



## EFFECT OF SELECTED YOGIC PRACTICES AND PHYSICAL EXERCISES ON CARDIO RESPIRATORY ENDURANCE

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### ABSTRACT

Cardio respiratory endurance is the ability to exercise the entire body for extended periods of time without undue fatigue. A strong heart is necessary to supply oxygenated blood to the muscles of the body effectively. For the purpose of the study a group of 80 healthy adults were divided in four equals groups. Experimental groups 'A', 'B', 'C' and control group 'D' of 20 subjects each were compared in this study. The purpose of this study was to investigate the response of certain yogic practices and physical exercise programme on cardiorespiratory endurance and to assess their effectiveness as measured by nine minute run -walk test (AAPHER Health related physical fitness test, 1980). The analysis of data revealed that the three experimental groups trained by Exercise, yogic practices and combined exercise and yogic practices, showed significant improvement in performance of Cardiorespiratory endurance but the mean gain achieved by combined exercise and yogic practices groups was higher than the other groups.

**KEYWORDS :** Cardiorespiratory Endurance, Physical Exercise, AAPHER test item, yogic practices, Health related Physical Fitness

### INTRODUCTION

Yogic practices or Asanas are physical exercises which enable the body to be physically fit. These exercises in physical endurance play an important part in helping the pupils to maintain a slim and youthful body. Several tests and experiment have been conducted to know the values and importance of asanas. Like psychological effect of short term yogic exercises on the adolescent body has an inevitable effect. It also harnessed our will and emotions to improve power of analysis, insight and vision. They calm the mind and steadily the emotions, still not losing the sharpness intellect which is the key to humor process. The science of yoga and health is dedicated to help people to change their personalities and health.

Yoga is an ancient Indian cult and way of life which is claimed to endow one who practices it with perfect physical mental and spiritual health. Although efficacy of yoga on health and physical and cardio-vascular fitness have been well proved (Ganguly, 1981; Joshi & Joshi, 1992) Moreover, on the basis of various research reports yogic and mental asana claimed to have superior to training on physical exercises for anxiety level fatigue of children's (Karwarde, 1981; Pratap, 1968; Kocher, 1974) in enhancement steadiness and two hand coordination as results of yogic practices have found. This might be because of yogic practices have no chance of fatigue mentally as well as physically. practice now been found useful for cardio-vascular fitness (karambelkar, 1982; Rao, 1964 Roldon, 1983; Ganguly, Ghorate, July, 1989) specially related to kapalbhathi and hyper ventilation. However, there seems to be no objective evidence showing the utility of kapalbhathi and surya Bhabam pranayam in lying left body position for developing cardiorespiratory endurance.

The American college of sports medicine has defined Health-Related Physical Fitness "a state characterized by an ability to perform daily activities with vigour and a demonstration of traits and capacities that are associated with low risk of premature development of the hypo kinetic disease (i.e. those associated with physical inactivity)."

### METHOD

#### Selection of Subject

Eighty subjects of department of Physical Education students of K.R.K.K Mahavidyalaya, Purba Bardhaman, West Bengal were selected at random for this study. The average age of subjects was 20 to 25 years. The subjects were divided in four groups. Experimental group 'A', 'B' and 'C' and control group 'D' of 20 subjects each. The group was randomly assigned to act as controlled group and experimental groups.

### Training Programme

The subject of all three experimental groups 'A', 'B' and 'C' underwent to training programme on asanas, exercises and the combined respectively under the guidance of three assistant at same place at one time under careful supervision of research scholar for a period of twelve weeks in 5 days week. The control 'D' group was not allowed to undergo the training.

The experimental group 'A' did 10 yogasanas as given below: (1) Sirshansana, (2) Sarvangasana, (3) Matsyasana, (4) Halasana, (5) Bhujangasana, (6) Salbhasana, (7) Dhanurasana, (8) Ardhamatsyandrasana, (9) Pachimotasan, (10) Mayurasana, and (11) Anlom vilom (12) kapalbhathi perform for bringing system normal.

The experimental group 'B' did ten exercise programme as given below: (1) Spinal rock, (2) Back over, (3) side stretcher, (4) alternative prone rock, (5) one leg jumping, (6) line walking after front roll, (7) 5 meter dash, (8) Raising the hands with folded hand, (9) Walking on hands with partner, (10) Stride stretcher. All exercises were performed with 5 time repetition.

The experimental group 'C' did exercise and asanas programme combined.

### CRITERION MEASURE:

Cardio respiratory endurance tested by Nine minute run -walk test

### ADMINISTRATION OF THE TEST:

The subject is asked to take a standing start. At the signal Ready? GO the subject covers as much distance as possible in 9 minutes. If the track and running area is marked of every 200 yards, the tester can count the number of laps completed and additional incomplete lap distance covered in 9 minutes respectively. Although the tester has to encourage all the subject to run the entire period of 9 minutes but interspersed walking is allowed and total distance covered in 9 minutes is recorded correct up to one yard.

The scoring of the test is the interval between the starting signal and the instant subject crosses the finish line is the score of the test. The time is recorded correct up to tenth of a second.

### RESULT AND ANALYSIS:

For each of chosen variables, the results pertaining to significant difference, if any between the pre-test and post-test means for the four groups which were calculated by applying

t'-test are shown in Table – 1.

Table-1

Group	Pre test	Post test	Mean Difference	DM	't' ratio
Exercise	1.610	1.76	0.149	0.013	11.5*
Asanas	1.408	1.578	0.169	0.016	10.56*
Combined	1.648	1.805	0.156	0.010	15.6*
Control	1.424	1.392	-0.032	0.010	- 3.2

\*Significant at 0.05

Table -2 Analysis Of Covariance Of The Means Of Three Experimental Groups And The Control Group In Cardiorespiratory Endurance Test

	Group				Sum of Squares	df	Mean Square	F ratio
	Exercise	Asanas	Combined	Control				
Pre-Test	1.610	1.408	1.648	1.424	B 0.931	3	0.31	1.82
					W 13.64	76	0.77	
Post-Test	1.76	1.578	1.805	1.392	B 2.13	3	0.71	18.68*
					W 2.9	76	0.038	
Adjusted Post-test Mean	1.741	1.553	1.778	-1.412	B 1.578	3	0.526	17.53*
					W 2.321	76	0.030	

\*Significant at 0.05 level of confidence.

The analysis of covariance for cardiorespiratory endurance test indicated that the resultant F ratio of 1.8 was not significant in case of the pre-test means indicating that initial means difference among the groups were not significant. The post-test means of the entire four groups yielded an F ratio of 18.68 which was also significant. The differences between the adjusted final means for four groups were found significant as the obtained F ratio 17.53 tabulated F ratio being 2.74 are shown in Table – 2.

Since the difference between the post test and adjusted final means for four groups were found significant, the critical difference for adjusted mean was applied to find out which of the differences between the paired adjusted final means were most significant. Differences between the paired adjusted final means are shown in Table -3

Table – 3 Paired Adjusted Final Means And Differences Between Means For The Three Experimental Groups And The Control Group In Cardiorespiratory Endurance Test

	Mean			Difference between means	Critical difference for Adjusted mean
Exercise	Asanas	Combined	Control		
	1.741	1.553	1.778	-1.412	0.19*-0.37*
	1.741	1.553	1.778	-1.412	0.33* -0.23*
	1.741	1.553	1.778	-1.412	0.14*-0.37*

\*Significant at 0.05 level.

It is evident from Table -3 that the mean difference of all six pairs of groups was Found to be significant (Fig. 1).

The mean gains made by three experimental groups show statistically significant differences amongst them. The mean gain made by all the three experimental groups was also most significantly greater than the control group in the performance of Cardiorespiratory Endurance test (Fig. 1)

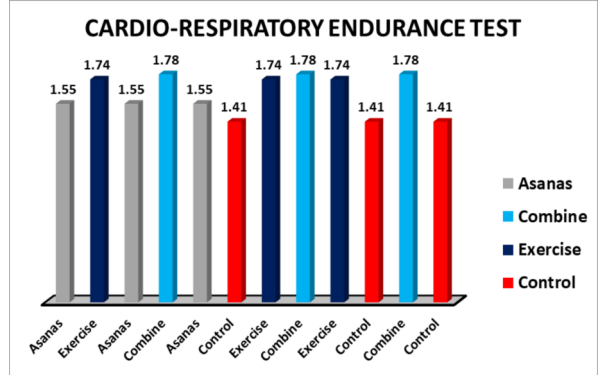


Fig: 1 Comparison of Paired adjusted final mean scores and difference between means scores for the three experimental groups and the control group in Cardiorespiratory Endurance test.

DISCUSSION AND FINDING:

Cardio respiratory endurance could be improving practice of exercise. It was also found that Yogasanas is more effective compare to exercise but when these both group compare with combine group of exercise and asana the significant difference were obtained.

During the experimental period the subjects were given yogic exercises for period of eight weeks. The data shows a significant improvement in the fitness test as a result of yogic practice. cardio respiratory endurance (ganguly and gharote, 1989, ganguly et.al, 1998. Maily and A rear researcher reveal that both soft term and long term yoga practices help to improve Samanta.2004). however there is some multiplicity in opinion about the efficiency on yoga practice cardiovascular efficiency Ganguly recorded improvement in cardio respiratory endurance as a result of yogic practice however this result are not similar(Ganguly,Bera and Ghorate 2003)although there may be difference in experimental conduction and different training stimuli. Nandi and Adhikari(1999) conducted a study on the effect Of selected yogic practice on cardio-respiratory endurance of school boys. The study was undertaken on twenty male students of Rajagram S.B.Raha institution Bankura cardio-respiratory endurance was measured using cooper's 12 minute run/walk test. Daniels(1983)studied heart rate and respiration function and found biofeedback training was effective to get the desired patterns of heart rate and breathing.Yogic training was also found to improve these factors successfully(Bhole and Karambelkar; 1972;Khodeskar; 1988;Robson, 1973).In fact,Yogic training schedule in the present study included such exercise which perhaps facilitate cardiorespiratory function along with its co-ordination with other body function and ,therefore, might have contributed towards enhancement in cardiovascular efficiency of yoga group than the long distance Run Group.

Thus this study clearly so that yogic asana is more effective when compare to exercise cardio respiratory probably result from complex combination of cardiorespiratory endurance .the exercise are more effective on development of cardio respiratory endurance by exercise and asanas is more effective one.

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