

Effect of Intermittent Fasting on Body Composition, Metabolism, and Athletic Performance in Indian Athletes

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Abstract Intermittent fasting (IF), a dietary approach alternating between fasting and eating windows, has gained widespread attention for its potential benefits in fat loss, metabolic enhancement, and overall athletic performance. This review analyzes the specific effects of IF on Indian athletes, a group with unique cultural, nutritional, and religious practices. The paper evaluates how IF influences fat mass reduction, lean muscle retention, insulin sensitivity, and energy utilization during different types of sports. Findings show that while IF can be an effective strategy for improving body composition and metabolic markers, its success is dependent on sport type, meal quality, hydration, and timing. Personalization is essential for ensuring that IF strategies align with both training goals and traditional dietary customs. The paper concludes that IF, when properly managed, can be a useful nutritional strategy for Indian athletes across disciplines.

Keywords: Intermittent fasting, metabolism, athletic performance, Indian athletes, Ramadan fasting

I. INTRODUCTION

Nutrition forms the foundation of athletic success by influencing energy metabolism, muscle recovery, and long-term health. Intermittent fasting (IF) has emerged as a promising dietary method, particularly for fat loss and metabolic regulation. Unlike traditional diets that focus on calorie reduction, IF emphasizes eating within specific time windows, which can optimize hormonal responses and energy efficiency.

In India, where athletes often adhere to vegetarian diets and observe religious fasts such as Ramadan and Navratri, the role of IF becomes both culturally relevant and physiologically significant. However, limited data exist on the direct impact of IF among Indian athletes. This review critically explores the

intersection of IF with sports performance in the Indian context.

II. OBJECTIVE OF THE STUDY

The objective of this review is to investigate the impact of intermittent fasting on body composition, metabolic parameters, and athletic performance in Indian athletes, and to explore culturally appropriate strategies for its effective implementation.

III. HYPOTHESIS

Intermittent fasting significantly influences fat reduction and insulin sensitivity in Indian athletes, but its effects on strength, endurance, and recovery vary based on sport type, fasting duration, and individual adaptability.

IV. METHODOLOGY

A systematic review of literature was conducted using databases such as PubMed, Google Scholar, and ResearchGate. Keywords included "intermittent fasting," "Indian athletes," "Ramadan fasting," "body composition," and "sports performance." Only peer-reviewed research published between 2000 and 2025 was included. Emphasis was placed on studies involving South Asian populations or those with comparable dietary practices.

V. DISCUSSION AND ANALYSIS

V.I Intermittent Fasting and Body Composition
Several global and regional studies confirm the effectiveness of IF in reducing fat mass while preserving lean muscle. Tinsley and La Bounty (2015)

highlighted fat loss with maintained muscle mass under TRF protocols. Similarly, Kumar et al. (2018) conducted an 8-week intervention on Indian wrestlers and found significant fat reduction without compromising strength. This balance is essential for sports like wrestling or boxing where body weight plays a crucial role.

However, prolonged fasting without adequate protein intake or poor nutrient timing may result in muscle catabolism. Bhutani et al. (2020) emphasized the importance of consuming adequate protein within the eating window, especially for athletes in muscle-building or maintenance phases.

V.II Intermittent Fasting and Metabolic Regulation IF improves key metabolic markers such as insulin sensitivity, lipid profiles, and glucose regulation. Singh and Gupta (2021) reported enhanced glycemic control in Indian athletes during fasting periods. Hormonal shifts, particularly increases in human growth hormone (HGH) and better leptin-ghrelin balance, support fat metabolism and reduce appetite fluctuations (Chaudhary et al., 2022).

These metabolic changes are especially valuable for Indian athletes who may be predisposed to insulin resistance due to genetic and lifestyle factors. IF provides a non-pharmacological method to enhance long-term metabolic health.

V.III Athletic Performance The influence of IF on athletic performance varies significantly across sports.

- Endurance sports: Some endurance athletes benefit from improved fat oxidation and mitochondrial adaptation. Studies on Ramadan fasting (Zerguini et al., 2007) suggest that aerobic performance can be maintained with proper hydration and recovery.
- Anaerobic performance: High-intensity sports like sprinting or weightlifting may be negatively affected if glycogen levels are depleted. Chenna et al. (2019) noted performance drops in Indian sprinters training in fasted states.
- Recovery: Recovery may be delayed when post-exercise nutrition is not timed appropriately within the eating window. Sleep disruption during

religious fasting can further hinder tissue repair and performance consistency.

V.IV Cultural and Nutritional Challenges in Indian Athletes A significant portion of Indian athletes follow vegetarian or mixed diets, often resulting in lower protein intake. Additionally, common dietary practices include skipping meals or consuming high-fat traditional foods that may not align with sports nutrition guidelines.

Religious fasting further complicates nutritional planning. During Ramadan, for example, athletes abstain from food and fluids for up to 16 hours, posing risks of dehydration and nutrient deficiency. Cultural expectations and limited access to sports nutritionists amplify these challenges.

To implement IF effectively, meal plans must respect religious practices while ensuring adequate macronutrient intake. Culturally adapted guidance is necessary to balance tradition with science.

V.V Practical Considerations for Implementation To ensure the safe and effective use of IF among Indian athletes, several practical strategies should be employed:

- Meal quality: Nutrient-dense meals with adequate protein, fiber, and healthy fats should be prioritized within the feeding window.
- Timing: Align eating windows with training sessions to support performance and recovery.
- Hydration: Special care should be taken during fasting hours, especially in hot climates. Rehydration during the eating window is crucial.
- Monitoring: Regular tracking of body composition, energy levels, and performance metrics is essential to adapt IF protocols over time.
- Professional guidance: Athletes should work with certified sports nutritionists to tailor IF strategies to their unique needs.

VI. CONCLUSION

Intermittent fasting can be a beneficial strategy for Indian athletes aiming to improve body composition, metabolic health, and, in some cases, performance.

However, it is not universally applicable. Sport-specific demands, individual physiology, and cultural factors must guide its use.

Athletes involved in endurance disciplines may find IF more compatible with their training, whereas strength athletes should approach it with caution. Personalized plans developed in consultation with experts are crucial for optimizing benefits and minimizing risks.

As Indian sports continue to evolve, integrating evidence-based nutritional strategies like IF—while honoring cultural practices—will be essential in supporting athlete development at both amateur and elite levels.

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