)	Source of Variance	Sum of Square	df	Mean Squares	'F' Ratio
Short Service	Pre Test	18.2	17.9	18.1	Between	1.10	2	0.55	**0.42**
					Within	55.20	42	1.31	

Accuracy	Post Test	24.5	22.3	18.4	Between	112.45	2	56.22	**8.75***
					Within	269.30	42	6.41	
	Adjusted Post Test	24.1	22.0	18.3	Between	105.30	2	52.65	**8.20***
					Within	263.50	41	6.42	
Long Service Accuracy	Pre Test	19.0	18.7	18.9	Between	1.20	2	0.60	**0.45**
					Within	56.00	42	1.33	
	Post Test	25.2	23.1	19.2	Between	210.50	2	105.25	**11.85***
					Within	373.20	42	8.89	
	Adjusted Post Test	24.8	22.7	19.1	Between	198.40	2	99.20	**10.95***
					Within	380.50	41	9.28	
Smash Accuracy	Pre Test	20.1	19.8	20.0	Between	1.15	2	0.58	**0.44**
					Within	54.90	42	1.31	
	Post Test	26.8	28.9	20.5	Between	245.60	2	122.80	**12.95***
					Within	398.20	42	9.48	
	Adjusted Post Test	26.2	28.4	20.4	Between	230.40	2	115.20	**12.10***
					Within	389.60	41	9.50	
Footwork Efficiency	Pre Test	12.8	11.9	12.7	Between	1.05	2	0.53	**0.40**
					Within	55.10	42	1.31	
	Post Test	11.1	9.4	12.6	Between	135.80	2	67.90	**9.60***
					Within	296.80	42	7.07	
	Adjusted Post Test	11.3	9.6	12.5	Between	128.60	2	64.30	**9.10***
					Within	289.70	41	7.06	

*Significant at 0.05 level of confidence. (Table value with df 2 and 42 and 2 and 41 are 3.22 and 3.23 respectively).

The pre, post-test and adjusted post-test mean values of short service accuracy on conventional training group (CTG), resistance training group (RTG) and Control group (CG) were 18.2, 24.5, 24.1; 17.9, 22.3, 22.0 and 18.1, 18.4, 18.3 respectively.

The pre, post-test and adjusted post-test mean values of long service accuracy on conventional training group (CTG), resistance training group (RTG) and Control group (CG) were 19.0, 25.2, 24.8; 18.7, 23.1, 22.7 and 18.9, 19.2, 19.1 respectively.

The pre, post-test and adjusted post-test mean values of smash accuracy on conventional training group (CTG), resistance training group (RTG) and Control group (CG) were 20.1, 26.8, 26.2; 19.8, 28.9, 28.4 and 20.0, 20.5, 20.4 respectively.

The pre, post-test and adjusted post-test mean values of footwork efficiency on conventional training group (CTG),

resistance training group (RTG) and Control group (CG) were 12.8, 11.1, 11.3; 12.9, 10.4, 10.6 and 12.7, 12.6, 12.5 respectively. The obtained F values of adjusted post-test were 8.20, 10.95, 12.10 and 9.10 greater than the table value of 3.23. Hence it was proved that there were significant improvements on short service accuracy, long service accuracy, smash accuracy and footwork efficiency of college men badminton players.

MEAN VALUES OF SHORT SERVICE ACCURACY

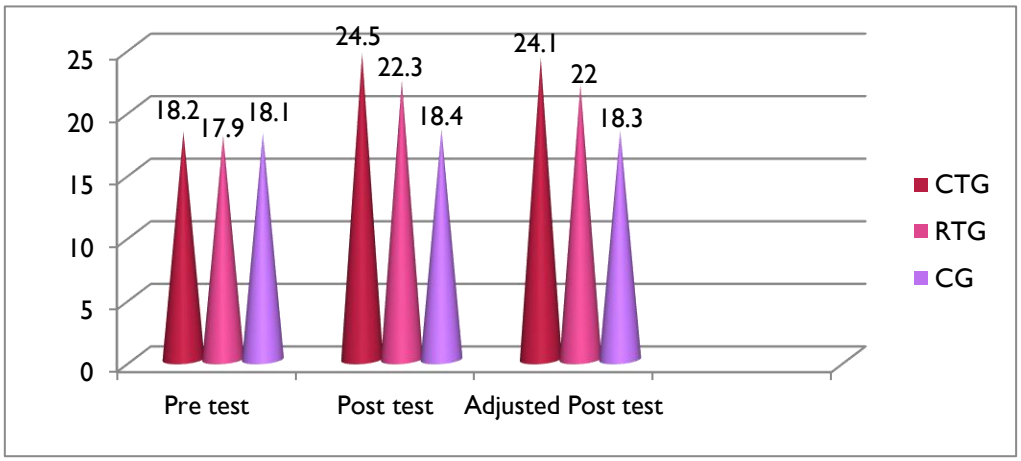

Figure 1: Pre, Post and Adjusted Post Test Means of Conventional Training, Resistance Training and Control Group on Short Service Accuracy

MEAN VALUES OF LONG SERVICE ACCURACY

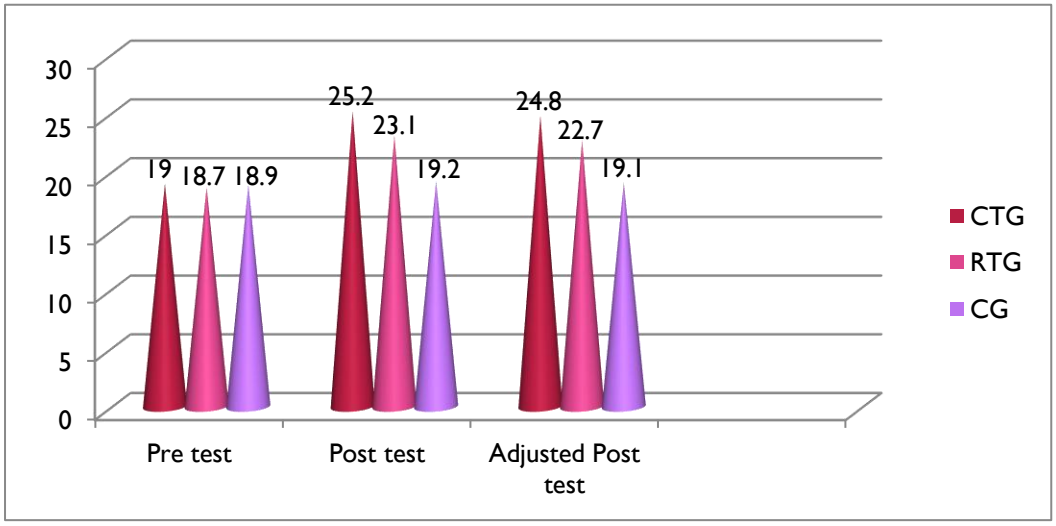

Figure 2: Pre, Post and Adjusted Post Test Means of Conventional Training, Resistance Training and Control Group on Long Service Accuracy

MEAN VALUES OF SMASH ACCURACY

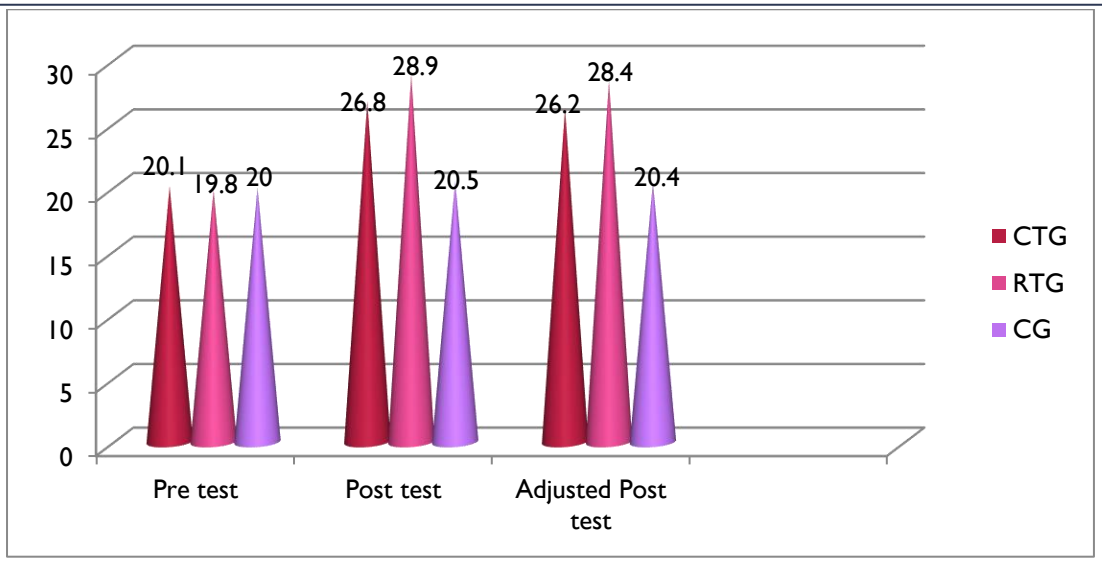

Figure 3: Pre, Post and Adjusted Post Test Means of Conventional Training, Resistance Training and Control Group on Smash Accuracy

MEAN VALUES OF FOOTWORK EFFICIENCY

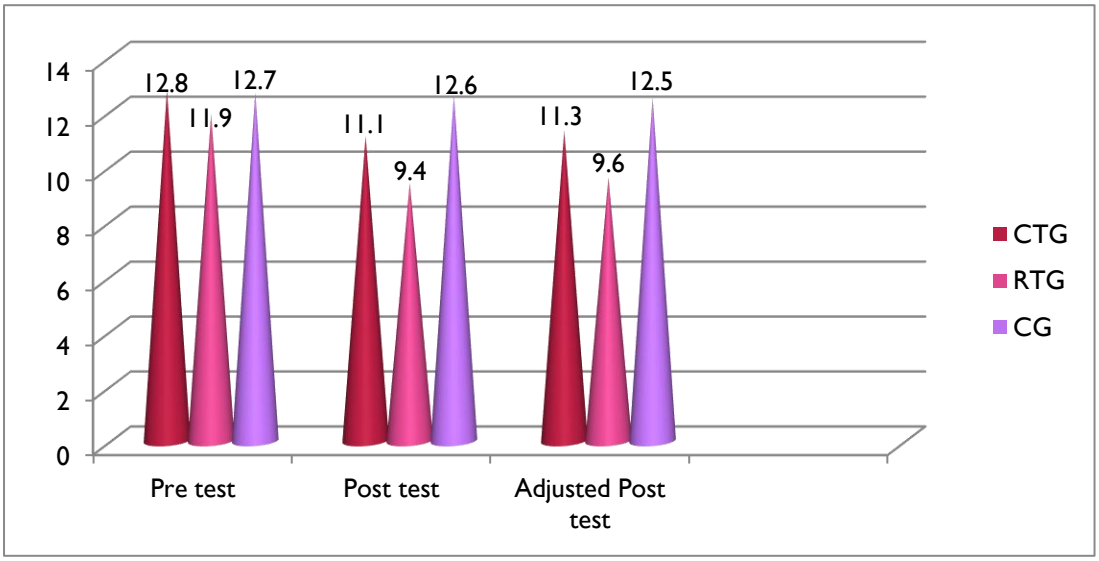

Figure 4: Pre, Post and Adjusted Post Test Means of Conventional Training, Resistance Training and Control Group on Footwork Efficiency

DISCUSSION ON FINDINGS

The result of the study indicates that the experimental group namely as conventional training and resistance training had significantly improved in the selected dependent variables such as short service accuracy, long service accuracy, smash accuracy and footwork efficiency. Improvement caused by short service accuracy, long service accuracy, smash accuracy and footwork efficiency due to twelve weeks conventional and resistance training. The results of the studies are in line with the studies of (Zhang et. al., 2025 and Westcott, 2023).

CONCLUSIONS

The experimental groups namely as conventional training group and resistance training group had achieved significant improvement on selected skill performance variables such as short service accuracy, long service accuracy, smash accuracy

and footwork efficiency when compared to the control group.

It was concluded that the conventional training group demonstrated greater gains in short service accuracy and long service accuracy when compared to the resistance training group.

It was concluded that the resistance training group showed notable improvement in smash accuracy and footwork efficiency when compared to the conventional training group.

It was concluded that college level badminton players should practice conventional training and resistance training for the positive development of skill performance and enhancement of playing performance.

The control group did not show any notable improvement, which confirms that the observed changes in performance were due to the training interventions rather than external factors.

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