Email:editorijless@gmail.com Volume: 4, Issue 3, 2017 (July-Sept)

INTERNATIONAL JOURNAL OF LAW, EDUCATION, SOCIAL AND SPORTS STUDIES (IJLESS)

http://www.ijless.kypublications.com/

ISSN:2455-0418 (Print), 2394-9724 (online)
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International Journal of Law, Education, Social and Sports Studies (IJLESS)
Volume: 4, Issue 3, 2017 (July-Sept.);Page 63-66
ISSN:2455-0418 (Print), 2394-9724 (online)
Research Article

EFFECT OF ISOLATED AND COMBINED TRAINING OF AEROBIC AND YOGA ON VO_2 MAX AMONG SCHOOL STUDENTS

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ABSTRACT
The purpose of the study was to find out the effect of isolated and combined training of aerobic and yoga on VO_2 max among school students. To achieve this purpose of the study, sixty school girls were selected as subjects who were from the INDUS International School, Bangalore. The selected subjects were aged between 15 to 18 years. They were divided into four equal groups of fifteen each, Group I underwent aerobic training, Group II underwent yogic training, Group III underwent combined training and Group IV acted as control that did not participate in any special training apart from their regular curricular activities. The subjects were tested on selected criterion variable such as vo_2 max prior to and immediately after the training period. The selected criterion variable such as vo_2 max was determined through using Treadmill. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variable. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. The result of the present study has revealed that there was a significant difference among the experimental and control group on vo_2 max.

KEYWORDS: aerobic training, yoga training, combined training, vo_2 max, school students**.**

1. INTRODUCTION

The primary objective of sports training is to stress various bodily systems to bring about positive adaptation in order to enhance sporting performance. To achieve this objective, coaches and athletes systematically apply a number of training principles including overload, specificity and progression, organized through what is commonly termed periodization. The application of these principles involves the manipulation of various programme design variables including choice of exercise, order of training activities/exercises, training intensity (load and repetition), rest periods between sets and activities/exercises and training frequency and volume in order to provide periods of stimulus and recovery, with the successful balance of these factors resulting in positive adaptation(1). Aerobic exercise refers to exercise that involves or improve oxygen consumption by the body. Aerobic training increased cardio-respiratory endurance, which in turn increased Vo_2 max, because of it increased level of hemoglobin. The physiological response to dynamic aerobic exercise

is an increase in oxygen consumption and heart rate that parallels the intensity of the imposed activity and a curvilinear increase in stroke volume. The cardiovascular system, composed of the heart, blood vessels and blood responds predictably to the increased demands of exercise. With few exceptions, the cardiovascular response to exercise is directly proportional to the skeletal muscle oxygen demands for any given rate of work and oxygen uptake increases linearly with increasing rates of work (2). Pranayama is the control of the prana and the vital forces of the body. It is regulation of the breath. Pranayama begins with the regulation of the breath for having control over the life-currents through the control of breath. Breath is the external manifestation of the gross prana. A correct habit of breathing must be established by the regular practice of pranayama.Breathing is one of the life. It is one of our most vital functions. One of the five principles of yoga is pranayama or breathing exercise, which promotes proper breathing. Proper breathing, in a yogic point of view, is to bring more oxygen to the blood and to the brain, and to control prana or vital life of energy (3). Pranayama the science of breath control consists a series of exercises intended to meet these needs and to keep the body in vibrant health. Yogic techniques, which aim at physical and mental self-culture, have convincing scientific bases and produce consistent physiological changes. It has been reported that yogis are capable of achieving remarkable feats of endurance and controlling their autonomic functions. There is evidence that the practice of yoga improves cardio-respiratory efficiency and performance quotient (4).A person's maximum oxygen uptake is a function of cardiac output multiplied by the arterial-mixed venous oxygen difference. Cardiac output thus plays an important role in meeting the oxygen demands for work. As the rate of work increases, the cardiac output increases in a nearly linear manner to meet the increasing oxygen demand, but only up to the point where it reaches its maximal capacity. The resting heart rate can be obtained through auscultation, palpation or ECG recordings. When taking heart rate by auscultation, the bell of the stethoscope is placed to the left of the sternum, just above the level of the nipple. The heart beats can be counted

Maximal Oxygen Consumption (VO_2 Max)

VO_2 max (also maximal oxygen consumption, maximal oxygen uptake, peak oxygen uptake or maximal aerobic capacity) is the maximum rate of oxygen consumption as measured during incremental exercise, most typically on a motorized treadmill. Maximal oxygen consumption reflects the aerobic physical fitness of the individual, and is an important determinant of their endurance capacity during prolonged, sub-maximal exercise. The name is derived from V - volume, O_2 – oxygen, max - maximum. VO_2 max is expressed either as an absolute rate in (for example) liters of oxygen per minute (L/min) or as a relative rate in (for example) milliliters of oxygen perkilogram of body mass per minute (e.g., ml/(kg·min)). The latter expression is often used to compare the performance of endurance sports athletes (5).

2. MATERIALS AND METHODS

In the present study all the students studying in educational institution of INDUS International School, Bangalore area were considered as population for the study. A representative sample of 60 school students in the age of 15-18 years was chosen as sample for the study. The selected participants were divided into four groups. Group I underwent aerobic training, Group II underwent yogic training, Group III underwent combined training and Group IV acted as control that did not participate in any special training apart from their regular curricular activities. The experimental groups underwent twelve weeks of training in their particular workout. For this study dependent variable is vo_2 max. Pre-test data were collected two days before the training program and post-test data were collected two days after the training program. The collected data treated with ANCOVA. Level of confidence was fixed at 0.05. If obtained 'F' ratio significant scheffe's post hoc test were used (6).

2.1 Measurement of vo_2 max

VO_2 max (maximal oxygen uptake) was predicted using a sub maximal treadmill test on a motor driven treadmill. The test began at a speed with which each subject could jog comfortably. After 3 minutes when a steady state heart rate (HR) was achieved, the speed and heart rate was recorded VO_2 max was predicted using the following formula.

The estimated VO_2 max can be calculated in ml/kg/min.

VO_2 max = 54.07 – 0.1938 × Body weight + (4.47 × Speed/1.6) – 0.1453 × heart rate + 7.62 × gender

where: speed = km/h, gender = 1 for men, 0 for women and body weight = kg (7).

3. RESULTS AND DISCUSSION

The statistical analyses of Vo_2 max due to aerobic training, yoga training, combined training and control group have been presented in Table I.

TABLE – I: COMPUTATION OF ANALYSIS OF COVARIATION ON VO_2 MAX

TEST	E.G. I	E.G. II	E.G. III	C.G.	F
PRE TEST	35.46	35.18	35.42	35.24	1.61
POST TEST	39.88	40.42	40.63	35.43	11.56*
ADJUSTED	39.86	40.48	40.72	35.41	21.22*

The table I show that the pre-test values on vo_2 max for aerobic training, yoga training, combined training and control groups were 35.46, 35.18, 35.42 and 35.24 respectively. The obtained 'F' ratio value of 1.61 for pre-test score of aerobic training, yoga training, combined training and control groups on vo_2 max was less than the required table value of 2.70 for significance with df 3 and 56 at 0.05 level. The post-test means of vo_2 max for aerobic training, yoga training, combined training and control groups were 39.88, 40.42, 40.63 and 35.43 respectively. The obtained 'F' ratio value of 11.56 for post-test scores of aerobic training, yoga training,combinedtraining and control groups was more than the required table value of 2.70 for significance with df 3 and 56 at 0.05 level. The adjusted post-test means of vo_2 max for aerobic training, yoga training, combined training and control groups were 39.86, 40.48, 40.72 and 35.41 respectively. The obtained 'F' ratio value of 21.22 for adjusted post-test scores of aerobic training, yoga training, combined training and control groups were higher than the required table value of 2.72 for significance with df 3 and 55 at 0.05 level. The results of the study indicate that there is a significant difference between vo_2 max for aerobic training, yoga training, combined training after respective training for a period of 12 weeks, Scheffe's post-hoc test was applied and the results are presented in Table –II.

Table II: SCHEFFE'S TEST FOR THE ADJUSTED POST-TEST PAIRED MEANS OF VO2 MAX

Adjusted Post-Test Means				Mean Diff.	Class Interval
AT	**RT**	**CT**	**CG**		
39.86	40.48			0.62	3.56
39.86		40.72		0.86	
39.86			35.41	4.45*	
	40.48	40.72		0.24	
	40.48		35.41	5.07*	
		40.72	35.41	5.31*	

The results presented in table IIshows that the mean difference between aerobic training group and control group was 4.45, yoga training group and control group was 5.07 and combined training group and control group was 5.31, which were higher than the required confidence interval value of 3.56. However, all the experimental groups have significant difference when compare to the control group and also there was no significant difference between the experimental groups.

The results of analysis of covariance on vo_2 max showed that there was a significant difference existed between control group and aerobic training, yoga training and combined training groups. Thus, twelve weeks of experimental treatment influences in vo_2 max of the school girls compared to control group, and it was found there wouldn't any significant difference between the experimental groups. The above findings are in consonance with the study conducted by Mughal and others (8) and Zabihoiah Tarasi and others (9).

REFERENCES

[1]. Reena Kirtani, **Physical Fitness for Health**, Delhi: Vivek Thani Publications, 2003: 45-48.

[2]. Sharon Kay Stoll and Jennifer Marie Beller, **The Professional's Guide to Teaching Aerobics** (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1989), 5.

[3]. Swami Sivanand, ***Yogic Home Exercise,*** [Bombay: D.B. Taraporevala Sons and Co., Pvt. Ltd., N.D. 2005], 21.

[4]. Madanmohan, *et al.,* "Effect of Yoga Training on Reaction Time, Respiratory Endurance and Muscle Strength" ***Indian J. Physiol. Pharmac., (2004);* 36(4),** 229.

[5]. American College of Sports Medicine (2006) ***ACSM's Guidelines for Exercise Testing and Prescription***, Philadelphia: Lippincott Williams and Wikins.

[6]. Clarke H. Harrison (1976), ***Application of Measurement to Health and Physical Education,*** Englewood Cliffs, New Jersey: Prentice Hall Inc., 152.

[7]. Dlugosz, E. M., et al., 2013. Phylogenetic analysis of mammalian maximal oxygen consumption during exercise. ***Journal of Experimental Biology*** 216:4712-4721.

[8]. Mughal M.A. et. al, (2001), "The Effects of Aerobic Exercise Training on Resting Blood Pressurein Hypertensive Patients", ***Journal of Pakistan Medical Association***, 51:222.

[9]. Zabiholah Tarasi, et. al, (2011) "The Effect of the Sequence of Concurrent Strength and Endurance Training on Aerobic Capacity, Anaerobic Capacity and Maximum Strength of Male Adolescents", ***Australian Journal of Basic and Applied Sciences***, 5(10).