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Efficacy of Osteopathic Manipulative Medicine as a Non-Pharmacological Approach for Alleviating Pain and Muscle Stiffness in Patients with Multiple Sclerosis and a Comparison to Conventional Medical Interventions

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Background

- National Multiple Sclerosis Society reports that nearly one million people in the United States have multiple sclerosis (MS)¹
- MS an incurable continuous degenerative disease process influenced and driven by underlying mechanisms of central nervous system damage²⁻⁴
- Numerous symptoms, including muscle stiffness, fatigue, spasticity, tremors, and gait disturbance,¹³ that vary widely and unpredictably among patients²
- Disease-modifying therapies (DMTs) can slow progression and limit relapse of MS but do not eradicate daily symptoms²
- Complementary and alternative medicine (CAM) approaches, including osteopathic manipulative treatment (OMT), can help manage symptoms and improve quality of life

Significance

- The application and effectiveness of OMT for MS are not well understood but have therapeutic potential for treating somatic dysfunctions causing symptoms of pain and stiffness
- OMT is used in one study to normalize the nervous system and provide direct and indirect improvement of somatic dysfunction
- Current struggles in conventional treatment pathways
 - A study of 319 MS patients found only 46.7% adhered to DMT regimen⁵
 - Prices of self-administered DMTs for MS increased patients' out-of-pocket costs 7.2-fold over 10 years⁶
- The high cost of and lack of adherence to conventional drug regimens likely mean many patients with MS experience persistent pain in their daily lives
- This study investigates primary-level findings of the effectiveness of OMT in reducing chronic pain, fatigue, and muscle tension in efforts to improve overall quality of life

Overview of Included Studies

Author/year	Objective	Interventions	Findings
Yates et al., 2002	Evaluate effects of OMT combined with maximal-effort exercise (MEE) on strength, coordination, endurance and fatigue in female patients with MS	1)Specialized 12-week program consisting of OMT and MEE twice per week 2)IsoPump Machine utilized for MEE (Concentric leg press, Eccentric leg press, lunge) 3)OMT techniques: myofascial, articular, direct and indirect spinal and rib	Maximal effort concentric-eccentric exercise program combined with OMT significantly increases strength and ambulatory levels while not increasing fatigue
Porcari et al., 2019	Describe effects of OMT in patients with MS	1)CRT, 3 times/week (total of 24 sessions) 2)OMT, 2 times/week for 60 min (total of 16 sessions)	Strong evidence that OMT would be useful in rehabilitative settings in MS patients, particularly for anxiety and fatigue
Stoll et al., 2012	Identify prevalence and frequency of use of therapies other than DMTs, including CAM, among patients with MS	13-question patient/participant survey • current use of non-DMT therapies (e.g., PT, OMT, Massage, dietary supplements) • level of disability on a scale of 1 to 10 (with 10 being most severe)	1)Significant portion of MS patients are seeking additional treatments 2)Physicians and other health care professionals must be aware of extensive use of alternative modalities to provide proper guidance in improving outcomes
Cordano et al., 2018	Evaluate effect of OMT on chronic symptoms of MS	5 OMT sessions	1)OMT should be considered in treatment of patients with chronic symptoms of MS 2)OMT particularly effective in reducing anxiety and fatigue 3)Results need to be replicated in randomized trials
Mann et al., 2004	Evaluate whether OMT would affect gait disturbance	One 3-hour session at West Virginia School of Osteopathic Medicine • questionnaires regarding disease process and gait instability • physical examination • ambulation (70 ft) before and after treatment • OMT: indirect techniques, except muscle energy; Lymphatic techniques excluded	1)MS patients described relief with gait disturbance and other symptoms following OMT 2)Treatment provided increase in quality of life as reported in improved gait stability, mobility, strength, and self-esteem
Schwarz et al., 2008	Analyze patient characteristics, motivation, perceived effectiveness, and side effects of CAM in comparison with established conventional MS therapies	53-item survey	1)Evidence that majority of patients with MS use various forms of CAM at least once 2)Strong insights into patients' perspectives on why they use CAMs (note: OMT not included in this study)

Methods

- Scoping literature review on MS, OMT, DMTs, and medication adherence
- Databases searched: PubMed, CINAHL Plus, EMBASE, and Clinical Key
- Search terms (including variants) in various combinations
 - Multiple Sclerosis, Neurological Disease, Neurodegenerative Disease
 - Osteopathic Manipulation, Alternative Treatment
 - Drug Therapy, Medication Adherence
 - Treatment, Intervention, Rehabilitation
 - Quality of Life
- Inclusion criteria are intentionally broad due to limited research on the effectiveness of OMT in MS.
 - MS type: progressive and relapse-remitting, all severity
 - Study designs: Pilot, RCT, experimental, Reviews
 - Outcome measures: Short- and long-term outcomes of OMT
 - International studies
 - MS Society resources, peer-reviewed journals, and guides to Osteopathic Medicine
- Exclusion criteria
 - Other neurological diseases, such as Parkinson's disease, where OMT has been researched
 - Studies exclusively examining exercise therapy and physical therapy
 - Studies focusing on lymphatics
- Data analyzed quantitatively and qualitatively for
 - Trends in OMT used for treatment
 - Effectiveness on pain, fatigue, and muscle stiffness

Future Directions

- Exploration of OMT use for application beyond musculoskeletal and nervous system dysfunctions
- Further research is to understand the full therapeutic effect and symptom management potential of OMT for MS
- Future research focuses on larger sample populations and data collection consistency to improve relevance and establish statistical significance.
- Cost analysis and comparison of OMT sessions versus conventional symptom-managing drugs to determine whether OMT can help alleviate the treatment-related financial burden of MS

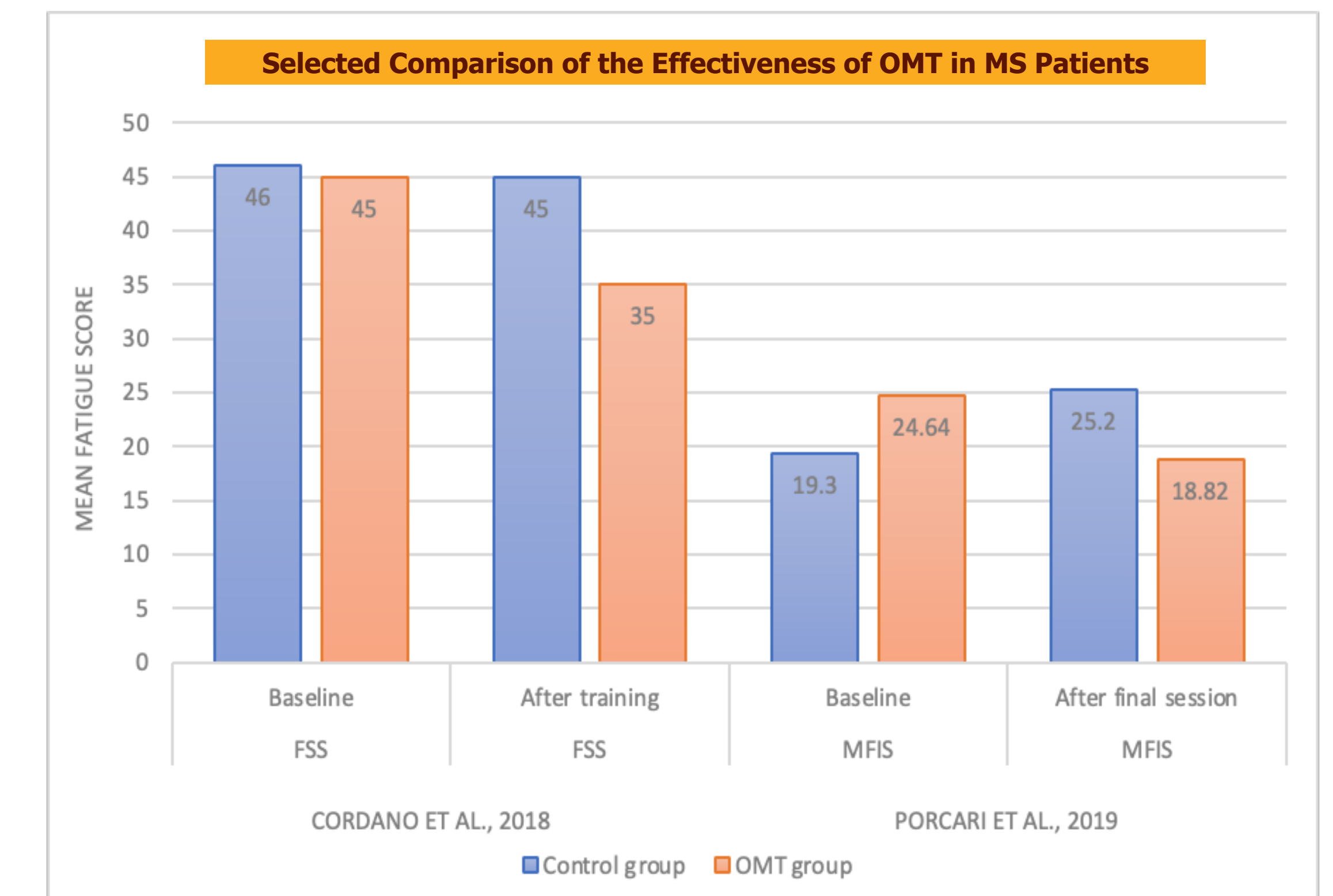
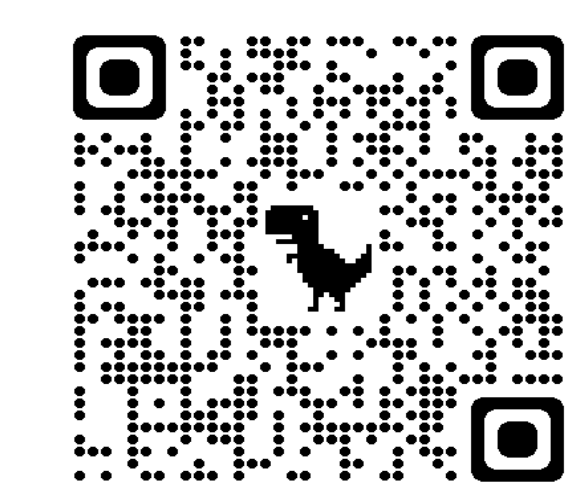


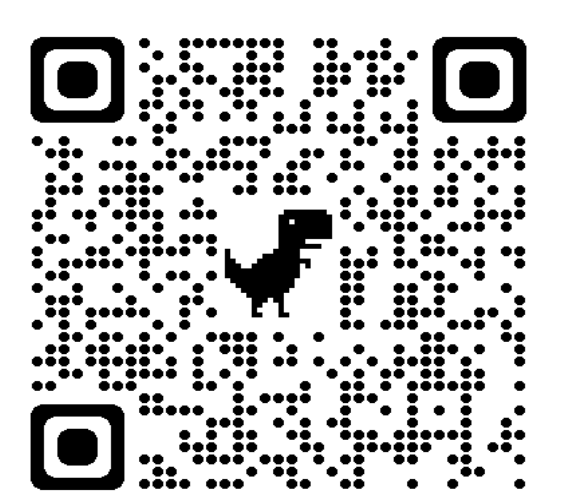
Fig. 1. Comparison between the use of OMT in patients with MS and the patient-assigned mean fatigue score. Data source: Porcari et al.⁷ and Cordano et al.⁸ MFIS = Modified Fatigue Impact Scale FSS = Fatigue Severity Scale

Discussion

- The primary goals for the medical management of MS are reducing the number and severity of flares and preventing long-term disability⁷
- Cordano et al.⁸ confirmed that OMT can help lessen the impact of MS-related fatigue, a frequently used measure of treatment efficacy (fig. 1)
- Non-pharmacologic treatments can help patients avoid side effects (e.g., drowsiness) of medications used for symptom management of MS that may contribute to reported MS fatigue^{1-4, 6-17}
- Most patients in one study reported better ability to walk, less fatigue, and increased range of motion after OMT³
- Stoll et al. reported that all study participants used CAM or other non-DMT remedy, confirming interest in and need for OMT service¹⁴
- Indirect OMT techniques (counterstrain, myofascial release, muscle energy techniques) are effective for muscle tension, spasticity, and changes to gait mechanics^{6,7, 13-17}
 - Articular techniques proved effective in increasing the range of motion¹⁷
 - Multiple forms of direct and indirect spinal and rib techniques reduce somatic and visceral somatic dysfunctions by enhancing beneficial trophic and neurotrophic effects on associated connective tissue^{1-4, 6-19}
- OMT can significantly contribute to limiting persistent disability by
 - directly alleviating pain and muscle stiffness
 - potentially replacing certain symptom-managing medications
 - combined use with medications to improve overall treatment outcomes
- Limitations
 - Varying definitions and scopes of practice of OMT and Osteopathic Medicine across the world, so the inclusion of international studies may affect the ability to generalize findings.
 - The subjective nature of OMT creates challenges to collecting and reporting objective data.



Contact Information



References