383. The latest insights in pulmonary rehabilitation

P3539

Effect on prevention of readmissions of a home-based education and exercise program implemented early after a severe exacerbation of COPD

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Introduction: Exacerbations and hospitalizations in patients with chronic obstructive pulmonary disease(COPD) represent a major health burden and the impact of early education and rehabilitation programs on readmission after an exacerbation are open to debate.
Objectives: To assess the effect of a two-month, home program (HP) based on education and exercise,implemented just after a severe exacerbations of COPD,on future hospital admissions and number of outpatients visits.
Methods: Following a case-control design,COPD patients who had just undergone treatment of an acute exacerbation were enrolled on to a multidisciplinary intervention HP that included education sessions and exercise training from the second day after discharge (I group), for a period of 8 weeks, and were compared with a non-intervention group which received usual care (UC group).Primary outcome was the rate of severe exacerbations and secondary outcome outpatients visits during a 6-month follow-up period.
Results: 10 patients underwent the program and 12 patients were included in the control group (I group mean [SD] age 72[7] years and FEV1after bronchodilator 43[11]% predicted; UC group 72[5] years, 45[17]% predicted, ns).7 patients were readmitted to hospital with an exacerbation in the UC group (58%) and 1 in the I group (10%) ($p<0.05$).The difference in the number of outpatients visits in both groups was not statistically significant (I group 1[IQR 0-2];UC group 0[IQR 0-1],ns).
Conclusions: A post-exacerbation multidisciplinary HP in COPD may reduce re-exacerbation events that require admission over a 6-month period, without a significant increase in the number of outpatient visits.

P3540

Effectiveness of an additional tobacco-dehabituation-coaching (TDC) through nursing staff during inpatient pulmonary rehabilitation (PR)

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Background: Tobacco dehabituation (TD) is an essential component of PR. The nursing staff could be able to make an important contribution to TD. We studied the effectiveness of additional coaching from the nursing staff to an already existing comprehensive TD programme (TDP).
Methods: From February until July 2011 717 patients were admitted (3-week inpatient PR) of which 26% were smokers. The classification of "smoker" was made in data consolidation served by patients, the physician's estimation and biomonitoring (COHb). *Intervention group* (TD + coaching through nursing staff = TDC): All smokers within the observed ward were invited to short supportive conversations by the nursing staff (in the first week twice a day, in the following weeks twice a week). In the observed time span 336 patients (95 of which smokers) were assigned to the ward with the associated pilot study. 63 smokers participated in the offered TDC voluntarily (78% male, 55±8 y). 61 patients regularly used NRT. The *control group* consisted of 381 consecutive patients from a different ward, observed within the same time span, of which 90 were smokers (59% male, 52±9 years). These patients took part in the same TDP, but without TDC.
Results:

	Admission (T0)	Dismissal (T1)
Classified smokers	smokers	refrained from smoking
Intervention group (IG)	63	44 (69.8%) p<0.001
Control group (CG)	90	38 (42.2%) p<0.001
	between groups p<0,001	
Biomonitoring (COHb [%])	mean COHb	
IG (n = 63)	2.70±1.40	1.84±1.11 p<0.001
CG (n = 90)	2.99±1.21	2.14±1.03 p<0.001
	between groups p=0.099	

Discussion: Those smokers who took part in the TDC refrained from smoking significantly more often than those who did not obtain this support.

P3541

Retrospective survival of COPD patients according to disease stage and pulmonary rehabilitation program

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The aim of this study was to examine the retrospective survival of patients with chronic obstructive pulmonary disease (COPD) according to type of pulmonary rehabilitation (PR) program and Global Initiative for Obstructive Lung Disease (GOLD) stage.
Retrospectively, 193 patients (m/f 92/101, mean age 69.2±8.6 SD) receiving PR were studied with lifetable analyses. FEV_1 % pred. was significantly different in the in-patient (n = 72), out-patient (n = 72), and maintenance group (n = 49) [mean 54.5±21.8 SD, 52.2±17.7, and 42.9±15.0, respectively ($p < 0.004$)]. The impact of evaluated variables on survival in the three groups was significant for age, FEV_1 and the use of long-term oxygen therapy (LTOT) ($p < 0.0001$, HR 1.06, $p < 0.01$, HR 0.98, and $p < 0.005$, HR 2.18, respectively). Mean survival was eight years in GOLD stage 4 (n = 22), six in stage 3 (n = 79), and >10 in stage 1 (n = 18) and 2 (n = 74). The impact of the evaluated variables on survival in the GOLD stages was significant for age, LTOT and stage 3 ($p < 0.0005$, HR 1.05, $p < 0.001$, HR 2.33, and $p < 0.02$, HR 4.24, respectively). For the in-patient, out-patient and maintenance group days of PR were mean 30.3±20.4 SD, 18.9±10.4 and 30.0±20.3, respectively ($p < 0.000$), stays in hospital 0.35±0.85, 0.86±1.46, and 1.17±1.60, respectively ($p < 0.003$), and days in hospital 2.90±8.89, 4.78±8.26, and 9.04±15.69, respectively ($p < 0.010$).
In conclusion, patients with GOLD stage 4 lived significantly longer than stage 3. Older age, decreased pulmonary function and LTOT predicted poorer survival in all PR groups. In addition to older age and LTOT, stage 3 predicted significantly poorer survival.

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P3542

Pulmonary rehabilitation affects lung hyperinflation and cardiovascular response to exercise in COPD

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Background: Pulmonary rehabilitation (PR) including exercise training has emerged as a recommended standard of care in COPD patients. The aim of this study was to assess whether PR may influence ventilatory and cardiovascular response to training.
Methods: Twenty-three COPD patients (9F; age 70 yrs ± 8; BMI 28 kg/m^2 ± 5) with moderate to severe airflow obstruction (FEV_1/VC range: 65-36%) admitted to a 6-week PR course performed a pre-to-post evaluation of lung function test and symptom-limited cardiopulmonary exercise test (CPET). Inspiratory capacity (IC) manoeuvres, VAS dyspnoea (D) and leg fatigue (F) were assessed during the CPET. Cardiovascular response was also assessed by means of oxygen pulse (VO_2/HR), product of systolic blood pressure and heart rate normalized for the maximum workload (DP/W), and heart rate recovery at the 1st min (HRR).
Results: Workload (W) and Maximum oxygen uptake (VO_{2max}) increased (from 61.2 W ± 23.7 to 74.5 W ± 33.4, *p= 0.002,* and from 12.9 L/kg/min ± 2 to 14.5 L/kg/min ± 4, *p=0.002*, respectively) following PR. The IC for a given W significantly changed from 0.03 L/W ± 0.01 to 0.02 L/W ± 0.01 (*p=0.01*). VO_2/HR increased from 9 L/min/bpm ± 2 to 9.8 L/min/bpm ± 2.7 (*p=0.006*), DP/W decreased from 352.2±130.3 to 288.7±113.2 (*p=0.002*), and HRR changed from 8.6 bpm ± 6.7 to 13.3 bpm ± 8.8 (*p=0.007*) at peak of exercise. Moreover, D (from 1.5±0.5 to 1.3±0.6, *p=0.005*) and F (from 1.3±0.6 to 0.98±0.5, *p=0.005*) reduced at peak/W.
Conclusions: Our study shows that training effect during rehabilitation course in COPD is associated with significant reduction of lung hyperinflation and improved cardiovascular response to exercise.

P3543

Endurance time is the most sensitive exercise measurement for evaluating pulmonary rehabilitation efficacy in patients with idiopathic pulmonary fibrosis

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Study objective: Pulmonary rehabilitation (PR) has been reported useful for improving exercise capacity and HRQoL in patients with idiopathic pulmonary fibrosis (IPF). It is unknown which exercise measurements are more suitable for evaluating PR efficacy in IPF patients. The purpose of the present study was to compare the characteristics of five exercise measurements in evaluating the efficacy of PR in IPF patients.
Methods: We performed a case-control study in which 53 IPF patients were divided into the PR group and the control group (C group). The PR group underwent the 10-weeks PR program involving exercise training and muscle training. The C group was no intervention for 10-weeks. Five exercise measurements (endurance time by constant load ergometry test, peak work rate and peak VO_2 by incremental load ergometry test, the distance of 6 minutes walking test (6MWD) and incremental shuttle walking test (ISWD)) were evaluated at baseline and following 10-weeks after.
Results: In each group, 24 patients were completed five exercise measurements at baseline and following 10-weeks after. Lung function data and exercise capacity in baseline were no difference between two groups. In the PR group, endurance time, peak work rate, 6MWD and ISWD were improved significantly after 10-weeks ($p<0.01$), whereas peak VO_2 was not improved. In the control group, all five measurements remained unchanged. In the PR group, endurance time was the most sensitive for improvement rate among five measurements.
Conclusions: PR improves exercise capacity and endurance time is the most sensitive exercise measurement for evaluating PR efficacy in IPF patients.

P3544

Lower FFMI in female compared to male patients with COPD admitted to pulmonary rehabilitation

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Background: Patients with chronic obstructive pulmonary disease (COPD) often struggle to maintain body weight. It is recognized that a body mass index (BMI) < 21 kg/m^2 has adverse effects on health status in COPD. Loss of fat free mass (FFM) is common, and is negatively associtated with exercise capacity, quality of life and survival. Depletion in FFM has been suggested as fat free mass index (FFMI) < 16 kg/m^2 for men and <15 kg/m^2 for women, and has been found to be an independent and better predictor of survival than BMI.
Aim: The study aimed to evaluate if screening of body composition in COPD patients is valuable in order to detect muscle wasting.
Methods: COPD-patients on an in-patient four-week rehabilitation program were consecutively included. Lung function and body composition tests were performed according to the standardized procedures.
Results: 274 COPD patients (43% men) were included. Mean (SD) age 64 (9) yrs, FEV_1% pred 47 (18) %. BMI (kg/m^2) was 26.3 (6.2) and 25.8 (6.0) for men and women, respectively (p=0.858). FFMI (kg/m^2) was 18.9 (3.0) for men and 15.8 (1.9) for women ($p<0.001$). 20 (17%) of all men, and 52 (33%) (p=0.002) of all women had FFMI below recommended limit; low FFMI was more frequent in those with low BMI and GOLD 4. A low FFMI was found in 26% of the men and 64% of the women with normal BMI.
Conclusion: The prevalence of low FFMI among COPD patients admitted to rehabilitation is similar to previous studies. However, female patients have a significantly higher risk of depletion in FFM compared to men.

P3545

Role of low cost pulmonary rehabilitation programme in COPD in rural area of India

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Background: Chronic obstructive pulmonary disease (COPD) is the 4th leading cause of death in the world (WHO 2000). COPD patients appear to benefit from Pulmonary rehabilitation (PR) & maintenance of physical activity, improving their exercise tolerance, experiencing decreased dyspnoea & fatigue (Berry MJ et al. AJRCCM 1999; 160:1248-53). PR is done with exercise equipment, supporting staff & follow up. In resource poor areas this is not possible. We evaluated the effect of home based PR programme in COPD patients in rural areas of India.
Methods: COPD patients in stable state who were ready to follow up for 12 weeks at 2 weeks interval were included, 40 patients who completed the PR formed the study group while 20 patients who were not included in PR formed control group. The Airways questionnaire-20 score (AQ-20) and the 6 minute walk distance (6-MWD) were analysed in both groups, who continued on a similar drug management.
Objectives: To study the effect of a low cost and home based PR program & to compare the improvement in outcome with non PR group.
Results: The mean 6-MWD showed an average increase of 75.72 meters in the study group, while an average decrease of 2.1 meters in control group. Mean value of study group was higher for 6-MWD results and difference between the two groups was statistically significant ($p<0.05$). AQ-20 showed a mean decrease of 6.12 in study group and 1.5 in control group which is also statistically significant ($p<0.05$).
Conclusion: A simple outpatient-based PR can improve health status, quality of life and exercise capacity in patients with COPD.
Clinical implications: This can be promoted on a wide scale & can benefit a lot of COPD patients in resource poor setting.

P3546

Early versus late pulmonary rehabilitation on anxiety and depression in chronic obstructive pulmonary disease patients with acute exacerbations

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Objective: Compare the effects of early and late pulmonary rehabilitation on anxiety and depression in COPD inpatients with exacerbations.
Methods: We randomized 113 COPD patients with exacerbation to early(76) or late(37) pulmonary rehabilitation.After discharging from exacerbation,the early pulmonary rehabilitation started a rehabilitation program with 8-weeks.While the late accepted assessment again in the eight week after discharging. Taked the change of pre-post discharging as those patients who did not attend rehabilitation program.After finishing the second assessment, the late group also accepted a rehabilitation program as the early. Primary outcomes were anxiety and depression assessed by BDI and STAI. Secondary outcomes included lung function, dyspnea and 6-minutes wallk distance(6MWD).
Results: (1) Only 26 patients of the early and 20 patients of the late finished the program(≥70%). (2) Overall, patients' lung function were not improved. Anxiety, depression,dyspnea and 6MWD all were improved significantly over 8 weeks among three groups. Moreover, the improvement in the early pulmonary rehabilitation were better than the late and the not rehabilitation group. (3) Prevalence of anxiety and depression were not changed significantly pre-post or between groups, except the pre-post rehabilitation in the early.
Conclusion: Early and late pulmonary rehabilitation, as well as the usual discharge with the exacerbation, are effective treatment in terms of improving anxiety, dr-perssion, dyspnea and exercise capacity in COPD patients with exacerbation. And the early pulmonary rehabilitation provides the most benefits.

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P3547

Pulmonary rehabilitation in patients referred for lung transplantation

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The purpose of this study is to prospective examine efficiency of Nordic Walking, a low cost, accessible and proven beneficial form of physical exercise as form of pulonary rehabilitation (PR) in patients referred for LT.

Material and methods: 22 patients, referred for LT In Dpt. of Lung Diseases and Tuberculosis were invited to take part in the study. The PR program, which conducted for 18 weeks, was based on Nordic Walking exercise training. Lung function tests (FVC, FEV1), mobility (6 minute walking test (6 MWT)), rating of dyspnoea (Borgs scale, MRC and Baseline Dyspnea Index) and quality of life (SF-36 and SGRQ) were performed before and after completed the exercise program

Results: No adverse events were observed after completed the PR program in-patients referred for LT. After 18 weeks of PR with Nordic Walking programme we observed significant ($p<.05$) increase of mean results of 6 MWT (310.2 vs. 372,1). Also results of lung function test showed improvement (FVC, FEV1) but without statistical significances. No statistical significant differences were observed in perception of dyspnoea (MRC, OCD, Borgs scale) before and after completed the study. SGRQ showed significant (> 4 pts.) improvement in activity score. General health quality of life questionnaire (SF-36) shoved improvement in domains: Physical Functioning, Role-Physical, Bodily pain, General Health and Social Functioning but only in Role-Physical domain the improvement was statistically significant ($p<.05$).

Conclusion: Pulmonary rehabilitation with Nordic Walking programme is safe, cost effective and easy to use in end stage lung disease patients referred for LT resulting improvement in mobility and quality of life.

P3548

Home-based pulmonary rehabilitation program following a severe exacerbation of COPD

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Introduction: Pulmonary rehabilitation (PR) is an effective intervention for patients with chronic obstructive pulmonary disease (COPD) and is recommended by clinical guidelines.Timing of referral for rehabilitation,immediately after exacerbation to later on while the patient is in a stable state, however, is open to debate.

Objectives: To evaluate the effects of a two-month, home-based PR program on dyspnea, exercise capacity, muscle strength and activities of daily living in COPD after a severe exacerbation.

Methods: COPD patients who had just undergone inhospital treatment for a severe exacerbation were enrolled on to a multidisciplinary home PR within 48-72 hours of discharge.The program consisted of twice-weekly sessions for a period of 8 weeks.Lung function,oxygen saturation,exercise capacity (six-minute walk distance test),quadriceps strength,Bode index and London Scale Scoring were recorded at hospital discharge and after 2 months.Follow-up and baseline measurements were compared to determine the change in the measured variables after the program (paired t test).

Results: 10 patients underwent the program (mean [SD] age 71.90 [7.1]years, baseline FEV1 after bronchodilator 42.7[11] % predicted).Significant improvements were attained after the program in exercise capacity (pre 280m and postprogram 354m $p<0.05$),oxygen saturation (pre 91.4%, and postprogram 94.4% $p<0.001$) and London Scale Scoring (pre 22.1 and postprogram 14.9 $p<0.001$).No statistically significant improvements in lung function,BODE index and quadriceps strength were observed.

Conclusions: Post-exacerbation PR improve exercise capacity tolerance in COPD patients with a significant impact on activities of daily living.

P3549

Dry sodium chloride aerosol in rehabilitation of patients with COPD

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Aim of the study: The main objective was to estimate the efficacy of inhaled dry sodium chloride aerosol (DSCA) in rehabilitation therapy (RT) of patients with COPD.

Objects and methods: It was double- blind placebo study. 72 patients (pts) with moderate and mild stage of COPD were recruited. They were randomized in 2 groups - interventional group (IG) (21 m, 18 f, 60.3±10.8 yrs) and control group (CG) (22 m, 11 f, 58.5±8.9 yrs). All patients received RT: daily procedures of chest massage, light radiation, physical exercises. Pts of IG were treated with the DSCA (45 min twice a day for 14 days). DSCA containing particles with size of 1-5 μm and level of mass concentration in the room of 10-15 mg/m^3 was produced by halogenerator GDA-01.17 (Halomed, Lithuania). CG received placebo (inhalations with room air) instead of DSCA. Clinical, functional parameters and measures of health-related quality of life (HRQL) by SF-16 and LCQ (10 items) were estimated after RT procedures and in 3 months.

Results: Improvements of clinical symptom scores were observed in the both groups after the course of RT ($p<0.05$), but in 3 months positive effect was noticed only in IG (before-13.8±5.4, after RT- 9.1±4.9, in 3 months -9.6±4.3, $p<0.05$). Measures of LCQ were changed significantly after RT only in pts of IG, received DSCA (35.2±5.2 and 52.4±6.3, $p<0.05$). Positive changes of physical functioning measures (SF-16) were observed in IG and CG groups after RT, but they have been kept till 3 month only in IG.

Conclusions: Application of inhalations of DSCA on the background of the RT in pts with COPD renders to positive effect.

P3550

Prevelance and the association of anaemia with clinical and functional parameters in patients with COPD who referred to a pulmonary rehabilitation programme

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Polycytemia is commonly associated with COPD but recent reports suggest that anaemia is also prevalent

Aim: The aim of this study was to determine the prevelance of anaemia in patients with COPD who referred to PR programme and to explore the clinical and functional associations between anaemia.

Materials and methods: 398 COPD patients who referred to Atatürk Chest Disease and Chest Surgery Traning Hospital PR Center between January 2008 December 2011 were evaluated retrospectively and 176 patients were included. Patients were classified as anaemic,polycythemic or normal.Dyspnea was assessed with the MRC and CRQ dyspnea scale; quality of life was assessed with SGRQ. Exercise capacity was measured using the ISWT, ESWT, body composition was assessed with BMI, FFMI, anxiety and depression were assessed with the HADS.

Results: Anaemia was present in 14 (8%) patients and polycythemia in 24 (14%). BMI, FFM, FFMI, MRC, endurance time (ET) differed between anaemic, normal and polycythemic patients though there were no significant differences in the other parameters. Anaemic patients showed a significantly higher MRC than patients with normal, where body composition parameters in this group were lower than polystemic and the other group. Polycythemic patients had a significantly lower ET compared patients with normal. Anaemic patients walked the shortest distance in ISWT though this was not reach statisticaly significant level.

Conclusion: Anaemia is associated with poor clinical and functional outcomes in patients with COPD who were referred PR programme and provide support for the evaluation and monitoring of anaemia in these patients.

P3551

Outcomes of pulmonary rehabilitation according maintenance treatment in real life COPD patients

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Pulmonary rehabilitation (PR) improves health status as well as exercise tolerance in symptomatic patients with chronic obstructive pulmonary disease (COPD). Maintenance bronchodilator (BD) therapy is recommended to improve symptoms and could enhance ability to train and augment benefits of PR.

We aimed to evaluate if the modality of inhaled medication therapy could improve exercise tolerance and health-related quality of life (HRQL) in real life patients with COPD who were referred to PR.

We compared HRQL (Saint George Respiratory Questionnaire; SGRQ) and six minute walk distance (6MWD) after PR according to maintenance treatment: no long-acting bronchodilators (N); long-acting β_2-adrenergic agonist or anticholinergic BD (LABD); combined treatment with long-acting β_2-agonist plus inhaled corticosteroid (dual therapy; DT); or DT plus long-acting anticholinergic BD (triple therapy; TT). All groups used short acting bronchodilators as needed.

One hundred forty five COPD patients (64% males) who completed PR were retrospectively classified according their treatment. Twenty nine received no maintenance therapy (N), 16 LABD, 82 DT and 18 TT. They were 64.5±.8.8 years old and showed a mean FEV_1 and FVC of 42.6±18.2% and 65.7±.21.5% predicted, respectively. In the baseline test they walked 393.5±.94.9m. No difference was found related to baseline spirometric, 6MWD and SGRQ values. The whole sample presented significant improvements in total and specific domains of SGRQ ($p<0.05$) as well as 6MWD (53.1±.65.7m; $p<0.01$) with no difference among treatment groups.

In conclusion, in a real life cohort of COPD patients the specific maintenance therapy did not interfere in clinical PR outcomes.

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P3552

Influence of pulmonary rehabilitation in patients with COPD in respiratory hospital admissions (Rha) and emergency department visits (EDv)

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Introduction: Pulmonary Rehabilitation (PR) provides significant clinical benefits to patients with severe and very severe COPD

Objectives: To verify the effect of PR on COPD patients in our Hospital, not only in terms of Lung Function Tests but also in Rha and EDv.

Methods: 148 patients were studied, 106 started PR from January 2009 to October 2010 and 42 did not.

We compared EDv and Rha of patients for one year before and after receiving PR and also with the patients who did not. Changes in FEV1 and in 6MWT (6-minute walk test) were also studied.

Results:

Table 1. Data of 106 patients who followed PR

	Before PR	After PR
EDv*	145	74
Rha	45	27
FEV1*	38.35	41.33
6MWT*	353.95	394.60

*Statistically significant.

Table 2. Data of 42 patients who did not followed PR

	Jan 2008-09	Oct 2010-11
EDv	79	81
Rha	17	30
FEV1	37.81	NA
6MWT	331.2	NA

Both EDv and Rha show a decrease, being statistically significant in the case of EDv. Also FEV1 and 6MWT show a statistically significant improvement.

Conclusions: PR is an effective intervention in treating COPD patients, as it results in significant clinical improvements by increasing capacity to perform physical exercise and by lowering EDv and Rha rates.

P3553

Six months and one year follow up of COPD patients who had oral nutritional supplement therapy as a part of pulmonary rehabilitation program

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We evaluated long term efficacy of oral nutritional supplement (ONS) which was indicated according to body composition abnormalities in patients with COPD.

41 patients who were given ONS were enrolled. Pulmonary function tests, quality of life, exercise capacity, dyspnea sensation, and body composition datas were recorded before and after PR program, at 3., 6. month and in 20 patients 1 year follow-up visit.

Table1 summarizes parameters of patients that were grouped according to ONS duration. In all groups ONS lead to sustained improvements of exercise capacity, dyspnea, symptom management, and body composition at 3 and 6 month. Quality of life was protected in group 1, in other groups it was over baseline values despite loss at 6. month. Both exercise capacity and quality of life decreased at the end of the first year, exercise capacity was lower than baseline. Improvements in symptom control, dyspnea, body composition were protected in one year follow up.

Table1

	Group 1	Group 2	Group 3
Patients numbers	10	16	15
Age (years)	54,7±13,8	65,5±9	67,8±6,3
Tobacco (pack/years)	27,2±15,3	55±19	67,9±38
BMI (kg/m^2)	20±1	18,7±1,7	17,5±1,5
FFMI (kg/m^2)	16,9±1,3	15,9±1,1	15,5±0,9
MRC	2,6±0,5	3,5±0,8	4±1
%FEV1	36,6±13,8	29,3±9,4	25,9±9,8
ISWT (meters)	282±108	174±118	123±108
SGRQ Symptom	67,1±9,1	67,3±13	73,3±14
SGRQActivity	71,9±22,2	77,2±19,7	82±20
SGRQimpact	58,5±17,6	62±21	57,7±23,3
SGRQTotal	64,1±16	67,6±15,5	67,8±19

As the changes of body composition are correlated with prognosis and survival in COPD, all patients who are scheduled to receive a PR program should be evaluated and be given ONS if necessary.

P3554

Intensity of training and physiologic and clinical changes after pulmonary rehabilitation programme in patients chronic obstructive pulmonary disease

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The aim of the study was to evaluate the efficacy of a pulmonary rehabilitation programme (PRP) in relation to the intensity of exercise training achieved during PRP in patients with Chronic Obstructive Pulmonary Disease (COPD). We performed a retrospective analysis on 92 COPD patients (FEV1% 54) who participated in a PRP between 2007 and 2009. All subjects did an outpatient training exercise programme lasted 2 months. The training sessions were 20 and each session consisted in 30 min of cyclergometer exercise associated with 30 min of upper limb exercise. Before and after the PRP the following measurements were done: the exercise tolerance by 6MWT and cardiopulmonary exercise test (CPET), upper and lower limb endurance (ULE;LLE), MRC, MIP and MEP, quality of life by SGRQ. Patients were divided into two groups based on the achievement (Group 1) or not (Group 2) of high intensity training, meaning the intensity of 75% of Wmax reached in CPET pre PRP, sustained for as long as 25 - 30 minutes for 8 final sessions of the PRP.

	Group 1		Group 2		Group 1 vs Group 2
	Δ	p	Δ	p	
Watts	13.4	p<0.001	2.55	ns	*
VO2 spec (ml/min/kg)	–1.87	p<0.001	–1.65	ns	
VE isow (L/min)	–3.65	p<0.01	–2.01	ns	
HR isow (BPM)	–14.9	p< 0.001	–5.63	ns	*
ULE (sec)	37.7	p<0.001	35.5	p<0.01	
LLE (sec)	409.	p<0.01	230.	p<0.01	
MIP (cmH2O)	5.7	p<0.05	7.5	p<0.05	
MRC	–0.39	p<0.01	–0.44	p<0.01	
6MWT (mt)	31.2	p<0.01	40.2	p<0.001	
SGRQ Impact	–6.48	p<0.01	–2.39	ns	
SGRQ tot	–5.72	p<0.01	–2.22	ns	

After PRP,changes from baseline were signiicant for all measurements in Group 1, but not in Group 2. Therefore, reaching and maintaining high intensity of exercise training is associated with better results obtained by PRP in COPD patients.

P3555

Two-years of a community maintenance follow-up program in patients with COPD

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Introduction: Benefits of short-term outpatient rehabilitation programs (RP) have been showed in patients with COPD that decline gradually over one year after discharge. Moreover, the capacity of maintenance follow-up programs to preserve the benefits of pulmonary rehabilitation programs is controversial.

Therefore, the objective of this study was to examine the efficacy of a two year, supervised, community maintenance follow-up program to maintain the benefits of an initial 12-week outpatient RP.

Methods: Eight patients (moderate to severe) COPD men (GOLD), dyspnea 2-3 (MMRC) were included. All patients performed a two years, supervised, community maintenance program (CMP) (twice a week) following a 12-week outpatient rehabilitation program (twice a week). Maximal dynamic resistance (1RM) of the upper limb (chest press and dorsal) and lower limb (leg press and leg extension), and peak power output at 70% of 1RM in leg press were measured. Analysis of variance with repeated measures was used for statistical analysis.

Results: Initial data from the RP were used as a baseline for all outcomes. 1RM in leg press increased (P <0.001) by 20% in RP and 22% in CMP from baseline. 1RM in chest press increased (P <0.001) by 32% in RP and 45% in CMP. 1RM in knee extension and dorsal increased (P <0.001) by 36 and 35% in RP and 38 and 35% in CMP, respectively. Power output of the lower limb at 70% of 1RM increased by 33% in RP and 30% in CMP (from 555±108 to 738±312 to 720±258 w, P <0.05) from baseline.

Conclusions: A low volume, supervised, CMP is able to maintain and improve the benefits of a short-term RP in COPD patients.

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P3556

Attendance vs prescription: Exercise attendance rates for people with COPD: Systematic review

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The duration, frequency, mode and intensity of exercise programs for people with COPD are recommended by international consensus statements. The question for this review was: 'How consistently are a priori criterion and attendance rates reported for people with COPD participating in exercise programs?' A systematic search of CINAHL, Medline, Embase and CENTRAL (Cochrane), was undertaken in October 2011. Studies were eligible for inclusion if published in English, included people with COPD, assessed the effects of rehabilitation as the primary intervention (+/– adjunctive strategies) and included at least 2 weeks exercise training (+/– education). There were no limits placed on intervention site (hospital, community, home) or publication date. Data extraction processes were confirmed prospectively for consistency (>80% agreement), with pairs of reviewers extracting data independently and disagreements resolved by consensus. The search returned 752 citations (497 citations excluded from title and abstract) with 255 full text articles retrieved for review. Of the 174 articles reviewed to date, a further 21 citations have been excluded. Of the 153 studies, 100% report the prescribed frequency of training but only 54% provide information on attendance at training sessions (n = 83) and less than a third of these report a priori criteria for attendance (n = 23, 28%). These preliminary analyses suggest that reporting of attendance rates in COPD exercise trials is low, which makes it difficult to calculate dose-response relationships between exercise participation and improvements in health outcomes.

P3557

The effectiveness of a home-based pulmonary rehabilitation program (PRP) in people with COPD

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Background: PRP has been shown to be one of the most effective interventions for COPD. However several barriers has limited participation. To overcome some of these barriers a Home-Based PRP was offered to people were unable to attend the Hospital-Based PRP.
Aim: To assess the effectiveness of a Home-Based PRP in improving exercise capacity and quality of life in people with COPD unable to attend the Hospital-Based PRP.
Methods: A retrospective review of patients recruited to a Home-Based PRP at Liverpool Hospital between January 2009 and November 2010. 6MWT and SGRQ were used. Data analysed by SPSS using the Paired T-Test.
Results: 67 patients were recruited with an average age of 72 years. Of these 33% completed the PRP and post PRP assessment, and 30% completed the 12-month post PRP follow-up. At post-PRP 6MWT improved by 36.7m P<0.001 and SGRQ improved by 9.5% P=0.003. At 12-months (compared to baseline) post-PRP 6MWT was -12.6m P=0.5 and SGRQ improved by 3.5% P=0.4. Difference in outcomes between males and females were also noted as outlined in the table.
Conclusions: A Home-Based PRP can be a suitable alternative for patients who are unable to attend a Hospital-Based PRP. However, a RCT with appropriate sample size would be required.

P3558

Referral to pulmonary rehabilitation amongst patients admitted to hospital with COPD

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Background: Pulmonary rehabilitation (PR) is recommended in the management of patients with COPD. However, little information is available about the incidence of referral to PR amongst COPD patients.
Aim: This study prospectively examined consecutive patients admitted to hospital with a primary diagnosis of COPD, to determine the incidence and characteristics of patients referred (versus not) to PR.
Methods: Demographic, disease and admission characteristics were collected using prospective and retrospective medical record review, and patient interview at the end of hospital admission. Information about referral to and attendance at a PR program in the past, and referral to PR from the current admission, were obtained from patient interview and confirmed in medical records.
Results: From 190 patients, 64 were recruited to interview (77 excluded due to insufficient English language, cognition, or missed; 43 were repeat admissions and 6 declined). Included patients were aged 72(12) years [mean(SD)], with FEV_1%predicted =44(19)%; 61% had a respiratory physician involved in their ongoing care. Of the 64 patients interviewed, 39 (61%) had been referred at some point since diagnosis to PR, but only 15 (24%) had attended. During the current admission, 20% (n=13) had been referred to PR. In 12 cases (19%), PR had been discussed but no referral made, and in 39 cases (61%) PR had not been discussed.
Conclusion: A proportion of COPD patients admitted to hospital had not been referred either in the past, or at the time of the index admission, to PR. Further analysis of this data to determine characteristics associated with referral (or not) will help direct strategies to implement PR in more people with COPD.

Abstract P3557 – Table 1. Outcomes Male vs Female

	Males: Outcomes Mean Difference Compared to Baseline		Females: Outcomes Mean Difference Compared to Baseline	
	Training Completion	12-Month Post Training Completion	Training Completion	12-Month Post Training Completion
6MWT (m) MID=35	49.4 (35) P=0.001	25.5 (61) P=0.47	26 (39) P=0.04	-29.6 (67) P=0.22
SGRQ (%) MID=4	16 (8) P<0.001	3 (12) P=0.66	3 (15) P=0.52	-6.6 (15) P=0.25

MID: minimal important difference. Data are presented as mean (SD).

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