

European Respiratory Society Annual Congress 2013

Abstract Number: 3943

Publication Number: P1342

Abstract Group: 9.2. Physiotherapists

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

Title: Assessment of thoracoabdominal mechanics in elderly by optoelectronic plethysmography: A controlled study

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Body: Background: Age-related respiratory changes results from decreased compliance of the lung and the chest wall as well as weakness of the respiratory muscles; however, the impact of these changes in the thoracoabdominal mechanics remains poorly studied. Objective: To assess chest wall volumes and inspiratory muscular activity in elderly compared with adults. Methods: Sixty five elderlies (32 males, 70±7yrs, 24.7±4.3Kg/m²) and 71 adults (23 males, 45±5yrs, 25.5±5.3Kg/m²), with normal lung function were evaluated. All patients performed quiet and deep breathing during thoracoabdominal kinematics analysis (optoelectronic plethysmography) measured simultaneously with muscular activity of the sternocleidomastoid and superior and inferior intercostal muscles (electromyography). One-way repeated measures ANOVA was used and the significance level was set at 5%. Results: During quiet breathing, no difference was observed in the thoracoabdominal volumes and muscular activity between elderlies and adults. During deep breathing, elderly presented a lower upper ribcage volume compared to adults (respectively, 470±190mL vs. 550 ±220mL; p<0.05) and no difference was observed in upper and abdominal volumes as well as muscular activity. Conclusion: Our results show that elderlies have a decrease in the upper chest wall only during deep breathing.