QUANTITATIVE GAIT ANALYSIS IN PATIENTS WITH PARKINSON TREATED WITH DEEP BRAIN STIMULATION: THE EFFECTS OF A ROBOTIC GAIT TRAINING.

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ABSTRACT

BACKGROUND: Despite Deep Brain Stimulation (DBS) improves cardinal symptoms of Parkinson's Disease (PD), its effect on walking impairment is less evident. Robotic-assisted rehabilitation systems could serve as "add-on" physical therapy for PD patients. This systems are able to anticipate and correct the trajectory of patients' motion to improve their motor function recovery.

OBJECTIVE: Aim of the present study was the quantitative assessment of the effects of a Robotic-Assisted Rehabilitation Protocol (RARP) on gait patterns by means of three-dimensional gait analysis on PD patients treated with DBS.

METHODS: 9 patients with PD treated with DBS were submitted to 5 weeks robotic-assisted rehabilitation sessions. Three-dimensional gait analysis was performed before the starting session, and one day after the last session using an optoelectronic system with passive markers.

RESULTS: The RARP showed significant improvements on spatio-temporal gait parameters and on the Unified Parkinson's Disease Rating Scale motor score.

CONCLUSIONS: The RARP with Lokomat may have positive effects on spatio-temporal gait parameters of PD patients and it could be an adjunct therapy for patients treated with DBS. On the other hand kinematic and kinetic gait parameters did not show significant improvements, remaining almost comparable before and after the RARP.