

Short Communication

# New Auxiliaries of Rehabilitation in Parkinson's Disease

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New approaches for rehabilitation of patients with Parkinson Disease (PD) emerged nowadays, some consolidated, others lacking evidence. The role of physiotherapy aims to maximise functional ability and minimise secondary complications through movement rehabilitation within a context of education and support for the whole person [1]. Health professionals who deal with patients with PD must know new rehabilitation strategies, as with drug therapy employed, it can minimize the disabilities caused by the disease.

At the end of 2012, the authors identified relevant trials in electronic databases, selecting only randomised controlled trials of physiotherapy intervention versus no physiotherapy intervention in patients with PD. Meta-analysis had been used to evaluate the effectiveness of physiotherapy compared with placebo. Several types of rehabilitation treatment were part of the screening search. The group used tests for heterogeneity to assess differences in treatment effect through these different physiotherapy interventions. The final result consisted of 33 trials with 1518 participants. Compared with non-intervention, patients who underwent the various therapeutic modalities, showed gains in balance reactions and protection, the gait patterns, mobility and in basic and instrumental activities of daily living. In other words, rehabilitation exercises are really effective for these clients [2].

Another major study by the same group above consisted of 39 trials of 1827 participants who met the inclusion criteria, of which 29 trials provided data for the meta-analyses. Significant benefit from physiotherapy was reported for nine of 18 outcomes assessed. The authors also sought, through statistical analysis, whether the type of technique used made a difference in the results. Interesting fact in this study is that physical therapy was effective, from the statistical point of view, only at short-term. The authors point to the need for larger randomized-controlled studies with better methodological quality to strengthen the long-term results [3].

A randomized single-blind controlled trial performed by Volpe et al compared the results of hydrotherapy with exercises on the floor. The sample comprised a total of thirty-four patients with Parkinson's disease classified in Hoehn-Yahr stage 2.5-3. The first group

performed water exercises and the second, physiotherapy on the floor for two months. The frequency and the total treatment time was similar between both. The center of pressure through stabilometric analysis and the results obtained through scales and specific functional tests such as the Unified Parkinson's Disease Rating Scale II and III Timed Up and Go Test and the Berg Balance were evaluated. The results demonstrated that the treatment in the pool is safe and effective. What drew attention in the study was the most significant improvement in patients who underwent hydrotherapy, than in those treated with therapy on the ground in the analyzes of balance after stabilometry [4].

Rehabilitation activities involving dance practice emerged in recent times as auxiliaries in the rehabilitation of patients with Parkinson's disease. Although it's a case report, Kaski D et al, submitted a patient in moderate stage of Parkinson's Disease to transcranial Direct Current Stimulation (tDCS) while practicing tango, to evaluate their postural reactions (trunk and balance). The patient performed a total of four dances over two days, two 'tango+tDCS' and two 'tango+ without tDCS' in a randomised double-blind fashion. In a separate experimental session we also assessed the isolated effect of tDCS (and sham) on gait without tango dancing. For the dance session, trunk peak velocity during tango was significantly greater during tDCS compared to sham stimulation. In the gait experiments we observed a modest but significant reduction in the time taken to complete the 3m 'timed up and go' and 6m walk, and an increase in overall gait velocity and peak pitch trunk velocity with tDCS compared to sham [5].

We believe that the results obtained by these authors, although preliminary, may contribute to stimulation studies with larger number of patients. Amaral PC et al [6], through systematic review could conclude that dance programs for the elderly and especially to patients with Parkinson's disease, promote improvements in functional capacity and quality of life.

We alert that, there are already evidences that aerobic and strength training improve physical abilities of patients suffering from Parkinson's Disease. Morberg BM [7], in a current study attempted to investigate the effects of a complex, high intensity physical training program, with a long duration, on motor and non-motor symptoms in patients with PD. The authors selected 24 patients with PD in stages between 1-3 of Hoehn and Yahr. Half of the patients were submitted to 32 weeks of high intensity personalized physical training twice a week. The other group, received general recommendations regarding physical activity. The group that had been submitted to personalized treatment of high intensity achieved significant improvements in motor subscores, basic and instrumental activities of daily living, complacation and mentation. What called attention was the fact that the high-intensity training group present significant improvements in well-being items and bodily discomfort after application of PDQ39. Although the results promoted by this study proved to be positive, we pay attention to such patients that

should only be subjected to such activities after thorough evaluation and clinical indication to do so, because such activity can also be harmful for some of these patients.

The practice of Tai Chi Chuan also emerged as a new possibility for rehabilitation of patients with Parkinson's Disease [8]. A group of researchers conducted a randomized, controlled trial study seeking answers about the practice of tai chi exercises in patients with Parkinson's disease. 195 patients were linked to the research, classified between stages 1 and 4 of Hoehn and Yahr to one of three groups: tai chi, resistance training, or stretching. There were two sessions of about 60 minutes given for 6 months for all groups. Profiles, measures and indicators of evaluation were used for comparison of results. The group that performed the exercises of tai chi showed less incidence of risk of falls with improved balance reactions. Such effects were maintained for up to three months after the end of program [9].

Another interesting study by Capecci M et al, utilized functional genes bandwidth for postural adaptation in patients with PD. The study was Single-Blind type, randomized controlled trial with 1-month follow-up. The researchers selected 20 patients with PD who had postural abnormalities in the sagittal and / or coronal plane. Of all patients, 13 received proprioceptive and tactile stimulation associated with stretching and postural reeducation. Six of the 13 subjects receiving postural rehabilitation also had kinesio taping strips applied to their trunk muscles, according to the features of their postural abnormalities. The rest of the group, seven patients did not carry out any intervention. The groups were compared for two months. At the end of the study authors have concluded that the combination of posture correction, stretching and proprioceptive stimulation through kinesio taping strips can help PD patients with postural abnormalities [10].

The Virtual Reality (VR) can be a therapeutic tool used in neurorehabilitation field. It is considered a ludic activity that provides visual and auditory feedbacks, facilitating the patients' adherence to treatment. Various studies suggest that VR shows positive aspects in velocity and movement time, balance, gait, postural control and functionality of upper extremities. The ludic activity provided by VR and the contribution of visual and auditory feedbacks of this intervention can be the great potential of this new tool [11-13].

Often, different disciplines are often involved in treatment of DP. Physical therapeutic goals for DP are: (1) to stimulate the patients

safety and independence in the performance of activities, with the emphasis on: transfers, posture, reaching and grasping, balance and gait. (2) to preserve physical capacity; (3) to prevent falling.

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