

Medical rehabilitation

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The role of Inspiratory Muscle Training in the pulmonary rehabilitation of patients with COPD

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Background

Chronic obstructive pulmonary disease (COPD) adversely affects the quality of life and life expectancy of patients. Symptoms of COPD cause the lack of exercise tolerance. Low physical efficiency adversely correlates with higher mortality. The use of inspiratory muscle training in the outpatient pulmonary rehabilitation increases its effectiveness, leading to a significant improvement in the functional status of patients.

Objectives

We examined the effectiveness of an eight-week interval cycle ergometer training and inspiratory muscle training on their function, lung ventilation and exercise tolerance in patients with COPD.

Material and methods

The study was performed in a group of 49 patients with diagnosed COPD (19 women and 30 men).

The average age of the patients was 63.9 years (± 7.4), average BMI 27.8 kg/m² (± 5.4) and the average length of the disease 7.7 years (± 7.1), averaged number of pack-years was 36.2 (± 20.5). Patients were divided into 4 groups:

CET + IMT Group (Cycle ergometer Training and Inspiratory Muscle Training): eight-week interval cycle ergometer training (3 times a week) and inspiratory muscle training on the device Threshold IMT (5 times a week).

CET Group (Cycle ergometer Training): eight-week interval endurance cycle ergometer training (3 times weekly).

IMT Group (Inspiratory Muscle Training): eight-week inspiratory muscle training using the device Threshold IMT (5 times a week).

The control group (CG): patients not participating in a rehabilitation program.

Before being included in the rehabilitation process the patients completed: the health-related quality of life questionnaire (SGRQ), a 6-minute walking test, assessment of fatigue using a modified Borg scale and the degree of dyspnea using the MRC scale, pulmonary function test with measurement of inspiratory (Pimax) and expiratory (Pemax) muscle strength, a treadmill exercise test according to the modified Bruce protocol. All tests were repeated after the end of pulmonary rehabilitation.

Results

After eight-week pulmonary rehabilitation increased significantly Pimax and Pemax in the CET+IMT group and Pimax in the IMT group in comparison with control group (CG). Exercise tolerance increased significantly only in patients undergoing combined training program (CET + IMT). Statistically significant improvement in the SGRQ was demonstrated for group CET+IMT in comparison with CG.

Conclusion

The research results showed the highest efficacy of combining both types of training and confirm the validity of the addition of inspiratory muscle training to the standard pulmonary rehabilitation