

# Effect of Circuit Training on Speed and Agility Among Inter Collegiate Hockey 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 among Inter Collegiate Hockey players. To achieve the purpose of the study thirtyinter collegiate Hockey players in an age group of 19 to 23 were selected as subjects from the Arts and Science College. All the students were Under Graduate students. 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 Hockey Training. In addition of the above training the experimental group underwent specified circuit training morning one hour before starting their own routine Hockey 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 in the selected physical fitness variables of speed and agility.

**Keywords:** 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 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 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. SudhakarBabu and Paul Kumar (2013) conducted a study on theeffect 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.Itwas 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

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 among school boys.

## **Methodology**

To achieve the purpose of the study thirty inter collegiate Hockey players were selected subjects in an age group of 19 to 23from Arts and Science College. All the students were Under Graduate students. 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 Hockey Training. In addition of the above training the experimental group underwent specified circuit training morning one hour before starting the their own routine Hockey 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 Hockey players with the age

group of 19 to 23 years. The following combinations of eight different exercises were designed in the circuit training program.

1. Skipping
2. Push ups
3. Jumping jack
4. Step ups
5. Sit ups
6. Shuttle run
7. Squat jump and
8. 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 eight weeks training period. The test administered were physical fitness variables of speed (50 mts dash), agility (4x10 mts shuttle run) and explosive power (standing vertical jump). 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**

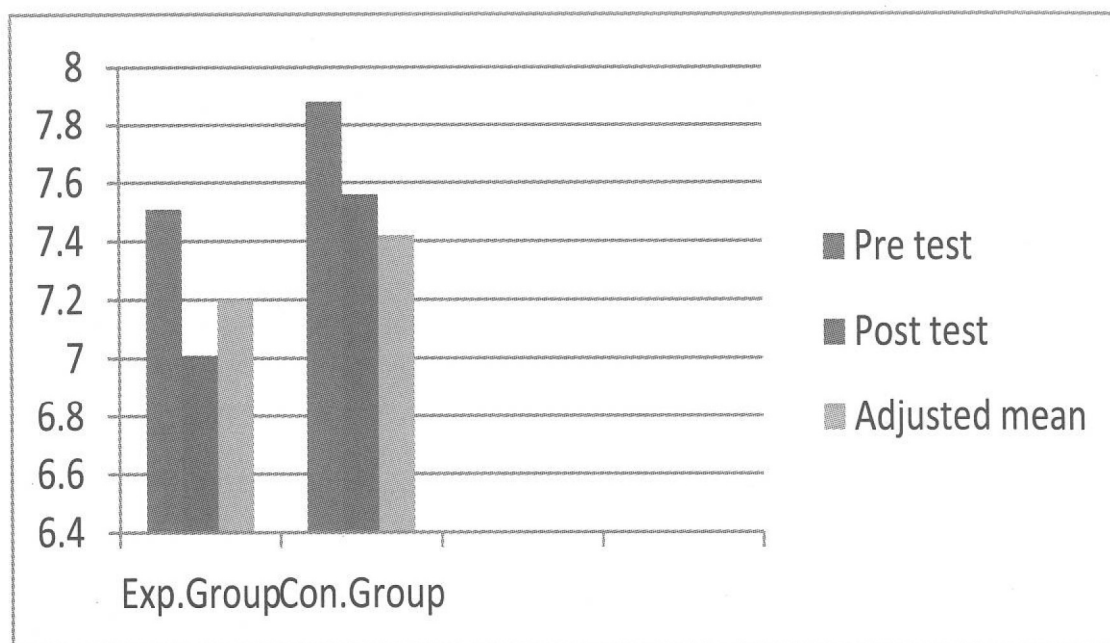
TEST	Group		sv	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	7.45	7.88	B	1.426	1	1.426	0.261
			W	18.386	28	0.656	
Post test	7.01	7.56	B	2.302	1	2.302	6.548*
			W	22.86	28	0.816	
Adjusted Mean	7.2	7.42	B	1.684	1	1.684	12.65*
			W	0.465	27	0.017	

\*Significant at 0.05 level of confidence for the degree of freedom 1 and 28 is 4.20 and df 1 and 27 is 4.21

It was observed from the Table-I that there was no significant difference in the pretest ( $F=0.261 < 4.20$ ). A significant difference in the post test ( $F=6.548 > 4.20$ ) for df 1 and 28 and adjusted posttest ( $F=12.65 > 4.21$ ) 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 Hockey players.

The discussion clearly indicated that the experimental group was higher improvement on speed due six weeks circuit training.

**Figure-1**  
**Bar Diagram Showing the Mean Value of Speed**



**Table-II**  
**Computation of analysis of covariance on Agility**

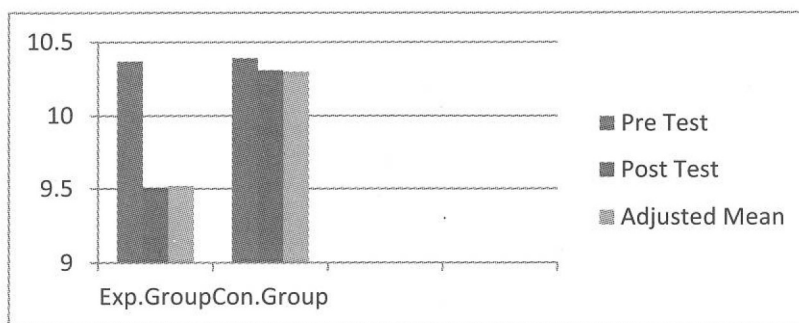
TEST	Group		sv	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	10.37	10.39	B	0.005	1	0.005	0.005
			W	14.675	28	0.524	
Post test	9.51	10.31	B	4.760	1	4.760	9.810
			W	13.585	28	0.485	
Adjusted Mean	9.52	10.30	B	4.612	1	4.612	12.100
			W	10.292	27	0.381	

\*Significant at 0.05 level of confidence for the degree of freedom 1 and 28 is 4.20 and df 1 and 27 is 4.21

It was observed from the Table-II that there were no significant difference in the pretest ( $F=0.005 < 4.20$ ). The significant differences were observed in posttest ( $F=9.810 > 4.20$ ) for df 1 and 28 at 0.05 level of confidence and adjusted posttest ( $F=12.100 > 4.21$ ) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there was a significant impact in agility due to circuit training among inters collegiate Hockey players.

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

**Figure-2**  
**Bar Diagram Showing the 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
2. Circuit training may be included in training regime to improve physical fitness qualities
3. 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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