

## EFFECT OF YOGIC PRACTICE AND AEROBIC EXERCISE ON BREATH HOLDING TIME AND FLEXIBILITY AND MUSCULAR ENDURANCE AMONG COLLEGE AGED MALE STUDENTS

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### Abstract

*The purpose of the study was to find out the effect of yogic practices and aerobic exercise on breath holding time, flexibility and muscular endurance. Thirty college male students from various departments of Annamalai University, aged between 18 and 22 years were selected for the study. They were divided into three equal groups, each group consisted of ten subjects, in which Group I underwent yogic practice and group II underwent aerobic exercise (walk-jog-walk programme), five days per week for twelve weeks and group III acted as control, who did not participate in any training. The subjects were tested on selected criterion variables such as breath holding time, flexibility and muscular endurance at prior to and immediately after the training period. Breath holding time was assessed by holding the breath for maximum duration in seconds. Flexibility and muscular endurance was measured by conducting sit and reach test and sit-ups test. Analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups and control group on selected criterion variables separately. Since, there were three groups involved, the Scheffé S test was used to find out which of the adjusted post test mean was differ significantly. The selected criterion variables such as breath holding time was increased significantly for both the training groups when compared with the control group and the flexibility and muscular endurance were also improved significantly for yogic practice group and aerobic exercise group. The aerobic exercise group has increased the breath holding time, flexibility and muscular endurance significantly than the yogic practice group and control group.*

**Keywords:** Yogic Practices, Aerobic Exercises, Breath holding time, Flexibility, Muscular Endurance.

### INTRODUCTION

Yoga is an ancient philosophical and religious tradition, which is thought to have originated in India in at least 1000 B.C. It refers to a large body of values, attitudes and techniques whose primary objective is the pursuit of enlightenment or self-knowledge. The word yoga is probably derived from the Sanskrit word "Yuj" which means to "unite" or "connect" and, in the higher levels of yoga, this is often said to mean the experience of union of the individual self with the universal self. Yogasanas are Indian's unique contribution to physical education. Yoga and physical education may be compared to two bullocks hitched to shaft as they are for the judicious blending of the education of body and the mind. There is no denial of the fact that yoga and physical education attach importance by gaining the benefits of physical health, mental health, physical fitness and peace of mind through their regular practices. Physical education concerns with anatomical aspects of the physique with its physiological reactions for a given activity. The ultimate aim of which is to enjoy a good health and optimum fitness. Yoga is providing a multidimensional development and it has now become an adjunct to physical education.

Aerobic exercise uses continuous, rhythmic movement of large muscle groups to strengthen your heart and lungs (cardiovascular system). When you

exercise, your muscles demand more oxygen-rich blood. This makes your heart beat faster to keep up. When you follow a program of regular aerobic exercise, your cardiovascular system grows stronger and can meet the muscles' demands without as much effort. In addition, your muscles adapt and become more efficient at performing activity. Aerobic exercise includes any type of exercise, typically those performed at moderate levels of intensity for extended periods of time, that maintains an increased heart rate. In such exercise, oxygen is used to "burn" fats and glucose in order to produce adenosine triphosphate, the basic energy carrier for all cells. Initially during aerobic exercise, glycogen is broken down to produce glucose, but in its absence, fat metabolism is initiated instead. The latter is a slow process, and is accompanied by a decline in performance level. The switch to fat as fuel is a major cause of what marathon runners call "hitting the wall." There are various types of aerobic exercise. In general, aerobic exercise is one performed at a moderately high level of intensity over a long period of time. For example, running a long distance at a moderate pace is an aerobic exercise, but sprinting is not.

Flexibility which is considered as range of motion around a joint is the base for any movement. To pick up a small object, to sit, stand and to plant a nail

into the well one should have flexibility though other factors like strength are also essential. Muscular endurance is very important for people playing sports and who have to sustain an activity for long periods of time. Muscular endurance is determined by how well your slow twitch muscle fibers are developed.

#### METHODOLOGY

The purpose of the study was to find out the effect of yogic practices and aerobic exercise on breath holding time, flexibility and muscular endurance. To achieve this purpose of the study, thirty college aged male students, studying in various departments of Annamalai University, aged between 18 and 22 years were contacted and randomly selected as subjects. They were divided into three equal groups, each group consisted of ten subjects in which, Group I underwent yogic practices and group II underwent aerobic exercises

(walk-jog-walk) five days per week for twelve weeks and group III acted as control, who did not participate in any training. The subjects were tested on selected criterion variables such as breath holding time, flexibility and muscular endurance at prior to and immediately after the training period. The selected criterion variables such as breath holding time was assessed by holding the breath for maximum duration in seconds, flexibility was measured by conducting sit and reach test and muscular endurance was measured by conducting sit-ups test. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate.

**TABLE - I**  
**ANALYSIS OF COVARIANCE AND 'F' RATIO FOR BREATH HOLDING TIME, FLEXIBILITY AND MUSCULAR ENDURANCE FOR YOGIC PRACTICE, AEROBIC EXERCISE AND CONTROL GROUPS**

Variable Name	Group Name	Yogic Practice Group	Aerobic Exercise Group	Control Group	'F' Ratio
Breath holding time (Seconds)	Pre-test Mean $\pm$ S.D	25.17 $\pm$ 3.25	19.62 $\pm$ 4.03	21.14 $\pm$ 2.96	0.22
	Post-test Mean $\pm$ S.D.	22.19 $\pm$ 2.69	22.38 $\pm$ 4.28	20.65 $\pm$ 3.28	5.86*
	Adj. Post-test Mean $\pm$ S.D.	24.828	24.916	20.056	45.37*
Flexibility (Inches)	Pre-test Mean $\pm$ S.D	7.95 $\pm$ 0.68	7.75 $\pm$ 0.49	7.25 $\pm$ 0.71	0.98
	Post-test Mean $\pm$ S.D.	8.49 $\pm$ 0.76	8.45 $\pm$ 0.97	7.15 $\pm$ 0.95	45.89*
	Adj. Post-test Mean $\pm$ S.D.	8.561	8.157	7.158	63.79*
Muscular Endurance (Numbers/min)	Pre-test Mean $\pm$ S.D	34.4 $\pm$ 0.9661	34.0 $\pm$ 0.8165	34.7 $\pm$ 1.1595	1.257
	Post-test Mean $\pm$ S.D.	36.0 $\pm$ 1.333	35.8 $\pm$ 0.7888	34.3 $\pm$ 1.0594	37.353*
	Adj. Post-test Mean $\pm$ S.D.	35.814	35.855	34.431	54.483*

\* Significant at .05 level of confidence.

(Table value required for significant at .05 level of confidence with df 2 and 27 and 2 and 26 are 3.35 and 3.37).

**TABLE - II**  
**SCHEFFÉ S TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST MEAN OF SELECTED**  
**CRITERION VARIABLES**

<i>Adjusted Post-test Mean on Breath holding time</i>				
<b>Yogic Practice Group</b>	<b>Aerobic Exercise Group</b>	<i>Control group</i>	<b>Mean Difference</b>	<b>Confidence interval at .05 level</b>
24.828	24.916		0.088	1.798
24.828		20.056	4.769*	1.798
	24.916	20.056	4.86*	1.798
<i>Adjusted Post-test Mean on Flexibility</i>				
<b>Yogic Practice Group</b>	<b>Aerobic Exercise Group</b>	<i>Control group</i>	<b>Mean Difference</b>	<b>Confidence interval at .05 level</b>
8.561	8.157		0.304	0.593
8.561		7.158	1.403*	0.593
	8.157	7.158	0.999*	0.593
<i>Adjusted Post-test Mean on Muscular Endurance</i>				
<b>Yogic Practice Group</b>	<b>Aerobic Exercise Group</b>	<i>Control group</i>	<b>Mean Difference</b>	<b>Confidence interval at .05 level</b>
35.814	35.855		0.041	1.2671
35.814		34.431	1.383*	1.2671
	35.855	34.431	1.424*	1.2671

\* Significant at .05 level of confidence.

## RESULTS

Table – I showed that there was a significant difference among yogic practice group, aerobic exercise group and control group on breath holding time, flexibility and muscular endurance.

Table – II showed that the Scheffé S Test for the difference between adjusted post-test mean difference in breath holding time between yogic practice group and control group (4.769) and aerobic exercise group and control group (4.86) which was significant at .05 level of confidence. But there was no significant difference between yogic practice group and aerobic exercise groups (0.088) on breath holding time after the respective training programme.

Table – II showed that the Scheffé S Test for the difference between adjusted post-test mean flexibility yogic practice group and control group (1.403) and aerobic exercise group and control group (0.999), which were significant at .05 level of confidence. But there was no significant difference between yogic practice group and aerobic exercise groups (0.593) on flexibility after the respective training programme.

Table – II also shows that the Scheffé S Test for the difference between adjusted post-test mean difference in muscular endurance between yogic practice group and control group (1.383) and aerobic exercise group and control group (1.424) which, were significant at .05 level of confidence. But there was no significant

difference between yogic practice group and aerobic exercise groups (0.041) on muscular endurance after the respective training programme.

## CONCLUSIONS

Based on the results of the study, the following conclusions were drawn:

1. It was concluded from the result of the study that there was a significant increase in breath holding time for experimental groups when compared with control group. But there was no significant difference between the experimental groups on breath holding time.
2. Yogic practice group and aerobic exercise group showed significant improvement in flexibility as compared to control group. There was no significant difference found between yogic practice group and aerobic exercise group on flexibility.
3. It was concluded from the result of the study that there was a significant improvement in muscular endurance for both the experimental groups when compared with control group. But there was no significant difference between the experimental groups on breath holding time.

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