

# Effect of Circuit Training on Speed and Agility among 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 badminton players. Thirty subjects were randomly selected from badminton match practice group from Chettinad University. The age groups of the subjects selected for inter collegiate badminton players in the age group of 18 to 25 years. The selected subjects were divided in to two equal groups of fifteen subjects each as experimental group and control group. Both the group underwent their routine badminton practice. In addition of the above training the experimental group underwent specified circuit training morning 40 minutes before starting the their own routine badminton practice in a schedule of weekly three days in alternative days for all the eight weeks. The collected data were statistically analyzed by using ANCOVA to find out the significant difference between the groups. So it can be concluded that circuit training can be the contributing factor for the coaches to plan appropriate loads and maximizing the performance of badminton players. It was concluded from the result of the study that the experimental group significantly improved in the selected physical fitness variables of speed and agility.

**Keywords:** circuit training, physical fitness, speed and agility.

## Introduction

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. The program was developed by R.E. Morgan and G.T. Anderson in 1961 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 routines were arranged in a circle, alternating between different muscle groups (hence the name circuit training). 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 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. 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.

Badminton is highly complex sport and this presents great challenges for players and coaches of all levels. An individual rally is a series demanding movements performed using a movement pattern which is unique compared with any other sport. Rally length is often short (average for elite players is around 6-8 seconds) and, consequently, performed at very high intensity. However players must also be prepared for long rallies. Rallies are interspersed with short rest periods (typical duration around 15 seconds) which allow partial recovery from previous rally. However, competitive matches may last at least 45 minutes. So, badminton is a combination of speed in rallies and agility to allow sustained efforts and to promote recovery between rallies. Great strength, power, endurance and flexibility are also required. All of these fitness components should form part of a player's fitness training. Additionally, the development of tactical and technical elements is, of course, also vital. With all of these types of training, an understanding of the principles of fitness training from a general point of view is essential.

Footwork plays an important role in the game of badminton. These footwork approaches might be underestimated by some, but these are very important in playing the game. Good footwork helps the player reach the shuttle early. The players should play their shots as fast as they can so they won't allow the shuttlecock to drop in their area. It has been established that no single variable measures physical fitness, which a composite factor is varying with each sport.

Therefore, in the present study the researcher intends to see the effects of circuit training on speed and agility along with the performance in badminton players.

## Methodology

### Selection of Subjects

Thirty subjects were randomly selected from badminton match practice group from Chettinad University, Kelambakkam, Chennai. All the subjects were played badminton in inter collegiate level. The age group of the subjects selected for the study was 18 to 25 years. The subjects were divided into two groups (experimental and control) at random, each consisting of fifteen subjects.

### Selection of Variables

Speed and agility are the two important physical fitness qualities for the badminton performance. The selected physical fitness variables of speed and agility were assessed through standardized test.

Sl.No	Variable	Test
1	Speed	50 Meter Dash
2	Agility	Shuttle Run (4 x 10 M)

### Experimental Design

The selected subjects were divided in to two equal groups of fifteen subjects each as experimental group and control group. Both the group underwent their routine badminton practice. In addition of the above training the experimental group underwent specified circuit training morning one hour before starting the their own routine badminton practice in a schedule of weekly three days in alternative days for all the eight weeks. The entire tests were demonstrated and explained to the subjects by the scholar. The pre and post tests were administered before and after the eight weeks training period. After eight weeks of training program, the groups were again administered the test in the same parameters as they were tested during pre test stage and the data were also collected as done during the pre test stage. The training program for the experimental groups was for a period of 40 minutes, three times a week. The data was collected by administering the tests for the selected variables.

### Circuit Training Procedure

The duration of the training was eight weeks. The training program was consists of warm up exercise for 10 minutes (jogging, slow space running, stretching exercises etc.), circuit training exercise of core and trunk and lower and upper body, cool down exercises. Skipping, Burpees, Sit ups (lower abdominals),

push ups, Squat jumps, Compass jumps, astride jumps, Shuttle runs were selected for the main training schedule. Experimental group performed 25 to 35 seconds work on each exercise with a 20 to 30 seconds recovery. They performed 2 to 4 sets with a 2 to 3 minutes recovery between each set for a duration of 40 minutes. The training program was conducted three days in a week of eight weeks.

### 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 respectively.

**Table-I**  
**Computation of Analysis of Covariance on Speed**

TEST	Group		Sv	Sum of Squares	Df	Mean Square	F value
	Exp.	Con.					
Pre test	8.41	8.11	B	0.666	1	0.666	1.268
			W	14.696	28	0.524	
Post test	7.19	8.10	B	6.274	1	6.274	24.438*
			W	7.189	28	0.256	
Adjusted Mean	7.12	8.16	B	7.688	1	7.6886	43.373*
			W	4.786	27	0.177	

\*Significant at 0.05 level of confidence

It was observed from the Table-I that there was no significant difference in the pretest ( $F=1.268 < 4.20$ ). A significant difference in the post test ( $F=24.438 < 4.20$ ) for df 1 and 28 and adjusted posttest ( $F=43.373 > 4.21$ ) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there was influences on speed through circuit training among inter collegiate badminton Players. The discussion clearly indicated that the experimental group was higher improvement on speed due to eight weeks circuit training.

**Table-II**  
**Computation of Analysis of Covariance on Agility**

TEST	Group		SV	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	10.41	10.65	B	0.415	1	0.415	0.690
			W	16.841	28	0.601	
Post test	9.59	10.57	B	7.222	1	7.222	10.933*
			W	18.497	28	0.660	
Adjusted Mean	9.66	10.49	B	5.129	1	5.129	11.376*
			W	12.173	27	0.450	

\*Significant at 0.05 level of confidence

It was observed from the Table-II that there were no significant difference in the pretest ( $F=0.690 < 4.20$ ) and post test ( $F=10.933 < 4.20$ ) for df 1 and 28 at 0.05 level of confidence. However significant difference was observed on adjusted post test ( $F=11.376 < 4.21$ ) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there was significant improvements in agility due to circuit training among inter collegiate badminton players.

The discussions clearly indicated that there was a significant difference in speed and agility among experimental and control group due to eight weeks circuit training.

### Conclusions

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

1. It was observed that there was significant improvement in the speed of the experimental group owing to circuit training.
2. It was observed that there was significant improvement in the agility of the experimental group owing to circuit training.
3. It can be concluded that Badminton Specific Circuit Training can be the contributing factor for the coaches to plan appropriate loads and maximizing the performance of badminton players.
4. There was no significant improvement in the selected variables of the control group

## References

- Manohar M. Mane and Sarvesh Kumar Yadav (2011). Variorum, Multi-Disciplinary e-Research Journal, 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, Vol.-01, Issue-IV,
- Morgan, R.E. and Adamson, G.T. (1961). Circuit Training (2nd Ed.). Bell and Sons Ltd.: London.
- Scholich, M. (1990). Circuit Training for All Sports: Methodology of Effective Fitness Training. Sport Books Publisher: Toronto.
- Sudhakar Babu, M and Paul Kumar, P.P.S. (2013). Effect of Selected Circuit Training Exercises on Sprinters of High School Girls, International Journal of Science and Research (IJSR), 2 (11) available at [www.ijsr.net](http://www.ijsr.net)

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