Intermittent Feeding and High-Intensity Interval training potentiates energetic metabolism.

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Introduction: Intermittent feeding (IF) is defined as a reduction of calories ingestion without malnutrition. Similar to physical training, IF is capable of causing global changes in energetic metabolism. However, the effects of IF on metabolism in association with high-intensity interval training (HIIT) are unknown.

Objective: Characterize the effects from the combination of a HIIT with an IF schedule on the energetic metabolism.

Materials & Methods: Wistar male rats were separated into four groups of eight animals each: Control (C), Training (T), Intermittent Feeding (IF) and Intermittent Feeding with Training (IF/T). IF was based on a schedule of feeding every other day. The HIIT regimen utilized a swimming protocol that consisted of 14, 20 sec series of swimming sessions with a 10s rest between series, performed 3 times a week for 10 weeks.

Results & Discussion: The weight for the animals was reduced by 16% in the IF group and 20% in the IF/T group in comparison to the control. The observed fasting glycemic index showed that training associated with caloric restriction increased the absorption of glucose over 23%. The assessment of physical performance of animals subjected to intermittent feeding with training (IF/T) displayed a swimming time in the last test three times greater than the control animals (C) and 50% greater than the group that was only trained (T). From the gastrocnemius muscular in the IF/T group, mitochondrial coupling was 90% greater than control group, which increased respiratory efficiency and reduced by >37% the leakage of protons.

Conclusion: The results suggest that both IF and T alone can modulate glucose levels, mitochondrial activity and metabolism. The data also strongly suggests that the combination of a calorie restricted diet together with high intensity interval training led to a more efficient use of glucose and the oxidative metabolism than either treatment separately.

Key Words: Intermittent Feeding, Energetic Metabolism and Training.

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