The Effects of Massed Practice on Fatigue in Patients With Multiple Sclerosis

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BACKGROUND

Multiple sclerosis (MS) is one of the most common neurological diagnoses, affecting over one million people worldwide (Heine et al., 2015; Englund et al., 2022). Multiple sclerosis is most associated with fatigue, mental exhaustion, and overall decreased quality of life (Englund et al., 2022). Activity based therapy (ABT) has been shown to improve neurological recovery by incorporating task-specific practice with massed practice and repetition to yield meaningful occupational change (Quel de Oliveira et al., 2023). Practitioners are often reticent to push patients with MS into high intensity intervention due to complicating fatigue. Evidence suggests, however, that high intensity exercise with resistance training decreases fatigue and inflammatory blood markers, indicating both impairment and participation changes specifically regarding chronic conditions (Englund et al., 2022; Anderson, E. & Durstine, J., 2019).

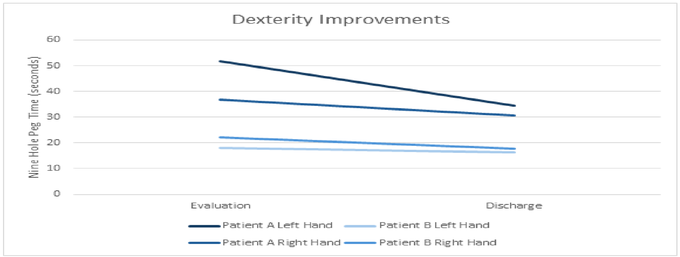
METHODS

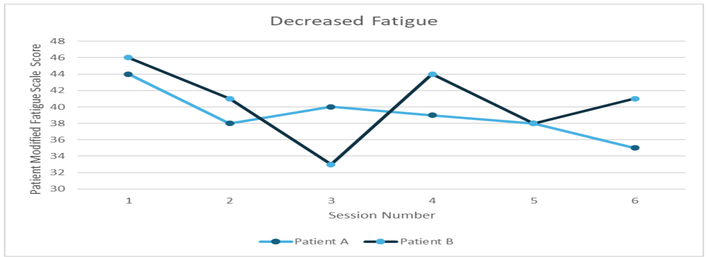
- Patients participated in one session per week of ABT for six to eight weeks.
- Patients were assessed during each session with Rate of Perceived Exertion (RPE) scale during and post intervention.
- Breaks required during session were also recorded.
- Nine-hole peg test was collected and compared pre and post intervention.

- Patients participated in a virtual exercise program that involves visual feedback and provides cues for posture and to limit compensatory movements.
- Patients completed 3-5 minutes of activity at a time, self-initiating rest breaks as needed.
- The program involved multiple types of movements including upper extremity, trunk, and lower extremity movements.
- Some examples include shoulder flexion, shoulder abduction, trunk lateral flexion, trunk rotation, squatting, lateral stepping, and lateral weight shift. Some exercises can be done in either sitting or standing, depending on the patient's balance, activity tolerance, and comfort level.

DISCUSSION

Examine effectiveness of using massed practice interventions focused on proximal strengthening to decrease fatigue and improve upper extremity function in 3 patients ranging in age from 48 to 76 years of age with MS.





RPE SCALING

- Patient A consistently demonstrated the same RPE during activity (4-6) and reported decreased RPE after activity (2-3) demonstrated decrease in breaks required
- Patient B demonstrated consistent RPE during activity (2-3) and demonstrated overall notable reduction upon completion (1-2)
- Patient B increased game levels, time, and balance challenge (standing on Airex or Bosu) each week

PATIENT DESCRIPTION

Patient A: 66-year-old retired male, ambulatory with walker. Gait abnormality as well as impaired left UE ROM secondary to previous injury prior to diagnosis. Presented for therapy to decrease fatigue and improve functional activity tolerance and endurance for participation in leisure and ADL tasks.
Patient B: 56-year-old female, working full time, ambulatory without device. Full UE ROM and strength bilaterally. Presented to improve fine motor strength as well as energy for work, leisure, and community participation.

CONCLUSIONS

1. Patients with MS showed increased endurance and decreased fatigue after participating in massed practice over the course of 6 weeks for 1 hour per session.
2. Patients showed improvements in fine motor strength and coordination as evidenced in reduction of Nine Hole Peg Scores.
3. Patients were able to engage in therapy with decreased breaks and increased challenges upon completion training.

References available upon request. This poster was prepared for AOTA 2025 by Brooke Reeves, OTD, OTR/L and Emily Smith MS, OTR/L. Reevesb@kennedykrieger.org, SmithEmily@kennedykrieger.org