

Expiratory and Expiratory Plus Inspiratory Muscle Training Improves Respiratory Muscle Strength in Subjects with COPD: Systematic Review

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Abstract

BACKGROUND: Inspiratory muscle training (IMT) produces beneficial effects in COPD subjects, but the effects of expiratory muscle training (EMT) and EMT plus IMT in ventilatory training are still unclear. The aim of this study was to systematically review the effects of EMT and EMT plus IMT compared to control groups of COPD subjects.

METHODS: This study is a systematic review and meta-analysis. The search strategy included MEDLINE, Embase, LILACS, PEDro, and Cochrane CENTRAL and also manual search of references in published studies on the subject. Randomized trials comparing EMT and EMT plus IMT versus control groups of subjects with COPD were included. The outcomes analyzed were respiratory muscle strength and functional capacity. Two reviewers independently extracted the data.

RESULTS: The search retrieved 609 articles. Five studies were included. We observed that EMT provided higher gain in maximum expiratory pressure ($P_{E_{max}}$ 21.49 cm H₂O, 95% CI 13.39–29.59) and maximum inspiratory pressure ($P_{I_{max}}$ 7.68 cm H₂O, 95% CI 0.90–14.45) compared to control groups. There was no significant difference in the 6-min walk test distance (29.01 m, 95% CI –39.62 to 97.65) and dyspnea (0.15, 95% CI –0.77 to 1.08). In relation to EMT plus IMT, we observed that $P_{E_{max}}$ (31.98 cm H₂O, 95% CI 26.93–37.03) and $P_{I_{max}}$ (27.98 cm H₂O, 95% CI 20.10–35.85) presented higher values compared to control groups.

CONCLUSIONS: EMT and EMT plus IMT improve respiratory muscle strength and can be used as part of the treatment during pulmonary rehabilitation of subjects with severe to very severe COPD.

COPD obstructive pulmonary disease pulmonary diseases
chronic obstructive expiratory muscle training breathing exercise
respiratory muscle training

Footnotes

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