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Study of the effects of circuit training and weight training on the physical fitness of students

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Abstract
The main purpose of this research study was to study the effects of circuit training and weight training on the physical fitness of students studying in Podar International School in Mehsana district. In this research study, students studying in Podar International School in Mehsana district were selected as subjects whose ages ranged from 16 to 18 years. Out of all, total 90 students were selected randomly for this study. They were divided into three groups: Group A, Group B and C. In which, Group A was given weight training, Group B was given circuit training while Group C was not given any kind of training that was known as control group. Thus, the endurance of the students was measured through this training and an "F" (ANCOVA) test was taken. Through this test, a significant difference was seen in the physical fitness of the students.

Keywords: Endurance, physical fitness, health

Introduction
Nature has given every human being a priceless gift of the body. Physical fitness is a basic need for every human being. Any person can make a great impression in his sports or in his social life with his good physical fitness. We know that physical conditions have a significant effect on the mind and mental conditions on the body, that is why it is said that "sound mind in a sound body." Psychological research has proven that children who participate in physical education activities are emotionally stable, confident, have leadership skills and do not get nervous easily. In many European countries, a program called "Run for Health" is run in a very systematic way to keep people healthy. On any holiday, all the people of the society or locality gather at one place and run a fixed distance together. In this program, men, women and children from the age of about 8 to 80 years participate together. In this, neither anyone is given a prize nor a winner. The main goal of this program is to maintain good health. Endurance is an important ability to perform well in any game or sport.
It is said that a hundred years ago, only 6 percent of mechanical power was used while 94 percent of human power was used. Which is strong evidence of the physical fitness of humans during that era. While today the situation is completely opposite.
In this research study, a significant difference was found in the physical fitness of students studying in Podar International School in Mehsana district through weight training and circuit training.
The aim of the present study was to examine the effect of weight training and circuit training on the physical fitness of students studying in Podar International School in Mehsana district through weight training and circuit training on the physical fitness of students studying in Podar International School in Mehsana district.

Purpose of the study
The main objective of this research study was to examine the effect of weight training and circuit training on the physical fitness and endurance capacity of students studying at Podar International School in Mehsana district.

Methodology
For this research study, 90 students studying at Podar International School in Mehsana district were randomly selected as subjects. Their age ranged from 16 to 18 years. Each subject was

given weight training in the morning and circuit training in the evening for ***5*** weeks on a regular basis, with Sunday being the day off each week. In this research study, the circuit training group was given various exercises like pull-ups, band sit-ups, rope jumping and zig-zag run while in weight training, activities like barbell bench press, dumbbell shoulder press, half squat and barbell squats were given and the third group was not given any kind of training.

Data analysis

Before statistical analysis, pre-test and post-test were conducted for each subject to obtain general information about the distribution of data. Based on which descriptive statistics were taken and "F" (ANCOVA) test was conducted. In which the significance level was set at $p<0.05$.

In the present research study, the researcher made an accurate attempt to determine how circuit training and weight training affect the physical fitness and endurance of the subjects.

Table 1: Covariance analysis of endurance test performance of two experimental and one control groups

Test	Group			Variance covariance analysis				F
	Weight training	Circuit training	Control group	Type I sum of squares (SS)		(df)	Mean square (MSS)	
Pre-test mean	2020.33	1945.00	1902.00	B	215268.89	2	107634.44	2.31
				W	4059976.67	87	46666.40	
Post test	2282.17	2350.33	1912.66	B	3327290.56	2	1663645.28	25.72*
				W	5628067.50	87	64690.43	
Adjusted mean	2250.61	2355.60	1938.95	B	2766077.02	2	1383038.51	25.54*
				W	4658034.09	86	54163.19	

*Significant' level at 0.05. f = 0.05 (2,87) = 3.101 & (2,86) = 3.103

Results and Discussion

The above table shows all the statistical data of pre-test and post-test means and analysis of covariance 'F'(ANCOVA). Accordingly, the pre-test means of endurance test performance were (weight training group = 2020.33, circuit training group = 1945.00, control training group = 1902.00). The 'F' ratio obtained for the pre-test was found to be 2.31. Comparing this with the table F - ratio 3.101, the ratio obtained was found to be less. Hence, the pre-test test was not found to be significant at the 0.05 level for degrees of freedom 2 and 87.

The mean of the final test of all three groups were (weight training group = 2282.17, circuit training group = 2350.33, control training group = 1912.66). Also, the 'F' ratio obtained for the final test was found to be 25.72. Comparing this with the table F - ratio 3.101, the ratio obtained was found to be higher. Therefore, the final test was found to be significant at the 0.05 level for degrees of freedom 2 and 87.

In addition, the Adjusted medians were (weight training group = 2250.61, circuit training group = 2355.60, control training group = 1938.95) and the obtained 'F' ratio was found to be 25.54. Which was found to be higher when compared to the table F-ratio 3.103. Hence, the obtained 'F' ratio between the Adjusted medians of the three groups is significant at the 0.05 level for degrees of 2 and 86.

Conclusions

At the end of the research, it was concluded that circuit training and weight training had a significant effect on the physical fitness and endurance capacity of students studying at Podar International School in Mehsana district in both the experimental groups. Also, the circuit training group proved to be more effective than the other two groups.

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