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THE EFFECT OF PREGNANCY ON RESPIRATORY FUNCTION

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Pregnancy is a parapsychological condition that affects the respiratory system through biochemical and mechanical factors. Hormonal patterns cause ventilatory changes. The enlarging uterus alters chest wall configuration.

We aimed to quantify these changes: optoelectronic plethysmography was used for ribcage (RC) geometry, ventilatory and thoraco-abdominal pattern, while ultrasound for diaphragmatic function (thickness and displacement).

11 primiparous women were analyzed during quiet breathing at each trimester of pregnancy. 11 nulliparous were the control group.

Subcostal angle, antero-posterior and mediolateral RC diameters progressively increased, while RC height decreased with constant RC volume. Breathing frequency increased, while tidal volume did not change although the reduced RC contribution at the third trimester. No changes in terms of diaphragmatic thickness and displacement (Figure 1).

During pregnancy there is a reorganization of RC geometry, mainly due to a bucket-handle upward shift of the lower costal margin, in terms of shape but not of volume. In this way, the lung is not restricted while leaving space to accommodate the abdominal expansion. Although our results suggest no effects on the diaphragm, the enlarging uterus increases the abdominal load and stretches the diaphragm. The preserved thickness indicates that it increases in total size.

We can speculate that pregnancy has a training effect on the diaphragm, being propaedeutic for the delivery phase.

Session:

Respiratory muscles and lung function: from healthy subjects to patients (Oral presentation)

Date/Time:

Monday, September 17, 2018 / 10:45-12:45

Room:

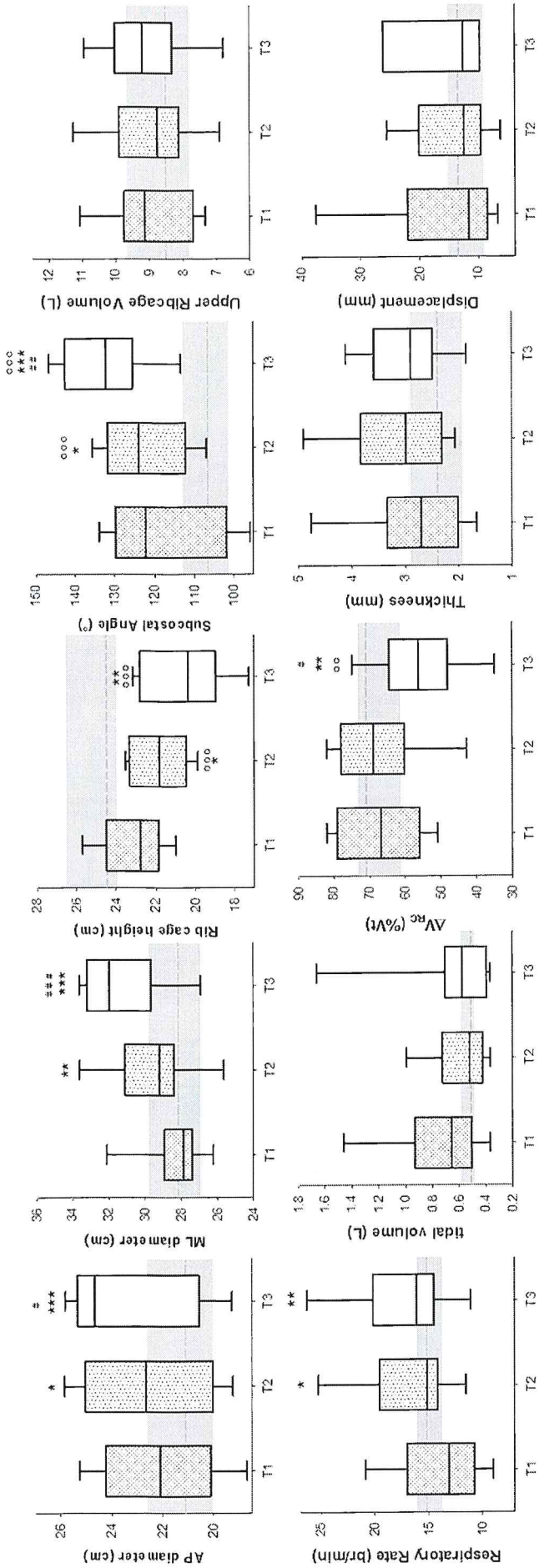
7.3M

Category:

Clinical respiratory physiology, exercise and functional imaging

Keywords:

Physiology, Respiratory muscle



Median, interquartile range, 10th and 90th percentiles of antero-posterior (AP) ribcage diameters, medio-lateral (ML) ribcage diameters, ribcage height, subcostal angle, ribcage volume, tidal volume, the percentage contribution of ribcage to tidal volume (AV_{rc}), diaphragmatic thickness and displacement of multiparous women during quiet breathing at the first (T1), second (T2) and third (T3) trimester of pregnancy. The grey area and the grey line indicate the interquartile range and the median value of the corresponding parameter of the multiparous women.

*, **, ***, p < 0.05, 0.01, 0.001 vs T1; #, ##, ###, p < 0.05, 0.01, 0.001 vs T2; †, ††, †††, p < 0.01, 0.001 vs multiparous

Chairs : David M. G. Halpin (Exeter Devon, United Kingdom), Stephanie Everaerts (Leuven, Belgium)

- Late Breaking Abstract - High-sensitivity troponin I predicts all-cause mortality in stable COPD in the COSYCONET cohort**
- OA2138 Benjamin Waschki (Hamburg, Germany), Peter Alter, Tanja Zeller, Christina Magnussen, Raphael Twerenbold, Stefan Blankenberg, Albert Omlor, Christian Herr, Klaus Rabe, Tobias Welte, Rudolf Jörres, Claus Vogelmeier, Robert Bals, Henrik Watz
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- Disease progression patterns in COPD**
- OA2139 Felix John Samuel Bragman (London, United Kingdom), Alexandra Young (London, United Kingdom), Alexandra Louise Young, David J Hawkes, Daniel C Alexander, John R Hurst
-
- Longitudinal stability and association with all-cause mortality of the 2017 GOLD groups in the ECLIPSE cohort**
- OA2140 Alvar Agusti Garcia-Navarro (Barcelona, Spain), Maria Rosa Faner Canet, Guillaume Noell, Per Bakke, Edwin K. Silverman, Ruth Tal-Singer
-
- The value of short physical performance battery (SPPB) as an alternative component of the BODE Index in predicting death in chronic obstructive pulmonary disease (COPD) in the ERICA cohort.**
- OA2141 Jillies Fermont (Cambridge (Cambridgeshire), United Kingdom), Marie Fisk, Charlotte Bolton, John Cockcroft, Carmel Mceniery, Jonathan Fuld, Divya Mohan, Ruth Tal-Singer, Hana Mullerova, Angela Wood, Ian Wilkinson, Michael Polkey
-
- Soluble urokinase plasminogen activator receptor (suPAR) predicts mortality in exacerbated COPD**
- OA2142 Ditte Vendelbo Jørgensen (Hvidovre, Denmark), Nina Skalvan Godtfredsen, Kristoffer Marsaa, Charlotte Suppli Ulrik, Ove Andersen, Jesper Eugen-Olsen, Line Jee Hartmann Rasmussen
-
- Role of different spirometric reference equations for lung volumes assessment**
- OA2143 Gianluca Imeri (Bergamo, Italy), Fulvio Braido, Marco Contoli, Angelo Corsico, Fabiano Di Marco, Claudio Micheletto, Girolamo Pelaia, Paola Rogliani, Roberta Trapasso, Pierachille Santus, Nicola Scichilone, Paolo Solidoro, Giovanni Sotgiu
-
- Novel spirometry indices detect mild airflow obstruction not detected by traditional criteria**
- OA2144 Surya Bhatt (Birmingham, United States of America), Nirav Bhakta, Carla Wilson, Chris Cooper, Igor Barjaktarevic, Sandeep Bodduluri, Young-Il Kim, Michael Eberlein, Prescott Woodruff, Frank Sciruba, Peter Castaldi, Meilan Han, Mark Dransfield, Arie Nakhmani
-
- Clinical clustering of COPD patients is useful to predict future COPD exacerbations**
- OA2145 Andrei Malinovschi (Uppsala, Sweden), Christer Janson, Kristina Bröms, Björn Stållberg, Karin Lisspers, Marieann Högman

7.3M Session 247 10:45 - 12:45

Oral presentation: Respiratory muscles and lung function: from healthy subjects to patients

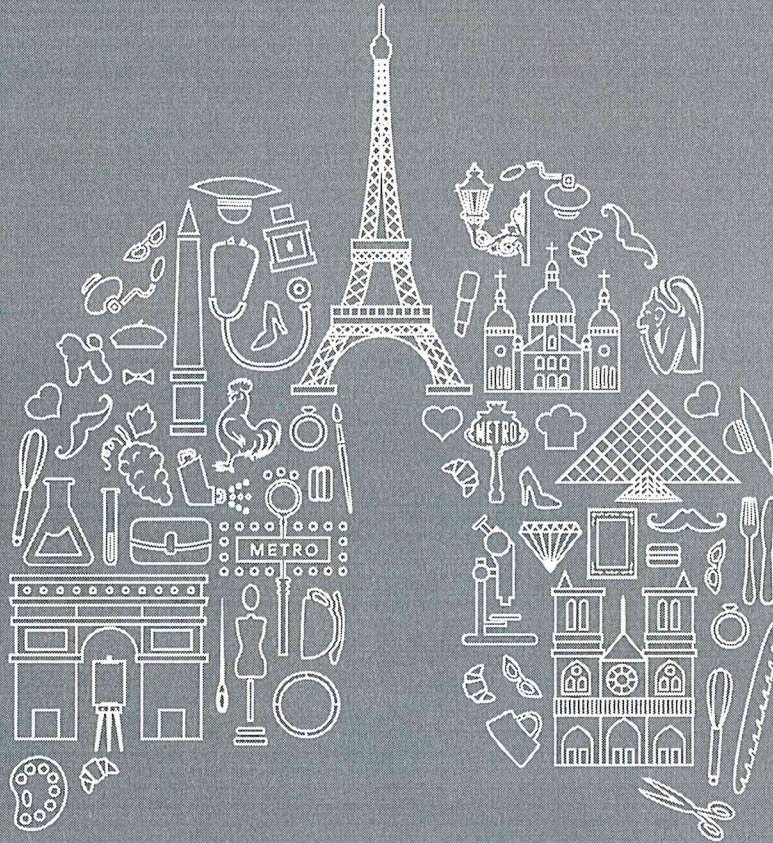
Disease(s) : Airway diseases Interstitial lung diseases

Method(s) : Epidemiology Imaging Cell and molecular biology Physiology

Chairs : Sam Bayat (Grenoble, France), Danilo Cortozzi Berton (Porto Alegre (RS), Brazil)

- OA2146 **Late Breaking Abstract - Estimating elastic recoil via the forced oscillation technique (FOT).**
Kris Nilsen (VIC, Australia), David, G Chapman, Katrina, O Tonga, Greg, G King, Bruce, R Thompson, Cindy Thamrin
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- OA2147 **Acute effects of inspiratory threshold load and interface on breathing pattern and activity of respiratory muscles**
Jéssica Danielle Medeiros da Fonsêca (Santa Cruz, Brazil), Vanessa Regiane Resqueti, Antônio José Sarmento Da Nobrega, Luciana Fontes Silva Da Cunha Lima, Valéria Soraya Farias Sales, Andrea Aliverti, Guilherme Fregonezi
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- OA2148 **Acute effects of normocapnic hyperpnoea exercise on intercostal and locomotor muscle oxygenation in COPD**
Ferid Oueslati (Québec (QC), Canada), Didier Saey, Eric Nadreau, Mickael Martin, Francois Maltais
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- OA2149 **THE EFFECT OF PREGNANCY ON RESPIRATORY FUNCTION**
Antonella LoMauro (Milano (MI), Italy), Andrea Aliverti, Daniela Alberigo, Nicola Persico, Peter Frykholm, Federica Briganti, Mario Nosotti, Ilaria Righi
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- OA2150 **Chest wall kinematics measured during inspiratory threshold loading, deep breathing maneuvers and CO2 rebreathing in individuals post-stroke.**
Jadranka Spahija (Montréal (QC), Canada), Karen Dev, Caroline De Marchie, Joyce Fung
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- OA2151 **Pharmacometabolic effect of pirfenidone treatment in IPF detected by high resolution MALDI-FTICR imaging**
Isis Enlil Fernandez (München, Germany), Na Sun, Mian Wei, Michael Witting, Michaela Aichler, Stijn Verleden, Philippe Schmitt-Kopplin, Axel Walch, Oliver Eickelberg





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