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## Effect of yoga therapy on selected bio-chemical variables among diabetic mellitus middle aged men east Godhavari district

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### Abstract

The purpose of the study was to find out the efficacy of yoga therapy on selected bio-chemical variables among diabetic mellitus middle aged men. To facilitate the study, 30 subjects were selected at random from East Godhavari district only. Their age were ranged between 40-60 years old. They were assigned into two groups as yoga therapy group and control group. All the subjects were tested prior to and immediately after the 8 weeks treatment in progression to bio-chemical variables such as blood glucose, high density lipoprotein (HDL) and low density lipoprotein (LDL). The initial and final scores in selected bio-chemical variables were put in-to statistical treatment using Analysis of Covariance (ANCOVA) to find out the significant mean differences. Results revealed that yoga therapy helped in increasing the level of HDL and decreasing the blood glucose and LDL level in blood and systematic eight weeks of yoga therapy reduced the blood glucose, LDL and increased the HDL more than the control group.

**Keywords:** yoga, diabetic mellitus, biochemical

### Introduction

Yoga is usually defined as union: union between the limited self (jiva) and the cosmic self (atman). Without trying to confuse things any further, we would like to point out that there is an anomaly in this definition. For there to be an aim or goal of union there must first be a state of separation. And in fact this separation does not exist. At this very moment you are united with the cosmic consciousness. Even this statement is not true, for you actually are the cosmic consciousness. So the aim of yoga is not really to unite you with greater self, to make you are already united. It is to make you realize your identity with the greater self, to make you know and tune in with your existing inner nature (Swami Satyananda Saraswati, 1981).

Yoga is an ancient philosophy of life as well as a system of exercises that encourages the union of mind, body, and spirit. In fact, the word yoga is derived from the Sanskrit word meaning "yoke" or "union." The ultimate goal of yoga is to achieve a state of balance and harmony between mind and body.

Yoga therapy a form of physical activity is rapidly gaining in popularity and has many health benefits. Yet healthcare providers have been slow to recognize yoga therapy for its ability to improve health conditions, and few interventions have been developed that take full advantage of its benefits. Yogis observe the mind and the body as one and that if one is provided with the right yoga kit and tools and taken to the correct atmosphere; it can discover harmony and men itself. Yoga so is regarded as therapeutic. Ancient Theories, explanations and ideas about the mind and body connection is now being established by modern drug. Extensive research has been performed to look at the health advantages of yoga India- from the yoga asanas, yoga pranayama and meditation and diet. The information on yoga poses and advantages are grouped into 3 groups physiological, biochemical effects. In addition, scientists have set these outcomes against the advantages of usual exercise. Psychological advantages of yoga therapy: increases the mood improves and subjective well-being, self-acceptance and self-actualization, social adjustment, self-actualization, social skills, self-acceptance, well-being, somatic and kinesthetic awareness, improves the concentration, memory, attention, learning efficiency, mood, attention, learning efficiency, symbol coding, depth perception, flicker fusion frequency decreases the anxiety, depression and hostility.

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**Methodology**

The purpose of the study was to find out the efficacy of yoga therapy on selected bio-chemical variables among diabetic mellitus middle aged men. To facilitate the study, 30 subjects were selected at random from East Godhavari district only. Their age were ranged between 40-60 years old. They were assigned into two groups as yoga therapy group and control

group. All the subjects were tested prior to and immediately after the 8 weeks treatment in progression to bio-chemical variables such as blood glucose, high density lipoprotein (HDL) and low density lipoprotein (LDL). The initial and final scores in selected bio-chemical variables were put in-to statistical treatment using Analysis of Covariance (ANCOVA) to find out the significant mean differences.

**Table 1:** Computation of analysis of covariance of blood glucose (Scores in mg/dl)

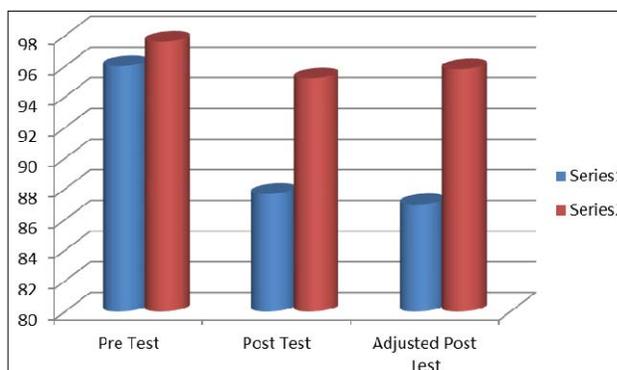
Test	Yoga Therapy	Control Group	SV	SS	Df	Ms	F
Pretest mean	97.60	96.00	B	19.38	1	9.69	0.11
			W	3836.93	28	91.36	
Posttest mean	87.67	95.20	B	461.73	1	230.87	4.65*
			W	2657.47	28	63.27	
Adjusted Post Test mean	86.99	95.81	B	613.41	1	306.70	5.46*
			W	158.25	27	3.86	

Table F-ratio at 0.05 level of confidence for 1 and 28 (df) =4.20, 1 and 27 (df) =4.21.

\*Significant

As shown in Table I the obtained F value on the scores of the pre-test means 0.11 was lesser than the required F value of 4.65, which proved that the random assignment of the subject were successful and their scores in Blood glucose before the training were equal and there was no significant differences. The analysis of post test means proved that the obtained F value 4.65 was greater than the required F value of 4.20 to be significant at 0.05. The result of the study on blood glucose indicates that all the yoga therapy groups brought about significant improvement after the training. The results of the study indicate that there was a significant difference on blood glucose between the yoga therapy group and control group. However, yoga therapy group was found to be better in decreasing the blood glucose level in blood than control group. The result of this study on blood glucose has in line with the study conducted by Selvalakshmi and Yogaraj (2009)

The ordered adjusted means are presented through bar diagram for better understanding of the result of this study in Figure 1.



**Fig 1:** Bar diagram showing the mean difference of pre and post score in blood glucose

**Results on bio-chemical variable blood glucose**

The statistical analysis comparing the initial and final means of Blood Glucose assessed through Blood Test (Lab) due to yoga therapy on selected Bio-Chemical variables among diabetic mellitus middle aged men were presented in Table I. levels. Taking in to consideration of the pre test and post test means the adjusted post test means were done and the obtained F value of 5.46 was greater than the required F value of 4.21 hence it was accepted that the yoga therapy significantly decreased the Blood glucose.

**Results on bio- chemical variable high density lipoprotein (HDL)**

The statistical analysis comparing the initial and final means of High Density Lipoprotein (HDL) assessed through Blood Test (Lab) due to yoga therapy on selected Bio-Chemical variables among diabetic mellitus middle aged men were presented in Table 2.

**Table 2:** Computation of analysis of covariance of high density lipoprotein (hdl) (Scores in mg/dl)

Test	Yoga Therapy	Control Group	SV	SS	Df	Ms	F
Pre test mean	45.73	47.07	B	34.84	1	17.42	0.31
			W	2382.80	28	56.73	
Post test mean	53.53	46.73	B	346.80	1	173.40	4.89*
			W	1874.40	28	44.63	
Adjusted Post Test mean	53.68	45.80	B	474.84	1	237.42	6.10*
			W	334.50	27	8.16	

Table F-ratio at 0.05 level of confidence for 1 and 28 (df) =4.20, 1 and 27 (df) =4.21.

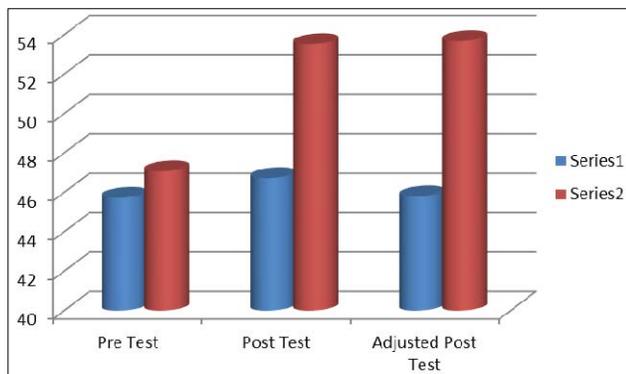
\*Significant

As shown in Table II the obtained F value on the scores of the pre-test means 0.31 was lesser than the required F value of 4.20, which proved that the random assignment of the subject were successful and their scores in High Density Lipoprotein (HDL) before the training were equal and there was no significant differences. The analysis of post test means proved that the obtained F value 4.89 was greater than the required F

value of 4.20 to be significant at 0.05 levels. Taking in to consideration of the pre test and post test means the adjusted post test means were done and the obtained F value of 6.10 was greater than the required F value of 4.21 hence it was accepted that the yoga therapy significantly increased the High Density Lipoprotein (HDL).

The ordered adjusted means are presented through bar

diagram for better understanding of the result of this study in Figure 2.



**Fig 2:** Bar diagram showing the mean difference of pre and post score in high density lipoprotein

### Conclusions

Within the limitations and delimitations set for the present study and considering the results obtained, the following conclusions were drawn:

1. Yoga therapy helped in increasing the level of HDL and decreasing the blood glucose and LDL level in blood.
2. Systematic eight weeks of yoga therapy reduced the blood glucose, LDL and increased the HDL more than the control group.
3. There was a little difference between the yoga therapy the blood glucose, HDL and LDL. Based on the mean value it was concluded that eight weeks of yoga therapy improve the HDL in blood and decreased blood glucose and LDL more than the control group.

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