

The Effects of a 48-Hour Fasting Period on Metabolic Markers During Exercise and Recovery in Male Combat Sports Athletes

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Purpose: Fasting strategies have gained increasing attention in sports science due to their potential effects on metabolic responses and athletic performance. However, limited research has examined the metabolic and performance-related consequences of a 48-hour fasting period followed by a 24-hour recovery phase in combat sports athletes. This study aims to investigate the effects of 48-hour fasting on metabolic markers, performance, and recovery in male combat sports athletes, emphasising the reversibility of fasting-induced metabolic changes after a 24-hour refeeding period.

Methods: A total of eight male combat sport athletes ([Mean $\pm$ standard deviation] Age: 25.1 ± 4.0 years, Height: 181 ± 6.7 cm, Body Weight: 83.3 ± 12.7 kg) participated in this interventional pre- and post- study. The research design included three assessment points: before fasting (baseline), after 48 hours of fasting, and after a 24-hour recovery period. The measured variables included: the resting metabolic rate (RMR), $\dot{V}O_{2\max}$ test data, lactate, glucose and ketone, free fat mass (FFM), body weight.

Results: Fasting significantly decreased FFM (-1.4 ± 10.8 kg, $p < 0.008$) and body weight (-2.1 ± 12 kg, $p < 0.001$). $\dot{V}O_{2\max}$ test load decreased significantly (13 Watts, $p < 0.001$) after fasting but returned to baseline after 24-hour recovery. Ketone levels increased significantly (1.04 ± 0.51 mmol/L, $p < 0.001$). Peak glucose levels also decreased significantly (0.8 ± 0.70 mmol/L, $p < 0.028$), along with glucose levels at the 2nd (0.7 ± 0.51 mmol/L, $p < 0.001$) and 15th (0.6 ± 0.70 mmol/L, $p < 0.005$) minutes of recovery. Lactate concentrations decreased significantly during peak performance (10.3 ± 4.03 mmol/L, $p < 0.049$) and 30-minute recovery (5.5 ± 1.60 mmol/L, $p < 0.005$).

Conclusion: This study demonstrates that a 48-hour fasting period significantly alters metabolic markers and temporarily impairs $\dot{V}O_{2\max}$ performance. However, after a 24-hour recovery period, performance measures returned to baseline, suggesting that 48-hour fasting does not have long-lasting adverse effects on performance in combat sports athletes. These findings highlight the metabolic adaptability of trained athletes and the potential implications of fasting as a weight management strategy. Further research is required to explore the long-term physiological effects and potential applications in combat sports training and competition.

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