The components of a respiratory rehabilitation program: a systematic overview
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Authors' objectives
To determine the contribution of the various components of a rehabilitation program to the improvement of exercise capacity and health-related quality of life (HRQL), in patients with chronic obstructive pulmonary disease (COPD).

Searching
MEDLINE was searched from 1966 to April 1996. Additional material was obtained by examining conference abstracts, reference lists of retrieved articles and an official statement from the American Thoracic Society on the management of COPD, and by contacting experts. Only English language articles were included.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were included. Other study designs were also discussed where appropriate.

Specific interventions included in the review
Respiratory rehabilitation, either in-patient, out-patient or home-based, which included systemic exercise therapy with or without education and/or psychosocial support.

Participants included in the review
Patients with a clinical diagnosis of COPD. In- and out-patients are included.

Outcomes assessed in the review
Exercise capacity (based on maximal exercise capacity tests and functional exercise capacity tests), HRQL, and compliance and knowledge about the disease.

How were decisions on the relevance of primary studies made?
The papers were selected for review by two independent reviewers.

Assessment of study quality
The trials were assessed using a validated scale, in addition to other criteria relating to blinded assessment of outcomes and allocation concealment. The papers were assessed for validity by two independent reviewers.

Data extraction
The data were extracted by two independent reviewers.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative review.

How were differences between studies investigated?
Differences between the studies were investigated narratively.

Results of the review
Twenty-two trials (877 patients in total) were included.
Exercise.

1. Intensity of training: 2 studies in patients with mild or moderate COPD were identified, which suggested that patients could achieve maximal physiological training by establishing individual training intensities at or above the anaerobic threshold. However, there was no evidence that this influenced relevant health outcomes.

2. Upper limb training: 1 trial compared upper-limb with lower-limb training and with a combination of both. The treatment effect due to upper-limb training was small and of unknown clinical significance. Upper-extremity training improved arm-specific measures of exercise capacity, though there is no evidence that this has a different effect on HRQL to leg training alone.

3. Inspiratory muscle training as an adjunct to exercise training: the results from the 7 trials examining this intervention were mixed. The authors conclude that the evidence that inspiratory muscle training confers any additional benefit is equivocal.

4. Other types of breathing exercises: the identified trials have presented few details of the intervention, or have had methodological problems. There is, therefore, only weak evidence that patients with COPD may gain from specific breathing exercises such as those used in yoga or t’ai chi.

Education.

There is an absence of valid RCTs, though a non-randomised study was found that showed no association between health education programmes and any health status measure.

Psychological interventions alone, or as an adjunct to exercise training.

The trials assessed had either methodological problems, or showed non significant (statistically or clinically) effects on health-related outcomes such as anxiety or dyspnea. While relaxation was shown to relieve dyspnea in the short term, it is unknown whether there are any long-term benefits. Cognitive and behavioural modification techniques are effective in improving exercise tolerance and HRQL.

Authors’ conclusions
The real treatment effects of most interventions could not be estimated. However, exercise training should be a mandatory component of any rehabilitation programme that seeks to improve functional exercise capacity and HRQL, though the additional benefit of individualised or high-intensity training is presently unknown. Psychosocial support will reduce breathlessness for a short time and may promote patient compliance.

CRD commentary
This is a high-quality review which clearly links its conclusions to the quality of the included studies.

Bibliographic details

PubMedID
9106590

DOI
10.1378/chest.111.4.1077

Original Paper URL
Indexing Status
Subject indexing assigned by NLM

MeSH
Breathing Exercises; Exercise Therapy; Exercise Tolerance; Humans; Lung Diseases, Obstructive /rehabilitation; Patient Education as Topic; Quality of Life; Social Support

AccessionNumber
11997000553

Date bibliographic record published
31/05/1998

Date abstract record published
31/05/1998

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.