

European Respiratory Society Annual Congress 2013

Abstract Number: 3570

Publication Number: P3980

Abstract Group: 4.1. Clinical respiratory physiology, exercise and functional imaging

Keyword 1: Respiratory muscle **Keyword 2:** Physiology **Keyword 3:** Rehabilitation

Title: Thixotropic effects on operational chest wall volumes in healthy subjects

Prof. Dr Guilherme 21756 Fregonezi fregonezi.guilherme@gmail.com¹, Mr. Fernando Henrique Fernandes 21757 Macedo nandohfm@hotmail.com¹, Ms. Maria Clara 21758 Goes mariaclaragoes1@hotmail.com¹, Mr. Rencio Bento 21759 Florencio reencio.bf@hotmail.com¹, Prof. Dr Vanessa 21760 Resqueti vanessaesqueti@hotmail.com² and Prof. Dr Andrea 21761 Aliverti andrea.aliverti@polimi.it³. ¹ Respiratory Muscle and PneumoCardioVascular Performance Lab, Physical Therapy, Federal University of Rio Grande Do Norte, Natal, Brazil ; ² Physical Therapy, Federal University of Pernambuco, Recife, Brazil and ³ Boengineering, Politecnico Di Milano, Milano, Italy .

Body: Inspiratory muscle thixotropy can be achieved by muscle contraction at an inflated or deflated lung volume, causing muscle stiffness or slackness (Homma et al.). Here we aimed to assess the effects of thixotropy maneuver on operating volumes in healthy subjects. Ten subjects (5 f), age 24 yrs (IQR:22-27.5), BMI:24 Kg/m²(IQR:21.9-27.2), FVC% pred:97(IQR:89.2-104.2) and FEV₁/FVC: 0.84 (IQR:0.82-0.86) were studied. End-inspiratory (EIV) and end-expiratory (EEV) volumes of Chest Wall [CW] were measured by Opto-Electronic Plethysmography before, during and immediately after inspiration at TLC and expiration at RV with occluded airways for 8 secs (apnea, AP). In addition, TLC and RV maneuvers were performed at occluded airways with inspiratory (INS) or expiratory (EXP) efforts sustained for 5 sec followed by 3 sec of relaxation. EEV and EIV variations were measured during the first 4 breaths immediately after each maneuver. Results are shown in figure 1a and 1b. After RV, maneuvers, chest wall EEV decrease significantly after INS and AP (p=0,0061 and p=0,0122, respectively); chest wall EIV decrease significantly during after INS (p=0,010). After TLC maneuvers, EIV increase significantly during INS, EX and AP maneuvers (p=0,0189, p=0,012 and p=0,0002, respectively).

Our results suggest that a thixotropic effect determines an increase of chest wall operational volumes after sustaining lung volumes at TLC and a decrease after sustaining lung volumes at RV.