

## Effects of High Intensity Interval or Continuous Moderate Training on Metabolic Thresholds: A Randomized Control Trial

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High intensity interval training (HIIT) has been suggested to promote superior metabolic and cardiovascular adaptations than classical moderate continuous training (MCT) in athletes or sedentary people. However, less is known about the effects of HIIT in metabolic thresholds like anaerobic (AT) or respiratory compensation point (RCP) in active women. Moreover, former studies have not compared exercise protocols with same training internal load (similar energy expenditure), which must be a main concern in order to compare HIIT and MCT. PURPOSE: It was our aim to compare changes in AT and RCP between HIIT and MCT exercise training protocols with the same energy expenditure. METHODS: Forty-one healthy women accepted to participate in the study (42.58±7.53 years; fat mass percent (%FM) 35.8±7.0%; maximum oxygen uptake (VO<sub>2</sub>max), 30.78±7.66 ml/kg/min). Thirty-two were previously active (>3 days/week restructured exercise), and they were randomized in HIIT (95% VO<sub>2</sub>max reserve, 172 min/week) or MCT (61% VO<sub>2</sub>max reserve, 279 min/week) groups, a control group (CG) of 9 women with similar age and body composition was selected from the university community. Both exercise-training protocols were designed to result in similar energy expenditure and were performed 2-3 times per week during 24 weeks. AT and RCP were measured using indirect calorimetry (Ultima CCM, MedGraphics, USA) during a ramp exercise test (delta 15 watts/min) on bike. Data from exercise test were used to prescribe training load. Repeated measured analyses were carried out in order to compare AT and RCP before and after 24 weeks of training between HIIT, MCT and CG groups. RESULTS: After 24-week of training exercise, both groups increased VO<sub>2</sub> at AT (1067±404 vs 1207±351 ml/min and 947±293 vs. 1128±351 ml/min, HIIT and MCT respectively; *P*<0.05 for both) and RCP (1529±434 vs 1730±403 ml/min and 1599±496 vs. 1815±529 ml/min; HIIT and MCT respectively, *P*<0.01 for both). Post Hoc analysis showed that VO<sub>2</sub> at AT and RCP were significantly different among training groups and CG, which did not modify any variable. CONCLUSIONS: Our results suggests that both HIIT and MCT promote similar improvements of VO<sub>2</sub> at AT and RCP in previously active women, when similar energy expenditures are performed.

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