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Impact of a 48-Hour Fasting Period on Metabolic Markers During Exercise and Recovery in Male Combat Sport Athletes

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INTRODUCTION:

Combat sports demand high-intensity efforts that predominantly rely on anaerobic energy systems and specialized technical skills. Athletes often employ rapid weight loss strategies such as a 48-hour fasting period to compete in lower weight categories, despite a recovery period of 24 hours or less that may not fully restore their physiological parameters. However, the impact of such fasting protocols on metabolic markers like glucose, ketone, and lactate concentrations and subsequent anaerobic performance during the recovery phase remains underexplored. This study aims to investigate the effects of a 48-hour fasting period on resting metabolic ratio, performance, and 1-hour recovery in male combat sports athletes, hypothesizing that while fasting induces metabolic changes, anaerobic performance is maintained after a 24-hour recovery period.

METHODS:

This study involved eight male professional combat athletes, with an age of 25 ± 3 years and body weight of 84 ± 4 kg. The athletes underwent a 48-hour fasting period, followed by 24-hour recovery, with measurements taken at three time points: pre-fasting, after fasting, and post-recovery. The testing included assessments of resting substrate oxidation, lactate, glucose, ketone levels, and power output during VO₂max test. Statistical analysis was conducted using Repeated Measures ANOVA to compare the metabolic and performance data across these phases.

RESULTS:

Compliance with fasting regime was supported by decreased body weight ($p < 0.001$), carbohydrate oxidation ($p < 0.003$) and resting glucose concentration ($p < 0.028$), and by increased fat oxidation ($p < 0.001$) and resting ketone concentration ($p < 0.001$). Fasting decreased power output ($p < 0.008$), along with decreased peak lactate ($p < 0.049$) and glucose concentrations ($p < 0.028$) during VO₂max test. However, metabolic changes and VO₂max test performance output returned to baseline after 24-h recovery period.

CONCLUSION:

48-h fasting temporarily suppressed metabolic changes and VO₂max test performance in professional combat athletes. After recovery period restored metabolic changes indicate the ability to restore glycogen levels and sustain performance.

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