382. New adjuncts and modalities in pulmonary rehabilitation

P3519
Expiratory muscle activity and nasal expiratory pressure during reverse sniff  
Toru Iida1, Kana Kato2, Hiroshi Ohsawa3, Koichiro Kouchi4

The evaluation of expiratory muscle strength is of clinical importance in patients with neuromuscular respiratory disease. Maximal expiratory pressure (MEP) has achieved wide acceptance as a simple non-invasive measurement of expiratory muscle strength. However, MEP measurement is difficult for neuromuscular disease patients. In this study, we measured expiratory muscle activity during reverse sniff, a maneuver akin to “blowing your nose”, and we analyzed the relationship between expiratory muscle activity and reverse sniff nasal expiratory pressure (RSNEP).

In 5 healthy subjects, mean age 21.2 yrs, weight 69.2 kg, height 176.6 cm, we inserted fine wire electrodes into transversus abdominis muscle (TA) using high-resolution ultrasound. RSNEP was measured through a catheter that occluded one nostril, while the contralateral nostril remained open. Subjects performed short, sharp, maximum and variable intensity of reverse sniff, beginning from FRC while standing. TA EMG activity was expressed as percent of maximum EMG (%EMGmax) throughout respiratory and non-respiratory maneuvers. Mean MEP was 80.8±3.6 cmH2O. Mean maximum RSNEP was 34.9±18.7 cmH2O, and mean TA EMG activity at maximum RSNEP was 73.9±23.6%/EMGmax. TA EMG activity increased with stepwise increments in RSNEP. In every subject, the linear relationship between RSNEP and TA EMG activity was significant (r = 0.56-0.98, p < 0.05).

We conclude that RSNEP corresponds to the activity of the expiratory muscle transversus abdominis, and that this simple maneuver may be useful for assessment of expiratory muscle strength.

This study was approved by Kitasato university human ethics committee. This work was supported by MEXT of Japan KAKENHI (23500601).

P3520
Inspiratory muscle training (IMT) as an adjunct to pulmonary rehabilitation (PR) in patients with severe COPD  
Dragan Stojanovic1, Oliver Gohl2, Benjamin Krämer1, Sebastian Fuchs1, Vroni Haber1, Michael Wittmann1, Konrad Schultz1. Fachbereich Pneumologie, Klinikum Bad Reichenhall, Zentrum für Rehabilitation, Pneumologie and Orthopädie, Bad Reichenhall, Germany

Background: Up to now there is insufficient evidence for IMT as an adjunct to PR in patients with COPD.

Method: From November 2011 until January 2012 in our clinic 198 COPD patients underwent a 3-week inpatient PR, including 90 with COPD III-IV. Of these 52 patients (25 females) with a median age of 64.5 years (range 34-80) were analyzed. At presentation, 33 patients (55%) had slow bulbar-onset and 27 (45%) rapid bulbar-onset. Non-invasive ventilation (NIV) was initiated in 52 patients (86.7%), with a mean vital capacity of 1699.0±768.0 L and 22.0±48.0 months after diagnosis. Mean duration of NIV was 19.6±23.7 months. Mechanical assisted cough was used in 23 patients (38.3%). Gastrostomy was performed in 21 patients (17 rapidly bulbar) and tracheostomy in 10 (9 rapidly bulbar) after a mean time of 13.6±17.0 months under NIV. The 5-year survival was 48%.

The median overall survival and survival after respiratory muscle aids initiation was significantly higher in slowly bulbar patients compared with rapidly bulbar (p=0.03 and p<0.01, respectively).

In multivariate analysis, predictive factors of survival were younger age, slow bulbar-onset, and early NIV initiation.

Conclusion: Survival may be prolonged in patients with ALS and respiratory dyspnea with early NIV initiation. Age and bulbar onset have significant negative impact on survival.

P3521
Predictive factors of survival in amyotrophic lateral sclerosis patients with respiratory dysfunction  
Inês Neves1, Hans Dabo1, Inês Belchior2, Ana Belarmin1, Tiago Pinto3, Miguel Gonçalves1, João Carlos Winck1,2.1. Pneumology, Departamento, Centro Hospitalar de São João, Porto, Portugal; 2Faculty of Medicine, University of Porto, Portugal

Background: Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disorder that causes severe respiratory dysfunction which is the major cause of death. Early management of respiratory symptoms may improve outcomes and survival.

Aim: Describe survival of patients with ALS and respiratory dysfunction and identify predictive factors of survival.

Methods: Retrospective analysis of patients with ALS evaluated in an outpatient setting. Ventilatory support data was screened. Kaplan-Meier survival analysis was performed and predictive factors were evaluated by Cox multivariate regression.

Results: 60 patients (35 females) with a median age of 64.5 years (range 34-80) were analyzed. At presentation, 33 patients (55%) had slow bulbar-onset and 27 (45%) rapid bulbar-onset. Non-invasive ventilation (NIV) was initiated in 52 patients (86.7%), with a mean vital capacity of 1699.0±768.0 L and 22.0±48.0 months after diagnosis. Mean duration of NIV was 19.6±23.7 months. Mechanical assisted cough was used in 23 patients (38.3%). Gastrostomy was performed in 21 patients (17 rapidly bulbar) and tracheostomy in 10 (9 rapidly bulbar) after a mean time of 13.6±17.0 months under NIV. The 5-year survival was 48%.

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Conclusion: Survival may be prolonged in patients with ALS and respiratory dyspnea with early NIV initiation. Age and bulbar onset have significant negative impact on survival.

P3522
Short-form Sun-style Tai Chi as an exercise training modality in people with COPD: A randomised controlled trial  
Kerina Wu1, Ian Legrand2, Zoe McKee2, Matthew Peters3, Jennifer Alison2. 1Department of Physiotherapy, Concord Repatriation General Hospital, Concord, NSW Australia; 2Discipline of Physiotherapy, Faculty of Health Sciences, University of Sydney, Lidcombe, NSW, Australia; 3Department of Thoracic Medicine, Concord Repatriation General Hospital, Concord, NSW, Australia

Aim: To determine the exercise intensity, capacity, balance and quality of life (Part A) and investigate the exercise intensity of SSTC in COPD patients with severe COPD.

Method: A randomised controlled trial. Participants underwent a 3-week inpatient PR , including 90 with COPD III-IV. Of these patients the control group (CG, n=38) received standard PR, consisting among other things of physical training, education, breathing therapy and psychosocial support. The intervention group (IG, n=52) underwent an additional IMT with at home SSTC in COPD was 53 (18)% of VO2 reserve.

Results: Of 42 participants (mean (SD) age 73 (8) years, FEV1% 59 (16)% predicted). The improvements in 6MWD, MRC, FEVI and CAT tended to be better in the IG, but these differences didn’t reach statistical significance.

Discussion: Considering all COPD patients (IG + CG) the PR program resulted in significant improvement in CAT, 6MWD and MRC score among others. The IG tended to reach greater improvements in these parameters than the CG, especially in Fmax.

Conclusion: IMT appears to be a promising additional therapeutic module to PR.

Abstract P3520 – Table 1

<table>
<thead>
<tr>
<th>CG (PR)</th>
<th>IG (PR+IMT)</th>
</tr>
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<tbody>
<tr>
<td>t0</td>
<td>6.9±2.11</td>
</tr>
<tr>
<td>t1</td>
<td>7.10±2.43</td>
</tr>
<tr>
<td>t2</td>
<td>0.71±0.0136</td>
</tr>
<tr>
<td>6MWD (m)</td>
<td>38.61±11.28</td>
</tr>
<tr>
<td>MMC/Dyspnoea score [0–4]</td>
<td>2.74±1.24</td>
</tr>
<tr>
<td>FEVI [l]</td>
<td>1.39±0.42</td>
</tr>
<tr>
<td>CAT (COPD assessment test) [0–40]</td>
<td>21.9±6.80</td>
</tr>
</tbody>
</table>
P3523
Breathing retraining in COPD: A Cochrane review
Anne Holland 1, 2, Catherine Hill 1, 2, Alice Jones 3, Christine McDonald 1, 2, 3
1Physiotherapy, Concord Repatriation General Hospital, Concord, NSW, Australia; 2Discipline of Physiotherapy, University of Sydney, NSW, Australia; 3Department of Thoracic Medicine, Concord Repatriation General Hospital, Concord, NSW, Australia

Background: Breathing retraining aims to alter respiratory muscle recruitment in order to reduce dyspnoea and improve respiratory muscle performance. Our aim was to determine whether breathing retraining is safe and beneficial for people with COPD.

Methods: The Cochrane Airways Group Specialised Register of trials and the PEDro database were searched to identify randomised controlled trials comparing breathing retraining to no breathing retraining or another intervention in COPD. Primary outcomes were dyspnoea, exercise capacity and quality of life; secondary outcomes were:

Results: 16 studies involving 1104 participants with mean FEV1 30-51% predicted were included. Few studies reported allocation concealment, assessor blinding or intention to treat analysis. Two studies showed improvement in 6-minute walk distance after 3 months of yoga involving pranayama timed breathing techniques (mean difference 45m, 95% CI 29.6-61m), with similar improvements in single breath. Compliance with supervised and unsupervised training was high. Impor-

Conclusion: Breathing retraining in COPD is safe and improves exercise capacity when compared to no intervention; however there are no consistent effects on dyspnoea or quality of life. Breathing retraining may not have additional benefits beyond that offered by exercise training for people with COPD.

P3524
Tai Chi, like it or not? The COPD experience
Branisa Gecski1, Zoe McKerrough2, Matthew Peters3, Jennifer Allison2
1Physiotherapy; 2Concord Repatriation General Health, Concord, NSW, Australia; 3Discipline of Physiotherapy, University of Sydney, NSW, Australia; 4Department of Thoracic Medicine, Concord Repatriation General Hospital, Concord, NSW, Australia

Aims: To determine the experience of people with COPD to Tai Chi. Methods: Participants, who finished 12 week short-form Sun-style Tai Chi (SSTC) training program, completed a survey of eight questions. Each question was answered by participants who attended 2 (4) supervised training sessions out of a possible 24 sessions and performed 4 (1) days per week of unsupervised home training. The Table below indicates the results of four survey questions.

Tai Chi survey questions (score out of 10 cm) Mean (SD)
How enjoyable was your Tai Chi exercise program 8.9 (1) cm
How helpful was the Tai Chi program at improving a) Physical fitness 7.9 (2) cm
b) Balance 7.9 (1) cm
c) Shortness of breath 7.0 (2) cm
How hard were the following parts of the Tai Chi program a) Remembering the movements 5.3 (3) cm
b) Balancing during Tai Chi movements 6.5 (2) cm
c) Coordinating your breathing and the Tai Chi movements 7.0 (2) cm
Would you continue Tai Chi training as your regular exercise regime 8.4 (2) cm

Conclusion: Participants reported that SSTC was a highly enjoyable exercise which they perceived improved their physical fitness, balance and shortness of breath. Compliance with supervised and unsupervised training was high. Impor-

P3525
Effects of Tai Chi Qigong exercise training on asthma control
Sumalee Khunboon, Potjanne Kortungrong, Pornpimon Leasonaranukul
Division of Pulmonary and Critical Care Medicine, Department of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

Though exercise training increased exercise capacity in asthma, its effect on asthma control has not been well described. This study aims at exploring the impact of Tai Chi Qigong(TCQ) exercise training on asthma control.

Methods: This prospective, case-control study recruited adult asthmatics with pre-bronchodilator FEV1 of ≤75% predicted. In addition to the self-monitored peak-expiratory flow rate(PEFR) and Asthma Control Questionnaire(ACQ), participants were asked about any change in their control of asthma, i.e. ACQ (1.38±0.83 vs 1.05±0.81, p=0.011) and PEFR variability(%) (18.10±12.87 vs 12.8±14.39, p=0.067); (6MDW)imeters (461.66±44.83 vs 478.84±57.25, p=0.078); (MIP)cm−H2O (1.07±27.62 vs 91.1±24.71, p<0.000); Borg changes after 6MW (2.9±1.57 vs 2.03±1.15, p=0.0927) and TDI (10.45±2.20 vs 14.24±4.06, p=0.000). Neither of these parameters improved with time in the control group. SGRQ improved in the TCQ group (25.02±15.11 vs 21.13±14.48, p=0.05), but deteriorated in the control group (63.2±11.81 vs 24.9±17.03).

Conclusions: TCQ exercise training improved asthma control. This finding and the associated improvements in exercise capacity, muscle strength and dyspnea suggested that TCQ training could be considered an effective, adjunctive asthma-therapy.

P3526
Effect of Chinese Tai chi exercise in COPD patients with moderate airflow limitation
Haifeng Ouyang1, Respiratory Medicine, Xijing Hospital, Fourth Military Medical University, Xian, China

Introduction and background: Recently, several small sample studies demonstrated the effectiveness of Chinese Tai chi exercise in people with COPD. However, the effect Tai Chi have not been specially evaluated in in COPD patients with moderate airflow limitation.

Aims and objectives: To evaluate the effectiveness of a 6-week Chinese Tai chi exercise in COPD patients with moderate airflow limitation.

Methods: Thirty COPD patients with moderate airflow limitation were recruited. All patients received standard COPD care and were taught tai chi exercise for 1 hour, thrice a week, which include gentle movement, relaxation and breathing techniques. St. George Respiratory Questionnaire, lung function test and 6-min walk test were performed at the baseline and at the end of 6 weeks. Differences in pre-Tai chi versus post-Tai chi scores were evaluated.

Results: Statistically significant improvements were observed on the St. George Respiratory Questionnaire (p=0.01) and FVC (p=0.05). No changes were observed on FEV1 and 6-min walk distance.

Conclusions: Tai chi exercise when practiced by COPD patients with moderate airflow limitation results in improvement in the quality of life and FVC on a 6-week term basis, which provided an alternate form of exercise training which does not require exercise equipment.

P3527
Butyrate technique (BT) as an adjunct in pulmonary rehabilitation (PR) in patients with asthma and dysfunctional breathing. – First results of an ongoing prospective controlled study
Thomas Schmidt, Alois Wasitthuber, Oliver Gohl, Dragan Stojanovic, Konrad Schultz. Fachbereich Pneumologie, Klinik Bad Reichenhall, Zentrum für Rehabilitation, Pneumologie und Orthopädie, Bad Reichenhall, Germany

Background: BT is recommended as an additional therapeutic module in asth-}


do not require exercise equipment.


tics. So far there is inconclusive evidence of the effectiveness of BT as part of standard PR.

Method: From November 2011 until January 2012 in our clinic 258 asthmatics underwent a 3-week inpatient PR. Of these 36% were characterised by dysfunctional breathing (Nijmegen Questionnaire, NQ=23). Of those, the control group for patients (CG, n=21) received standard PR consisting among others of physical training, patient education, breathing therapy and psychosocial support. The inter-


tion group (EG, n=39) additionally underwent at least 6 Butyekyo sessions. The indication for enrolling patients to the BT was decided upon by the responsible physician. Primary outcome was the total score of the asthma control test (ACT), secondary outcome was the NQ-score. Statistics are based on data that resulted in complete data pairs of ACT and NQ at baseline (t0) and end of PR (t1).

Results: (mean±SD):

<table>
<thead>
<tr>
<th>ACT (±25)</th>
<th>NQ (±54)</th>
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<tbody>
<tr>
<td>14±5</td>
<td>18.9±3.9</td>
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</table>

Discussion: Considering all asthmatics with dysfunctional breathing, our PR program resulted in significant improvements in ACT (+4.4) and NQ (+8.8). The IG

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tended to reach greater improvements in ACT (especially in items 2, 3 and 4, i.e. shortness of breath, asthma symptoms at night, rescue inhaler) and NQ than the CG, but these trends weren’t significant between groups.

Conclusion: BT could be a promising adjunct to PR.

P3528
Speech and language therapy effectiveness in vocal cord dysfunction management
Nicola Pargetter, Sarah Manney, Adel Mansur. Severo & Brittlee Asthma Unit, Birmingham Heartlands Hospital, Birmingham, West Midlands, United Kingdom

Introduction: Vocal cord dysfunction (VCD) “paradoxical vocal cord adduction” is misdiagnosed as asthma, resulting in over medication and increased hospital admissions. There is anecdotal evidence of the benefits of Speech Therapy (SLT) in management of VCD. This study explored the impact of SLT on symptom control and hospital admission prevention.

Method: One hundred consecutively referred patients (m:f ratios=1:5, mean age 45yrs, range = 16-77) underwent detailed assessment at a tertiary VCD clinic with nasendoscopy confirmed VCD. No 81/100 (81%) had physician-diagnosed asthma, 45/81 (56%) required oral steroids. Patients received four sessions of SLT. Treatment effectiveness was assessed pre/post therapy, using in-house self-rated, VCD symptoms score (range 0-25). N=21/100 (21%) patients reported hospital admission with dyspnoea in the year prior to assessment. Data were analysed to determine number of hospital admissions one year pre/post SLT intervention.

Results: Differences pre/post therapy were assessed using Wilcoxon Signed Ranks Test. Significant reduction in patient-reported symptoms was noted post SLT pre vs. post therapy; mean (SD) = 17.88 (3.10), 8.16 (4.13) respectively, p<0.001. Reduction in hospital admissions was noted in the year post SLT intervention; pre vs. post therapy mean (SD) = 10.7 (8.8), range = 2.08 to 1.5 (2.2), range 0-6, p<0.001.

Conclusion: SLT significantly improves symptom control and reduces hospital admissions in VCD. The availability of effective therapy prompts the need to increase awareness of vocal cord dysfunction.

Reference:

P3529
The long-term effect of ambulatory oxygen (AO) in normoxaemic COPD patients who participate in pulmonary rehabilitation (PR) and desaturate during exercise. A randomised study
Thomas Ringbaek, Gerd Martinez, Peter Lange. Respiratory Medicine, Hvidovre Hospital, Copenhagen, Denmark

Introduction: The long-term effect of AO in combination with PR in COPD patients experiencing exertional desaturation have not been studied.

Patients and methods: Normoxaemic COPD who participated in PR and desaturation >4% and below 90% during endurance shuttle walk test (ESWT) were randomised to control (n=23) or AO 2 L/min. From a portable oxygen concentrator (n=22) to be used during physical activity.

PR consisted of supervised training 20 wks + unsupervised daily training at home and then 13 wks without supervised training.

Results: Only 45 of 165 eligible patients wanted to participate. Mean FEV1=32% and MRC=4.5 (3-5).

Supplemental oxygen improved satO2 during ESWT by 2.3% (p<0.001).

In the study period of 33 wks, 10 and 6 patients withdraw from the AO group and control group, respectively. Patients spent average 7.9 hours/week on oxygen. PR improved ESWT and SGRQ after 7 wks, and these gains were remained at 33-wks evaluation. There were no differences between the AO group and controls.

Effect of PR on ESWT and SGRQ in patients on AO and room air (controls), respectively

<table>
<thead>
<tr>
<th>Effect parameter</th>
<th>AO p-level</th>
<th>Controls p-level</th>
<th>p-level for difference between groups</th>
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<tr>
<td>Change in ESWT, 0-7 weeks, sec.</td>
<td>186 (231)</td>
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<td>Change in SGRQ, 0-7 weeks, units</td>
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<td>Change in ESWT, 0-33 weeks, sec.</td>
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<td>0.004</td>
<td>241 (402)</td>
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<td>-3.6 (7.9)</td>
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Conclusions: AO provided no additional beneficial effects in patients with COPD participating in pulmonary rehabilitation and experiencing exertional desaturation without severe resting hypoxaemia.

P3530
Preliminary results of noninvasive ventilation during a pulmonary rehabilitation program in patients with COPD
Kris M H Ida1,2,1, Lieve De Backer2,3, Denise Daems2, Erwin Boelen2, Glenn Leemans2,1, Dirk Vissers1,3, Wilfried De Backer2,3, Gerd Martinez, Peter Lange. Sport Faculty, West University, Timisoara, Timis, Romania; 1Physical Education and Sport Faculty, West University, Timisoara, Timis, Romania

Introduction: In COPD on lung function and maximal exercise capacity.

Methods: 8 patients were randomized in a NIV (n=5) or control group (n=3). Patients trained with or without NIV for a period of 6 weeks. Lungfunction and exercise tests were taken before and after 6 weeks. NIV was set on IE pressure of 8/4 and 1/2 leakage valves were added for patients comfort.

Results: Ventilation at maximal tolerated load (VE max) changed significantly in the experimental group and did not reach significance in the control group compare to baseline (p=0.043). In the same test setting there was no significant drop in heart rate.

Conclusions: Noninvasive ventilation during exercise training may change ventilation at maximal tolerated load and heart rate after 6 weeks. This allows patients to train at a level higher and achieve better training results because of a better ventilatory adaption during exercise.

P3531
Benefits of a new device for inspiratory muscle training in COPD
Vociu Tudorache1, Cristian Oancea1, Nicoleta Bertici1, Ovidiu Fita-Mladinescu1, Monica Marc1, Claudiu Avram2, Alexandru Somanes1.

1Pneumonology, University of Medicine and Pharmacy, Timisoara, Timis, Romania; 2Physical Education and Sport Faculty, West University, Timisoara, Timis, Romania

In chronic obstructive pulmonary disease (COPD), inspiratory muscle weakness may occur as a result of the combined effects of increased work of breathing, malnutrition, hypercapnia/hypoxemia and others. The benefit of inspiratory muscle training (IMT) depends on patients phenotype but also on the type exercise methods.

The aim of the study was the evaluation of medium (3 months) and short-term (at the end of a pulmonary rehabilitation program, PRP) effects of IMT using the TrainAir® electronic system.

47 patients with COPD (GOLD stage III, IV) without any previously PRP were divided in 2 groups. Both groups followed one month a comprehensive PRP, but the group of patients that initially presented lower values of the respiratory work of breathing, so higher intensities are reached and could result in a better ventilatory adaption during exercise.

Our results demonstrated in both groups the increase of exercise capacity on short and medium term (p=0.025) measured by the distance expressed in meters walked to 6MWT as compared to the initial value (500±173 and 488±46 vs. 457±51 for the IMT group, 492±89 and 479±87 vs. 452±105 for the control group).

In conclusion, in COPD patients, in addition to the improvement of MIP, IMT was beneficial for patients' symptomatology.

P3532
The impact of PEEP, CPAP and BiPAP in post-exercise recovery from dyspnea in COPD patients
Anamah Mahadevan, Laurent Brouquerey, Chuck Cain, Alan Cripp.

Respiratory Care, Philips Respironics, Monroeville, PA, United States Pulmonary Rehabilitation, Pulmonary Rehabilitation Associates, Boardman, OH, United States

Dyspnea is the chief complaint of COPD patients limiting their ability to perform activities of daily living reducing quality of life. To relieve dyspnea, patients may try short acting bronchodilators, pursed lip breathing or physically stop activity. In this study we evaluated different types of positive airway pressure (PAP) therapies to help COPD patients recover from dyspnea following activity.

6395

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TUESDAY, SEPTEMBER 4TH 2012

12:50 - 14:40
Halle A-6

Thematic Poster Session

"Paradoxical Vocal Cord Adduction" in Normoxemic COPD: The Long-Term Benefits of Ambulatory Oxygen in Combination with Pulmonary Rehabilitation

Patients and Methods: Normoxemic COPD who participated in PR and desaturation >4% and below 90% during endurance shuttle walk test (ESWT) were randomised to control (n=23) or AO 2 L/min. From a portable oxygen concentrator (n=22) to be used during physical activity.

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Supplemental oxygen improved satO2 during ESWT by 2.3% (p<0.001).

In the study period of 33 wks, 10 and 6 patients withdraw from the AO group and control group, respectively. Patients spent average 7.9 hours/week on oxygen. PR improved ESWT and SGRQ after 7 wks, and these gains were remained at 33-wks evaluation. There were no differences between the AO group and controls.

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Conclusions: AO provided no additional beneficial effects in patients with COPD participating in pulmonary rehabilitation and experiencing exertional desaturation without severe resting hypoxaemia.
The aim of this study was to determine if PAP therapies would reduce the patient’s recovery time from a Borg of 7 to their baseline Borg following a standardized exercise regimen. 10 COPD patients classified as Gold Stage 2, 3 or 4 with an FEV1 less than 55% were evaluated. These patients were subjected to a baseline test where they recovered without any device to the baseline Borg. During 2 successive visits,during the recovery phase, patients were asked to try 6 different types of PAP therapy. This included 2 levels of PEEP, CPAP or BiPAP therapy. Borg scores were measured every minute during exercise & every 30 seconds during recovery phase. Time to recovery was measured with other physiological parameters.

Results indicate that all forms of PAP therapy tested aided the patients to recover fast. Among the 3 tested therapies, BiPAP provided the shortest recovery time improving the time to recover to baseline by 40±9%. CPAP was 2nd best at 27±16%. PEEP provided 26±13% improvement. These findings indicate that PAP therapy helps COPD patients recover from shortness of breath following activity. The impact of these therapies on other physiologic endpoints (Heart Rate, Respiratory Rate & SpO2) are being analyzed. These are being further tested to confirm the findings.

**P3534**

**Efficacy of Nordic walking in rehabilitation of patients with COPD:**

**Preliminary data**

Mauro D’Alessandro1, Vincenzo Digilio1, Mauro Carone1.2.

1 Pulmonology, Fondazione S. Maugeri, Casnano, Mrazia, Italy; 2 Pulmonology, University of Bari, Italy.

**Background:** Nordic walking is a well-known activity which combines sport and leisure. It is particularly well received in Scandinavia among Nordic ski athletes and it is extremely simple to perform. However, there are very few studies which evaluated the use of Nordic walking in the field of physical rehabilitation. The aim of the study is to assess the efficacy of Nordic walking in patients with COPD.

**Methods:** We enrolled 11 patients with COPD (mean age 64.2±1.3) in a stable phase of their disease and randomized them into two groups. The study group was composed by 5 patients who performed a daily 30 minutes session of Nordic walking for 5 days a week for a total period of 3 weeks. The control group was composed by 6 patients who were treated with traditional rehabilitation (selective training of arms and legs) for the same period as study group. Both the groups performed educational intervention and exercises for respiratory coordination.

The two groups of patients performed spirometry, blood gas analysis, 6 minutes walking test, MRC, BDI/BDI, EuroQol, and Saint George test before and after the rehabilitation period.

**Results:** Patients in the study group had a significant improvement in terms of post training 6 minutes walking test, MRC, EuroQol, and Saint George (<0.05) whereas patients in the control group had only an improvement in MRC (<0.05).

**Conclusions:** This preliminary study shows the efficacy of Nordic walking in reducing dyspnea, improving physical performance and quality of life in a small group of patients with COPD. If confirmed in larger studies Nordic walking could become part of the training schedules for COPD rehabilitation.

**P3535**

**Respiratory muscles trainings as physical rehabilitation in patients with chronic obstructive pulmonary disease and myocardial infarction**

Gregory Aryanuma, Anna Rylova, Elena Koloušková, Natalja Rylova. Therapy, The Russian National Research Medical University named after N.I. Pirogov, Moscow, Russian Federation

**Background:** Patients with MI and concomitant COPD often can’t take part in physical trainings as a part of cardiac rehabilitation.

**Purpose:** To study the effect of respiratory muscles trainings (RMT) in patients with acute MI and COPD.

**Methods:** 87 patients were randomized to either an exercise training group (EG) or to a control group (CG). Patients were on their 7-7 day of MI. The EG participated in a RMT with gradual increase of inspire and expire resistance. RMT were held with the use of Threshold IMT and PEP devices. RMT were started at the hospital on the 5-7th day after MI and were continued for 1 year at home by patients themselves.

**Results:** In 1 year the distance of 6 minute walk test increased significantly in EG (285±87 m vs 275±3.928%, p < 0.01). VO2peak also increased significantly in EG (6.8±5.1 mm3 vs 4.6±6.1,1.65 ml/kg/min, p<0.01). RMT helped to stabilize mean pulmonary pressure (MPP) (55.4±7.7 mm Hg in TG vs 40.7±6.92 mm Hg in CG, p<0.05). There was a statistically significant increase in the maximal inspiratory mouth pressure in most of patients (5.6 kPa ±.8 vs 4.1 kPa ± 1.1, p< 0.01).

Health related quality of life (HRQL) increased in both groups, but in EG patients it grew significantly higher according to SGRQ and SF-36. In a year there were no lethal outcome in both groups. EG patients had significantly less hospitalizations because of HF progression (7.8% in EG vs 14.6% in CG) and pneumonias (2.1% vs 15.3%).

**Conclusion:** RMT in patients with MI and COPD can be started at their acute period. It improves physical capacity, stabilizes MPP, increase HRQL and decrease number of hospitalizations during first year after MI.

**P3536**

**Comparison of the effects of the diaphragmatic breathing exercise in rehabilitation to COPD subjects with normal and high body mass index**

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**Background:** COPD rehabilitation is a coordinated program of exercise, disease management training, and counselling that can help COPD patients to stay more active and improve to carry out patient’s day-to-day activities. COPD is an heterogeneous disease with a mixture of clinical and functional phenotypes, hence individualization of action strategies, such as pulmonary rehabilitation is very important.

**Aim:** To compare the effects of diaphragmatic breathing exercise technique in improving quality of the life in COPDs with normal and increased BMI

**Material and method:** We assessed 122 subjects with severe COPD, with grave smoking experience more than 20 yrs, and more than 15 cigarettes per day, with BMI more than 30. An equal number of COPDs, matched by COPD stage, sex, age, smoking experience, but with normal BMI, were evaluated like controls. All (combined group and controls) were educated how to use diaphragmatic breathing rehabilitation technique, and they practice it 3 times per day. Before study they could not walk more than 30 meters, and had dyspnoea with shortness of breath. Follow up period was 12 months.

**Results:** Our results show fantastic significant improvement of the quality of life especially in increased BMI group. The walking distance without dyspnoea was our criteria for assessment. After rehab, in group with augmented BMI the walking distance of at least 300 meters without symptoms was represented at 108 subjects (88.5%) vs. 52 (42.6%) in controls with normal BMI, (P < 0.05).

**Conclusion:** Our results suggest that BMI may play role in the breathing exercise rehab program in COPD patients.
we week for 8 to 56 days. We evaluated the breathing pattern by PSR, respiratory rate (RR), 6-minute distance (6MD), and oxygen saturation (SpO2) before and after these programs.

Case A: Vital Capacity (VC) 0.94L (%VC 44.8%), Forced Expiratory Volume in one second (FEV1.0) 0.52L (%FEV1.0 37.4%).
Case B: VC 2.34L (%VC 80.1%), FEV1.0 0.65L (%FEV1.0 37.4%).
Case C: VC 1.73L (%VC 60.1%), FEV1.0 0.57L (%FEV1.0 34.3%).
Case D: VC 2.17L (%VC 75.9%), FEV1.0 0.58L (%FEV1.0 35.6%).
Case E: VC 1.37L (%VC 61.6%), FEV1.0 0.96L (%FEV1.0 73.2%).

Results: The average height of waveforms of the breathing pattern increased about 3 times. 6MD in 2 cases and SpO2 in 3 cases increased in this study; however, the 3 other cases of 6MD and 2 other cases of SpO2 remained unchanged. Additionally, RR decreased in 4 cases. Since the start of the program, changes in the breathing pattern from mouth to nose breathing were observed in a case.

Conclusions: This study revealed that BAT and PLB resulted in a decrease of RR and a change in the breathing pattern; furthermore, after this program, changes from mouth to nose breathing were observed.

P3538
Consumed by breathlessness – A critical interpretative synthesis
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Background: COPD is characterised by acute exacerbations (AE) often prompting hospital admission. The application of The Common Sense Model suggests that scrutinising the reported experiences of AE and increasing understanding of appraisals of AE may suggest ways to target interventions.

Methods: A systematic review was conducted. The terms: exacerbate* OR hospital* AND “Chronic obstructive” OR emphysema OR bronchitis AND interview* OR qualitative were used to search electronic databases. Inclusion criteria included: primary research published in English of the patient’s experience of an AE COPD; using qualitative methodologies. 8 full text papers were included. Data were extracted by 3 researchers and constructs elicited by 2 researchers via Reciprocal Translational Analysis.


Conclusions: Patients are fearful of their symptoms, this prompts constant vigilance and increased passivity. Targeted interventions that acknowledge intense fear and shape appraisals and acceptance may reduce distress and improve focus of self-management messages.