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Effects of Aerobic Rhythmic Exercise and Weight Training On Vo2 Max among College Men Obese Students

T. Bharathi[1] & Dr. N. Bright Selva Kumar[2]

[1]Ph.D, Scholar, Department of Physical Education, Tamilnadu Physical Education and sports University, Chennai – 127
[2]Principal, Christian College of Physical Education, Nagercoil

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Abstract

The purpose of the study was to investigate effects of aerobic rhythmic exercise and weight training on vo2 max among college men obese students. The subjects were equally assigned to random sampling procedure into three equal groups, i.e., the experimental group I, II and control group. The experimental group I , II under gone the practices in aerobic rhythmic exercise and weight training. The control group not under went the any kind of training for the duration of the training programme of twelve weeks. The training was given in alternate days in a week. Each session scheduled for 60 minutes. The Vo2 max was measured before and after the experimentation using the standardized test (To ascertain VO_2 Max of the subjects, Cooper's formulae was used and accordingly Cooper's 12 Minutes run / Walk Test was administered). The data were analyzed by Analysis of Covariance (ANCOVA) and it was concluded that the selected yogic practices group than the control group had significant ($P < 0.05$) effect on the Vo2 max level.

Keywords: aerobic rhythmic exercise and weight training, Vo2 max and obese.

Introduction

Sports training is the basic form of an athlete's training. It is the preparation systematically organized with the help of exercises, which in fact is a pedagogically organized process of controlling an athlete's development. Sports Training is the physical, technical, intellectual, psychological and moral preparation of an athlete by means of physical exercise

The word training has been a part of human language since ancient times. It denotes the process of preparation for some task. This process invariable extended to a number of days and even months and years. The term 'training' is widely used in sports to achieve the high level of performance to a particular competition. Sports training is a systematic process extending over a long period. For best results the system of training has to be based and conducted on scientific facts and lines. Where it is not possible to do that, the training has to be based on the results of successful practice which has withstood the test of time. Sports science has still not been able to provide a scientific base for all the aspects and elements of training. Many things are still based on the results of successful practice which on deeper analysis is also a method of science to prove or disprove a theory.

Aerobic exercise is sometimes known as "cardio" -- exercise that requires pumping of oxygenated blood by the heart to deliver oxygen to working muscles. Aerobic exercise stimulates the heart rate and breathing rate to increase in a way that can be sustained for the exercise session. In contrast, anaerobic ("without oxygen") exercise is activity that causes to be quickly out of breath, like sprinting or lifting a heavy weight. Examples of aerobic exercises include cardio machines, spinning, running, swimming, walking, hiking, aerobics classes, dancing, cross country skiing, and kickboxing. There are many other types. Aerobic exercises can become anaerobic exercises if performed at a level of intensity that is too high. Aerobic exercise not only improves fitness; it also has known benefits for both physical and emotional health. Aerobic exercise can help prevent or reduce the chance of developing some cancers, diabetes, depression, cardiovascular disease, and osteoporosis. An aerobic exercise plan should be simple, practical, and realistic. Specific equipment (such as cardio machines) may be used but is not necessary for successful aerobic exercise.

Weight training is an effective tool for improving or maintaining strength, endurance, and overall fitness. It involves controlled movements of skeletal muscle in an effort to move an external load. This can be accomplished by using machines, free-weights, and exercises involving body weight. Individuals participating in a weight training program can expect improvement in body tone and strength. Incorporating a weight training program as part of a complete fitness plan will contribute to increased weight loss/control, balance and coordination, and a better overall sense of well-being.

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AIM OF THE STUDY

The aim and objective of the study was to investigate effects of aerobic rhythmic exercise and weight training on vo2 max among college men obese students.

REVIEW OF RELATED LITERATURE

(Goran Markovic, 2010) The aim of this study was to determine the precise effect of plyometric training (PT) on vertical jump height in healthy individuals. Meta-analyses of randomized and non-randomized controlled trials that evaluated the effect of PT on four typical vertical jump height tests were carried out: squat jump (SJ); countermovement jump (CMJ); countermovement jump with the arm swing (CMJA); and drop jump (DJ). Studies were identified by computerized and manual searches of the literature. Data on changes in jump height for the plyometric and control groups were extracted and statistically pooled in a meta-analysis, separately for each type of jump. A total of 26 studies yielding 13 data points for SJ, 19 data points for CMJ, 14 data points for CMJA and 7 data points for DJ met the initial inclusion criteria. The pooled estimate of the effect of PT on vertical jump height was 4.7% (95% CI 1.8 to 7.6%), 8.7% (95% CI 7.0 to 10.4%), 7.5% (95% CI 4.2 to 10.8%) and 4.7% (95% CI 0.8 to 8.6%) for the SJ, CMJ, CMJA and DJ, respectively. When expressed in standardized units (ie, effect sizes), the effect of PT on vertical jump height was 0.44 (95% CI 0.15 to 0.72), 0.88 (95% CI 0.64 to 1.11), 0.74 (95% CI 0.47 to 1.02) and 0.62 (95% CI 0.18 to 1.05) for the SJ, CMJ, CMJA and DJ, respectively. PT provides a statistically significant and practically relevant improvement in vertical jump height with the mean effect ranging from 4.7% (SJ and DJ), over 7.5% (CMJA) to 8.7% (CMJ). These results justify the application of PT for the purpose of development of vertical jump performance in healthy individuals.

METHODS AND MATERIALS

The sample for the present study consists of 45 college men obese students from Chennai city. The subjects were selected using random sampling method. Their age ranged from 18 - 24 years. They were divided into three groups namely Experimental group I, II and control group (n=45), Experimental group I was under the practice of aerobic rhythmic exercises, Experimental group II was under the practice of weight training for the period of 6 weeks both morning at 6.30 to 7.30 for the period of 6 weeks . The training programme was administered for 60 minutes per session. The control group did not engage in any special activities. The pre test and post test were taken before and after the experimental training programme. Analysis of covariance was used as a test of significance.

Results

The data pertaining to the variables under the study was examined by analysis of covariance for each criterion variables separately in order to determine the differences, if any between the groups at different stages.

TABLE-I
COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF VO2 MAX OF EXPERIMENTAL AND CONTROL GROUP

Test	Experimental Group – I (aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	41.873	41.353	40.947	Between	2	6.47244	3.23622	0.18
				Within	42	971.944	23.1415	
Post-test mean	45.820	44.447	41.160	Between	2	172.02	86.0095	5.51*
				Within	42	663.42	15.7956	
Adjusted mean	45.49	44.47	41.46	Between	2	131.229	65.6148	12.64*
				Within	41	221.146	5.39382	
Mean Gain	3.947	3.094	0.213					

* F(0.05) (2,42 and 2, 41) = 3.23. *Significant at 0.05 level of confidence.

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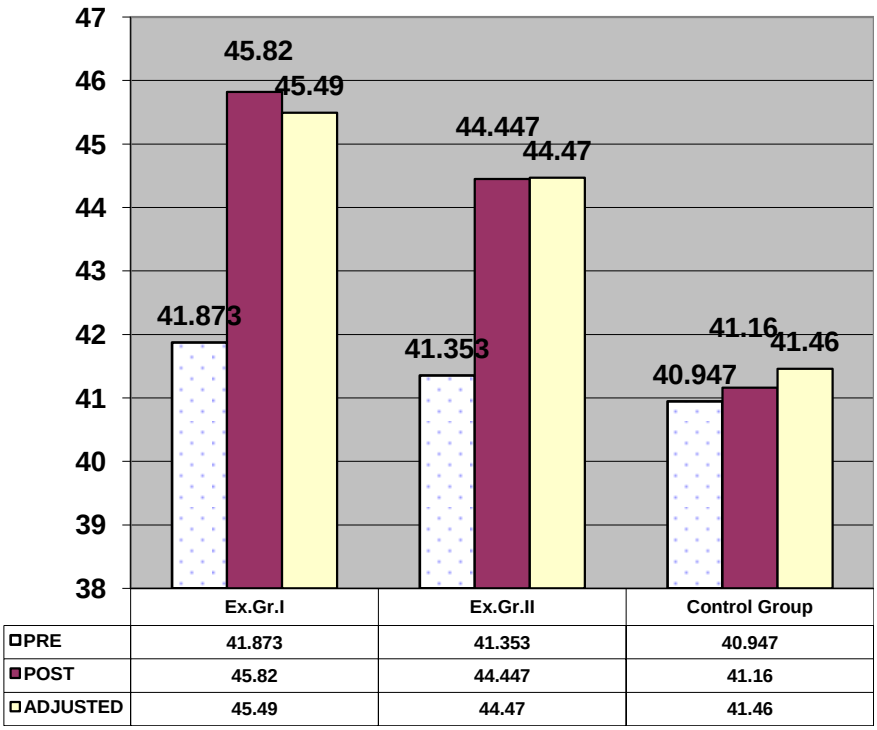
TABLE - II
SCHEFFE'S POST-HOC TEST FOR VO2 MAX

Experimental Group – I (Aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control Group	Mean difference	Required C.I
45.49	44.47		1.023	
45.49		41.46	4.0358*	
	44.47	41.46	3.0128*	*0.460*

FIGURE - 1
BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST-TEST VALUES OF CONTROL GROUP, TWO EXPERIMENTAL GROUPS ON VO2 MAX



	Ex.Gr.I	Ex.Gr.II	Control Group
PRE	41.873	41.353	40.947
POST	45.82	44.447	41.16
ADJUSTED	45.49	44.47	41.46

DISCUSSIONS ON THE FINDINGS OF VO2 MAX

Taking into consideration of the pretest means and posttest means adjusted posttest means were determined and analysis of covariance was done and the obtained F value 12.64 was greater than the required value of 3.22. And hence it was accepted that the aerobic rhythmic exercises, weight training significantly improved (increased) the Vo2 max level.

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between aerobic rhythmic exercises, weight training groups and control group on Vo2 max level. This proved that due to 6 weeks of aerobic rhythmic exercises, weight training groups in Vo2 max level was significantly improved (increased) among obese college students.

CONCLUSION OF THE RESEARCH

The analysis of co-variance of Vo2 max level indicated that experimental group I (aerobic rhythmic exercises), experimental group II (weight training), were significantly improved (increased) the Vo2 max level than the group III (Control group).

The findings of the study showed that the experimental group I (aerobic rhythmic exercises), had improvement Vo2 max more than the experimental

group II (weight training) were significantly improved (increased) the Vo2 max level.

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