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Effect of Yogasana and Pranayama on Selected Physiological Variables among School Boys

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Abstract

The purpose of the present study was to find out the influence of yogasana and pranayama on selected physiological variables (resting pulse rate and maximal oxygen uptake ($VO_{2\ max}$). To achieve this purpose, thirty boys from various higher secondary schools around Cuddalore, Tamilnadu, India served as subjects. These subjects were divided into two groups group I was experimental (n=15) and group II acted as control (n = 15). The control group was not engaged in yogasana and pranayama training. The experimental group was engaged in yogasana and pranayama training. The pre and post-test data were analysed by analysis of co-variance (ANCOVA), the process by which pre-test mean differences can be adjusted to the pre – test means. Since, only two groups were involved in this study, the Scheffe'S post-hoc test was not used whenever the 'F' ratio for adjusted post-test mean was found to be significant. In all the cases 0.05 level of confidence was selected to reject the null hypothesis. Yogasana and pranayama training showed a significant decrease in resting pulse rate. Yogasana practices group showed a significant increase in maximal oxygen uptake.

Keywords: Resting Pulse Rate, Maximum Oxygen Uptake ($VO_{2\ max}$), School Boys.

Introduction

Yoga is an ancient system of breathing practices, physical exercises and postures, and meditation intended to integrate the practitioner's body, mind, and spirit. It originated in India several thousand years ago, and its principles were first written down by a scholar named Patanjali in the second century B.C. The word yoga comes from a Sanskrit word, yukti, and means "union" or "yoke." The various physical and mental disciplines of yoga were seen as a method for individuals to attain union with the divine. In the contemporary West, however, yoga is more often regarded as a beneficial form of physical exercise than as a philosophy or total way of life. As of 2002, more than six million people in the United States were practicing some form of yoga, with 1.7 million claiming to practice it regularly.

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 the 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. The word yoga is derived from the Sanskrit root yuj meaning to bind, join, attach and yoke, to direct and concentrate one's attention on, to use and apply. It also means union or communion. It is the true union of our will with the will of god. "It thus means", says Mahadev Desai in his introduction to the Gita according to Gandhi, "The yoking of all the power of body, mind and soul to God; it means the disciplining of the intellect, the mind, the emotions, the will, which that yoga presupposes; it means a poise of the soul which enables one to look at life in all its aspects evenly.

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Methodology

To achieve the purpose of the study 30 boys studying at, various higher secondary schools around Cuddalore, Tamilnadu, India were selected as subjects and their age ranged between 15 to 17 years. Subjects were selected at random by lot procedure. They were asked to undergo medical checkup and were found to be normal, healthy and fit enough to undergo training. Group I undergo training (n = 15) and Group II acted as control (n = 15). The data were collected with the help of trained physical education scholars. The investigation reviewed the available scientific literature pertaining to yogasana and pranayama from books, journal, periodical and research articles. Resorting from the review of literature and discussions with the experts and

considering the feasibility criteria of the study and the relevance of the variables of the present study. In the present study yogasana and pranayama is consider as independent variables. The following are dependent variables: Resting Pulse Rate, Maximum Oxygen Uptake ($VO_{2\ max}$).

Statistical Analysis

The data collected from experimental and control groups prior to and after experimentation on selected physiological, psychological and physical fitness variables – i.e., pulse rate and maximal oxygen up take ($VO_{2\ max}$) were statistically examined for significant differences, if any, by applying the analysis of covariance (ANCOVA).

Results

The data of pulse rate before and after the training of experimental and control groups were analysed and presented in Table – I.

Table I. Analysis of covariance for the data on pulse rate of experiment and control groups

	Experimental Group	Control Group	Source of Variance	Sum of Square	df	Mean Square	'F' ratio
Pre-test Mean	69.80	69.40	Between	2.80	1	2.80	0.81
S.D.	2.10	2.03	Within	96.23	28	3.43	
Post-test Mean	66.30	69.30	Between	9.89	1	9.89	5.53*
S.D.	2.91	2.87	Within	50.20	28	1.79	
Adjusted Post-test Mean	65.19	68.41	Bet ween	13.71	1	13.71	7.91*
			Within	46.65	27	1.73	

*Significant .05 level of confidence, (the table values required for significance at .05 level of confidence with df 1 and 28 and 1 and 27 were 4.20 and 4.21 respectively).

Table I indicated that the pre-test mean of pulse rate between experimental group and control group were 69.80 ± 2.10 and 69.04 ± 2.03 respectively. The obtained 'F' ratio of 0.81indicated that the pre-test means was not significant at 0.05 level of confidence. The Post-test mean of pulse rate between the experimental group and control group was 66.30 ± 2.91 and 69.30 ± 2.87 respectively. The 'F' ratio of 5.53 indicated that the post-test means was significant at 0.05 level of confidence. The adjusted post-test means of pulse rate between experimental group and control group were 65.19 and 68.41 respectively. The obtained 'F' ration was 7.92 and it was greater than the tabulated 'F' ratio for degree of freedom 1 and 27 was 4.21. It was concluded that there was a significant improvement after the experimental period. The data of maximal oxygen uptake before and after the training of experimental and control groups were analysed and presented in Table – II.

Table II. Analysis of covariance for the data on maximal oxygen uptake of experimental and control groups

	Experimental Group	Control Group	Source of Variance	Sum of Square	df	Mean Square	'F' ratio
Pre-test							
Mean	1.65	1.66	Between	0.001	1	0.001	
							0.104
S.D.	0.58	0.45	Within	0.152	28	0.005	
Post-test							
Mean	2.81	1.69	Between	0.124	1	0.124	
							22.52*
S.D.	0.21	0.49	Within	0.154	28	0.006	
Adjusted Post-test			Bet ween	0.111	1	0.111	
Mean	2.78	1.67					55.01*
			Within	0.054	27	0.002	

*Significant .05 level of confidence, (The table values required for significance at .05 level of confidence with df 1 and 28 and 1 and 27 were 4.20 and 4.21 respectively).

Table II indicated that the pre-test mean of maximal oxygen uptake between the experimental group and control group were 1.65 ± 0.58 and 1.66 ± 0.45 respectively. The 'F' ratio of 0.104 indicated that the pre-test means was not significant at the 0.05 level of confidence. The post-test mean of maximal oxygen uptake between the experimental group and control group were 2.80 ± 0.21 and 1.69 ± 0.49 respectively. The 'F' ratio of 22.52 indicated that the post-test means was significant at the 0.05 level of confidence. The adjusted post-test means of maximal oxygen uptake between the experimental group and control group were 2.78 and 1.67 respectively. The obtained 'F' ratio was 55.01 and it was higher than the tabulated 'F' radio for degree of freedom 1 and 27 was 4.21. It was concluded that there was a significant improvement after the experimental period.

Conclusions

1. Yogasana and pranayama training showed a significant decrease in resting pulse rate.
2. Yogasana practices group showed a significant increase in maximal oxygen uptake.

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