

## **Research-based abstract**

**Title:** Effectiveness of technology-based distance physical rehabilitation interventions on physical activity and walking in multiple sclerosis: a systematic review and meta-analysis of randomized controlled trials

**Type:** oral presentation in English or poster presentation

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**List of keywords:** systematic review, meta-analysis, distance physical rehabilitation, multiple sclerosis

**Background:** The use of technology in rehabilitation among central nervous system disorders has been increasing in the past decade. To date, technology-based distance physical rehabilitation (DPR) in multiple sclerosis (MS) has not been investigated. The purpose of this study was to determine the effectiveness of technology-based DPR intervention on physical activity and walking in MS.

**Methods:** Systematic literature search was conducted in seven databases for January 2000–September 2016. In total, 11 RCT studies fulfilled the inclusion criteria and were included in the synthesis and meta-analysis.

**Main results and conclusions:** On average, the methodological quality was good (8/13)<sup>1</sup>. The Internet, telephone, exergaming and pedometers were the technologies enabling DPR. Technology-based DPR had a large effect on physical activity (Standard mean difference (SMD) 0.59; 95% confidence interval (95% CI) 0.38 to 0.79;  $p < 0.00001$ ) compared to control group with usual care, minimal treatment, and no treatment. A large effect was also observed on physical activity (SMD 0.59; 95% CI 0.34 to 0.83;  $p < 0.00001$ ) when compared to no treatment alone. This study was unable to identify differing effects between technologies on physical activity or walking in the DPR interventions in MS. In conclusion, technology-based DPR increased physical activity among persons with MS, but further research of technology-based DPR and MS is needed.

**Significance for research, policy or practice going forward:** These results suggest that technology-based DPR interventions increase physical activity among ambulatory persons with MS.

## **Key references:**

1. Furlan AD, Malmivaara A, Chou R, Maher CG, Deyo RA, Schoene M, et al. 2015 Updated Method Guideline for Systematic Reviews in the Cochrane Back and Neck Group. *Spine*. 2015; 40, 1660–1673.