

Title**Orchestrating a New Path for MS Rehabilitation: Empowering Patients Through Both Physical and Music Therapies****Authors**

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Abstract

BACKGROUND: Although disease-modifying therapies (DMTs) are available for multiple sclerosis (MS) to delay disability progression and reduce relapses, as MS progresses, additional support and management of symptoms become increasingly important.

OBJECTIVES: To assess the role of nonpharmacological therapies, focusing on physiotherapy (PT) and music therapy (MT) that can lead to improvements in most of the physical and psychosocial domains that are negatively impacted in patients with MS.

METHODS: MEDLINE was searched without date restriction to identify studies on the efficacy of PT and MT in MS. A panel of PT and MT experts was convened to identify important themes and research studies.

RESULTS: PT can lead to improvements in mobility and balance. A review of 16 randomized controlled trials showed that treadmill training three times per week for 8 weeks improved walking endurance by 26.5 m from baseline in patients with MS. PT can also provide clinically meaningful improvements in fatigue, health-related quality of life (HRQoL), mood and cognition. In a group of 20 patients with MS who performed high-intensity resistance training twice a week for 12 weeks, patients achieved statistically significant reductions in anxiety ($p=0.002$), depression ($p=0.019$) and fatigue ($p=0.001$). Likewise, MT can improve physical symptoms and HRQoL in MS. In a trial comparing rhythmic-cued motor imagery, metronome-cued motor imagery and no intervention, patients in the two intervention groups could, respectively, walk a mean of 62.1 m and 60.9 m further after 4

weeks vs baseline; the mean change in the no intervention group was -17.1 m. Significant improvements in HRQoL measures were also seen in both intervention groups vs the no intervention groups for physical function, general health perception, vitality, social function and mental health ($p < 0.05$).

CONCLUSIONS: While DMTs aim to reduce disability progression and inflammatory activities in MS, additional nonpharmacological therapies are an important adjunct for managing daily life with MS, particularly in improving or maintaining mobility, cognition and other functional systems. Current studies regarding the use of PT and MT in MS indicate these are highly beneficial tools in delaying the loss of both fine and gross motor skills, improving overall well-being and psychosocial health factors and, ultimately, preserving HRQoL. Further research on combined PT and MT interventions may further improve outcomes in MS.

Character count (limit 2,500 including spaces): 2,491

Disclosure: This study was funded by Novartis Pharmaceutical Corporation, East Hanover, NJ, USA.

This abstract was presented at the Annual Meeting of the Consortium of Multiple Sclerosis Centers (CMSC) May 27-30, 2020, Orlando, FL, USA.

Suggested submission category

Categories: Rehabilitation

Disclosures

Megan Weigel has received consultancy fees from Biogen Inc., Celgene Corporation, Inc., Novartis Pharmaceuticals Corporation (independent of the submitted work) and Sanofi Genzyme and speakers fees from Acorda, EMD Serono, Mallinckrodt Pharmaceuticals, Novartis Pharmaceuticals Corporation and Sanofi Genzyme.

Renée Fleming has received consultancy fees from Novartis Pharmaceuticals Corporation independent of the submitted work.

Brian Hutchinson has received consultancy fees from Novartis Pharmaceuticals Corporation independent of the submitted work.

Wendy Magee has received consultancy fees from Novartis Pharmaceuticals Corporation independent of the submitted work.

Wendy Su is an employee of Novartis Pharmaceuticals Corporation.