International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Impact of Structured Daily and Prolonged Fasting on Insulin Sensitivity and Weight Reduction in an Overweight Adult Male: A Case Report

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ABSTRACT

This case report examines the metabolic and anthropometric effects of a structured fasting protocol in a 47-year-old overweight male with lifestyle-associated metabolic dysfunction. Before intervention, the patient consumed 4–5 meals per day, resulting in sustained hyperinsulinemia and progressive weight gain. After enrolment, the patient adopted One Meal a Day (OMAD) within a strict 1-hour eating window and engaged in periodic prolonged fasts (48–72 hours). Over nine months, body weight decreased from 113.2 kg to 82.65 kg (total loss 30.55 kg). Fasting-induced improvements in insulin sensitivity were identified as the primary mechanism enabling sustained fat oxidation. This case highlights structured fasting as an effective therapeutic tool for metabolic rehabilitation and durable weight reduction.

INTRODUCTION

Fasting-based interventions reduce basal insulin levels, improve insulin sensitivity, restore metabolic flexibility, and enable sustained fat oxidation. Unlike caloric restriction, fasting reorganizes metabolic timing, creating extended low-insulin windows required for effective mobilization of adipose reserves. High-frequency eating patterns contribute to hyperinsulinemia, impaired metabolic regulation, and weight gain. This case demonstrates that structured fasting, rather than dietary modification, served as the primary therapeutic driver of significant metabolic improvement.

CASE PRESENTATION

A 47-year-old male (height 5'10") presented with overweight status (113.2 kg), prediabetic markers, borderline hypertension, constipation, episodic urticaria, and heel spur discomfort. Prior to intervention, lifestyle patterns included 4–5 meals per day, late-night eating, and limited physical activity (2,000–5,000 steps/day), contributing to metabolic dysregulation.

INTERVENTION

Beginning October 3, 2024, the patient adopted:

1. One Meal a Day (OMAD) fasting within a strict 1-hour daily eating window, with one heavy meal consumed during that window.

2. Multiple prolonged fasts lasting 48–72 hours.
3. Light-to-moderate walking (3,000–10,000 steps/day) without structured exercise.
4. L-Carnitine supplementation taken regularly as a supportive measure; fasting remained the primary therapeutic intervention.

RESULTS

Weight trajectory:
October 2024: 113.2 kg → ~103 kg
November 2024: ~103 kg → ~97 kg
December 2024: ~97 kg → ~95 kg
January 2025: ~95 kg → ~90.7 kg
February 2025: ~90.7 kg → ~88–89 kg
March 2025: ~88 kg → ~87 kg
April 2025: ~87 kg → ~85 kg
May 2025: ~85 kg → ~84 kg
June 2025: ~84 kg → 82.65 kg
Total weight reduction: 30.55 kg.

DISCUSSION

The weight reduction observed is consistent with physiological responses to structured fasting. Extended fasting windows (23 hours/day plus multi-day fasts) produced reductions in basal insulin levels, improved insulin receptor sensitivity, reduced hepatic glucose output, and enhanced metabolic switching capacity. These adaptations enabled sustained fat oxidation despite consumption of a single heavy daily meal. Prolonged fasting cycles accelerated glycogen depletion, activated autophagy, and intensified lipolytic signaling. Plateaus reflected normal metabolic adaptation and resolved with additional prolonged fasting.

CONCLUSION

Structured fasting—specifically a 1-hour OMAD window combined with periodic 48–72-hour prolonged fasts—served as the primary therapeutic intervention resulting in sustained metabolic improvement and significant weight reduction. Over nine months, the patient achieved a 30.55 kg decrease without caloric restriction, dietary modification, pharmacotherapy, or structured exercise. Fasting-induced improvements in insulin sensitivity enabled restoration of metabolic flexibility and durable fat loss. This case supports fasting-centered protocols as effective therapeutic strategies for metabolic rehabilitation.

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