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## Impact of circuit training on muscular strength of high school boys

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### Abstract

The purpose of the study was to determine the effect of Circuit training programme on Muscular strength. Randomly selected 60 high school boys were divided into two equal groups as A, and B. After taking the pre-test for Muscular strength the training programme was given to experimental groups A where as the group B was a control group. The experimental group 'A' had undergone the Circuit training programme, thrice a week for 12 weeks. Two middle tests after 4 weeks and 8 weeks and a post test were conducted. The t-test was employed to analyse the significance of difference from the pre-test to post test on selected variable. The result reveals that there was significant improvement in Muscular strength for the experimental group as a result of the training programme conducted for a period of three months.

**Keywords:** Circuit training, Muscular strength

### Introduction

In ancient days the life style, food consumption and daily routine contributed highly to the health of the people. Since the means of transport and way of life demanded a lot of physical strain most of the people were sound in their physique. The underdeveloped science and technology that prevailed at that time forced people to perform most of their activities manually. Moreover, the dietary habits of the individuals were natural and healthy.

Advancement in modern technology has evolved our present day society to exist in a world, where the concept of hard or even moderate physical work is unfashionable. The reduction in the work load of the people have caused an alarming decline in the attitude of individuals towards physical activity. This in turn has caused a physical inability which makes people refrain from the hard tasks of life.

Circuit training is an excellent way to improve mobility, strength and stamina. The circuit training comprises 6 to 10 strength exercises that are completed one exercise after another. Each exercise is performed for a specified number of repetitions or for a set time before moving on to the next exercise. The exercises within each circuit are separated by a short rest period, and each circuit is separated by a longer rest period. The total number of circuits performed during a training session may vary from two to six depending on your training level (beginner, intermediate, or advanced), your period of training (preparation or competition) and your training objective.

You won't be bored when you do circuit training. This workout gets your heart rate up and strengthens your muscles at the same time. You'll move quickly through 8-10 exercise stations to work different muscle groups with little to no rest between stations. Each station has a different exercise. You may do bicep curls or jump rope for 60 seconds. You'll do about 10-25 reps at each station, lasting between 30 seconds and 3 minutes, and then move on to the next station. To keep things interesting, you can switch up the sequence, swap out different stations, and do it at the gym with equipment, at home with dumbbells and resistance bands, or on a fitness trail by alternating push-ups and squats with brisk walking or biking. Allow at least 20-30 minutes for the workout. If you're new to the moves, work with a trainer or take a class so you learn how to do each exercise right.

Muscular strength is defined as the amount of force a particular muscle group can apply in a single effort (Vivian, H. Hayward, 1991) [2]. Muscular strength is defined as the amount of

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muscular force, one is capable of exerting in a single muscular contraction (Hazeline, Rex, 1985) [4]. Muscular strength is important for smooth and easy performance of everyday activities, such as carrying groceries, lifting boxes and walking upstairs as well as for emergency situations. It has obvious importance in recreational activities.

To measure arm and shoulder girdle strength the test performer hangs from the bar using the overhand grip with his legs and arms fully extended. His feet should not touch the floor. He pulls himself upward in a metal or wooden bar approximately 1½ inches in diameter until his chin is over the bar and then lowers his body to a full hang position. He repeats the exercise as many times as possible. Only one trial is administered, unless it is obvious the performer can do better with a second attempt. The score is the number of completed pull-ups. The knees must not be flexed, and kicking motions, swinging, and snap-up motions are not permitted. The test administrator may prevent these actions by holding an extended arm across the front of the performer's thighs.

### Objective of the study

The purpose of the study was to determine the effect of Circuit training programme on Muscular Strength of high

school boys. The study may help the people to know the effect of Circuit training, on selected variable of health related physical fitness

### Hypotheses

There will be significant improvement in Muscular strength as a result of Circuit training programme.

### Design of the study

Randomly selected 60 subjects were divided into two equal groups as A and B. After taking the pre-test for Muscular Strength (Pull ups test), the training programme was given to experimental groups A where as the group B was the control group. The experimental group 'A' had undergone the Circuit training programme, thrice a week for 12 weeks. Two middle tests after 4 weeks and 8 weeks and a post test were conducted.

### Analysis of Data and Discussion of Findings

The t-test was employed to analyse the significance of difference from the pre-test to post test on selected variables. The level of significance chosen was 0.05.

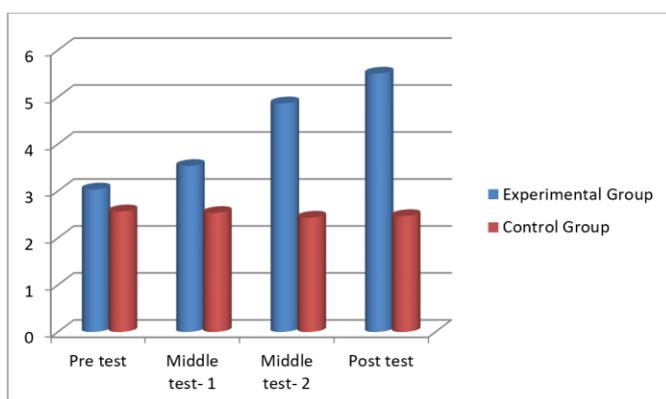
The following table of statistical descriptions reveal the effect of Circuit training programme

**Table 1:** Significance of differences between the pre-test and post-test means of the experimental and control groups on muscular strength

Groups	Means				MD	SD	SE	't' value
	Initial	First middle test	Second middle test	Final				
Experimental Group (N=30)	3.0333	3.533	4.866	5.50	2.4667	0.5074	0.0926	26.626*
Control Group (N=30)	2.5667	2.533	2.433	2.4667	0.10	0.4806	0.0877	1.140

\* Significant at 0.05 level  
't' value required at 0.05 level = 2.045 (df 29)

The statistical results presented in table indicate that the Experimental group exhibited significant improvement in muscular strength with initial mean score (3.0333) and the final mean score (5.50). Further it demonstrates that the obtained 't' value (26.626) is higher than the tabulated 't' value (2.045) at 29 degrees of freedom. Hence, the obtained 't' value was found to be highly significant at 0.05 level. On the other hand, the initial mean value (2.5667) and final mean value (2.4667) for control group showed negligible difference. Since, the obtained 't' value (1.140) is less than required 't' value (2.045), it was therefore insignificant at 0.05 level. The graphical representation of means of the Experimental and Control groups are shown below.



**Fig 1:** Graphical representation of mean difference of Experimental and control groups on muscular strength

### Conclusion

Based on the analysis of statistical results, it was observed

that there was significant improvement in Muscular strength for the experimental group as a result of the Circuit training programme conducted for a period of three months. There was no significant improvement shown by the control group.

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