Seasonal variability in physical activity in healthy subjects and patients with early COPD

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Background: Physical activity (PA) is an important parameter related to morbidity in both patients with COPD and in healthy subjects. Little is known on the variability in PA measurements. We aimed at computing the intra-individual variability of PA assessments within one week and when measured 6 months apart in stable subjects.

Methods: 78 Subjects (Age 63±7 years; 6MWD 92±9% pred), including 45 healthy persons and 33 patients with COPD (23 GOLD I;10 GOLD II), were instructed to wear the SenseWear Armband during 7 consecutive days, six months apart, to measure PA. The difference in the average amount of steps (PAsteps) and the time spent in moderate PA (> 3 METS) (PAmod) were chosen as primary outcomes. The coefficient of variation (CV) was calculated for these 7 days. Outcomes are linked to the season of assessment.

Results: The CV for the number of steps was 33±14% and accounted 59±28% for PAmod. Table 1 provides an overview of physical activity at follow-up for the four seasons.
Conclusion: Our analysis indicates that, within one visit, the variability in PA is large. Average PA is reduced during autumn and winter time. Trials using PA as an outcome should take these seasonal fluctuations into account.

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Profile of physical activity in daily life in apparently healthy smokers and its correlation with exercise capacity and quality of life
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Objectives: To evaluate the characteristics of physical activity in daily life (PADL) in Brazilian smokers; and to study the factors which correlate with PADL in this population.

Methods: Eighty-three smokers with normal lung function (63 male, 20 female, 34 years old; 26 current smokers, 57 ex-smokers) and to study the factors which correlate with PADL in this population.

Results: PAsteps (steps/day) 7647 ± 2939 steps/day; 514 ± 2939 steps/day; 569 ± 52£ 125±97 20±306

Table 1. Group characteristics

<table>
<thead>
<tr>
<th>Group</th>
<th>Age (y)</th>
<th>6MWD (m)</th>
<th>FEV1 (L)</th>
<th>VO2max (% pred)</th>
<th>BODE</th>
<th>GOLD</th>
<th>Muscle strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>64±6</td>
<td>34±21</td>
<td>105±14</td>
<td>116±17**</td>
<td>62±8</td>
<td>76±4</td>
<td>76±5*</td>
</tr>
<tr>
<td>Active</td>
<td>63±5</td>
<td>34±21</td>
<td>105±14</td>
<td>116±17**</td>
<td>62±8</td>
<td>76±4</td>
<td>76±5*</td>
</tr>
<tr>
<td>Inactive</td>
<td>64±6</td>
<td>34±21</td>
<td>105±14</td>
<td>116±17**</td>
<td>62±8</td>
<td>76±4</td>
<td>76±5*</td>
</tr>
<tr>
<td>Smoke</td>
<td>63±5</td>
<td>34±21</td>
<td>105±14</td>
<td>116±17**</td>
<td>62±8</td>
<td>76±4</td>
<td>76±5*</td>
</tr>
<tr>
<td>Non-smoke</td>
<td>64±6</td>
<td>34±21</td>
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<td>76±4</td>
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</tr>
</tbody>
</table>

Conclusion: PADL level in GS correlated modestly with the 6MWT both in active and inactive subgroups. No differences were observed concerning exercise capacity, muscle force and BODE index. Modest but significant correlations were found between time spent during sedentary physical activity and age (r=0.32), BMI (r=0.28), fat mass (r=0.32), days/stay (r=0.56), time spent walking/day (r=0.48), total energy expenditure (r=0.43), FEV1 (r=0.36) and GOLD (r=0.33).

P283
Respiratory and peripheral muscle strength, functional capacity, dyspnea and physical activity levels in patients with COPD and heart failure
Meral Bosnak-Gucu1, Semra Savci1, Deniz Inal-Ince1, Hulya Arikän1, Erol Tülimen1, Melda Saglam 3, Naciye Vardar-Yagli3, Nurdan Korkmaz1, Kudret Aytemir4, Lütfi Cöplü 6, Lale Tokgözoglu4, Renato Vitorasso, Vanessa Probst, Fabio Pitta, Laboratório de Pesquisa em Fisioterapia Pulmonar (LIFP), Universidade Estadual de Londrina (UEL), Londrina, Paraná, Brazil

Objectives: To investigate differences between patients with COPD who achieve or not the minimum physical activity recommended by the American College of Sports Medicine (ACSM) according to age.

Methods: Physical activity in daily life (DynaPort monitor and SenseWear arm-brace); lung function, exercise capacity using six-minute walk test (6MWT), dyseana and quality of life (SF-36). Physical activity was evaluated using dynamometer, respiratory muscle strength (MIP and MEP) using a mouth pressure device, quadriceps femoris (QF) muscle strength using a hand held dynamometer, functional cap folding using six-minute walk test (6MWT), dyspnea and quality of life (SF-36). SF-36: 6METs, 6kg m-2). Groups were divided according to ACSM guideline in: active (70 min/stay; percentage of variance in the 6MWT distance was explained by MIP (R2=0.55), 6MWD (R2=0.04), gender (R2=0.02) and COPD (R2=0.02; total r=0.25).

Conclusion: PA is reduced in patients with mild COPD. Age, season of assessment and 6MWD are predictors of PA.

P284
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Physical activity in patients with COPD living alone or not: Preliminary results
Nadia A. Fernandes1,2, Thais Sant’Anna1, Carlos A. Camillo1,3, Anaísa C. Veronez1,2, Victória C. Escobar1, Vanessa S. Protib1,2, Fabio Pitta1,2, Flávio Proença, Fabio Pitta1,2, Demetria Kovelis, Juliana Zabatiero, Karina Furlanetto, Leandro Mantoani.

Background: Although patients with chronic obstructive pulmonary disease (COPD) are known to be physically inactive, we hypothesized that those living alone are less inactive in daily life than patients living in family in order to maintain their functional needs.

Objective: To compare the physical activities in daily life between patients with COPD either living alone or with their families.

Methods: Physical activities in daily life were evaluated in 10 patients living alone (4 male, 64 [61-68] years, FEV1, 39 [26-62]%pred, BMI 23 [21-30] kg/m2) and 10 paired patients living with their families (4 male, 66 [61-71] years, FEV1, 41 [30-49]%pred, BMI 22 [20-29] kg/m2) using a multiaxial accelerometer (MiniMod, Microresearch, the Netherlands) during 12 hours/day for two consecutive weekdays.

Other measurements were: spirometry, respiratory and peripheral muscle force (maximal respiratory pressures [MIP and MEP] and quadriceps one-repetition maximum test [1RM], respectively) and functional exercise capacity (6-minute walk test, 6MWT).

Results: The two groups had similar 6MWT, MEP, MIP and quadriceps 1RM. Time spent walking/day was 71 [37-112] min/day in patients living alone and 49 [19-80] min/day in patients living with their families (p=0.129). Moreover, patients living with their families tended to spend more time (p=0.124) vs 87 [48-177] min/day, p=0.093.

Conclusion: These preliminary results suggest that patients with COPD living alone are more active in daily life than patients living with their families, despite presenting similar functional exercise capacity and muscle force. This might be related to different treatment approach in patients living alone or with family.

Activity limitations in patients with chronic obstructive pulmonary disease
Naciye Vardar-Yagli1, Melda Saglam 1, Sema Savci2, Hulya Arikan 1, Deniz Inal-Ince1, Ebru Calik 1, Tulin Duger1, Meral Bosnak-Guclu 3, Naciye Vardar-Yagli1, Melda Saglam 1, Sema Savci2, Hulya Arikan 1, Deniz Inal-Ince1, Ebru Calik 1, Tulin Duger1, Meral Bosnak-Guclu 3, Naciye Vardar-Yagli1, Melda Saglam 1, Sema Savci2, Hulya Arikan 1, Deniz Inal-Ince1, Ebru Calik 1, Tulin Duger1, Meral Bosnak-Guclu 3, Naciye Vardar-Yagli1, Melda Saglam 1, Sema Savci2, Hulya Arikan 1, Deniz Inal-Ince1, Ebru Calik 1, Tulin Duger1, Meral Bosnak-Guclu 3.

Aim: Breathlessness causes limitations in activities of daily living (ADL) in COPD patients. The aims of the study were to determine most prevalent ADL limitations, and to analyze relationship between changes in occupational performance and dyspnea, respiratory and peripheral muscle strength, fatigue and quality of life in COPD.

Materials and methods: Thirty-five COPD patients (FEV1 50.6 ± 17.3% predicted) with modified Medical Research Council dyspnea (MMRC) and Fatigue Tolerance Questionnaire for nicotine dependence and smoking habits.

Result: Seventy seven percent of COPD patients reported difficulty in active recreation and 74% in community management, 60% in solitary activities as performance and satisfaction score on 1-10 point scale. Quadriceps and lifting and lowering containers on a shelf above the scapular waist and hanging. The Borg scale was used to verify dyspnea and fatigue.

Conclusion: Performance during this specific protocol, which is representative of some daily life tasks was not related to the MMRC. Preliminary data suggest that ventilatory and metabolic responses had no influence of inspiratory muscle capacity during this standardized protocol of ADL in patients with COPD.
Cystic Fibrosis (CF) is a chronic respiratory disease with a multisystemic involvement resulting in peripheral muscle fatigue. There are specific limitations that assess physical activity fatigue in children. Children Sport Fatigue Questionnaire (CSFQ) and Short Fatigue Questionnaire (SFQ).

Objectives: To valuate the Spanish version of both questionnaires in healthy sportive children and to measure the sensitivity of both tools on children with CF that follow regular physical activity.

Methodology: After the questionnaires translation and retro-translation, they were applied in 44 healthy sportive children twice. Sensitivity was measured in 20 children with CF and the results were compared with the Cystic Fibrosis Questionnaire Revised (CFQ-R).

Results: with children: age (12±2.6 years), BMI (19±2.7 kg/m²), Crohn index showed good consistency, 0.86 to 0.78. CSFQ and SFQ and intraclass correlation coefficient showed: 0.85 and 0.83, CSFQ and SFQ, respectively. CF: children: age (13±3.8 years), BMI (18±2.7 kg/m²). Significant correlations were obtained between CFQ-R and CSFQ: Physical 0.76, Body 0.66 and Role 0.85 for CFQ-R14+, Digestive 0.34 and Treatment 0.33 for CFQ-R Child. Correlations between CFQ-R and SFQ: Physical 0.53 and Role 0.54 for CFQ-R14+, and Treatment for CFQ-R Child.

Conclusion: The CSFQ and SFQ questionnaires are valid and reliable for assessing the fatigue caused by physical activity and being suitable for use in CF children that follow regular physical activity such as pulmonary rehabilitation.


Physical activity behaviour and sedentary time in persons with obstructive sleep apnea and obesity
Helena Igelström1,2, Margareta Emtner1,2, Eva Lindberg2, Pernilla Åsenlöf1.

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Physical activity (PA) is a relevant outcome in COPD. We developed a conceptual framework to guide the item generation of the PROactive instruments to measure PA in COPD. A prospective study, using factor analysis, is planned to evaluate whether these 3 themes of the PROactive instruments indeed represent different domains of PA or tatter one central concept, i.e. physical activity.

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Assessing COPD patients’ experiences of physical activity: From qualitative interviews to item generation
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Experiences of physical activity are similar among European COPD patients

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Background: The PROactive consortium aims to develop Patient Reported Outcome instruments capturing physical activity (PA) in COPD patients. Qualitative studies showed that amount of PA is important, yet, when developing items, one should ascertain that the specific activities representing this theme are relevant to all patients, irrespective of demographics or cultural background.

Methodology: Fifty five COPD patients with diverse demographic and disease characteristics from Belgium, the Netherlands, United Kingdom (Scotland) and Greece were enrolled in 8 focus groups (38.2% female; 61.6% gold stage I-II; 45% ≤ 65 years), with the aim to understanding how they experience PA. The proportion of patients who expressed difficulties with activities between countries, age groups and gender were compared using non-parametric statistics.

Results: The proportion of patients experiencing difficulties was similar between the 4 countries for walking, climbing stairs, chores, hobbies, carrying/lifting objects, and self-care activities. Significant differences were noted for cycling (p=0.007), which was an activity specific to the Netherlands and Belgium only; and for walking uphill (p=0.023), which was more common in Greece and Scotland, due to the country geographic characteristics. No differences between gender and age groups (≤ 65 vs. > 65 years) were detected.

Discussion: Physical activity is most likely a universal concept, as patients from diverse countries report similar activities that are affected when sharing their PA experiences. Activities that are only relevant to certain subgroups should not be selected as items in PROs on PA.

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