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Effectiveness of the use of home-based action observation training in subjects with Parkinson’s disease

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Objective: The aim of this study was to verify the feasibility of a home-based AOT in improving balance and gait problems in a cohort of PD subjects. Furthermore, we investigated long-lasting effects in terms of functional improvements and QoL.

Background: Parkinson’s disease (PD) is expected to impose an increasing social and economic burden all over the world. In fact, even with optimal medical management, PD subjects experience a deterioration of mobility and independence in daily activities, leading to reduced quality of life (QoL). There has been increasing demand to consider rehabilitation as an essential adjuvant to pharmacological treatment. Action Observation Therapy (AOT) has been recently described as an effective strategy in PD rehabilitation, promoting neural plasticity and motor learning.

Methods: 55 subjects with PD (age 70.4 ± 5.0 , HY stage 1-3) were enrolled in this study. Participants were invited to perform AOT at home for 8 weeks (5 days/week) using a tablet. In each training sessions, they were required to watch video sequences of exercises and then to repeat the same actions for 3 minutes. In all, 20 videos were used in 2 months of training. Motor and cognitive performance and QOL were measured by means of: Timed UP&GO (TUG), 10-meter (10mwt), 6 minutes walking tests (6Mwt), Berg Balance Scale (BBS), Montreal Cognitive Assessment (MOCA), Freezing of gait and PDQ-39 questionnaires. Assessment points were set at one week before (T0), 1 month (T1), 2 months (T2) and at 6 months (T3) after AOT training.

Results: 46 participants completed the training and 3 didn’t complete the T3 evaluation, thus 43 subjects were included in the analysis. Statistical analysis showed significant improvements in gait and balance performance (TUG, 10mwt, BBS, FoG-Q, p always < 0.05) and in QoL ($p < 0.05$) at T1 and T2 evaluations. Most of these results (except FoG-Q and 6Mwt) remained also significant at follow-up evaluation (T3). Furthermore, we found a significant increase of MoCA and PDQ-39 scores at all assessments.

Conclusions: Unsupervised training combining exercises with AO in a cohort of PD is feasible and lead to beneficial effect on motor performance, with positive impact on global cognition and QoL. This finding might provide a support for introducing AOT as a valid and user-friendly tool for home-based training.

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Effectiveness of a novel cognitive rehabilitation program based on mindfulness and reminiscence in patients with Parkinson’s Disease and Mild Cognitive Impairment: a pilot study

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Objective: To evaluate the efficacy of a new integrated rehabilitation program based on Mindfulness and Cognitive Training (MILC-tr) on cognitive functions and mood in patients with Parkinson’s Disease (PD) or Mild Cognitive Impairment (MCI).

Background: Mindfulness-based programs have been observed to be effective on psychological distress in neurodegenerative disorders, but few

studies to date have implemented mindfulness in the context of cognitive rehabilitation.

Methods: A randomized study was conducted on a sample of 16 adults (aged 66-83) with a clinical diagnosis of MCI ($n=7$) or idiopathic PD ($n=9$). Participants were enrolled in two different rehabilitation training programs, MILC-tr or Cognitive Training alone (CR-tr), for 8 weekly sessions, 50 minutes each. We assessed each patient at T0 (before treatment) and T1 (after treatment) using the Montreal Cognitive Assessment (MoCA) and the Beck Depression Inventory II (BDI-II).

Results: Verbal long-term memory (LTM) improved significantly after MILC-tr, compared to CR-tr (MILC-tr vs. CR.tr improvement [mean \pm SD] = 0.89 ± 1.05 vs. 0.14 ± 0.38 , $Z = 2.38$, $p = .017$, $r = .577$). There were no significant differences between the two training programs in other MoCA sub-items and BDI-II score.

Conclusions: Mindfulness combined with Classical Cognitive Training may have a moderate effect on memory in patients with PD and MCI.

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Evaluation of Motor Speech Disorders in Patients with Parkinson’s Diseases

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Objective: To correlate auditory-perceptual assessment and the patient self-perception in speech disorders in Parkinson’s Disease and correlate them with clinical data. To correlate auditory-perceptual assessment and the patient self-perception in speech disorders in Parkinson’s Disease and correlate them with clinical data.

Background: Dysarthria is common in Parkinson’s disease, however, this speech disorder is still poorly studied. Studying dysarthria in Parkinson’s disease may bring new approaches regard diagnosis and early rehabilitation. Furthermore, speech assessment may also serve as a predictor of the disease progression.

Methods: Cross-sectional observational study. Speech samples were acquired from ten patients. Five patients with Deep Brain Stimulation (DBS) and five patients who use only medications. Each participant was instructed to perform sustained phonation of the vowel /a/ per one breath as long and steadily as possible, fast/pa/-/ta/-/ka/syllable repetition and a monologue on a given topic. It was also applied with patients the Radboud Oral Motor Inventory for Parkinson’s Disease (ROMP).

Results: Analyzing the total score of the ROMP protocol and taking into account the diagnosis of each patient, it is clear that patients who have implanted DBS believe much more that they have speech impairment than those who do not have the implant. This is characterized by a high value in the mean ROMP score, taking into account the diagnosis of these patients, who mostly have mild dysarthria. When analyzing the age of patients, it is not possible to distinguish that older patients believe they have greater loss of speech ability.

Conclusions: Our findings indicate that the implant of DBS is closely linked with a negative self-perception of the speech ability. The same can be concluded for those who have longer time of diagnosis, where patient’s DBS might be closely linked with a negative self-perception of the speech ability. The same can be concluded for those who have longer time of diagnosis, where patients believe that their speech capacity is greatly reduced. It is clear from our data that the duration of the disease is directly related to the patient’s self-perception of speech. Just as the presence or absence of DBS is directly related to the diagnosis of dysarthria and also with the patient’s self-perception.

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Virtual reality for balance and mobility in Parkinson’s disease: systematic review and meta-analysis

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Objective: The aim of this study was to assess if a VR-BT relative to BT alone is more effective to improve balance and mobility in PD subjects with balance/mobility difficulties.

Background: Previous studies demonstrated that balance exercises improve postural instability in Parkinson’s disease subjects (PD). In the last few years, virtual reality (VR) has been increasingly used to strengthen the effect of balance training (BT) in PD.