



ORIGINAL ARTICLE

Factors that influence physical activity in the daily life of male patients with chronic obstructive pulmonary disease[☆]



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KEYWORDS

Chronic obstructive pulmonary disease;
Activities of daily living;
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Abstract

Introduction: Chronic obstructive pulmonary disease (COPD) is a disease with great impact on the ability to carry out physical activity.

Objective: To identify the main factors that affect physical activity in the daily life of patients with COPD.

Methods: Physical activity in daily routine has been evaluated according to the *London Chest Activity of Daily Living* scale (LCADL) and the pedometer counting the number of steps per day, for a period of three days. Fifty-five male patients with a diagnosis of moderate to very severe COPD were included (aged 67 ± 9.6 years; FEV_1 $50.8 \pm 14.7\%$ predicted).

Results: Patients walked on average 4972 steps per day. Very severe COPD patients ($n=12$) walked much less than severe ($n=21$) and moderate ($n=22$) patients (respectively 3079.8 versus 4853.5 and 6118.1 steps per day, $p < 0.001$). The number of steps per day had a negative correlation with age, dyspnea (mMRC), depression, BODE index and pulmonary hyperinflation; and a positive correlation with the distance covered in the six-minute walk test (6MWT), forced expiratory volume in the first second (FEV_1), carbon monoxide diffusion capacity (DLCO), arterial oxygen saturation (SpO_2) and body mass index (BMI).

Conclusions: The main factors that correlated with limited physical activity in daily life routine of this group of COPD patients were dyspnea and 6 min walking distance. These patients form a sedentary group, with a low rate of daily physical activity, which is more evident in patients with GOLD spirometry stage IV. Although pedometer is simpler and less accurate than other devices, it can be used to detect significant restraints daily life physical activity of COPD patients.

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PALAVRAS-CHAVE

Doença Pulmonar
Obstrutiva Crônica;
Atividades da Vida
Diária;
Pedômetro

Fatores que influenciam a atividade física na vida diária dos doentes do sexo masculino com doença pulmonar obstrutiva crônica

Resumo

Introdução: A Doença Pulmonar Obstrutiva Crônica (DPOC) é uma doença com grande impacto na capacidade de realizar atividade física.

Objetivo: Identificar os principais fatores que influenciam a atividade física na vida diária dos doentes com DPOC.

Métodos: A atividade física na rotina diária foi avaliada de acordo com a escala *London Chest Activity of Daily Living* (LCADL) e a quantificação do número de passos por dia avaliada com pedômetro durante um período de 3 dias. Foram selecionados 55 doentes do sexo masculino com o diagnóstico de DPOC moderada a muito grave (com $67 \pm 9,6$ anos de idade e volume expiratório forçado no primeiro segundo (FEV1) $50,8 \pm 14,7\%$ do previsto).

Resultados: Os doentes andaram uma média de 4.972 passos por dia. Os doentes com DPOC muito grave (n=12) andaram muito menos do que os doentes com DPOC grave (n=21) e moderada (n=22) (respetivamente, 3.079,8 versus 4.853,5 e 6.118,1 passos por dia, $p < 0,001$). O número de passos por dia apresentou uma correlação negativa com a idade, dispneia (mMRC), depressão, índice BODE e hiperinsuflação pulmonar; e apresentou uma correlação positiva com a distância percorrida na prova de marcha de seis minutos (6MWT), FEV1, capacidade de difusão do monóxido de carbono (DLCO), saturação de oxigénio arterial (SpO2) e índice de massa corporal (IMC).

Conclusões: Os principais fatores que se correlacionaram com a limitação da atividade física na rotina da vida diária deste grupo de doentes com DPOC foram a dispneia e a distância percorrida na prova de marcha dos 6 minutos. Estes doentes formam um grupo sedentário, com uma taxa reduzida de atividade física diária, o que é mais evidente em doentes com espirometria de estágio GOLD IV. Embora o pedômetro seja mais simples e menos preciso que outros dispositivos, pode ser usado para detetar restrições significativas da atividade física na vida diária dos doentes com DPOC.

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Introduction

Monitoring of the daily physical activity in patients with COPD has been a subject of study, since physical activity is known to be reduced^{1,2} due to multifactorial causes and worsened prognosis.

The present recommendations³ point out the benefits of moderately intense daily physical activity for at least 30 min 5 times/week (or 150 min/week) and considers those not meeting this goal as insufficiently active.

Physical activity in daily life can be measured with pedometers,⁴ which evaluate the vertical body movement, counting the number of steps during a certain period of time, during a recommended evaluation period of three days.⁵ Although less accurate than accelerometers, these devices provide a low-cost objective measurement of walking, a daily physical activity responsible for a great amount of the total energy expenditure.

Tudor-Locke and Bassett⁶ proposed the following indices of physical activity measured with a pedometer in adults: less than 5000 steps per day – “sedentary”; 5000–7499 steps per day – “low active”; 7500–10,000 steps per day – “somewhat active” and more than 10,000 steps per day – “active”.

The main goal of this study was to identify the factors that influence physical activity in the daily life in COPD patients. Secondary goals were: (1) to find out whether there

were differences in physical activity according to airways flow limitation (GOLD spirometry grade⁷); (2) to compare the number of steps per day measured with the pedometer and daily living activities (reported by London Chest of Activity Daily Living scale) and (3) to relate clinical, nutritional, psychological, lung function and exercise variables with daily living activities of COPD patients.

Methods**Sample**

This study included 55 moderate to very severe⁷ COPD patients, followed in the Pulmonology Unit and selected consecutively in a period of 7 months.

The inclusion criteria were: male sex; smoking history above 10 pack-years; COPD diagnosis; FEV₁/FVC% ratio less than 70% and FEV₁ less than 80% of predicted post-bronchodilation and stable disease (absence of exacerbation or change in treatment in the last three months). Exclusion criteria were other conditions that could also cause or enhance dyspnea (e.g. asthma, cardiovascular diseases), conditions that could impair physical activity performance (e.g. cerebrovascular, osteoarticular or psychiatric diseases) or already taking part in a pulmonary rehabilitation program.

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