Influence of Different Training Methods on Selected Physical Variables among Men Badminton Players

S. Pragatheeswaran[1*], N. Rajasekar[2] and C. Ramesh[3]

[1]*PhD Scholar, Department of Physical Education, Madurai Kamaraj University, Madurai, Tamil Nadu, India.*

[2]*Director of Physical Education, GTN Arts College, Dindigul, Tamil Nadu, India.*

[3]*Assistant Professor & Head, Department of Physical Education, Madurai Kamaraj University, Madurai, Tamil Nadu, India.*

[*]*Corresponding Author Email: pragatheeswaran.s@gmail.com*

Abstract

The purpose of the present study was to examine the influence of different training methods on selected physical variables among men badminton players. To accomplish this objective, thirty badminton players were selected from SVN College and Arul Anandar College in Madurai District, Tamil Nadu, India. The participants were between 18 and 21 years of age. They were randomly divided into two equal groups of fifteen players each: an experimental group and a control group. The experimental group underwent different training methods for a period of eight weeks, whereas the control group did not participate in any special training during the study. Flexibility was selected as the criterion variable and was assessed using the sit-and-reach test. Pre-tests were conducted before the training program, and post-tests were administered immediately after the eight-week period. The data were analyzed using the t-ratio statistical technique. The findings indicated a significant improvement in flexibility among the experimental group compared to the control group, demonstrating the effectiveness of different training methods.

Keywords*: selective yogic package, neuromuscular, leg explosive power, flexibility and basketball.*

Introduction

Badminton is a physically demanding racket sport that requires high levels of fitness to meet technical and tactical game requirements. Athletes must develop multiple components such as strength, agility, endurance and flexibility to sustain performance during fast rallies and directional changes. Research highlights that badminton players should

possess proficiency in several aspects of physical fitness to support the sport's physical and physiological demands (Richardson & Duncan, 2016). Modern training approaches emphasize structured and varied methods to optimize performance outcomes in athletes. Evidence suggests that contemporary training programs are more effective than routine exercises in improving agility, balance and aerobic capacity, thereby enhancing overall badminton performance (Ma et al., 2025). Since badminton is played internationally and by millions of participants, scientific conditioning programs are essential for developing specialized training strategies and improving competitive success (Richardson & Duncan, 2016). Badminton has grown significantly in popularity, making physical preparation increasingly important for athletes. Exercise plays a crucial role in developing coordination and flexibility among badminton players, both of which support efficient movement and stroke execution (Research Journal, 2014). Greater flexibility enables athletes to perform skills with a wider range of motion, accuracy and strength, ultimately improving physical and skill performance (Al-selmi et al., 2024). Moreover, good levels of strength, flexibility and agility help athletes meet the technical and tactical demands of the sport (Richardson & Duncan, 2016).

Playing badminton provides substantial energy expenditure, making it beneficial for physical fitness and weight management. On average, badminton burns approximately **300–550 calories per hour**, with singles matches requiring higher energy because players cover the entire court independently. The sport's demanding nature requires athletes to maintain strong physical conditioning through structured training programs. Studies indicate that badminton is a dynamic activity requiring attributes such as agility, core stability and rapid reaction time, all of which can be enhanced through targeted training interventions (Ghorpade, 2024). Additionally, incorporating diverse training methods improves performance metrics such as VO_2 max, balance and agility, highlighting the value of systematic conditioning for athletes (Ma et al., 2025). Therefore, combining different training approaches is essential to meet the sport's high physiological demands while improving endurance, movement efficiency and overall competitive readiness.

Research Methodology

The purpose of this study was to examine the effect of different training methods on flexibility among badminton players. To accomplish this objective, youth badminton players

were selected from SVN College and Arul Anandar College in Madurai District, Tamil Nadu, India. The participants were between 18 and 21 years of age.

Selection of Variables

Independent variable

Different training methods

Dependent variable

- Flexibility

Experimental Design

The selected subjects were randomly divided into two equal groups of fifteen participants each: an experimental group and a control group. The experimental group participated in different training methods for five days per week over a period of eight weeks. Meanwhile, the control group did not undergo any specialized training program apart from their regular physical activities prescribed in their curriculum. Flexibility was chosen as the criterion physical variable for the study. All participants from both groups were assessed on flexibility using the sit-and-reach test before the commencement of the training program and immediately after its completion.

Statistical Technique and Level of Significance

The 't' test was used to analysis the significant differences, if any, difference between the groups respectively. The 0.05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

Table I

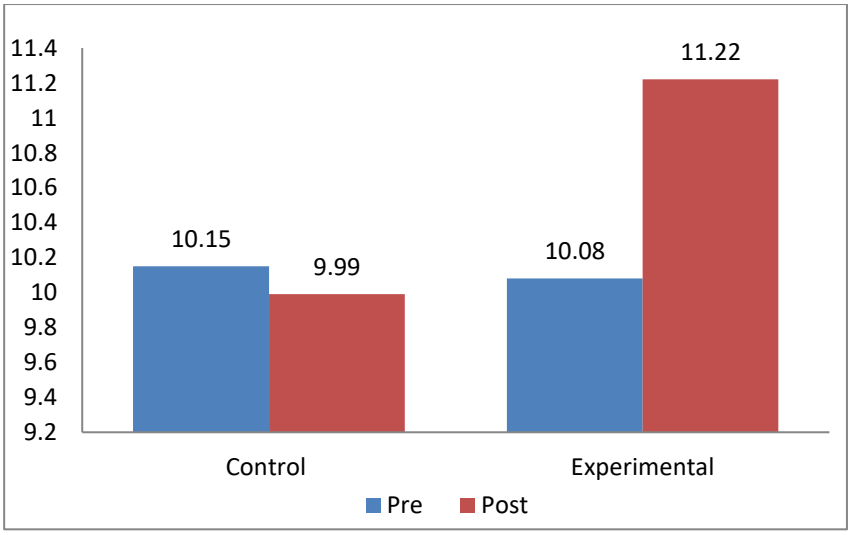
Analysis of T-Ratio for The Pre and Post Tests of Experimental and Control Group on Flexibility

Variables	Group	Mean		SD		df	t- ratio
		Pre	Post	Pre	Post		
Flexibility	Control Group	10.15	9.99	0.30	0.72	14	0.76
	Experimental Group	10.08	11.22	0.48	0.56	14	**3.60***

*Significance at .05 level of confidence (df- 14) Table value is 2.15

Table I presents the analysis of the *t*-ratio for the pre- and post-test scores on flexibility for both the experimental and control groups. The control group showed a slight decrease in mean flexibility from 10.15 to 9.99, and the obtained *t* value (0.76) was not significant, indicating no meaningful improvement without specialized training. In contrast, the experimental group demonstrated a considerable increase in mean flexibility from 10.08 to 11.22. The calculated *t* value (3.60) was significant, confirming that the different training methods had a positive effect on flexibility. Therefore, the results suggest that structured training programs are effective in enhancing flexibility among badminton players.

Figure-1 Bar Diagram Showing the Pre and Post Mean Values of Control and Experimental Group on Explosive Power



Discussions on Findings

The results of the present study revealed that the experimental group showed significant improvement in flexibility compared to the control group, indicating the effectiveness of different training methods. Flexibility is an essential component of physical fitness that supports efficient movement patterns and reduces the risk of injury in racket sports (Behm et al., 2016). Previous research has demonstrated that structured training programs can significantly enhance range of motion and overall athletic performance (Afonso et al., 2021). Since badminton requires rapid lunges, overhead strokes and multidirectional movements, improved flexibility enables players to execute skills more effectively. Therefore, the findings of this study are consistent with earlier investigations, confirming that systematic training plays a vital role in developing flexibility and improving badminton performance.

Conclusion

The study concludes that different training methods significantly improved flexibility among badminton players in the experimental group, while the control group showed no notable change. The findings indicate that systematic and structured training is effective in enhancing range of motion, which is essential for better movement efficiency and skill execution in badminton. Improved flexibility may also help reduce the likelihood of injuries and support overall athletic performance. Therefore, incorporating appropriate training methods into regular practice sessions is highly recommended for badminton players to achieve optimal physical fitness and competitive readiness.

References

1. *Deng, N. (2024). Effects of plyometric training on skill-related physical fitness in badminton players. Heliyon.*
2. *Ghorpade, O. S. (2024). Efficacy of backward walking training on treadmill to improve physical attributes in badminton athletes. Journal of Sports Rehabilitation.*
3. *Gepfert, M. (2025). Impact of an eight-week plyometric training intervention on agility and sprint performance in badminton players. Sports.*
4. *Kumar, A. (2025). A prospective study on strength and conditioning of state-level badminton players. International Journal of Sports Science.*
5. *Nugroho, S. (2022). Effect of plyometric ladder drill and hurdle drill exercises on agility of badminton athletes. Journal of Physical Education and Sport.*
6. *Behm, D. G., et al. (2016). Acute effects of muscle stretching on physical performance, range of motion, and injury incidence. Applied Physiology, Nutrition, and Metabolism.*
7. *Afonso, J., et al. (2021). Strength and conditioning practices that improve flexibility in athletes: A systematic review. Journal of Sports Sciences.*
8. *Richardson, D. L., & Duncan, M. J. (2016). Physical and physiological profiles in badminton athletes.*
9. *Ma, S., et al. (2025). Effects of physical training programs on healthy badminton players.*
10. *Research Journal. (2014). Effect of selected exercises on flexibility and coordination of badminton players.Al-selmi, A., et al. (2024). How precision, strength and flexibility affect badminton skills.*
11. *Richardson, D. L., & Duncan, M. J. (2016).*
12. *Sport-Calculator. (2025). Badminton calorie calculator.*
13. *Ghorpade, O. S. (2024). Efficacy of backward walking training on treadmill.*