

Action Observation treatment on Parkinson disease patients: an fMRI and controlled double blind study

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This is the first attempt to evaluate the effects of Action observation therapy (AOT) on Parkinson's disease (PD) using brain imaging techniques. PD is a neurodegenerative disorder characterized by motor and cognitive impairment. AOT is a method in which participants are required to observe others' actions and execute them. Many studies demonstrate that AOT has a positive effects in rehabilitation. A total of 10 patients with idiopathic PD received an AOT treatment 3 times a week for 1 month. During treatment subjects had to watch 24 videos in which an actor performed a daily life activities and to reproduce it. All patients were evaluated in four times: baseline, pre-test, post-test, and follow up. Evaluation included: Rey Auditory Verbal Learning test; Rey-Osterrieth Figure test; Taylor Complex Figure test; Verbal and Semantic Fluency test; Stroop Color Word test; Trail Making test; Wisconsin Card Sorting test; and Corsi test. Movement impairment and autonomy were evaluated by Unified Parkinson's Disease Rating Scale; Tinetti Scale; IADL/ADL; and Euroqool Rating Scale. We used also the Movement Imagery Questionnaire for motor imagery ability and Jebsen Hand Function Test for movement velocity. All patients underwent to fMRI at pre-test and post-test. After the intervention significant improvements were found in verbal memory ($p=.009$; $p=.014$); in Stroop Color Word test performance ($p=.000$; $p=.020$); in long-term visuospatial memory ($p=.002$). Analysis of fMRI results evaluating changes in the relevant brain networks are under way. Results suggest that the application of AOT may be effective in the treatment of PD, in particular for working memory and attention cognitive functions.