

Ankle Foot Orthoses Improves Ground Reaction Forces in patients with Peripheral Artery Disease

Peripheral artery disease (PAD) is caused by atherosclerotic blockage of the arteries in the legs. Globally, over 236 million people suffer from PAD. Intermittent claudication is the most common PAD symptom that includes muscle pain, cramping, and/or aching induced by physical activities and relieved with rest. PAD impacts gait patterns: specifically, rapid ankle plantar flexion after heel contact, which decreases optimal energy transfer. An ankle-foot orthosis (AFO) is an assistive device that improves gait in patients with neurological conditions. AFOs could help patients with PAD to improve walking kinetics. The purpose of this study was to determine the impact of AFOs on ground reaction forces (GRF) during walking in PAD patients. In this study, fourteen patients with PAD were assessed before and after a three-month intervention with AFO. GRFs data were recorded while participants walked with AFO (AFO) and without AFO (NAF) over the force platforms. Five successful heel strike and toe-off events in each condition were needed to complete the study. To prevent the onset of intermittent claudication, one minute of rest was required between each walking trial. Peak values from anterior-posterior, medial-lateral, and vertical GRFs were computed. The results showed, AFOs improved vertical and lateral ground reaction forces, moving patients with PAD back towards the patterns of healthy older individuals without PAD. Additional studies of how AFOs and other assistive walking devices impact gait, are needed to understand the potential for assistive device interventions to help patients with PAD.