

EXERCISE-INDUCED MODULATION OF BODY COMPOSITION, ADIPONECTIN-ASPROSIN BALANCE AND LIPID AND CARBOHYDRATE METABOLISM IN MEN WITH METABOLIC SYNDROME: A RANDOMIZED CONTROLLED TRIAL

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Background: Adiponectin has anti-inflammatory and insulin-sensitizing effects, whereas asprosin stimulates appetite and promotes insulin resistance. However, the relationships among adiponectin, asprosin, physical activity, and metabolic syndrome (MetS) remain poorly understood.

Objective: This study aimed to evaluate the effects of two 12-week exercise interventions (aerobic training, combined aerobic-resistance training) on body composition, adiponectin and asprosin concentrations, and metabolic parameters in men with MetS.

Subjects and methods: Sixty-two men with MetS (age 36.6±6.9 years; BMI 33.6±4.4 kg/m²) were randomly assigned to: aerobic training (EG1, n=21), combined aerobic-resistance training (EG2, n=21), or a non-intervention control group (CG, n=20). Body composition and biochemical markers (adiponectin, asprosin, triglycerides, fasting glucose, insulin) were assessed at baseline, weeks 6 and 12, and 4 weeks post-intervention. Intervention effects were analysed using linear mixed models with post hoc tests and effect sizes.

Results: EG1 showed a significant increase in the adiponectin/asprosin ratio (p=0.02, ES=0.73), along with improvements in body composition and lipid accumulation product (p<0.01, ES=2.28). EG2 improved body composition and insulin resistance (p<0.01, ES=1.19), while the control group showed a decline in the adiponectin/asprosin ratio (p<0.01, ES=1.54). Aerobic training primarily enhanced adipokine balance and lipid metabolism, whereas combined aerobic-resistance training improved carbohydrate metabolism in men with MetS, likely through reductions in visceral adiposity.

Keywords: Body fat; Fat free mass; Insulin resistance.

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