

Beyond Medication: Yoga as a Holistic Tool for Diabetes Management

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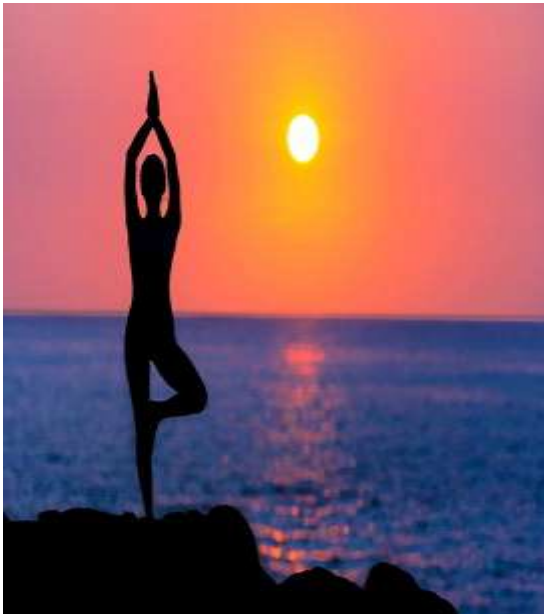
❖ ABSTRACT –

Diabetes mellitus is a condition where the body does not properly regulate blood sugar levels. This can happen because the body does not produce enough insulin or does not use insulin effectively. Insulin helps control blood sugar, and when it works poorly, it leads to high blood sugar levels over time. If not managed, diabetes can harm important organs like the nerves and blood vessels. The number of people with diabetes is growing very quickly, and it is expected to double by 2030. In South India, many middle-aged women are affected by this condition, which shows the need for better and lasting ways to manage it. Managing diabetes is more than just taking medicine. It also requires making lifestyle changes that help the body and mind. Stress is closely linked to insulin resistance and can make it harder to control blood sugar. In this context, yoga – a traditional practice that combines physical exercises, breathing techniques, and meditation – has become an important support for managing chronic illnesses like diabetes. Yoga helps with relaxation, improves how the body manages blood sugar, and boosts overall health by affecting the nervous and hormonal systems. Regular yoga practice can help reduce stress hormones like cortisol and make the body more responsive to insulin. This can lead to better blood sugar control. Yoga also helps people become more aware of their bodies and improves mental discipline, which encourages healthier habits such as eating well, managing stress, and staying active in daily life. This review looks at how yoga helps with stress and blood sugar control, focusing on its overall benefits. Combining different yoga practices, good breathing, meditation, healthy eating, and positive changes in behavior and attitude can greatly help those with type 2 diabetes.

Keywords: Yoga, Type 2 diabetes, Insulin sensitivity, Physical activity, Holistic health

❖ INTRODUCTION –

Type 2 diabetes is a common illness that happens when the body becomes resistant to insulin or does not produce enough of it, leading to high blood sugar and other heart-related problems. According to the International Diabetes Federation's Diabetes Atlas (eighth edition, 2017), about 425 million people had diabetes in 2017, and this number is expected to go up to 629 million by 2045. Being inactive and eating in unhealthy ways are major reasons for developing such illnesses, including diabetes. Stress also plays a big role in increasing the risk and making diabetes worse. Research has shown that not being physically active increases the risk of diabetes by three times and the risk of heart disease by 2.4 times. Yoga, which started in India over 5,000 years ago, helps balance the body, mind, and emotions. There's growing evidence that yoga can help deal with the physical problems caused by diabetes and support managing the condition and its complications. In this short review, we look at how different types of yoga can help manage diabetes based on studies from clinical research.



Eating well and exercising are known ways to treat type 2 diabetes and other health issues like obesity, high blood pressure, and high cholesterol. However, in today's busy world with more fast food, lots of machines, less space for exercise, and a hectic lifestyle, it's hard for people with diabetes to stick to eating well and exercising. People with diabetes might also find it difficult to exercise because of being overweight, not being fit, sitting too much, and other health issues like heart disease, nerve damage, and foot problems. Studies show that not following diet and exercise programs is a big problem when managing diabetes without medicines. Yoga, which started in India over 5,000 years ago, helps balance the body, mind, and emotions. There's growing evidence that yoga can help deal with the physical problems caused by diabetes and support managing the condition and its complications. In this short review, we look at how different types of yoga can help manage diabetes based on studies from clinical research.

❖ **YOGA IN TYPE 2 DIABETES**

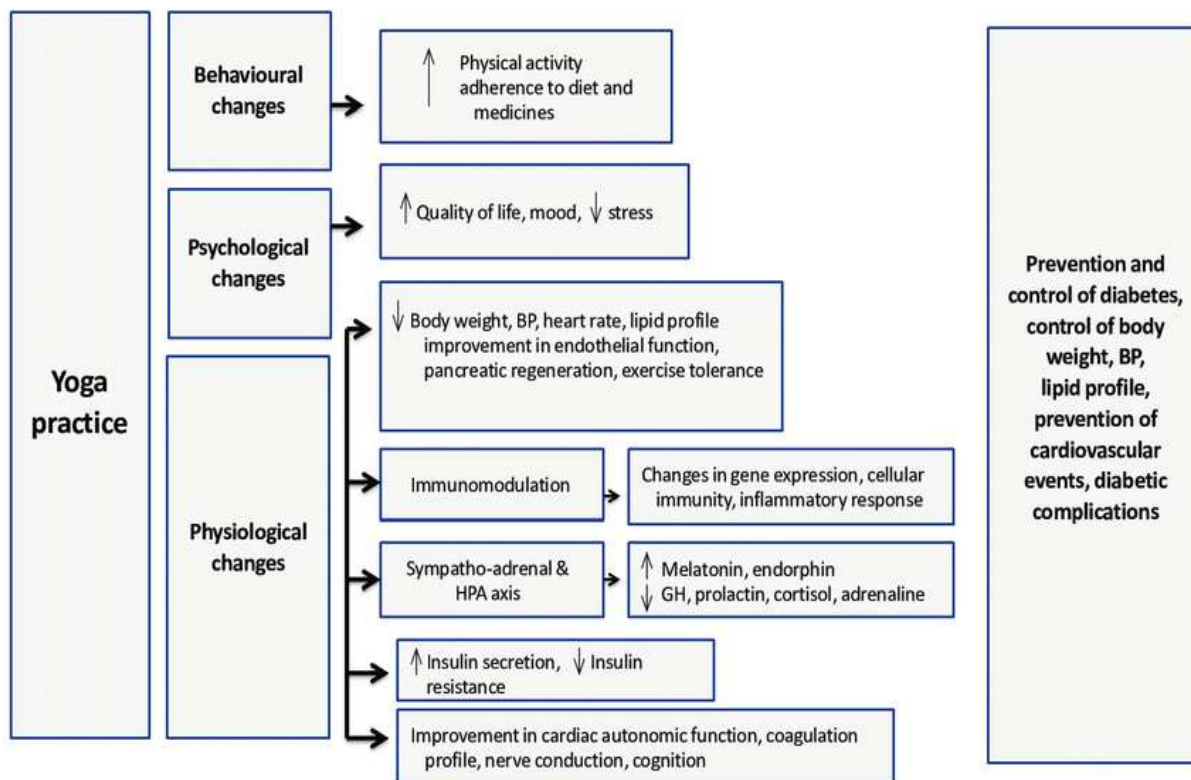
Even though yoga has been around for a long time, using it as a therapy is still a new and growing idea in healthcare. A lot of research has looked at how yoga affects the body in many ways, like changing biochemical, electrical, cellular, genetic, muscle, and imaging processes. This has made yoga useful in treating various health conditions and it is now being recognized around the world as a safe and effective treatment option. Traditionally, yoga is a practice that connects the mind and body, with the goal of achieving spiritual peace. However, it is also a way of managing health, not just a treatment for specific diseases.

❖ **DIETARY MANAGEMENT OF DIABETES WITH YOGA**

Yoga is also useful in managing eating habits and has been suggested for people with eating disorders. The connection between mind and body developed through yoga can help with self-awareness, thinking about habits, and making positive changes. Practices like yoga, breathing exercises, and sudarshan kriya have been found to help improve eating habits and make patients more likely to follow their treatment plans.

❖ **MECHANISMS OF YOGA IN DIABETES MANAGEMENT**

Yoga helps manage diabetes by looking at both physical and mental health. The ways yoga helps with diabetes include reducing stress, improving how the body uses insulin, and helping control the body's metabolism. Yoga can help keep blood sugar levels under control, reduce stress in the body, and lower HbA1c levels. Physical movements in yoga help muscles work better, which helps the body use glucose. Breathing exercises and meditation can also help the body's automatic functions, which in turn improves heart and metabolism health. Together, these effects can help stop or prevent type 2 diabetes from developing in people with prediabetes.



IAYT: Yoga Asana, Breath regulation and awareness through Pranayama, Meditation and Deep Relaxation in supine rest

30 minutes to 1 hour of practice a day

Mechanism by which yoga works is through single or combined impact of:

(a) Neurophysiology; (b) Psychophysiology; (c) Psycho neuro endocrinology; (d) Neuropsychology (e) Neuroendocrinology

Autonomic balance

Vagal modulation

Endocrine- Hormonal regulation: Insulin, C Peptide, GIP, GLP-1, Glucagon

Glucose Homeostasis and Glycemic control

Prevention and Management of Type 2 Diabetes Mellitus



STRESS REDUCTION

Stress is a big factor in how insulin works in the body, especially for people with diabetes. When stress is constant, it affects the hypothalamic-pituitary-adrenal (HPA) axis, which causes the body to release cortisol, a hormone that helps the body deal with stress. Too much cortisol makes the liver produce more glucose, leading to higher blood sugar

levels. Also, cortisol can make cells less responsive to insulin, making it harder for the body to use glucose properly. Doing Yoga can help reduce these stress-related issues by controlling the HPA axis. Practicing Yoga regularly can lower cortisol production, which helps keep blood sugar levels more stable. Yoga also helps by activating the parasympathetic nervous system, known as the "rest and digest" system. This balances out the "fight or flight" response from the sympathetic nervous system, which usually kicks in during stress. This balance helps keep heart rate and blood pressure in check, and promotes relaxation. This not only improves physical health but also supports better diabetes management. Breathing techniques, like Pranayama, are especially helpful in reducing stress. Practices such as alternate nostril breathing and deep breathing can improve the activity of the vagus nerve, which is important for the parasympathetic nervous system. These techniques lower stress hormones like cortisol and adrenaline, while also improving the body's oxygen supply. Slow and deep breathing helps stabilize the nervous system and reduce anxiety. The combination of physical and mental benefits of Pranayama makes it a powerful way to manage stress in people with diabetes. Meditation is another important part of Yoga that helps with stress reduction. It helps calm the mind, reduces thinking about negative things, and improves emotional control. Mindfulness, which comes from meditation, can greatly reduce stress, anxiety, and depression that are common in people with chronic diseases like diabetes. By improving mental health, meditation helps people develop better ways to cope with stress and can improve their ability to manage their condition. Managing insulin resistance, a major challenge in diabetes, is important for controlling blood sugar levels. Yoga helps by improving the way the body uses insulin and processes glucose. Yoga poses, or Asanas, help by increasing blood flow and muscle activity, which can improve insulin sensitivity. Controlled breathing practices further help by reducing oxidative stress. Oxidative stress happens when there is an imbalance between free radicals and the body's antioxidants, which can harm insulin signals and glucose balance. Yoga breathing techniques help activate enzymes that fight free radicals, protecting cells and improving insulin signaling. This makes it easier for the body to take up and use glucose. Yoga has a big impact on overall metabolic health, which is key for managing diabetes. It influences several body functions that help manage blood sugar, blood pressure, weight, appetite, and digestion. One of the main benefits of Yoga is improving the balance of fats in the blood. Studies have found that regular Yoga practice lowers bad cholesterol (LDL) and triglycerides, while increasing good cholesterol (HDL). This helps reduce the risk of heart and blood vessel problems, which are common in poorly managed diabetes. Lower LDL and triglycerides can prevent plaque from forming in the arteries, improving vascular health and lowering the risk of heart attacks and strokes. Yoga also helps control blood pressure by improving the flexibility of blood vessels and reducing stress. It activates the parasympathetic nervous system and reduces stress, which helps keep blood pressure in a healthy range. Lower blood pressure not only helps prevent heart problems but also protects the kidneys, which can be damaged over time by long-term diabetes.

❖ **THE EFFECTS OF YOGA ON BLOOD LIPID PROFILES**

Many studies have looked at how yoga affects blood lipid levels. All these studies suggest that practicing yoga and yoga-based programs can improve lipid profiles. The changes seen include lower levels of cholesterol, triglycerides, low-density lipoprotein (LDL), and very low-density lipoprotein (VLDL), along with higher levels of high-density lipoprotein (HDL). The ratio of LDL to HDL also improved compared to initial levels or control groups. In people with type 2 diabetes mellitus, yoga practice was linked to increased insulin levels, better glucose uptake, fat redistribution, and a lower waist-to-hip ratio.

❖ **THE EFFECTS OF YOGA ON BLOOD PRESSURE**

Patients with type 2 diabetes who did a three-month residential kriya yoga program along with a vegetarian diet showed improvements in both systolic and diastolic blood pressure compared to their baseline levels. The program included yoga, a vegetarian diet, stress management, and group support. Similar results were found in patients with type 2 diabetes and coronary heart disease. Meditation was found helpful for people with high blood pressure, but its benefits were only seen while they kept practicing. Patients with type 2 diabetes and high blood pressure also saw improvements in blood pressure after two to three weeks of yoga, often needing less medication for blood pressure control.

❖ CONCLUSION

Diabetes is a complex condition that needs a complete approach to treatment, considering both body and mind. Yoga, with its mix of physical postures, breathing techniques, and meditation, offers a whole-body approach to managing diabetes. It helps control blood sugar by improving insulin sensitivity, helping the body use glucose better, and reducing inflammation and stress. Yoga also helps reduce stress, a key factor in diabetes, by lowering cortisol levels and promoting relaxation through the parasympathetic nervous system. Yoga is a useful addition to standard diabetes care, helping with both physical and mental health. It's affordable, easy to access, and has low risk, making it suitable for many people. More research is needed to create better yoga programs for diabetes and to understand its long-term benefits. Including yoga in diabetes care can help improve patients' quality of life and help them manage their blood sugar better.

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