



Influence of Yoga with Step Aerobic Exercises on Breath Holding Time and Resting Pulse Rate among School Boys

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Abstract

The purpose of the study was to influence of yoga with step exercises on breath holding time and resting pulse rate among school boys. To achieve this purpose of the study only thirty school boys were selected in Seventh day Matriculation Higher Secondary School, Usilampatti, Madurai as subjects. The selected subjects were divided into two equal groups of fifteen subjects each, such as yoga with step aerobic exercises group and control group. The group I underwent yoga with step aerobic exercise training programme for three days per week for twelve weeks. Group II acted as control who did not participate any special training programmes apart from their regular physical education activities as per their curriculum. The following variables namely breath holding time and resting pulse rate were selected as criterion variables. All the subjects of three groups were tested on selected dependent variables at prior to and immediately after the training programme by using holding the breath for time and radial pulse respectively. The analysis of covariance (ANCOVA) was used to analyze the significant difference, if any between the groups. The .05 level of confidence was fixed as the level of significance to test the "F" ratio obtained by the analysis of covariance, which was considered as an appropriate. The results of the study revealed that there was a significant difference between yoga with step aerobic exercise group and control group on breath holding time and resting pulse rate.

Keywords: Breath Holding Time, Resting Pulse Rate, Ancova, Yoga with Step Aerobic Exercises, School Boys.

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Introduction

The word 'Yoga' is derived from the root "Yuj" or Yoke that means union or merger. The merger of soul with God and the experience of oneness with him are meant by yoga. Patanjali stated that "Yoga Cittavrtti nirodha". It means stilling the minds' movement. It is also explained as seeing yourself in yourself by yourself. Yoga is a timeless Pragmatic science evolved over thousands of years dealing with the physical and spiritual being of man as a whole. Aerobics is an efficient method to decrease the percentage of body fat to attain the other metabolic benefits of fitness. Aerobics is also a very good way to develop musculoskeletal fitness while building strength, flexibility and coordination. Aerobics is a progressive physical conditioning programme that stimulates cardiorespiratory activity for a time period sufficiently long to produce beneficial changes in the body. As the intensity and duration of work increases the demand for fuel in the working muscle also increases to meet the additional demand for energy. The step aerobics, which was developed by Gin Miller while she was recovering from a knee injury, is a trend that took

the aerobics industry by storm. This extremely popular style involves stepping up and down from a platform 15 to 30 centimeters (6 to 12 inches) high while performing different step combinations. In step aerobic exercises the heart rate increases substantially, but never reaches its maximum level. The heart is always able to deliver sufficient oxygen – rich blood to muscles so that they can derive energy from fat and glycogen aerobically. Aerobic exercises builds stamina for sports and it is also the most important form of exercise for health, since it increases the efficiency of heart, circulation and muscles.

Review of Related Literature

Eckerson & Anderson (1992) conducted a study to determine the heart rate (HR) and VO₂ max measured during water aerobics (WA) and were compared to maximal values obtained during an incremental treadmill test to assess the energy demand and potential cardiorespiratory (CR) training effects of WA. Sixteen college females served as subjects (Mean + SD = 20.4 + 1.6 years). The results indicated that WA elicited a mean HR of 162 b min⁻¹ and a mean VO₂ of 18.4 ml kg⁻¹min⁻¹ which represented 75% of HR reserve, 82% of maximal HR and 48% of VO₂ max. It was concluded that WA may be an attractive alternative to traditional mode of exercise for improving CR fitness.

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Ogawa & Spina (1993) conducted a study to determine whether endurance exercise training increases aerobic capacity, VO₂ max and attenuates the age related decline in left ventricular (LV) function during exercise in older men. To determine whether similar adaptations occur in older women, 10 subjects (aged 63 + 4 years + SE) were studied before and after 9 to 12 months of endurance exercise training. They exercised 3.85 + 0.06 days / week at 81 + 0.3% of maximal heart rate. LV function at rest and during supine exercise was assessed by radio nuclide ventriculography. VO₂ max was increased by 21% (p<0.001) in response to training. Maximal heart rate and systolic blood pressure during treadmill exercise were unchanged after training. LV ejection fraction at rest (70.4 + 2% before Vs 70+ 1\$ after) and during peak exercise (78.6 = 2% before Vs 79.3 +2 % after) did not change in response to training. Stroke volume and cardiac output at peak exercise also did not change in response to training.

Methodology

The purpose of the study was to influence of yoga with step exercises on breath holding time and resting pulse rate among school boys. To achieve this purpose of the study only thirty school boys were selected in Seventh day Matriculation Higher Secondary School, Usilampatti, Madurai as subjects. The selected

subjects were divided into two equal groups of fifteen subjects each, such as yoga with step aerobic exercises group and control group. The group I underwent yoga with step aerobic exercise training programme for three days per week for twelve weeks. Group II acted as control who did not participate any special training programmes apart from their regular physical education activities as per their curriculum. The following variables namely breath holding time and resting pulse rate were selected as criterion variables. All the subjects of three groups were tested on selected dependent variables at prior to and immediately after the training programme by using holding the breath for time and radial pulse respectively. The analysis of covariance (ANCOVA) was used to analyze the significant difference, if any between the groups. The .05 level of confidence was fixed as the level of significance to test the “F” ratio obtained by the analysis of covariance, which was considered as an appropriate.

Results and Discussion

Breath Holding Time

The analysis of covariance on breath holding time of pre and post tests for yoga with step aerobic exercises group and control group was analysed and presented in Table I.

Table I. Ancova on breath holding time of pre and post test for yoga with step aerobic exercises and control groups

Test	Yoga with Step Aerobic Exercises Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained ‘F’ Ratio
Pre Test							
Mean	27.27	26.73	Between	2.13	1	2.13	059
S.D.	2.21	2.47	Within	101.87	28	3.64	
Post Test							
Mean	31.87	27.13	Between	168.03	1	168.03	16.48*
S.D.	1.39	1.31	Within	285.50	28	10.20	
Adjusted Post Test							
Mean	31.65	27.35	Between	135.73	1	135.73	73.69*
			Within	49.73	27	1.84	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 1 and 28 and 1 and 27 are 4.20 and 4.21 respectively).

The table I shows that the adjusted post-test means on breath holding time of yoga with step aerobic exercises group and control group are 31.65 and 27.35 respectively. The obtained “F” ratio of 73.69 for adjusted post-test means is more than the table value of 4.21 for df 2 and 41 required for significance at .05 level of confidence on breath holding time. The results of the study indicated that there was a significant difference between the adjusted post-test means of yoga with step

aerobic exercises group and control group on breath holding time.

Resting Pulse Rate

The analysis of covariance on resting pulse rate of pre and post tests for yoga with step aerobic exercises group and control group was analysed and presented in Table II.

Table II. Ancova on resting pulse rate of pre and post test for yoga with step aerobic exercises and control groups

Test	Yoga with Step Aerobic Exercises Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	81.47	81.73	Between	0.53	1	0.53	0.14
S.D.	2.19	1.25	Within	108.67	28	3.88	
Post Test							
Mean	77.33	81.40	Between	124.03	1	124.03	19.41*
S.D.	1.57	1.45	Within	178.97	28	6.39	
Adjusted Post Test							
Mean	77.37	81.37	Between	119.40	1	119.40	67.03*
			Within	48.09	27	1.78	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 1 and 28 and 1 and 27 are 4.20 and 4.21 respectively).

The table II shows that the adjusted post-test means of yoga with step aerobic exercises group and control group are 77.37 and 81.37 respectively. The obtained "F" ratio of 67.03 for adjusted post-test means is more than the table value of 4.21 for df 2 and 41 required for significance at .05 level of confidence on resting pulse rate. The results of the study indicated that there was a significant difference between the adjusted post-test means of yoga with step aerobic exercises group and control group on resting pulse rate.

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Conclusions

Based on the results of the study, the following conditions were drawn.

1. There was a significant difference between yoga with step aerobic exercises group and control group on breath holding time.
2. There was a significant difference between yoga with step aerobic exercises group and control group on resting pulse rate.

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