

Metabolic responses to submaximal treadmill walking and cycle ergometer pedalling in obese adolescents.

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Scandinavian Journal of medicine & Science in Sports 20: 630-7, 2010.

Physical activity is essential in obesity management because of the impact of exercise-related energy expenditure (EE) and fat oxidation (Fox) rate on a daily balance, but the specific physiological effects of different exercise modalities are scarcely known in obese individuals. The objective of the study was to compare the metabolic responses to treadmill (TM) and cycle ergometer (CE) exercise in obese adolescents. Gas exchange, heart rate (HR), blood lactate (LA) concentration, EE and Fox were determined at different intensity levels (up to about 85% of maximal oxygen uptake) during TM and CE in 14 pubertal (Tanner stage: > 3) obese (BMI SDS: 2.15-3.86) male adolescents (age: 13-18 years). At comparable HR, oxygen uptake, EE and Fox were higher, and LA lower, during TM than CE ($P < 0.05-0.001$), suggesting that cycling imposes a metabolic involvement at the level of the single active muscles greater than walking. Therefore, due to different physiological responses to TM and CE, walking was more convenient than cycling in obese adolescents, permitting to attain the same EE at lower HR, with lower blood LA concentration and with greater Fox. These conclusions seem clinically relevant when using exercise as a part of multidisciplinary treatment for juvenile obesity and amelioration of related metabolic disturbances.

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