
Impact of High-Intensity Interval Training (HIIT) on Lipid Profile and Cardiovascular Health in Male Adolescents Across Various Obesity Classes

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Résumé

The prevalence of obesity is increasing at an alarming rate worldwide, posing substantial health risks. Notably, childhood obesity is associated with significant comorbidities, including insulin resistance and hypertension¹. High-intensity interval training (HIIT) emerges as a promising alternative for reducing adiposity and improving metabolic health². Yet, the effects of HIIT on severe obesity remain understudied. This research aims to investigate the impact of HIIT on cardiovascular health, lipid profiles, and perceived exertion in obese adolescent boys, hypothesizing greater improvements in moderate obesity group (MOG) and longer adaptation periods for severe obesity group (SOG).

Throughout a 16-week intervention, participants engaged in thrice-weekly HIIT sessions on a cycle ergometer. These sessions comprised intervals at 100% peak power output, conducted at the ventilatory threshold, interspersed with recovery phases at 50% of peak power.

Both groups demonstrated improvements across all measures of body composition, with SOG exhibiting a more pronounced percentage change (Δ) after 16 weeks. Additionally, the 6-minute walking test performance enhanced significantly in both groups ($p < 0.001$). Furthermore, significant improvements were observed in various cardiovascular parameters, blood lactate levels at rest and post-exercise, blood lipid profiles, and insulin concentrations across both groups. Following the 16-week, MOG exhibited notable enhancements in peak heart rate (HR_{peak}), blood glucose levels, and rating of perceived exertion (RPE), although the percentage change (Δ) was higher in SOG across other variables. Specifically, SOG demonstrated greater improvements in waist-to-hip ratio, maximum heart rate, resting heart rate, systolic blood pressure, blood lactate levels post-exercise, and triglyceride concentrations following both 8 and 16 weeks of training.

The findings underscore the efficacy of long-term HIIT programs as a suitable training modality for obese adolescent boys with excess body fat. However, it is imperative to consider the perceived exertion levels, suggesting the need for thoughtful planning of session durations.

References

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