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📅 January 28, 2021
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FINAL PROGRAM **E-POSTER GUIDELINES**



2nd Global Virtual Conference on **Neurodegenerative Diseases**
Date: January 28, 2021 | Time: 09:40 AM CET-Central European Time Zone (Amsterdam, Berlin, Rome, Stockholm, Vienna)

Meeting Agenda

Poster Presentations			
P-04	14:10-14:15	15:10-15:15	Lyubka Tancheva, Bulgarian Academy of Sciences, Bulgaria
P-05	14:15-14:20	15:15-15:20	Konstantinos Alopis, University of Patras, Greece
P-06	14:20-14:25	15:20-15:25	Olha Mezhenka, Palladin Institute of Biochemistry of NAS of Ukraine, Ukraine

The effectiveness of Lee Silverman Voice Treatment (LSVT) – BIG program in Balance and Gait of Greek patients with Multiple Sclerosis compared to patients with Parkinson Disease

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Introduction/ Background	Intervention	Results (cont.)
<p>The Lee Silverman Voice Treatment (LSVT) BIG, designed for Parkinson's Disease (PD) presents strong evidence that increases movements amplitude and achieve more precise and coordinated movements through functional activities¹.</p> <p>Its effectiveness to patients with PD increases the interest of examining whether this rehabilitation program could have comparable effects to another central nervous system (CNS) disorder with mobility and motor coordinating problems such as the Multiple Sclerosis (MS). MS is a chronic disease of CNS with the patients suffering from weakness and spasticity which affect the balance and the normal mechanisms of gait². Thus, an exercise program based on motor learning of a new motor pattern, with sensory cues and specific instructions which activates neuroplasticity during functional daily life activities³, could be of great benefit for the rehabilitation of those patients.</p> <p>Purpose</p> <p>As literature lacks of specific exercise protocols for MS deficits, the purpose of this study is to examine the potential benefits of the LSVT-BIG training protocol on balance and gait for patients with MS and to compare its effectiveness with this on to PD.</p> <p>Methodology</p> <p>Sample</p> <p>6 PD participants (6 men), 67 ± 3 years old 6 MS participants (3 women, 1 man), 45 ± 8 years old</p> <p>Inclusion criteria:</p> <ul style="list-style-type: none"> • Ambulatory patients • Mild to moderate severity of the disease • Patients have to follow their medication <p>Exclusion criteria:</p> <ul style="list-style-type: none"> • Patients with atypical characteristics of the diseases • Patients who have received LSVT-BIG prior to this research • Quadroped pump or DBS operation for participants with PD • Cognitive problems or Dementia <p>Measurement outcomes</p> <ul style="list-style-type: none"> • Balance was evaluated by the Mini-BESTest • Gait was evaluated by - the Functional Gait Assessment (FGA) – the Timed Up and Go (TUG) test. • Fatigue (secondary outcome) was assessed with the Fatigue Severity Scale (FSS) <p>Intervention</p> <ul style="list-style-type: none"> • The exercises applied by a certified in this method physiotherapist, in an one to one mode of delivery (private session) are presented at Table 1 and Figures 1-7. • A 4 weeks protocol was conducted: 4 consecutive days per week, 1 hour session, 16 sessions in total • Different carryover tasks were assigned to patients every day 	<p>Table 1: Daily exercises</p> <p>Maximum sustained Movements: Exercise 1: Floor to Ceiling (Fig 1) Exercise 2: Sideto Side (Fig 2)</p> <p>Repetitive / Directional Movements: Standing Exercise 1: Step Forward (Fig 3) Exercise 2: Step Sideways (Fig 4) Exercise 3: Step Backwards (Fig 5) Exercise 4: Forward Rock and Reach (Fig 6) Exercise 5: Sideways Rock and Reach (Fig 7)</p> <p>Functional Component Movements Sit to stand The rest 4 exercises defined according to individual needs and preferences. Complex multilevel tasks that progressively become more difficult over the 4 weeks and can be tailored to each patient's goals and interests.</p> <p>Hierarchy task Walking with BIG posture, BIG stride and arm swing with high effort. Verbal cues are used by the physiotherapist to achieve the correct gait.</p> <p>LSVT BIG Walking</p> <p>Figure 1: Floor to Ceiling Figure 2: Sideto Side Figure 3: Step Forward Figure 4: Step Sideways Figure 5: Step Backwards Figure 6: Forward Rock and Reach Figure 7: Sideways Rock and Reach</p> <p>Procedure</p> <p>After patients have given their written consent (ethical approval by the Ethics committee of University of Patras), the physiotherapist visited the patients at their home to undertake the intervention. The exercise protocol conducted once per day during the physiotherapy day and twice/day the other days of the week.</p> <p>Statistical Analysis</p> <ul style="list-style-type: none"> • The effect of the treatment was evaluated with Repetitive Measures ANOVA before-middle-after the intervention • Differences between treatment groups were assessed using analysis of covariance (Mixed ANOVA) via SPSS v. 24 <p>Results</p> <p>Both groups demonstrated a:</p> <ul style="list-style-type: none"> • significant increase in mini-BESTest total score ($F_{(1,24)}=323, p<0,001$) (Graph 1) • significant increase in FGA total score ($F_{(1,24)}=280, p<0,001$) (Graph 2) • significant increase in time standing on left leg ($F_{(1,48)}=43, p<0,001$) and on right leg ($F_{(1,48)}=124, p<0,001$). • decrease in TUG duration ($F_{(1,24)}=32, p<0,001$) (Graph 3) • reduced perception of fatigue ($F_{(1,24)}=81,2, p<0,01$) (Graph 4) • No differences revealed between groups for any outcome [p>0.05]. 	<p>Graph 1: Mini-BESTest between & within groups</p> <p>Graph 2: FGA between & within groups</p> <p>Graph 3: TUG between & within groups</p> <p>Graph 4: FSS between & within groups</p> <p>Discussion</p> <p>The results showed significant improvements in balance, gait and fatigue between both groups, although MS & PD have different pathogenetic mechanisms. Additionally, the timing in one leg stance was improved. The current study conducted for the first time in people with MS and this limits the comparability with the rest of the literature. This is the innovation of the current study and emphasizes its significance. In contrast to existing conventional exercise programs, which are general, LSVT-BIG through daily life activities showed it's positive effect in patients with MS as well.</p> <p>Conclusion</p> <p>The comparative improvements in balance and gait between groups indicate that the LSVT-BIG may be beneficial for the MS patients as for the PD patients. However, more research is needed before general conclusions will be exported for the use of LSVT-BIG protocol in patients with MS.</p> <p>References</p> <ol style="list-style-type: none"> 1. Alopis et al., 2017 Rehabilitation for people with multiple sclerosis: an overview of Cochrane systematic reviews, <i>Cochrane Database of Systematic Reviews</i>, Issue 7, Art. No.: CD012772. DOI: 10.1002/14651958.CD012772 2. Shanks et al., (2008) Rehabilitation challenges in multiple sclerosis. <i>Ann Indian Academy Neurology</i> 11: 240-265. 3. Borchard et al., (2015) Cognitive exercise in Parkinson's disease: the Berlin LSVT study. <i>Mov Disord</i>, 30:1802-1808. 4. Carey et al., (2008) "Voiceless angels": specific therapeutic approaches for Parkinson's disease tremor: a neuroleptically-principled voice-treatment model. <i>J Topics in Geriatric Rehabilitation</i>, 24(1), 96-104. 5. Kishimoto, H., (2016) LSVT BIG as a prescriptive for patients with multiple sclerosis: potential benefits and practical recommendations. <i>BMC Neurology</i> (2017) 17:185 DOI 10.1186/s12883-017-0484-9 6. Liu et al., (2012) LSVT BIG and LSVT BIG behavior treatment program for speech and body movement in Parkinson disease. <i>Parkinsons Dis</i>: 2012(1), 393946. doi: 10.1155/2012/393946.