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Title: Respiratory muscles trainings as physical rehabilitation in patients with chronic obstructive pulmonary disease and myocardial infarction

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Body: Background: Patients with MI and concomitant COPD often can't take part in physical trainings as a part of cardiac rehabilitation. Purpose: To study the effect of respiratory muscles trainings (RMT) in patients with acute MI and COPD. Methods: 87 patients were randomized to either an exercise training group (EG) or to a control group (CG). Patients were on their 5-7 day of MI. The EG participated in a RMT with gradual increase of inspire and expire resistance. RMT were held with the use of Threshold IMT and PEP devices. RMT were started at the hospital on the 5-7th day after MI and were continued for 1 year at home by patients themselves. Results: In 1 year the distance of 6 minute walk test increased significantly in EG (285±8,7 m vs 275,3±9,28 m, p<0,01). VO2peak also increased significantly in EG (6,84±1,55 vs 4,61±1,16 ml/kg/min, p<0,01). RMT helped to stabilize mean pulmonary pressure (MPP) (35,4±7,7 mm Hg in TG vs 40,7±9,2 mm Hg in CG, p<0,05). There was a statistically significant increase in the maximal inspiratory mouth pressure in most of patients (5,6 kPa ± 0,8 vs 4,1 kPa ± 1,1; p < 0,01). Health related quality of life (HRQL) increased in both groups, but in EG patients it grew significantly higher according to SGRQ and SF-36. In a year there were no lethal outcome in both groups. EG patients had significantly less hospitalizations because of HF progression (7,8% in EG vs 14,6% in CG) and pneumonias (2,1% vs 15,3%). Conclusion: RMT in patients with MI and COPD can be started at their acute period. It improves physical capacity, stabilize MPP, increase HRQL and decrease number of hospitalizations during first year after MI.