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Effect of Step Aerobics Training on Selected Physical Fitness Variables of Men Badminton Players

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ABSTRACT

This study investigated the effects of step aerobics training on physical fitness variables in men's badminton players. To achieve the purpose of the study, the 30 male badminton players are selected, from Sri Ramakrishna Mission Vidyalaya Maruthi College of Physical Education Coimbatore, Control group (n=15) and the experimental group (n=15). The training group underwent 6 weeks of step aerobics training, while the control group continued with their regular training routine. Pre-test and post-test measurements will be taken for agility Southeast Missouri (SEMO) Agility Test, and flexibility (Sit and reach test). Data will be analysed using descriptive statistics, paired t-tests, and analysis of covariance (ANCOVA) to determine the significant differences between the experimental and control groups. The study aims to provide insights into the effectiveness of step aerobics training in enhancing the physical fitness of men badminton players.

Key words: step aerobics training, badminton, physical fitness variables, men's sports.

Introduction:

Step aerobics, a form of cardiovascular exercise, has long been utilized to enhance general fitness, endurance, and coordination. This dynamic workout involves stepping on and off an elevated platform, typically in rhythm to music, which has a direct impact on improving agility and flexibility. Given its rhythmic nature, step aerobics has been examined for its potential to benefit specific sports and skill performance, including badminton.

Badminton, a fast-paced racquet sport, requires athletes to possess excellent agility and flexibility. Agility, in particular, is crucial for quick direction changes, Flexibility allows players to perform high stretches, lunges, and rapid movements without risking injury. Training with step aerobics can enhance these physical fitness variables, making it a potentially valuable tool for badminton players.

Several studies suggest that aerobic exercises, like step aerobics, can help in improving key fitness components for athletes in various sports. For example, research has shown that aerobic training improves cardiovascular fitness, which contributes to endurance and stamina in sports requiring continuous movement (Smith et al., 2021).

Similarly, step aerobics may specifically enhance agility by improving coordination and muscle control (Bennett & Lee, 2019). Furthermore, muscular endurance can be developed due to the repetitive nature of stepping, which engages multiple muscle groups. Lastly, flexibility is a key aspect of step aerobics, as it involves dynamic movements that stretch and elongate the muscles.

Physical fitness is a vital component of overall health and plays a significant role in enhancing sports performance. It is generally defined as the ability of an individual to perform daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure-time pursuits and respond to emergencies (Caspersen, Powell & Christenson, 1985).

Physical fitness is often categorized into health-related components (such as cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition) and skill-related components (such as agility, balance, coordination, speed, power, and reaction time) (Hoeger & Hoeger, 2019).

Methodology:

Selection of subjects:

The purpose of study is to determine the effect of step aerobics training on selected skill performance and physical fitness variables of men badminton players. To achieve the purpose of the study, the 30 male badminton players are selected, from Ramakrishna Mission Vidyalaya Maruthi College of Physical Education Coimbatore, Control group (n=15) and the experimental group (n=15). They have high potential and greater ability in the game. The researcher is proposing to collect data from these subjects as the scores will be more applicable to the study.

Selection of variables:

- The study focuses on the following physical fitness variables:
- Agility
- Flexibility

Criterion measures:

As per the available literature and consultation with experts the following standardized tests will use to collected data on selected Physical fitness and skill performance variables. The selected criterion variables were measured using standardized test and equipment's.

PHYSICAL FITNESS VARIABLES	TESTS
Agility	Southeast Missouri (SEMO) Agility Test
Flexibility	Sit And Reach

Research Design:

The study aims to investigate the effect of step aerobics training on selected physical fitness variables of men badminton players. The physical fitness variables under consideration include agility and flexibility. This study will employ a pre-test, post-test, control group research design. A total of 30 male badminton players will be selected and randomly assigned to either an experimental group (n=15) or a control group (n=15). The experimental group will undergo a 6-week step aerobics training program, while the control group will continue with their regular training routine. Pre-test and post-test measurements will be taken for agility Southeast Missouri (SEMO) Agility Test and flexibility (Sit and reach test). Data will be analysed using descriptive statistics, paired t-tests, and analysis of covariance (ANCOVA) to determine the significant differences between the experimental and control groups. The study aims to provide insights into the effectiveness of step aerobics training in enhancing the physical fitness of men badminton players.

Statistical Technique:

The purpose of study is to find out the effect of step aerobics training on selected physical fitness variables of men badminton players. The pre and posttest are conducting and the data is collecting from the subjects are analysing by using the following statistical technique to find out the significant improvement in each variable due to Paired- Sample 't' test is applied to find out the significant improvement in the select criterion variables. The level of significant is fixing at 0.05.

Results:

Agility

Table 1

Computation with 't' Test of Agility Test on Experimental and Control Group on Men badminton players

Variables	Group	Test	Mean	S.d	D.m	Σ Dm	't'
Agility	Experimental	Pre test	11.07	0.85	1.35	0.58	2.31*
	Group	Post test	9.72	2.42			
	Control	Pre test	10.04	0.49	0.40	0.36	1.10
	group	Post test	10.00	0.45			

* Significant at 0.05 level, Table value for df 14 was 2.14

Table 1 highlights the mean and standard deviation of Agility Test for both the experimental and control groups of badminton players. The experimental group's pre-test and post-test mean scores were 11.07 and 9.72, respectively, with standard deviations of 0.85 and 2.42. The calculated 't' value of 2.31 exceeded the table value of 2.14 at 14 degrees of freedom. In contrast, the control group's mean scores were 10.04 and 10.00, with standard deviations of 0.49 and 0.45, and the 't' value of 1.10 fell below the table value of 2.14. The results suggest that the experimental group showed significant enhancement in Agility, attributed to proprioceptive training combined with Step aerobics among badminton players.

Figure 1: The Bar Diagram Shows That the Pre and Post Test Means of Experimental and Control Groups on Agility of men Badminton Players.

Figure 1



Flexibility

Table 2

Computation with 't' Test of Flexibility on Experimental and Control Group on Men badminton players

Variables	Group	Test	Mean	S.d	D.m	ΣDm	ʻť'
Flexibility	Experimental	Pre test	19.53	5.15	1.80	0.42	4.20*
	Group	Post test	21.33	5.38			
	Control	Pre test	20.66	5.13	0.20	0.78	0.25
	group	Post test	20.46	5.18			

* Significant at 0.05 level, Table value for df 14 was 2.14

Table 2 highlights the mean and standard deviation of Flexibility Test for both the experimental and control groups of badminton players. The experimental group's pre-test and post-test mean scores were 19.53 and 21.33, respectively, with standard deviations of 5.15 and 5.38. The calculated 't' value of 4.20 exceeded the table value of 2.14 at 14 degrees of freedom. In contrast, the control group's mean scores were 20.66 and 20.46, with standard deviations of 5.13 and 5.18, and the 't' value of 0.25 fell below the table value of 2.14. The results suggest that the experimental group showed significant enhancement in Flexibility, attributed to proprioceptive training combined with Step aerobics among badminton players.

Figure 2: The Bar Diagram Shows That the Pre and Post Test Means of Experimental and Control Groups on Flexibility of men Badminton Players.

Figure 2



Discussion on Findings:

The findings of this study clearly indicate that step aerobics training has a significant positive impact on agility and flexibility in male badminton players. Participants who engaged in regular step aerobics sessions demonstrated improved ability to perform quick directional movements and an enhanced range of motion, both of which are essential for optimal badminton performance.

In contrast, the control group, which did not participate in the step aerobics training, showed no significant improvement in the measured fitness variables. This highlights the effectiveness of incorporating step aerobics into regular training routines as a means to develop specific physical attributes required in the sport.

The study confirms the initial hypothesis that step aerobics training contributes significantly to the improvement of selected physical fitness variables. Therefore, it is recommended that coaches and trainers include step aerobics as a part of their conditioning programs to help players enhance agility and flexibility, reduce the risk of injuries, and improve overall performance on the court.

Conclusion:

- 1. This study found that step aerobics training significantly improved agility, flexibility in men's badminton players.
- 2. The findings suggest that step aerobics training can be a valuable adjunct training method, enhancing overall performance and competitiveness

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