

Virtual reality for rehabilitation in Parkinson's disease and atypical parkinsonisms

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Objective: To determine the potential long-term effect of Virtual Reality (VR) in improving motor and cognitive impairment in Parkinson's disease (PD) and Atypical Parkinsonisms (AP).

Design: Retrospective cohort study with 2-years follow-up.

Setting: Rehabilitation hospital.

Participants: Inpatients with extrapyramidal disorders (N=12).

Interventions: Neurorehabilitation treatment with the use of VR treadmill, 30 minutes a day, five days a week, for four weeks every year from 2019 to 2021.

Main outcome measures: UPDRS III score at entry and discharge and MMSE score.

Results: 3/12 patients were diagnosed with PD and 9/12 patients were diagnosed with AP. The UPDRS III score was 43.3 ± 5.8 at entry in 2019 vs 35 ± 4.4 at discharge in 2021 in PD (p-value 0.01, SMD 1.63); 45.6 ± 9.0 at entry in 2019 vs 34.4 ± 7.2 at discharge in 2021 in AP (p-value 0.00002, SMD 1.36). The MMSE score was 23.5 ± 2.5 in 2019 vs 23.7 ± 2.4 in 2021 in PD (p-value 0.53, SMD 0.07); 19.7 ± 3.9 in 2019 and 18.9 ± 3.9 in 2021 in AP (p-value 0.02, SMD 0.22).

Conclusions: Current literature has demonstrated the effectiveness of VR in the neurorehabilitation of motor and cognitive disorders in PD patients, but only in the short-term. Analysis of our data showed short-term and long-term benefits to the motor performance for both PD and AP patients. Despite the limited sample size, the promising results obtained encourage a continuation of the research by including other functional outcome measures, especially when considering the lack of studies on the benefits of rehabilitation in Atypical Parkinsonisms.