



**ORIGINAL RESEARCH PAPER**

**Physical Education**

**EFFECT OF ISOLATED AND COMBINED YOGIC PRACTICES AND PHYSICAL EXERCISES ON BLOOD SUGAR LEVEL AMONG DIABETIC PATIENTS**

**KEY WORDS:** Yogic Practices, Physical Exercises, Combined Yogic Practices and Physical Exercises Random Blood Sugar

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**ABSTRACT**

The aim of the study was designed to determine the effect of isolated and combined yogic practices and Physical Exercises on Blood sugar level among Diabetic Patients. To attain the purpose, sixty (N=60) men diabetic patients from in and around Pudukkottai city, Pudukkottai District, Tamilnadu, India were randomly selected as subjects. They were divided randomly into four groups of fifteen each i.e., (n=15) Group-I underwent Yogic Practices, Group-II underwent Physical Exercises, Group-III underwent Yogic Practices and Physical Exercises and Group-IV was act as Control. The Experimental groups underwent respective training period for three days per week for twelve weeks. For Yogic Practices and Physical Exercises the training period was restricted to twelve alternative weeks and the number of sessions per week was also confined to three. The dependent variable selected for this study was Random Blood Sugar and it was assessed through Blood Samples. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variables. Data were collected and statistically analyzed using ANCOVA. Scheffe’s post hoc test was applied to determine the significant difference between the paired means. In all the cases 0.05 level of significance was fixed. The results of the study showed that there was a significant difference among all the Experimental groups’ namely Yogic Practices Group, Physical Exercises group and Combined Yogic Practices and Physical Exercises group. Further the results, showed Combined Yogic Practices and Physical Exercises group was found to be better than the Yogic Practices and Physical Exercises group in Random Blood Sugar.

**INTRODUCTION**

Yoga is universally benefiting all people of all ages. The study of Yoga is fascinating to those with a philosophical mind and is defined as the silencing of the mind’s activities which lead to complete realization of the intrinsic nature of the Supreme Being. It is a practical holistic philosophy designed to bring about profound state as well is an integral subject, which takes into consideration man as a whole. The aim of Yoga is to devise ways and means of helping the better emotional and intellectual concentration.

Yoga is a science of right living and it works when integrated in our daily life. It works on all aspects of the person: the physical, mental, emotional, psychic and spiritual. The word yoga means ‘unity’ or ‘oneness’ and is derived from the San

“Yoga is a systematic physical practice to improve awareness to develop will power and to realise self to join traditional consciousness (jeevathma) to super consciousness (parmathma).

Physical exercise is a capsule for better living. With regular exercise, coronary arteries that supply blood to the heart enlarge and new blood capillaries develop within the organ larger, stronger and more efficient. Exercise increases the strength and efficiency of the muscles of the rib cage and diaphragm. This causes an increase in the lung volume, enabling a person to take in more air and thus absorb more oxygen. A person who exercises regularly breathes more slowly at rest than one who does not work out. But, when required, he or she can breathe deeply and oxygenate a given volume of blood, spending less energy. Exercise increases the size of existing blood vessels and makes them more elastic. It promotes the formation of new blood vessels not only in the heart, but also in the skeletal muscles, thus improving the oxygen supply to all parts of the body. Exercise increases the total blood volume in the body, the density of red blood cells and the haemoglobin content.

This increases the efficiency of the body’s oxygen transport system as well as the waste disposal mechanism, leading to improved muscular endurance and efficiency. Exercise helps to burn calories not only when exercising, but burns calories at a higher rate even after finished exercising and converts them into muscle tissues. “High levels of blood cholesterol are strongly associated with heart attacks. Regular exercise will lower cholesterol levels. Exercise brings down high blood pressure; reduces body fat and increases muscle mass; helps reduce weight; keeps blood sugar under control; relieves muscle and joint pains; reduce stress; prolongs life; exercise improves feeling of well being (Arjun, 1991).

Physical exercise is any organized activity that involves continuous participation. Exercise occupies a leading role in keeping a person fit. It will be quite difficult to adjust one’s life to stress, diet, sleep and so on without proper exercise.

**METHODOLOGY**

The study was conducted on sixty (N=60) men diabetic patients from in and around Pudukkottai city, Pudukkottai District, Tamilnadu, India were randomly selected as subjects. They were divided randomly into four groups of fifteen each i.e., (n=15) Group-I underwent Yogic Practices, Group-II underwent Physical Exercises, Group-III underwent Yogic Practices and Physical Exercises and Group-IV was act as Control. The Experimental groups underwent respective training period for three days per week for twelve weeks. For Yogic Practices and Physical Exercises the training period was restricted to twelve alternative weeks and the number of sessions per week was also confined to three. The dependent variable selected for this study was Random Blood Sugar and it was assessed through Blood Samples.

**ANALYSIS OF THE DATA**

The data collected from the experimental groups and control group on prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Whenever they obtained f-ratio value was significant the Scheffe’s test was applied as post hoc test to determine the paired mean differences, if any. In all the cases 0.05 level of significance was fixed.

**Random Blood Sugar**

The analysis of dependent ‘t’-test on the data obtained Random Blood Sugar of the subjects in the Pre-test and Post-test of Yogic Practices group, Physical Exercises group, Yogic Practices and Physical Exercises group and Control group have been presented in Table-1.

**Table – 1  
THE SUMMARY OF MEAN AND DEPENDENT ‘t’ TEST FOR THE PRE AND POST TESTS ON RANDOM BLOOD SUGAR OF EXPERIMENTAL GROUPS AND CONTROL GROUP**

Mean	Yogic Practices Group	Physical Exercises Group	Yogic Practices and Physical Exercises Group	Control Group
Pre- test mean	183.13	183.21	181.93	179.47

Post-test mean	169.27	169.73	155.27	179.67
't'-test	9.81*	6.72*	11.15*	0.06

\* Significant at 0.05 level.

(Table value required for significance at .05 level for 't'-test with df 14 is 2.15)

Table -1 shows that the pre-test mean on Random Blood Sugar of Yogic Practices group, Physical Exercises group, Yoga Practices and Physical Exercises group and Control group are 183.13, 183.21, 181.93 and 179.47 respectively. The post-test mean are 169.27, 169.73, 155.27 and 179.67 respectively. The obtained dependent t-ratio values between the pre and post test means on Random Blood Sugar of Yogic Practices group, Physical Exercises group, Yoga Practices and Physical Exercises group and Control group are 9.81, 6.72, 11.15 and 0.06 respectively.

The table value required for significant difference with df 14 at 0.05 level is 2.15. It was concluded that Experimental groups such as Yogic Practices group, Physical Exercises group and Yoga Practices and Physical Exercises group had registered significant improvement in Random Blood Sugar.

The results of the Analysis of Covariance on Random Blood Sugar of the pre, post, and adjusted test scores of Yogic Practices group, Physical Exercises group, Yoga Practices and Physical Exercises group and Control group are presented in Table -2.

**Table -2**  
**ANALYSIS OF COVARIANCE ON RANDOM BLOOD SUGAR OF EXPERIMENTAL GROUPS AND CONTROL GROUP**

Test	Yogic Practices Group	Physical Exercises Group	Yogic Practices and Physical Exercises Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	F ratio
Pre Test Mean	183.13	183.21	181.93	179.47	Between	134.45	3	44.82	1.46
					Within	1722.13	56	30.75	
Post Test Mean	169.27	169.73	155.27	179.67	Between	4528.85	3	1509.62	25.28*
					Within	3344.13	56	59.72	
Adjusted Post Test Mean	168.25	168.71	155.25	181.72	Between	5127.48	3	1709.16	44.12*
					Within	2130.66	55	38.74	

\* Significant at 0.05 level of confidence

(Random Blood Sugar Scores in mg/dL)

Table value for df (3, 56) at 0.05 level = 2.76 Table value for df (3, 55) at 0.05 level = 2.78

The above table-2 shows that the pre-test mean values on Random Blood Sugar of Yogic Practices group, Physical Exercises group, Yoga Practices and Physical Exercises group and Control group are 183.13, 183.21, 181.93 and 179.47 respectively. The obtained 'F' ratio of 1.46 for pre-test scores was lesser than the table value of 2.76 for degrees of freedom 3 and 56 required for significance at 0.05 level of confidence on Random Blood Sugar.

The post test mean values on Random Blood Sugar of Yogic Practices group, Physical Exercises group, Yoga Practices and

Physical Exercises group and Control group are 169.27, 169.73, 155.27 and 179.67 respectively. The obtained 'F' ratio of 25.28 for post-test scores was higher than the table value of 2.76 for degrees of freedom 3 and 56 required for significance at 0.05 level of confidence on Random Blood Sugar.

The adjusted post-test means on Random Blood Sugar of Yogic Practices group, Physical Exercises group, Yoga Practices and Physical Exercises group and Control group are 168.25, 168.71, 155.25 and 181.72 respectively. The obtained 'F' ratio of 81.59 for adjusted post-test scores was higher than the table value of 44.12 for degrees of freedom 3 and 55 required for significance at 0.05 level of confidence on Random Blood Sugar.

The results of the study indicate that there are significant differences among the adjusted post test means of Yogic Practices group, Physical Exercises group, Yoga Practices and Physical Exercises group and Control group in Random Blood Sugar.

To determine which of the paired means have a significant difference, the Scheffe's test is applied as Post hoc test and the results are presented in Table -3.

**Table -3**  
**THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST TEST PAIRED MEANS ON RANDOM BLOOD SUGAR**

Adjusted Post-test Means				Difference	Confidence Interval
Yogic Practices Group	Physical Exercises Group	Yogic Practices and Physical Exercises Group	Control Group		
168.25	168.71			0.47	6.55
168.25		155.25		12.99*	6.55
168.25			181.72	13.48*	6.55
	168.71	155.25		13.46*	6.55
	168.71		181.72	13.01*	6.55
		155.25	181.72	26.47*	6.55

\* Significant at 0.05 level of confidence

Table-3 shows that the adjusted post test mean differences on Random Blood Sugar between Yogic Practices group and Yogic Practices group and Physical Exercises Group, Yogic Practices group and Physical Exercises group and Control group Physical Exercises group and Yogic Practices group and Physical Exercises Group, Physical Exercises group and Control group, Yogic Practices group and Physical Exercises Group and Control group are 12.99, 13.48, 13.46, 13.01 and 26.47 respectively, which are greater than the confidence interval value of 6.55 on Random Blood Sugar at 0.05 level of confidence.

Further the table-3 shows that the adjusted post test mean differences on Random Blood Sugar between Yogic Practices group and Physical Exercises group, is 0.47. This is lesser than the confidence interval value of 0.19 on Random Blood Sugar at 0.05 level of confidence.

The results of the study showed that there was a significant difference between Yogic Practices group and Yogic Practices group and Physical Exercises Group, Yogic Practices group and Control group Physical Exercises group and Yogic Practices group and Physical Exercises Group, Physical Exercises group and Control group, Yogic Practices group and Physical Exercises Group and Control group on Random Blood Sugar. Further the results of the study showed that there was no significant difference between Yogic Practices group and Physical Exercises group on Random Blood Sugar.

The above data also reveal that Yogic Practices group and Physical Exercises Group had shown better performance than Yogic Practices group, Physical Exercises group and Control group in

Random Blood Sugar.

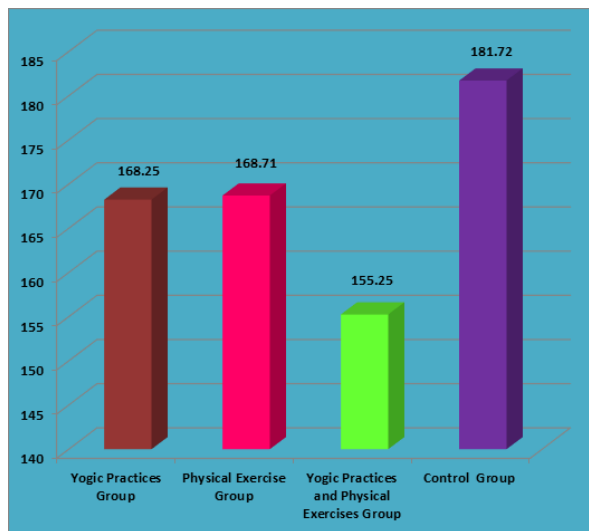
The pre and post mean values of Yogic Practices group, Physical Exercises group, Yogic Practices group and Physical Exercises group, and Control group on Random Blood Sugar are graphically represented in the Figure -1.

The adjusted post mean values of Yogic Practices group, Physical Exercises group, Yogic Practices group and Physical Exercises group, and Control group on Random Blood Sugar are graphically represented in the Figure -2.



Random Blood Sugar in mg/dL

Figure: 1The Pre and Post test Mean values of Yogic Practices group, Physical Exercises group, Yogic Practices group and Physical Exercises group, and Control group on Random Blood Sugar



Random Blood Sugar in mg/dL

Figure: 2The Adjusted Post Mean Values of Yogic Practices group, Physical Exercises group, Yogic Practices group and Physical Exercises group, and Control group on Random Blood Sugar

**CONCLUSION**

From the analysis of the data, the following conclusions were drawn.

1. Significant differences in achievement were found between Yogic Practices group, Physical Exercises group, Yogic Practices and Physical Exercises group and Control group in

the selected criterion variable on Random Blood Sugar.

2. The Experimental groups namely, Yogic Practices group, Physical Exercises group, Yogic Practices and Physical Exercises group had significantly decreased in Random Blood Sugar.
3. The Yogic Practices and Physical Exercises group was found to be better than the Yogic Practices group, Physical Exercises group and Control group in decreasing Random Blood Sugar.

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