

Intermittent Versus Continuous Walking in Obese Populations

What Was the Question?

This study addressed the growing belief that interval training is more beneficial than continuous aerobic training with regard to fat loss and caloric expenditure. Campbell, Wallman, and Green (2010) employed the conditions of interval exercise with caloric restriction and continuous aerobic exercise with caloric restriction in a 12-week, home-based program to examine cardiovascular fitness, body composition, resting metabolic rate (RMR), and blood lipids in obese participants.

What Was Done?

Forty-four individuals were recruited, but after participant withdrawal, 26 obese participants (body mass index [BMI] $\geq 30 \text{ kg} \cdot \text{m}^{-2}$) who were 18 to 65 years old remained. They were matched by age, gender, and BMI, and then randomly stratified into the interval (INT; 9 females, 3 males) and continuous (CON; 11 females, 3 males) groups. Physiological measures included BMI, blood pressure, RMR, body composition, VO_2 max, and a variety of fasting blood-lipid levels. Each physiological measure was collected at the start and end of the study. The caloric restriction for all participants consisted of a diet comprised of 50% carbohydrates, 30% fat, and 20% protein, with participants consuming between 1,200 kcals (women) to 1,400 kcals (men) per day. Weekly weigh-ins and sample daily food diaries from weeks 1 and 12 were used to document dietary adherence. The exercise intervention included walking five days a week for 12 weeks. Participants completed two 15-minute walking bouts with at least three hours of rest between bouts each day.

Exercise intensity for the CON

group was initially set to 50% of the subject's VO_2 max and was increased to 55% after six weeks to account for progression. The INT group employed a ratio of 2:1 minutes for low-intensity (40% VO_2 max) and moderate-intensity (70% VO_2 max) exercise. After six weeks, exercise intensities reached 45% and 75% VO_2 max, respectively. The difference between the two groups was the intensity at which each group walked; the CON group performed each 15-minute walking bout at a specified level of intensity without variation. The INT group, however, alternated between walking at the lower percent of their VO_2 max for two minutes, then at the higher percent VO_2 max for one minute for the entirety of each 15-minute bout. Participants used heart-rate monitors to maintain the correct exercise intensities, pedometers to assess daily activity (number of steps per day) during weeks 1 and 12, and a daily activity diary to document exercise adherence. Participants were asked to limit exercise to that included in the study.

What Was Found?

In both groups aerobic fitness, blood lipids, body composition, and metabolism improved, but bigger improvements were seen in the INT group. Very low-density lipoprotein was the only variable significantly ($p < 0.05$) different between the groups' poststudy values, with the INT group improving significantly more than the CON group. The authors suggested two plausible explanations for these findings: (1) the home-based nature of the program, which prevented direct supervision of both diet and exercise adherence; and (2) the possibility that if exercise intensity had been higher, like sev-

eral other studies cited in the paper, bigger differences might have been seen between groups.

What Does the Study Mean?

These results support previous findings that interval training is more beneficial to whole-body health than continuous training. The authors acknowledged three important limitations that may have influenced their findings: (1) the need to employ longer training periods, (2) the value of increasing the training intensity of the INT group, and (3) the implementation of larger differences between the low- and moderate-intensity levels of the interval training. Overall this study shows that although any kind of exercise is better than none, interval training appears to be the most beneficial with regard to fat loss, caloric expenditure, and aerobic capacity in obese populations. Alternating between fat-energy reserves and carbohydrate-energy reserves, as is the case with interval training, increases metabolism and, as a result, caloric expenditure. The authors' final note was to recommend that future studies consider the value of home-based and split-training protocols that were revealed as beneficial in this project.

Reference

Campbell, L., Wallman, K., & Green, D. (2010). The effects of intermittent exercise on physiological outcomes in an obese population: Continuous versus interval walking. *Journal of Sports Science & Medicine, 9*, 24-30.

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