Robot-assisted gait training in patients with Parkinson's disease: Implications for clinical practice. A systematic review

Issue title: Thematic Issue: Integrating Robot-assisted Therapy Into Neurorehabilitation Clinical Practice: Where Are We Now? Where Are We Heading?

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Abstract: BACKGROUND:Gait impairments are common disabling symptoms of Parkinson's disease (PD). Among the approaches for gait rehabilitation, interest in robotic devices has grown in recent years. However, the effectiveness compared to other interventions, the optimum amount of training, the type of device, and which patients might benefit most remains unclear. OBJECTIVE:To conduct a systematic review about the effects on gait of robot-assisted gait training (RAGT) in PD patients and to provide advice for clinical practice. METHODS:A search was performed on PubMed, Scopus, PEDro, Cochrane library, Web of science, and guideline databases, following PRISMA guidelines. We included English articles if they used a robotic system with details about the intervention, the parameters, and the outcome measures. We evaluated the level and quality of evidence. RESULTS:We included twenty papers out of 230 results: two systematic reviews, 9 randomized controlled trials, 4 uncontrolled studies, and 5 descriptive reports. Nine studies used an exoskeleton device and the remainders end-effector robots, with large variability in terms of subjects' disease-related disability. CONCLUSIONS:RAGT showed benefits on gait and no adverse events were recorded. However, it does not seem superior to other interventions, except in patients with more severe symptoms and advanced disease.

Keywords: Parkinson's disease, rehabilitation, gait, medical device

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