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339. Pulmonary rehabilitation and skeletal muscles, COPD and non-COPD

P3670

The effectiveness of chest physiotherapy that is applied in COPD patients with exacerbation

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Objective: The purpose of this study was to investigate the effectiveness of Chest Physiotherapy (CP) which is usually applied on stable stage in patients Chronic Obstructive Pulmonary Disease (COPD) with exacerbation.

Patients and Methods: The total of 86 patients with moderate-severe COPD was enrolled in this study. We applied CF program consisting of mainly breathing exercise and ambulation with breath control as 2 session/day in 56 patients. Thirty patients were not applied any CF program. As a outcome measurements, we used spirometric tests for lung function, 6 minute walking test for exercise capacity, Chronic Respiratory Disease Questionnaire and SF-36 Quality of Life Questionnaire for quality of life, and Modified Borg Scale for dyspnea and leg fatigue severity.

Results: We found that the length of hospitalization and the changes of lung function during exacerbation period of the patients with COPD were similar in both groups ($p > 0.05$).

Compared with the control group it was stated that the CF group had greater improvements in quality of life, exercise capacity, dyspnea and leg fatigue severity ($p < 0.05$).

Conclusion: As a consequence, chest therapy is effective on the enhancement of exercise capacities and status of quality of life by improving the ability to coping with the respiratory symptoms, it is suggested that chest therapy should have been applied during exacerbation period of the patients with COPD.

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Effects of upper limb and thoracic strength training on 6-min walk distance improvement in patients with COPD undergoing pulmonary rehabilitation

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Aim: to verify the influence of upper limb, thoracic and lower limb strength training on 6-min walk distance (6MWD) improvement after pulmonary rehabilitation in COPD patients.

Individuals and Methods: Eleven patients with mild to severe COPD were enrolled in 12-week, 36 sessions, of strength training rehabilitation program. Training consisted to three series of 8-12 repetitions (50-80% of one-repetition maximum - 1RM) of the following exercises: lat pull down, bench press, leg press and leg extension. Pulmonary function, body composition, maximal exercise test, constant workload endurance test (TEnd), 6MWD, baseline dyspnea index (BDI), Saint George's Respiratory Questionnaire (SGRQ), and 1RM for lat pull down (latissimus dorsi; trapezius; biceps), bench press (pectoralis; triceps), leg press (quadriceps; gluteus; hamstrings), and leg extension (quadriceps) were evaluated before and after the training program. Percent changes (Δ) of all variables were calculated.

Results: TEnd, SGRQ, BDI, 6MWD, and al 1RM values improved significantly after training period. Significant positive correlations between Δ 6MWD and Δ lat pull down ($r=0.64$), Δ bench press ($r=0.62$), and Δ leg extension ($r=0.60$) were shown. After multiple regression analysis, only Δ lat pull down was selected as determinant of the 6MWD ($R^2=0.409$).

Conclusions: the present study reinforces the influence of quadriceps muscle strength and suggests an important role for thoracic muscle strength on functional exercise capacity in COPD patients. In this context, specific thoracic muscle reconditioning can be a rationale strategy to improve functional exercise capacity in these patients.

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Nordic walking and endurance training in COPD

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The Norwegian Lung and Heart Association recommends patients with COPD to take part in activities like Nordic Walking (NW). This study compared effects of three endurance training modalities on VO_{2peak} , peak work rate and mastering of dyspnoea, and group differences in activity type and total activity time nine months after pulmonary rehabilitation (PR).

30 patients recruited from a PR program were randomly assigned to three groups. Endurance training was performed using treadmill (A), NW (B), or outdoor walking without poles (C). They performed interval training three times weekly for four weeks at 80% of peak work rate. Activity types, total activity time, perceived exertion and mastering of dyspnoea were examined in a questionnaire at baseline, after 4 weeks PR, and nine months after PR.

There were no significant differences in baseline characteristics between groups. Peak work rate, walking distance and walking time increased in all groups. There was no significant difference between the groups. VO_{2peak} increased after PR only in group A. Total activity time after nine months increased in about 50% of the subjects. NW was taken up by 7 more subjects; 2 (A), 4 (B) and 1 (C). Mastering of dyspnoea improved in 3 (A), 2 (B) and 5 (C) subjects at the end of PR, and in 1 (A), 5 (B) and 2 (C) after 9 months. Totally, mastering of dyspnoea was unchanged in 20 subjects, and got worse in 1 subject.

COPD patients may benefit from participating in free activities like NW. To some extent, type of intervention influenced type of activity after coming home. The increase in VO_{2peak} in group A (treadmill) may indicate that high intensity training outdoors probably requires more self-motivation and self-confidence than supervised training.

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Non-invasive ventilation effects during a six-minute walk test in patients with chronic obstructive pulmonary disease

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The effects of non-invasive ventilation (NIV) during an acute exercise are not well known.

Aims: 1) To evaluate the effects of NIV upon cardio respiratory variables during six-minute walk test (6'WT). 2) To compare such variables in two situations: during and between the trials.

Methodology: Thirteen male patients (68 ± 7 years old) with severe-moderate COPD were studied. We have performed randomly six 6'WT in which three were conventional 6'WT and the other three were made using NIV (IPAP=14cmH₂O and EPAP=5cmH₂O). In the final analysis we have considered the tests that presented the greatest distance ambulated. The blood pressure (BP), the cardiac and respiratory frequencies (HR and RF), O₂ saturation with pulse oximetry (SpO₂), the peak of the expiratory flow (PEF), the distance ambulated during the 6'WT and the work of walking ($W_{HO} = \text{weight} \times \text{distance}$) were measured.

Results: We observed the interplay between the diastolic arterial pressure, the HR and the PEF during the test. The cardio respiratory variables, the distance ambulated, the average speed and the W_{HO} have not presented differences between the conventional and NIV-6'WT. We observed a correlation among the BP, the HR and RF, the SpO₂, the PEF and the W_{HO} ($r=0.86$) in both kind of tests. The weight and the body mass index (BMI) correlated with the distance ambulated during the test.

Conclusion: The NIV have not changed the functional abilities and the cardio respiratory variables evaluated during the 6'WT-NIV. The correlation between the weight and the BMI with the distance ambulated suggests a relation between nutritional status and the functional performance of these patients.

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Effects of non-invasive ventilation in short term previously to evaluation of functional capacity in patients with chronic obstructive pulmonary disease

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Introduction: Patients with chronic obstructive pulmonary disease (COPD) present reduction of the functional capacity and decline of the activities of daily life.

Aims: 1) To assess the effect of the previous use of the non-invasive ventilation (NIV), in short term, on the physiological variables evaluated during the functional capacity test and 2) To correlate the respiratory muscles endurance with the physiological variables evaluated during the test.

Material and methods: Seven male patients (68.4 ± 7.2 years old) with moderate to severe COPD were submitted the two tests of functional evaluation (Protocol of Harbor) preceded randomly for use of the NIV (BiPAP group) and Sham-BiPAP (Sham-BiPAP Group) for 60 minutes. The pressures used in the BiPAP (IPAP=12 cmH₂O and EPAP=4 cmH₂O) were established in accordance with the comfort of

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each patient. The speed imposed during the treadmill test was fixed, determined previously from the six-minute walk test (6^WT) with 2% of inclination every each minute.

Results: The subjective levels of effort significantly diminished after use of the BiPAP (1.71±0.75 to 1.42±0.53). In the same way BiPAP group reduced, significantly, the respiratory frequency (19.28±2 to 17.85±2 breaths/min). We did not observe difference between walked distance (BiPAP=479.71±137.30 m and Sham-BiPAP=511.42±151.81 m) and the physiological variables in the different groups.

Conclusion: The reduction of the respiratory frequency and Borg scale score after use of the VNI in short term, suggestive of reduction of the overload of the respiratory muscles, have not improved the capacity of exercise in this group of patients.

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Determinants of impaired exercise capacity in mild to moderate COPD

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In patients with severe COPD, systemic manifestations as muscle wasting and weakness are prevalent and significant determinants of impaired exercise performance. Limited data are available in mild to moderate COPD.

Aim: to characterize local and systemic impairment in a random group of mild to moderate COPD patients with impaired exercise capacity (Wmax<70%) admitted to the Interdisciplinary community-based COPD management trial INTERCOM.

Methods: Exercise capacity (metabolic and ventilatory response to incremental cycle ergometry and 6 min walk test (6MWD), quadriceps force (QF) and endurance (QE) (isokinetic dynamometry), handgrip force (HGF) and body composition were measured. The majority of patients with GOLD 1-2 (n=120) were compared with predicted normal values and with the GOLD 3 (n=53) subgroup.

Results: Mean Wmax% (SD) was 65.6% (16.6), while sub maximal exercise capacity (mean 6MWD% (SD) was close to predicted normal value (99.2% (15.9)). Significant (p≤0.01) differences between GOLD 1-2 and GOLD 3 were found in exercise response: Wmax% (SD) (65.6 (16.6) vs 47.6 (15.5)), 6MWD% (99.2 (15.9) vs 92.7 (18.7)), Vo₂ peak % (87 (20.8) vs 77.3 (14.8)) Ve res% (17.1 (15.9) vs 5.0 (17.9)) and RQ peak (1.3 (0.2) vs 0.8 (0.2)). VD/VT, muscle function (QF%, QE, HGF%) and FFMI were not significant different in both groups. Wmax was associated (p≤0.01) with QF(r=0.63), QE(r=0.64) HGF(r=0.58) and TLCO (r=0.55) but not with FEV1%. Compared with patients with Wmax≥70% which were not enrolled in the trial, patients with Wmax<70% were more often hospitalized (11.6% vs 1.9%, p≤0.05). This study confirms that also in mild to moderate COPD muscle function relates to exercise impairment in a similar way as it does in severe COPD.

P3676

Quality of life in patients presenting with lung cancer and the affecting factors involved

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Objective: The aim of our study is to assess the quality of life in patients with lung cancer and interpret this assessment according to the stage and symptoms of the disease, the exercise capacity of the patients and the severity of the dyspnea.

Material and method: 20 patients (3 women and 17 men) diagnosed as having lung cancer and admitted to the clinic for follow-up care were included in the study. Nottingham Health Profile Survey was used to assess the quality of life and the exercise capacities of the patients were evaluated with a 6 minute walk test. The Modified Borg Scale was used for the measurement of dyspnea and the Visual Analog Scale was used for the measurement of pain. Additionally, the stage of the cancer, the continuing treatments and the state of metastasis were also evaluated.

Results: It was recorded that the average severity of pain in our patients (mean age= 59.15±9.43 yrs.) was 5.0±3.3 according to VAS and the walking distance was found to be 268.13±142.23 meters after the exercise test. Among the parameters of the quality of life, the results obtained in the categories related to functional capacity such as physical mobility and energy were found to be particularly low. It was determined that the decrease in these patients' quality of life was related to respiratory symptoms, the state of metastasis and the history of comorbidity (p<0.05).

Conclusion: Our study showed that the quality of life of the patients presenting with lung cancer decrease due to the decrease in the exercise capacity, the increase in the respiratory symptoms and especially the damage given to the physical function by the presence of metastasis.

P3677

Effects of short-term pulmonary rehabilitation in patients with idiopathic pulmonary fibrosis

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Background: The benefit of pulmonary rehabilitation has been demonstrated for patients with COPD and non-COPD. However, such benefit for patients with idiopathic pulmonary fibrosis (IPF) is still unclear. The aim of the study was to compare the effect of short-term pulmonary rehabilitation on patients with IPF and patients with COPD.

Patients and Methods: Thirteen patients with IPF (age: 76±7 years, FVC: 62.6±15% and MRC: 3.8±0.8) and 12 age-matched and MRC-matched COPD patients were enrolled in the study. We trained the patients using a 6-week rehabilitation program (2 to 3 times/week, bicycle endurance training, peripheral muscle conditioning training, and stretching, along with various education sessions). Clinical dyspnea ratings, a daily activity score, health related quality of life, exercise capacity and muscle force were assessed at baseline and after completion of the program. We compared the improvement of IPF patients with that of COPD patients in the same program.

Results and Conclusions: After rehabilitation, MRC dyspnea scale, BDI/TDI, activity score, SF-36 questionnaire, 6-min walk distance (6MWD), and quadriceps force improved in COPD group, but there was only significant change in BDI/TDI and activity score in IPF group. IPF patients showed smaller magnitudes of these improvements than patients with COPD. A short-term pulmonary rehabilitation program for patients with IPF can improve dyspnea and daily activity, but is insufficient in improving exercise capacity and health related quality of life.

P3678

Quadriceps force and 6-minute walking distance before and after lung transplantation

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Information on recovery of functional status after lung transplantation (LTX) is scarce. Changes in forced expiratory volume in one second (FEV1), quadriceps muscle force (QF) and 6-minute walking distance (6MWD) were studied before, after LTX and after 3 months pulmonary rehabilitation (PR) in 12 women (age 58.3±5) and 12 men (age 57±5). Table 1 displays the lung function, QF and 6MWD before and after the LTX.

FEV1, QF and 6MWD evolution.

		PRE LTX	% pv		POST LTX	POST 3 months REHAB
FEV1 (L)	Male	0.81±0.35	35±14		2.54±1.03	2.97±1.14
	Female	0.91±0.42	25.7±11		1.52±0.51	1.59±0.48
QF (Nm)	Male	121±40.5	68±24		93±39	112±32
	Female	69±27.6	75±39		46±25.5	49±22
6MWD (m)	Male	361±131	43.8±17		399±123	521±64
	Female	337±126	53.8±20.5		301±104	372±13

PR improved QF and 6MWD but the improvement in terms of QF after 3 months PR was less in women compared to men (+3±19Nm versus +19±25Nm respectively). Women and men reached respectively 70±28% and 95±23% of the Pre LTX QF (p< 0.05). For the 6MWD, the recovery was also less in women compared to men. Compared to the pre LTX 6MWD, women reached 112±38% and men 198±107% of this value (p<0.03).

Conclusion: In both female and male patients the quadriceps force is decreased after lung transplantation. The recovery of this deficit in women was slower compared to male patients despite 3 months of rehabilitation.

P3679

A domiciliary program to sustain physical fitness in morbidly obese individuals

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Physical fitness is an important part of intervention to promote health in morbidly obese individuals. Lack of information still exists on how education may improve physical performance at home after discharging these patients from a rehabilitation program.

We therefore designed a 9-month trial in obese subjects (BMI >30) aged 25 to 65 years and suitable for physical activities at home. At the end of a preliminary 1-month rehabilitation in-hospital program (baseline) patients were randomly assigned to either a structured educational program (Intervention) of daily incremental physical activity at home (walking and skeletal muscle resistance training, including booklets and written instructions) or to a general advice (Control) about

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exercise and fitness in the long-term. The time (min.) and the METS produced during the standardised 2-km walking test (W) and the time until exhaustion (sec.) to sustain consecutive repetitions of both abdominal flexion (AB), and iso-load pectoralis distension (PD) and quadriceps extension (QE) have been recorded at baseline and every 3 month in both groups.

Partial data in 22 patients (intervention, n=9, BMI 39±7; control, n=13, BMI 41±9) have shown that W trended to decrease whereas METS (by 13%), AB (by 41%) PD (by 24%) and QE (by 116%) significantly increased ($p < 0.05$) over time in Intervention but not in Control.

We conclude that this structured domiciliary program provides benefit in terms of physical fitness in a group of morbidly obese individuals.

P3680**Prevalence and importance of skeletal muscle weakness in cystic fibrosis**

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Patients with Cystic Fibrosis (CF) may have skeletal muscle weakness. We aimed to determine its prevalence and correlates.

Fifty patients (22 women), 26±8 years, FEV₁ 64±19, FVC 82±16%pred participated. Maximal respiratory pressures, hand grip strength (HG), isometric quadriceps force (QF) an incremental exercise test and a 6 min. walking test (6MWD) were done.

QF weakness (mean 69±17%pred) was present in 68% of patients (QF<75%pred, [the lower limit of normal for this test]). FEV₁ and FVC were related to muscle strength (probably reflective of underlying anthropometrics). In multiple regression analysis, QF was only related to gender (partial R² 0.35, $p < 0.001$) and body weight (partial R² 0.08, $p = 0.01$) and not to lung function. Similarly, HG was not related to lung function and only related to gender and body weight (cumulative R² 0.60, $p < 0.001$) in multiple regression analysis.

Table 1 gives the variables related to 6MWD in multiple regression analysis.

Table 1

Variable	Partial R2	Cumm. R2	p-Value
Gender	0.22	0.22	0.006
FVC (%pred)	0.15	0.37	0.002
QF (%pred)	0.06	0.43	0.03
Age (yrs)	0.04	0.47	0.08

QF: Quadriceps force, FVC Forced Vital capacity both in % of the predicted normal value)

Factors related to peak work rate were FEV₁ (%pred), gender and QF (%pred) (cumm. R²=0.73, $p < 0.001$).

We confirm significant skeletal muscle weakness in CF. Muscle force is an independent contributor to functional and maximal exercise capacity. Assessment of muscle force should be part of the clinical assessment of CF patients. Treatment to improve skeletal muscle function should be considered.

TT and LD are postdoctoral fellow FWO Vlaanderen

P3681**Disabilities experienced in normal daily activities by patients with COPD**

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Background The aim of history-taking at the start of pulmonary rehabilitation is to gain the clearest picture possible of health problems of COPD patients. One of the main topics in history-taking of the Dutch guidelines for physiotherapy in patients with COPD is to determine which disabilities these patients experience in normal daily activities.

Methods Self-reported problems during daily physical activities and dependence with personal care were assessed in 168 consecutive Dutch patients with COPD (mean (SE) age: 64 (0.8) years, 109 men) during the intake/assessment procedure before the start of a pulmonary rehabilitation program (PRP) in a secondary or tertiary care setting.

Results A 'problematic' transfer from lying to standing up was reported in 38.7% of the patients, while 23.8% reported a 'problematic' transfer from sitting to standing up. Stair climbing was reported as 'problematic' in 68.5% of the patients and 'impossible' in 15.5%. Reaching for something was 'problematic' in 53.6% of the patients and 'impossible' in 1.1%. 66.7% of the patients reported bending over as 'problematic' while 5.4% reported this physical activity as 'impossible'. Carrying groceries was 'problematic' in 66.7% of the patients and 'impossible' in 25.6%. 26.8% of the patients reported partial dependence in personal care, while 2.4% of the patients were completely dependent.

Conclusions A majority of the COPD patients reported disabilities during normal daily activities at the history-taking by the physiotherapist before the start of a PRP. Moreover, about one-fourth of the patients needed assistance in their personal care. Therefore, an additional intake/assessment of an occupational therapist should be considered.

P3682**Assessment of physical activity using a multisensor armband**

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Physical activity in daily life is becoming an increasingly important patient centered outcome in chronic diseases, including COPD. Monitoring of activity levels, however, is technically difficult due to the low movement intensity. We have used the Dynaport Activity Monitor (DAM, Mc Roberts, Den Haag, NL) as the standard to measure activities in daily life. The DAM has the advantage of a lower limb sensor making it relatively accurate in detecting slow movement. Recently the Armband (AB; Sensewear Pro, Body media, US) became available. This tool uses two accelerometers two temperature sensors (skin and 'near body') and galvanic skin response to estimate energy expenditure through programmed algorithms (Innerview Professional 5.0). It is worn at the upper right triceps and allows for 14 days of recording. We compared the physical activity level (PAL) estimate from the DAM and the as well as the number of steps registered by both devices. 24 subjects (5 healthy, 6 stable COPD, and 13 Lung transplant candidates (LTX)) did wear both devices simultaneously for at least two days, yielding 92 days for comparison. LTX were with both devices significantly less active (PAL_{DAM} 1.14±0.2; PAL_{AB} 1.18±0.23) compared to stable COPD (PAL_{DAM} 1.38±0.24; PAL_{AB} 1.47±0.26) and healthy subjects (PAL_{DAM} 1.33±0.21; PAL_{AB} 1.72±0.47). There was a significant relation between PAL_{DAM} and PAL_{AB} (R=0.73, $p < 0.001$). The number of steps counted per day was underestimated with the AB (3172±3350 day⁻¹) compared to the DAM (3409±2907 day⁻¹ $p = 0.002$). We conclude that the armband, underestimates steps, in slowly walking subjects. Physical activity level, however, shows good agreement between both devices.

TT is a postdoctoral fellow of FWO-Vlaanderen

P3683**Fear of effort in patients with COPD**

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Purpose: It determined that because of dyspnea the functionally independence reduced in patients with Chronic Obstructive Pulmonary Disease (COPD). The aim of this study was to evaluate as objective the dyspnea-related fear (fear of effort) in patients with COPD

Methods: Sixty-eight patients with moderate-severe COPD were included in this study. Fear of effort was assessed using an adapted version to dyspnea of the Tapma Scale for Kinesiophobia (TSK) questionnaire in the patients with COPD. TSK is an important instrument for measuring pain-related fear in persons with chronic pain. The exercise capacity was evaluated with the Six Minute Walk Test (6MWT), the lung function with the spirometry test, the quality of life with the Short-Form health survey (SF-36) and St-George, the dyspnea and the legs fatigue severity with the Modified Borg Scale (MBS), the depression with the Beck Depression Inventory evaluated were used in present study.

Results: 68 patients with a mean age 64.3±11.6 years, mean %FEV₁ 65.2±19.7, mean walk distance 473.8±157, mean Beck Depression score 13.7±10.4, mean TSK score 42.5±10.6, as a fear of effort in the subjects, were found. TSK showed a statistically significant correlation with Dyspnea ($p < 0.05$) and legs fatigue ($p < 0.01$), quality of Life (St-George; $p < 0.01$, SF-36; $p < 0.001$), Beck scores ($p < 0.001$).

Conclusion: The perceived decline in exercise capacity related to the fear of effort, rather than the increased cardiovascular stress in patients with COPD. These results provide evidence for the objective measurement of the effort fear.

P3684**Is a practice incremental shuttle walk test (ISWT) really necessary?**

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Introduction: The ISWT is a commonly used outcome measure for Pulmonary Rehabilitation (PR). The distance walked in the ISWT can be used to calculate the speed of the endurance shuttle walk test (ESWT). The ESWT consists of 16 levels (1 = 1.5kph, 16 = 6.0 kph). Singh et al (1992) advocate a practice walk (PISWT) but few centres do one. We set out to find out the following:

- 1 - Is a PISWT really necessary?
- 2 - Does a PISWT affect the level of ESWT?

Method: All patients attending PR perform a PISWT and an ISWT before the ESWT level is calculated. We present our data on the differences.

Results: 205 patients were assessed for PR between October 2002 and December 2005. We have PISWT and ISWT data on 184 patients. Table 1 shows the difference in distance walked between PISWT and ISWT. Table 2 shows the effect of PISWT on ESWT level.

Discussion: We have shown that there is a wide range in difference between PISWT and ISWT and the effect this has on ESWT can be very significant for an individual patient although not when taken as a whole.

Table 1. Comparison of PISWT and ISWT

	Difference (m)	% difference
Mean	20	22
Median	20	10
Range	-55 to 340	-110 to 170

Table 2. Effect of PISWT on ESWT level

Median Change in level	0
Mean Change in level	1
Range	-4 to 6

Conclusion: A PISWT is necessary to gain an accurate ESWT level. An inaccurate ISWT at baseline could impact on apparent post PR outcome whether using the ISWT or ESWT as the outcome measure.

P3685**The effects of cigarette consumption on exercise capacity and quality of life in terms of gender**

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Objective: Although smoking is known to be widespread among men, the rate of smokers among women has also shown an increase in the recent years. For this reason, our study was designed to evaluate the effect of cigarette consumption on exercise capacity and life quality in both sexes.

Material and method: 26 men with a mean age of 46.7±14.4 (Mean smoking duration: 24.2±12.8 years) and 42 women with a mean age of 41.1±11.8 (Mean smoking duration: 21.6±9.0 years) were included in the study. Additionally, 10 men with a mean age of 44.2±15.0 and 10 women with a mean age of 43.1±10.2 who were non-smokers constituted the control groups of our case study. The respiratory symptoms were examined. The exercise capacity was evaluated with a 6-minute walk test and quality of life was assessed with a SF-36 Quality of Life Scale.

Results: It was found that the demographic characteristics of the male and female patients of smokers were similar to each other and to control groups (p>0.05). The smoking duration and amount of smoking were similar along with the exercise capacity in both of the male and female groups (p=0.50). It was determined that in both of the male and female smoking groups, the quality of life was lower compared to that of the control groups (p<0.05). No respiratory symptoms were defined in the control group while the rate of effort dyspnea, cough and sputum were respectively, 74%, 57% and 38% in the female and 78%, 36% and 45% in the male group.

Conclusion: Our study showed that the factor of gender does not have an effect on the decrease in exercise capacity and quality of life and specifically, the effort dyspnea symptom is frequently seen among the smokers of both sexes.

P3686**The intertester and intratester reliability of the Nagasaki University respiratory activities of daily living questionnaire (NRADL)**

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Objective: To examine the intertester and intratester reliability of The Nagasaki University Respiratory Activities of Daily Living (NRADL) Questionnaire for patients with chronic obstructive pulmonary disease (COPD).

Design and Setting: A randomized case-control study. 33 patients, (24 males) were recruited from four facilities in Japan between March and October 2005. Age and %predicted forced expiratory volume in one second (mean±SD) were 75.1 ± 7.1 years and 58 ± 19% respectively.

Methods: The NRADL Questionnaire is composed of the following activities: Feeding, Hygiene, Grooming, Bathing, Dressing, Mobility (indoor), Mobility (in-floor), Mobility (in-hospital), Mobility (upstairs'), Shopping and Outdoor. A score from 0 to 3 is given for each activity based on Rate of activity, dyspnea during the activity (Borg 0-10 scale), and prescribed flow of supplementary oxygen during the activity. It is evaluated in sum total 100 points

The measuring method was divided into the random in the A and B method. A method: Physical Therapist (PT) evaluated first and second and other PT evaluated third. B method: PT evaluated first and third and other PT evaluated second time. Reliability was examined using Chronbach's α coefficient and interclass correlation coefficients (ICC).

Results: Reliability was good. Cronbach's - coefficient was 0.93. The ICC for intra-tester reliability was 0.96, and for between different testers the ICC was 0.97's.

Conclusions: The NRADL questionnaire has high reliability for the assessment of patients with COPD. Further studies are required to examine the responsiveness of the questionnaire to interventions such as rehabilitation.

P3687**Airways questionnaire 20 (AQ20) is reliable but not complete to measure changes in health related quality of life (HRQL) after exercise training in COPD patients**

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Aim: to evaluate the reliability of AQ20 to measure changes in HRQL after exercise training in COPD patients.

Individuals and Methods: Thirty-one patients with mild to severe COPD (FEV₁=59±23%) were stratified to 3 types of exercise training programs: strength training (ST), endurance training or combined training (CT). Saint George's respiratory questionnaire (SGRQ) and AQ20 were assessed before and after training period. Improvements ≥ 4% were considered as quality of life improvement for both HRQL tools. Difference between mean values was assessed and percent changes (Δ), sensibility, specificity, and accuracy were calculated. The agreement between Δ AQ20 and Δ SGRQ domains was evaluated using the Bland-Altman approach.

Results: SGRQ total score showed improvement in all groups while AQ20 score presented improvement only in ST and CT groups. There was a positive correlation between Δ SGRQ total and Δ AQ20 (r=0.67; p<0.00001). 71% of patients showed HRQL improvement in SGRQ symptom, SGRQ activity and SGRQ total, 58% presented in SGRQ impact, and about 80% presented AQ20 score improvement. AQ20 score presented 90.47% of sensibility, 60% of specificity, and 80.64% of accuracy when compared with SGRQ total score. The mean difference between Δ AQ20 and Δ SGRQ total, Δ SGRQ symptom, Δ SGRQ activity and Δ SGRQ impact were 2% (CI: -21.5% - 25.4%), -1.2% (CI: -49.2% - 46.9%), 0% (CI: -32.1% - 32.1%) and 6.5% (CI: -23.9% - 37%), respectively.

Conclusions: AQ20 is a reliable tool to measure benefit of exercise training programs on HRQL in COPD patients; however, AQ20 is not as complete as SGRQ to assess all important domains of HRQL.