

# Respiratory training improves pulmonary function in heart surgery patients

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**Introduction:** In heart surgery patients, the rehabilitation serves to improve their psychophysical status and successful return to daily activities<sup>1</sup>. Respiratory training is important already during the first phase of rehabilitation (in the intensive care unit, to prevent complications) and it continues in the second phase (physiotherapy facility), when patient condition is sufficiently improved. During the respiratory training, patient learns specific breathing techniques (diaphragmatic breathing, Three-ball respiratory training). The goal of this study was to assess effects of respiratory training in heart surgery patients during the rehabilitation process.

**Patients and Methods:** To assess the effects of respiratory training, we analyzed two groups of patients: 1) The experimental group patients (N = 100) combined cardiac training (physical exercises + bicycle ergometry) with respiratory training (Three-ball device); 2) The control group patients (N = 100) performed cardiac training only. The following variables were statistically analyzed in both groups at the beginning and at the end of rehabilitation: respiratory index, spirometry results (forced vital capacity - FVC, forced expiratory volume during the 1 second - FEV<sub>1</sub>, forced inspiratory vital capacity - FVC<sub>IN</sub>), six-minute walking test (6MWT), and Borg scale (subjective assessment of fatigue).

**Results:** Spirometry testing show that both physiotherapeutically interventions (cardiac training, respiratory training) improved pulmonary function in both groups of patients. However, experimental group patients achieved significantly better results (p < 0.001) in all measures of pulmonary function (FVC, FEV<sub>1</sub>, FEV<sub>IN</sub>).

**Conclusion:** Our results show that respiratory training (Three-ball device) has an additional beneficial effect on the improvement of pulmonary function in heart surgery patients. These respiratory exercises improve the strength of inspiratory muscles, increase pulmonary capacity, increase the mobility of thorax, and decrease the consumption of energy. Therefore, we propose that this type of respiratory training should become an integral part of cardiac rehabilitation, especially in heart surgery patients.

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## LITERATURE

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