

Robot-Assisted Gait Training in Patients With Parkinson Disease: A Randomized Controlled Trial

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Abstract - Gait impairment is a common cause of disability in Parkinson disease (PD). Electromechanical devices to assist stepping have been suggested as a potential intervention. A total of 41 patients with PD were randomly assigned to 45-minute treatment sessions (12 in all), 3 days a week, for 4 consecutive weeks of either robotic stepper training (RST; n = 21) using the Gait Trainer or physiotherapy (PT; n = 20) with active joint mobilization and a modest amount of conventional gait training. Participants were evaluated before, immediately after, and 1 month after treatment. Primary outcomes were 10-m walking speed and distance walked in 6 minutes.

Baseline measures revealed no statistical differences between groups, but the PT group walked 0.12 m/s slower; 5 patients withdrew. A statistically significant improvement was found in favor of the RST group (walking speed 1.22 ± 0.19 m/s [$P = .035$]; distance 366.06 ± 78.54 m [$P < .001$]) compared with the PT group (0.98 ± 0.32 m/s; 280.11 ± 106.61 m). The RAGT mean speed increased by 0.13 m/s, which is probably not clinically important. Improvements were maintained 1 month later.

RAGT may improve aspects of walking ability in patients with PD. Future trials should compare robotic assistive training with treadmill or equal amounts of over ground walking practice.