

# **Combined effect of Yog-vyayama on different levels of HbA1c in patients with Type 2 Diabetes Mellitus**

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## **Abstract**

The present study was Carried out in the exercise and sports physiology laboratory and Yoga Centre, Jadavpur University, Kolkata, India to investigate the combined effect of Yog-vyayama on selected anthropometric characteristics, muscular fitness, vitals, glycemic control, insulin resistance and insulin sensitivity in patients with Type 2 Diabetes Mellitus (T2DM) at three different time points. After screening from 230 registered participants 162 pre-diabetes and type 2 diabetes patients were purposively divided into three groups based on HbA1c levels: Pre-diabetes (Group A - 5.7% to 6.4%) n=51, T2DM Stage 1 (Group B - 6.5% to 8%) n=54 with taking oral hypoglycaemic agent (OHA) and T2DM Stage 2 (Group C - >8%) n=57 with OHA. Finally, 109 Participants underwent a 24-week Yog-vyayama intervention, including prayer, Yogic Suksma Vyayama, Surya namaskar, brisk walking, dynamic stretching and deep breathing, asana, kriya, pranayama, and meditation. G\*Power statistical software was used to determine the sample size. Shapiro–Wilk normality test was used to examine the normal distribution of the data. RM ANOVA was used for significant differences, followed by Post hoc analysis. Percentage changes were calculated to establish the batter effect of treatment. Results showed significant reductions in glycaemic control in all groups across the three measurement periods, with greater improvements in T2DM stage 2 (male-25.86% & female=32.64%), T2DM stage 1 (male-18.11% & female=21.14%) and pre-diabetes (male-13.40% & female=16.06%) groups. Yog-vyayama also improved BMI, waist & hip circumference, heart rate, blood pressure, insulin resistance and insulin sensitivity. These findings suggest that Yog-vyayama can be a valuable complementary and alternative therapy for T2DM management.

**Clinical Trial Registry of India:** Trial Registration No - [CTRI/2024/08/072487](#)

**Keyword:** Yog-vyayama, Pre-diabetes, T2DM, glycemic control, insulin resistance.