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Introduction: Myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) is a debilitating, multisystem disorder of unclear etiology. Core symptoms include profound fatigue, post-exertional malaise (PEM), cognitive dysfunction, widespread pain, and dysautonomia. Given the limited efficacy of pharmacological treatments, interest in non-pharmacological therapies such as whole-body cryotherapy (WBC) is growing.

The aim of the study: This study aimed to evaluate the effects of a 10-session WBC program, combined with static stretching (SS), on fatigue severity, cognitive function, autonomic nervous system activity, hemodynamic parameters, and the number of active myofascial trigger points in ME/CFS patients.

Materials and Methods: A total of 24 ME/CFS patients and 18 healthy controls participated in this clinical study. The intervention included 10 WBC sessions at -120°C (duration: 0.5-2.5 minutes), followed by 45-minute static stretching sessions based on ACSM guidelines. Assessments included: trigger point count, spinal range of motion, cognitive performance (TMT A and B), fatigue scales (CFS, FSS, FIS), and spectral analysis of heart rate variability (HRV) and blood pressure variability (BPV) in the context of the functioning of the autonomic nervous system.

Results: Post-intervention analysis revealed a significant reduction in trigger point number ($W = 0.0$; $p < 0.0001$) and improvements in range of motion across all tests (e.g., thoracolumbar rotation: $p = 0.0024$ – 0.0027 ; Thomayer test: $p = 0.0038$). Cognitive test scores improved (TMT A: $p = 0.0247$; TMT B: $p = 0.0397$), with significant associations between TMT B performance and PEM severity ($p = 0.0227$). Fatigue scores decreased significantly across all scales (CFS, FIS, FSS – all $p < 0.0001$). Spectral analysis indicated improved sympathovagal balance (e.g., LF/HF-RR: $p = 0.0204$; HFnu-dBP: $p = 0.0320$).

Conclusions: Whole-body cryotherapy combined with static stretching appears to be a safe and potentially effective intervention for patients with ME/CFS. The treatment resulted in improvements in fatigue, cognitive performance, autonomic function, and myofascial pain. These findings warrant further investigation in larger, randomized trials with extended follow-up periods.

Keywords: chronic fatigue syndrome, whole-body cryotherapy, fatigue, cognitive function, trigger points, autonomic nervous system, HRV, ME/CFS