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Effect of yogic exercises on aerobic capacity

Dr. S Sethu

Assistant Professor, Dept. of Physical Education and Sports, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract
The study was aimed at to find out the effect of yogic exercises on aerobic capacity (Vo2 max) among school boys. To achieve the purpose of the study, thirty school boys (n=30) from Good Shepherd Matriculation Higher Secondary School, Nagercoil were selected as subjects at random. The age category was under 19. All the subjects were divided in to two groups with 15 subjects each as experimental and control group. Group I underwent yogic exercises for a period of six weeks of five days per week and group II acted as control who did not participate in any special training other than the regular routine. Vo2 max was selected as dependent variable and it was tested by using beep test. Pre and post-test random group design was used for this study. The dependent "t" test was applied to determine the difference between the means of two groups. To find out whether there was any significant difference between the experimental and control groups on adjusted post-test means the analysis of covariance was used. To test the level of significant of difference between the means 0.05 level of confidence was fixed. It was concluded that, there was a significant improvement takes place on aerobic capacity (Vo2 max) of school boys due to the effect of six weeks of yogic exercises also, there was a significant difference exists between experimental and control groups on aerobic capacity (Vo2 max).

Keywords: Yogic Exercises, Aerobic, Capacity

1. Introduction

Now-a-days, more persons are interested in 'physical fitness' than any time before. Physical fitness depends mainly on cardio-respiratory endurance of an individual. Vo2 max (maximal oxygen uptake / maximal aerobic power/ aerobic capacity) is widely accepted as the best measure of cardio-respiratory endurance. Vo2 max refers to the level of oxygen consumption beyond which no further increase in oxygen consumption occurs with further increase in the severity of exercise. It is expressed as 'milliliters of oxygen used in one minute per kilogram of body weight' (ml/kg/min). Vo2 max is probably the best physiological indicator of a person's capacity to continue severe work. In sports, where endurance is an important component in performance, such as cycling, rowing, cross-country skiing, swimming and running (William, D., McArdle., Frank Katch, I., & Victor Katch, L. 2001) [12].

Exercise is one of the important tools used by physiologists in understanding coordinated function of several systems in the body. Recent advancements in understanding physiology of exercise have shown that regular physical activity promote health and prevent many diseases. Yoga is an ancient system of Indian philosophy. It has been practiced for health and well-being. Several researches have shown that regular practice of yoga improves health and well-being.1-4. The word "yoga" comes from a Sanskrit root "yuj" which means union, or yoke, to join, and to direct and concentrate one's attention (Astrand, P. O., & Rhyming, I. A., 1954) [2].

2. Statement of the Problem

The study was aimed at to find out the effect of yogic exercises on aerobic capacity among school boys.

3. Methodology

The collected data were statistically analysed and presented in the following tables.

Table I: The Summary of Mean and Dependent 'T' Test For the Pre and Post Tests on Aerobic Capacity of Experimental and Control Groups

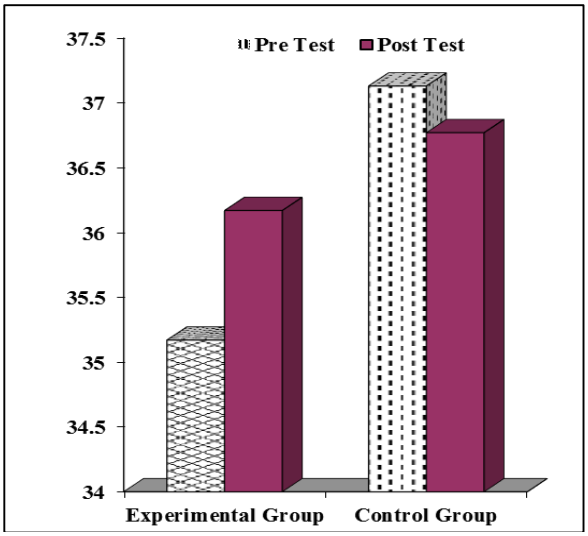
Group	Number	Mean		t-value
		Pre Test	Post Test	
Experimental group	15	35.17	36.17	20.49*
Control group	15	37.13	36.77	2.02

* Significant at 0.05 level

Table 2: Analysis of Covariance (Ancova) on Aerobic Capacity of Experimental and Control Groups

Adjusted Post Test Means		Source of Variance	Sum of Squares	df	Mean Square	F - ratio
Experimental Group	Control Group					
37.13	35.81	Between	12.891	1	12.891	63.55*
		Within	5.477	27	0.203	

* Significant at 0.05 level. (The table value required for significance at 0.05 level with df 1 and 27 is 4.21)



Mean Values for the Pre and Post Tests on Vo_2 Max of Experimental Group and Control Group

Results and Discussion

The result of the study indicated that the experimental group had significantly improved on aerobic capacity. However control group showed insignificant.

The results of the study also indicated that there is a significant mean difference exist between the adjusted post-test means of experimental and control group on aerobic capacity. The results obtained in this study were similar to that of the following,

Raju *et al* (1986) [10] who found that significant reduction of post exercise minute ventilation and oxygen consumption after 90 days of yoga training. Bouchard and malina (1983) [5] showed that upto 60% of variance in physical fitness is attributed to environmental and behavioral factors.

Catherine Woodward (2011) [6] shows that yogic practices enhance muscular strength and body flexibility, promote and improve respiratory and cardiovascular function, and enhance overall well-being and quality of life. Balsubramanian B, Pansaare MS (1991) [3] and Karambulkar & Balasubramanan (1985) [8] had shown improvement in aerobic power and significant increase in cardiovascular endurance after yoga training.

In a similar setting by Ganguly S.K (1981) [7] has shown that short term yoga training produced several beneficial effects on cardiovascular efficiency of subjects. Andreacci *et al* (2005) [1] have showed that Vo_2 max in children mainly depends on haemoglobin concentration, while obese black children were less active when compared with their white peers and was significantly correlated to cardiovascular fitness.

Ray U.S. *et al* (2001) observed significant improvement in Vo_2 max after Yogic training. Raju P.S. *et al* (1997) [9] have found a significant increase in oxygen consumption per unit work after yoga training. Bera T.K and Rajapurkar M.V (1993) [4] reported significant improvement in cardiovascular endurance as a result of yoga training.

It is inferred from the above literature and from the result of the present study, Vo_2 max is very importance for physical performance as well as for the health in general. So, Vo_2 max is a fundamental measure of physiologic functional capacity for exercise. The yoga training regime used in the present study was sufficient intensity and duration to produce significant changes in Vo_2 max.

Thus this study suggests that regular yoga practice improves aerobic capacity in school children. Research on particular set of Yogic exercises like only selected asanas or pranayama is required and also further research with large sample size and for varied age groups is required for applying these results to population in general.

Conclusions

On the basis of the interpretation of the data, the following conclusions may be drawn.

1. There was a significant improvement takes place on aerobic capacity (Vo_2 max) of school boys due to the effect of six weeks of yogic exercises.
2. There was a significant difference exists between experimental and control groups on aerobic capacity (Vo_2 max).

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