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Title: Respiratory muscle strength after inhaled short acting beta-agonist administration in stable COPD patients

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Body: Background: Complex mechanisms are involved in dyspnoea and exercise intolerance in COPD patients, one of these being the increased mechanical work of respiratory muscles. Aim: To evaluate the increase in respiratory muscle strength after administration of salbutamol in COPD patients. Subjects and methods: Stable COPD patients performed respiratory muscle strength measurements (maximal inspiratory pressure MIP, maximal expiratory pressure MEP) and body-plethysmography (residual volume RV, functional residual capacity FRC). MIP and MEP were again measured 30 minutes after 400 micrograms of inhaled salbutamol was administered. Results: Twenty stable COPD patients were evaluated: stage II-IV GOLD, mean age 58.5 (± 9) years, 17 males, mean FEV1 1.29 L (42.6% of predicted). Mean respiratory muscle strength values were: MIP 73.8 (± 22) cm H₂O and MEP 132.2 (± 35) cm H₂O. Thoracic hyperinflation was present in all cases: mean RV 231.8% and mean FRC 168.9% of predicted. A slight increase in respiratory muscle strength was seen after salbutamol administration, without reaching statistical significance: mean MIP value increased to 76.4 cm H₂O (by 2.6 cm H₂O, $p > 0.05$), mean MEP value increased to 133.15 (by 0.9 cm H₂O, $p > 0.05$). Conclusion: The administration of 400 micrograms of inhaled salbutamol in our stable COPD patients did not significantly improve respiratory muscle strength. Further studies are needed on a larger population of COPD patients with different disease phenotypes.