Cochrane Library

**Cochrane** Database of Systematic Reviews

# Self-management education for chronic obstructive pulmonary disease (Review)

Monninkhof E, van der Valk PP, van der Palen JJ, van Herwaarden CLA, Partidge MR, Walters EH, Zielhuis GG, van Herwaarden KC, Partridge MM

Monninkhof E, van der Valk PP, van der Palen JJ, van Herwaarden CLA, Partidge MR, Walters EH, Zielhuis GG, van Herwaarden KC, Partridge MM.

Self-management education for chronic obstructive pulmonary disease.

*Cochrane Database of Systematic Reviews* 2002, Issue 4. Art. No.: CD002990.

DOI: 10.1002/14651858.CD002990.

**www.cochranelibrary.com**




WILEY

## TABLE OF CONTENTS


HEADER . . . . . 1
ABSTRACT . . . . . 1
PLAIN LANGUAGE SUMMARY . . . . . 2
BACKGROUND . . . . . 2
OBJECTIVES . . . . . 3
METHODS . . . . . 3
RESULTS . . . . . 4
DISCUSSION . . . . . 6
AUTHORS' CONCLUSIONS . . . . . 7
ACKNOWLEDGEMENTS . . . . . 7
REFERENCES . . . . . 8
CHARACTERISTICS OF STUDIES . . . . . 10
DATA AND ANALYSES . . . . . 26
Analysis 1.1. Comparison 1 Self-management versus control, Outcome 1 HRQOL: SGRQ Total + domains. . . . 27
Analysis 1.3. Comparison 1 Self-management versus control, Outcome 3 Doctor and nurse visits: mean number per person per year. . . . . 28
Analysis 1.4. Comparison 1 Self-management versus control, Outcome 4 Excercise capacity: 6MW. . . . . 28
Analysis 1.5. Comparison 1 Self-management versus control, Outcome 5 Lung function: FEV1%pred. . . . . 29
Analysis 1.6. Comparison 1 Self-management versus control, Outcome 6 Days lost from work: mean number per person per year. . . . . 30
Analysis 1.7. Comparison 1 Self-management versus control, Outcome 7 General HRQOL: SIP Total score. . . . 30
Analysis 1.8. Comparison 1 Self-management versus control, Outcome 8 General HRQoL: SIP physical. . . . . 31
Analysis 1.9. Comparison 1 Self-management versus control, Outcome 9 General HRQoL : SIP psychosocial. . . . 32
Analysis 1.10. Comparison 1 Self-management versus control, Outcome 10 Patients using at least one course of oral steroids. . . . . 32
Analysis 1.11. Comparison 1 Self-management versus control, Outcome 11 Hospital admissions: one or more. . . 33
FEEDBACK . . . . . 33
WHAT'S NEW . . . . . 34
HISTORY . . . . . 34
CONTRIBUTIONS OF AUTHORS . . . . . 34
DECLARATIONS OF INTEREST . . . . . 35
SOURCES OF SUPPORT . . . . . 35
INDEX TERMS . . . . . 36

[Intervention Review]

# Self-management education for chronic obstructive pulmonary disease

Evelyn Monninkhof[1], Paul P.D.L.P.M. van der Valk[2], Job J van der Palen[3], C LA van Herwaarden[4], M R Partidge[4], E. Haydn Walters [5], Gerhard G.A. Zielhuis[6], Kees C.L.A. van Herwaarden[7], Martyn M.R. Partridge[8]

[1]Julius Center for Health Sciences and Primary Care, Utrecht, Netherlands. [2]respiratory medicine, Medisch Spectrum Twente, Enschede, Netherlands. [3]Medisch Spectrum Twente, Enschede, Netherlands. [4]Other. [5]Clinical School, University of Tasmania, Hobart, Australia. [6]Epidemiology and Biostatistics, University Medical Centre Nijmegen, Other. [7]respiratory medicine, University Medical Centre Nijmegen, Other. [8]Faculty of Medicine, NHLI Division, Imperial College of Science Technology and Medicine, London, UK

Contact address: Evelyn Monninkhof, Julius Center for Health Sciences and Primary Care, Str.6.131 (PO Box 85500), University Medical Center, Utrecht, 3508 GA, Netherlands. E.Monninkhof@umcutrecht.nl.

**Editorial group:** Cochrane Airways Group.
**Publication status and date:** Unchanged, comment added to review, published in Issue 3, 2007.

**Citation:** Monninkhof E, van der Valk PP, van der Palen JJ, van Herwaarden CLA, Partidge MR, Walters EH, Zielhuis GG, van Herwaarden KC, Partridge MM. Self-management education for chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews* 2002, Issue 4. Art. No.: CD002990. DOI: 10.1002/14651858.CD002990.



## ABSTRACT

### Background

In asthma, self-management programmes have been proven to be effective. In COPD, their value is not clear.

### Objectives

To assess the efficacy of COPD self-management/ education programmes on health outcomes and use of health services

### Search methods

We searched the Cochrane Airways Group trial register, MEDLINE (January 1985 to October 2001), reference lists, and abstracts of medical conferences. We also contacted research groups in the field for ongoing trials and unpublished material.

### Selection criteria

Controlled trials (randomised and non-randomised) of self-management education in patients with COPD. Studies focusing mainly on physical pulmonary rehabilitation were excluded.

### Data collection and analysis

Two reviewers independently assessed trial quality and extracted data. Investigators were contacted for additional information.

### Main results

The reviewers included 12 articles describing eight randomised-controlled trials and one controlled clinical trial. Self-management education was compared with usual care in eight studies. The studies in this review assessed a broad-spectrum of outcome measures with different follow-up times. Synthesis of the results using meta-analysis was not always possible. The studies showed no effect of self-management education on hospital admissions, emergency room visits, days lost from work and lung function. Inconclusive results were observed on health-related quality of life (HRQoL): studies using the disease specific St. George's Respiratory Questionnaire (SGRQ) showed a better quality of life in the patients in the intervention group, but only in the activity component where there was

heterogeneity between the results of the two included studies. A potential reason for the absence of convincing effects on HRQoL is the limited use of COPD-specific instruments. Inconclusive results were observed on COPD-symptoms and use of other health care resources such as doctor and nurse visits. Self-management education reduced the need for rescue medication, and led to an increased use of courses of oral steroids and antibiotics for respiratory symptoms.

**Authors' conclusions**

The data available for this review are insufficient for forming recommendations. Further research on the effectiveness of self-management programmes should be focussed on behavioural change evaluated in well designed randomised controlled trials with standardised outcomes designed for use in COPD patients, and with long follow-up time so that definite conclusions can be made.

## PLAIN LANGUAGE SUMMARY

**There is insufficient evidence to determine whether self-management education for people with chronic obstructive pulmonary disease (COPD) is effective, and more research is needed**

Chronic Obstructive Pulmonary Disease (COPD) represents a considerable burden to the individual and his or her loved ones, and represents an increasing health burden globally. COPD is characterised by frequent fluctuations, and repeated severe exacerbations are common. The idea of self-management is to prevent exacerbations by means of life style adaptation and to give patients tools to treat their exacerbations in an early stage. It is not clear how much difference education about self-management makes to people with COPD. The medical literature was systematically searched to obtain studies assessing the effects of self-management education in people with COPD. Two reviewers independently assessed each paper for methodological quality and extracted the data. The data from this review are insufficient to formulate recommendations regarding the effectiveness of self-management education programmes for COPD, because of the broad variation of outcome measures used and other limitations to generalisations in the current published literature.

## BACKGROUND

Chronic Obstructive Pulmonary Disease (COPD) is a serious public health problem worldwide. The prevalence, morbidity and mortality are expected to rise, especially in countries with a rapidly aging population and even in populations with reduced smoking rates (Feenstra 2001). A study published by the World Bank / World Health Organisation reported that COPD is likely to rise from being the 12th most burdensome disease in 1990 to the 5th in 2020 (Murray 1996). This will place an enormous burden on the healthcare system and will also cause a loss in health-related quality of life for many COPD patients. Treatment for individuals with COPD is often primarily aimed at improving airflow obstruction by bronchodilator- and anti-inflammatory therapy, despite indications that airflow obstruction is irreversible and apparent lack of effect of pharmacological interventions on the progressive decline in health status. Despite optimal pharmacological treatment many COPD patients experience substantial functional impairment (Wouters 1999) . However, airflow obstruction correlates poorly with disease perception by the patient (Curtis 1994; Ketelaars 1996). COPD is a systemic inflammatory disease, and besides airflow limitation and hyperinflation, due to loss of elastic recoil, as well as intrinsic airway narrowing, systemic deficits such as skeletal and respiratory muscle dysfunction are prominent features. There is a growing need for other forms of therapy for COPD-patients, not only to control and alleviate symptoms and complications of respiratory dysfunction, but also to teach them how to optimally carry out the activities of daily living (ATS 1981) in the face of their physiological impairment. As the benefits from pharmacological interventions (perhaps other than oxygen) are limited, it is essential that the relative merits of self-management education are fully evaluated and any successful components for this intervention clearly identified.

In the treatment of asthma, patient education and self-management programmes have proven to be successful, at least when combined with regular review, in reducing the economic burden of disease, as well as in improving quality of life and lung function (Gibson 2000; Gallefoss 1999a; Lahdensuo 1996; Klein 2001 ). In COPD, pulmonary rehabilitation has been proven to increase exercise tolerance and quality of life (Goldstein 1994). The drawback is that pulmonary rehabilitation programmes will normally

be more expensive and time consuming for both professionals and patients, than self-management programmes, and may be less widely available.

Worth 1996 was the first to describe the effectiveness of a self-management programme aimed at acquisition by the patient of self-management skills and behavioural change. Unfortunately, this pilot study was uncontrolled and studied a small sample of COPD patients (N = 21). Impressive reductions in the frequency of exacerbations and home visits by the family doctor were observed, but no changes in lung function were found. Several controlled trials have been conducted to evaluate the effectiveness of COPD education and self-management education programmes. This review is being conducted to address the impact of those programmes on health outcomes and health-care utilisation, and to assess the influence of programme characteristics on health outcomes.

## OBJECTIVES

(1) To evaluate whether self-management education programmes in COPD leads to improved health outcomes.

(2) To evaluate whether self-management education programmes in COPD leads to a reduction of health care utilisation.

## METHODS

### Criteria for considering studies for this review

#### Types of studies

Studies were included if they were randomised controlled trials or controlled clinical trials, which assessed the efficacy of self-management education in COPD patients. Studies focusing mainly on pulmonary rehabilitation were excluded as well as studies before 1985. In the period before 1985, treatment of COPD was not comparable with current practice.

#### Types of participants

Patients with a clinical diagnosis of COPD and not asthma as primary diagnosis were included.

#### Types of interventions

The interventions were categorised according to whether or not they involved COPD education and/or self-treatment guidelines i.e. an action plan.
Operational definition of COPD education: a programme which transfers information about COPD and treatment of COPD in any of the following forms: written, verbal, visual or audio. Minimal education included the provision of written material alone or a short structured verbal interaction between a healthcare provider and a patient. However, it had to be embedded in a formal programme, in which the primary goal was to improve the knowledge and understanding of COPD. The educational programme might be directed towards smoking cessation, improving exercise, nutrition, self-treatment of exacerbations, inhalation technique or coping with the activities of daily living, or a combination of these.
Operational definition of self-treatment guidelines (action plan): a written plan produced for the purpose of patient self-management of COPD exacerbations. It informs patients about when and how to adjust and/or start medication in case of an exacerbation.

#### Types of outcome measures

Any of the following outcomes: health-related quality of life scores; symptom scores; number and severity of exacerbations; courses of oral steroids or antibiotics; use of rescue medication; hospital admissions; emergency room visits; use of other health care facilities; days lost from work; lung function; and exercise capacity.

### Search methods for identification of studies

We identified studies from the following sources:
Cochrane Airways Group trials register derived from MEDLINE (January 1985 to October 2001), EMBASE (January 1985 to October 2001), CINAHL (January 1985 to October 2001), hand searched respiratory journals and meeting abstracts. We searched the databases using the following terms: 'Self-Care' AND 'Lung-Diseases-Obstructive' AND (COPD OR chronic obstructive pulmonary disease OR emphysema OR chronic bronchitis) AND ('Patient-Education' OR self management OR self-management OR self management). After obtaining articles for inclusion, we handsearched the bibliographic lists for additional papers. We also contacted research groups in this field for unpublished and non-registered ongoing trials.

### Data collection and analysis

STUDY ELIGIBILITY
Two reviewers independently coded the studies from the above searches based on the abstract/keywords/ title:
(1) Include: Randomised Controlled Trial (RCT) or Controlled Clinical Trial (CCT), COPD, education/ self-management
(2) Possible RCT or CCT, but undetermined from the abstract
(3) Exclude: non-RCT or non-CCT, pulmonary rehabilitation
Two investigators independently assessed study eligibility, study quality and intervention types. Agreement was examined; disagreement was resolved if possible by consensus, and otherwise by consultation with a third reviewer. We included articles if they were

randomised or controlled clinical trials of COPD education, and reported relevant outcomes.

ANALYSIS

We analysed outcomes as continuous and/or categorical variables using standard statistical techniques.

(A) For continuous outcomes, the weighted mean difference (WMD) or standardised mean difference (SMD) with 95% -confidence intervals (CI) were calculated as appropriate

(B) Rates (relative risks(RR)/odds ratios(OR)) were pooled.

PRIMARY COMPARISON

The primary comparison was self-management versus usual care.

# RESULTS

## Description of studies

See: Table of included studies.

DOCUMENTED CHARACTERISTICS OF INCLUDED TRIALS

(1) Demographics: age, gender, socio-economic status

(2) Setting of intervention: primary care, hospital based, group education, individual education, community based

(3) Involvement of the partner in the intervention

(4) Duration of intervention: number of sessions, hours of teaching, time frame

(5) Inclusion of physical exercise: type, location, duration

(6) Sample size/power

(7) Disease severity

(8) Intermediate outcomes: COPD specific knowledge, skills, inhalation technique, smoking cessation, compliance

MISSING DATA

An attempt was made to contact the author to complete missing data. A reminder was sent if the author did not reply.

## Risk of bias in included studies

Two reviewers independently assessed the methodological quality of the included studies using the criteria list of Jadad 1996.

The quality variables recorded in the criteria list of Jadad were:

(1) procedure of allocation

(2) withdrawals/drop-outs

(3) blinding of patients and outcome assessment

In general, a maximum of five points could be obtained using this criteria list. As blinding is impossible when assessing behavioral interventions the maximum score is limited to three points. A higher score indicates better methodolological quality.

In addition we described the general quality of the data in the studies in terms of sample size, quality of the outcome assessment, length of the follow-up period, etc.

## Effects of interventions

INCLUSION

The search identified 395 (386 Cochrane database and nine hand searched) titles and abstracts that were screened to identify 33 potentially relevant articles about self-management education in COPD. We obtained full-text versions of these papers, and two reviewers independently assessed them. The reviewers included 12 articles describing eight randomised controlled trials and one controlled clinical trial.

Twenty-one articles were excluded for the following reasons: the design of the study was not a CCT or RCT (10); most of the patients had asthma as primary diagnosis (2); the studies were published before 1985 (2); the studies were primarily focused on pulmonary rehabilitation (6); or the outcome assessed was not appropriate (1).

MISSING DATA

Replies were received from all authors who are listed in the acknowledgement section. However, not all authors could provide us with the additional requested information.

QUALITY

The method to generate the sequence of randomisation was not clear in two of the eight randomised-controlled trials. The concealment of allocation was adequate in the other six RCTs. None of the interventions was double blind, because blinding of the patients with respect to study status is almost impossible in behavioural clinical trials. A description of withdrawals and dropouts was given in eight of the nine studies.

Five studies (( Gallefoss 1999a, Gallefoss 1999b, Gallefoss 2000a); Emery 1998; Watson 1997; Littlejohns 1991; Blake 1990) scored the maximum number of three quality points, three studies (Cockcroft 1987; (Gourley 1998, Solomon 1998); Sassi-Dambron 1995) two points and 1 (Howland 1986) study scored one point.

INTERVENTIONS

Eight of nine studies described COPD self-management education compared with usual care. One study compared a rehabilitation programme without exercise component with general health education (Sassi-Dambron 1995). In four studies the education delivery mode consisted of group education; in four of individual education and one study used written education material only. One intervention also assessed the use of an action plan for self-treatment of exacerbations. The follow-up time was 12 months in four studies ((Gallefoss 1999a, Gallefoss 1999b, Gallefoss 2000a ); Littlejohns 1991; Howland 1986; Blake 1990) ,10 months in one study (Cockcroft 1987), six months in three studies ((Gourley 1998, Solomon 1998); Watson 1997; Sassi-Dambron 1995) and two months in one study (Emery 1998).

COMPARISONS

Eight of the nine studies that compared self-management education with usual care as control have been included in this review.

SUBJECTS / RECRUITMENT

A total number of 1295 patients were randomised in the eight studies; 1106 patients completed these studies. The drop out rates

ranged from 0% to 22.4%.

Five studies recruited their patients from outpatient clinics; one study recruited from general practice, one from the community and one study recruited patients from a mix of these settings.

OUTCOMES

Number of studies reporting outcome:

(1) Health-related quality of life (HRQoL) (8)
(2) Symptoms (2)
(3) Number and severity of exacerbations (1)
(4) Courses of oral steroids and/or antibiotics (3)
(5) Use of rescue medication (1)
(6) Hospital admissions (4)
(7) Emergency room visits (1)
(8) Use of other health-care facilities (3)
(9) Days lost from work (2)
(10) Lung function (4)
(11) Exercise capacity (0)

HEALTH-RELATED QUALITY OF LIFE

Instruments for measurement of HRQoL differed widely among the studies. COPD-specific HRQoL by means of the St. George's Respiratory Questionnaire (SGRQ) was measured in two studies (Gallefoss 1999a; Watson 1997). SGRQ total scores and domain scores were all lower (indicating a better HRQoL) in the self-management education groups, but these differences did not reach clinical significance. The SGRQ-domain physical activity showed a significant and clinically relevant lower score (WMD -10, (95% CI: -18.5; -2.0); indicating a better HRQoL) in the self-management education group, but there was significant heterogeneity between these two studies (Chi Sq 12.54 p< 0.05).

General HRQoL was measured with the Sickness Impact Profile (SIP) in three studies (Blake 1990; Littlejohns 1991 ;Emery 1998). Data from these three studies were not suitable for meta-analysis and showed incongruent results. One study (Emery 1998) reported significant improvement in total function measured by the SIP for the control group. However, Blake 1990 showed better physical function and total function in favour of the intervention group, and Littlejohns 1991 showed a significant greater improvement in physical function in the intervention group. Other studies used the Health Status Questionnaire 2.0 (Gourley 1998), the General Health Questionnaire (Cockcroft 1987) and a self designed questionnaire (Howland 1986) (consisting of elements of the health locus of control scale, respiratory health questionnaire, Zung scales and SIP-scales) to measure general health status. In the latest two studies, general HRQoL was not significantly different between the self-management education and control group, although, Gourley 1998 showed significantly improved scores for the well-being dimension of the Health Status Questionnaire 2.0 in the intervention group.

SYMPTOMS

The effects of self-management education on COPD symptoms were examined in two studies (Solomon 1998; Watson 1997). Solomon 1998 assessed symptoms with different instruments: the BORG-scale measuring breathlessness on a 12-point scale and the Global Assessment Scale measuring symptom severity on a 6-point scale. BORG-scale scores indicated a positive direction of effect of self-management education on breathlessness, although no statistical significant differences were observed. The Global Assessment Scale showed a reduction (not statistically significant) in symptom severity in the self-management education group while in the control group no reduction was observed. In the study by Watson 1997 patients scored their respiratory status in symptom diaries on a four point scale (usual, mild, moderate, severe). They found no significant differences between groups in the proportion of days rated as mild, moderate and severe.

NUMBER AND SEVERITY OF EXACERBATIONS

One study (Littlejohns 1991) reported the number of exacerbations. However, no comparison could be made because they only mentioned the number of acute exacerbations in the intervention group. The other studies did not use COPD exacerbation rates as an outcome measure.

Outcome measures such as (increased) symptoms, use of rescue medication, hospitalisations and use of health care facilities can serve as proxy variables for exacerbations of COPD because these variables indicate worsening of COPD.

COURSES OF ORAL STEROIDS AND/OR ANTIBIOTICS

Three studies assessed the use of oral corticosteroids for respiratory problems (Gallefoss 1999b; Watson 1997; Littlejohns 1991). Gallefoss 1999b reported that 69% of patients in the intervention group registered steroid courses compared to 44% in the control group, with a median of three and four courses recorded during the study year, respectively. Littlejohns 1991 reported that 49% of the patients in the intervention group used oral steroids and 37% in the control group during the study year. Meta-analysis of these studies showed an increased use of oral steroid courses in the educated patients (Relative Risk 1.39, 95% CI 1.02 to 1.91). Watson 1997 analysed from symptom diaries the days on prednisolone as percentage of the days recorded. The intervention group spent 15% of the days recorded on prednisolone compared to 9% in the control group.

Use of antibiotics for respiratory problems was assessed in two studies (Watson 1997; Littlejohns 1991). Littlejohns et al. reported that 79% of the patients in the intervention group were prescribed antibiotics during the study year compared to 52% in the control group. Watson 1997 analysed from symptom diaries the days on antibiotics as a percentage of the days recorded. The intervention group spent 10% of the days recorded on antibiotics compared with 4% in the control group. Treatment differences in both studies were statistically significant.

USE OF RESCUE MEDICATION:

One study (Gallefoss 1999b) reported on the use of short-acting B2- agonist as rescue medication. Use of rescue medication was coded as the Defined Daily Dosages (DDD) for comparison of medications within the same chemical therapeutic group. In this study the educated patients received less than half the amount

of rescue medication (median DDD = 125) compared with the control group (median DDD = 290). This reduction is statistically significant.

HOSPITAL ADMISSIONS

Four studies reported COPD related hospitalisations (Gallefoss 2000a; Cockcroft 1987; Solomon 1998; Littlejohns 1991). Overall, these studies did not observe significant differences between the self management education group and the control group. Meta-analyses of two studies (Gallefoss 2000a; Littlejohns 1991) reporting data about the number of patients with one or more admissions, showed a non-significant reduction of hospitalisations in favour of the treatment group (Relative Risk 0.80, 95% CI 0.43 to 1.50).

EMERGENCY ROOM VISITS

One study (Solomon 1998) reported the effect of self-management education on emergency room (ER) visits. This study showed no significant differences in ER-visits between the self-management education and the control group: four weeks prior to the last follow-up visit the median number of ER-visits per patient was 0.15 and 0.17 respectively for the active and control group.

USE OF OTHER HEALTH CARE FACILITIES

Doctor and nurse visits were reported in three studies and used for meta-analysis (Gallefoss 2000a; Solomon 1998; Watson 1997). Two studies (Gallefoss 2000a; Solomon 1998) reported a reduction of these visits, and one study (Watson 1997) reported an increase in the self-management education group compared to the control group. However, this last study (Watson 1997) was only based on three and four visits in the intervention and control group respectively. There was heterogeneity among these studies (Chi Sq 8.48 $p < 0.05$). The overall weighted mean difference did not reach statistical significance at -0.36 (95% CI: -0.75 to 0.03) visits per year in favour of the treatment group.

DAYS LOST FROM WORK

One study (Gallefoss 2000a) reported no difference between groups in days lost from work. Almost 50% of the COPD-patients in this study were employed, and only three out of 14 and two out of 13 in the intervention and control group respectively, reported an absence from work. Blake 1990 found no between group differences in restricted activity days. Restricted activity days were defined as days in which work was missed or in which activities were significantly reduced because of health problems. So, this study assessed loss from paid and unpaid work which can be seen in the larger numbers reported.

LUNG FUNCTION

Lung function was assessed as the forced expiratory volume in 1 second as percent predicted of the normal value (FEV1%-predicted). Of the four studies (Gallefoss 2000a; Emery 1998; Watson 1997; Littlejohns 1991) which reported data on FEV1%-predicted three were entered as post treatment levels. One study (Littlejohns 1991) only reported mean within-group differences so the results were entered as % change in predicted FEV1. No significant difference in deterioration of FEV1%-predicted was seen between the intervention and control groups (Standardised Mean Difference -0.01, 95% CI -0.24 to 0.22).

EXERCISE CAPACITY

No study evaluated the effect of self-management education on exercise capacity.

## DISCUSSION

This review systematically evaluated eight studies of self management education for patients with COPD compared to usual care. The studies showed no effect of self-management education on hospital admissions, ER visits, days lost from work and lung function. Inconclusive results were observed on HRQoL. A potential reason for the absence of convincing effects on HRQoL is the limited use of COPD specific instruments. General HRQoL instruments may not be sensitive enough to detect differences in COPD patients. The studies using the disease specific SGRQ showed a trend towards better quality of life in the educated patients.

Days lost from work might not be an adequate outcome in COPD patients because many are in the older age groups and often retired. Since, in most COPD studies a minority of the patients undertake paid work, we think restricted activity days, indicating days in which the normal activities are reduced by the disease, would be a better outcome measure.

We did not expect to find an effect of self management education on lung function. The accelerated decline in pulmonary function in COPD patients is very difficult to affect. Smoking cessation is the only treatment that has so far been able to reduce this accelerated decline (Fletcher 1977).

Inconclusive results were observed on COPD symptoms and use of other health care facilities, such as doctor and nurse visits.

Self-management education did reduce the need for rescue medication. This may indicate that self-management education leads to a better disease control in COPD-patients. However, use of rescue medication was measured in only one study, so the strength of evidence for this observation is poor.

Self-management education led to an increased use of courses of oral steroids and/or antibiotics for respiratory symptoms. This apparent paradox does not mean that self management education leads to worsening of respiratory symptoms. Seemungal 2000 showed in a well designed study that in COPD patients 50% of the exacerbations were not reported to a doctor. Considering this, it is most likely that the educated patients were more conscious of worsening of their symptoms, and that the threshold for seeking help was decreased. For the future, it will be important to investigate potential beneficial effects (on HRQoL and/or prevention of hospital admissions) but also side effects of increased use of prednisolone over the long term. But to answer these questions there is a need for large studies with a long follow-up period.

The review also identified a number of limitations in the current published literature, which need to be considered:

(1) The studies in this review assessed a broad spectrum of outcome parameters with different follow-up periods. Meta-analytic comparisons could not readily be made. For the main part, we have been limited to describing the effects of self-management education on the different outcome parameters.

(2) The COPD population was defined in varying detail, and included different diagnostic criteria. This could have led to heterogeneity in disease severity. The mode of the self management education programmes varied from group education, individual education, to written education material only. Use of an action plan for self treatment of exacerbations was assessed in one study only. Considering the evidence in a review of asthma self-management (Gibson 2000), we believe that this could be an important part of a self-management education programme. Gibson 2000 showed positive effects on health outcomes of self management interventions in adult asthma patients, using an action plan and regular health practitioner follow-up whereas interventions without action plans were not always of obvious benefit.

(3) The span of 14 years over which the trials were conducted will have introduced changes to the educational contents and the mode of delivery and background therapy. Most studies were not aimed at improving self management skills or behavioural change. However, we believe that self management involves the transfer of knowledge as well as the acquisition by the patient of certain important skills which ultimately leads to a change in their behaviour. This is the only way education can have a long term impact on the daily life of the COPD patient because knowledge about the disease does not directly implicate behavioural change. A theoretical model of behaviour and behavioural change, for example the ASE-model (Bandura 1986), can be very helpful in designing a self-management programme. The programme should be focused on the core elements of behaviour change in the theoretical model (for example: enhancing self-efficacy expectations or social support).

Besides the aforementioned limitations in the literature, absence of positive results in most of the self management education studies could also be caused by non-reversibility of the disease. COPD is a less variable disease than for example asthma, and it is a disease where the scope for therapeutic interventions is much more limited and therefore it is intrinsically harder to show positive results.

# AUTHORS' CONCLUSIONS

## Implications for practice

The data abstracted by this review form an insufficient basis for the formulation of recommendations regarding the effectiveness of self-management programmes for COPD patients, because of the broad spectrum of outcome parameters and other important limitations in the current published literature.

## Implications for research

Future studies with sufficient sample size and longer follow-up time should focus on:

(1) the effects of self-management programmes that focus on acquisition of self-management skills and behavioural change;

(2) the core elements of such a self management programme;

(3) the effects of an action plan; and

(4) cost/benefit analysis of prednisolone courses in self management educated patients in the long run.

# ACKNOWLEDGEMENTS

We would like to thank the following authors for their assistance:

F. Gallefoss (Gallefoss 1999a, Gallefoss 1999b, Gallefoss 2000a )

A. Cockcroft (Cockcroft 1987)

I.Town (Watson 1997)

D. Gourley ( Worth 1996,Solomon 1998)

F. Emery (Emery 1998)

D. Sassi-Dambron (Sassi-Dambron 1995)

P. Littlejohns (Littlejohns 1991)

J. Howland (Howland 1986)

R. Blake (Blake 1990)

J. Bourbeau (Bourbeau)

H. Worth (Worth)

Also John Simpson and Ian Wallace for commenting on the synopsis of the review from a consumer perspective and Kirsty Olsen who has copy edited this review.

# REFERENCES

## References to studies included in this review


**Blake 1990** *{published data only}*
Blake RL Jr, Vandiver TA, Braun S, Bertuso DD, Straub V. A randomized controlled evaluation of a psychosocial intervention in adults with chronic lung disease. *Family Medicine* 1990;**22**:365–70.

**Cockcroft 1987** *{published data only}*
Cockcroft A, Bagnall P, Heslop A, Andersson N, Heaton R, Batstone J, et al. Controlled trial of respiratory health worker visiting patients with chronic respiratory disability. *British Medical Journal* 1987;**294**(6566):225–8.

**Emery 1998** *{published data only}*
Emery CF, Schein RL, Hauck ER, MacIntyre NR. Psychological and cognitive outcomes of a randomized trial of exercise among patients with chronic obstructive pulmonary disease. *Health Psychology* 1998;**17**(3):232–40.

**Gallefoss 1999a** *{published data only}*
Gallefoss F, Bakke PS, Rsgaard PK. Quality of life assessment after patient education in a randomized controlled study on asthma and chronic obstructive pulmonary disease. *American Journal of Respiratory and Critical Care Medicine* 1999;**159**(3):812–7.

**Gallefoss 1999b** *{published data only}*
Gallefoss F, Bakke PS. How does patient education and self-management among asthmatics and patients with chronic obstructive pulmonary disease affect medication?. *American Journal of Respiratory and Critical Care Medicine* 1999;**160**(6):2000–5.

**Gallefoss 2000a** *{published data only}*
Gallefoss F, Bakke PS. Impact of patient education and self-management on morbidity in asthmatics and patients with chronic obstructive pulmonary disease. *Respiratory Medicine* 2000;**94**(3):279–87.

**Gourley 1998** *{published data only}*
Gourley GA, Portner TS, Gourley DR, Rigolosi EL, Holt JM, Solomon DK, et al. Humanistic outcomes in the hypertension and COPD arms of a multicenter outcomes study. *Journal of the American Pharmaceutical Association* 1998;**38**(5):586–97.

**Howland 1986** *{published data only}*
* Howland J, Nelson EC, Barlow PB, McHugo G, Meier FA, Brent P, et al. Chronic obstructive airway disease. Impact of health education. *Chest* 1986;**90**(2):233–8. MEDLINE: 146

**Littlejohns 1991** *{published data only}*
Littlejohns P, Baveystock CM, Parnell H, Jones P. Randomised controlled trial of the effectiveness of a respiratory health worker in reducing impairment, disability, and handicap due to chronic airflow limitation. *Thorax* 1991;**46**:559–64.

**Sassi-Dambron 1995** *{published data only}*
Sassi-Dambron DE, Eakin EG, Ries AL, Kaplan RM. Treatment of dyspnea in COPD. A controlled clinical trial of dyspnea management strategies. *Chest* 1995;**107**(3):724–9.

**Solomon 1998** *{published data only}*
Solomon DK, Portner TS, Bass GE, Gourley DR, Gourley GA, Holt JM, et al. Clinical and economic outcomes in the hypertension and COPD arms of a multicenter outcomes study. *Journal of the American Pharmaceutical Association* 1998;**38**(5):574–85.

**Watson 1997** *{published data only}*
Watson PB, Town GI, Holbrook N, Dwan C, Toop LJ, Drennan CJ. Evaluation of a self-management plan for chronic obstructive pulmonary disease. *The European Respiratory Journal* 1997;**10**(6):1267–71.


## References to studies excluded from this review


**Ashikaga 1980** *{published data only}*
Ashikaga T, Vacek PM, Lewis SO. Evaluation of a community-based education program for individuals with chronic obstructive pulmonary disease. *Journal of Rehabilitation* 1980;**46**(2):23–7.

**Brough 1982** *{published data only}*
Brough FK, Schmidt CD, Rasmussen T, Boyer M. Comparison of two teaching methods for self-care training for patients with chronic obstructive pulmonary disease. *Patient Counselling and Health Education* 1982;**4**(2):111–6.

**Brundage 1993** *{published data only}*
Brundage DJ, Swearengen P, Woody JW. Self-care instruction for patients with COPD. *Rehabilitation Nursing* 1993;**18**(5):321–5.

**De Assuncao 1999** *{published data only}*
De Assuncao FRR, De Sousa AB, Periera SR, Sugawara EE, Storpirtis S. Educational program at hospital Universitario, Universidade de Sao Paulo, for patients suffering from chronic obstructive pulmonary disease (COPD) and asthma. *Rev Bras Cienc Farm* 1999;**35**(1):39–46.

**Devine 1996** *{published data only}*
Devine EC, Pearcy J. Meta-analysis of the effects of psychoeducational care in adults with chronic obstructive pulmonary disease. *Patient Education and Counselling* 1996;**29**(2):167–78.

**Gallefoss 2000b** *{published data only}*
Gallefoss F, Bakke PS. Patient satisfaction with healthcare in asthmatics and patients with COPD before and after patient education. *Respiratory Medicine* 2000;**94**:1057–64.

**Garrod 1997** *{unpublished data only}*
Garrod R, Garnham R, Jones P, Wedzicha JA. Randomised controlled trial of hospital out-patient pulmonary rehabilitaion in moderate COPD. Early effects. Physiotherapy 1997; Vol. 83, issue 7:367.

**Grosbois 1996** *{published data only}*
Grosbois JM, Douay B, Fortin F, Dernis JM, Lemaire B, Boutemy J, et al. Effects of ambulatory respiratory rehabilitation on exercise tolerance and quality of life

in chronic obstructive lung disease patients [Effets de la rehabilitation respiratoire en ambulatoire sur la tolerance a l'effort et la qualité de vie des patients atteints de bronchopneumopathie chronique obstructive]. *Revue des Maladies Respiratoires* 1996;**13**(1):61–7.

**Hausen 1998** ***{published data only}***
Hausen, T. Brief education in comparison to combination of brief and education in groups in patients with chronic airway disease. *Prevention and rehabilitation* 1998;**10**(2): 83–8.

**Hausen 1999** ***{published data only}***
Hausen T. Patient education - how can the long-term effect be analyzed and how does it last? [Patientenschuling – woran ist ein langzeiteffekt abzulesen and wie lange halt dieser an?]. *Pneumologie* 1999;**53**(6):289–95.

**Janelli 1991** ***{published data only}***
Janelli LM, Scherer YK, Schmieder LE. Can a pulmonary health teaching program alter patients' ability to cope with COPD?. *Rehabilitation Nursing* 1991;**16**(4):199–202.

**Muller 1996** ***{published data only}***
Muller C, Heinl KW. Patient training reduces the fear of cortisone in chronic obstructive respiratory tract diseases. *Prevention and rehabilitation* 1996;**8**(1):45.

**Ries 1995** ***{published data only}***
Ries AL, Kaplan RM, Limberg TM, Prewitt LM. Effects of pulmonary rehabilitation on physiologic and psychosocial outcomes in patients with chronic obstructive pulmonary disease. *Annals of Internal Medicine* 1995;**122**(11):823–32.

**Scherer 1996** ***{published data only}***
Scherer YK, Schmieder LE. The role of self-efficacy in assisting patients with chronic obstructivepulmonary disease to manage breathing difficulty. Clinical Nursing Research 1996; Vol. 5, issue 3:343–55.

**Scherer 1998** ***{published data only}***
Scherer YK, Schmieder LE, Shimmel S. The effects of education alone and in combination with pulmonary rehabilitation on self-efficacy in patients with COPD. *Rehabiliation Nursing* 1998;**23**(2):71–7.

**Toshima 1990** ***{published data only}***
Toshima MT, Kaplan RM, Ries AL. Experimental evaluation of rehabilitation in chronic obstructive pulmonary disease: short-term effects on exercise endurance and health status. *Health Psychology* 1990;**9**(3):237–52.

**Tougaard 1992** ***{published data only}***
Tougaard L, KroneT, Sorknaes A, Ellegaard H. Economic benefits of teaching patients with chronic obstructive pulmonary disease about their illness. The PASTMA Group. *Lancet* 1992;**339**(8808):1517–20.

**Tougaard 1993** ***{published data only}***
Tougaard L, Krone T, Sorknaes A, Ellegaard H. Health economical benefits of personalized hospital treatment of chronic bronchitis [Sundhedsokonomiske fordele ved personlig hospitalsbehandling af kronisk bronkitis]. *Ugeskr Laeger* 1993;**155**(45):3657–60.

**van den Broek 1995** ***{published data only}***
van den Broek AHS. Patient education and Chronic Obstructive Pulmonary Disease. Rijksuniversiteit Leiden 1995:73–102.

**Wedzicha 1998** ***{published data only}***
Wedzicha JA, Bestall JC, Garrod R, Garnham R, Paul EA, Jones PW. Randomized controlled trial of pulmonary rehabilitation in severe chronic obstructive pulmonary disease patients, stratified with the MRC dyspnoea scale. *European Respiratory Journal* 1998;**12**(2):363–9.

**Worth 1997** ***{published data only}***
Worth H. Self management in COPD: one step beyond?. *Patient Education and Counselling* 1997;**32**(1S):S105–S109.

## References to ongoing studies

**Bourbeau** ***{unpublished data only}***
Living Well with COPD. Ongoing study 1–2–1998.

**Monninkhof** ***{unpublished data only}***
COPE-study. Ongoing study 1–5–1999.

**Tregonning** ***{unpublished data only}***
Randomised controlled trial of a home-based programme of exercise and education in COPD. Ongoing study ?.

**Worth** ***{unpublished data only}***
AFBE-study. Ongoing study 1–8–1999.

## Additional references

**ATS 1981**
American Thoracic Society. Position statement on pulmonary rehabilitation. *American Review of Respiratory Disease* 1981;**124**:663.

**ATS 1995**
American Thoracic Society. Standards for the diagnosis and care of patients with chronic obstructive pulmonary disease.. *American Journal of Respiratory and Critical Care Medicine* 1995;**152**:S77–S122. MEDLINE: 308

**Bandura 1986**
Bandura A. Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall, 1986.

**Curtis 1994**
Curtis JR, Deyo RA, Hudson LD. Pulmonary rehabilitation in chronic respiratory insufficieny. *Thorax* 1994;**49**(2): 162–70.

**Feenstra 2001**
Feenstra TL, Genugten LL, Hoogenveen RT, Wouters EF, Rutten-van Mölken MPMH. The impact of aging and smoking on the future burden of chronic obstructive pulmonary disease. A model analysis in the Netherlands. *American Journal of Respiratory and Critical Care Medicine* 2001;**164**:590–6.

**Fletcher 1977**
Fletcher C, Peto R. The natural history of chronic airflow obstruction. *British Medical Journal* 1977;**1**(6077):1645–8.

**Gibson 2000**
Gibson PG, Coughlan J, Wilson AJ, Abramson M, Bauman A, Hensley MJ, et al. Self-management eduaction and regular practioner review for adults with astma. *The Cochrane Library* 2000, Issue 2.

**Goldstein 1994**
Goldstein RS, Gort EH, Stubbing DG, Avendano MA, Guyatt GH. Randomised controlled trial of respiratory rehabilitation. *Lancet* 1994;**344**:1394–7. [293]

**Griffiths 2000**
Griffiths TL, Burr ML, Campbell IA, Lewis-Jenkins V, Mullins J, Shiels K, et al. Results at 1 year of outpatient multidisciplinary pulmonary rehabilitation: a randomised controlled trial. *Lancet* 2000;**355**:362–8. [1159]

**Jadad 1996**
Jadad AR, Moore RA, Carroll D, Jenkinson C, Reynolds DJ, Gavaghan DJ, et al. Assessing the quality of reports of randomized clinical trials: is blinding necessary?. *Controlled Clinical Trials* 1996;**17**:1–12. [1405]

**Ketelaars 1996**
Ketelaars CA, Schlösser MAG, Mostert R, Huyer Abu, Saad H, Halfens RJ, et al. Determinants of health-related quality of life in patients with chronic obstructive pulmonary disease. *Thorax* 1996;**51**(1):39–43.

**Klein 2001**
Klein JJ, van der Palen J, Uil SM, Zielhuis GA, Seydel ER, van Herwaarden CL. Benefit from the inclusion of self-treatment guidelines to a self- management programme for adults with asthma. *European Respiratory Journal* 2001;**17**(3):386–94.

**Lahdensuo 1996**
Lahdensuo A, Haahtela T, Herrala J, Kava T, Kirivanta K, Kuusisto P, et al. Randomised comparison of guided self management and traditional treatment of asthma over one year. *British Medical Journal* 1996;**312**:748–52.

**Murray 1996**
Murray CJ, Lopez AD. Evidence-based health policy--lessons from the Global Burden of Disease Study. *Science* 1996;**274**:740–3.

**Seemungal 2000**
Seemungal TA, Donaldson GC, Bhowmik A, Jeffries DJ, Wedzicha JA. Time course and recovery of exacerbations in patients with chronic obstructive pulmonary disease. *American Journal of Respiratory and Critical Care Medicine* 2000;**161**(5):1608–13.

**Spohn 2000**
Spohn S, Wittmann M, Petro W. [Patientenverhaltenstraining bei COPD: Konzepte und Effizienz]. *Pneumologie* 2000;**54**:72–9.

**Worth 1996**
Worth H, Dhein Y, Münks-Lederer C. Evaluation of a structured education program for patients with COPD; a pilot study. *European Respiratory Journal* 1996;**9**:304s.

**Wouters 1999**
Wouters EFM. Pulmonary rehabilitation in chronic obstructive pulmonary disease. *European Respiratory Journal* 1999;**9**:189–92.

* *Indicates the major publication for the study*

## CHARACTERISTICS OF STUDIES

### Characteristics of included studies *[ordered by study ID]*

**Blake 1990**

| | |
|---|---|
| Methods | RCT<br>FUP = 12 m<br>control: usual care |
| Participants | Eligible:109<br>Randomised: 94<br>Completed: 83<br>Mean age: I: 63 (?) yrs C: 64 (?) yrs<br>Sex (% male): I: 80% C: 82%<br>Diagnosis COPD: respiratory symptoms + abnormal pulmonary function:<br>- daily cough and/or shortness of breath over the preceding six months<br>- FEV1/VC < 75 % or FVC%pred < 75%<br>Recruitment: outpatients<br>Major exclusions: -<br>FEV1%pred: ?<br>FEV1/VC: I: 46% C: 43% |
| Interventions | Mode: individual education + patient brochure + audiotape<br>Content: stress management; relaxation exercise; meditation; guided imagery focusing on breathing; social and recreational activities; communication skills<br>Duration: 1 to 4 hrs<br>Action Plan: N |
| Outcomes | -Health status:<br>- SIP<br>- Hospital days<br>- Bed-disability days<br>- Restricted-activity days<br>- Physician visits |
| Notes | -Follow-up data for 6 and 12 months<br>-19% never smokers |

***Risk of bias***

| Bias | Authors' judgement | Support for judgement |
|---|---|---|
| Allocation concealment (selection bias) | Unclear risk | D - Not used |

**Cockcroft 1987**

| | |
|---|---|
| Methods | RCT<br>FUP = 10 m<br>control: usual care |
| Participants | Eligible: 92<br>Randomised: 75<br>Completed: 73<br>Mean age: I: 69 (?) yrs C: 71 (?) yrs Sex (% male): I: 69 C: 67<br>Diagnosis of COPD: all pts suffering from chronic respiratory disability that was caused mainly by chronic obstructive airways disease; at least admitted twice during previous 3 yrs.<br>Recruitment: outpatients<br>Major exclusions: disability not caused by a respiratory condition<br>FEV1%pred:?<br>FEV1/VC:? |
| Interventions | Mode: indidvidual by home visits of a respiratory health worker<br>Content: COPD knowledge; symptoms; coping behaviour<br>Duration: about 10 hrs<br>Action Plan: N |
| Outcomes | -Health Status<br>-GHQ<br>-Hospital admissions<br>-Deaths<br>-Knowledge about medication and condition<br>-VAS-scales concerning physical and psychological aspects |
| Notes | |

***Risk of bias***

| **Bias** | **Authors' judgement** | **Support for judgement** |
|---|---|---|
| Allocation concealment (selection bias) | Unclear risk | B - Unclear |

**Emery 1998**

| | |
|---|---|
| Methods | RCT<br>FUP = 2 m<br>control: usual care |
| Participants | Eligible: 92<br>Randomised: 50<br>Completed: 49<br>Mean age: I: 67 (6) yrs C: 67 (6) yrs<br>Sex (% male): I: 42 C: 48<br>Diagnosis of COPD: stable COPD; > 50 yrs; FEV1/VC < 70; > 6 months clinical symptoms of COPD |

**Emery 1998** (*Continued*)

| | |
|---|---|
| | Recruitment: outpatients + GP-patients + advertisements + word of mouth<br>Major exclusions: significant cardiac disease; other diseases affecting exercise tolerance or learning skills last 3 months; asthma without fixed obstruction<br>FEV1%pred: I: 43 (18) C: 39 (16)<br>FEV1/VC:? |
| Interventions | Mode: group education<br>Content: COPD knowledge;therapy; coping; interpreting pulmonary function tests; understanding of arterial bloodgases; stressmanagement<br>Duration: 26 hrs<br>Action Plan: N |
| Outcomes | -Health status<br>- SIP<br>- HRQoL-MHLC<br>-Health knowledge test<br>- FEV1%pred |
| Notes | The third arms was disregarded, because it was focussed on pulmonary rehabilitation |

***Risk of bias***

| **Bias** | **Authors' judgement** | **Support for judgement** |
|---|---|---|
| Allocation concealment (selection bias) | Low risk | A - Adequate |

**Gallefoss 1999a**

| | |
|---|---|
| Methods | RCT<br>FUP = 12 m<br>control: usual care |
| Participants | Eligible: 68<br>Randomised: 62<br>Completed: 53<br>Mean age: I: 57 (9) yrs C: 58 (10) yrs<br>Sex (% male): I:48 C: 52<br>Diagnosis of COPD: FEV1pred >= 40% and FEV1pred < 80%<br>Recruitment: outpatients<br>Major exclusions: any serious disease<br>FEV1%pred: I:59 (9) C: 56 (11)<br>FEV1/VC: I: 55(9) C:52(10) |
| Interventions | Mode:patient brochure + group sessions<br>Content:COPD knowledge; medication; symptoms; exacerbations; inhalation technique;smoking cessation; relaxation; coping<br>Duration: max 6.5 hrs<br>Action Plan: Y |

**Gallefoss 1999a** (*Continued*)

| | | |
|---|---|---|
| Outcomes | -Health status<br>-SGRQ<br>-other HRQoL instruments | |
| Notes | - The same study as Gallefoss 1999b and 2000 | |
| ***Risk of bias*** | | |
| **Bias** | **Authors' judgement** | **Support for judgement** |
| Allocation concealment (selection bias) | Low risk | A - Adequate |

**Gallefoss 1999b**

| | | |
|---|---|---|
| Methods | RCT<br>FUP = 12 m<br>control: usual care | |
| Participants | Eligible: 68<br>Randomised: 62<br>Completed: 53<br>Mean age: I: 57(9) C: 58(10)<br>Sex (% male): I:48 C: 52<br>Diagnosis of COPD: FEV1%pred >= 40% and FEV1%pred<80%<br>Recruitment: outpatients<br>Major exclusions: any serious disease<br>FEV1%pred: I: 59 (9) C:56 (11)<br>FEV1/VC: I: 55 (9) % C: 52 (10) % | |
| Interventions | Mode:patient brochure + group sessions<br>Content:COPD knowledge; medication; symptoms; exacerbations; inhalation technique;smoking cessation;relaxation; coping<br>Duration: max 6.5 hrs<br>Action Plan: Y | |
| Outcomes | -Compliance<br>-Courses of steroids<br>-Use rescue medication | |
| Notes | - The same study as Gallefoss 1999a and 2000 | |
| ***Risk of bias*** | | |
| **Bias** | **Authors' judgement** | **Support for judgement** |
| Allocation concealment (selection bias) | Low risk | A - Adequate |

**Gallefoss 2000a**

| | |
|---|---|
| Methods | RCT<br>FUP = 12 m<br>control: usual care |
| Participants | Eligible: 68<br>Randomised: 62<br>Completed: 53<br>Mean age: I: 57 (9) yrs C: 58(10) yrs<br>Sex (% male): I: 48% C: 52%<br>Diagnosis of COPD: FEV1pred >= 40 % and FEV1pred< 80%<br>Recruitment: outpatients<br>Major exclusions: any serious disease<br>FEV1%pred: I: 59 (9) C: 56 (11)<br>FEV1/VC: I: 55 (9) % C: 52 (10) % |
| Interventions | Mode: patient brochure + group sessions + individual sessions by nurse and physiotherapist<br>Content: COPD knowledge; medication; symptoms; exacerbations; inhalation technique; smoking cessation,relaxation; coping<br>Duration: max 6,5 hrs<br>Action Plan: Y |
| Outcomes | -Health status<br>- SGRQ<br>- Hospital admissions<br>- Days lost from work<br>- GP-consultation<br>- FEV1%pred |
| Notes | - 6% were never smokers<br>- The same study as Gallefoss 1999a and 1999b |

***Risk of bias***

| **Bias** | **Authors' judgement** | **Support for judgement** |
|---|---|---|
| Allocation concealment (selection bias) | Low risk | A - Adequate |

**Gourley 1998**

| | |
|---|---|
| Methods | RCT<br>FUP = 6 m<br>control: usual care |
| Participants | Eligible: ?<br>Randomised: 98<br>Completed: 98<br>Mean age: I: 69 (6) yrs C: 69 (9) yrs<br>Sex (% male): I: 100 C:100<br>Diagnosis of COPD: COPD ATS criteria; at least one MDI; > 40 yrs |

**Gourley 1998** (*Continued*)

| | |
|---|---|
| | Recruitment: outpatients<br>Major exclusions: life expectancy < 6 months; hospitalisation or ER-visits during past 2 wks; lung infection past 2 wks; decompensated CHF class 3 or 4; other lung disease except for conmittant asthma<br>FEV1%pred:?<br>FEV1/VC:? |
| Interventions | Mode: individual verbal education<br>Content: COPD knowledge; therapy; coping<br>Duration: 3 hrs<br>Action Plan: N |
| Outcomes | - Health status<br>- HSQ2<br>- Patient satisfaction<br>- Disease knowledge<br>- Disease management knowledge |
| Notes | - The same study as no. 33 |

***Risk of bias***

| **Bias** | **Authors' judgement** | **Support for judgement** |
|---|---|---|
| Allocation concealment (selection bias) | Unclear risk | D - Not used |

**Howland 1986**

| | |
|---|---|
| Methods | CCT<br>FUP = 12 m<br>control: usual care |
| Participants | Eligible: 923<br>Randomised: 659<br>Completed: 538<br>Mean age: I: 59 (?) yrs C: 60 (?) yrs<br>Sex (% male): I: 54% C: 51%<br>Diagnosis COPD: presence of COAD; FEV1/FVC < 60% or between 60 to 70% with chronic symptoms of cough, weezing or breathlessness<br>Recruitment: community patients<br>Major exclusions: -<br>FEV1%pred: ?<br>FEV1/VC: ? |
| Interventions | Mode:group education (one for the mildly and one for the severely impaired patients)<br>Content: Severe group: COPD knowledge; nutrition; excercise; smoking cessation; Mild group: emphasized prevention and impairment oa smoking cessation, building and maintaining physical endurance and reducing stress<br>Duration: Severe group = 12 hrs; Mild group = 6 hrs |

**Howland 1986** (*Continued*)

| | |
|---|---|
| | Action Plan: N |
| Outcomes | -Health status<br>measured by a self designed questionnaire<br>- FEV1%pred |
| Notes | - They assessed a severe and a mild group of patients |

***Risk of bias***

| **Bias** | **Authors' judgement** | **Support for judgement** |
|---|---|---|
| Allocation concealment (selection bias) | Unclear risk | D - Not used |

**Littlejohns 1991**

| | |
|---|---|
| Methods | RCT<br>FUP = 12 m<br>control: usual care |
| Participants | Eligible: 166<br>Randomised: 152<br>Completed: 133<br>Mean age: I: 63 (8) yrs C: 63 (7) yrs<br>Sex (% male): I: 67 C: 63<br>Diagnosis of COPD: previously documented chronic airflow obstruction; 30 to 75 yrs; FEV1%pred < 60%; stable state<br>Recruitment: outpatients<br>Major exclusions: other major disease; change in medication at least six weeks before recruitment<br>FEV1%pred: I: 45 (22) C: 50 (23)<br>FEV1/VC:? |
| Interventions | Mode: individual by respiratory health worker<br>Content: COPD knowledge; inhalation technique; impairment, disability and handicap<br>Duration: ?<br>Action Plan: N |
| Outcomes | -Health status<br>- SIP<br>-No. of exacerbations<br>-Courses of oral steroids<br>-Courses of antibiotics<br>-Hospital admissions<br>-FEV1%pred<br>-Excercise capacity<br>-6MW |
| Notes | |

**Littlejohns 1991** (*Continued*)

| *Risk of bias* | | |
|---|---|---|
| **Bias** | **Authors' judgement** | **Support for judgement** |
| Allocation concealment (selection bias) | Low risk | A - Adequate |

**Sassi-Dambron 1995**

| | |
|---|---|
| Methods | RCT<br>FUP = 6 m<br>control:general health education |
| Participants | Eligible: 143<br>Randomised: 98<br>Completed: 76<br>Mean age: I: 68 (8) C: 67 (8)<br>Sex (% male): I: 57 C: 53<br>Diagnosis of COPD: patients report that he or she felt limited in physical function secondary to dyspnea<br>Recruitment: outpatients+ GP-patients+community patients<br>Major exclusions: participation in pulmonary rehabilitation previous 2 years<br>FEV1%pred: I: 50 (21) C:50 (23)<br>FEV1/VC: ? |
| Interventions | Mode: group education (I: rehab without exercise C: general health education lectures)<br>Content: ?<br>Duration: 6 sessions<br>Action Plan: N |
| Outcomes | -Health status<br>-QWB<br>-Symptoms<br>-Exercise capacity<br>-6MW |
| Notes | -Comparison of two interventions. No usual care group. |

| *Risk of bias* | | |
|---|---|---|
| **Bias** | **Authors' judgement** | **Support for judgement** |
| Allocation concealment (selection bias) | Unclear risk | B - Unclear |

**Solomon 1998**

| | |
|---|---|
| Methods | RCT<br>FUP = 6 m<br>control: usual care |
| Participants | Eligible: 193<br>Randomised: 128<br>Completed: 98<br>Mean age: I: 69 (6) yrs C: 69 (9) yrs Sex (% male): I: 100 C:100<br>Diagnosis of COPD: COPD ATS criteria; at least one MDI; > 40 yrs<br>Recruitment: outpatients<br>Major exclusions: life expectancy < months; hospitalisation or ER-visits during past 2 wks; lung infection past 2 wks; decompensated CHF class 3 or 4; other lung disease except for conmittant asthma<br>FEV1%pred:?<br>FEV1/VC:? |
| Interventions | Mode: individual verbal education<br>Content: COPD knowledge; therapy; coping<br>Duration: 3 hrs<br>Action Plan: N |
| Outcomes | -Control of disease<br>-Symptoms<br>-Hospital admissions<br>-ER visits<br>-Use of other health care facilities |
| Notes | |

***Risk of bias***

| **Bias** | **Authors' judgement** | **Support for judgement** |
|---|---|---|
| Allocation concealment (selection bias) | Low risk | A - Adequate |

**Watson 1997**

| | |
|---|---|
| Methods | RCT<br>FUP = 6 m<br>control: usual care |
| Participants | Eligible: 93<br>Randomised: 69<br>Completed: 56<br>Mean age: I: 68 (10) yrs C: 67 (8) yrs<br>Sex (% male): I: 62 C: 67<br>Diagnosis of COPD: COPD (ATS crtiteria) as major limiting disease; smoking history > 10 pack years; FEV1%pred < 65%; FEV1/VC < 70 %; bronchodilator therapy<br>Recruitment: GP-patients |

**Watson 1997** (*Continued*)

| | |
|---|---|
| | Major exclusions: asthma (onset < 35 yrs) as primary diagnosis; cardiac disease as primary diagnosis, another functionally limiting disease (except cor pulmonale) affecting mortality<br>FEV1%pred: I: 37 (14) C: 36 (16)<br>FEV1/VC: I: 52 (25) C: 48 (15) |
| Interventions | Mode: action plan and patient brochure<br>Content: COPD knowledge; exercise; smoking cessation; coping (controlling breathlessness); nutrition<br>Duration: < 1 hr<br>Action Plan: Y |
| Outcomes | -Health Status<br>- SGRQ<br>-Symptoms<br>-GP-visits<br>-Courses of prednisolone<br>-Courses of antibiotics<br>-FEV1%pred |
| Notes | |

***Risk of bias***

| **Bias** | **Authors' judgement** | **Support for judgement** |
|---|---|---|
| Allocation concealment (selection bias) | Unclear risk | B - Unclear |

## Characteristics of excluded studies *[ordered by study ID]*

| Study | Reason for exclusion |
|---|---|
| Ashikaga 1980 | <1985; asthma + COPD |
| Brough 1982 | < 1985; methodological flaws |
| Brundage 1993 | No CCTor RCT |
| De Assuncao 1999 | No CCTor RCT; asthma |
| Devine 1996 | No CCT or RCT: meta-analysis |
| Gallefoss 2000b | No adequate outcome |
| Garrod 1997 | Abstract only; primarly focused on pulmonary rehabilitation |

(*Continued*)

| | |
|---|---|
| Grosbois 1996 | No CCT or RCT; pulmonary rehabilitation |
| Hausen 1998 | No CCTor RCT; 76% asthma |
| Hausen 1999 | No CCTor RCT |
| Janelli 1991 | No CCT or RCT |
| Muller 1996 | No CCT or RCT; asthma + COPD group |
| Ries 1995 | Primarly focused on pulmonary rehabilitation |
| Scherer 1996 | No CCT or RCT |
| Scherer 1998 | Primarly focused on pulmonary rehabilitation; no adequate outcome |
| Toshima 1990 | Primarly focused on pulmonary rehabilitation; the same article as refnr. 83 |
| Tougaard 1992 | About 90% were asthma patients |
| Tougaard 1993 | The same article as refnr. 100 |
| van den Broek 1995 | Primarly focused on pulmonary rehabilitation |
| Wedzicha 1998 | Primarly focused on pulmonary rehabilitation |
| Worth 1997 | No CCT |

## Characteristics of ongoing studies *[ordered by study ID]*

### Bourbeau

| | |
|---|---|
| Trial name or title | Living Well with COPD |
| Methods | |
| Participants | Eligible: 469<br>Randomised: 191<br>Completed:165<br>Mean age:I: 69 yrs C: 70 yrs<br>Sex (% male): I: 52 C: 59<br>Diagnosis COPD:smoking history (> 10 packyears), age 50+, FEV1 post 25-75% of pred, no previous diagnosis of asthma, terminal disease, dementia or L CHF, no participation in pulm. rehabilitation in the prior year, no long term care facility stays<br>Recruitment: outpatients<br>Follow-up: 12 m |

**Bourbeau** (*Continued*)

| | |
|---|---|
| Interventions | Mode: individual education; skill training; self help workbooks; learning video; supportive telephone calls<br>Content: knowledge of COPD; inhalation technique; energy conservation; breathing and coughing techniques; relaxation and exercise; symptom control; adopting a healthy lifestyle; coping; oxygen therapy<br>Duration: 8 hrs<br>Action Plan: Y<br>Execercise program: Y |
| Outcomes | -Health status:<br>-SGRQ<br>-Exacerbations<br>-Courses of oral steroids<br>-Courses of antibiotics<br>-Hospital admissions<br>- Use of other health care facilities<br>- Lung function<br>-Excercise capacity:<br>-6MW |
| Starting date | 1-2-1998 |
| Contact information | J. Bourbeau<br>Respiratory Epidemiology Unit<br>Lady Meridith House<br>1110 Pine Avenue West<br>Montreal, Quebec,<br>Canada H3A 1A3<br>jean.bourbeau@mcgill.ca |
| Notes | |

**Monninkhof**

| | |
|---|---|
| Trial name or title | COPE-study |
| Methods | |
| Participants | Eligible: 509<br>Randomised: 246<br>Completed: ?<br>Mean age: I: 64 yrs C: 64 yrs<br>Sex (% male): I: 85.5 C:83.7<br>Diagnosis COPD: clinical stable COPD, smoking history, age 40-75; FEV1%pred 25-75%; FEV1/VC <= 60; reversibilty of FEV1%pred < =12 %<br>Recruitment: outpatients<br>Follow-up: 24 m |

**Monninkhof** (*Continued*)

| | |
|---|---|
| Interventions | Mode: group education; skill training; self help workbook;<br>Content: knowledge of COPD; inhalation technique; relaxation and exercise; symptom control; coping; nutrition; communication<br>Duration: 7.5 hrs<br>Action Plan: Y<br>Exercise program: Y |
| Outcomes | - Health status:<br>- SGRQ<br>- Euroqol-5D<br>-Symptoms -Exacerbations<br>- Courses of oral steriods<br>-Courses of antibiotics<br>- Use of rescue medication<br>-Hospital admissions<br>- Use of other health care facilities<br>-Lung function<br>- Excercise capacity:<br>-6MW |
| Starting date | 1-5-1999 |
| Contact information | E. Monninkhof<br>COPE-study<br>Department of lung diseases<br>Medisch Spectrum Twente<br>P.O. Box 50000<br>7500 KA Enschede<br>The Netherlands<br>emonninkhof@introweb.nl |
| Notes | |

**Tregonning**

| | |
|---|---|
| Trial name or title | Randomised controlled trial of a home-based programme of exercise and education in COPD |
| Methods | |
| Participants | Eligible: ?<br>Randomised: 141<br>Completed: 117<br>Mean age: I: 73 yrs C: 73 yrs<br>Sex (% male): I: 66 C: 60<br>Diagnosis COPD: stable COPD, FEV1< 80%; FEV1/VC < 70<br>Recruitment: hospital patients<br>Follow-up: 6 m |

**Tregonning** (*Continued*)

| | |
|---|---|
| Interventions | Mode: individual education; self help workbook; supportive telephone calls<br>Content: knowledge of COPD; coping; nutrition; smoking cessation; relaxation and execercise; communication; flexible use of medication<br>Duration:3 visits<br>Action Plan: N<br>Exercise program: Y (home) |
| Outcomes | -Health status:<br>-CRDQ<br>-Symptoms<br>-Excercise capacity:<br>-6MW |
| Starting date | ? |
| Contact information | M. Tregonning<br>North Bristol NHS Trust<br>Bristol<br>UK |
| Notes | |

**Worth**

| | |
|---|---|
| Trial name or title | AFBE-study |
| Methods | |
| Participants | Eligible: 102<br>Randomised: 89<br>Completed: 86<br>Mean age: 62 yrs<br>Sex (% male): 76%<br>Diagnosis COPD:clinical stable COPD; age 45-75 FEV1%pred. 30-80%,<br>FEV1 /VC <=<br>70%<br>FEV1 -reversibility <= 12%<br>Recruitment: outpatients<br>Follow-up: 12 m |
| Interventions | Mode: group education<br>; skill training<br>Content: knowledge of COPD; inhalation technique; monitoring of disease; effects/side effects of medication; self adjustment of medication; behaviour during exacerbations<br>Duration: 6 hrs<br>Action Plan: Y<br>Exercise program: N |

**Worth** (*Continued*)

| | |
|---|---|
| Outcomes | -Health status:<br>- SGRQ<br>- SF-36<br>-Symptoms<br>-Exacerbations<br>-Courses of oral steroids<br>-Courses of antibiotics<br>- Use of rescue medication<br>-Lung function |
| Starting date | 1-8-1999 |
| Contact information | Y. Dhein,<br>H. Worth<br>Medical Department Fuerth Hospital<br>Jakob-Henle-Str. 1<br>90766 Fuerth<br>Germany<br>med1@klinikum-fuerth.de |
| Notes | |

## DATA AND ANALYSES

### Comparison 1. Self-management versus control

| Outcome or subgroup title | No. of studies | No. of participants | Statistical method | Effect size |
|---|---|---|---|---|
| 1 HRQOL: SGRQ Total + domains | 2 | | Mean Difference (IV, Fixed, 95% CI) | Subtotals only |
| 1.1 SGRQ | 2 | 109 | Mean Difference (IV, Fixed, 95% CI) | -1.32 [-7.87, 5.23] |
| 1.2 SGRQ-symptoms | 2 | 109 | Mean Difference (IV, Fixed, 95% CI) | -3.56 [-11.54, 4.41] |
| 1.3 SGRQ-activity | 2 | 109 | Mean Difference (IV, Fixed, 95% CI) | -10.20 [-18.46, -1.95] |
| 1.4 SGRQ-impact | 2 | 109 | Mean Difference (IV, Fixed, 95% CI) | -2.77 [-9.25, 3.70] |
| 3 Doctor and nurse visits: mean number per person per year | 3 | 197 | Mean Difference (IV, Fixed, 95% CI) | -0.36 [-0.75, 0.03] |
| 3.1 doctor and nurse visits: mean number per person per year | 3 | 197 | Mean Difference (IV, Fixed, 95% CI) | -0.36 [-0.75, 0.03] |
| 4 Excercise capacity: 6MW | 1 | 133 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 5 Lung function: FEV1%pred | 4 | 290 | Std. Mean Difference (IV, Fixed, 95% CI) | -0.01 [-0.24, 0.22] |
| 6 Days lost from work: mean number per person per year | 2 | 121 | Mean Difference (IV, Fixed, 95% CI) | -17.5 [-50.05, 15.05] |
| 7 General HRQOL: SIP Total score | 3 | 249 | Mean Difference (IV, Fixed, 95% CI) | 0.30 [-4.00, 4.60] |
| 8 General HRQoL: SIP physical | 2 | 201 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 9 General HRQoL : SIP psychosocial | 2 | 201 | Mean Difference (IV, Fixed, 95% CI) | 0.0 [0.0, 0.0] |
| 10 Patients using at least one course of oral steroids | 2 | 186 | Risk Ratio (M-H, Fixed, 95% CI) | 1.39 [1.02, 1.91] |
| 11 Hospital admissions: one or more | 2 | 195 | Risk Ratio (M-H, Fixed, 95% CI) | 0.80 [0.43, 1.50] |

## Analysis 1.1. Comparison 1 Self-management versus control, Outcome 1 HRQOL: SGRQ Total + domains.

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 1 HRQOL: SGRQ Total + domains

| Study or subgroup | Treatment N | Mean(SD) | Control N | Mean(SD) | Mean Difference IV,Fixed,95% CI | Weight | Mean Difference IV,Fixed,95% CI |
|---|---|---|---|---|---|---|---|
| 1 SGRQ | | | | | | | |
| Gallefoss 1999a | 26 | 40 (16) | 27 | 43.1 (21) | | 42.6 % | -3.10 [ -13.13, 6.93 ] |
| Watson 1997 | 29 | 39 (17) | 27 | 39 (16) | | 57.4 % | 0.0 [ -8.64, 8.64 ] |
| **Subtotal (95% CI)** | **55** | | **54** | | | **100.0 %** | **-1.32 [ -7.87, 5.23 ]** |
| Heterogeneity: $Chi^2$ = 0.21, df = 1 (P = 0.65); $I^2$ =0.0% | | | | | | | |
| Test for overall effect: Z = 0.40 (P = 0.69) | | | | | | | |
| 2 SGRQ-symptoms | | | | | | | |
| Gallefoss 1999a | 26 | 44.9 (21) | 27 | 51.3 (22) | | 47.5 % | -6.40 [ -17.98, 5.18 ] |
| Watson 1997 | 29 | 58 (21) | 27 | 59 (21) | | 52.5 % | -1.00 [ -12.01, 10.01 ] |
| **Subtotal (95% CI)** | **55** | | **54** | | | **100.0 %** | **-3.56 [ -11.54, 4.41 ]** |
| Heterogeneity: $Chi^2$ = 0.44, df = 1 (P = 0.51); $I^2$ =0.0% | | | | | | | |
| Test for overall effect: Z = 0.88 (P = 0.38) | | | | | | | |
| 3 SGRQ-activity | | | | | | | |
| Gallefoss 1999a | 26 | 53.2 (19) | 27 | 50.9 (21) | | 58.7 % | 2.30 [ -8.47, 13.07 ] |
| Watson 1997 | 29 | 23 (24) | 27 | 51 (25) | | 41.3 % | -28.00 [ -40.85, -15.15 ] |
| **Subtotal (95% CI)** | **55** | | **54** | | | **100.0 %** | **-10.20 [ -18.46, -1.95 ]** |
| Heterogeneity: $Chi^2$ = 12.54, df = 1 (P = 0.00040); $I^2$ =92% | | | | | | | |
| Test for overall effect: Z = 2.42 (P = 0.015) | | | | | | | |
| 4 SGRQ-impact | | | | | | | |
| Gallefoss 1999a | 26 | 30.9 (18) | 27 | 37.4 (24) | | 32.3 % | -6.50 [ -17.89, 4.89 ] |
| Watson 1997 | 29 | 25 (15) | 27 | 26 (15) | | 67.7 % | -1.00 [ -8.86, 6.86 ] |
| **Subtotal (95% CI)** | **55** | | **54** | | | **100.0 %** | **-2.77 [ -9.25, 3.70 ]** |
| Heterogeneity: $Chi^2$ = 0.61, df = 1 (P = 0.44); $I^2$ =0.0% | | | | | | | |
| Test for overall effect: Z = 0.84 (P = 0.40) | | | | | | | |
| Test for subgroup differences: $Chi^2$ = 2.96, df = 3 (P = 0.40), $I^2$ =0.0% | | | | | | | |

### Analysis 1.3. Comparison 1 Self-management versus control, Outcome 3 Doctor and nurse visits: mean number per person per year.

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 3 Doctor and nurse visits: mean number per person per year

| Study or subgroup | Treatment N | Mean(SD) | Control N | Mean(SD) | Mean Difference IV,Fixed,95% CI | Weight | Mean Difference IV,Fixed,95% CI |
|---|---|---|---|---|---|---|---|
| 1 doctor and nurse visits: mean number per person per year | | | | | | | |
| Gallefoss 2000a | 26 | 0.5 (0.9) | 27 | 3.4 (5.5) | | 3.4 % | -2.90 [ -5.00, -0.80 ] |
| Solomon 1998 | 41 | 0.81 (0.93) | 47 | 1.17 (1.03) | | 90.4 % | -0.36 [ -0.77, 0.05 ] |
| Watson 1997 | 29 | 3 (3) | 27 | 2 (3) | | 6.1 % | 1.00 [ -0.57, 2.57 ] |
| **Total (95% CI)** | **96** | | **101** | | | **100.0 %** | **-0.36 [ -0.75, 0.03 ]** |

Heterogeneity: Chi² = 8.48, df = 2 (P = 0.01); I² =76%

Test for overall effect: Z = 1.83 (P = 0.067)

Test for subgroup differences: Not applicable


### Analysis 1.4. Comparison 1 Self-management versus control, Outcome 4 Excercise capacity: 6MW.

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 4 Excercise capacity: 6MW

| Study or subgroup | Treatment N | Mean(SD) | Control N | Mean(SD) | Mean Difference IV,Fixed,95% CI | Weight | Mean Difference IV,Fixed,95% CI |
|---|---|---|---|---|---|---|---|
| Littlejohns 1991 | 68 | 369.2 (0) | 65 | 367.5 (0) | | | Not estimable |
| **Total (95% CI)** | **68** | | **65** | | | | **Not estimable** |

Heterogeneity: not applicable

Test for overall effect: not applicable

Test for subgroup differences: Not applicable

### Analysis 1.5. Comparison 1 Self-management versus control, Outcome 5 Lung function: FEV1%pred.

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 5 Lung function: FEV1%pred

| Study or subgroup | Treatment N | Mean(SD) | Control N | Mean(SD) | Std. Mean Difference IV,Fixed,95% CI | Weight | Std. Mean Difference IV,Fixed,95% CI |
|---|---|---|---|---|---|---|---|
| Emery 1998 | 23 | 41 (20) | 25 | 39 (16) | | 16.6 % | 0.11 [ -0.46, 0.68 ] |
| Gallefoss 2000a | 26 | 62 (14) | 27 | 58 (14) | | 18.2 % | 0.28 [ -0.26, 0.82 ] |
| Littlejohns 1991 | 68 | -2.06 (11.6) | 65 | -0.15 (14.7) | | 45.9 % | -0.14 [ -0.48, 0.20 ] |
| Watson 1997 | 29 | 37.03 (13.51) | 27 | 37.89 (14.67) | | 19.4 % | -0.06 [ -0.58, 0.46 ] |
| **Total (95% CI)** | **146** | | **144** | | | **100.0 %** | **-0.01 [ -0.24, 0.22 ]** |

Heterogeneity: Chi² = 1.91, df = 3 (P = 0.59); I² =0.0%

Test for overall effect: Z = 0.07 (P = 0.94)

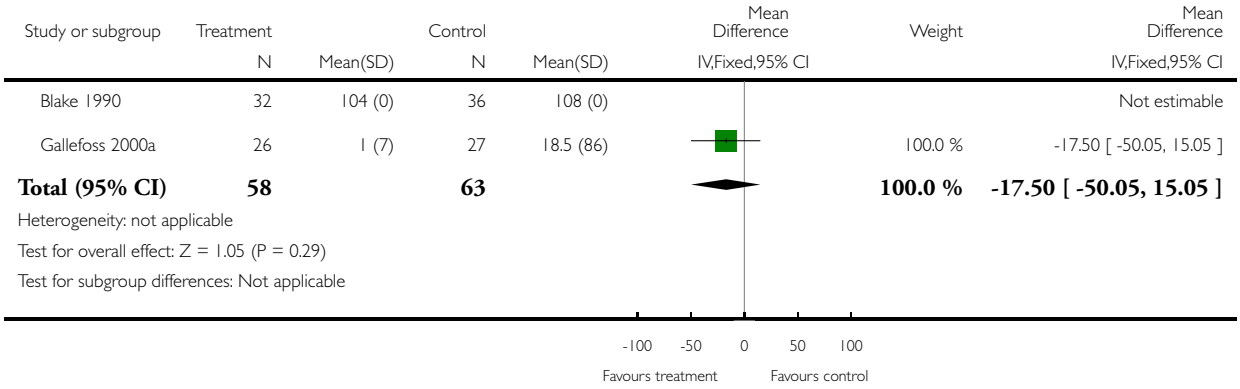
Test for subgroup differences: Not applicable

### Analysis 1.6. Comparison 1 Self-management versus control, Outcome 6 Days lost from work: mean number per person per year.

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 6 Days lost from work: mean number per person per year

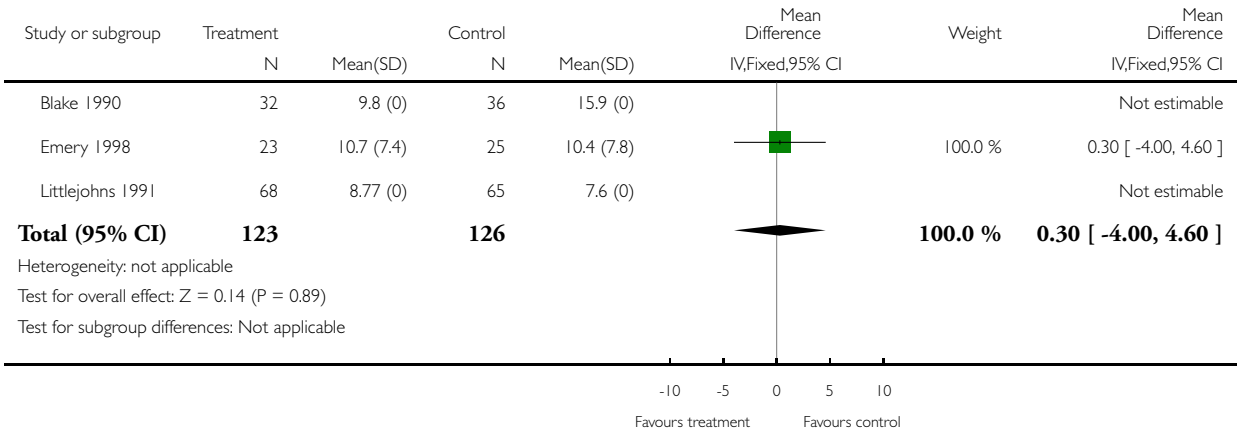



### Analysis 1.7. Comparison 1 Self-management versus control, Outcome 7 General HRQOL: SIP Total score.

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 7 General HRQOL: SIP Total score



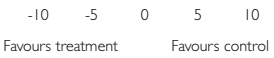
### Analysis 1.8. Comparison 1 Self-management versus control, Outcome 8 General HRQoL: SIP physical.

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 8 General HRQoL: SIP physical

| Study or subgroup | Treatment N | Mean(SD) | Control N | Mean(SD) | Mean Difference IV,Fixed,95% CI | Weight | Mean Difference IV,Fixed,95% CI |
|---|---|---|---|---|---|---|---|
| Blake 1990 | 32 | 6.3 (0) | 36 | 13 (0) | | | Not estimable |
| Littlejohns 1991 | 68 | 1.57 (0) | 65 | 3.45 (0) | | | Not estimable |
| **Total (95% CI)** | **100** | | **101** | | | | **Not estimable** |
| Heterogeneity: not applicable | | | | | | | |
| Test for overall effect: not applicable | | | | | | | |
| Test for subgroup differences: Not applicable | | | | | | | |



### Analysis 1.9. Comparison 1 Self-management versus control, Outcome 9 General HRQoL : SIP psychosocial.

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 9 General HRQoL : SIP psychosocial

| Study or subgroup | Treatment N | Mean(SD) | Control N | Mean(SD) | Mean Difference IV,Fixed,95% CI | Weight | Mean Difference IV,Fixed,95% CI |
|---|---|---|---|---|---|---|---|
| Blake 1990 | 32 | 8.6 (0) | 36 | 12 (0) | | | Not estimable |
| Littlejohns 1991 | 68 | 7.42 (0) | 65 | 5.82 (0) | | | Not estimable |
| **Total (95% CI)** | **100** | | **101** | | | | **Not estimable** |

Heterogeneity: not applicable

Test for overall effect: not applicable

Test for subgroup differences: Not applicable


### Analysis 1.10. Comparison 1 Self-management versus control, Outcome 10 Patients using at least one course of oral steroids.

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 10 Patients using at least one course of oral steroids

| Study or subgroup | Treatment n/N | Control n/N | Risk Ratio M-H,Fixed,95% CI | Weight | Risk Ratio M-H,Fixed,95% CI |
|---|---|---|---|---|---|
| Gallefoss 1999b | 18/26 | 12/27 | | 32.4 % | 1.56 [ 0.95, 2.55 ] |
| Littlejohns 1991 | 33/68 | 24/65 | | 67.6 % | 1.31 [ 0.88, 1.96 ] |
| **Total (95% CI)** | **94** | **92** | | **100.0 %** | **1.39 [ 1.02, 1.91 ]** |

Total events: 51 (Treatment), 36 (Control)

Heterogeneity: $Chi^2$ = 0.28, df = 1 (P = 0.60); $I^2$ =0.0%

Test for overall effect: Z = 2.08 (P = 0.038)

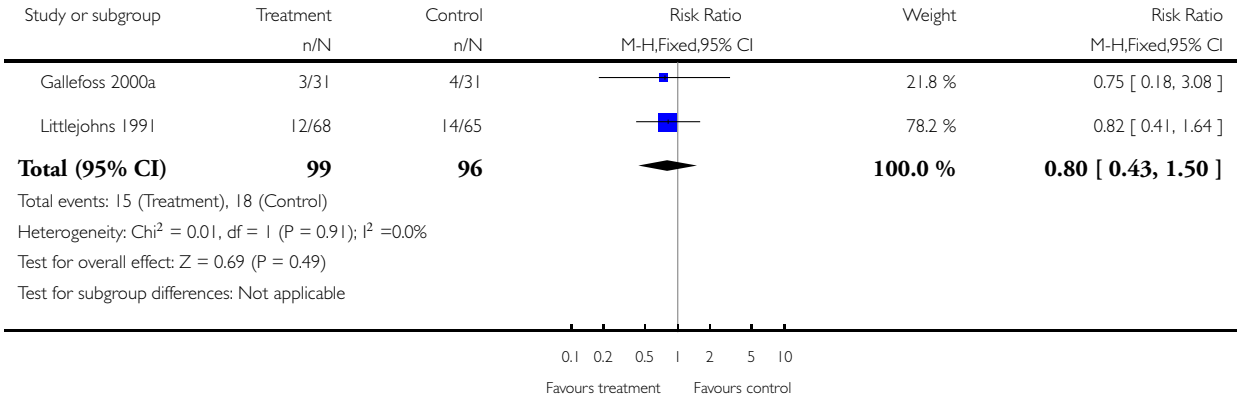
Test for subgroup differences: Not applicable

**Analysis 1.11. Comparison 1 Self-management versus control, Outcome 11 Hospital admissions: one or more.**

Review: Self-management education for chronic obstructive pulmonary disease

Comparison: 1 Self-management versus control

Outcome: 11 Hospital admissions: one or more




## F E E D B A C K

### Error quoting dosage figure

#### Summary

In the results section "Use of Rescue Medication", the Gallefoss 1999 study is quoted in this review as follows:
"In this study the educated patients received less than half the amount of rescue medication (median DDD = 125) compared with the control group (median DDD=209)".
In figure 3 of the original Gallefoss paper it is reported that in the control group the
median DDD= 290 not 209.

#### Reply

I agree with the comment of Susan Varney. The median DDD rescue medication in the control group should be 290 not 209. This should be changed.

**Contributors**

Varney S

## WHAT'S NEW

Last assessed as up-to-date: 20 August 2007.

| Date | Event | Description |
|---|---|---|
| 10 May 2017 | Amended | Converted to new review format. |

## HISTORY

Protocol first published: Issue 2, 2001

Review first published: Issue 1, 2003

| Date | Event | Description |
|---|---|---|
| 16 July 2002 | New citation required and conclusions have changed | Substantive amendment |

## CONTRIBUTIONS OF AUTHORS

E. Monninkhof:

Designed and co-ordinated the review

All steps belonging to data collection for the review

Data management for the review

Analysis of data

Interpretation of data

Writing the review

Updating the review

P. van der Valk:

Screened search results against inclusion criteria

Screened retrieved papers against inclusion criteria

Independent arbitrator to reach "consensus agreement"

Provided a clinical perspective

J. van der Palen:

Conceived the review

Screened search results against inclusion criteria

Screened retrieved papers against inclusion criteria

Abstracted data

Obtained and screened data from unpublished studies

Appraised quality of papers

Supported datamanagement and data-analysis

Provided a methodological perspective

G. Zielhuis:

Designed the review

Provided advice on data-analysis

Provided a methodological perspective

Provided general advice on the review

Critically revised the review

C. van Herwaarden:

Provided a clinical perspective

Critically revised the review

Provided a policy perspective

M. Partridge:

Provided a policy perspective

Provided a clinical perspective

Provided general advice on the review

EH Walters:

Editorial support throughout.

## DECLARATIONS OF INTEREST

Netherlands Asthma Foundation, Glaxo Wellcome BV, Boehringer Ingelheim provided funding for this review but these parties were in no way be able to influence the results of the review.

## SOURCES OF SUPPORT


### Internal sources

- Boehringer Ingelheim, Netherlands.

### External sources

- Netherlands Asthma Foundation, Netherlands.
- Glaxo Wellcome BV, Netherlands.
- Boehringer Ingelheim, Netherlands.
- Amicon Health Care Insurance Company, Netherlands.
- Euregio, Belgium.
- Garfield Weston Foundation, UK.


## INDEX TERMS

### Medical Subject Headings (MeSH)

*Patient Education as Topic; *Self Care; Health Status; Hospitalization [statistics & numerical data]; Outcome Assessment (Health Care); Patient Compliance; Program Evaluation; Pulmonary Disease, Chronic Obstructive [*therapy]; Quality of Life; Randomized Controlled Trials as Topic

### MeSH check words

Humans