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**REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION (RTMS) INCREASES THE CORTICOSPINAL INHIBITION AND THE BRAIN-DERIVED NEUROTROPHIC FACTOR (BDNF) IN CHRONIC MYOFASCIAL PAIN SYNDROME (MPS): AN EXPLANATORY DOUBLE-BLINDED, RANDOMIZED, SHAM-CONTROLLED TRIAL**

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**Introduction:** Chronic myofascial pain syndrome (MPS) has been related to defective descending inhibitory systems. **Objective:** Evaluate if the rTMS increases the corticospinal inhibition and the BDNF in chronic MPS. **Methods:** Twenty-four females aging 19-65 yo with chronic MPS were randomized to receive ten sessions of repetitive transcranial magnetic stimulation (rTMS) (n=12) at 10 Hz or a sham intervention (n=12). We tested if pain [quantitative sensory testing (QST)], descending inhibitory systems [conditioned pain modulation (QST+CPM)], cortical excitability (TMS parameters) and the brain-derived neurotrophic factor (BDNF) would be modified. **Results:** There was a significant interaction (time vs. group) regarding the main outcomes of the pain scores as indexed by the visual analogue scale on pain (analysis of variance,  $P < 0.01$ ). Post hoc analysis showed that compared with placebo-sham, the treatment reduced daily pain scores by -30.21% (95% confidence interval [CI] -39.23 to -21.20) and analgesic use by -44.56 (-57.46 to -31.67). Compared to sham, rTMS enhanced the corticospinal inhibitory system (41.74% reduction in QST+CPM,  $P < 0.05$ ), reduced in 23.94% the intracortical facilitation ( $P = 0.03$ ), increased in 52.02% the motor evoked potential ( $P = 0.02$ ) and presented 12.38 ng/mL higher serum BDNF (95%CI=2.32 to 22.38). No adverse events were observed. **Conclusion:** rTMS analgesic effects in chronic MPS were mediated by top-down regulation mechanisms enhancing the corticospinal inhibitory system possibly via BDNF secretion modulation. The trial was registered in ClinicalTrials.gov - NCT01964729. **Palavra-chave:** TMS; MPS; BDNF. Projeto 120346