



## EFFECT OF CIRCUIT TRAINING ON SPEED AND AGILITY AMONG INTER COLLEGIATE BADMINTON PLAYERS

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### Abstract

*The purpose of the present study was to find out the effect of circuit training on selected Physical Fitness variables of speed and agility among Inter Collegiate Men Badminton players. To achieve the purpose of the study thirty inter collegiate Badminton players in an age group of 18 to 23 were selected as subjects from the Arts and Science College. All the students were under graduate students. The selected subjects were divided into two equal groups of fifteen subjects each as experimental group and control group. Both the group underwent their routine Badminton Training and in addition of the above training the experimental group underwent specified circuit training morning one hour before starting their own routine Badminton Training in a schedule of weekly five days in for all the six weeks. The collected data's were statistically analyzed by using ANCOVA to find out the significant difference between the groups if any. It was concluded from the result of the study that the experimental group significantly improved the selected physical fitness variables of speed and agility.*

**Keywords:** Badminton, Physical fitness, Speed, Agility.

### INTRODUCTION

Circuit training program was developed by R.E. Morgan and G.T. Anderson in 1953 at the University of Leeds in England. Circuit training is a workout routine that combines cardiovascular fitness and resistance training. It was first proposed in the late 1950s as a method to develop general fitness. The initial routine was arranged in a circle, alternating between different muscle groups and there by the name circuit training was given. By allowing only a short rest interval of 30-90 seconds between stations, cardiovascular fitness is gained along with the benefits of resistance training. The different exercises in different stations are fixed depends on the trainees training state, age and demand to improve physical fitness and physiological qualities.

Circuit training involves performing a consecutive series of exercises with rest periods in-between. It's easy to customize circuit training to emphasize specific aspects of fitness you want to develop, including agility. Agility, the ability to change directions with your body quickly and efficiently, is essential for athletes and a benefit for non-athletes as well. Circuit training typically consists of a series of exercises or stations completed in succession with minimal rest in between. Circuit routines allow the athlete or coach to create an endless number of workouts and add variety to routine training programs. Through circuit training the athletes may increase their strength and endurance by increasing the repetitions of exercise at each station or by doing the required frequencies of exercise in a shorter length of form. If the work load is kept constant, the athletes can develop strength and

endurance (Morgan Adamson, 1957).

Circuit training is a method of physical conditioning in which one moves from one exercise to another, usually in a series of different stations or pieces of equipment. Circuit training is a style of training that develops overall fitness. Performed regularly, circuit training will simultaneously improve muscular strength, endurance, cardiovascular fitness, and flexibility. "Circuit training is a method of fitness training that is designed to develop general, all-round physical and cardiovascular fitness" (Scholich, 1990). It is an excellent training program for improving different type of physical fitness abilities based on the program in different stations.

In sports training the coaches are applying various means and methods to make their athletes run faster, jump higher and move quicker than ever before to achieve higher performance. Present study is undertaken to find out the effect of specified circuit training on certain physical and physiological variables. Circuit training has gained popularity as a training strategy due to its improvement in different physical fitness qualities. Sudhakar Babu and Paul Kumar (2013) conducted a study on the effect of selected circuit training exercises on sprinters of high school girls. They have found out that the experimental group improved the physical fitness qualities as well as sprinting performance. Susilatrochman Hendrawan et al. (2017) found the circuit training game exercise program and circuit ladder drill were significant to increase agility and speed.

Manohar M. Mane and Sarvesh Kumar Yadav (2011) conducted a study on the effects of circuit training

for the development of vertical jumping ability, endurance, agility and skill ability in Football players' boys aged 10 to 12 Years. It was found out the circuit training had benefited in improving all the selected physical fitness qualities. Taşkin (2009) found that circuit training, which is designed to be performed 3 days a week during 10 weeks of training, improves sprint-agility and anaerobic endurance of physical education students.

Circuit training is one of the well-known training methods to improve the physical fitness due to its nature of the activity. The present study was intended to assess the effect of circuit training on the selected physical fitness qualities of speed and agility among Inter Collegiate Badminton players.

## METHODOLOGY

To achieve the purpose of the study thirty inter collegiate Men Badminton players were selected subjects in an age group of 18 to 23 from Arts and Science College. All the students were Under Graduate students. The selected subjects were divided into two equal groups of fifteen subjects each as experimental group and control group. Both the group underwent their routine Badminton Training. In addition of the above training the experimental group underwent specified circuit training morning one hour before starting their own routine Badminton Training in a schedule of weekly five days in for all the six weeks..

## CIRCUIT TRAINING PROCEDURE

The six weeks circuit training was designed in emphasizes the necessity of the needs of fitness development of Inter Collegiate Badminton players with the age group of 18 to 23 years. The following combination of ten different exercises were designed in the circuit training program and they are;

1. Skipping
2. Push up
3. Jumping jack
4. Step up
5. Sit ups
6. Shuttle run
7. Hurdle Jump
8. Squat Jump
9. Chin up
10. Sprint

The above circuit training was performed weekly three days in alternative days. Each exercise was carried out 3 to 5 repetitions. Rest intervals were 10 seconds between pairs and 3 to 4 minutes between sets for the duration of one hour.

## ADMINISTRATION OF TESTS

The pre and post tests were administered before and after the six weeks training period. The test administered were physical fitness variables of speed (50 meter dash) and agility (4x10 meter shuttle run). All the tests were administered through standardized test.

## STATISTICAL PROCEDURE

The collected data were statistically examined by analysis of covariance (ANCOVA) and the results have been presented in Table I and II.

## RESULTS AND DISCUSSIONS ANALYSIS OF COVARIANCE OF PHYSICAL FITNESS VARIABLES

The analysis of covariance on the data obtained for speed and agility of pre and post tests were tabulated and presented in the tables I and II.

**TABLE-I**  
**COMPUTATION OF ANALYSIS OF COVARIANCE ON SPEED**

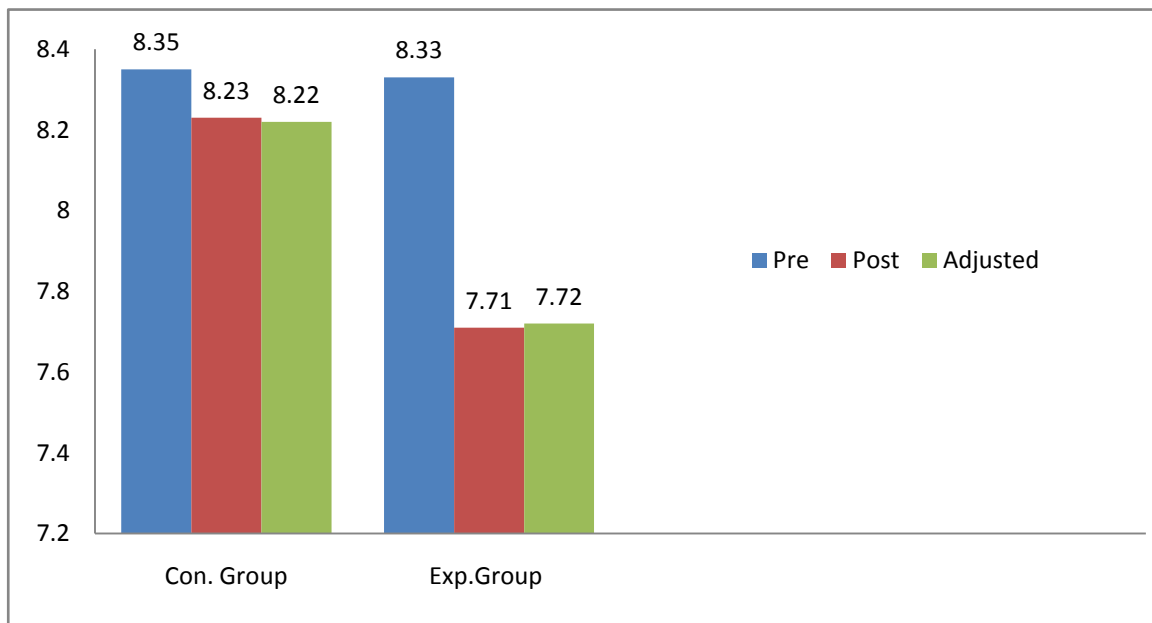
TEST	Group		sv	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	8.33	8.35	B	0.0017	1	0.0017	0.003
			W	13.3935	28	0.4783	
Post test	7.71	8.23	B	1.9660	1	1.9660	5.788*
			W	9.5104	28	0.3396	
Adjusted Mean	7.72	8.22	B	1.882	1	1.8821	19.563*
			W	2.598	27	0.0962	

\*Significant at 0.05 level of confidence (df 1 & 28 = 4.20 and 1 & 29 = 4.21)

It was observed from the Table-I that there was no significant difference in the pretest ( $F = 0.003 < 4.20$ ). A significant difference in the post test ( $F = 5.788 > 4.20$ ) for df 1 and 28 and adjusted posttest ( $F = 19.563 > 4.21$ )

for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there was an influence on speed through circuit training among Inter Collegiate Badminton players.

**FIGURE-1**  
**BAR DIAGRAM SHOWING THE PRE, POST ADJUSTED MEAN VALUE OF SPEED**



**TABLE-II**  
**COMPUTATION OF ANALYSIS OF COVARIANCE ON AGILITY**

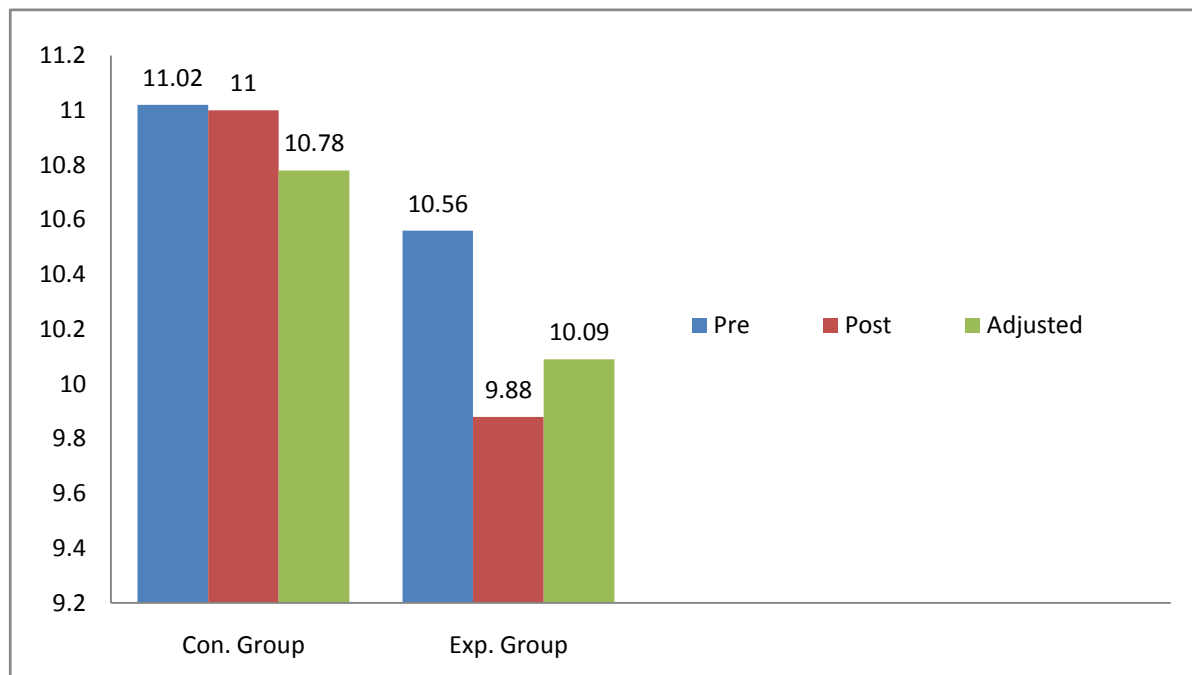
TEST	Group		sv	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	10.56	11.02	B	1.6054	1	1.6054	1.42
			W	31.4364	28	1.1227	
Post test	9.88	11.00	B	9.4416	1	9.4416	6.06*
			W	43.5569	28	1.5556	
Adjusted Mean	10.09	10.78	B	3.339	1	3.3391	5.85*
			W	15.393	27	0.5701	

\*Significant at 0.05 level of confidence (df 1 & 28 = 4.20 and 1 & 29 = 4.21)

It was observed from the Table-II that there were no significant difference in the pretest ( $F=1.42 < 4.20$ ). The significant differences were observed in posttest ( $F=6.06 > 4.20$ ) for df 1 and 28 at 0.05 level of confidence and adjusted posttest ( $F=5.85 >$

4.21) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there was significant impacts in agility due to circuit training among inter collegiate Badminton players.

**FIGURE-2**  
**BAR DIAGRAM SHOWING THE PRE, POST ADJUSTED MEAN VALUE OF AGILITY**



## CONCLUSIONS

On the basis of the results and discussions the following conclusions are drawn.

1. Circuit training method is beneficial to improve the physical fitness qualities of speed, and agility of inter collegiate badminton players
2. It was concluded that circuit training is a useful and perhaps optimal training strategy to do the exercise with interest due to different stations and different in nature.

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