# A Comparative Study was Done to Assess the Effectiveness of Antigravity Exercise and Pilates Exercise on Blood Sugar Among Diabetes Patients in Selected Area of Anand District

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***Abstract*—The ratio of diabetes mellitus is higher in India, with many people not engaging in regular physical activities. Exercise plays a crucial role in managing blood sugar levels, modifying cardiovascular risk factors, improving insulin sensitivity, and enhancing overall health. This study aims to assess the effect of Antigravity exercise and Pilates exercise on fasting blood sugar among diabetes patients.**

***Index Terms*—Antigravity Exercise, Diabetes mellitus, Fasting blood sugar, Pilates exercise**

## I. INTRODUCTION

Diabetes mellitus derives from the Greek word "diabetes," meaning to siphon or pass through, and the Latin word "mellitus," meaning sweet. In 1889, Mering and Minkowski identified the pancreas's role in diabetes development. A significant breakthrough came in 1922 with the discovery of insulin. In 2021, the World Bank reported that 9.6% of individuals aged 20 to 79 in India were affected by diabetes. As of April 2023, 77 million individuals in India aged 18 and above are living with Type II diabetes mellitus. Diabetes management includes multiple aspects such as diet, medication, and physical activity.

Antigravity workouts are high-intensity exercises that help reduce blood sugar levels and support insulin release. Pilates emphasizes developing strength, flexibility, and endurance. The core principles include strengthening the center of the body, controlled breathing, and fluid movements. Both methods may benefit individuals managing diabetes.

## II. METHODOLOGY

This study employs a quantitative approach with a comparative design. A total of 60 participants were selected through convenience sampling and divided equally into Antigravity and Pilates groups. The study was conducted in Morad village, Anand District, from May 5 to May 25, 2024.

Inclusion criteria: Diagnosed with type II diabetes mellitus, aged 30-60 years, on oral hypoglycemic agents.
Exclusion criteria: Patients with physical disabilities, recent surgeries, foot ulcers, and pregnant women.

Both exercise routines were performed for 21 days in the early morning for 20 minutes each day. The Antigravity group engaged in stair steppers, squats, and shoulder presses. The Pilates group performed leg circles, criss-cross, and double leg stretch exercises. Data collection tools included socio-demographic and diabetes assessment tools. The Physical Activity Readiness Tool was used for eligibility screening.

## III. RESULTS

Antigravity Group:
Pre-test mean: 128.1 mg/dL
Day 10: 123.7 mg/dL ($t = 2.3$, $p < 0.05$)

Day 21: 119 mg/dL ($t = 6.4$, $p < 0.05$)
Pilates Group:
Pre-test mean: 125.8 mg/dL
Day 10: 117.1 mg/dL ($t = 5.9$, $p < 0.05$)
Day 21: 121.5 mg/dL ($t = 3.7$, $p < 0.05$)
Comparison:
Day 10 reduction: 4.5 (Antigravity) vs 8.7 (Pilates), $t = 1.7$, $p > 0.05$
Day 21 reduction: 9.1 (Antigravity) vs 4.3 (Pilates), $t = 2.6$, $p < 0.05$

## IV. DISCUSSION

Both Antigravity and Pilates exercises effectively reduced fasting blood sugar levels. However, by day 21, Antigravity exercises showed a statistically significant greater effect than Pilates exercises. The findings align with previous research by Kamatchi Kaviraja (2022), who concluded that Antigravity exercises improve balance and strength in diabetes patients more effectively than Pilates.

## V. CONCLUSION

This study concluded that while both Antigravity and Pilates exercises are effective in reducing fasting blood sugar levels, Antigravity exercises demonstrated significantly greater effectiveness by the 21st day of intervention among diabetes patients.

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