

Changes in GAIT Over a 30 Minute Walking Session in Obese Females

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Purpose: This study assessed the biomechanical gait changes in obese and normal weight female adult subjects following a commonly recommended 30-minute walking session. Hip and knee adduction and extensor forces were hypothesized to increase in obese females following a 30-minute walking period, resulting in more stress across the hip and knee joint.

Methods: Ten obese (37.7 ± 4.8 years of age; BMI: 36.1 ± 4.2 kg/m²) and ten normal weight control female subjects (38.1 ± 4.5 years of age; BMI: 22.6 ± 2.3 kg/m²) walked 30 minutes continuously on the treadmill at their self-selected speed. VO₂ max was estimated using Ebbeling protocol. Pre- and post-treadmill three-dimensional gait analysis was conducted using infrared markers and force plates to calculate hip and knee forces.

Results: Knee extensor forces increased in both obese, pre-treadmill (0.54 ± 0.28 Nm/kg) to post-treadmill (0.78 ± 0.43 Nm/kg) ($p = 0.01$) and in control subjects (0.57 ± 0.34 Nm/kg) to post-treadmill (0.80 ± 0.49 Nm/kg) ($p = 0.02$). Knee extensor and adductor moments showed good to moderate relationships with VO₂ max, but not BMI or waist circumference.

Conclusion: Obese and normal weight subjects experienced an increase in knee extensor moments following 30 minutes of walking similarly, therefore clinicians do not need special consideration for obese individuals when recommending 30-minute walking sessions. Fitness may be the important factor in judging the implications of exercise on joint mechanics and parameters of a walking.