

## Effect of Yogic Intervention on Selected Cardiac Functioning Variables of Overweight School Children

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**ABSTRACT:** Yoga is an ancient cultural heritage of India. Yoga proposes for a systemic life style directed towards a human being bearing complete wellness. It is composed of postures, kriyas, meditative practices and breathing exercises leading to a poised balance between human body and mind. According to literature available on yogic research it is somehow clear that yoga can play a role in systematic cardiac functioning of an individual. It is also evident that school going children are vulnerable to childhood obesity which is to some extent related to their defective cardiac activity. To unveil the cardiac function status of Obessed School going children and to explore a yogic intervention protocol suitable for prevention and control the scholar premeditated to accomplish the study entitled “EFFECT OF YOGIC INTERVENTION ON SELECTED CADIAC FUNCTIONING VARIABLES OF OVERWEIGHT SCHOOL CHILDREN”. The subjects were randomly selected (After medical screening) from the two schools viz. Ghoshpara Saraswati Trust Estate Vidyapith, Kalyani and Ramnagar Milan Bagan Siksha Niketan, Ranaghat of the district of Nadia, West Bengal. The age of the subjects for the study was ranged from (12 -15) years. All the subjects were divided into two equal groups, one was the experimental group (n= 30) and another was the control group (n= 30). Yogic training was intervened for 12 weeks on the experimental group. But the control group was not involved in the treatment program. From data analysis significant differences have been observed between control and experimental group in selected hemodynamic variables like resting heart rate, systolic and diastolic pressure. With respect to the hemodynamic variables the experimental group was better than the control group.

**Key words:** yogic intervention, cardiac functioning, school children.

### I. INTRODUCTION:

Yoga is an ancient cultural heritage of India. Yoga proposes for a systemic life style directed towards a human being bearing complete wellness. It is composed of postures, kriyas, meditative practices and breathing exercises leading to a poised balance between human body and mind. According to literature available on yogic research it is somehow clear that yoga can play a role in systematic cardiac functioning of an individual.

Over the past four decades, there has been an increase in the prevalence of overweight and physical fitness deterioration in the population across all genders, age and racial/ ethnic groups all over the world. It can cause many risk factors to health including coronary heart disease, forms of cancer, diabetes, hypertension, stroke, osteoarthritis respiratory problems etc.

Good health and freedom from disease is the best achievement of life. Modern medicine has made tremendous progress in recent years. Modern medicine as well as yoga has scientific basis and universal outlook. Breathing sustains life. It clears the mind and calms all the emotions and releases the flow of energy in us. Yoga is a science practiced in India over thousands of years (*Gilbert C. 1999*).

We are well aware of the fact that any sort of exercise done regularly, is beneficial to the body. Yoga is considered to be a very good exercise for maintaining proper health and also has a profound effect on the lung functions of an individual. It is claimed that yogic practices help in prevention, control and rehabilitation of many respiratory diseases. In view of this, the present study was undertaken to see whether yoga has any effect on heart rate, blood pressure and peak expiratory flow rate of overweight school children.

It is also evident that school going children are vulnerable to childhood obesity which is to some extent related to their defective cardiac activity. To unveil the cardiac function status of Obessed School going children and to explore a yogic intervention protocol suitable for prevention and control the scholar premeditated to accomplish the study entitled “EFFECT OF YOGIC INTERVENTION ON SELECTED CADIAC FUNCTIONING VRAIBLES OF OVERWEIGHT SCHOOL CHILDREN”.

**Purpose:** The purpose of the present investigation was to unearth the effect of yogic intervention on selected cardiac functioning of overweight school children.

**Methodology:** The subjects: In order to accomplish the study the scholar randomly selected (After medical screening) volunteers for his study from the two schools viz. Ghoshpara Saraswati Trust Estate Vidyapith, Kalyani and Ramnagar Milan Bagan Siksha Niketan, Ranaghat of the district of Nadia, West Bengal. The age of the subjects for the study was ranged from (12 -15) years. All the subjects were divided into two equal groups, one was the experimental group (n= 30) and another was the control group (n= 30).

**Design of study:** The design of the study was experimental in nature. Yogic training was intervened for 12 weeks on the experimental group. But the control group was not involved in the treatment program.

**Variables measured:** Heart rate was measured by Digital blood pressure monitor in beats/min, Systolic blood and Diastolic blood pressure were measured by Digital blood pressure monitor.

For data analysis ANCOVA was computed with the help of SPSS soft ware. The significance of means were tested at  $p < 0.05$  level of confidence.

## II. TRAINING PROTOCOL USED FOR YOGIC INTERVENTION

The yogic programme was imparted systematically from simple to complex manner.

Sl. No.	Name	Duration
1.	Surya Namaskar	3-7 turns of each, the pose being maintained for ten seconds adding one turn each, every fortnight
2.	Trikonasana	2 turns of the each side and the pose being maintained for ten seconds, adding one turn per week.
3.	Ustrasana	2 turns of each and the pose being maintained for 5seconds. Adding one turn each, every fortnight and increase duration 5 to 10 seconds.
4.	Twisting pose	2 turns of the each side and adding one turn each per week.
5.	Tolasana	2 to 3 turns of each, the pose being maintained for 5 seconds adding one turn each week.
6.	Salabhasana	3-7 turns of each and the pose being maintained for 5 seconds. adding one turn each, every fortnight.
7.	Paschimottanasana	3-7 turns of each and the pose being maintained for 5 seconds adding one turn each, every fortnight.
8.	Merudandasana	2 turns of each and the pose being maintained for 5seconds. Adding one turn each, every fortnight and increase duration 5 to 10 seconds.
9.	Pawanmuktasana	2-5 turns of each and 15 seconds to one minute for each, adding one turn each, every fortnight.
10.	Utkatasana	2 turns of the each and the pose being maintained for 10seconds, adding one turn each, per week.
11.	Halasana	First only ardha-halasan to be tried for 2 seconds in each of its stage and then the full pose may be taken through its four different stages, each stage being maintain for 2 seconds only.3-5 turns, adding one turn every fortnight.
12.	Naukasana	2 turns of each, the pose being maintained for 10 seconds adding one turn each, every fortnight.
13.	Bhujangasana	3 to 7 turns of each; the pose being maintained for 2 to 5 seconds, one turn adding each, and every fortnight.
14.	Dhanurasana	3 to 7 turns of each; the pose being maintained for 2 to 5 seconds, one turn adding each, every fortnight.
15.	Shavasana	2-10 minutes.
16.	Bhastrika Pranayama	1-5 minutes per day.
17.	Padmasana	15 seconds to one minute, adding 15 seconds per week.
18.	Pranayama	Kapalavhati
		Anulumbilum
		Bhramari
		5 to 15 minutes

**Result and discussion:** in this part of the research paper the scholar tried to present the data and their results in tabular form and tried to present the discussion and interpretation of data for reaching judicious conclusion.

**Table 1. Descriptive statistics (Age, Height, Weight and BMI) of the subjects of the experimental group & control group**

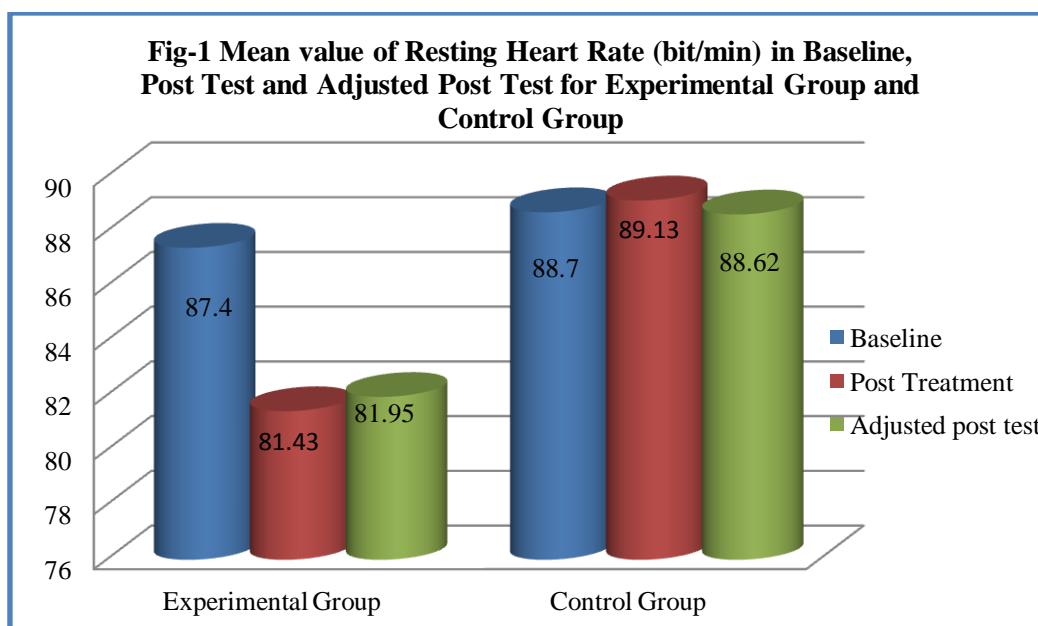
Name of the variable	Experimental Group		Control Group	
	Pre Test	Post Test	Pre Test	Post Test
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Age (years)	13.23 ± 1.14	13.23 ± 1.14	13.63 ± 1.19	13.63 ± 1.19
Height (cm)	149.4 ± 8.85	149.6 ± 8.79	152 ± 9.78	152.2 ± 9.72
Weight (kg)	58.23 ± 8.91	56.33 ± 8.58	59.77 ± 8.40	60.97 ± 8.89

**Table 2. Analysis of Covariance of Resting Heart Rate for Experimental Group and Control Group**

Name of the variables	Test		Experimenta l Group	Control Group	Source of variance	Sum of squares	df	Mean squares	'F' Ratio
Resting Heart Rate (bit/min)	Baseline	Mean	87.40	88.70	Between	25.35	1	25.35	0.205
		± SD	± 12.64	± 9.33	Within	7156	58	123.37	
	Post Treatment	Mean	81.43	89.13	Between	889.35	1	889.35	8.954
		± SD	± 10.12	± 9.81	Within	5760.83	58	99.32	
	Adjusted post test	Mean	81.95	88.62	Between	663.69	1	663.69	31.205
					Within	1212.30	57	21.27	

$F(0.05) (1, 58 \text{ and } 1, 57) = 4.01$ , \*Significant at 0.05 level of confidence.

**Table-2** Shows that the adjusted post-test means of Resting Heart Rate of the Experimental Group and Control Group are 81.95 bit/min and 88.62 bit/min respectively. The obtained F-ratio value was 31.205, which was higher than the table value 4.01 with df (1, 57) required for significant at 0.05 level. It indicates that there was a significant difference among the adjusted post-test means of Resting Heart Rate of the Experimental Group and Control Group. Thus Resting Heart Rate significantly reduced in the Experimental Group due to the intervention of structured yogic practices for 12 weeks.

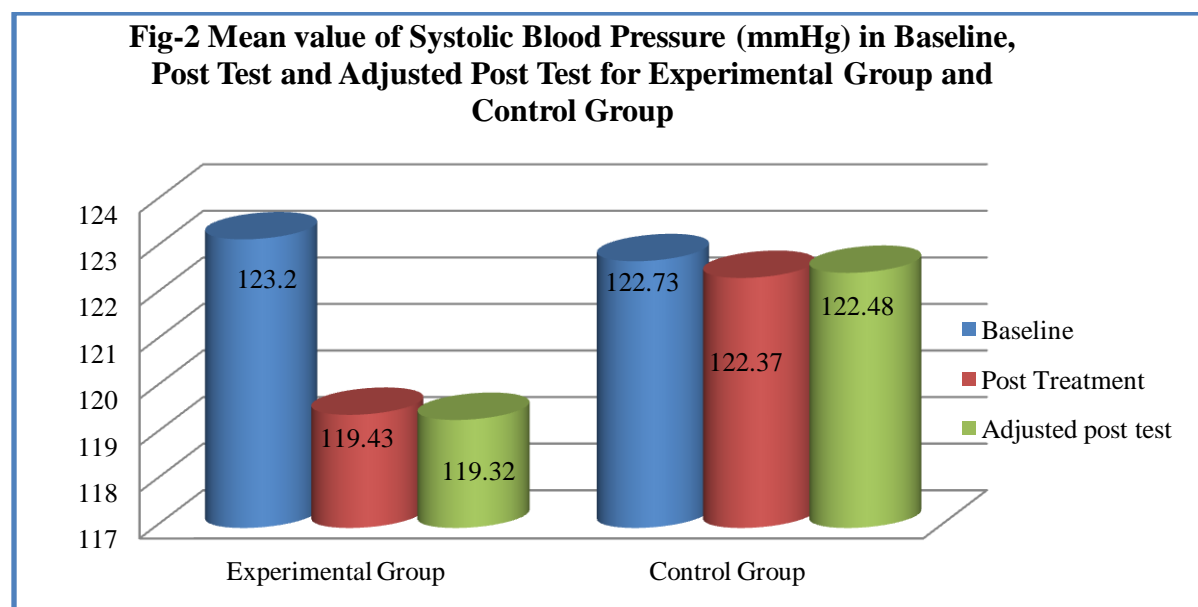


**Analysis of Covariance of Systolic Blood Pressure for Experimental Group and Control Group**

Name of the variables	Test		Experimental Group	Control Group	Source of variance	Sum of squares	df	Mean squares	'F' Ratio
Systolic Blood Pressure [mmHg]	Baseline	Mean	123.20	122.73	Between	3.27	1	3.27	0.140
		± SD	± 4.80	± 4.86	Within	1353	58	23.32	
	Post Treatment	Mean	119.43	122.37	Between	129.07	1	129.07	8.908
		± SD	± 4.07	± 3.53	Within	840.33	58	14.49	
	Adjusted post test	Mean	119.32	122.48	Between	148.72	1	148.72	15.642
		± SD	± SD		Within	541.92	57	9.51	

$F(0.05) (1, 58 \text{ and } 1, 57) = 4.01$ , \*Significant at 0.05 level of confidence.

Table-3 shows that the adjusted post-test means of Systolic Blood Pressure of the Experimental Group and Control Group were 119.32mmHg and 122.48 mmHg respectively. The obtained F-ratio value was 15.642, which was higher than the table value 4.01 with df (1, 57) required for significant at 0.05 level. It indicates that there was a significant difference among the adjusted post-test means of Systolic Blood Pressure of the Experimental Group and Control Group. Thus Systolic Blood Pressure significantly reduced in the Experimental Group due to the intervention of structured yogic practices for 12 weeks.

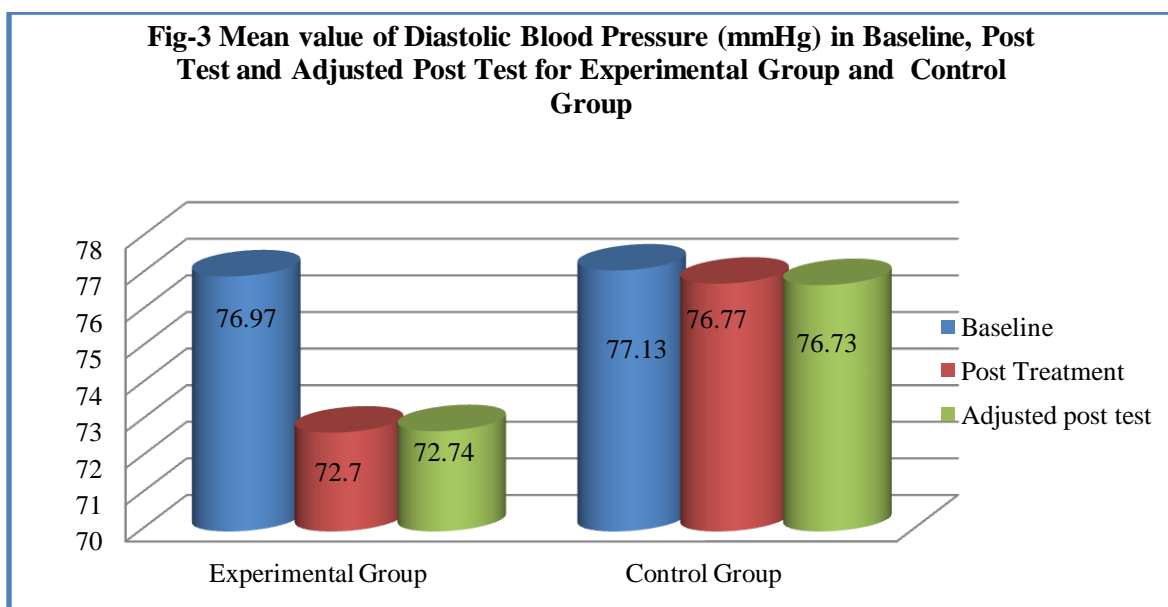


**Analysis of Covariance of Diastolic Blood Pressure for Experimental Group and Control Group**

Name of the variables	Test		Experimental Group	Control Group	Source of variance	Sum of squares	df	Mean squares	'F' Ratio
Diastolic Blood Pressure [mmHg]	Baseline	Mean	76.97	77.13	Between	0.42	1	0.42	0.015
		± SD	± 5.52	± 4.75	Within	1538	58	26.52	
	Post Treatment	Mean	72.70	76.77	Between	248.07	1	248.07	13.036
		± SD	± 4.71	± 3.98	Within	1103.67	58	19.03	
	Adjusted post test	Mean	72.74	76.73	Between	239.18	1	239.18	16.858
		± SD	± SD		Within	808.70	57	14.19	

$F(0.05) (1, 58 \text{ and } 1, 57) = 4.01$ , \*Significant at 0.05 level of confidence

**Table-4** shows that the adjusted post-test means of Diastolic Blood Pressure of the Experimental Group and Control Group were 72.74 mmHg and 76.73 mmHg respectively. The obtained F-ratio value was 16.858, which was higher than the table value 4.01 with df (1, 57) required for significant at 0.05 level. It indicates that there was a significant difference among the adjusted post-test means of Diastolic Blood Pressure of the Experimental Group and Control Group. Thus Diastolic Blood Pressure significantly reduced in the Experimental Group due to the intervention of structured yogic practices for 12 weeks.



### III. CONCLUSION

Conclusion of the present study is as follow:

- 1) The Resting Heart Rate of the experimental group reduced significantly.
- 2) The systolic blood pressure of the experimental group reduced significantly.
- 3) The diastolic blood pressure of the experimental group reduced significantly.

Summing up: From the findings of the present study the scholar arrived at the conclusion that systematic and organized yogi practice intervention play a positive role on strengthening of cardiac functioning variables like Resting heart rate, systolic and diastolic pressure. It is also evident from the inferences that yogic practices can play a positive role on health and fitness of overweight school children by strengthening their cardiac functioning.

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