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**Title:** Dynamic recruitment and maximal force of respiratory muscles in healthy subjects undergone strenuous exercise

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**Body:** Background: The force of respiratory muscles and their respective recruitment during exercise progression is still not fully described even in healthy subjects. Understanding these physiologic responses is essential for comparisons with respiratory patients. Aim: To measure the strength achieved in strenuous exercise and describe the recruitment of inspiratory and expiratory muscles during exercise progression. Method: 14 healthy subjects were monitored with surface electromyography of the respiratory accessory muscles as well as esophageal and gastric catheter for transdiaphragmatic pressure (Pdi). The maximal force was obtained by isometric maneuvers for inspiratory and expiratory accessory muscles, while maximal Pdi was measured by Sniff test. Subjects underwent cycle exercise increasing the effort up to exhaustion and the maximum load was termed as mild, moderate and strenuous efforts based on the respective tertile. Results: All inspiratory and expiratory muscles at strenuous exercise have not achieved their maximal force. The dynamic recruitment during exercise was progressive and mild intensity was already enough to recruit all muscles, including accessories.

**Conclusion:** In healthy subjects, the diaphragm and the accessory muscles are already recruited even in mild intensity. Strenuous exercise was not able to exhaust the maximal force of respiratory muscles, with a higher reserve for diaphragm in contrast to the accessories.