



## ROLE OF YOGA AND AEROBICS ON BIOCHEMICAL PARAMETERS IN OBESITY MANAGEMENT IN SCHOOL GIRLS

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### ABSTRACT

The conversion from a conventional to a progressive lifestyle, the intake of high-fat, high-calorie diets, and an elevated degree of psychological trauma have exacerbated the difficulty. With the adoption of a lack of physical activity and a change in eating habits, the prevalence of lifestyle diseases such as obesity has increased. The system is precisely managed to produce and release the hormones from the glands in balance measures. Obesity increases the risk of many physical and mental conditions. These co-morbidities are most commonly shown in metabolic syndrome. In this study, forty-five female students were selected as subjects from the Little Flower School and M K Nadkarni School, Vadodara, Gujarat. The study was confined with the female of 10 to 16 years. Eight weeks yoga exercise schedule and Step aerobics of 40-50 minutes each had followed by the experimental groups. Subjects were uniformly split up into three groups, two experimental and a control group. In this study, comparison was made using an equated group design consisting of experimental groups and a control group to measure the effect of yoga exercises on girls. The variables that were chosen for the purpose of this study: (1) Resting Heart rate (2) Hemoglobin (3) High Density Lipoprotein (4) Low Density Lipoprotein (5) Triglycerides (6) Total Cholesterol. The analysis of co-variance was employed and significant effect was found in experiment group further. In all variables, LSD post hoc test outcomes revealed a significant difference between control and experimental groups.

**Key words:** *High Density Lipoprotein, Low Density Lipoprotein, Triglyceride, Total Cholesterol.*

## Introduction

Living standard and working habits in people had been influenced by Socioeconomic and Demographic changes. Many factors have changed the Indian family lifestyle. These factors are modernization, economic growth, socialization, and urbanization etc. The changeover to modern lifestyle from a traditional, use of heavy fat in diets and more calories with a towering mental stress level has increased complexity of the problem. The transition from a traditional to modern lifestyle, consumption of diets rich in fat and calories combined with a high level of mental stress has compounded the problem further. With a shift in eating habits and the adoption of a sedentary lifestyle has led to the increasing prevalence of lifestyle diseases like Obesity (Poonam et.al 2012). system is controlled and regulated to secrete the harmony from the glands in balance quantities. Obesity raises the risk of a variety of physical and mental ailments. Metabolic syndrome is the most common cause of these co-morbidities.

Obesity and overweight comprise two of the most noteworthy medical and health harms in the world today. The effects emerge to be as much physiological as psychological. Obesity leads to the danger of many health problems. High Blood Cholesterol, High TG level, High Blood Pressure diabetes mellitus type 2 and many medical disorders are highly associated with obesity.

The muscles and bones, as well as the nervous, glandular, respiratory, excretory, and circulatory systems, are coordinated to work cooperatively. Yoga asanas strengthen the body and enable it to adapt easily to changes in the environment. The sympathetic and parasympathetic nervous systems are brought into balance, ensuring that neither the sympathetic nor parasympathetic nervous systems are overactive or underactive. The endocrine system is controlled and regulated in order for the glands to secrete harmony in balanced amounts. Even if only one gland is dysfunctional, a noticeable decline in health may occur. Yoga practise on a regular basis can help keep the organs healthy and assist an unhealthy body in becoming healthy. (abrib et.al 2017)

Exercise in which  $O_2$  consumption by the body is involved or improved is known as Aerobic exercise. Aerobic means in presence of oxygen, and it is energy generating process or metabolic process of body in which oxygen is utilized. There are many types of exercise which are aerobic. (Gyan et.al 2017) It is performed for absolute time period at intensity which is considered as moderate. Large muscles like thigh, gluteus etc and other muscles are involved in aerobic exercises consisting warm up time and twenty minutes exercises with moderate level of intensity followed by cooling down to end the session. This pattern of exercises provides required results of aerobic exercises.

Yoga practise on a regular basis can help keep the organs functioning properly and encourage the body to transition from unhealthy to healthy. Consumption of  $O_2$  by the body can be improved with aerobic exercises. Aerobic term denotes to use of oxygen', and in broad way utilization of oxygen in energy producing process. There are many types of aerobic exercises; it may be define as activities are performed at moderate intensity for longer duration.

## Methods

The participants in this study were forty five young females chosen from the New Horizon school (Little Flower School) and M K Nadkarni School, Vadodara, Gujarat. Subjects ranged in age from ten to sixteen years old. Subjects were assigned at random to two experimental groups and one control group. The current study utilised an equated group design that included a control group and two experimental groups was utilised to provide a comparison of the effect of yoga exercises and step aerobic exercises on obese girls. The following variables were selected for this study: (1) Resting Heart rate (2) Haemoglobin (3) High Density Lipoprotein (HDL) (4) Low Density Lipoprotein (LDL) (5) Triglycerides (6)

Total Cholesterol. For eight weeks, experimental groups received 40-50 minutes of yoga and step aerobics training, while the control group received no formal training. Following the completion of the eight-week exercise programme, all variables were retested in the same manner as the pre test.

The data obtained during the criterion test, were analysed using analysis of covariance. Additionally, post hoc tests were used to determine whether There was a statistically significant difference between the means of specific groups. To test the hypothesis, a significance level of 0.05 was chosen.

### Results

The analysis of covariance was performed on the data collected for the variables RHR, haemoglobin, HDL, LDL, TG, and TC. The calculated F value of 7.10, 38.45, 21.41, 110.28, 7.98 and 202.84 for Resting Heart Rate, haemoglobin, HDL, LDL, TG and TC respectively were found to be significantly greater than the table value of 3.23, indicating that both training sessions had a substantial effect on chosen variables.

**Table -1. Means and F-ratios**

Variables	Yoga Mean x.y (adj.)	Aerobics Mean x.y (adj.)	Control Mean x.y (adj.)	F-ratio	Critical Difference
Resting Heart rate (RH)	70.49	71.44	72.61	7.10*	1.14
Haemoglobin (Hb)	13.15	12.56	11.66	38.45*	0.34
High Density Lipoprotein (HDL)	51.46	49.79	45.23	21.41*	1.96
Low Density Lipoprotein (LDL)	110.41	115.02	120.76	110.28*	1.41
Triglycerides (TG)	107.62	109.56	114.96	7.98*	3.84
Total Cholesterol (TC)	143.19	145.86	166.82	202.84*	2.6

\*Significant at 0.05 level

Tab F (2, 41) = 3.23

The improvement in resting heart rate was greater in the yoga group, considering yoga helps with breath control. The higher adjusted mean value of Hb in the yoga group concluded that yoga can help obese girls improve their haemoglobin levels. The results indicate that yoga training has a greater effect on these two variables than aerobics, namely resting heart rate and haemoglobin.

Further the results of the study show that the lipid profile variables like HDL, LDL, TG and TC were also significantly improved by the trainings. Aerobic training provides the assistant to increases the level of HDL in blood. It also has affected the LDL, TG and TC and has reduced the amount in blood, which lead to the normal level of these variables.

The values of adjusted mean of different groups are presented in figure 1

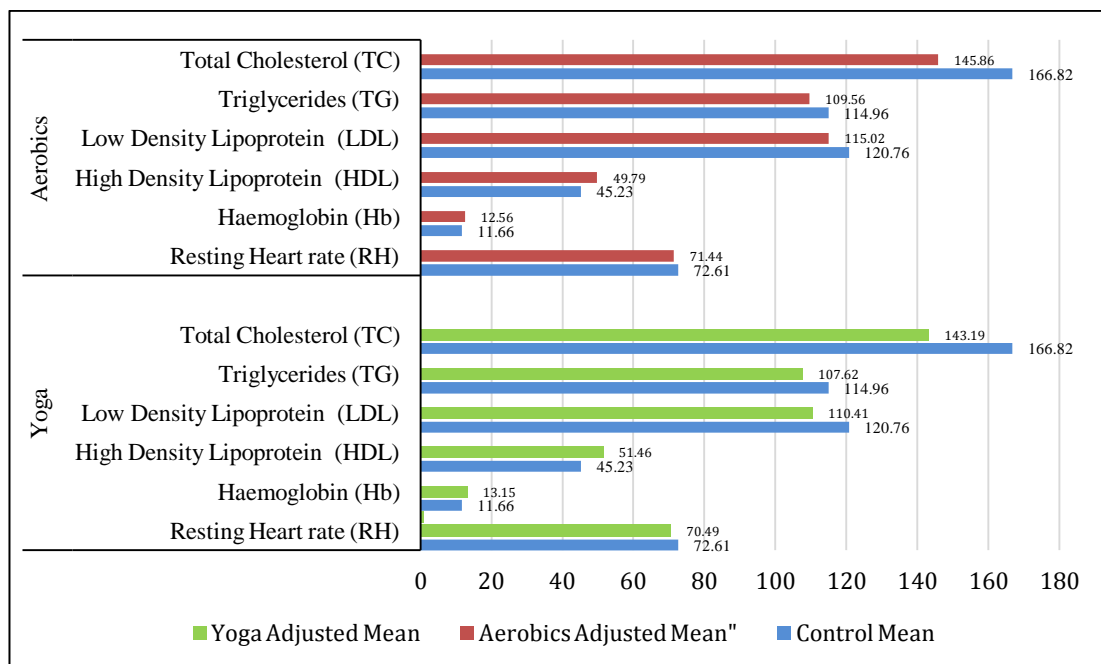


Fig. 1 Graphical Representation of Resting Heart Rate and HDL Adjusted Mean

### Conclusion

On the basis of the research findings, it can be concluded that the Yoga Exercises and Step Aerobic Exercises programme resulted in a decrease in Resting Heart Rate. Yoga and Step Aerobic Exercises improved significantly the haemoglobin score. The administration of Yoga Exercises and Step Aerobic Exercises resulted in a significantly increased level of High Density Lipoprotein (HDL). After completing the Yoga Exercises and Step Aerobic Exercises programme, a decrease in Low Density Lipoprotein (LDL) was observed. Yoga Exercises and Step Aerobic Exercises significantly reduced Triglyceride levels. After completing the Yoga Exercises and Step Aerobic Exercises programme, total cholesterol was reduced and brought into the normal range.

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