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Paper

The energy expenditure of using a "walk-and-work" desk for office-workers with obesity

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▶ Abstract

Objective: For many people, the majority of the working day is spent sitting in front of a computer screen. Approaches for obesity treatment and prevention are being sought to increase work-place physical activity because low levels of physical activity are associated with obesity. Our hypothesis was that a vertical work station that allows an obese individual to work whilst walking, is associated with significant and substantial increases in energy expenditure over seated work.

Methods: The vertical work station is a work station that allows an office-worker to use a standard personal computer whilst walking on a treadmill at a self-selected velocity. Fifteen, sedentary individuals with obesity (14 women, one man; 43 + 7.5 years, 86 + 9.6 kg; BMI 32 + 2.6 kg/m²) underwent measurements of energy expenditure at rest, seated working in an office chair, standing and whilst walking at a self-selected speed using the vertical work station. Body composition was measured using dual x-ray absorptiometry.

Results: Mean energy expenditure whilst seated at work in an office chair was 72 + 10 kcal/hour whereas the energy expenditure whilst walking-and-working at a self-selected velocity of 1.1 + 0.4 mph, was 191 + 29 kcal/hour. The mean increase in energy expenditure for walking-and-working over sitting was 119 + 25 kcal/hour.

Conclusions: If sitting computer-time were replaced by walking-and-working, energy expenditure might increase by 100 kcal/hour. Thus, if obese individuals were to replace sitting computer time with walking computer time, by two-three hours per day and if other components of energy balance were constant, weight loss of 20-30 kg/year could occur.

Key Words: NEAT, energy expenditure, obesity, physical activity, workplace

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