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Title: Home-based deep breathing exercises after cardiac surgery - A randomized controlled trial

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Body: Breathing exercises are recommended to cardiac surgery patients. Instructions concerning how long patients should continue exercises after discharge vary, and the significance of treatment needs to be determined. Our aim was to assess the effects of home-based deep breathing exercises performed with a positive expiratory pressure device for two months following cardiac surgery. The study design was a prospective, single-blinded, parallel-group, randomized trial. Patients performing breathing exercises two months after cardiac surgery (n=159) were compared to a control group (n=154) performing no breathing exercises after discharge. The intervention consisted of 30 slow deep breaths performed with a positive expiratory pressure device (10-15 cmH₂O) five times a day during the first two months after surgery. The outcomes were lung function measurements, oxygen saturation, thoracic excursion mobility, subjective experiences of breathing and pain, patient-perceived quality of recovery, health-related quality of life and self-reported respiratory tract infection/pneumonia and antibiotic treatment. Two months postoperatively, the patients had significantly reduced lung function, with a mean decrease in FEV₁ to 93 ± 12 % (p < 0.001) of preoperative values. Oxygenation had returned to preoperative values, and health-related quality of life was improved compared to preoperative values (p < 0.01). There were no significant differences between the groups in any of the measured outcomes. No significant differences in lung function, subjective experiences, or quality of life were found between patients performing home-based deep breathing exercises and control patients two months after cardiac surgery.