

## **Effect of Yogic intervention on some bio-chemical parameters of Diabetic patients**

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### **Abstract**

The present study aimed to find the effect of Yogic intervention on some biochemical parameters such as hemoglobin and ESR level on diabetic patients. 50 diabetic patients suffering with type II Diabetes mellitus were selected and biochemical investigations were done before and after a comprehensive Yoga training program comprising of a sessions for three months.

There was a significant increase in hemoglobin and significant decrease in ESR level as a result of Yoga practices as the result shows statistically significant “t” value. Changes in these parameters may be due to improved immunity and better endurance capacity in the practitioners. Yoga improved the overall health of the subjects practicing Paschimottanasana and Shavasana. A comprehensive yoga therapy program has the potential to enhance the beneficial effects of standard medical management of diabetes mellitus and can be used as an effective complementary or integrative therapy program.

**Keywords:** Paschimottanasana, Shavasana and Biochemical parameters.

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### **Introduction**

Yoga has always been an essential part of life in traditional system of treatment, as it includes physical activities like several postures in the form of Asana and breathing exercises in the form of Pranayama which can play a vital role to prevent such lifestyle related diseases. Rosenthal M et al (1983) physical exercise and regular activities can enhance insulin sensitivity.

In the ensuing decades opponents to exercise therapy would change their attitudes due to some of the first research in the area of exercise physiology. A group of French researchers led by Chaveau and Kaufman (1887) measured the uptake of glucose by working muscle and found it to be higher than resting muscle. In addition, a reduction in blood glucose levels with muscular exercise was apparent. With this

new scientific evidence, the therapeutic benefits of exercise, so long held by Bouchardat, became common practice in other clinics for diabetics.

Yogic Interventions as a part of diabetes mellitus prevention and therapy has gained in popularity over the past few decades as more research has become available. However, its use is definitely not a novel approach in the management of this disease. According to the American College of Sports Medicine (2002), indications of the effectiveness of exercise in reducing glycosuria have been evident since 600 B.C. when an East Indian text, the Shushruta noted the reduction in the sweetness of urine from diabetic patients following exercise.

Andersen R E et. al, (2002)-Moderate intensity physical activity achieved through changes in lifestyle may promote

weight management. A program of diet plus lifestyle physical activity may be a suitable alternative for dieting adults who have difficulty adhering to a program of vigorous activity.

Shaw, S. (2008) observed a significant improvement in the diabetics condition as mentioned in his study entitled “Yoga: Uniting Body, Mind, and Spirit”.

Alexander, G.K. Taylor, A.G. Innes, K.E. Kulbok, P. Selfe, T.K. (2008) states in their study entitled “Contextualizing the Effects of Yoga Therapy on Diabetes Management: A Review of the Social Determinants of Physical Activity” that practice of Yoga is an effective tool to manage the diabetes mellitus.

Gina K. Alexander, Ann Gill Taylor, Karen E. Innes, Pamela Kulbok, Terry K. Selfe (2008) also found through their systematic review that Yoga Therapy is quite effective in Diabetes Management.

Lorenzo A Gordon, Errol Y Morrison, Donovan A mcgrowder, Ronald Young, Yeiny Terry Pena Fraser, Esleen Martorell Zamora, Ruby L Alexander-Lindo, Rachael R Irving (2008) states that there is a positive impact of exercise therapy on lipid profile and oxidative stress indicators in patients with type 2 diabetes.

Amita S, Prabhakar S, Manoj I, Harminder S and Pawan T, (2009) observed in their study that the practitioners of yoga nidra had better control in their fluctuating blood glucose and symptoms associated with diabetes in comparison to the control group people having same physiological conditions.

Miller, J. (2009) also suggest in their study “Quality Zone: Yoga for emotional wellbeing in diabetes and other long-term conditions” that practice of yoga plays an important role in the general condition of diabetic patients, if practiced for a longer time.

Diabetes is a deficiency which affects a human being in a middle part of his age. All must ready to avoid this deficiency. For that Yogic practices are very helpful. In that particularly Paschimottanasana protect the people from the diabetes. Already affected people can get the cure. *Paschimottanasana* is a very simple asana. It is one of the best asana which helps to get recovery from the diabetes.

While going through the review Yoga showed favorable outcomes among patients with diabetes type II. A number of studies have been done in various part of the globe to observe the effect of Yoga on diabetics, more than 250 thesis works were conducted only in India at P.G. and Ph.D. Levels. More or less, either the studies were based on Yoga and complementary therapies or a vast package of Asana, Pranyama, Shatkarma, Mudra- Bandha and meditative techniques in combination. These improvements were mainly among short term or immediate diabetes outcomes and not all of the improvements were statistically significant. No study was done over a single practice particularly on *Paschimottanasana* and *Shavasana* only.

### **Methodology**

The sample consisted of 50 subjects were selected from Dayanand Ayurvedic College and Hospital, Siwan (Bihar). The institutional research ethics-committee approved this study. After signed informed consent by the subjects anthropometrics measurements were taken. Each subject was randomly assigned for this study. A professional not associated with this study generated the randomization scheme.

Fifty patients diagnosed as type 2 Diabetes and who met the following criteria were selected: no history of coronary artery disease, diagnosed stroke, cerebrovascular disease, known neuropsychiatric illness or any other complications (retinopathy, nephropathy) of diabetes; age between 30-60 yrs with duration of DM between 2-7 yr.

All the patients were receiving conventional medical therapy. The drugs prescribed most commonly were oral hypoglycaemic drugs. Pre – post research design was used in this study. Each subject

was tested individually. The subjects in this study have given Yogic practices daily for half an hour for 90 days. Yogic intervention plan was as followed:

**Table1:** Yogic Intervention program

S.No.	Yogic Practice	Rounds	Duration
1	Preparation and Gayatri Mantra	1	2 minutes
2	Joints loosening	2 - 5	7 minutes
3	Paschimottanasana	3 - 5	10 minutes
4	Shavasana	-	10 minutes
6	Shanti patha and Ending	1	1 minutes

The subjects of experimental group used to visit the center for Yoga training for 90 days daily under the supervision of a Yoga expert. The pre and post values were taken

at the interval of three month for hemoglobin and ESR level of the patients suffering with diabetes and ‘t’ test was used for comparing the level of significance in present study.

### Result

**Table 2 :** Showing the Pre – post mean , SD, SED and t value of HB level

Test	Mean	N	SD	SED	T value	Level of significance
Pre	7.92	50	0.543	0.11	18.76	0.01
Post	10.02	50	0.938			

Df = 49, r = 0.53

**Table 3:** Showing the Pre – post mean, SD, SED and t value of **ESR:**

Test	Mean	N	SD	SED	T	Level of Significance
Pre	22.20	50	1.178	0.229	14.00	0.01
Post	19.00	50	0.639			

Df = 49, r = 0.54

### Discussion& Conclusion

Yoga is an old, traditional, Indian psychological, physical and spiritual exercise regimen that has been studied for several

decades for its role in the management of several chronic diseases including hypertension, asthma, obesity, neuromuscular diseases and psychiatric illnesses.

Additionally yoga has been studied for controlling both the symptoms and the complications associated with diabetes mellitus type II. The results from these studies suggested a statistically significant role for yoga in controlling diabetes. Furthermore, yoga practice showed a significant improvement for those diabetic patients with pre-existing complications. These findings suggest that diabetics may benefit from yoga's ability to improve their quality of life.

These Asanas encourage different groups of muscles to assume a state of stable equilibrium by introducing shifts in the line of gravity. *Paschimottasana* involve stretching by which one can actively affect the functioning of the locomotor system. Changes in the length of muscle and tendons subsequently cause anatomical, bio-chemical and physiological changes, which will affect both the biomechanical function of joints and metabolism of soft tissues. Clinical evidence also suggests that intramuscular connective tissue may account for a significant amount of limitation of the joint motion with ageing.

While practicing this *Paschimottasana* the intestines,

pancreas, gall bladder are smoothly pressed and stimulates well. The soul energy of the body will be strengthening by spinal cord, spinal nerves are pulled during the time of asana. It prevents diabetes. It increases the fertility factor of male removes the infertility. Stomach pain, headache, piles, hip pain, back pain and body weakness are cured by doing this asana.

These Asanas develop awareness, stability through co-contraction during holding the pose. There is an involvement of multiple joints; hence, stretching of soft tissues and muscles is possible. *Shavasana* practice helps in relaxation and psychological well being. No adverse effects would occur, if correct technique is practiced.

Alexander, G.K. et. al (2008) and Gina K. et. al (2008) found through their systematic review that Yoga Therapy is quite effective in Diabetes Management.

Studies done by Lorenzo A Gordon, et.al (2008) Amita S, et. al (2009) & Miller, J. (2009) also suggest that practice of yoga plays an important role in the general condition of diabetic patients, if practiced for a longer time.

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