

Effect of Circuit Training on Selected Physical Variables among School Boys

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Abstract

The present study was conducted to find out the effect of circuit training on selected physical variables among the school boys. For this purpose 60 untrained high school boys who did not participate in any of the games were selected as subjects. They were divided into two equal groups, the control and experimental. Circuit training was given to the experimental group for three days in a week for a period of eight weeks. The control group was not allowed to participate in any of the training programmes. Before and after the training the subject Strength and Agility was measured. Analysis of Covariance was used to analyse the data. The findings of the study showed that strength and agility had significantly improved due to circuit training.

Keywords: Physical fitness, Circuit training, Strength, Agility.

Introduction

Physical fitness is important for all human beings, irrespective of their age. A given work may not be carried out if the required physical strength is not available. Components of physical fitness are muscular strength, muscular endurance, cardio respiratory endurance, flexibility and body composition.

In the last few decades, training methods attracted more physical educationists and sports persons than ever before. Numerous studies have been done in the area of athletic training. Training means a systematic scientific programme of conditioning exercises and physical activities designed to improve the physical fitness and skills of the players or athletes participated. Circuit training is a method of physical conditioning that employs both apparatus resistance training and calisthenic conditioning exercises. It provides a means of achieving optimal fitness in a systematized controlled fashion. The intensity and vigor of circuit training are indeed challenging and enjoyable to the performer. This system produces positive changes in motor performance, general fitness, muscular power, endurance and speed.

Purpose of the Study

There are a number of training methods such as resistance training, endurance training, plyometric training etc... Since circuit training is the combination of set of exercises which influences the motor fitness for better adaptation and better performance. Since the investigator is interested in carry out the circuit training and to trace out its effect on physical fitness.

The purpose of the study was to find out the significant improvement in Strength and Agility due to circuit training among school boys.

Hypothesis

It was hypothesized that there would be significant improvement in strength and agility due to circuit training.

Review of Related Literature

Brown (1962) conducted a study on the effect of circuit training on physical fitness variables on grade five girls. Two classes were tested before and after eight weeks of regular physical education classes. The experimental class had circuit training and it was found that the experimental class made greater gain strength and agility.

Methodology

Since the purpose of this study was to find out the effect of circuit training on selected physical variables on high school boys, 60 untrained boys who did not participate in any of the games or sports were selected at random from Kendriya Vidyalaya Matriculation Higher Secondary School, Karaikudi. Their age was ranging from thirteen to fifteen years. The Subjects were divided into two equal groups called control and experimental, consisting of thirty boys in each group. Circuit training was given to the experimental group for three days in a week for a period of eight weeks. The control group was not allowed to participate in any of the training programmes, except in their routine physical education classes. The Physical fitness Variables selected for testing were Strength and Agility

Experimental Protocol

The exercises included in the circuit training programme were

1. Running on the spot 2. Push - ups 3. Shuttle run 4. Rope skipping 5. Knee bent sit ups and 6. Jump squats. The subjects were asked to perform each exercise as much as they can in thirty seconds. The rest period between the stations is ninety seconds. The subjects were asked to repeat the circuit three times a day. In between each circuit a recovery period of five minutes was given. After four weeks, the subjects were asked to repeat the circuit four times a day. The data were collected by conducting tests. Push Ups (1min.) to measure strength, Shuttle run (2x10mts) to measure agility. The collected data were analysed using Analysis of Covariance.

Results & Discussion

The results of the analysed data were presented below.

Table-I

Computation of Analysis of Covariance of Pre-test and Post - Test on Strength of Control and Circuit Training Groups

Mean	Circuit training (N = 30)	Control group (N = 30)	Source of Variance	Sum of Squares	df	Mean Square	F-Ratio
Pre-test means	9.53	8.97	B:	4.82	1	4.82	0.73 NS
			W:	380.43	58	6.56	
Post-test means	11.26	9.03	B:	74.82	1	74.82	22.07 *
			W:	196.83	58	3.39	
Adjusted post-test means	11.13	9.17	B:	56.80	1	56.80	30.21 *
			W:	107.09	57	1.88	
Mean Gains	1.73	0.06					

*- Significant at 0.05 level

NS - Not Significant

Table I shows that the pre test mean of circuit training and control group were initially lesser than the required table value of 4.0 when it was compared to the obtained value f ratio 0.73, hence it was not significant at 0.05 confidence. It was observed that the post test mean and adjusted post test mean the obtained f 22.07 and 30.21 respectively were greater than the required table value of 4.0 and hence it was concluded that there were statistical significant improvement in strength due to the circuit training.

The obtained result shows that there existed statistical significant improvement in circuit training and to have easy understanding the results were given in figure 1.

Figure-1

Graphical Representation on Pretest, Post Test and Adjust to Post Mean on Strength of Control and Circuit Training Groups

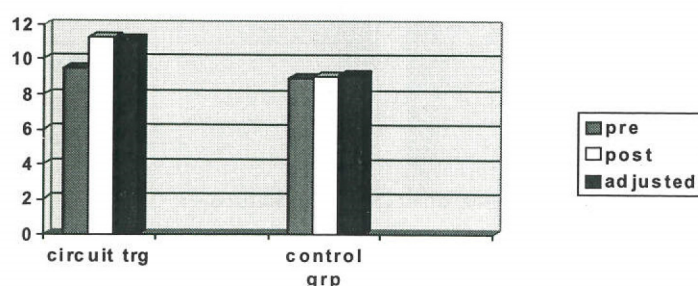


Table-II
Computation of Analysis of Covariance of Pre-test and Post - Test on
Agility of Control and Circuit Training Groups

Mean	Circuit training (N = 30)	Control group (N = 30)	Source of Variance	Sum of Squares	df	Mean Square	F-Ratio
Pre-test means	12.56	12.55	B:	0.40	1	0.40	1.00 NS
			W:	23.48	58	0.40	
Post-test means	11.78	12.39	B:	7.28	1	7.28	20.22*
			W:	21.15	58	0.36	
Adjusted post-test means	11.78	12.40	B:	4.74	1	4.74	43.09*
			W:	6.38	57	0.11	
Mean Gains	0.78	0.16					

*- Significant at 0.05 level

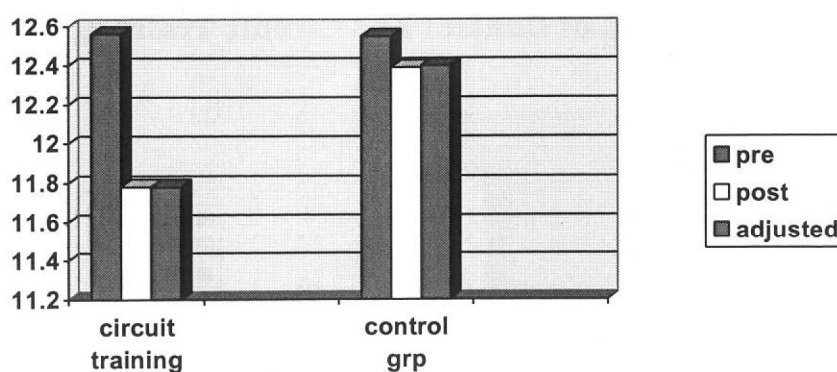
NS - Not Significant

Table I shows that the pre test mean of circuit training and control group were initially lesser than the required table value of 4.0 when it was compared to the obtained value f ratio 1.00, hence it was not significant at 0.05 confidence. It was observed that the post test mean and adjusted post test mean the obtained f 20.22 and 43.09 respectively were greater than the required table value of 4.0 and hence it was concluded that there were statistical significant improvement in agility due to the circuit training.

The obtained result shows that there existed statistical significant improvement in circuit training and to have easy understanding the results were given in figure 2.

Figure-2

Graphical Representation on Pretest, Post Test and Adjust to Post Mean on Agility of Control and Circuit Training Groups



Discussion on findings

The results of the study prove that strength has significantly improvement due to the selected circuit training exercises for eight weeks among the school boys. this results is in agree with Miller (1969) who demonstrated the effectiveness of circuit training on upper body strength, leg explosive power. This Study reveals that the Agility also significantly improvement among school boys and which was also in agree with the study conducted Tiskin (2009) who proved in his study that the agility component was influenced by the circuit training.

Conclusion

Based on the result of study it was concluded that circuit training significantly improved the physical variables such as strength and agility significantly among the school boys.

References

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