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Effect of Modern Gadgets Training on Selected Skill Performance and Performance Releated Fitness Variables of College Men Badminton Players

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ABSTRACT

The present study investigates the effect of modern gadget-based training, specifically using shuttle feeding machines, on selected skill performance and performance-related fitness variables among novice college male badminton players. Thirty participants from Sri Ramakrishna Mission Vidyalaya Maruthi College of Physical Education were randomly divided into an Experimental Group (n=15) and a Control Group (n=15). The Experimental Group underwent 6-weeks training programme incorporating modern gadgets such as shuttle feeder machine, while the control group followed traditional training methods. Pre- and post-tests were conducted to evaluate forehand clear, and agility, using standardized tests. The results revealed that there was a significant improvement in the selected criterion variables in the experimental group. These findings revealed that the effectiveness of modern gadget-based training in enhancing both skill performance and performance-related fitness variables. The study concludes that integrating technology such as shuttle feeder machines into training regimens offers a promising approach to developing athletic performance among college-level badminton players.

Key words: Modern gadget-based training, forehand clear, and agility.

Introduction

Shuttle feeding machines represent a significant advancement in sports training, particularly for college level men. These machines deliver precise and repetitive movements, such as shuttlecock delivery in badminton with adjustable speed, and trajectory. By simulating game-like scenarios and providing consistent training stimuli, these machines offer athletes a controlled environment to improve motor skills, reaction times, coordination, and strategic decision-making abilities. This study aims to explore the impact of shuttle feeding machine training on selected skill performance and performance-related fitness variables among college-aged men. The selected skill performance refers to competencies relevant to the sport or activity, such as racket skills, footwork, timing, and accuracy in badminton. These skills are crucial for success in competitive settings and are honed through systematic training and practice. Performance-related fitness variables encompass a range of physiological factors that contribute to overall athletic ability and health. Understanding the effects of shuttle feeding machine training on skill performance and performance-related fitness variables is crucial for several reasons. Firstly, it allows coaches, athletes, and sports scientists to assess the efficacy of this technology in enhancing specific skills and physical capacities. Secondly, it provides insights into how technological advancements can be integrated into training regimens to maximize performance outcomes.

Methodology

The study adopted a pre-test and post-test randomized group design involving 30 novice male college badminton players aged between 18 and 22 years from SRMV Maruthi College of Physical Education, Coimbatore selected through random sampling. The participants were randomly divided into two groups: an experimental group (n = 15), which underwent modern gadget-based training, and a control group (n = 15), which followed traditional training methods without any technological aids. The training programme was conducted over a period of 6 weeks, with sessions held five days a week. Each training session lasted 60 minutes, including warm-up, skill-based drills, fitness exercises, and cool-down activities. This methodology aimed to assess the effect of gadget-based training on skill performance and performance-related fitness variables. Pre - and post - tests data were analyzed using the dependent 't' - test, with a significance level set at 0.05.

TABLE-I

COMPUTATION OF 't'-RATIO BETWEEN PRE AND POST TESTS ON AGILITY OF EXPERIMENTAL AND CONTROL GROUPS

Group	Test	Mean	SD	DM	σ DM	't'	'p' Value
Experimental	Pre	16.46	0.72	0.52	0.11	4.83*	0.01
	Post	15.94	0.85				
Control	Pre	16.87	0.73	0.11	0.06	1.89	0.08
	Post	16.98	0.73				

*Significant at 0.05 level

Table - I show the mean and standard deviation for agility scores among college students. The experimental group recorded pre-test and post-test mean values of 16.46 and 15.94 seconds, with standard deviations of 0.72 and 0.85, respectively. The obtained t' ratio was 4.83, indicating a significant improvement in agility. The control group showed pre-test and post-test means of 16.87 and 16.98 seconds, with standard deviations of 0.73 and 0.73, and 't' ratio of 1.89. These results showed that both the groups improved, but the experimental group showed statistically significant gains, likely due to the intervention alone.

FIGURE- 1

MEAN DIFFERENCE OF PRE AND POST-TESTS SCORES ON AGILITY OF EXPERIMENTAL AND CONTROL GROUPS
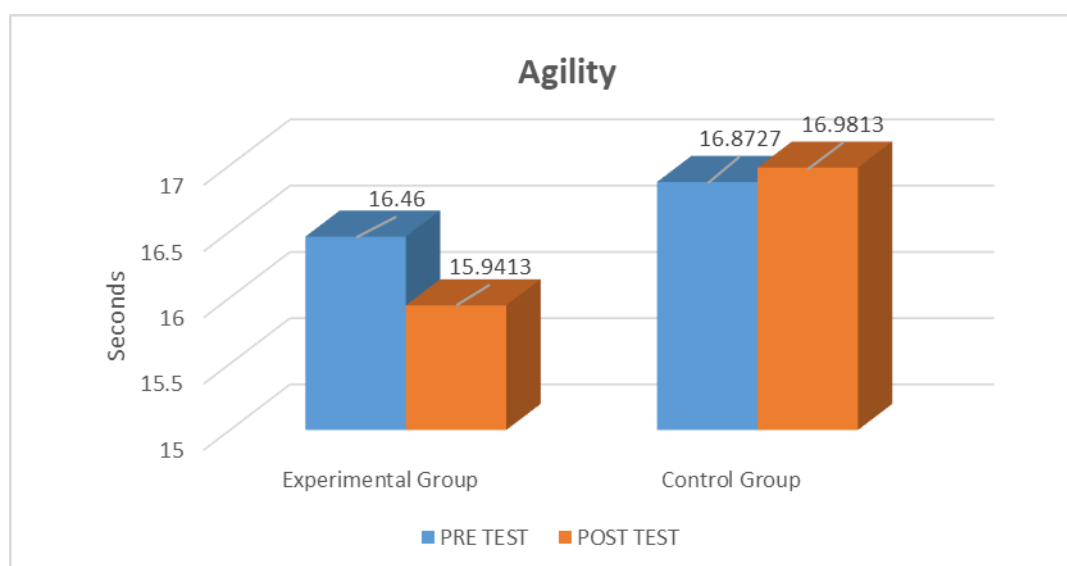

TABLE-II

COMPUTATION OF 't'-RATIO BETWEEN PRE AND POST TESTS ON FOREHAND CLEAR OF EXPERIMENTAL AND CONTROL GROUPS

Group	Test	Mean	SD	DM	σ DM	't'	'p' Value
Experimental	Pre	29.06	2.57	2.00	0.51	3.94*	0.01
	Post	31.06	2.65				
Control	Pre	31.66	3.49	0.47	0.46	1.02	0.32
	Post	32.13	3.66				

*Significant at 0.05 level

Table - II presents the mean and standard deviation for the forehand clear test conducted on college students. The experimental group showed a significant improvement in forehand clear, with pre-test and post-test mean scores of 29.06 and 31.06, and corresponding standard deviations of 2.57 and 2.65 respectively. The 't' ratio obtained was 3.94, indicating a highly significant improvement. On the other hand, the control group showed only a slight increase, with pre-test and post-test means of 31.66 and 32.13, and standard deviations of 3.49 and 3.66, respectively. The 't' ratio of 1.02 for the control group, though statistically improved, was lower than that of the experimental group. These findings suggest that the defensive drills using the shuttle feeder machine were more effective in enhancing forehand clear performance among the students of experimental group.

FIGURE- 2

MEAN DIFFERENCE OF PRE AND POST-TESTS SCORES ON FOREHAND CLEAR OF EXPERIMENTAL AND CONTROL GROUPS
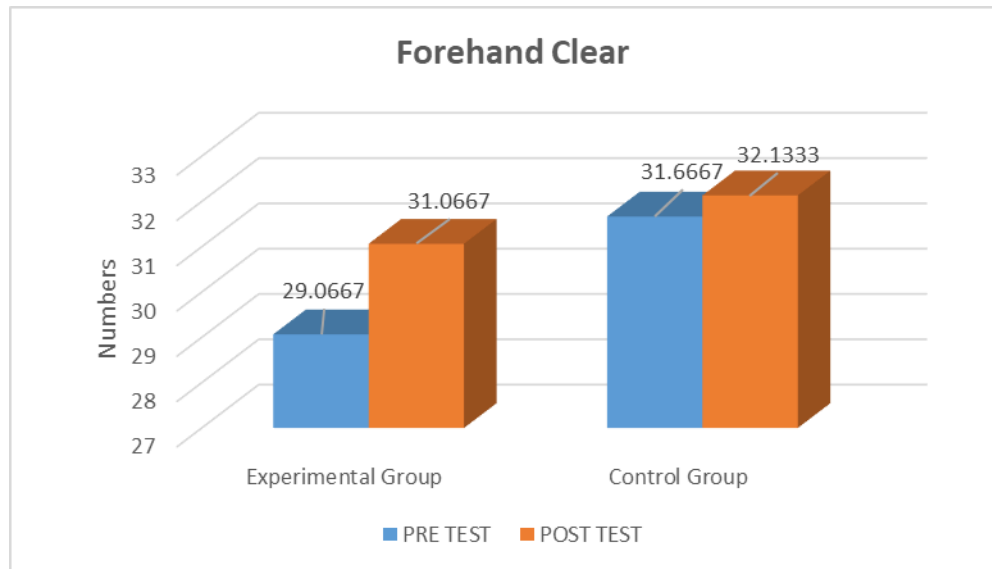
Discussion on Findings

The present study aimed to examine the effect of modern gadget-based training, specifically using shuttle feeder machines, on selected skill performance and performance-related fitness variables of college-level male badminton players. The results demonstrated statistically significant improvements in agility, and forehand clear skills among participants in the experimental group who underwent training with technological assistance compared to the control group that followed traditional methods. The improvement in agility, as shown through the agility test, corroborates findings by Sáez-Sáez et al. (2019), who emphasized that consistent and structured movement patterns using automated training aids enhance neuromuscular coordination and change-of-direction speed in athletes. The current study's agility gains reflect the benefit of repetitive and precise shuttle deliveries provided by shuttle feeder machines, which allow athletes to anticipate movement directions and develop reactive capabilities. Similarly, the experimental group showed significant improvement in forehand clear performance, which aligns with the study by Kuntze, Mansfield, and Sellers (2010), who found that integrating mechanical tools in racket sports training improves timing and stroke consistency due to the predictability of delivery and controlled practice environments. The improvement in stroke accuracy and power can also be attributed to the ability of shuttle machines to deliver high-frequency repetitions, enabling players to fine-tune their forehand technique through muscle memory development and focused feedback (Ranganathan & Newell, 2013), who observed that machine-based shuttle drills significantly enhance stroke mechanics and wrist control in novice badminton players. The consistent rhythm and controlled trajectory provided by the shuttle feeding machines enable beginners to isolate and refine specific motor skills, especially forehand clears that generally require more technical proficiency. Furthermore, the statistical significance observed in the experimental group across all performance variables validates the role of technology in improving performance-related fitness parameters such as agility and skill execution, as supported by Reilly et al. (2009), who noted that modern training interventions lead to better functional adaptations in athletes through task-specific stimuli and high-quality feedback loops. In contrast, although the control group also showed improvements, the magnitude of change was smaller and less consistent. This reinforces the idea that while traditional training remains effective, the integration of technology like shuttle feeder machines can provide a more focused, measurable, and accelerated pathway to skill acquisition and physical development (Singh & Jayaraman, 2021)**.**

Conclusions

The study concludes that modern gadget-based training, specifically using shuttle feeder machines, is more effective than traditional methods in improving agility and stroke performance (forehand clears) among novice college male badminton players. Incorporating technology into regular training regimens can significantly enhance skill execution and physical fitness, providing a valuable tool for coaches and physical educators aiming for optimal athletic performance development.

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