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## **Comparative study of the effectiveness of a low-pressure hyperbaric oxygen treatment and physical exercise in women with fibromyalgia: randomized clinical trial**

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PMID: 32636943 PMCID: PMC7315668 DOI: 10.1177/1759720X20930493

### **Abstract**

**Background:** Fibromyalgia (FM) is characterized by chronic pain and fatigue, among other manifestations, thus advising interventions that do not aggravate these symptoms. The main purpose of this study is to analyse the effect of low-pressure hyperbaric oxygen therapy (HBOT) on induced fatigue, pain, endurance and functional capacity, physical performance and cortical excitability when compared with a physical exercise program in women with FM.

**Methods:** A total of 49 women with FM took part in this randomized controlled trial. They were randomly allocated to three groups: physical exercise group (PEG, n = 16), low-pressure hyperbaric oxygen therapy group (HBG, n = 17) and control group (CG, n = 16). Induced fatigue, perceived pain, pressure pain threshold, endurance and functional capacity, physical performance and cortical excitability were assessed. To analyse the effect of the interventions, two assessments, that is, pre and post intervention, were carried out. Analyses of the data were performed using two-way mixed multivariate analysis of variance.

**Results:** The perceived pain and induced fatigue significantly improved only in the HBG ( $p < 0.05$ ) as opposed to PEG and CG. Pressure pain threshold, endurance and functional capacity, and physical performance significantly improved for both interventions ( $p < 0.05$ ). The cortical excitability (measured with the resting motor threshold) did not improve in any of the treatments ( $p > 0.05$ ).

**Conclusions:** Low-pressure HBOT and physical exercise improve pressure pain threshold, endurance and functional capacity, as well as physical performance. Induced fatigue and perceived pain at rest significantly improved only with low-pressure HBOT.

Trial registration: ClinicalTrials.gov identifier NCT03801109.

Keywords: cortical excitability; fibromyalgia; functional ability; hyperbaric oxygen therapy; pain; physical exercise.

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Conflict of interest statement

Conflict of interest: The authors declare that there is no conflict of interest.