P1162
Aerobic exercise training cannot be prescribed based on predictive heart rate equations in moderate or severe asthmatic patients
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Methods: Ninety-eight adults with moderate to severe asthma aged 36 (ranging from 24-53) years were submitted to a symptom-limited cardiopulmonary exercise test (CPET) and anaerobic threshold (AT) was determined by two independent experienced researchers. The association and agreement between maximum heart rate (HRmax) achieved on CPET and age-predicted Tanaka’s maximum HR was determined by Tanaka’s predictive equation (177.0 vs. 182.8 bpm, respectively, p<0.001; r=0.46) and a weak agreement (p<0.001; ICC=0.26) between regimes on other exercise capacity and QoL outcomes was found.

Conclusions: The strength of the overall evidence to support the use of SLE regimes compared to other exercise regimes or control in patients with COPD or CHF is low and further research is requested.

P1164
Changes in heart rate and blood pressure variability during and following a period of slow breathing
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Methods: The effects of slow breathing on heart rate variability (HRV) and also affects diastolic blood pressure variation (DBPV). We hypothesized that slow breathing would modify HRV and DBPV and the effects would persist for some time, being the basis of a training adaptation which might be of benefit to COPD patients. Eleven subjects (8 male, age 28-67 years) were recruited, 6 normotensive and 5 with well managed essential hypertension. Subjects breathed at 12 breaths per minute (bpm) then at 6 bpm and finally at 12 bpm, each for 10 min. There were no differences in mean heart rate, systolic or diastolic blood pressures with breathing rate but there were major changes HRV and DBPV during slow breathing, with an increase of power at low and a decrease at high spectral frequencies. Heart rate was entrained to breathing in younger and normotensive subjects at 12 bpm while the older and hypertensive subjects showed little evidence of this until breathing at 6 bpm. In all subjects the spectral changes developed and resolved over several minutes following each change in breathing rate; DBPV changed more slowly than HRV.

Conclusions: Slow breathing modulates vagal and sympathetic activity which takes time to develop and resolve indicating neuronal plasticity which, with repetition, could be the basis of the anti-hypertensive action of slow breathing training.

P1165
Effect of percutaneous transluminal coronary angioplasty on deep breathing heart rate variability
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Methods: The PTCA did not induce changes during deep-breathing when compared to spontaneous breathing in the time domain indices (P>0.05).

Conclusions: The PTCA did not induce changes during deep-breathing heart rate variability (HRV) has not been well established.

Objective: The aim of the study was to analyse deep breathing heart rate variabiltiy, which reflect the sympathovagal control of heart rate in patients before, after 1 and 30 days of elective PTCA.

Methods: The study consisted of 10 consecutive patients (7 men, 3 women) with age of 62±11.6 years, single-vessel coronary artery disease (CAD) who underwent elective coronary angioplasty with stent implant. Heart-rate variability (HRV) was obtained at rest (spontaneous breathing) and during respiratory sinus arrhythmia maneuver (RSA-M) by cardiofrequency meter (Polar S810i) before, after 1 and 30 days of PTCA. RSA-M consisted of deep-breathing in 6 respiratory cycles per minute. HRV analyses were obtained by the time, frequency-domain (high frequency- HF; and low frequency-LF) and non-linear methods (triangular R-R intervals-RR-ir and Approximate Entropy-ApEn).

Results: The PTCA did not induce changes during deep-breathing compared to spontaneous breathing in the time domain indices (P>0.05). However, before
of PTCA higher values of BF/AF ratio were observed (P < 0.05). Interestingly, deep-breathing increased RR-tri only before and after 1 day of PTCA (P < 0.05) and ApEn decreased only after 1 month (P < 0.05).

Conclusion: Patients with CAD presented sympathetic activation before PTCA, which produced altered responses during deep-breathing after the procedure.

PI166
Does music affect fatigue perception during exercise in COPD patients?
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Introduction: Performing daily life activities is difficult for many COPD patients. Pulmonary rehabilitation (PR) is useful to improve exercise tolerance. If dyspnoea remains the primary debilitating symptom associated with COPD, fatigue is also frequent in patients suffering from lung disease, especially during and after physical activities. Influence of music on dyspnoea was previously reported. The aim of this preliminary study was to observe the influence of music on fatigue during pulmonary rehabilitation sessions.

Material and method: 12 COPD patients regularly attending our PR program were recruited (age: 63.9 y.o.; ± 13.0). Fatigue was measured during two sessions by a questionnaire comprising 8 items. Investigation was performed during two separate sessions with or without music. PR exercises were the same during both sessions.

Results: There was no difference in total fatigue score (16.7 ± 4.7 vs 17.1 ± 5.0; p = 0.58). The 8 items were not different between both sessions. Except for two items, all questions were well correlated between the two sessions.

Conclusion: In this preliminary study, we have shown that music does not influence fatigue perception during a PR session.

PI167
The results of a rehabilitation program including inspiratory muscle training in COPD patients
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Background: Respiratory muscle impairment could contribute to dyspnoea, exercise intolerance and diminished quality of life in COPD patients.

Aim: To evaluate the results of a pulmonary rehabilitation (PR) program that includes inspiratory muscle training (IMT) in COPD patients.

Method: A randomized controlled trial to evaluate improvements in inspiratory muscle strength (maximal inspiratory pressure: MIP), exercise tolerance (6 minutes walking test: 6MWT), dyspnoea score (Medical Research Council: MRC) and quality of life (St. George Respiratory Questionnaire: SGRQ). The research group included 20 patients with COPD (stage II-IV), mean age 63 years (± 4.7). The study comprised 16 men and 4 women. The patients were divided into two groups. The control group included patients who attended PR programs without IMT (n=20), and the study group included patients who attended PR with IMT (n=20).

Results: We included 20 COPD patients, stage II-IV GOLD, mean age 63 years, 16 men, mean FEV1 1.27 L (47% of predicted). Mean values for the measured parameters were: MIP 63.9 cm H2O, 6MWT distance (6MDW) 407.1 m, dyspnoea MRC score 3.05 points and SGRQ score 46.5 (symptoms 45.6, activity 63.7, impact 35.6).

There was a significant improvement in the following mean values at the end of the PR program: MIP increased by 9.6 cm H2O (p=0.005) and 6MWD by 55 m (p<0.001); dyspnea score decreased by 0.75 (p=0.001). SGRQ score un-significantly decreased by 4.9 points (p>0.05). A greater improvement of MIP was seen in stage III-IV patients (12.5 cm H2O) compared to stage II patients (8.6 cm H2O).

Conclusions: Our rehabilitation program including general and inspiratory muscle training led to a significant improvement in inspiratory muscle strength, walking distance and symptoms. The greater improvement in respiratory muscle strength in severe and very severe COPD patients will be verified in a larger population study.

PI168
Withdrawn

SUNDAY, SEPTEMBER 2ND 2012
P1171 Breathing exercises for cardiac surgery patients – A national survey of clinical practice

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There are differences in routines regarding recommendations of breathing exercises for patients undergoing cardiac surgery. To date, no surveys of the use of breathing exercises for cardiac surgery patients in Europe have been performed.

Aim: The aim of this national survey was to determine current practice of chest physiotherapy and breathing exercises for cardiac surgery patients in Sweden.

Method: A total population sample was identified and postal questionnaires were sent to the 33 physiotherapists working at the departments of thoracic surgery in Sweden. Structured and open-ended questions were asked about the routine care of patients undergoing cardiac surgery.

Results: In total, 29 replies were received. All physiotherapists instructed the patients to perform postoperative breathing exercises hourly, on a regular basis. Physical activity and health-related quality of life (HRQL), in patients with pulmonary sarcoidosis (PS).

Background: Definition of the pulmonary rehabilitation (PR) precisely describes how such a programme should be established and what parts should be included. However, there is a need for a programme that motivates patients to keep it up and thus to prolong the beneficial effect of it.

Aim: To evaluate an effect of a 6-week home-based PR following a 6-week outpatient PR on health-related quality of life (HRQL) in patients with pulmonary sarcoidosis (PS).

Methods: There were 18 patients with PS (mean age 50.3 ± 13.3 years) recruited to the PR programme. The assessments included lung function tests, maximal inspiratory (MIP) and expiratory (MEP) mouth pressures, chest expansion, 6-minute walk test (6MWT) and HRQL using the Sarcoidosis Health Questionnaire. Patients underwent a 6-week outpatient PR followed by a 6-week home-based PR programme, which both consisted of respiratory physiotherapy and regular physical activity training.

Results: Baseline data showed decreased breathing muscle strength (MIP 89%, MEP 65%), limited chest expansion, and relatively normal results in 6MWT (105% of predicted). Completing outpatient PR programme induced statistically significant changes in all measured parameters but lung function tests. Further significant improvement was observed in MIP during the following home-based PR programme.

Conclusion: Achieved improvements of the 6-week outpatient PR remained also after the 6-week home-based PR and therefore patients should be encouraged in continuing the PR programme at home. Supported by grants of the Palacky University – FK 2011:010, FK 2012:023.

P1172 An effect of the home-based rehabilitation programme following the outpatient rehabilitation programme in patients with pulmonary sarcoidosis

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P1173 Analysis of the usability and motivation of the use of video game platforms as a training system in patients with cystic fibrosis (CF)

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P1174 Video game exercise effectiveness of a domiciliary respiratory rehabilitation program in cystic fibrosis (CF) patients

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The purpose of this study was to evaluate the effectiveness of a domiciliary respiratory rehabilitation program in cystic fibrosis (CF) patients using video games platforms. CF is a multisystemic disease characterized by an abnormal ventilation response to exercise, the main limiting factor to exercise tolerance. Exercise training using videogames platforms can be a key factor to guarantee this adherence. Our goal was to evaluate the efficacy of a domiciliary exercise program using the Wii™ video game platform as a training system.

The study included 7 CF patients: age (11.4 ± 3.92 years); BMI (18.4 ± 3.92 years); FVC (78.9 ± 18.5%); FEV1 (74.7 ± 22.6%). All performed a domiciliary respiratory rehabilitation program using the Wii™ video game platform with the Active 2 game.

The program consisted of exercise about 30-min every day, 5 days/week during 6 weeks. The measurements evaluated from the beginning to the final were: exercise tolerance using the six minutes walk test (6MWT) and the shuttle test (Shut) and quality of life using the Cystic Fibrosis Questionnaire-Revised (CFQ-R).

The exercise program improved the distance walked during the 6MWT (649 vs 670m) and during the Shut (622 vs 708m) (p < 0.05, both), pre vs post respectively. However, the differences between the dyspnea and fatigue perception were not statistically significant. In relation with the CFQ-R, the data obtained from the respiratory symptoms (p = 0.045) and physical disability domains (p = 0.047) were statistically significant (p < 0.05, both).

The domiciliary respiratory rehabilitation program in CF patients, executed with the Wii™ video game platform, is feasible and can induce significant increases in exercise tolerance and quality of life.

P1175 Pranayama breathing exercises in impaired elderly: Threshold loading versus Pranayama breathing exercises

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Introduction: In the older elderly, the respiratory function may be seriously compromised when the decrease of respiratory muscle (RM) strength coexists with comorbidity and immobility syndrome. The aim of this study was to determine the effectiveness of RM training using the Threshold IMT device, or Pranayama breathing exercises vs. a control group in impaired elderly. Our general hypothesis was that RM training would improve RM function among this population.

Methods: Institutionalized elderly, who were unable to walk, were allocated randomly into three groups: a control group and two experimental groups (Threshold and Pranayama). Experimental groups performed a supervised interval-based training protocol, either through respiratory threshold loading or Pranayama breathing exercises, which lasted six weeks (5 days per week). Maximum respiratory pressures (MIP and MEP) and Maximum Voluntary Ventilation (MVV) were measured at four time points: pre-training, intermediate, post-training and follow-up (weeks 0, 4, 7 and 10, respectively).

Results: Seventy-one residents (90% female, mean age 85) completed the study: Control (n=24), Threshold (n=23), Pranayama (n=24). There was a significant treatment effect on all strengths (MIP, F(6,204)=4.755, p<0.001, n2=0.166, MEP, F(6,204)=4.257, p<0.001, n2=0.111) and MVV (F(6,204)=3.322, p<0.001, n2=0.135).

A total of 24 CF patients: age (124±3.7 years); BMI (18±3); FVC (97±20±p>0.05); FEV1 (93±20±p>0.05) answered a questionnaire specifically designed to evaluate the usability and management of the video game platforms for exercise training. Patients played three different video games Wii Fit Plus (Wii Fit), Wii Family Training (Wii-Train) and Wii Active (Wii-Acti). After this protocol they were asked about their feelings and impressions about them.

The questionnaire showed that video game platforms are usual in child environment (87.5%), they play about 1-4 days per week (50%), they spend playing about 1-2 hours per session (87%), and the main goal is to have fun (79%). During the protocol, the platform that the children like the most was the Wii-Fit (42%) followed by the Wii-Acti, and they considered both a good system to practice exercise at home (83.3%).

The video game platforms represent a common element in CF children and teenagers life. They use this type of platforms frequently and they show highly motivated to incorporate them as a training modality for respiratory rehabilitation programs at home.

Conclusion: Pranayama training group worked differently and significantly better than the other two groups, and may be therefore, a powerful alternative to general exercise conditioning in order to improve RM function (strength and endurance) in the elderly population with a significant loss of mobility and exercise capacity.

P1176

Impact of body position in premature newborn receiving nasal CPAP

Marisa Brunherotti1, Célia Lopes2,3

Introduction: The body position affects the cervical-thoracic-abdominal biomechanics and has impact on lung ventilation and perfusion. The impact of body position during CPAP is not well recognized.

Objectives: To evaluate the clinical impact of prone and supine positions in newborn preterm infants breathing without support or on nasal CPAP.

Methods: Thirty two preterm infants with GA from 26 to 33 weeks, BW <2.257 g and birth weight loss >15% prospectively included. Infants were separated in three groups according to use of nasal CPAP (n=16) or breathing without any support (n=16). Body position (supine or pronation) was changed following a random order. Preterm stand at each decubitus for one hour, and respiratory rate, oxygen saturation, heart rate and Silverman-Andersen bulletin (SA) were recorded every ten minutes.

Results: The 16 infants of the nasal CPAP group presented GA of 30±2.0 weeks, BW of 1.35±2.81g, 56% were male and had 3±2.4 days of life at study. The 16 infants without breathing support presented respectively 33±1.5 weeks, 1.77±0.238 g, 37% were male and had 4±1.5 days of life at study. Clinical parameters of infants in nasal CPAP were not influenced by body position. Infants breathing without support presented at prone position better parameters, but with small clinical relevance, regarding oxygen saturation (95% ± 1.6 vs 94% ± 3.1, p<0.01) and SA (0.2±0.4 vs 0.7±0.6, p<0.01).

Conclusion: No significant differences in clinical parameters were found after changing the postural position in infants at nasal CPAP. When infants were breathing without support, prone position showed a small but statistically significant improvement in oxygen saturation and SA bulletin.

P1177

Comparative evaluation of vibrocompression and bag squeezing: A randomized study

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Introduction: Few scientific evidence has demonstrated the effects of respiratory physiotherapy in intubated children. The clearance maneuvers in mechanical ventilation without the assistance of a carer. Our study shows the LVR bag is easy to use and aids patient spumt clearance. Therefore, this technique warrants further investigation in a larger population with a wider range of conditions.

Objectives: Analyze and compare the hemodynamic effects, ventilation and respiratory physiotherapy in intubated children with respiratory failure. Comparative evaluation of vibrocompression and bag squeezing:

Method: Eleven children with mean age of 28.42±15.42 months were randomized into two groups according to the technique used: (1) Bag Squeezing (BS; n=5) and (2) vibrocompression thoracic (VCT; n=6). All variables were studied before, immediately and 30, 60 and 120 min after the maneuvers (p<0.05).

Results: For both groups were found similar results, no significant differences.

Discussion: Our knowledge this is the first report of patient satisfaction using the innovative LVR bag. 6/8 patients were able to clear sputum more easily after using the LVR bag. 7/8 patients and 6/8 patients agreed/agreed that the bag was easy to use. In 7/8 patients, the technique required the assistance of a carer. Our study shows the LVR bag is easy to use and aids patient spumt clearance. Therefore, this technique warrants further investigation in a larger population with a wider range of conditions.

P1179

Experimental model of atelectasis in newborn pigs

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Introduction: The body position affects the cervical-thoracic-abdominal biomechanics and has impact on lung ventilation and perfusion. The impact of body position during CPAP is not well recognized.

Objectives: To evaluate the effects of the combination of Bag Squeezing maneuver with broncho-alveolar surfactant in an experimental model of Meconium Aspiration Syndrome in newborn pigs.

Methodology: Newborn pigs resulting from a cross-breeding between Large White and Landrace, properly sedated, anesthetized, tracheostomized, paralyzed and mechanically ventilated were used. The animals received artificial mucus infusion through an infusion pump, underwent radiological assessment of the lungs and blood gas analysis was performed to confirm the production of atelectasis.

Discussion: The model showed consistent results between parameters of oxygenation and pulmonary perfusion. The atelectasis model was successfully developed in over 70% of cases, surpassing 90% of attempts in the final phase of the study. Our study shows the LVR bag is easy to use and aids patient spumt clearance. Therefore, this technique warrants further investigation in a larger population with a wider range of conditions.
Conclusion: The association of Bag-squeezing maneuver can bring benefits to gasometric parameters mechanical ventilation and increase the removal of meconium.

P1181
Comparison of two techniques of chest physiotherapy in experimental model of atelectasis in newborn pigs
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Objective: To compare the effectiveness of two techniques of respiratory therapy in an experimental model of atelectasis by bronchial obstruction in newborn pigs.

Methods: 24 pigs sedated, tracheostomized and mechanically ventilated. For the induction of atelectasis, artificial mucus was infused (Polyethylene oxide, Sigma-Aldrich™, USA) using an infusion pump through the tracheal tube. Confirmation of atelectasis was a chest X-ray and by a pressure drop of oxygen in arterial blood. The animals were divided into 3 groups: group 1 that received tracheal aspiration after 20 minutes of confirmation of atelectasis, group 2 underwent the technique of bag squeezing over tracheal aspiration and group 3 underwent vibration chest. To evaluate the effectiveness of techniques one second X-ray was done. To evaluate the changes during the procedures were performed arterial blood gases and pulmonary mechanics evaluation before and after the induction of atelectasis immediately and 30 minutes after the procedure.

Results: The mean percentage change in the PO2 was statistically detect significant between the groups (control: 97.80±37.33, bag squeezing: 166.75±68.63 e vibration: 104.41±45.45, p=0.0408), with improvement in oxygenation in the group undergoing the technique of bag squeezing. The remaining variables did not differ.

Conclusions: The results suggest that the technique of bag squeezing is more efficient than manual vibration chest in these animal model, but clinical improvement was not accompanied by detectable radiological improvement.