Gait pattern in lean and obese adolescents.

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Obesity is the most common chronic disorder in children and adolescents. As walking is the most common daily task and is recommended for weight management, quantifying how obesity affects the biomechanics of gait provides important insight into the relationship between metabolic and mechanical energetics, mechanical loading and associated risk for musculoskeletal injury. This study quantitatively compared gait in 12 obese and 10 lean adolescents. Obese adolescents showed longer stance duration, excessive hip flexion during the whole gait cycle and an increased hip movement in the frontal plane compared with lean participants. In the obese, the knee was slightly extended in stance phase and the ankle was in a plantar flexed position at initial contact and at toe-off, with a greater ankle range of motion. Kinetic data showed higher values of maximum power generated at hip level during the stance phase; ankle power displayed a higher absorption at initial stance and higher values of power generation in the terminal stance. Because obese adolescents are encouraged to walk to increase their physical activity and energy expenditure level, injury prevention and rehabilitative programmes should take our findings into consideration and include specific strengthening of the lower limb proximal and distal muscles, together with weight loss and reconditioning interventions.