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A Febin Jebaraj
M.P.Ed, M.Phil, Ph.D Scholar,
A.V.V.M Sri Pushpam College,
Poondi, Tamil Nadu, India.

Dr. C Robert Alexandar
M.A, M.P.Ed, M.Phil, Ph.D,
Head of the Department,
A.V.V.M Sri Pushpam College,
Poondi, Tamil Nadu, India.

Correspondence
A Febin Jebaraj
M.P.Ed, M.Phil, Ph.D Scholar,
A.V.V.M Sri Pushpam College,
Poondi, Tamil Nadu, India.

Effect of plyometric and aerobic exercise on obesity among school students

A Febin Jebaraj, Dr. C Robert Alexandar

Abstract

The purpose of the study is to find out the effect of plyometric and aerobic exercise on obesity among school student. To achieve this purpose, forty five school student aged between 14 to 17 years, studying in the ONGC public school children were selected. The subjects were divided into three equal groups of fifteen subjects each, namely aerobic exercise group, Plyometric exercise group and control group. The aerobic exercise group was given cycling, calisthenics, Rhythmic exercises, continuous slow running. Plyometric exercise group was given Squat jumps, simple jumps, hurdle jumps, step jumps, jumping rope, jump on boxes, and single leg-hops daily for twelve weeks. Weight was tested before (pre) and after (post) the training programme for both experimental and control group by using Waist circumference. ANCOVA was used to find out the significant difference if any between the groups. The results of this study indicate that the Aerobic exercise group has significantly improved from plyometric exercise and control group the selected dependent variable namely waist circumference. However control group did not show any improvement on the obesity as it was not involved in any of the specific training programme.

Keywords: Aerobic exercise, Plyometric exercise, Waist circumference, Obesity

Introduction

The word aerobic-meaning with oxygen-to represent the idea even so the dynamic of the idea are more complicated than implied by the definition. Doing aerobics regularly can decisively improve your heart rate, your body condition, and your state of mind. Over 20 years of research has shown that aerobic exercise is one of the best exercises you can do since it is a safe and complete work out, as well as a fun sport to do. Aerobics conditions your heart and lungs, help you use oxygen more efficiently and help control weight and reduce stress. A regular aerobics program gives you a sense of responsibility and the assurance of being in control of your body, which are two positive mental attitudes that are necessary to help reduce stress. Aerobics helps relax tense muscles, and a regular aerobics activity increases the body's production of endorphins (a natural sedative) and catecholamine (chemical substances that help stabilize moods). So, aerobics can makes you feel happy "Aerobic" means literally "with oxygen" in opposition to "anaerobic," which means without or with little oxygen. In order to understand what aerobic and anaerobic systems do in the human body, we must explain first what role they play during exercising. The major benefits of aerobic exercises are a stronger and more efficiently operating heart and lungs more energy physical flexibility, conditioned muscles, proper use of fats and effective burning of calories The increased oxygen flow gained through aerobics re-energizes by given you more energy and a 're-awakening' of your senses. [patrica patno -1985 (muscle aerobics the ultimate workout for body shaping) U.S.A]

Plyometric is known as jump training. It is designed to enhance muscular power and explosiveness. In fact, it consists of fast and powerful movements. Plyometric was created by Yuri Verkhoshansky in late 1960's. It was developed for Olympic athletics but now it is popular workout for everyone. Plyometric exercises burn more calories in various ways. In fact, plyometric make the muscle bigger stronger and improve endurance capabilities, in this way calories are burn at higher rate plyometric also enhance the metabolism which help in burning calories even when you do not perform any activity. Indeed, these exercise facilitate weightloss.

The obesity and overweight are the most serious health problems facing this nation and right now it is the most common disability in elementary school level according to the current statistics among the school children over 20 percent are having over weight and obese because of improper physical exercise program in their schools children who are obese may seen relatively health in their youth however they usually face serious medical complication later in their life these children may at higher for coronary heart disease, respiratory impairment, diabetes orthopedic problem and certain type of cancer may affected

Body mass index or BMI is a simple and widely used method for estimating body fat mass. BMI was developed in the 19th century by the Belgian statistician and anthropometries BMI is an accurate reflection of body fat percentage in the majority of the adult population. It however is less accurate in people such as body builders and pregnant women. A formula combining BMI, age and gender can be used to estimate a person's body fat percentage BMI is calculated by dividing the subject's mass by the square of his or her height, typically expressed either in metric or US "Customary" units:

Metric: $BMI = kilograms / meters^2$

Materials and Methods

To achieve this purpose, forty five students were selected from the ONGC PUBLIC SCHOOL Karaikal in the age group of 14 to17 years randomly with their consent. The selected subjects were divided into three equal groups of fifteen

subjects each, namely aerobic training group, plyometric exercise group and control group. The selected criterion variable was assessed using standard test and procedures before and after the training regime. Obesity was tested before (pre) and after (post) the training programme for both experimental and control group by using waist circumference. The selected subjects had undergone the aerobic and circuit training daily for twelve weeks. Aerobic training after get warm up (5minutes) underwent cycling, calisthenics, rhythmic exercises, continuous slow running, sit-ups. plyometric exercise also underwent Squat jumps, simple jumps, hurdle jumps, step jumps, jumping rope, jump on boxes, and single leg-hops. The control group did not participate in any specialized training programme during the period of study.

Statistical Analysis

ANCOVA was used to find out the significant differences in obesity between aerobic training group, plyometric exercise group and control group. BMI was tested before (pre) and after (post) the training programme for both experimental and control group by using waist circumference. They were statistically significant at 0.05 level of confidence.

Results of the Study

The descriptive analysis of data collected on selected waist circumference before and after twelve weeks of aerobic and plyometric exercise program is presented in table

Table: Analysis of Covariance on obesity of aerobic group, plyometric exercise and Control groups (Scores in Counts)

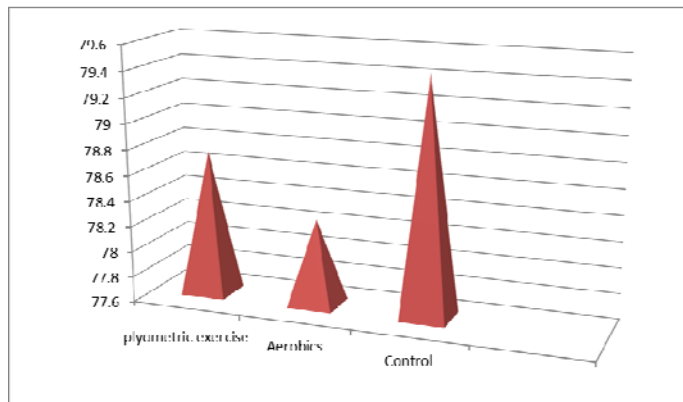
Means	Plyometric exercise Group	Aerobic training Group	Control Group	Source of variance	Sum of Squares	Df	Mean of Squares	Obtained F
Pre Test	78.16	78.94	80.71	Between	51.37	2	25.5	180.72
				Within	389.59	42	9.27	
Post test	77.77	77.98	80.71	Between	80.79	2	40.39	99.22
				Within	301.13	42	7.17	
Adjusted	78.73	78.27	79.45	Between	62.58	2	31.29	49.8
				Within	340.04	41	8.29	
Mean diff	-0.39	-0.96	00					

*Significant at 0.05 level

(The table value required for significant at .05 levels with df 2 and 42; and 2 and 41 respectively)

Table showed that the pre-test mean of obesity of plyometric exercise group was 78.16 aerobic Training group was 78.94 and that of control group was 80.71. The obtained 'F' ratio for pre-test was 180.72 which was higher than the table value. This showed that statistically there was significant difference

between the pre test means at .05 level of confidence. The post test of plyometric exercise group was 77.77, aerobic group was 77.98 and that of control group was 80.71 and they have an F ratio of 99.22 which was significant at 0.05 level of confidence. The difference post test means indicated that there was significant difference in waist circumference with in the aerobic training group after the training period.



Means	78.73	78.27	79.45
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Discussion

Several research studies suggest that aerobic exercise may be valuable for reducing the waist circumference. According to Peter, Olga 2007, varied aerobic training programme was clinically relevant effects on aerobic performance in adolescents severe obesity. School student have the opportunity to utilize the different modes of exercise in their day to day life. The main goal of the workout is to reduce the waist circumference, and every school students needs to choose which modes will suit him the best.

Conclusion

The result of this study shows that, the aerobic exercise has significant improvement on waist circumference among school obese student as compared to plyometric exercise group and control group.

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