

Case Report: Blood Flow Restriction and Therapeutic Exercise for a Patient with MS and Advanced Disability

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BACKGROUND

- Resistance training at moderate-to-high intensities can improve muscle strength in people with MS who have low-to-moderate disability (Expanded Disability Status Scale: EDSS 0-5.5), but less is known about its effects in those with advanced disease (EDSS>6.0)
- People with MS and advanced disability may struggle to achieve moderate-to-high intensity resistance training due to more advanced weakness and/or fatigue
- Severe mobility limitations put people with MS and advanced disability at high risk for entering a negative cycle of deconditioning and decreased physical activity (Fig 1) which can worsen quality of life and health

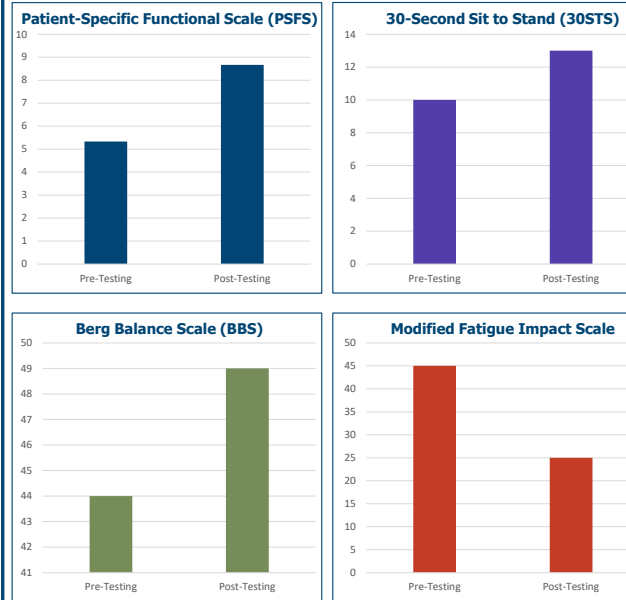
PURPOSE

The purpose of this case report is to describe the use of low-load resistance training with BFR for an individual with advanced MS and report associated changes in impairments (strength, fatigue, and balance), activities (30 second sit to stand (30STS), gait speed), and participation (Patient-Specific Functional Scale-PSFS)

CASE PRESENTATION

- 58-year-old woman with a 19-year history of MS
- EDSS 6.0: required unilateral assistance to walk >100m
- Presented with weakness and difficulty walking
- Participated in low-load resistance training with BFR twice weekly for 8 weeks
- BFR was utilized bilaterally during leg press, calf press, and hip abduction using recommended dosing: 20-30% 1RM, 1 set of 30 followed by 3 sets of 15 using up to 80% of maximal limb occlusion pressure (LOP) based on patient's rate of perceived exertion and tolerance
- Pain, fatigue, and adverse events were recorded at each session. Other outcomes were assessed before and after the intervention.

RESULTS



Other Findings

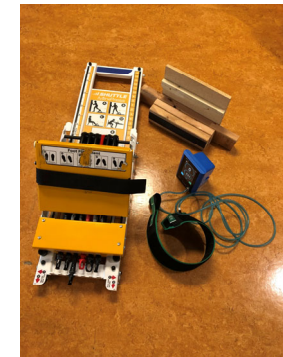
- No increase in pain/fatigue reported following BFR at any visit.
- AOP started at 60% and progressed to 80% by the 10th visit.
- Increased knee extension strength left: +22.4%, right: +16.9%
- Negligible changes were found for gait speed, and ankle and hip strength
- The patient had no adverse events related to the intervention but experienced one non-injurious fall in the community.

Patient reported "feeling stronger" and "having more energy" following intervention



CONCLUSIONS

- BFR was safe and well-tolerated in this individual and led to significant improvements in several clinically important domains
- Overall, there is a lack of evidence for effective resistance training for people with MS and EDSS ≥ 6.0 .



CLINICAL RELEVANCE

BFR could be a safe and effective alternative form of exercise for patients with more advanced MS for improving strength, balance, fatigue, and participation, though further study on more participants is necessary

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Funding: Consortium of MS Centers Pilot Grant Program, NIH/NCATS UL1-TR001082, TL1-TR002535