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Title: Acute effects of threshold positive expiratory pressure on chest wall volumes in Parkinson and chronic stroke patients

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Body: Aim: To study the effects of different levels of Threshold positive expiratory pressure on chest wall volumes in patients with Parkinson and Chronic Stroke. Methods: In eleven patients with Parkinson Disease (60 ± 10.3 years old; 4.4 ± 3 years of diagnosis; BMI: 25.5 ± 2.7 kg/m²; FEV₁/FVC %: 0.82 ± 0.07 and FVC%_{pred}: 82.4 ± 17.9) and 10 chronic stroke patients (53 ± 5.9 years; 3.3 ± 2.6 years of diagnosis; BMI: 26.9 ± 4.8 kg/m²; FEV₁/FVC%: 0.8 ± 0.06 e FVC%_{pred}: 100.6 ± 14.1) we assess the effects of three levels of Threshold PEP (10, 15 and 20 cmH₂O) in random order on chest wall volumes (Optoelectronic Plethysmography, OEP) in three moments: 5 minutes during quiet breathing (QB), 5 minutes breathing against PEP and 5 minutes recovery (rQB). Results: Intragroup analyses showed that tidal volume of chest wall increased in all levels of PEP compared to QB in Parkinson patients (QB= 0.46 ± 0.06 L vs PEP10= 1.04 ± 0.35 L; vs PEP15= 1.2 ± 0.57 L and vs PEP20= 1.23 ± 0.48 L, $p < 0.001$) and chronic stroke patients (QB= 0.41 ± 0.05 vs PEP10= 0.77 ± 0.26 L; vs PEP15= 0.76 ± 0.13 L; PEP20= 0.77 ± 0.22 L, $p = 0.0001$), but no differences were found between levels of Threshold PEP. The behavior of pulmonary rib cage, abdominal rib cage and abdominal compartments were similar during all PEEP levels. End expiratory and end inspiratory lung volumes did not change significantly during different loads of PEP. Conclusion: The different loads of Threshold PEP induced similar changes on chest wall and compartmental volumes in Parkinson and Chronic Stroke patients.