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Publicações recentes.

Reabilitação respiratória.

Com uma introdução de
Chris Burtin, PT, PhD

Índice.

Reabilitação respiratória.

Resumos.

Reabilitação respiratória.
Introdução.

A reabilitação respiratória é uma intervenção multidisciplinar, global e baseada na evidência, que é habitualmente indicada para doentes sintomáticos, com dificuldade respiratória e com fadiga durante as atividades da vida diária. Estes sintomas são muitas vezes o resultado de redução da tolerância ao exercício e têm impacto importante na qualidade de vida. Curiosamente, a intolerância ao exercício mostra-se fortemente relacionada com a fraqueza muscular e com o sedentarismo, independentemente da função pulmonar [1,2]. Os benefícios da reabilitação respiratória na tolerância ao exercício, nos sintomas, na qualidade de vida relacionada com a saúde e com o índice de BODE, estão bem comprovados [3,4]. Realça-se ainda, que a reabilitação respiratória é custo-efetiva, estando associada a diminuição do número de dias de internamento hospitalar [5,6].

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O planeamento do programa é crucial para obter benefícios ótimos para a saúde. O treino com exercício é considerado a pedra basilar da reabilitação respiratória. Atualmente é recomendado um treino de exercício de características gerais, realizado com intensidade entre 60 a 100% da capacidade máxima de exercício, em função da atividade e do tipo de treino (ex. caminhada vs. pedalar; treino de endurance vs treino intervalado)[7].

A combinação de exercício de características gerais e de treino de força é considerada uma forma de obter melhores resultados simultaneamente na capacidade de endurance e de força[8]. A literatura indica que uma supervisão rigorosa do treino é crucial para atingir as intensidades de treino desejáveis, e consequentemente, obter os efeitos fisiológicos adequados[9].

Ainda que a importância do treino supervisionado com exercício seja indiscutível, um programa de reabilitação respiratória deve ter uma abordagem multidisciplinar. Além do treino com exercício, componentes como um suporte farmacológico adequado, a educação, o ensino de estratégias de auto-gestão (em termos de cessação tabágica, comportamentos de atividade física, deteção precoce de exacerbações, etc), suporte psicossocial, terapia ocupacional e nutrição, entre outras, têm sido


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descritas como importantes num programa de reabilitação[10].

Nos últimos anos tem sido colocado ênfase no aumento da atividade física diária como o resultado mais importante dos programas de reabilitação respiratória, dado que a melhoria na tolerância ao exercício e o aumento da atividade física durante o decorrer destes programas não se traduzem de imediato em mudança para um estilo de vida mais activo[11].

A investigação sobre o uso de entrevistas motivacionais, o uso de equipamento de monitorização da atividade física e intervenções que possam ser incorporadas facilmente no dia-a-dia (ex. marcha nórdica), proporcionam estratégias interessantes para aumentar a atividade física durante e após os programas de reabilitação[12,13].

A abordagem multidisciplinar deve ser ajustada a cada doente, isto é, deve ser individualizada de forma a ajudar na promoção da autogestão da doença crónica ao longo da vida, otimizando benefícios para a saúde a longo prazo. Reuniões regulares da equipa podem ajudar os profissionais de saúde na integração dos diferentes aspetos do processo de reabilitação do doente.

A importância da reabilitação respiratória multidisciplinar é hoje em dia bem reconhecida pelas principais sociedades respiratórias internacionais[14]. Infelizmente, na Europa apenas 30% dos doentes elegíveis são referenciados para a reabilitação respiratória[15]. A falta de conhecimento sobre a reabilitação respiratória e dos benefícios do exercício físico para a saúde poderá ser uma razão importante pela qual muitos médicos não referenciam os seus doentes.[16]

Tradicionalmente, os alvos de intervenção são os doentes estáveis, com doença moderada a muito grave. A evidência recente indica também que doentes com exacerbações agudas severas e indivíduos com DPOC ligeira, podem beneficiar com o treino de exercício e com a reabilitação respiratória[17,18].

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Abstract. Characteristics of physical activities in daily life in chronic obstructive pulmonary disease.

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Am J RespirCrit Care Med.
2005 May 1;171(9):972-7.

Quantification of physical activities in daily life in patients with chronic obstructive pulmonary disease has increasing clinical interest. However, detailed comparison with healthy subjects is not available. Furthermore, it is unknown whether time spent actively during daily life is related to lung function, muscle force, or maximal and functional exercise capacity.

We assessed physical activities and movement intensity with the DynaPort activity monitor in 50 patients (age 64 +/- 7 years; FEV1 43 +/- 18% predicted) and 25 healthy elderly individuals (age 66 +/- 5 years). Patients showed lower walking time (44 +/- 26 vs. 81 +/- 26 minutes/day), standing time (191 +/- 99 vs. 295 +/- 109 minutes/day), and movement intensity during walking (1.8 +/- 0.3 vs. 2.4 +/- 0.5 m/second2; $p < 0.0001$ for all), as well as higher sitting time (374 +/- 139 vs. 306 +/- 108 minutes/day; $p = 0.04$) and lying time (87 +/- 97 vs. 29 +/- 33 minutes/day; $p = 0.004$). Walking time was highly correlated with the 6-minute walking test ($r = 0.76$, $p < 0.0001$) and more modestly to maximal exercise capacity, lung function, and muscle force ($0.28 < r < 0.64$, $p < 0.05$).

Patients with chronic obstructive pulmonary disease are markedly inactive in daily life. Functional exercise capacity is the strongest correlate of physical activities in daily life.

PMID: 15665324
[PubMed - indexed for MEDLINE]

Abstract. Peripheral muscle weakness in patients with chronic obstructive pulmonary disease.

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Am J RespirCrit Care Med.
1998 Aug;158(2):629-34.

Peripheral muscle weakness is commonly found in patients with chronic obstructive pulmonary disease (COPD) and may play a role in reducing exercise capacity.

The purposes of this study were to evaluate, in patients with COPD: (1) the relationship between muscle strength and cross-sectional area (CSA), (2) the distribution of peripheral muscle weakness, and (3) the relationship between muscle strength and the severity of lung disease. Thirty-four patients with COPD and 16 normal subjects of similar age and body mass index were evaluated.

Compared with normal subjects, the strength of three muscle groups ($p < 0.05$) and the right thigh muscle CSA, evaluated by computed tomography (83.4 +/- 16.4 versus 109.6 +/- 15.6 cm2, $p < 0.0001$), were reduced in COPD. The quadriceps strength/thigh muscle CSA ratio was similar for the two groups. The reduction in quadriceps strength was proportionally greater than that of the shoulder girdle muscles ($p < 0.05$). Similar observations were made whether or not patients had been exposed to systemic corticosteroids in the 6-mo period preceding the study, although there was a tendency for the quadriceps strength/thigh muscle CSA ratio to be lower in patients who had received corticosteroids.

In COPD, quadriceps strength and muscle CSA correlated positively with the FEV1 expressed in percentage of predicted value ($r = 0.55$ and $r = 0.66$, respectively, $p < 0.0005$). In summary, the strength/muscle cross-sectional area ratio was not different between the two groups, suggesting that weakness in COPD is due to muscle atrophy. In COPD, the distribution of peripheral muscle weakness and the correlation between quadriceps strength and the degree of airflow obstruction suggests that chronic inactivity and muscle deconditioning are important factors in the loss in muscle mass and strength.

PMID: 9700144
[PubMed - indexed for MEDLINE]

Abstract. Pulmonary rehabilitation and the BODE index in COPD.

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EurRespir J.
2005 Oct;26(4):630-6.

The BODE index, which integrates body mass index, airflow limitation (forced expiratory volume in one second), dyspnoea and 6-min walk distance, predicts mortality in chronic obstructive pulmonary disease (COPD).

Pulmonary rehabilitation (PR) improves some components of BODE. It was hypothesised that changes in BODE may reflect the effects of PR. To test this, participation in PR was offered to 246 patients (BODE quartiles 2-4). The patients were divided as follows: no PR (130 who declined rehabilitation or who dropped out from PR), and PR (116 who completed PR). BODE was determined at entry, after PR, and at 1 and 2 yrs. Other outcomes were: length of stay (LOS) for respiratory-related hospitalisations and mortality.

At entry, the two groups had similar age and comorbidity but different BODE. After PR, the BODE improved by 19% and returned to baseline after 2 yrs. The BODE worsened in the no PR group by 4% at 12 months and 18% at 2 yrs. Respiratory mortality at 2 yrs for PR was 7%, compared with 39% for no PR. LOS at 1 yr for COPD decreased 20% in PR, while it increased 25% in no PR. In conclusion, pulmonary rehabilitation participation improves BODE and is associated with better outcomes. The BODE index change after pulmonary rehabilitation provides valuable prognostic information.

PMID: 16204593
[PubMed - indexed for MEDLINE]

Abstract. Pulmonary rehabilitation for chronic obstructive pulmonary disease.

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Cochrane Database Syst Rev.
2006 Oct 18;(4):CD003793.

BACKGROUND:
The widespread application of pulmonaryrehabilitation in chronic obstructive pulmonary disease (COPD) should be preceded by demonstrable improvements in function attributable to the programs. This review updates that reported in 2001.

OBJECTIVES:
To determine the impact of rehabilitation on health-related quality of life (QoL) and exercise capacity in patients with COPD.

SEARCH STRATEGY:
We identified additional RCTs from the Cochrane Airways Group Specialised Register. Searches were current as of July 2004.

SELECTION CRITERIA:
We selected RCTs of rehabilitation in patients with COPD in which quality of life (QoL) and/or functional (FEC) or maximal (MEC) exercise capacity were measured. Rehabilitation was defined as exercise training for at least four weeks with or without education and/or psychological support. Control groups received conventional community care without rehabilitation.

DATA COLLECTION AND ANALYSIS:
We calculated weighted mean differences (WMD) using a random-effects model. We requested missing data from the authors of the primary study.

MAIN RESULTS:
We included the 23 randomized controlled trials (RCTs) in the 2001 Cochrane review. Eight additional RCTs (for a total of 31) met the inclusion criteria. We found statistically significant improvements for all the outcomes. In four important domains of QoL (Chronic Respiratory Questionnaire scores for Dyspnea, Fatigue, Emotional function and Mastery), the effect was larger than the minimal clinically important difference of 0.5 units (for example: Dyspnoea score: WMD 1.0 units; 95% confidence interval: 0.8 to 1.3 units; n = 12 trials). Statistically significant improvements were noted in two of the three domains of the St. Georges Respiratory Questionnaire. For FEC and MEC, the effect was small and slightly below the threshold of clinical significance for the six-minute walking distance (WMD: 48 meters; 95% CI: 32 to 65; n = 16 trials).

AUTHORS' CONCLUSIONS:
Rehabilitation relieves dyspnea and fatigue, improves emotional function and enhances patients' sense of control over their condition. These improvements are moderately large and clinically significant. Rehabilitation forms an important component of the management of COPD.

PMID: 17054186
[PubMed - indexed for MEDLINE]

Abstract. Cost effectiveness of an outpatient multidisciplinary pulmonary rehabilitation programme.

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Thorax.
2001 Oct;56(10):779-84.

BACKGROUND:
Pulmonaryrehabilitation programmes improve the health of patients disabled by lung disease but their cost effectiveness is unproved. We undertook a cost/utility analysis in conjunction with a randomised controlled clinical trial of pulmonaryrehabilitation versus standard care.

METHODS:
Two hundred patients, mainly with chronic obstructive pulmonary disease, were randomly assigned to either an 18 visit, 6 week rehabilitation programme or standard medical management. The difference between the mean cost of 12 months of care for patients in the rehabilitation and control groups (incremental cost) and the difference between the two groups in quality adjusted life years (QALYs) gained (incremental utility) were determined. The ratio between incremental cost and utility (incremental cost/utility ratio) was calculated.

RESULTS:
Each rehabilitation programme for up to 20 patients cost pound 12,120. The mean incremental cost of adding rehabilitation to standard care was pound -152 (95% CI -881 to 577) per patient, p=NS. The incremental utility of adding rehabilitation was 0.030 (95% CI 0.002 to 0.058) QALYs per patient, p=0.03. The point estimate of the incremental cost/utility ratio was therefore negative. The bootstrapping technique was used to model the distribution of cost/utility estimates possible from the data. A high likelihood of generating QALYs at negative or relatively low cost was indicated. The probability of the cost per QALY generated being below pound 0 was 0.64.

CONCLUSIONS:
This outpatient pulmonaryrehabilitation programme produces cost per QALY ratios within bounds considered to be cost effective and is likely to result in financial benefits to the health service.

PMID: 11562517
[PubMed - indexed for MEDLINE]

Abstract. Results at 1 year of outpatient multidisciplinary pulmonary rehabilitation: a randomised controlled trial.

Griffiths TL, Burr ML, Campbell IA, Lewis-Jenkins V, Mullins J, Shiels K, Turner-Lawlor PJ, Payne N, Newcombe RG, Ionescu AA, Thomas J, Tunbridge J.

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Lancet.
2000 Jan 29;355(9201):362-8.

BACKGROUND:
Pulmonaryrehabilitation seems to be an effective intervention in patients with chronic obstructive pulmonary disease. We undertook a randomised controlled trial to assess the effect of outpatient pulmonaryrehabilitation on use of health care and patients' wellbeing over 1 year.

METHODS:
200 patients with disabling chronic lung disease (the majority with chronic obstructive pulmonary disease) were randomly assigned a 6-week multidisciplinary rehabilitation programme (18 visits) or standard medical management. Use of health services was assessed from hospital and general-practice records. Analysis was by intention to treat.

FINDINGS:
There was no difference between the rehabilitation (n=99) and control (n=101) groups in the number of patients admitted to hospital (40 vs 41) but the number of days these patients spent in hospital differed significantly (mean 10.4 [SD 9.7] vs 21.0 [20.7], p=0.022). The rehabilitation group had more primary-care consultations at the general-practitioner's premises than did the control group (8.6 [6.8] vs 7.3 [8.3], p=0.033) but fewer primary-care home visits (1.5 [2.8] vs 2.8 [4.6], p=0.037). Compared with control, the rehabilitation group also showed greater improvements in walking ability and in general and disease-specific health status.

INTERPRETATION:
For patients chronically disabled by obstructive pulmonary disease, an intensive, multidisciplinary, outpatient programme of rehabilitation is an effective intervention, in the short term and the long term, that decreases use of health services.

PMID: 10665556
[PubMed - indexed for MEDLINE]

Abstract. Practical recommendations for exercise training in patients with COPD.

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EurRespir Rev.
2013 Jun 1;22(128):178-86.

The aim of this article was to provide practical recommendations to healthcare professionals interested in offering a pulmonaryrehabilitation programme for patients with chronic obstructive pulmonary disease (COPD). The latest research findings were brought together and translated into clinical practice. These recommendations focus on the description of useful assessment tests and of the most common exercise modalities for patients with COPD.

We provide specific details on the rationale of why and especially how to implement exercise training in patients with COPD, including the prescription of training mode, intensity and duration, as well as suggestions of guidelines for training progression.

PMID: 23728873
[PubMed - in process]

Abstract. Comparison of effects of supervised versus self-monitored training programmes in patients with chronic obstructive pulmonary disease.

Puente-Maestu L, Sánz ML, Sánz P, Cubillo JM, Mayol J, Casaburi R.

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EurRespir J.
2000 Mar;15(3):517-25.

The effects of two 8 week programmes of reconditioning in chronic obstructive pulmonary disease (COPD) patients were studied. Forty one subjects (mean+/-SD) 644.5) yrs; forced expiratory volume in one second (FEV1) 1.09+/-0.16 L; 40.6+/-6.2% predicted were randomly assigned either to supervised training on a treadmill, 4 days x week(-1) (group S; n=21) or walking 3 or 4 km in 1 h 4 days x week(-1), self-monitored with a pedometer, with weekly visits to encourage adherence (group SM; n=20).

Patients were evaluated with the chronic respiratory diseases questionnaire (CRQ) and two exercise tests on a treadmill: incremental (IT) and constant (CT), above lactic threshold or 70% of maximal oxygen uptake (VO2, max) with arterial blood lactate determinations.

Estimated mean work rate of training was 69+/-27 W and 25+/-5 W respectively for groups S and SM. Both types of training produced similar changes in the four dimensions of the CRQ. In group S reconditioning yielded significant ($p<0.05$) increases in VO2, max and increases in duration, with decreased lactate accumulation, ventilation, CO2 output (VCO2), heart rate (HR) and diastolic blood pressure (DBP) at the end of CT. They also adopted a deeper slower pattern of breathing during exercise.

The SM group showed significant ($p<0.05$) increases in duration, lower HR and DBP at the end of CT. Significantly ($p<0.05$) different effects between S and SM programmes were changes in VO2, max 100+/-101 mL x min(-1) versus 5+/-101 mL x min(-1)), duration of the CT (8.1+/-4.4 min versus 3.9+/-4.7 min), VCO2 (-94+/-153 mL x min(-1) versus 48+/-252 mL x min(-1)), lactate accumulation (-1.3+/-2.2 mmol x L(-1) versus 0+/-1.2 mmol x L(-1) and respiratory rate at the end of CT (4.3+/-3.4 min(-1) versus -1+/-4.2 min(-1)). Supervised, intense training yields physiological improvements in severe chronic obstructive pulmonary disease patients not induced by self-monitored training.

The self-monitored, less intense training, increases submaximal exercise endurance, although to a lesser degree.

PMID: 10759446
[PubMed - indexed for MEDLINE]

Abstract. Comparison of effects of strength and endurance training in patients with chronic obstructive pulmonary disease.

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Am J RespirCrit Care Med..
2002 Sep 1;166(5):669-74.

We determined the effect of different exercise training modalities in patients with chronic obstructive pulmonary disease, including strength training (n = 17), endurance training (n = 16), and combined strength and endurance (n = 14) (half of the endurance and half of the strengthening exercises).

Data were compared at baseline, the end of the 12-week exercise-training program, and 12 weeks later. Improvement in the walking distance was only significant in the strength group. Increases in submaximal exercise capacity for the endurance group were significantly higher than those observed in the strength group but were of similar magnitude than those in the combined training modality, which in turn were significantly higher than for the strength group. Increases in the strength of the muscle groups measured in five weight lifting exercises were significantly higher in the strength group than in the endurance group but were of similar magnitude than in the combined training group, which again showed significantly higher increases than subjects in the endurance group.

Any training modality showed significant improvements of the breathlessness score and the dyspnea dimension of the chronic respiratory questionnaire. In conclusion, the combination of strength and endurance training seems an adequate training strategy for chronic obstructive pulmonary disease patients.

PMID: 12204863
[PubMed - indexed for MEDLINE]

Abstract. The importance of components of pulmonary rehabilitation, other than exercise training, in COPD.

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EurRespir Rev.
2013 Sep 1;22(129):405-413.

Comprehensive pulmonaryrehabilitation is an important component in the clinical management of people with chronic obstructive pulmonary disease (COPD).

Although supervised exercise training is considered the cornerstone of effective pulmonaryrehabilitation, there are many other components that should be considered to manage the impairments and symptom burden, as well as the psychosocial and lifestyle changes imposed by COPD. These include approaches designed to: 1) facilitate smoking cessation; 2) optimise pharmacotherapy; 3) assist with early identification and treatment of acute exacerbations; 4) manage acute dyspnoea; 5) increase physical activity; 6) improve body composition; 7) promote mental health; 8) facilitate advance care planning; and 9) establish social support networks.
This article will describe these approaches, which may be incorporated within pulmonaryrehabilitation, to optimise effective chronic disease self-management.

PMID: 23997066
[PubMed - in process]

Abstract. Does exercise training change physical activity in people with COPD? A systematic review and meta-analysis.

Cindy Ng LW, Mackney J, Jenkins S, Hill K.

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ChronRespir Dis.
2012 Feb;9(1):17-26.

A systematic review and meta-analysis was conducted to examine the effect of exercise training on daily physical activity (PA) in people with chronic obstructive pulmonary disease (COPD). MEDLINE, PubMed, EMBASE, CINAHL, Physiotherapy Evidence Database (PEDro) and Cochrane Central Register of Controlled Trials were searched from their inception to week 27 of 2010, using the keywords ‚COPD,' ‚exercise,' ‚therapy' and ‚physical activity.'

All studies except case reports were eligible for inclusion provided they investigated the effects of ≥4 weeks of supervised exercise training on PA in patients with COPD. Study quality for the randomised trials (RTs) and single-group interventional studies was rated using the PEDro scale and Downs and Black Tool, respectively. No randomised controlled trials met our study criteria.

The two RTs had a mean PEDro score of 5. The 5 single-group studies had a mean Downs and Black score of 19 ± 3. When combined, a small effect on PA outcomes was demonstrated (overall mean effect = 0.12; p = 0.01). Taken together, the RTs and single-group studies demonstrate that exercise training may confer a significant but small increase in PA.

PMID: 22194629
[PubMed - indexed for MEDLINE]

Abstract. The effects of a lifestyle physical activity counseling program with feedback of a pedometer during pulmonary rehabilitation in patients with COPD: a pilot study.

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Institute of Human Movement Sciences, University of Groningen, Anton Deusinglaan 1, P.O. Box 196, 9700 AD Groningen, The Netherlands.

Patient EducCouns.
2006 Apr;61(1):48-55.

OBJECTIVE:
To study the effects of a lifestyle physical activity counseling program with feedback of a pedometer during pulmonary rehabilitation.

METHODS:
Twenty-one chronic obstructive pulmonary disease (COPD) patients were randomized to an experimental group that followed a regular rehabilitation program plus the counseling intervention or to a control group that only followed rehabilitation. The primary outcome was daily physical activity assessed by pedometers. Secondary outcomes were physical fitness, health-related quality of life, activities of daily living, depression and self-efficacy.

RESULTS:
The experimental group showed an increase of 1,430 steps/day (+69% from baseline), whereas the control group showed an increase of 455 steps/day (+19%) ($p = 0.11$ for group x time interaction). The secondary outcomes showed no differences.

CONCLUSION AND PRACTICE IMPLICATIONS:
This study showed that the use of the pedometer, in combination with exercise counseling and the stimulation of lifestyle physical activity, is a feasible addition to pulmonary rehabilitation which may improve outcome and maintenance of rehabilitation results.

PMID: 16455222
[PubMed - indexed for MEDLINE]

Abstract. Nordic walking improves daily physical activities in COPD: a randomised controlled trial.

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Respir Res.
2010 Aug 22;11:112.

BACKGROUND:
In patients with COPD progressive dyspnoea leads to a sedentary lifestyle. To date, no studies exist investigating the effects of NordicWalking in patients with COPD. Therefore, the aim was to determine the feasibility of NordicWalking in COPD patients at different disease stages. Furthermore we aimed to determine the short- and long-term effects of NordicWalking on COPD patients' daily physical activity pattern as well as on patients exercise capacity.

METHODS:
Sixty COPD patients were randomised to either NordicWalking or to a control group. Patients of the NordicWalking group (n = 30; age: 62 +/- 9 years; FEV1: 48 +/- 19% predicted) underwent a three-month outdoor NordicWalking exercise program consisting of one hour walking at 75% of their initial maximum heart rate three times per week, whereas controls had no exercise intervention. Primary endpoint: daily physical activities (measured by a validated tri-axial accelerometer); secondary endpoint: functional exercise capacity (measured by the six-minute walking distance; 6MWD). Assessment time points in both groups: baseline, after three, six and nine months.

RESULTS:
After three month training period, in the NordicWalking group time spent walking and standing as well as intensity of walking increased (Delta walking time: +14.9 +/- 1.9 min/day; Delta standing time: +129 +/- 26 min/day; Delta movement intensity: +0.40 +/- 0.14 m/s2) while time spent sitting decreased (Delta sitting time: -128 +/- 15 min/day) compared to baseline (all: $p < 0.01$) as well as compared to controls (all: $p < 0.01$). Furthermore, 6MWD significantly increased compared to baseline (Delta 6MWD: +79 +/- 28 meters) as well as compared to controls (both: $p < 0.01$). These significant improvements were sustained six and nine months after baseline. In contrast, controls showed unchanged daily physical activities and 6MWD compared to baseline for all time points.

CONCLUSIONS:
NordicWalking is a feasible, simple and effective physical training modality in COPD. In addition, NordicWalking has proven to positively impact the daily physical activity pattern of COPD patients under short- and long-term observation.

PMID: 20727209
[PubMed - indexed for MEDLINE]

Abstract. Barriers to, and facilitators for, referral to pulmonary rehabilitation in COPD patients from the perspective of Australian general practitioners: a qualitative study.

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Prim Care Respir J.
2013 Sep;22(3):319-24.

BACKGROUND:
Pulmonaryrehabilitation (PR) is recommended in the management of people with chronic obstructive pulmonary disease (COPD), but referral to this service is low.

AIMS:
To identify barriers to, and facilitators for, referral to PR programmes from the perspective of Australian general practitioners.

METHODS:
Semi-structured interviews were conducted with general practitioners involved in the care of people with COPD. Interview questions were informed by a validated behavioural framework and asked about participants' experience of referring people with COPD for PR, and barriers to, or facilitators of, this behaviour. Interviews were audiotaped, transcribed verbatim, and analysed using content analysis.

RESULTS:
Twelve general practitioners participated in this study, 10 of whom had never referred a patient to a PR programme. Four major categories relating to barriers to referral were identified: low knowledge of PR for COPD; low knowledge of how to refer; actual or anticipated access difficulties for patients; and questioning the need to do more to promote exercise behaviour change. Awareness of benefit was the only current facilitator. Three major categories of potential facilitators were identified: making PR part of standard COPD care through financial incentive; improving information flow with regard to referrals and services; and informing patients and public.

CONCLUSIONS:
Significant barriers to referral exist, but opportunities to change the organisation of practice and information management were identified. Behaviour change strategies which directly target these barriers and incorporate facilitators should make up the key components of interventions to improve referral to PR by general practitioners who care for people with COPD.

PMID: 23797679
[PubMed - in process]

Abstract. Rehabilitation and acute exacerbations.

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EurRespir J.
2011 Sep;38(3):702-12.

Recent evidence indicates that acute exacerbations of chronic obstructive pulmonary disease aggravate the extrapulmonary consequences of the disease. Skeletal muscle dysfunction, a sustained decrease in exercise tolerance, enhanced symptoms of depression and fatigue are reported.

Avoidance of physical activities is likely to be a key underlying mechanism and increases the risk of new exacerbations. Pulmonary rehabilitation is an intervention targeting these systemic consequences. Exercise strategies need to be adapted to the increased feelings of dyspnoea and fatigue.

This review aims to describe the systemic consequences of acute exacerbations and compiles evidence for the feasibility and effectiveness of different rehabilitation strategies to counteract these consequences during and/or immediately after the acute phase of the exacerbation.

Resistance training and neuromuscular electrical stimulation have been applied safely in frail, hospitalised patients and have the potential to prevent muscle atrophy. Comprehensive pulmonary rehabilitation, including general exercise training, can be implemented immediately after the exacerbation, leading to a reduction in hospital admissions and an increase in exercise tolerance and quality of life.

Self-management strategies play a crucial role in changing disease-related health behaviour and preventing hospital admissions.

PMID: 21719481
[PubMed - indexed for MEDLINE]

Abstract. Pulmonary rehabilitation for mild chronic obstructive pulmonary disease: a 1 systematic review.

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Respir Care.
2013 Oct 8.

INTRODUCTION:
PulmonaryRehabilitation (PR) is effective in improving exercise capacity and health-related quality of life in patients with moderate-to-very-severe COPD. Quadriceps strength and health-related quality of life (HRQL) can be impaired in patients with mildCOPD, therefore, patients at this grade may already benefit from PR. However, the impact of PR in mildCOPD remains unestablished. Thus, this systematic review assessed the impact of PR on exercise capacity, HRQL, healthcare resource use and lung function in patients with mildCOPD.

METHODS:
The Web of knowledge, EBSCO, MEDLINE and SCOPUS databases were searched up to April 2013. Reviewers independently selected studies according to the eligibility criteria.

RESULTS:
Three studies with different designs (retrospective, one group pretest-posttest and randomized control trial) were included. Outpatient PR programs were implemented in two studies, which included mainly aerobic, strength and respiratory muscle training. The randomized control trial compared a PR home-based program, consisting of 6 months of walking and ball game activities, with standard medical treatment. Significant improvements on exercise capacity (effect size-ES 0.874 and 1.816) and HRQL (ES from 0.236 to 0.860) were found when comparing pre-post data and when comparing PR with standard medical treatment. In one study, a significant decrease in hospitalization days was found (ES 0.380). No significant effects were observed on the number of emergency department visits (ES 0.320), number of hospitalizations (ES 0.219) or lung function (ES 0.198).

CONCLUSION:
Most of the PR programs had significant positive effects on exercise capacity and HRQL of patients with mildCOPD however, their effects on healthcare resource use and lung function were inconclusive. This systematic review suggests that patients with mildCOPD may benefit from PR; however insufficient evidence is still available. Studies with robust designs and with longer follow-ups should be conducted.

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