

BENEFICIAL EFFECTS OF SUDARSHANA KRIYA IN TYPE II DIABETES MELLITUSAnupama N¹, Varun Malhotra², Rinku Garg³, Venkiduswami⁴, Ranganath⁵**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: BACKGROUND: Sudarshana kriya is a Sanskrit term meaning –proper vision, purified action by controlling the breath. Kri means to act with awareness. It normalizes breathing by concentrating on it systematically. **MATERIAL AND METHODS:** 40 subjects with type II diabetes 20 males, 20 females with age group of 40-60 were chosen. They underwent sudarshana kriya training for 6 days organized in Bangalore. A written consent was taken from subjects. They participated in 6 day Sudarshana kriya training held at Bangalore by a trained teacher. This 6 day training includes Sudarshana kriya and meditation. Our Study is designed to study the glycemic control and antilipemic effect of Sudarshana kriya in TypeII Diabetes Mellitus. **RESULTS:** Sudarshana kriya appears to be specialized pranayamic breathing capable of inducing series of beneficial changes besides causing significant fall of sugar levels, total cholesterol, triglyceride levels ($p<0.001$) and a raise in HDL cholesterol ($p<0.001$) **CONCLUSION:** Sudarshan Kriya can be used along with oral hypoglycemic agents as a holistic adjunct approach for a better glycemic and lipid profile control. Regular practice of Sudarshana Kriya reduces symptoms of mental depression for treating stress and anxiety in post-traumatic stress disorder. Sudarshana Kriya leaves one more alert aware, attentive and focused

KEYWORDS: Sudarshan Kriya Lipid Profile Diabetes.

INTRODUCTION: Sudarshana kriya is a Sanskrit term meaning –proper vision, purified action¹ by controlling the breath. It normalizes breathing by concentrating on it systematically. Regular practice of Sudarshana Kriya reduces symptoms of mental depression¹ for treating stress and anxiety in post-traumatic stress disorder.² Sudarshana Kriya leaves one more alert aware, attentive and focused.² Our Study is designed to study the glycemic control and antilipemic effect of Sudarshana kriya in TypeII Diabetes Mellitus.

MATERIALS AND METHODS: 40 subjects with type II diabetes 20 males, 20 females with age group of 40-60 years were chosen. They underwent sudarshana kriya training for 6 days organized in Bangalore. A written consent was taken from subjects. They participated in 6 day Sudarshana kriya training held at Bangalore by a trained teacher. This 6 day training includes Sudarshana kriya and meditation. The breathing techniques that are part of Sudarshana Kriya are:

- a) Three-Stage Pranayama with Ujjayi or "Victory Breath",
- b) Three sets of Bhastrika or "Bellow's Breath", and
- c) Sudarshana kriya or the "Healing Breath Technique" and they were practiced in that order. The breathing practices are done in a vajrasan posture, on the carpet spread over the floor. Eyes are kept closed throughout the sessions.

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Normal breathing is at the rate of 14 to 16 breaths per minute. Ujjayi is a slow and deep breathing technique at 2 to 4 breaths per minute.

Three-Stage Pranayama with Ujjayi breath is an advanced form using a specific ratio of inhalation and exhalation, and breath-holds. Participants practice this component where specific arm positions are held for approximately ten minutes in total. It involves taking a breath for a period of 4–10 seconds, holding the inhaled breath for a further 4–10 seconds, exhaling over a period of 6–12 seconds, and holding one's breath in the exhaled. The second breathing component of Sudarshan kriya is Bhastrika.

Here the breathing is vigorous and faster, about twenty to thirty respiratory cycles per minute. Three approximately one-minute rounds of Bhastrika are followed by a few minutes of normal breathing. Arm movements are used to increase the force and depth of inhalation and exhalation. Practice of this component lasts for approximately five minutes.

The central component of Sudarshana kriya is an advanced cyclical breathing exercise of slow, medium, and fast rates in succession. Slow breaths are about 20 respiratory cycles per minute, medium breaths are about 40–50 respiratory cycles per minute, and the fast breathing is about 60–80 cycles per minute. The participant rotates through these breathing patterns during Sudarshana kriya. Daily home practice of Sudarshana kriya takes approximately 10 minutes.

During the instruction phase, several longer group sessions of Sudarshana kriya, lasting approximately thirty minutes, are practiced. Blood pressure, sugar levels lipid profile was measured before and after the 6 days Sudarshana kriya training.

RESULTS:

Biochemical parameters	Mean value +/- SD (Before)	Mean value +/- SD (After)	t value	P value
FBS	200.30+/-30.20	130.10+/-28.25	3.65	0.001
PPBS	280.28+/-25.23	200.23+/-25.50	3.81	0.001
Total cholesterol	250.20+/-20.0	200.83+/-30.10	3.0	0.001
HDL cholesterol	58.57+/-15.3	80.20+/-24.10	-4.29	0.0001
LDL Cholesterol	50.45+/-28.8	40.15+/-50.00	3.41	0.001
VLDL cholesterol	28.51+/-13.20	24.31+/-12.15	3.15	0.001
Triglycerides	200.15+/-20.25	150.27+/-18.35	3.0	0.001

Table 1: Biochemical Parameters before and after Sudarshana kriya

Figure 1 and Table 1: shows a statistically significant fall in blood sugar, total cholesterol, Triglycerides, LDL cholesterol, VLDL cholesterol and raise in HDL cholesterol as compared to before the Sudarshana kriya training.

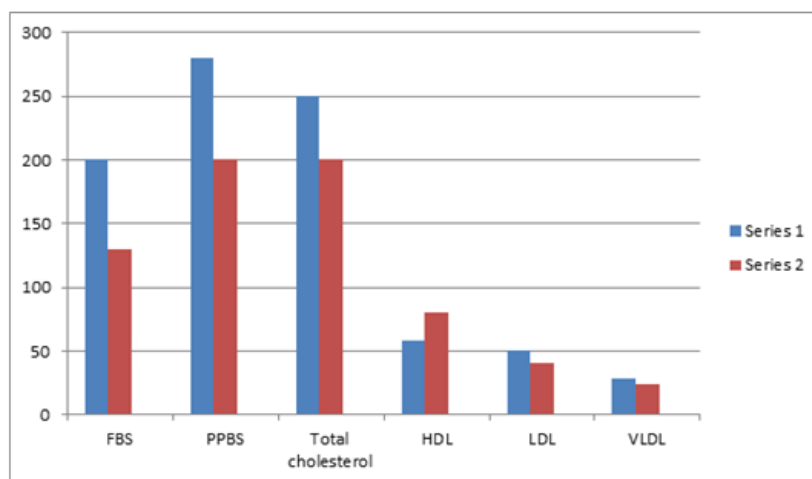


Figure 1: Biochemical Parameters before and after Sudarshan Kriya

DISCUSSION: Sudarshana kriya appears to be specialized pranayamic breathing capable of inducing series of beneficial changes besides causing significant fall of sugar levels, total cholesterol, triglyceride levels and a raise in HDL cholesterol.

Other researchers have reported that yoga asanas significantly reduced FBG and serum MDA in patients with type 2 diabetes mellitus Hatha yoga exercise significantly reduced FBG concentrations.^{3,4}

Lipoprotein abnormalities play an important role in the causation of diabetic atherosclerosis.⁵

Dyslipidemia causes morbidity and mortality in patients with type 2 diabetic mellitus and the most common pattern in type 2 diabetic patients are elevated triglyceride and LDL, and decreased HDL cholesterol concentrations.⁶

In this study Hatha yoga and conventional PT exercises significantly reduced serum TC and VLDL concentrations with no significant change in triglyceride, LDL or HDL concentrations. Agrawal et al. reported significant improvement in glycemic control and lipid profile in type 2 diabetic patients exposed to yoga exercise where there was significant reduction in serum TC, triglyceride and LDL concentrations associated with concomitant significant increase in HDL concentrations after three months.⁷

The results of this study and others point to benefits for persons with diabetes mellitus with relationship to the risks associated with dysfunction of the lipid profile such as: macrovascular complications, endothelin-1⁸ Exercise training has been known to be effective in type 2 diabetes mellitus by increasing insulin sensitivity.⁹

The yoga postures are slow rhythmic movements which emphasize the stimulation of the organs and glands by easy bending and extensions which do not over-stimulates muscles but concentrate on glandular stimulation.¹⁰

A major benefit of non-exhaustive exercise such as yoga is to induce a mild oxidative stress that stimulates the expression of certain antioxidant enzymes. This is mediated by the activation of redox-sensitive signaling pathways.¹¹

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Sudarshana kriya has shown a significant antidepressant effect in alcohol dependent subjects also a fall in levels of stress hormone cortisol and ACTH.¹²

Yoga asanas help improve cardiovascular function, pulmonary function, nerve conduction velocity in diabetes mellitus patients, increasing longevity and better lifestyle because of better glycemic control with reduced complications.¹³⁻¹⁷

CONCLUSION: Sudarshan Kriya can be used along with oral hypoglycemic agents as a holistic adjunct approach for a better glycemic and lipid profile control.

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