

## Effectiveness of Hyperbaric Oxygen for Fibromyalgia: A meta-analysis of randomized controlled trials

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## Abstract

**Background:** As characterized by chronic widespread skeletal muscle pain, fibromyalgia syndrome (FMS) is a common rheumatologic disease. Hyperbaric oxygen therapy (HBOT) has been reported as an emerging treatment regimen for FMS, with a paucity of solid evidence. Accordingly, a systematic review and meta-analysis was performed to address the effectiveness of HBOT on FMS.

**Methods:** We searched Cochrane Database, EMBASE, MEDLINE, PubMed, Clinicaltrials.gov and psyINF, and the reference sections of original studies and systematic reviews from inception to December 2020. Randomized controlled trials (RCTs) on the treatment of FMS with HBOT were included. Outcome measures included pain, Fibromyalgia Impact Questionnaire (FIQ), Tender Points Count (TPC) and side effects. Pooled analysis was performed to standardized mean difference (SMD), 95% confidence interval (CI) and  $I^2$  representing heterogeneity, with random-effect and consistent models.

**Results:** As a result, four RCTs, with 163 participants, were included for analysis. Pooled results showed that HBOT can benefit FMS with significant improvement at the end of treatment, including FIQ (SMD= -1.57, 95% CI -2.34 to -0.80,  $p < 0.0001$ ) and TPC (SMD= -2.50, 95% CI -3.96 to -1.05,  $p = 0.0007$ ). However, there was no significant effect on pain (SMD= -1.68, 95% CI, -4.47 to 1.11,  $p = 0.24$ ). Meanwhile, HBOT significantly increased the incidence of side effects (RR= -24.97, 95% CI 3.75 to 166.47,  $p = 0.0009$ ).

**Conclusion:** Collectively, emerging evidence from RCTs indicate that HBOT can benefit FMS patients in FIQ and TPC throughout the observation time phrases. Although HBOT has some side effects, it does not cause serious adverse consequences. Definitive, large-sample studies with consistent intervention are needed, focusing on long-term outcomes and maintenance of the beneficial effects.

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