

European Respiratory Society Annual Congress 2012

Abstract Number: 4340

Publication Number: P862

Abstract Group: 4.1. Clinical physiology and Exercise

Keyword 1: Lung mechanics **Keyword 2:** Respiratory muscle **Keyword 3:** Physiology

Title: An integrative and comprehensive approach to evaluate lung mechanics in seated and upright positions

Mr. Andre 25989 Albuquerque alpalbuquerque@hotmail.com MD ¹, Mr. Pedro 25990 Caruso pedcaruso@gmail.com MD ¹, Ms. Renata 25991 Pletsch renatapletsch@terra.com.br ¹, Ms. Pauliane 25992 Santana paulivisa@gmail.com MD ¹, Ms. Leticia 25993 Cardenas letscardenas@gmail.com ¹, Mr. Andre 25997 Apanavicius apanavicius@terra.com.br MD ¹, Mr. Gabriel 26005 Rozin grozin@gmail.com MD ¹, Mr. Marcelo 26032 Macchione marcelo_macchione@hotmail.com MD ¹, Mr. Joao Marcos 26017 Salge jmsalge@uol.com.br MD ¹ and Mr. Carlos 26033 Carvalho crrcarvalho@uol.com.br MD ¹. ¹ Respiratory Department, Heart Institute (Incor) - University of Sao Paulo Medical School, Sao Paulo, Brazil .

Body: Ventilatory and sensorial differences have been found between treadmill and cycle in respiratory diseases. However, there are still many doubts about lung mechanics in these two body positions. Methods: 5 male healthies were evaluated at quite breathing (QB) and voluntary hyperventilation (VH) in seated (ST) and upright (UR) with: transdiafragmatic pressure (Pdi) - oesophageal and gastric sensors, electromyography (RMS) of sternocleidomastoid, Intercostal, Rectus abdominis and External Abdominal Oblique (ObIEMG), ribcage (RC) and abdominal (Ab) bi-dimensional movement by inductotrace (Volt), and flow measurement (L.min⁻¹). Results: At QB in ST with similar flows, we found: the chest wall movement was mainly the Ab, with similar Pdi than UR (20.9 vs 28.1 cmH₂O) but with a lower gastric pressure (12.3 vs 21.9cmH₂O, NS). Inspiratory muscles accessory were poorly recruited in both positions, but UR lead to higher activity of abdominal muscles (p=0.08). During (VH): the chest wall increase was mainly dependent of RC in ST, while in UR the contribution of RC and Ab was the same. Despite the incPes was equivalent (305 vs 295%) in both positions during VH, gastric pressure augmented more in ST than UR (169 vs 109%, NS). Finally, VH in ST resulted in similar recruitment of insp accessory muscles but superior of exp muscle (incObIEMG 118% vs 83%, NS) than UR. Conclusion: Seated is characterized by greater contribution of Ab to chest wall movement despite the lower gastric pressure and also lower exp muscle recruitment than UR. During hyperventilation, the increase of Ab contribution was also greater in ST. Ab compartment is more recruited and less contributing to chest wall mechanics in UR.