

EFFECT OF LOW AND HIGH INTENSITY CARDIAC CIRCUIT EXERCISES ON SELECTED ANTHROPOMETRIC MEASURES AMONG OBESE MALE STUDENTS

Mr. K. Bala Murugan*

Ph.D Research Scholar, Department of Physical Education,
Annamalai University

Dr. S. Senthilvelan**

Professor and Head, Department of Physical Education,
Annamalai University, Chidambaram, TamilNadu, India

Abstract

The purpose of present study was to find out the effect of low and high intensity cardiac circuit exercises on selected anthropometric measures among obese male students. To achieve this purpose, forty five obese male students, studying in various departments of Annamalai University, Annamalainagar, Chidambaram, Tamilnadu and the age range between 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 exercises with 50% of heart rate, group – II (n = 15) underwent high intensity cardiac circuit exercises with 60% of heart rate, group – III (n = 15) acted as control which did not participate in any special exercises. The exercises programme was carried three days per week for twelve weeks (alternative days). Prior to and after the exercises period the subjects were tested for body mass index and percentage of body fat. The collected data were statistically analyzed by using Analysis of Covariance (ANCOVA). Further to determine which of the paired means has significant improvement, Scheffe's test was applied as Post-Hoc Test. The result of the study, there was a significant decrease on percentage of body fat and body mass index after twelve weeks of low and high intensity cardiac circuit programme.

Keywords:- *Cardiac circuit exercise, body mass index and percentage of body fat.*

INTRODUCTION

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems. People are considered as obese when their body mass (BMI), a measurement obtained by dividing a person's weight in kilograms by the square of the person's height in meters, exceeds 30 kg/m^2 .

It is a metabolic disorder which is affecting the people throughout the world and commonly caused by a combination of excessive food energy intake, junk food, lack of physical activity, genetic susceptibility, and other psychological problems, although a few cases are caused primarily by genes, endocrine disorders, medications or psychiatric illness. The negative health (obesity) consequences are less or more insulin resistance, chances of occurring type 2 diabetes, asthma, hyper tension, increase in high total cholesterol, low density lipoproteins, triglycerides and lowering the triglycerides in blood, become sleep apnea, attaining early puberty, etc.

Indexes associated with high risk in obese persons often return to normal with appropriate physical activities, dietary habits, and a small weight loss even when body weight and percentage body fat remain above recommended amounts. 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

To achieve this purpose, forty five obese male students, studying in various departments of Annamalai University, Annamalainagar, Chidambaram, Tamilnadu and the age range between 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 exercises with 50% of heart rate, group – II (n = 15) underwent high intensity cardiac circuit exercises with 60% of heart rate, group – III (n = 15) acted as control which did not participate in any special exercises. The exercises programme was carried three days per week for twelve weeks (alternative days). Prior to and after the exercises period the subjects were tested for body mass index and percentage of body fat. 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 percentage of body fat and body mass index on low and high intensity cardiac circuit exercises and control group were analyzed and presented in the following table –I

Table-I

Analysis of covariance for percentage of body fat and body mass index on low and high intensity cardiac circuit exercises and control group

Variable Name	Group Name	Control Group	Low intensity Group	High intensity Group	F ratio
Percentage of Body Fat	Pre-test Mean ± S.D	22.65 ± 1.32	23.15 ± 1.82	22.90 ± 1.35	2.03
	Post-test Mean ± S.D.	23.19 ± 0.85	21.62 ± 1.52	19.01 ± 1.58	8.53*
	Adj. Post-test Mean ± S.D.	22.98	21.48	20.42	106.23
Body Mass Index	Pre-test Mean ± S.D	29.52 ± 1.40	30.25 ± 1.65	29.42 ± 1.53	2.46
	Post-test Mean ± S.D.	30.75 ± 1.45	28.46 ± 1.99	26.21 ± 1.95	11.65*
	Adj. Post-test Mean ± S.D.	31.56	29.56	27.25	102.58

* 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-I it is clear that low and high intensity cardiac circuit exercises reduces percentage of body fat and body mass index 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 – II

Table – II

Scheffé S Test for the Difference Between the Adjusted Post-Test Mean of percentage of body fat and body mass index on low and high intensity cardiac circuit exercises and control group

Adjusted Post-test Mean of percentage of body fat				
High intensity Group	Low intensity Group	Control Group	Mean Difference	Confidence interval at .05 level
20.42		22.98	2.56*	0.601
20.42	21.48		1.06*	0.601
	21.48	22.98	1.50*	0.601
Adjusted Post-test Mean of body mass index				
27.25		31.55	4.30*	0.057
27.25	29.56		2.31*	0.057
	29.56	31.55	1.99*	0.057

* Significant at 0.05 level of confidence.

Both low and high cardiac circuit exercises reduces percentage of body fat and body mass index when compare with control. High cardiac circuit exercises may have better effect to reduce body mass index and percentage of body fat of obese adult.

CONCLUSIONS

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

1. There was a significant difference between low and high intensity cardiac circuit exercises on percentage of body fat and body mass index when compared with the control group.

2. The improvement in criterion variable such as percentage of body fat and body mass index was higher for the high intensity cardiac circuit exercises group than the low intensity cardiac circuit exercises group.

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