Abstract

BACKGROUND: The progression of diabetes and the challenge of daily tasks may result in changes in biomechanical strategies. Descending stairs is a common task that patients have to deal with, however it still has not been properly studied in this population.

OBJECTIVES: We describe and compare the net joint moments and kinematics of the lower limbs in diabetic individuals with and without peripheral neuropathy and healthy controls during stair descent.

METHOD: Forty-two adults were assessed: control group (13), diabetic group (14), and neuropathic diabetic group (15). The flexor and extensor net moment peaks and joint angles of the hip, knee, and ankle were described and compared in terms of effect size and ANOVAs (p<0.05).

RESULTS: Both diabetic groups presented greater dorsiflexion [large effect size] and a smaller hip extensor moment [large effect size] in the weight acceptance phase. In the propulsion phase, diabetics with and without neuropathy showed a greater hip flexor moment [large effect size] and smaller ankle extension [large effect size].

CONCLUSION: Diabetic patients, even without neuropathy, revealed poor eccentric control in the weight acceptance phase, and in the propulsion phase, they showed a different hip strategy, where they chose to take the leg off the ground using more flexion torque at the hip instead of using a proper ankle extension function.

Keywords

Biomechanics, diabetic polyneuropathy, kinematics, kinetics, motion.