

The Effectiveness of Exercise Therapy on Decreasing Pain in Women with Temporomandibular Disorders and How Their Brains Respond: A Pilot Randomized Controlled Trial

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Abstract : Due to physiological differences between men and women, pain is experienced differently between the two sexes. Chronic pain disorders, notably temporomandibular disorders (TMDs), disproportionately affect women in diagnosis, and pain severity in opposition of their male counterparts. TMDs are a type of musculoskeletal disorder that target the masticatory muscles, temporalis muscle, and temporomandibular joints, causing considerable orofacial pain which can usually be referred to the neck and back. Therapeutic methods are scarce, and are not TMD-centered, with the latest research suggesting that subjects with chronic musculoskeletal pain disorders have abnormal alterations in the grey matter of their brains which can be remedied with exercise, and thus, decreasing the pain experienced. The aim of the study is to investigate the effects of exercise therapy in TMD female patients experiencing chronic jaw pain and to assess the consequential effects on brain activity. In a randomized controlled trial, the effectiveness of an exercise program to improve brain alterations and clinical outcomes in women with TMD pain will be tested. Women with chronic TMD pain will be randomized to either an intervention arm or a placebo control group. Women in the intervention arm will receive 8 weeks of progressive exercise of motor control training using visual feedback (MCTF) of the cervical muscles, twice per week. Women in the placebo arm will receive innocuous transcutaneous electrical nerve stimulation during 8 weeks as well. The primary outcomes will be changes in 1) pain, measured with the Visual Analogue Scale, 2) brain structure and networks, measured by fractional anisotropy (brain structure) and the blood-oxygen level dependent signal (brain networks). Outcomes will be measured at baseline, after 8 weeks of treatment, and 4 months after treatment ends and will determine effectiveness of MCTF in managing TMD, through improved clinical outcomes. Results will directly inform and guide clinicians in prescribing more effective interventions for women with TMD. This study is underway, and no results are available at this point. The results of this study will have substantial implications on the advancement in understanding the scope of plasticity the brain has in regards with pain, and how it can be used to improve the treatment and pain of women with TMD, and more generally, other musculoskeletal disorders.

Keywords : exercise therapy, musculoskeletal disorders, physical therapy, rehabilitation, tempomandibular disorders

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