

## Therapy - Symptom Management and Rehabilitation

P880

### Investigation of the Relationship Between Balance, Functional Mobility, and Walking in Patients with Multiple Sclerosis

Tansu Kus<sup>1</sup>, Arzu Guclu-Gunduz<sup>2</sup>, Mustafacan Salamci<sup>2</sup>, Canan Yucesan<sup>3</sup>

<sup>1</sup>Cappadocia University, Nevsehir, Türkiye, <sup>2</sup>Gazi University, Ankara, Türkiye, <sup>3</sup>Ankara University, Ankara, Türkiye

**Introduction:** Balance disorders are common in patients with multiple sclerosis (PwMS) and impact functional mobility and walking. Impaired postural stability is also a predisposing factor that increases the risk of falls in this population.

**Objectives/Aims:** This study aimed to investigate which balance parameters are more strongly associated with functional mobility and walking in PwMS.

**Methods:** Sixty-two PwMS, with a mean Expanded Disability Status Scale (EDSS) score of  $2.03 \pm 1.05$  and a mean age of  $36.5 \pm 12.28$  years, were included in the study. Balance was assessed using the Postural Stability Test (PST), the Limits of Stability Test (LOS), and the modified Clinical Test of Sensory Interaction in Balance (m-CTSIB) and Activities-specific Balance Confidence (ABC) Scale. Functional mobility was evaluated with the Timed Up and Go Test (TUG), while walking performance was measured using the Six-Minute Walk Test (6MWT).

**Results:** A significant relationship was found between all balance measurements, functional mobility, and walking distance. Postural stability during double-leg stance demonstrated a strong correlation with mobility ( $r=0.70-0.89$ ,  $p<0.05$ ), whereas single-leg stance stability was moderately correlated with both functional mobility and walking distance ( $r=0.40-0.69$ ,  $p<0.05$ ). Furthermore, moderate correlations were observed between limits of stability and mobility, as well as between m-CTSIB scores and mobility ( $r=0.40-0.69$ ,  $p<0.05$ ). Balance confidence exhibited a strong correlation with walking distance ( $r=0.70-0.89$ ,  $p<0.05$ ), and a moderate correlation with functional mobility ( $r=0.40-0.69$ ,  $p<0.05$ ).

**Conclusion:** Postural stability and perceived balance confidence are strongly associated with physical performance, walking distance, and walking speed in PwMS. These findings suggest that clinicians may consider the PST and the ABC Scale as practical indicators of mobility in this population. Furthermore, the results emphasize the importance of targeting postural stability in rehabilitation programs to enhance both physical performance and mobility in PwMS.

**Disclosure of interest:** No potential conflict of interest was reported by the authors.

P881

### The effect of a new multisite transcutaneous stimulation approach - the EXOPULSE Mollii Suit - on motor functions in patients with multiple sclerosis

Samar S. AYACHE<sup>1,2,3,4</sup>, Moussa Antoine Chalah<sup>1,3,5</sup>, Joseph Mattar<sup>1,2</sup>, Alain CREANGE<sup>2,6</sup>, Jean-Pascal Lefaucheur<sup>2,4</sup>, Georges Abi Lahoud<sup>1,3</sup>, Naji Riachi<sup>7,8</sup>

<sup>1</sup>Institut de la Colonne Vertébrale et des Neurosciences (ICVNS), Centre Médico Chirurgical Bizet, 75116, Paris, France, <sup>2</sup>UR 4391, Excitabilité Nerveuse et Thérapeutique, Faculté de Santé, Université Paris Est, 94010, Créteil, France, <sup>3</sup>Department of Neurology, Gilbert and Rose-Marie Chagoury School of Medicine, 4504, Byblos, Lebanon, <sup>4</sup>Service de Physiologie-Explorations Fonctionnelles, DMU FxIT, Hôpital Henri Mondor, Créteil, France, <sup>5</sup>Institut de Neuromodulation, Service Hospitalo-Universitaire, Pôle Hospitalo-Universitaire Psychiatrie Paris 15, GHU Paris Psychiatrie et Neurosciences, Hôpital Sainte-Anne, 75014, Paris, France, <sup>6</sup>Service de Neurologie, Hôpital Henri Mondor, AP-HP, Créteil, France, <sup>7</sup>Khalifa University College of Medicine, Abu Dhabi, United Arab Emirates, <sup>8</sup>Sheikh Shakhboub Medical City, Abu Dhabi, United Arab Emirates

**Introduction:** Patients with multiple sclerosis (PwMS) frequently experience motor impairments, including impaired balance, gait disturbances, spasticity, and fatigue. These symptoms could result in substantial alteration of quality of life. Conventional treatment options often demonstrate limited efficacy and various side effects. In this context, the EXOPULSE Mollii Suit emerges as a potential non-invasive therapeutic tool. It is a wearable device that delivers transcutaneous electrical nerve stimulation to 40 muscle groups simultaneously.

**Objectives/Aims:** This study investigated the impact of the EXOPULSE Mollii Suit on balance, walking, spasticity, fatigue, pain, and quality of life in PwMS.

**Methods:** A two-phase investigation was conducted: Phase 1 employed a randomized, double-blind, crossover, sham-controlled design to evaluate the immediate effects of a single stimulation session (active vs. sham), while Phase 2 adopted an open-label approach to explore outcomes after a four-week stimulation regimen. The Berg Balance Scale (BBS) was utilized as the primary measure of balance, with supplementary assessments of spasticity, mobility, pain, fatigue, and quality of life serving as secondary endpoints.

**Results:** Thirty-two participants completed Phase 1 and 30 individuals completed Phase 2. The intervention was well tolerated, and no serious adverse effects were reported. Phase 1 findings revealed statistically significant enhancement in balance, spasticity, and fatigue following active stimulation ( $p < 0.01$ ). In Phase 2, the continued use of the suit was associated with sustained improvements in balance, spasticity, mobility, and quality of life ( $p < 0.05$ ).

**Conclusion:** The EXOPULSE Mollii Suit yielded significant improvements in key motor symptoms among PwMS, suggesting its potential as a valuable therapeutic aid. However, additional large-scale and long-term studies are required to validate and replicate these results.

**Disclosure of interest:** SA declares having received compensation from Sanofi Aventis, France; Exoneural Network AB, Sweden and Ottobock, France. MC declares having received compensation from Janssen Global Services LLC, Exoneural Network AB, Sweden, and Ottobock, France. AC declares having received financial support for research from Biogen, GeNeuro, MedDay, Novartis, Octapharma, and Roche and having received honoraria from Biogen, GeNeuro, Novartis, and