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Effect of low and medium Intensity cardiac circuit exercises on inspiratory reserve volume and expiratory reserve volume among obese male students

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Abstract

The purpose of present study was to find out the effect of low and medium intensity cardiac circuit exercises on inspiratory reserve volume and expiratory reserve volume among obese male students. To achieve this purpose, forty five obese male students, studying in various classes and departments of Annamalai University, Annamalainagar, Chidambaram, Tamil Nadu, in the age group of 21 - 25 years were selected as subjects. The selected 45 subjects were divided into three equal groups, in which, group – I (n = 15) underwent low intensity cardiac circuit exercise with 50% of heart rate, group – II (n = 15) underwent medium intensity cardiac circuit exercise with 55% of heart rate, group – III (n = 15) acted as control which did not participate in any special training. The training programme was carried three days per week for twelve weeks (alternative days). Prior to and after the training period the subjects were tested for inspiratory reserve volume and expiratory reserve volume. inspiratory reserve volume and expiratory reserve volume was measured by using expirograph. The collected data were statistically analyzed by using Analysis of Covariance (ANCOVA) and Scheffé's Post-Hoc Test. The result of the study was a significant improvement on inspiratory reserve volume and expiratory reserve volume after twelve weeks of low and medium intensity cardiac circuit exercises. However the increase was favour of experimental group. There was a significant difference was occurred between low, medium intensity cardiac circuit exercises and control group after twelve weeks of low and medium intensity cardiac circuit exercises.

Keywords: Obesity, intensity, cardiac circuit exercise, inspiratory reserve volume and expiratory reserve volume

Introduction

Obesity is a complex disease involving an excessive amount of body fat. Obesity isn't just a cosmetic concern. It is a medical problem that increases your risk of other diseases and health problems, such as heart disease, diabetes, high blood pressure and certain cancers.

There are many reasons why some people have difficulty avoiding obesity. Usually, obesity results from a combination of inherited factors, combined with the environment and personal diet and exercise choices.

The good news is that even modest weight loss can improve or prevent the health problems associated with obesity. Dietary changes, increased physical activity and behavior changes can help you lose weight. Prescription medications and weight-loss procedures are additional options for treating obesity.

Circuit exercises is the most effective way to build muscles and improve cardio fitness, which makes it ideal for those who are overweight. Completing a circuit is no easy feat, as there is little or no rest between workouts, which means some level of fitness, is required.

Methodology

The purpose of present study was to find out the effect of low and medium intensity cardiac circuit exercises on inspiratory reserve volume and expiratory reserve volume among obese male students. To achieve this purpose, forty five obese male students, studying in various classes and departments of Annamalai University, Annamalainagar, Chidambaram, Tamil Nadu, in the age group of 21 - 25 years were selected as subjects.

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expirograph. The collected data were statistically analyzed by using Analysis of Covariance (ANCOVA). Further Scheffe's post hoc test was used to compare the means. The level of significance was fixed at 0.05.

Results

The data collected prior to and after the experimental periods on inspiratory reserve volume and expiratory reserve volume on low and medium intensity cardiac circuit exercises and control group were analyzed and presented in the following table 1.

Table 1: Analysis of covariance for inspiratory reserve volume and expiratory reserve volume on low and medium intensity cardiac circuit exercises and control group

Variable Name	Group Name	Control Group	Low intensity Group	Medium intensity Group	F ratio
Inspiratory reserve volume	Pre-test Mean \pm S.D	2.62 \pm 1.32	2.63 \pm 1.82	2.63 \pm 1.42	2.03
	Post-test Mean \pm S.D.	2.64 \pm 0.85	2.69 \pm 1.52	2.74 \pm 1.82	6.24*
	Adj. Post-test Mean \pm S.D.	2.62	2.69	2.72	66.37*
Expiratory reserve volume	Pre-test Mean \pm S.D	2.54 \pm 1.60	2.53 \pm 1.58	2.54 \pm 1.61	2.47
	Post-test Mean \pm S.D.	2.56 \pm 1.45	2.64 \pm 1.99	2.71 \pm 2.03	8.23*
	Adj. Post-test Mean \pm S.D.	2.54	2.56	2.64	77.36*

* Significant at .05 level of confidence.

* The table value required for significance at .05 level of confidence with df 1 and 43 and 1 and 42 were 3.21 and 3.22 respectively.

From the Table-1 it is clear that low and medium intensity cardiac circuit exercises increases inspiratory reserve volume and expiratory reserve volume when compare with control group.

Further to determine which of the paired means has a significant improvement, Scheffé S test was applied as post-hoc test. The result of the follow-up test is presented in Table – 2.

Table 2: Scheffé S Test for the Difference Between the Adjusted Post-Test Mean of inspiratory reserve volume and expiratory reserve volume on low and medium intensity cardiac circuit exercises and control group

Adjusted Post-test Mean of inspiratory reserve volume				
Medium intensity Group	Low intensity Group	Control Group	Mean Difference	Confidence interval at .05 level
2.72		2.62	0.20*	0.061
2.72	2.69		0.03	0.061
	2.69	2.62	0.07*	0.061
Adjusted Post-test Mean of expiratory reserve volume				
2.64		2.54	0.10*	0.057
2.64	2.56		0.08*	0.057
	2.56	2.54	0.02	0.057

* Significant at 0.05 level of confidence.

Both low and medium cardiac circuit exercises increases inspiratory reserve volume and expiratory reserve volume when compare with control. Medium cardiac circuit exercises may have better effect to increases inspiratory reserve volume and expiratory reserve volume of obese adult.

Conclusions

From the analysis of the data, the following conclusions were drawn.

1. There was a significant difference between low and medium intensity cardiac circuit exercises on inspiratory reserve volume and expiratory reserve volume when compared with the control group.
2. The improvement in criterion variable such as inspiratory reserve volume and expiratory reserve volume was higher for the medium intensity cardiac circuit exercises group than the low intensity cardiac circuit exercises group.

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