Research Paper Physical Education

Effect of Aerobic Training on Selected Physical and Physiological Variables of College Obese Men Students

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ABSTRACT

The study was designed to investigate the effect of Aerobic Training on Selected Physical and Physiological Variables of College Obese Men Students. To achieve the purpose of the study forty students from Karpagam College of Engineering and Technology and Karagam University were selected as subjects and segregated into two groups of twenty subjects each as experimental group and control group following random procedure. The experimental group underwent Aerobic Training over a period of twelve weeks where as control group did not participate in any of the training except their regular play. Endurance were selected as Physical Variable whereas Vital Capacity were selected as Physiological variable and they were assessed before and after the experimental period by using Coopers 12 minutes run or walk test. ANCOVA was used to analyze the collected data. The results of this study showed that there was a significant difference between experimental group and control group on endurance and vital capacity.

KEYWORDS : Endurance,, Vital capacity, Analysis of Co variance (ANCOVA)

Introduction

Aerobic training is a process whereby the heart and lungs are trained to pump blood more efficiently, allowing more oxygen to be delivered to muscles and organs. Aerobic training is a determining factor in performance in events with duration greater than 2mins. On the athletics track this would include all events in excess of 800m. Physical fitness is generally achieved through correct nutrition, exercise, and enough rest. Endurance is the ability of an organism to exert itself and remain active for a long period of time, as well as its ability to resist, withstand, recover from, and have immunity to wounds, or fatigue. Obesity has become a major health, social and economical burden of today's world (James et al., 2004). It has now been well established that obesity directly increases cardio metabolic risk by altering the secretion of adipokines and, indirectly, by promoting insulin resistance and its associated metabolic disorders, such as Type-2 diabetes (Kopelman, 2000). For the physiological system of body to need fit, they must function well enough to support the specific activity the individual in performing. Moreover, different activities make different demands upon the organism with respect to circulatory, respiratory, metabolic and neurological process, which are specific to the activities. The lungs, heart and blood perform a vital function on the body's supply system. They supply to the muscles with necessary fuels, oxygen and carry waters such as carbon dioxide and lactic acid. Consequently, the cardio respiratory system in the athlete needs to be developed.

Methodology

The purpose of the study was to find out whether there would be any significant improvement on selected variables as an effect of aerobic training on selected physical and physiological variables of college obese men students. To achieve the purpose of the study forty students will be selected as the subjects for this study from Karpagam College of Engineering and Technology and Karagam University. The participants are randomly selected from students and assigned to Group – I (Aerobic Training Group) and Group – II (Control Group). Each group consisted of 20 subjects. After assigning the group all the students are administered with the criterion variable which is considering as a pre test. The experimental groups are treated with packages of exercise for the period of twelve weeks and the control group did not participate in any training. After the treatment period was over all the subjects were administered with the criterion measures which was considered as post test.

Table I
Type of Variables, Tests and Unit of Measurements

S.No.	Variables	Tests / Equipments	Units of Measurement
	Endurance	Cooper's 12 Minutes Run / Walk	Distance in meters
	Vital Capacity	Spirometer	CC / Milliliters

Aerobic Training Programs

The training period, the experimental groups underwent their respective training programs three days per week (Alternative days) for 12 weeks. During the training days they worked out for 45 to 60 minutes approximately including warming up and warming down periods. Another group acted as control group and they were instructed do not to participate in any strenuous physical exercises and specific training throughout the training program. However, they performed their regular activities as per the curriculum. Each group consists of 20 students. The Aerobic exercises such as long distance running, jump rope training, sit-ups, press-ups, crunches, pull ups, star jumps are crucial part of its training.

Collection of Data

The data were collected on the selected test items as per the methods described. The pre test was conducted before the experimental period. After Twelve weeks of the Experimental period, the post test was conducted and the data were collected for the study.

Test scores were subjected to statistical analysis The ANOCOVA were calculated for the physical and physiological variables. To find out significance of the difference or the change that occurred between pre-and-post tests.

Table II
COMPUTATION OF ANALYSIS OF COVARIANCE OF ENDURANCE

Group	Aerobic	Control	Source of Variance	Sum of Squares	df	Mean Squares	F
Pre Test Mean	1095	1099	Between	160	1	160	0.006
			Within	1084080	38	28528.42	
Post Test Mean	1568	1127	Between	1940402.5	1	11940402.5	53.12*
			Within	1387895	38	36523.55	
Adjusted Post Test Mean	1569	1126	Between	1964973.19	1	1964973.19	85.35*
			Within	851792.93	37	23021.43	

Table F-ratio at 0.05 level of confidence for 1 and 38 (df) = 4.08, 1 and 37 (df) = 4.08. * Significant

As shown in Table V, obtained F ratio of 0.006 on pre test means of the groups was not significant at 0.05 level. This shows that there was no significant difference among the means of the groups at the initial stage and the random assignment of the groups was successful.

The obtained F ratio on post test means was 53.12, which was significant at 0.05 level, the obtained F value was greater than the required F value of 4.08 to be significant at 0.05 level. Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done and the obtained F value 85.35 was greater than the required value of 4.08 and hence it was accepted that there was significant differences among the adjusted means on the engineering college obese men students.

Table III
COMPUTATION OF ANALYSIS OF COVARIANCE OF VITAL CAPACITY

Group	Aerobic	Control	Source of Variance	Sum of Squares	df	Mean Squares	F
Pre Test Mean	3790	3357	Between	45562.50	1	45562.5	1.03
			Within	1669375	38	43930.92	
Post Test Mean	3560	3365	Between	380250	1	380250	9.64*
			Within	148500	38	39434	
Adjusted Post Test Mean	3591	3334	Between	638176.04	1	638176.04	177.38*
			Within	133111.71	37	3597.61	

Table F-ratio at 0.05 level of confidence for 1 and 38 (df) = 4.08, 1 and 37 (df) = 4.08. * Significant

As shown in Table VI, obtained F ratio of 0.186 on pre test means of the groups was not significant at 0.05 level. This shows that there was no significant difference among the means of the groups at the initial stage and the random assignment of the groups was successful.

The obtained F ratio on post test means was 9.64, which was significant at 0.05 level, the obtained F value was greater than the required F value of 4.08 to be not significant at 0.05 level. Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done and the obtained F value 177.38 was greater than the required value of 4.08 and hence it was accepted that there was significant differences among the adjusted means on the engineering college obese men students.

Conclusion:
The twelve weeks aerobic training programme on the engineering college obese men students has proved to be effective on selected physical and physiological variables and it's significant at 0.05 level of significance.

References:

1. McGuire S, Shields M, Carroll MD, Ogden CL. Adult obesity prevalence in Canada and the United States. NCHS data brief no. 56, Hyattsville, MD: National Center for Health Statistics, 2011. Adv Nutr.2011;2:368–369.
2. Gleim (1993) cited by Green S. and Dowson B,(2002) Measurement of Aerobic Capacity in Humans, University of Western Australia
3. Barrow, Harold H. and Rose Mary, Mc Gee (1974), A Practical Approach to Measurement in Physical Education, Philadelphia: Lea and Febiger.
4. David H. Clarke and H. Harrison Clarke, (1970) Advanced Processes in Physical Education Recreation and Health, Englewood Cliffs, N.J. Prentice Hall., Inc.
5. Dhiman, O.P. (1987), Foundation of Education, Delhi: Atmarmand Sons.
6. Dick, Frank W., (1992), Sports Training Principles, Cambridge, University Press.
7. Doherty Kenneth J, (1976). Modern Track and Field, Englewood Cliffs, New Jersey: Prentice Hall Inc.P. 87
8. Eva Lurie Weinerb, (1984).. Anatomy & Physiology, London: Addison Weseley Publishing Company, P.394.