

Online only material (Online supplement)

Determinants and outcomes of physical activity in patients with chronic obstructive pulmonary disease: a systematic review

Elena Gimeno-Santos, Anja Frei, Claudia Steurer-Stey, Jordi de Batlle, Roberto A Rabinovich, Yogini Raste, Nicholas S Hopkinson, Michael I Polkey, Hans van Remoortel, Thierry Troosters, Karoly Kulich, Niklas Karlsson, Milo A Puhon and Judith Garcia-Aymerich on behalf of PROactive consortium

Online supplement 1. Protocol for systematic review.

Online supplement 2. Search strategy and results in 4 databases.

Online supplement 3. Form for guidance of title and abstract screening process.

Online supplement 4. Form for guidance of full text assessment process.

Online supplement 5. Details on methods of data extraction and quality assessment.

Online supplement Table 1. Reason for exclusion after full text assessment and data extraction process.

Online supplement Table 2. Design, patients' characteristics and instruments for measuring physical activity of 86 studies reporting associations between physical activity and its determinants or outcomes in COPD patients.

Online supplement Table 3a. Determinants covered by at least 2 articles and their association with physical activity, grouped in main categories and sorted by alphabetical order.

Online supplement Table 3b. Other potential determinants (only evidenced in 1 study) and their association with physical activity, grouped in main categories and sorted by alphabetical order.

Online supplement Table 4a. Outcomes covered by at least 2 articles and their association with physical activity, grouped in main categories and sorted by alphabetical order.

Online supplement Table 4b. Other potential outcomes (only evidence in 1 study) and their association with physical activity, grouped in main categories and sorted by alphabetical order.

Online supplement references.

Online supplement 1. Protocol for systematic review.

The next 10 pages contain the original protocol for the systematic review about “Determinants and outcomes of physical activity in COPD patients” that was approved by the PROactive consortium in October 6th, 2010.

PROactive Work Package 2A: Input from the literature

Protocol for review 5 – Determinants and outcomes of PA for COPD patients

October 6th, 2010

WP2A team Systematic Review 5:

- Milo Puhan, Anja Frei, Claudia Steurer-Stey, University of Zurich, Switzerland
- Judith Garcia Aymerich, Elena Gimeno, Jordi de Batlle Centre for Research in Environmental Epidemiology-CREAL, Barcelona, Spain
- Roberto Rabinovich, University of Edinburgh, Old College South Bridge, Scotland
- Nick Hopkinson, Michael Polkey, Yogini Raste, Matthew Hind, Royal Brompton Hospital, London
- Thierry Troosters, Hans van Remoortel, Katholieke University of Leuven, Belgium

Background

The aim of Work Package 2 (WP2) of the PROactive project is to support the development of the initial version of the Patient-Reported Outcome (PRO) tool for physical activity in chronic obstructive pulmonary disease (COPD). The 4 sub-work-packages that contribute to the development are systematic reviews of the literature (WP2a), patient input (WP2b), input from experts (WP2c) and the validation and selection of an activity monitor (WP2d) that will be integrated as assessment of activity levels (performance) in addition to the PRO.

WP2a consists of five systematic reviews of the literature. In this report, we focus on the systematic review of studies that assessed determinants and outcomes of physical activity in COPD in order to develop a conceptual model (referred to as Systematic Review 5). A conceptual model describes the relationship among measurements, in this case the measurements of physical activity and of its determinants (e.g. hyperinflation or low FEV₁) and its outcomes (e.g. hospital admissions or poor health-related quality of life). The conceptual model will inform the planning of the observational study of PROactive (WP4), which will in turn provide additional data for the conceptual model. Finally, the conceptual model will provide an evidence base for developing endpoint models for specific trials. An endpoint model describes the relationship among PRO and non-PRO measured in a specific trial and specifies the primary, secondary and exploratory outcomes.

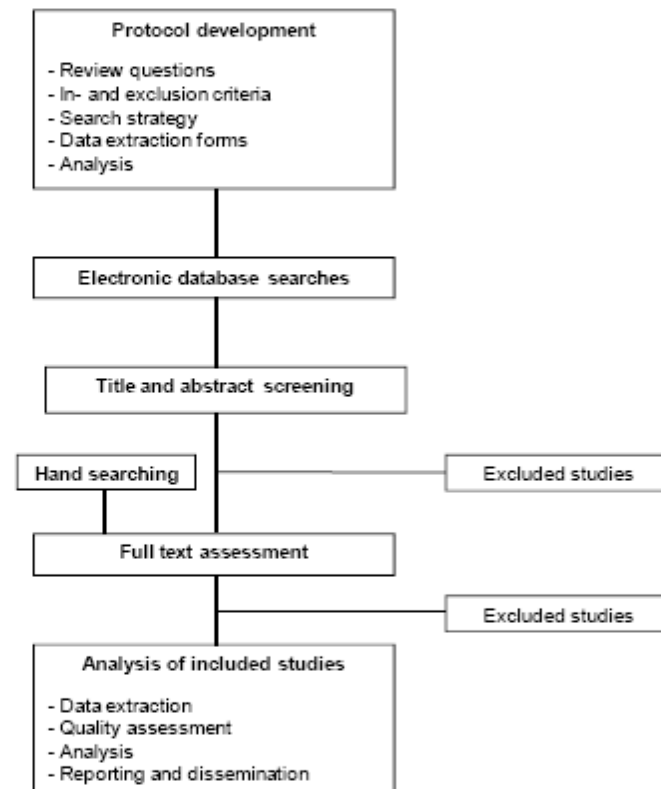
The four other systematic reviews identify and assess available PRO tools for measuring physical activity (Systematic Review 1), qualitative studies about physical activity (Systematic Review 2), validation studies of activity monitors (Systematic Review 3) and studies proposing conceptual frameworks for physical activity for PRO developments (Systematic Review 4). For more detailed information about these reviews and the entire PROactive project, readers are referred to respective reports and the main protocol.

Thus the aim of the report of this systematic review is to describe the methodology for conducting systematic review 5, the search results, available conceptual models as well as to outline implications for PROactive.

Methods

Overview

We will follow standard systematic review methodology following handbooks of the Centre for Reviews and Dissemination (York, UK) and the Cochrane Collaboration. The figure shows the steps we will follow for each review and the protocol below provides details on each step:



Review questions

The objectives of the reviews are to:

Review #5: Identify and summarize studies assessing associations between physical activity and its determinants and outcomes in patients with COPD and to develop an initial conceptual model for physical activity in COPD.

In- and exclusion criteria for studies

Inclusion criteria for review 5 (conceptual model)

Population:

Patients with chronic obstructive pulmonary disease (COPD), defined by spirometry (any definition as long as it is based on spirometry such as the current one: $FEV_1/FVC < 0.7$ and FEV_1 in % predicted $< 80\%$).

Content of article:

Articles that consider physical activity and any measurements that may be a determinant or outcome of low levels of physical activity in COPD.

Physical activity is defined as in its classic definition: "any bodily movement produced by skeletal muscles that results in energy expenditure"⁸⁸⁷. This definition will be broadly interpreted, thus in this review we will consider to include as physical activity:

- quantitative measures (activity monitors and questionnaires)
- activities of daily living (ADL) and instrumental-activities of daily living (I-ADL) (both are actually bodily movements that result in energy expenditure). We will consider any PROs that were included in systematic review 1 and thus follow the same criteria.

Physical activity will not contain measures of fitness/exercise capacity (e.g. 6-minute walk distance)

A determinant is defined as any factor that brings about change in a health condition or other defined characteristics. Examples of determinants in this review could be: age, lung hyperinflation, body mass index, co-morbidities (e.g. diabetes, depression). Determinants can be modifiable (e.g. dynamic hyperinflation, BMI) or non-modifiable (e.g. age).

An outcome is defined as all the possible results that may stem from exposure to a causal factor or from preventive or therapeutic interventions. Examples of outcomes in this review could be: lung function (FEV_1 , IC), systemic inflammation (IL-6, CRP),

mortality, exacerbations, health care use, patient-reported outcomes (dyspnea, quality of life), exercise capacity (6-MWD, maximal workload), social participation etc.

Study design:

- Longitudinal observational studies: both prospective and retrospective studies.
- Experimental studies: both arms (interventional + control) if the outcome is "physical activity" (as defined above).
- Experimental studies: only control arm considered for an analysis similar to a longitudinal observational study.
- Cross-sectional studies: No restrictions, but quality will be considered in the analyses.
- Validation of PA instruments if they include associations with other variables.

Exclusion criteria:

- Language restrictions: none

Searches

Electronic search for review 5

Databases:

Search strategy for Medline, Embase, PsycINFO, CINAHL:

(COPD or 'chronic lung disease' or 'chronic obstructive lung disease' or 'chronic bronchitis' or emphysema) AND Human AND ('physical activity' or functioning or function or 'motor activity' or 'chronic limitation of activity' or 'limitation of activity' or 'activity limitation' or 'sedentary lifestyle' or 'physical exertion' or 'physical effort' or 'activities of daily living' or 'daily living activities' or 'daily living activity') AND (determinant or risk factor or predictor or outcome or 'outcome measure' or 'outcome assessment' or 'clinical outcome') AND ('longitudinal study' or 'randomized clinical trial' or 'randomized controlled trial' or 'controlled trial' or 'comparative study' or 'validation studies' or 'experimental study' or 'cross-sectional study' or 'prevalence study')

Management of references

The bibliographic details of all retrieved articles will be stored in a RefWorks-COS file RefWorks (<http://www.refworks.com/>) is an online research management, writing and collaboration tool that is designed to help researchers easily gather, manage, store and share all types of information, as well as generate citations and bibliographies. For a research consortium such as PROactive an online platform is most attractive

because it avoids sending around files that are constantly being updated. Using RefWorks we will have a common workspace that is always up-to-date. The University of Zurich will be offered a licensing agreement with ProQuest, the provider of RefWorks-COS. The agreement allows members of the PROactive consortium to login from any place. Licensing for all institutions of the PROactive consortium will not be required. This special agreement will be offered by ProQuest because they are interested in gaining experience with such research consortiums that are likely to become the standard in the future.

We will have 5 RefWorks-COS bibliographies for the five different reviews. We will remove duplicate records resulting from the various database searches. The source of identified articles (database, hand search, researcher contacts) will be recorded in a "user defined field" of the RefWorks-COS file. Additional "user defined field" will be assigned to individual reviewers where they can record their decision for in- and exclusion.

Study selection

Abstracts and titles screening: the title and abstract of every citation retrieved by the database searches will be scrutinized independently by 2 members of the consortium. We will order all articles that are deemed potentially eligible by at least one member of the consortium. Decisions of the reviewers will be recorded in the RefWorks-COS file (for example for Review/User 1, 0 = exclude; 1 = order for full text assessment; 2 = related study, do not order but may be useful reference).

Full text screening: two members of the consortium will then independently evaluate the retrieved full texts and make a decision on inclusion or exclusion according to the predefined selection criteria. They will record their decision about in- or exclusion in the RefWorks-COS file and will record the reason if the paper is decided to be excluded. In case of persistent disagreement a third member will decide upon in- an exclusion. Each reviewer's decisions as well as the final decisions on journal articles will be recorded in the RefWorks-COS file. All studies that do not fulfill all of the predefined criteria will be excluded and their bibliographic details listed with the specific reason for exclusion. Any disagreements will be resolved by consensus with close attention to the inclusion/exclusion criteria.

Dealing with lack of information

If unclear whether a study fulfils the inclusion criteria or not based on full text assessment we will make three attempts to contact authors by email or telephone giving one week to respond each time. If we fail to retrieve the relevant information we will list the respective study as "potentially relevant study".

Dealing with duplication

Multiple papers may be published for a number of reasons including translations, results at different follow-up period or reporting of different outcomes. We will treat a study with multiple reports as a single study but make reference all the publications.

Reporting study selection

We will use a flow chart to describe the study selection process according to the PRISMA STATEMENT (<http://www.prisma-statement.org/>) diagram.

Pilot the study selection process: Initially, members of the consortium will pilot the selection process by applying the inclusion and exclusion criteria to a sample of 10 randomly selected papers. Inclusion and exclusion criteria will be refined and clarified.

Data extraction strategy

The data extraction from study reports will be performed independently by 2 members of the consortium. A data collection electronic form adapted for this review will be used to recollect the data. The form will be tested by the reviewers to identify if it is confusing or incomplete. The data form could be modified after consensus between the reviewers.

The reviewers will extract the information from the report following the data extraction form criteria. The information must be explicit and detailed (using 'not reported' or 'unclear' if is necessary), the original information must write in quotes. In case of the reviews were unable to extract the whole information from the report they would contact with study authors.

The reviewers will share the information at the end of the data extraction process. Any disagreements will be resolved by consensus with close attention to the data extraction form. In case of persistent disagreement, a third member of the consortium will resolve it.

Quality assessment

Methods of analysis and synthesis

The different designs will provide different information, from the cross-sectional studies we will learn the strength of association, from the longitudinal studies we will learn about the direction of the association. Therefore, we should conduct a meta-analysis based on the information of the longitudinal studies where PA is the outcome. We should conduct a meta-analysis based on the information of the cross-sectional

studies. And should conduct a meta-analysis based on the information of the longitudinal studies where PA is the exposure.

Organization of review 5

Lead: Milo Puhan and Judith Garcia-Aymerich

Protocol development: Milo Puhan, Anja Frei, Claudia Steurer-Stey, Judith Garcia Aymerich, Elena Gimeno, Roberto Rabinovich, Nick Hopkinson, Michael Polkey, Thierry Troosters, Hans van Remoortel, Niklas Karlsson

Review coordination: Elena Gimeno and Anja Frei

Database searches: Anja Frei

Reviewers: Elena Gimeno, Anja Frei, Milo Puhan, Claudia Steurer-Stey, Judith Garcia Aymerich, Roberto Rabinovich, Nick Hopkinson, Michael Polkey, Thierry Troosters, Hans van Remoortel, Jordi de Batlle

Tentative timelines

Initial protocol: March 5th 2010

Revision of protocol: May 7th 2010

Review of protocol by team: May 28th 2010

Finalize protocol: first week of June 2010

Database search: first week of June 2010

Title and abstract screening: depends on number of refs, tbd

Full text assessment: tbd

Data extraction: tbd

Report writing: tbd

Appendices

Systematic Review 5

Selection criteria for title and abstract screening

Inclusion Criteria

Population:

- Patients with chronic obstructive pulmonary disease (COPD)
- Other populations including COPD patients:
 - if they report results separately for each disease → order full text (1)
 - if they don't report the results separately and COPD population is ≥90% → order full text (1)
 - if they don't report the results separately and COPD population is <90% → exclude (0)
 - if the abstract doesn't explicit the previous points → order full text (1)

Type of article:

Articles that consider:

- measures of physical activity (PA) (any activity monitors and questionnaires *-see below list of questionnaires which we should consider*);
- and any other variable that is associated/correlated with PA, as potential determinant/outcome (e.g. age, BMI, co-morbidities, FEV₁, systemic inflammation, exacerbations, health care use, dyspnea, quality of life, exercise capacity, social participation, etc).

Note: we won't consider PA as measures of fitness/exercise capacity (e.g. 6MWT)

Study design:

- Longitudinal observational studies: prospective and retrospective studies.
- Experimental studies if have "physical activity" as an outcome.
- Cross-sectional studies.
- Validation of PA instruments if they include associations with other variables.

Exclusion criteria

Language restrictions: none

If the Abstract is not clear enough on the eligibility criteria or does not contain the necessary information → please be conservative and order full text (1)

Use your user filed to classify title & abstract screening in RefWorks file:

- 0 = exclude
- 1 = order for full text
- 2 = related study that may be useful reference

List of questionnaires to be consider in this review:

- The Activities Checklist, Arbuckle, 1994
- Zutphen Physical Activity Questionnaire, Caspersen, 1991
- The Adelaide Activities Profile (AAP), Clark, 1995
- The Customary Activity Questionnaire, Dallosso, 1988
- The YALE Physical Activity Survey for Older Adults (YPAS), Dipietro, 1993
- Meaningful Activity Participation Assessment (MAPA), Eakman, 2007
- The Lifetime Total Physical Activity Questionnaire, Friedenreich, 1998
- The Physical Activity Questionnaire, Liu, 2001
- The Veterans Specific Activity Questionnaire (VSAQ), Myers, 1994
- The Physical Activity and Disability Survey (PADS), Rimmer, 2001
- The LSA Physical Activity Questionnaire (LAPAQ), Stel, 2003
- CHAMPS Physical Activity Questionnaire, Stewart, 2001
- Physical activity questionnaire, Voorrips, 1991
- The Physical Activity Scale for the Elderly (PASE), Washburn, 1993
- Scale of Older Adults' Routine (SOAR), Zisberg, 2005

Online supplement 2. Search strategy and results in 4 databases.

We performed searches in the databases Medline, Embase, CINAHL and Psycinfo using the following search terms: chronic obstructive lung disease, chronic bronchitis, emphysema, physical activity, motor activity, activity of daily living, physical inactivity, risk factors, outcome assessment, randomized controlled trial, experimental studies, cohort studies, cross-sectional studies, longitudinal studies. All publications prior to November 2012 (the time of the most recent search) were included. Additionally, we also performed manual searches of (i) all references listed in retrieved full-text articles and (ii) the first 50 references (sorted by link ranking) from PubMed's "Related Articles" search filter of retrieved full-text articles. We also contacted external scientists on this topic to identify further articles.

The bibliographic details of all retrieved articles were stored in a RefWorks-COS file. We removed duplicate records resulting from the various database searches. The source of identified articles (database, hand search, and researcher contacts) was recorded in a "user defined field" of the RefWorks-COS file. An additional "user defined field" was assigned to individual reviewers where they recorded their decision for in- and exclusion.

Ovid MEDLINE(R), Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid OLDMEDLINE(R) 1946 to Present

#	Suchen	Ergebnisse
1	Lung Diseases/	52324
2	chronic.tw.	630259
3	1 and 2	6161
4	lung diseases, obstructive/ or pulmonary disease, chronic obstructive/ or bronchitis, chronic/	31477
5	(COPD or 'chronic lung disease' or 'chronic obstructive lung disease' or 'chronic bronchitis').tw.	29350
6	exp Pulmonary Emphysema/	12869
7	emphysema.tw.	15442
8	emphysema/ or mediastinal emphysema/ or subcutaneous emphysema/	6986
9	7 not 8	12113
10	3 or 4 or 5 or 6 or 9	63861
11	exp Motor Activity/	88894
12	exp "Activities of Daily Living"/	40409
13	exp Exercise/	51689
14	exp Walking/	12461
15	("physical activit*" or "Motor activit*" or "activit* of daily living" or "Chronic Limitation of Activit*" or "Limitation of Activit*" or "Daily Living Activit*" or "motor inactivit*" or "physical inactivit*" or "functional activit*" or walking or "functional performance").tw.	100599
16	or/11-15	235838
17	10 and 16	2330
18	Risk factors of readmission to hospital for a COPD exacerbation: a prospective study.ti.	1
19	Characteristics of Physical Activities in Daily Life in Chronic Obstructive Pulmonary Disease.ti.	1
20	17 and 18	1
21	17 and 19	1
22	"outcome assessment (health care)"/ or treatment outcome/	460397
23	risk factors/	418203

4

18.06.2010 10:52

Suchergebnisse

<http://ovidsp.tx.ovid.com/sp-2.3.1b/ovidweb.cgi>

24	(outcome adj3 (measur* or assess*).tw.	116810
25	("risk factor*" or predictor).mp. or "clinical outcome".tw. [mp=title, original title, abstract, name of substance word, subject heading word, unique identifier]	614457
26	((quantif* or measur* or assess*) adj3 (activit* or performance or function)).tw.	138787
27	or/22-26	1222316
28	18 and 27	1
29	19 and 27	1
30	17 and 27	762
31	cohort studies/ or longitudinal studies/ or follow-up studies/ or prospective studies/ or cross-sectional studies/	861267
32	clinical trials as topic/ or controlled clinical trials as topic/ or randomized controlled trials as topic/	217736
33	("longitudinal study" or "randomized clinical trial" or "randomized controlled trial" or "controlled trial" or "comparative study" or "cohort study" or "experimental study" or "cross-sectional study").tw.	233352
34	Comparative Study/	1488243
35	31 or 32 or 33	1188991
36	30 and 35	291
37	limit 36 to humans	290
38	((quantif* or measur* or assess* or investigat* or examin* or evaluat*) adj10 (activit* or performance or function)).tw.	521428
39	22 or 23 or 24 or 25 or 38	1574543
40	17 and 39	998
41	("19255291" or "18708291" or "16738033" or "12740256" or "18573647" or "17268729" or "16537849" or "9554623").af.	8
42	40 and 41	8
43	from 40 keep 1-499	499
44	from 40 keep 500-998	499
45	from 44 keep 1	1

Suchergebnisse: from 44 [from 41 keep 500-998] keep 1

Verfügbare Ergebnisse: 1

Angezeigte Ergebnisse: #1

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<1>
VN - Ovid Technologies
DB -
UI - 15620116
RD - From MEDLINE, a database of the U.S. National Library of Medicine.
ST - MEDLINE
AU - Chou SH
```

ID	Search	Results	Date of search
7	#3 AND #6	1314	21 Jun 2010
6	#4 OR #5	1095605	21 Jun 2010
5	((quantif* OR measur* OR assess* OR investigat* OR examin* OR evaluat*) NEAR/10 (activit* OR performance OR function)):ab,ti	591744	21 Jun 2010
4	((quantif* OR measur* OR assess*) NEAR/3 (activit* OR performance OR function)):ab,ti OR ((abilit* OR disabilit*) NEXT/3 (measur* OR assess*)):ab,ti OR (outcome NEAR/3 measurement):ab,ti OR (outcome NEAR/3 assessment):ab,ti OR 'risk factors'/exp OR predictor OR 'clinical outcome':ab,ti OR 'behavioral risk factor surveillance system'/exp OR 'risk factor'/exp	672506	21 Jun 2010
3	#1 AND #2	5501	21 Jun 2010
2	'motor activity'/exp OR 'exercise physiology'/exp OR 'physical activity':ab,ti OR 'physical activities':ab,ti OR 'motor activity':ab,ti OR 'motor activities':ab,ti OR 'activity of daily living':ab,ti OR 'activities of daily living':ab,ti OR 'chronic limitation of activity':ab,ti OR 'limitation of activity':ab,ti OR 'limitation of activities':ab,ti OR 'daily living activity':ab,ti OR 'daily living activities':ab,ti OR 'motor inactivity':ab,ti OR 'motor inactivities':ab,ti OR 'physical inactivity':ab,ti OR 'physical inactivities':ab,ti OR 'functional activity':ab,ti OR 'functional activities':ab,ti OR 'functional performance':ab,ti OR walking:ab,ti OR exercise:ab,ti OR 'physical activity'/exp	566815	21 Jun 2010
1	'chronic lung disease' OR 'chronic lung emphysema'/exp OR 'chronic lung emphysema' OR 'chronic obstructive lung disorder'/exp OR 'chronic obstructive lung disorder' OR 'copd'/exp OR 'chronic lung disease'/exp OR 'chronic obstructive lung disease'/exp OR 'chronic bronchitis':ab,ti OR 'chronic pulmonary disease'/exp OR 'chronic obstructive pulmonary disease'/exp	78004	21 Jun 2010

S13	S11 and S12	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	6833
S12	chronic	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	77379
S11	(MH "Lung Diseases, Obstructive+")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	22023
S10	(MH "Outcomes (Health Care)+")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	110184
S9	(MH "Risk Factors+")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	50384
S8	(MH "Outcome Assessment")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	9735
S7	(MH "Treatment Outcomes+")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	77529
S6	(MH "Motor Activity+")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	2164
S5	(MH "Exercise+")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	36565
S4	(MH "Walking+")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	8650
S3	(MH "Activities of Daily Living") or (MH "Physical Activity")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	22081
S2	(MH "Emphysema+")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	939
S1	(MH "Pulmonary Disease, Chronic Obstructive+")	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	4162
			Search Screen - Advanced Search Database - CINAHL	
S16	S1 or S2 or S13 or S14	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	9238
S15	TI (("physical activit"" or 'Motor activit" or 'activit" of daily living' or 'Chronic Limitation of Activit" or 'Limitation of Activit" or 'Daily Living Activit" or "motor inactivit"" or 'physical inactivit" or "functional activit"" or walking or "functional performance")) or AB (("physical activit"" or 'Motor activit" or 'activit" of daily living' or 'Chronic Limitation of Activit" or 'Limitation of Activit" or 'Daily Living Activit" or "motor inactivit"" or 'physical inactivit" or "functional activit"" or walking or "functional performance")))	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	27578
S14	TI ((COPD or 'chronic lung disease' or 'chronic obstructive lung disease' or 'chronic bronchitis')) or AB ((COPD or 'chronic lung disease' or 'chronic obstructive lung disease' or 'chronic bronchitis')))	Search modes - Find all my search terms	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL	5761

#	Suchen	Ergebnisse
1	(COPD or 'chronic lung disease' or 'chronic obstructive lung disease' or 'chronic bronchitis').tw.	737
2	lung disorders/ or exp chronic obstructive pulmonary disease/ or exp pulmonary emphysema/	1251
3	lung emphysema.mp. or pulmonary emphysema.tw. [mp=title, abstract, heading word, table of contents, key concepts]	9
4	1 or 2 or 3	1494
5	"chronic obstructive pulmonary disease".mp. or "chronic pulmonary disease".tw. [mp=title, abstract, heading word, table of contents, key concepts]	873
6	4 or 5	1722
7	("physical activit*" or 'Motor activit*' or 'activit* of daily living' or 'Chronic Limitation of Activit*' or 'Limitation of Activit*' or 'Daily Living Activit*' or "motor inactivit*" or 'physical inactivit*' or "functional activit*" or walking or "functional performance").tw.	27087
8	exp "activities of daily living"/	3061
9	exp Physical Activity/	14400
10	exp exercise/	11680
11	exp walking/	2001
12	exp Motor Performance/	10971
13	or/7-12	44545
14	6 and 13	151
15	exp treatment outcomes/	22382
16	exp risk factors/	23364
17	(outcome adj3 (measur* or assess*)).tw.	19987
18	("risk factor*" or predictor).mp. or "clinical outcome".tw. [mp=title, abstract, heading word, table of contents, key concepts]	73869
19	((quantif* or measur* or assess*) adj3 (activit* or performance or function)).tw.	30715
20	or/15-19	138245
21	14 and 20	42
22	limit 21 to human	42
23	((quantif* or measur* or assess* or investigat* or examin* or evaluat*) adj10 (activit* or performance or function)).tw.	111820
24	15 or 16 or 17 or 18 or 23	214728
25	14 and 24	68
26	from 25 keep 1	1

Suchergebnisse: from 25 [14 and 24] keep 1

Verfügbare Ergebnisse: 1

Angezeigte Ergebnisse: #1

Online supplement 3. Form for guidance of title and abstract screening process.

Inclusion Criteria

Population:

- Patients with chronic obstructive pulmonary disease (COPD)
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Type of article:

Articles that consider:

- measures of physical activity (PA) (any activity monitors and questionnaires -see *below list of questionnaires which we should consider*);
- and any other variable that is associated/correlated with PA, as potential determinant/outcome (e.g. age, BMI, co-morbidities, FEV₁, systemic inflammation, exacerbations, health care use, dyspnea, quality of life, exercise capacity, social participation, etc).

Note: we won't consider PA as measures of fitness/exercise capacity (e.g. 6MWT)

Study design:

- Longitudinal observational studies: prospective and retrospective studies.
- Experimental studies if have "physical activity" as an outcome.
- Cross-sectional studies.
- Validation of PA instruments if they include associations with other variables.

Exclusion criteria

Language restrictions: none

If the Abstract is not clear enough on the eligibility criteria or does not contain the necessary information → please be conservative and order full text (1)

Use your user filed to classify title & abstract screening in RefWorks file:

0 = exclude

1 = order for full text

2 = related study that may be useful reference

List of questionnaires to be consider in this review:

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- The Customary Activity Questionnaire, Dallosso, 1988
- The YALE Physical Activity Survey for Older Adults (YPAS), Dipietro, 1993
- Meaningful Activity Participation Assessment (MAPA), Eakman, 2007
- The Lifetime Total Physical Activity Questionnaire, Friedenreich, 1998
- The Physical Activity Questionnaire, Liu, 2001
- The Veterans Specific Activity Questionnaire (VSAQ), Myers, 1994
- The Physical Activity and Disability Survey (PADS), Rimmer, 2001
- The LSA Physical Activity Questionnaire (LAPAQ), Stel, 2003
- CHAMPS Physical Activity Questionnaire, Stewart, 2001
- Physical activity questionnaire, Voorrips, 1991
- The Physical Activity Scale for the Elderly (PASE), Washburn, 1993
- Scale of Older Adults' Routine (SOAR), Zisberg, 2005

Online supplement 4. Form for guidance of full text assessment process.

Decide on in- and exclusion of study based on the full text and the following inclusion criteria (Systematic review 5 – Conceptual model)

Reviewer: 1st Author: Year: Language:

Inclusion criteria:

- | | |
|---|----------|
| 1. Patients with COPD defined by spirometry (any definition as long as it is based on spirometry such as the current one: $FEV_1/FVC < 0.7$ and FEV_1 in % predicted $< 80\%$) (NOTE: consider also item a in case of other populations) | Yes / No |
| a. Other populations including COPD patients: the authors report results separately for each disease or they don't report the results separately but COPD population (also by spirometry) is $\geq 90\%$ | Yes / No |
| 2. Study considers measurement of PA^1 (activity monitor or questionnaire (see example*)) | Yes / No |
| 3. Study considers any measurements that may be (at least one): | Yes / No |
| a. a determinant of PA in COPD (defined using any measure of association (e.g. OR, HR, etc.) but not an agreement measure (correlation coefficient, Bland-Altman plot, p-value for mean difference, etc.)) or | |
| b. an outcome of PA in COPD (defined using any measure of association (e.g. OR, HR, etc.) but not an agreement measure (correlation coefficient, Bland-Altman plot, p-value for mean difference, etc.)) | |
| 4. Study design is: | Yes / No |
| - longitudinal observational studies (prospective and retrospective) or | |
| - experimental studies if have PA as an outcome / determinant or | |
| - cross-sectional studies or | |
| - validation of PA instruments if they include associations with other variables | |

If not included, specify reasons below:

- ☐ Study doesn't show an association measure, but an agreement measure (correlation coefficient, Bland-Altman plot, p-value for mean difference, etc.)
- ☐ Not relevant patient group
- ☐ Study does not consider PA^1
- ☐ PA is measured as exercise/fitness capacity (eg: 6-minute walk distance, maximal exercise test)
- ☐ Article presents data from review and no primary data
- ☐ Other: _____

Final decision: Include ☐ Exclude ☐

***Questionnaires need to include, according to the definition by Caspersen, a quantitative measure of PA (e.g. time spent at x METs) or ADL or I-ADL. Examples of PA questionnaires include but are not restricted to:**

- The Activities Checklist, Arbuckle, 1994
- Zutphen Physical Activity Questionnaire, Caspersen, 1991
- The Adelaide Activities Profile (AAP), Clark, 1995
- The Customary Activity Questionnaire, Dallosso, 1988
- The YALE Physical Activity Survey for Older Adults (YPAS), Dipietro, 1993
- Meaningful Activity Participation Assessment (MAPA), Eakman, 2007
- The Lifetime Total Physical Activity Questionnaire, Friedenreich, 1998
- The Physical Activity Questionnaire, Liu, 2001
- The Veterans Specific Activity Questionnaire (VSAQ), Myers, 1994
- The Physical Activity and Disability Survey (PADS), Rimmer, 2001
- The LSA Physical Activity Questionnaire (LAPAQ), Stel, 2003
- CHAMPS Physical Activity Questionnaire, Stewart, 2001
- Physical activity questionnaire, Voorrips, 1991
- The Physical Activity Scale for the Elderly (PASE), Washburn, 1993
- Scale of Older Adults' Routine (SOAR), Zisberg, 2005

Online supplement 5. Details on methods of data extraction and quality assessment.

The following information was extracted from each included study: (i) bibliographic details such as first author, year, journal, and aim of the study; (ii) study description such as study design, setting, recruitment method, study group characteristics (sample size, sex, age, smoking habit, lung function parameters, dyspnoea, body mass index (BMI)); (iii) measurement of physical activity such as direct and/or indirect measure, and physical activity variables; (iv) information related to determinants of physical activity (if any) such as determinant name, estimate of the association, statistical test or model, and covariates; (v) information related to outcomes of physical activity (if any) such as outcome name, estimate of the association, statistical test or model, and covariates; and (vi) comments from the reviewers. In studies that compared COPD patients with healthy subjects, we extracted only data for the COPD group.

The GRADE approach is used by more than 70 organizations to establish the confidence in effect estimates based on the underlying quality of the evidence. This approach rates the quality of evidence for each variable across studies, this does not rate each study as a single unit. Four reviewers assessed the quality of evidence for each association and reached a consensus on the final rating. Each association started at ++++ (high quality = high confidence that the true effect lies close to that of the estimate of the effect and more studies are unlikely to change the estimate) and was downgraded for specific reasons^{S88 S89}. The criteria, all of them referring to threats to validity, to up- or downgrade the confidence in effect estimates were: (i) direction of association; (ii) control for confounding; (iii) consistency of association across studies; (iv) strength of association; (v) directness; (vi) applicability of results to a broader COPD population; (vii) precision; (viii) other: e.g. publication bias or different measures of physical activity. For each threat to validity, we downgraded the confidence rating by -1 but did not further downgrade if the quality was very low (i.e., there is a little

confidence in the effect estimate, the true effect is likely to be substantially different from the estimate of effect and more studies are very likely to change the estimate). The assessment of the quality of evidence for this systematic review was focused on those determinants and outcomes of physical activity assessed by at least 2 manuscripts.

Online supplement Table 1. Reason for exclusion after full text assessment and data extraction process.

Reference	Reason for exclusion
Abdellaoui, A. 2011, Fund Clin Pharmacol	Other: conference abstract
Ade-Oshifogun, J. 2008	Other: conference abstract
Ade-Oshifogun, J. 2009	Other: conference abstract
Ade-Oshifogun, J. 2012, J Nurs Scholar	No physical activity measure provided
Agarwal, V. 2012, J Cardiopulm Rehab Prev	No information on determinants or outcomes of physical activity
Aguilaniu, BC. 2010, Int J Chron Obstruct Pulm Dis	No primary data showed
Al Ahmari, AD. 2011, Am J Respir Crit Care Med	Other: conference abstract
Alcazar, B. 2012, Arch Bronconeumol	No physical activity measure provided
Altenburg, WA. 2011, Am J Respir Crit Care Med	Other: conference abstract
Alvarez-Gutierrez, F. 2007, Arch Bronconeumol	No physical activity measure provided
Alvarez-Nemegyei, J. 2006, Rev Med Instit Mex Seg Soc	No relevant population included
Amudhan, SR.2011, Natl Med J India	No relevant population included
Ando, M. 2003, Nihon Kokyuki Gakkai Zasshi	Other: Japanese language
Anonymous. 2010, Harvard Mens Health Watch	No primary data showed
Antonelli-Incalzi, R. 2007, Dem Geriat Cog Dis	No information on determinants or outcomes of physical activity
Archibald, CJ. 1987, Can J Rehab	No physical activity measure provided
Arne,M. 2011. Int J Chron Obstruct Pulm Dis	No relevant population included
Arvidsson, D. 2006, Clin Nutr	No assumption of directionality
Avdeeva, E. 2000, Klin Med	Other: Russian language
Bae, YO. 2003, Tuberc Respir Dis	Other: Korean language
Balcells Vilarnau, E. 2007, Arch Bronconeumol	No primary data showed
Barchfeld,T. 1999, Med Klin	No assumption of directionality
Batty, G. 2003, Am J Public Health	No relevant population included
Bauldoff, G. 2002, Chest	No physical activity measure provided
Behnke, M. 2000, Respir Med	No physical activity measure provided
Belfer, MH. 2007, COPD	No primary data showed
Beling, J. 2009, Cardiopul Phys Ther Journal	No physical activity measure provided
Bell, KR. 2004, Arch Phys Med Rehabil	No information on determinants or outcomes of physical activity

Belza, B. 2001, Nurs Res	No assumption of directionality
Bentsen,SB. 2010, Patient Educ Couns	No physical activity measure provided
Biger, M. 2010, Fundam Clin Pharmacol	Other: conference abstract
Bon, JM. 2010, Am J Respir Crit Care Med	Other: conference abstract
Bridevaux, PO. 2009, Eur Respir J	Sample includes <90% COPD
Burr, JF. 2012, Can Fam Phys	No primary data showed
Camillo, C. 2008, Lung	No assumption of directionality
Cantley, MEG. 2001 (thesis)	No assumption of directionality
Carrieri-Kohlman, V. 2005, J Cardiopulm Rehabil	No physical activity measure provided
Carter, R. 2002, J Cardiopulm Rehabil	No assumption of directionality
Carter, R. 2011, JNP	No primary data showed
Casaburi, RC. 2007, COPD	No primary data showed
Castro, AAM. 2012, Clinics	No physical activity measure provided
Cavalheri, V. 2011, Respir Med	No assumption of directionality
Cazzola, M. 2010, Respir Med	Other: short term pharma study
Centers for Disease Control and Prevention. 2001	No relevant population included
Chang, A. 2008, Contemp Clin Trials	No primary data showed
Chen, G. 2011, J Cent South Univ (Medical sciences)	Other: Chinese language
Cheng, YJ. 2003, Br J Sports Med	No relevant population included
Christensen, CC. 2004, Eur Respir J	No physical activity measure provided
Chu, LW. 1999, Gerontology	No relevant population included
Cindy Ng, LW. 2012, Disab Rehab	No information on determinants or outcomes of physical activity
Clark, N. 2009, Int J Chron Obstruct Pulm Dis	No primary data showed
Cohen, MD. 2010, J Cardiopulm Rehabil	No assumption of directionality
Cohen, MD. 2011, Am J Respir Crit Care Med	Other: conference abstract
Cohen, MD. 2012, COPD	No information on determinants or outcomes of physical activity
Cooper, CB. 2011, Am J Respir Crit Care Med	Other: conference abstract
Coronell, C. 2004, Eur Respir J	No assumption of directionality
Correa, KS. 2011, Rev Brasil Fisioter	No assumption of directionality
Costa, F. 2011, Am J Respir Crit Care Med	Other: conference abstract
Costi, S. 2009, Chest	No physical activity measure provided
Covey, MK. 2004, Am J Nurs	No primary data showed
Cutaia, M. 2011, Lung	No information on determinants or outcomes of physical activity
de Torres, JP. 2006, Health Qual Life	No physical activity measure provided

Outcomes	
Dechman, G. 2008, Cardiopulm Phys Ther J	No primary data showed
Denkinger, MD. 2012, Z Gerontol Geriatr	No relevant population included
DePew, ZS. 2012, Chron Respir Dis	No information on determinants or outcomes of physical activity
DePew, ZS. 2013, Respir Care	No relevant population included
Dobosz, K. 2007, Fam Med Prim Care Rev	Sample includes <90% COPD
Dodd, JW. 2011, Am J Respir Crit Care Med	Other: conference abstract
Dolmage, TE. 2012, Chest	No physical activity measure provided
Donaire-Gonzalez, D. 2011, Arch Bronconeumol	No information on determinants or outcomes of physical activity
Donesky-Cuenca, D. 2007, Heart Lung	No information on determinants or outcomes of physical activity
Dubbert, PM. 2002, J Gerontology	No relevant population included
Dyer, CA. 2012, Physiother	No information on determinants or outcomes of physical activity
Dyer, CAE. 2002, Thorax	No relevant population included
Eakin, EG. 1997, J Health Psych	No relevant population included
Eisner, MD. 2008, Am J Med	Results not provided for only COPD
Eisner, MD. 2011, Thorax	No physical activity measure provided
Emery, CF. 1998, Health Psych	No physical activity measure provided
Emery, CF. 2001, Am J Respir Crit Care Med	No physical activity measure provided
Emery, CF. 2003, Health Psych	No assumption of directionality
Evans, RA. 2011, Chest	No physical activity measure provided
Fernandes, FL. 2010, J Bras Pneumol	No physical activity measure provided
Folgering, H. 1994, Int J Sports Med	No primary data showed
Fong, KN. 2010, Indoor Air	No information on determinants or outcomes of physical activity
Frey, JG. 1998, Rev Mal Respir	No assumption of directionality
Furlanetto, KC. 2010, Arch Phys Med Rehab	No information on determinants or outcomes of physical activity
Gagnon, P. 2011, Am J Respir Crit Care Med	Other: conference abstract
Garcia-Aymerich, J. 2007, Am J Respir Crit Care Med	No primary data showed
Garcia-Aymerich, J. 2009, Arch Bronconeumol	No primary data showed
Garcia-Polo, C. 2012, Respir Med	No physical activity measure provided
Garcia-Rio, F. 2011, Chest	No physical activity measure provided
Garcia-Rio, FC. 2007, Med Clin	No primary data showed
Garfield, BE. 2012, Eur Respir J	No assumption of directionality
Garrod, R. 2000, Respir Med	No assumption of directionality

Gause-Nilsson, I. 1999, J Nutr Health Aging	No relevant population included
Goris, AHC. 2003, Br J Nutr	No assumption of directionality
Gorzelniaak, L. 2012, COPD	No assumption of directionality
Gosker, HR. 2003, Chest	No assumption of directionality
Gouzi, F. 2011, Arch Phys Med Rehab	No information on determinants or outcomes of physical activity
Greenland, P. 2001, J Cardiopulm Rehab	Other: conference abstract
Grimby, GC. 1977, Bull Eur Physiopathol Respir	No primary data showed
HajGhanbari, B. 2011, Respir Med	No assumption of directionality
Hannink, JDC. 2010, Chest	No physical activity measure provided
Hartman, JE. 2011, Am J Respir Crit Care Med	Other: conference abstract
Hassanein, SE. 2009, J Cardiopulm Rehab	No physical activity measure provided
Haughney, J. 2004, Prim Care Resp J	No primary data showed
He, J. 2006, N Engl J Med	No primary data showed
Hecht, A. 2009, COPD	No assumption of directionality
Heppner, PS. 2006, J Cardiopulm Rehab	No physical activity measure provided
Herlitz, J. 2005, Int J Cardiol	No relevant population included
Hernandes, NA. 2009, J Bras Pneumol	No assumption of directionality
Hill, K. 2010, Thorax	No information on determinants or outcomes of physical activity
Hill, K. 2011, Respiriology	Other: conference abstract
Hill, K. 2012, Chest	No information on determinants or outcomes of physical activity
Hirayama, F. 2010, J Phys Act Health	No relevant population included
Houchen, L. 2011, Physiotherapy	No physical activity measure provided
Hudon, C. 2008, Can Fam Phys	No primary data showed
Hukkinen, M. 2009, COPD	No relevant population included
Hyland, ME. 1999, Psych Health Med	No assumption of directionality
Incalzi, RA. 1998, Respir Med	No physical activity measure provided
Incalzi, RA. 2005, Chest	No relevant population included
Isoaho, R. 1995, Scand J Prim Health Care	No assumption of directionality
Jackson, AS. 2013, Eur Respir J	No assumption of directionality
Janssens, T. 2011, Chest	No physical activity measure provided
Jardim, JR. 2011, Am J Respir Crit Care Med	Other: conference abstract
Jehn, ML. 2011, Eur J Cardiovasc Prev Rehabil	Other: conference abstract
Jehn, ML. 2011, Respir Med	No assumption of directionality
Jeng, C. 2003, Heart Lung	No physical activity measure provided
Jonkers, CC. 2012, Int Psychoger	No physical activity measure provided

Ju, CR. 2011, Respiriology	Other: conference abstract
Ju,CC. 2009, Respiriology	Other: conference abstract
Kajiwar, T. 2010, Am J Respir Crit Care Med	Other: conference abstract
Kanda, M. 2012, Int Med	No information on determinants or outcomes of physical activity
Kanervisto, M. 2010, Chron Respir Dis	No physical activity measure provided
Kao, MC. 2011, PM and R	Other: conference abstract
Kapella, MC. 2006, Nurs Res	No physical activity measure provided
Kapella, MC. 2011, Med Sci Sports Exerc	No physical activity measure provided
Kaptein, AA. 1993, Eur Respir J	No assumption of directionality
Kato, DJ. 2012, J Cardiopulm Rehab Prev	No physical activity measure provided
Katula, JA. 2004, Health Qual Life Outcomes	No physical activity measure provided
Katz, P. 2011, J Cardiopulm Rehab Prev	No relevant population included
Katz, PP. 2010, Chest	Sample includes <90% COPD
Katz, PP. 2010, J Cardiopulm Rehab	No relevant population included
Kim, S. 2004, Chest	No relevant population included
Kim, SH. 2011, Korean J Fam Med	No physical activity measure provided
Kiyokawa, N. 2009, Respiriology	Other: conference abstract
Kon, SS. 2011, Thorax	No primary data showed
Kon, SS. 2011, Thorax	Other: conference abstract
Koo, P. 2009, Chest	Other: conference abstract
Kovelis, D. 2011, COPD	No physical activity measure provided
Kuyucu, T. 2011, Tuberk Toraks	No relevant population included
Kwua-Yun, W. 2012, Respir Care	No physical activity measure provided
Lahaije, AJ. 2010, Respir Med	No information on determinants or outcomes of physical activity
Langer, D. 2009, J Heart Lung Transplant	No relevant population included
Langer, D. 2009, Thorax	No primary data showed
Langer, D. 2011, Am J Respir Crit Care Med	Other: conference abstract
Langer, D. 2012, Respir Med	No relevant population included
Lareau, SC. 2005, Int J Ther Rehabil	No primary data showed
Larson, JL. 2007, COPD	No primary data showed
Larson, JL. 2011, Am J Respir Crit Cre Med	Other: conference abstract
Lautenschlager, NT. 2006, Cur Opinion Psych	No primary data showed
Lee, AH. 2011, Ann Epidemiol	No information on determinants or outcomes of physical activity
Lee, JS. 2007, Gerontology	No relevant population included
Leff, B. 2009, J Am Geriatr Soc	No relevant population included
Leidy,NK. 1999, Respir Care	No assumption of directionality
Leung, RW. 2011, Contemp Clin Trials	No physical activity measure provided

Lewis, KE. 2011, Am J Respir Crit Care Med	Other: conference abstract
Lewis, MJ. 2009, Clin Physiol Funct Imaging	No physical activity measure provided
Liddell, F. 2010, Physiotherapy	No physical activity measure provided
Lomundal, BK. 2012, Int J Chron Obstruct Pulm Dis	No physical activity measure provided
Lopez Varela, MV. 2010, Eur Respir J	No physical activity measure provided
Mackenbach, JP. 2001, J Epidemiol Community Health	No relevant population included
Magnussen, H. 2009, Med Klin	No primary data showed
Magnussen, H. 2009, Proc Am Thorac Soc	No primary data showed
Man, WD. 2009, Thorax	Other: conference abstract
Mannino, DM. 2002, Respir Care	No relevant population included
Mantoani, LC. 2011, Rev Brasil Fisiot	No assumption of directionality
Matsunaga, H. 2011, Am J Respir Crit Care Med	Other: conference abstract
McGlone, S. 2006, COPD	No assumption of directionality
Medhi, GK. 2006, J Assoc Physicians India	No relevant population included
Menotti, A. 1985, J Epidemiol Community Health	No relevant population included
Metzner, HL. 1983, Prev Med	No relevant population included
Mikami, M. 1995, Japanese J Thorac Dis	Other: Japanese language
Miller, RR. 2004, J Am Geriatr Soc	Sample includes <90% COPD
Miravittles, M. 2009, Thorax	No assumption of directionality
Miravittles, M. 2013, Respir Med	No physical activity measure provided
Mittal, N. 2011, J Invest Med	Other: conference abstract
Mok, M. 2012, J Am Coll Cardiol	Other: conference abstract
Monso, E. 1998, Respir Med	No assumption of directionality
Montes de Oca, M. 2009, Respir Med	No physical activity measure provided
Moore, R. 2009, J Cardiopulm Rehab	No assumption of directionality
Morgan, M. 2003, Thorax	No primary data showed
Morgan, M. 2008, Thorax	No primary data showed
Morimoto, M. 2003, Nihon Kango Kagakkai Shi	No assumption of directionality
Morimoto, M. 2004, Nurs Health Sci	Other: Japanese language
Moy, ML. 2008, J Rehabil Res Dev	No assumption of directionality
Moy, ML. 2010, Am J Respir Crit Care Med	Other: conference abstract
Nader, GA. 2009, Curr Opin Rheumatol	No relevant population included
Nakamura, Y. 2001, Nihon Kokyuki Gakkai Zasshi	Other: Japanese language
Nejjari, C. 1997, Rev Epidemiol Sante Publique	No relevant population included

Nguyen, HQ. 2011, J Nurs Meas	No information on determinants or outcomes of physical activity
Nguyen, HQ. 2012, Arch Phys Med Rehab	No assumption of directionality
No author. 2002, SportEX Health	No primary data showed
No author. 2006, Am J Nurs	No primary data showed
No author. 2006, Medicina Sport	No primary data showed
No author. 2008, Cardiology Rev	No primary data showed
No author. 2008, South Online J Nurs Res	No physical activity measure provided
Novoa, N. 2009, Interact Cardiovasc Thorac Surg	No relevant population included
Ohar, J. 2006, J Respir Dis	No primary data showed
Ortega, FB. 2010, J Allergy Clin Immunol	No relevant population included
Ozkan, S. 2009, Saudi Med J	No assumption of directionality
Ozkan, S. 2012, Nobel Med	No physical activity measure provided
Paffenbarger, R. 1978, Am J Epidemiol	No relevant population included
Parada, A. 2011, Rev Med Chil	No assumption of directionality
Parshin, VD. 2009, Khirurgiia	No physical activity measure provided
Partridge, MR. 2010, Eur Respir J	No physical activity measure provided
Patel, SA. 2005, Respiration	No primary data showed
Pavord, ID. 2009, Lancet	No primary data showed
Perez-Castejon, J. 2007, Rev Multidiscip Gerontol	No primary data showed
Petersen, AMW. 2008, Scand J Med Sci Sports	No physical activity measure provided
Pison, CC. 1999, Rev Mal Respir	No primary data showed
Pitta, F. 2005, Am J Respir Crit Care Med	No assumption of directionality
Pitta, F. 2005, Arch Phys Med Rehab	No assumption of directionality
Regueiro, EM. 2009, Clinics	No assumption of directionality
Reilly, K. 2008, Am J Epidemiol	No physical activity measure provided
Ren, XS. 1998, Med Care	No physical activity measure provided
Riddoch-Contreras, J. 2012, COPD	No relevant population included
Ringbaek, TJ. 2001, Respir Med	No physical activity measure provided
Robles, P. 2012, Can Respir J	Other: conference abstract
Roig, M. 2011, Physiother Can	No relevant population included
Ruhle, KH. 2009, Pneumologie	No information on determinants or outcomes of physical activity
Salvi, SS. 2009, Lancet	No primary data showed
Schonhofer, B. 1997, Eur Respir J	No assumption of directionality
Serres, I. 1998, Chest	No assumption of directionality
Shed, D. 2012, Phys Ther Rev	No primary data showed

Shephard, RJC. 1982, Ann Clin Res	No primary data showed
Sherrill, DM. 2005, J Neuroeng Rehabil	No assumption of directionality
Shrikrishna, D. 2011, Thorax	Other: conference abstract
Shrikrishna, D. 2012, Eur Respir J	No assumption of directionality
Simon, KM. 2011, Rev Brasil Fisiot	No assumption of directionality
Singh, SJ. 2001, J Cardiopulm Rehabil	No assumption of directionality
Singh, SJ. 2001, Respir Med	No assumption of directionality
Slinde, F. 2003, Clin Nut	No assumption of directionality
Smith, BJ. 2002, Chron Respir Dis	COPD diagnosis not defined by spirometry
Smith, BJ. 2005, Med J Aust	No relevant population included
Snijders, MC. 1998, Stud Health Technol Inform	No physical activity measure provided
Snijders, MC. 2002, Gerontechnology	No information on determinants or outcomes of physical activity
So, CT. 2008, OTJR: Occup, Particip Health	No information on determinants or outcomes of physical activity
Soguel Schenkel, N. 1996, Eur Respir j	No physical activity measure provided
Soicher, JE. 2010, Dissertation Abstracts International	Other: conference abstract
Soicher, JE. 2012, Eur Respir J	No information on determinants or outcomes of physical activity
Sorino, C. 2009, Am J Respir Crit Care Med	No primary data showed
Steele, BG. 2000, Chest	No assumption of directionality
Steele, BG. 2003, J Rehabil Res Dev	No primary data showed
Steele, BG. 2008, Arch Phys Med Rehab	Sample includes <90% COPD
Stein, MB. 2006, Psychol Med	No physical activity measure provided
Steinsbekk, A. 2009, Chron Respir Dis	No physical activity measure provided
Stepanishcheva, LA. 2005, Klin Med	Other: Russian language
Stieb, DM. 2000, Can J Public Health	No relevant population included
Sugino, A. 2012, Respiration	No assumption of directionality
Swallow, EB. 2007, J Appl Physiol	No assumption of directionality
Swisher, AC. 2006, Cardiopulm Phys Ther J	No primary data showed
Swisher, AC. 2008, Cardiopulm Phys Ther J	No primary data showed
Szmidt, M. 2012, Pneumol Alergol Polska	Other: Polish language
Tanaka, Y. 2008, Respirology	No physical activity measure provided
Tanaka, Y. 2009, Respirology	Other: conference abstract
Tantucci, C. 2012, Endocrine	No primary data showed
Thomas, MJ. 2010, Physiotherapy	No primary data showed
Toh, CK. 2006, J Clin Oncol	No primary data showed
Troosters, T. 2010, Eur Respir J	No physical activity measure provided

Vaes, AW. 2012, PloS ONE	No physical activity measure provided
Van den Borst B, 2011, Am J Respir Crit Care Med	Other: conference abstract
Van den Borst B, 2011, Thorax	No relevant population included
Van Der Horst-Graat, JM. 2007, J. Nutr. Health Aging	No relevant population included
Van Dijk, PTM. 2005, J Am Geriatr Soc	No relevant population included
Van Gestel, AJ. 2012, Respiration	No assumption of directionality
Van Helvoort, HA. 2011, Arch Phys Med Rehab	No physical activity measure provided
Van Manen, JG. 2002, Thorax	No physical activity measure provided
Van Remoortel, H. 2011, Am J Respir Crit Care Med	Other: conference abstract
Varga, J. 2007, Respir Med	No physical activity measure provided
Varraso, R. 2007, Am J Epidemiol	COPD diagnosis no defined by spirometry
Varraso, R. 2007, Thorax	COPD diagnosis no defined by spirometry
Varraso, R. 2012, Am J Clin Nutr	No primary data showed
Velloso, M. 2006, Chest	No assumption of directionality
Venkata, A. 2012, J Cardiopulm Rehab Prev	No assumption of directionality
Vilaro, J. 2007, Med Clin (Barc)	No assumption of directionality
Volpato, S. 2008, J Gerontol A Biol Sci Med Sci	No relevant population included
Vozoris, NT. 2012, Can Respir J	No relevant population included
Walker, PC. 2009, Chron Respir Dis	No primary data showed
Walters, JA. 2011, Respirology	Other: conference abstract
Walters, JA. 2012, Respirology	Other: conference abstract
Waschki, B. 2011, Am J Respir Crit Care Med	Other: conference abstract
Waschki, B. 2012, Respir Med	No assumption of directionality
Williams, V. 2011, Qual Health Res	No physical activity measure provided
Willis, JR. 2012, Arch Ophthalmol	No relevant population included
Winkelman, CC. 2010, Heart Lung	No assumption of directionality
Wouters, EF. 2011, Chest	No primary data showed
Wust, R. 2008, Eur J Appl Physiol	No relevant population included
Xu, F. 2005, Chest	No relevant population included
Yeh, M. 2004, J Adv Nurs	No assumption of directionality
Yentes, JM. 2011, Respir Med	No relevant population included
Zagol, B. 2010, Am J Cardiol	No relevant population included
Zanocchi, M. 2002, Minerva Med	Other: Italian language
Zhang, Z. 2008, JCR	Other: Chinese language
Zhang, Z. 2008, Zhongguo Wei Zhong Bing Ji Jiu Yi Xue	Other: Chinese language

Zhou, JH. 2006, Chin J Clin Rehabil	Other: Chinese language
ZuWallack, R. 1998, Monaldi Arch Chest Dis	No primary data showed
Zwerink, M. 2013, Respir Med	No assumption of directionality

Online supplement Table 2. Design, patients' characteristics and instruments for measuring physical activity of 86 studies reporting associations between physical activity and its determinants or outcomes in COPD patients.

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
Altenburg, WA. 2013, Respir Med ^{S1}	cross-sectional	155	102 (66)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) 62 (54-69)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) 60 (40-75)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) 26.1 (22.8-29.0)	Pedometer: Digiwalker SW-200; Yamax, Tokyo, Japan	--
Beauchamp, MK. 2012, Chest ^{S2}	cross-sectional	37	17 (46)	71 (7)	39 (16)	28.9 (10.5)	--	Physical Activity Scale for the Elderly (PASE) (Washburn, 1993)
Behnke, M. 2005, Respir Med ^{S3}	non-randomized controlled study	88	71 (81)	60 (8)	43 (14)	24.3 (3.6)	Accelerometer: Trictrac-R3D; Stayhealthy, Monrovia, CA, USA	--
Bendstrup, KE. 1997, Eur Respir J ^{S4}	randomized controlled trial	Experimental group (EG): 16 Control group (CG): 16	EG: 9 (55) CG: 9 (56)	EG: 64 (3) CG: 65 (2)	not available	not available	--	Activities of Daily Living score specific for COPD (Ogden, 1985)
Benzo, R. 2010, Respiration ^{S5}	cohort	Group 1 (G1): 394 Group 2 (G2): 203	G1: 130 (33) G2: 85 (42)	G1: 67 (6) G2: 67 (6)	G1: 27 (7) G2: 26 (6)	G1: 24.8 (3.5) G2: 24.7 (3.7)	--	Questions related physical activity*
Berry, M. 2006, Chest ^{S6}	cross-sectional	291	166 (57)	68 (8)	55 (18)	27.3 (5.4)	--	The Fitness Arthritis and Seniors Trial functional performance

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
								inventory (Rejeski, 1995)
Berry, M. 2010, Respir Med ^{S7}	randomized non-controlled parallel study	G1: 89 G2: 87	G1: 48 (54) G2: 47 (54)	G1: 66 (10) G2: 66 (10)	G1: 53 (19) G2: 51 (20)	not available	--	The Community Health Activities Model Program for Seniors (CHAMPS) (Stewart, 2001)
Bestall, J. 1999, Thorax ^{S8}	cross-sectional	100	55 (55)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) 70 (44-86)	Dyspnoea (MRC 3): 41 (15) Dyspnoea (MRC 4): 37 (16) Dyspnoea (MRC 5) 37 (15)	not available	--	Nottingham Extended Activities of Daily Living (EADL) scale (Lincoln, 1992)
Bon, J. 2011, Am J Respir Crit Care Med ^{S9}	cross-sectional	190	98 (52)	66 (7)	81 (22)	27.9 (4.1)	--	Stanford Brief Activity Survey (SBAS) (Taylor-Piliae, 2006)
Bossenbroek, L. 2009, J Heart Lung Transp ^{S10}	case-control	Cases (CA): 47 Controls (CO): 15	CA: 18 (38) CO: 5 (33)	CA: 55 (6) CO: 53 (6)	CA: 93 (28) CO: 20 (5)	CA: 25.0 (5.0) CO: 23.0 (3.3)	Pedometer: Digiwalker SW-200; Yamax, Tokyo, Japan	Short Questionnaire to Assess Health Enhancing Physical Activity (SQUASH) (Wendel-Vos, 2003)
Bourbeau, J. 2007, Eur Respir J ^{S11}	cohort	421	239 (57)	66 (na)	45 (na)	not available	--	Non-validated Activities of Daily Living (ADL) questionnaire [†]
Breyer, MK. 2010, Respir Research ^{S12}	randomized controlled trial	60	27 (45)	60 (8)	46 (18)	26.2 (4.6)	Accelerometer: DynaPort Activity Monitor;	--

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
							McRoberts BV, The Hague, The Netherlands	
Chao, PW. 2011, COPD ^{S13}	cross-sectional	21	10 (48)	57 (9)	not available	28 (6)	--	Historical Physical Activity Questionnaire (HPAQ) (DuBose, 2007)
Chen, Y. 2006, Western J Nurs Research ^{S14}	cohort	145	106 (73)	72 (10)	49 (18)	not available	--	Pulmonary Functional Status Scale (PFSS) (Weaver, 1998)
Coronado, M. 2003, J Cardiopulm Rehab ^{S15}	non-controlled study	15	13 (87)	67 (9)	54 (16)	23.6 (4.7)	Accelerometer: ADXL05; Analog Devices, Norwood, Mass, USA	--
Dal Negro, R. 2010, Monaldi Arch Chest Dis ^{S16}	randomized controlled trial	EG: 16 CG: 16	EG: 14 (88) CG: 11 (69)	EG: 75 (7) CG: 75 (7)	not available	EG: 20.2 (1.8) CG: 20.2 (1.4)	Accelerometer: SenseWear Armband PRO3; BodyMedia, Pittsburgh, PA, USA	--
Dallas, MI. 2009, Chron Respir Dis ^{S17}	non-controlled study	45	21 (47)	69 (8)	45 (18)	27.0 (5.0)	Pedometer: NL- 200 Activity Monitor; New Life-styles, Inc; Lee's Summit, MO, USA	--
Daly, C. 2011, Physio Ireland ^{S18}	non-controlled study	8	4 (50)	62 (6)	<i>P</i> ₂₅ - <i>P</i> ₇₅ 35-70	23.8 (3.9)	Accelerometer: RT3; Stayhealthy, Monrovia, CA,	--

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
							USA	
de Blok, BM. 2006, Patient Educ Couns ^{S19}	randomized controlled trial	EG: 10 CG: 11	EG: 5 (50) CG: 4 (36)	EG: 66 (10) CG: 63 (12)	EG: 52 (22) CG: 43 (13)	EG: 29.3 (8.4) CG: 28.2 (6.6)	Pedometer: Yamax Digiwalker SW-200;, Tokyo, Japan	--
Effing, T. 2011, Respir Med ^{S20}	randomized controlled trial	EG: 77 CG: 76	EG: 45 (58) CG: 44 (58)	EG: 63 (8) CG: 64 (8)	EG: 50 (14) CG: 51 (17)	EG: 26.1 (5.0) CG: 26.8 (4.4)	Pedometer Yamax Digi-Walker SW-200; Tokyo, Japan	--
Egan, C. 2012, Respir Med ^{S21}	non-controlled study	47	not available	not available	47 (17)	27.5 (6.2)	Accelerometer: SenseWear Armband PRO3; BodyMedia; Pittsburgh, PA, USA	--
Eisner, MD. 2008, Am J Epi ^{S22}	cross-sectional	1202	511 (43)	58 (6)	62 (23)	not available	--	Self-Reported Functional Limitation (Sternfeld, 2002)
Eliason, G. 2011, COPD ^{S23}	cross-sectional	44	16 (36)	mild: 64 (6) moderate: 64 (8) severe: 63 (8)	not available	mild: 25.9 (5.3) moderate: 28.0 (6.3) severe: 26.3 (4.2)	Accelerometer: Actigraph GT1M; Manufacturing Technology IC, Fort Walton Beach, FL, USA	--
Esteban, C. 2006, QJM ^{S24}	cohort	611	597 (98)	67 (8)	50 (15)	not available	--	Non-validated scale [‡]
Esteban, C. 2010, Eur Respir J ^{S25}	cohort	391	not available	66 (9)	52 (14)	27.9 (4.3)		Non-validated scale [‡]

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
Esteban, C. 2011, Respir Med ^{S26}	cohort	611	597 (98)	67 (9)	50 (15)	27.8 (4.3)	--	Non-validated scale [‡]
Faager, G. 2004, J Rehab Med ^{S27}	randomized controlled trial	EG: 10 CG: 10	EG: 3 (30) CG: 3 (30)	EG: 72 (9) CG: 70 (8)	EG: 26 (7) CG: 28 (6)	not available	--	Stanford Health Assessment Questionnaire (HAQ) (Ek Dahl, 1988)
Faulkner, J. 2010, Prim Care Respir J ^{S28}	randomized controlled trial	20	not available	not available	EG: 65 (12) CG: 67 (12)	not available	--	Seven day physical activity recall questionnaire (7 day physical activity) (Blair, 1984)
Garcia-Aymerich, J. 2003, Thorax ^{S29}	cohort	340	313 (92)	69 (9)	36 (16)	26.0 (5.0)	--	Adaptation from the Minnesota Leisure Time Physical (Elosua, 1994)
Garcia-Aymerich, J. 2004, Med Scien Sports Exerc ^{S30}	cross-sectional	346	317 (92)	69 (9)	35 (16)	26.0 (5.0)	--	Simplification of the Minnesota Leisure Time Physical Activity Questionnaire (Elosua, 1994)
Garcia-Aymerich, J. 2006, Thorax ^{S31}	cohort	2386	1286 (54)	60 (11)	n (%) mild: 833 (35) moderate: 1095 (46) severe:	24.9 (4.2)	--	Validated questionnaire (Saltin and Grimby, 1968)

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
					354 (15) very severe: 94 (4)			
Garcia-Aymerich, J. 2008, Ann Epidemiol ^{S32}	cohort	2226	1161 (52)	54 (10)	n (%) mild: 966 (44) moderate: 1027 (47) severe: 190 (9) very severe: 27 (1)	not available	--	Validated questionnaire (Saltin and Grimby, 1968)
Garcia-Aymerich, J. 2009, Chest ^{S33}	cross-sectional	341	317 (93)	68 (9)	52 (16)	28.2 (4.7)	--	YALE physical activity questionnaire (De Abajo, 2001)
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	cross-sectional	110	104 (95)	63 (8)	47 (14)	27.5 (3.7)	Accelerometer: RT3; Stayhealthy, Monrovia, CA, USA	--
Garcia-Rio, F. 2012, Chest ^{S35}	cohort	173	157 (91)	64 (8)	49 (14)	27.4 (3.5)	Accelerometer: RT3; Stayhealthy, Monrovia, CA, USA	--
Goto, Y. 2004, Respiriology ^{S36}	non-randomised controlled study	EG: 18 CG: 12	EG: 18 (100) CG: 11 (92%)	EG: 65 (6) CG: 67 (8)	EG: 29 (na) CG: 78 (na)	EG: na CG: na	--	Validated questionnaire ^{\$}
Hartman, JE. 2013, Arch Phys	cross-sectional	113	76 (67)	65 (9)	52 (14-119)*	not available	Accelerometer: DynaPort Activity	--

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
Med Rehab ^{S37}							Monitor; McRoberts BV, The Hague, The Netherlands	
Hataji, O. 2013, Int J Chron Obstruct Pulmon Dis ^{S38}	non-controlled study	23	21 (91)	70 (2)	65 (4)	21.6 (0.7)	Accelerometer: Lifecorder; Suzuken Corporation, Nagoya, Japan	--
Inal-Ince, D. 2005, Saudi Med J ^{S39}	cross-sectional	30	30 (100)	62 (10)	37 (12)	23.9 (4.2)	--	Activities of Daily Living Questionnaire (ADL-Q) (Kennedy, 1994)
Jehn, M. 2012, Med Sci Sports Exerc ^{S40}	cross-sectional	107	76 (71)	65 (11)	43 (15)	26.2 (5.8)	Accelerometer: Aipermon GmbH, Munich, Germany	--
Katajisto, M. 2012, Int J Chron Obstruct Pulmon Dis ^{S41}	cross-sectional	719	419 (60)	63 (7)	60 (19)	26.6 (5.2)	--	COPEX questionnaire ^{ll}
Lahaije, A. 2013, Respir Med ^{S42}	cross-sectional	57	35 (61)	64 (7)	64 (24)	27 (5)	Accelerometer: Actometer; Dep. of Electronics and Instrumental Services of the Psychological Laboratory of the University of Nijmegen, The Netherlads	--

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
Lee, H. 2011, Geriatr Nurs ^{S43}	cross-sectional	131	117 (89)	66 (na)	60 (na)	n (%) <18.5: 16 (12) 18.5 to <25: 86 (66) ≥25: 29 (22)	--	International Physical Activity Questionnaire (IPAQ) (Craig, 2003)
Lemmens, KMM. 2008, Patient Educ Couns ^{S44}	cross-sectional	278	156 (56)	63 (11)	78 (20)	27.5 (4.7)	--	Validated questionnaire [¶]
Lores, V. 2006, Arch Bronconeumol ^{S45}	cross-sectional	23	20 (87)	62 (7)	45 (13)	27.7 (3.6)	Accelerometer: RT3; Stayhealthy, Monrovia, CA, USA	--
Mador, MJ. 2011, J Cardiopulmon Rehab Prev ^{S46}	non-controlled study	24	not available	72 (8)	44 (18)	30.3 (4.5)	Accelerometer: RT3; Stayhealthy, Monrovia, CA, USA	--
Miravittles, M. 2011, Respir Med ^{S47}	cohort	346	315 (91)	69 (10)	47 (17)	27.4 (4.7)	--	Non-validated scale [‡]
Monteiro, F. 2012, Lung ^{S48}	cross-sectional	74	45 (61)	65 (9)	40 (15)	27 (6)	Accelerometer: DynaPort Activity Monitor; McRoberts BV, The Hague, The Netherlands; and SenseWear Armband PRO3; BodyMedia, Pittsburgh, PA, USA	--

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
Moy, M. 2009, J Rehab Res Develop ^{S49}	cross-sectional	17	17 (100)	73 (8)	57 (22)	28.0 (4.0)	Accelerometer: Actiped; FitLinixx, CT, USA	Physical activity checklist**
Moy, M. 2013, PLoS ONE ^{S50}	cohort	169	167 (99)	71 (8)	54 (20)	29.0 (6.0)	Accelerometer: Stepwatch® 3 Activity Monitor; OrthoCare Innovations, Washington DC, USA	--
Nguyen, HQ. 2009, Int J Chron Obstruct Pulm Dis ^{S51}	randomized controlled trial	EG: 9 CG: 8	EG: 3 (33) CG: 3 (37)	EG: 72 (9f) CG: 64 (12)	EG: 47 (19) CG: 34 (15)	EG: 26.3 (5.5) CG: 25.0 (7.8)	Accelerometer: Stepwatch® 3 Activity Monitor; OrthoCare Innovations, Washington DC, USA	--
Nguyen, HQ. 2013, Chest ^{S52}	cross-sectional	148	115 (78)	67 (9)	42 (16)	not available	Accelerometer: Stepwatch® 3 Activity Monitor; OrthoCare Innovations, Washington DC, USA	--
Nield, M. 2005, J Cardiopulm Rehab ^{S53}	non-controlled study	48	14 (29)	66 (8)	35 (15)	not available	--	Human Activity Profile (HAP) (Fix & Daughton, 1988)
Okubadejo, AA. 1997, Eur Respir J ^{S54}	case-control	CA: 23 CO: 19	CA: 14 (61) CO: 14 (74)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) CA: 71 (60-84) CO: 72 (62-75)	CA: 28 (12) CO: 35 (11)	CA: na CO: na	--	Nottingham Extended Activities of Daily Living (EADL)

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
								scale (Lincoln, 1992)
Palop Cervera, M. 2010, Rev Clínica Esp ^{S55}	case-control	CA: 44 CO: 81	CA: 39 (89) CO: 76 (94)	CA: 75 (9) CO: 72 (11)	CA: 40 (17) CO: 49 (16)	CA: na CO: na	--	<i>ad hoc</i> questionnaire ^{††}
Pitta, F. 2006, Chest ^{S56}	cohort	17	16 (94)	69 (9)	29 (20-48)*	24.0 (5.0)	Accelerometer: DynaPort Activity Monitor; McRoberts BV, The Hague, The Netherlands	--
Pitta, F. 2006, J Bras Pneumol ^{S57}	cross-sectional	23	16 (70)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) 61 (59-69)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) 39 (34-53)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) 24 (21-27)	Accelerometer: DynaPort Activity Monitor; McRoberts BV, The Hague, The Netherlands	Pulmonary Functional Status and Dyspnea Questionnaire (PFSDQ-M) (Lareau, 1994)
Pitta, F. 2008, Respir Med ^{S58}	cross-sectional	40	21 (53)	68 (7)	41 (14)	24.0 (6.0)	Accelerometer: SenseWear Armband PRO3; BodyMedia; Pittsburgh, PA, USA	--
Pitta, F. 2009, Respir Med ^{S59}	cross-sectional	G1: 40 G2: 40	G1: 21 (53) G2: 18 (45)	G1: 63 (7) G2: 66 (8)	G1: 48 (17) G2: 46 (17)	G1: 26 (4) G2: 26 (6)	Accelerometer: DynaPort Activity Monitor; McRoberts BV, The Hague, The Netherlands	--
Pomidori, L. 2012, J Cardiopulm Rehab Prev ^{S60}	randomized non-controlled parallel study	G1: 18 G2: 18	G1: 13 (72) G2: 14 (78)	G1: 70 (9) G2: 74 (7)	G1: 48 (13) G2: 49 (12)	G1: 27 (5) G2: 29 (4)	Accelerometer: SenseWear Armband PRO3; BodyMedia,	--

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
							Pittsburgh, PA, USA	
Probst, VS. 2011, Respir Care ^{S61}	randomized non-controlled parallel study	G1: 20 G2: 20	G1: 11 (55) G2: 10 (50)	G1: 65 (10) G2: 67 (7)	G1: 39 (14) G2: 40 (13)	G1: 26 (15) G2: 27 (6)	Accelerometer: DynaPort Activity Monitor; McRoberts BV, The Hague, The Netherlands; and SenseWear Armband PRO3; BodyMedia, Pittsburgh, USA	--
Roig, M. 2011, Respir Med ^{S62}	cohort	G1: 69 G2: 32	G1: 43 (62) G2: 13 (68)	<i>median (P₂₅-P₇₅)</i> G1: 72 (70-75) G2: 76 (72-79)	<i>median (P₂₅-P₇₅)</i> G1: 43 (37-50) G2: 44 (36-51)	<i>median (P₂₅-P₇₅)</i> G1: 24.9 (23.3-26.5) G2: 27.9 (25-30.8)	--	Physical Activity Scale for the Elderly (PASE) (Washburn, 1993)
Sandland, C.J. 2008, Chest ^{S63}	randomized controlled trial	EG: 10 CG: 10	EG: 6 (60) CG: 8 (80)	EG: 71 (4) CG: 76 (8)	EG: 43 (16) CG: 44 (29)	EG: 28.2 (5.4) CG: 26.3 (5.5)	Accelerometer: Gaehwiler Z80 – 32k V1 Int; Gaehwiler Electronics, Hombrechtikon, Switzerland	--
Schou, L. 2013, J Telemed Telecare ^{S64}	randomized controlled trial	EG: 22 CG: 22	EG: 10 (45) CG: 8 (34)	EG: 68 (12) CG: 73 (10)	EG: 39 (20) CG: 44 (15)	EG: na CG: na	--	Lawton Instrumental Activities of Daily Living Scale (Lawton, 1969)
Sewell, L. 2005, Chest ^{S65}	randomized non-controlled parallel study	G1: 90 G2: 90	G1: 60 (67) G2: 51 (57)	G1: 69 (9) G2: 67 (8)	G1: na G2: na	G1: na G2: na	Accelerometer: Gaehwiler Z80 – 32k V1 Int; Gaehwiler	Canadian Occupational Performance Measure (COPM) (Law,

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
							Electronics, Hombrechtikon, Switzerland	1998)
Sewell, L. 2010, J Cardiopulm Rehab Prev ^{S66}	non-controlled study	95	56 (59)	66 (9)	not available	not available	Accelerometer: Gaehwiler Z80 – 32k V1 Int; Gaehwiler Electronics, Hombrechtikon, Switzerland	--
Silva, DR. 2011, Respir Care ^{S67}	cross-sectional	95	62 (65)	67 (8)	41 (16)	25.8 (4.7)	--	International Physical Activity Questionnaire (IPAQ) (Craig, 2003)
Skumlien, S. 2006, Chron Respir Dis ^{S68}	cross-sectional	G1: 65 G2: 45	G1: 65 (100) G2: 45 (100)	G1: 62 (10) G2: 60 (6)	G1: 49 (16) G2: 46 (16)	G1: 25.6 (4.7) G2: 23.9 (5.2)	--	Pulmonary Functional Status and Dyspnea Questionnaire (PFSDQ) (Lareau, 1994)
Skumlien, S. 2008, Respir Med ^{S69}	non- randomized non-controlled parallel study	G1: 20 G2: 20	G1: 11 (55) G2: 11 (55)	G1: 62 (7) G2: 63 (9)	G1: 48 (17) G2: 50 (13)	G1: 23 (9) G2: 26 (8)	--	Hyrin Physical Activity Questionnaire (HPAQ) (Anderssen, 2000); and Glittre ADL-test (Skumlien, 2005)
Takigawa, N. 2007, Respir Med ^{S70}	non-controlled study	stage II: 21 stage III: 79 stage IV: 125	stage II: 15 (71) stage III: 68 (86) stage IV: 118 (94)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) stage II: 72 (63- 81) stage III: 69 (54- 84)	stage II: 60 (7) stage III: 38 (6) stage IV: 23 (5)	stage II: 19.1 (2.6) stage III: 19.3 (3.1) stage IV: 18.5	--	Non-validated scale ^{††}

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
				stage IV: 67 (45-79)		(3.2)		
Troosters, T. 2010, Respir Med ^{S71}	cross-sectional	70	58 (82)	66 (9)	54 (23)	not available	Accelerometer: SenseWear Armband PRO3; BodyMedia; Pittsburgh, PA, USA	--
Tsara, V. 2008, Respir Care ^{S72}	case-control	CA: 85 CO: 48	CA: na CO: na	CA: 71 (8) CO: 64 (11)	CA: 38 (16) CO: 57 (16)	CA: 28.6 (6.7) CO: 28.5 (6.1)	--	Non-validated questionnaire ^{SS}
Van Gestel, AJ. 2012, COPD ^{S73}	cross-sectional	154	67 (44%)	63 (11)	43 (19)	24.9 (6.1)	Accelerometer: SenseWear Armband PRO3; BodyMedia, Pittsburgh, PA, USA	--
Van Remoortel, H. 2013, Thorax ^{S74}	cross-sectional	59	44 (75)	63 (6)	85 (17)	26.9 (4.2)	Accelerometer: SenseWear Armband PRO3; BodyMedia, Pittsburgh, PA, USA	
Vergeret, J. 1989, Eur Respir J ^{S75}	cohort	G1: 75 G2: 84 G3: 51 G4: 33	G1: 63 (84) G2: 76 (90) G3: 45 (88) G4: 31 (94)	G1: 63 (7) G2: 61 (8) G3: 61 (8) G4: 62 (9)	G1: na G2: na G3: na G4: na	G1: na G2: na G3: na G4: na	--	Non-validated questionnaire ^{III}
Waatevik, M. 2012, COPD ^{S76}	cross-sectional	370	223 (60)	63 (7)	50 (14)	not available	--	Validated question ^{II}
Wakabayashi, R. 2011, Geriatr Gerontol ^{S77}	randomized controlled trial	102	88 (86)	72 (8)	60 (21)	21.8 (2.8)	--	Lawton Instrumental Activities of Daily

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
								Living Scale (Lawton, 1969)
Wakabayashi, R. 2011, J Am Geriatr Soc ^{S78}	cross-sectional	389	315 (81)	73 (8)	58 (26)	not available	--	Lawton Instrumental Activities of Daily Living Scale (Lawton, 1969)
Walker, PP. 2008, Thorax ^{S79}	non-controlled study	23	12 (52)	66 (9)	36 (12)	not available	Accelerometer: Actiwatch; Neurotechnology Cambridge, UK; and Dynaport Activity Monitor; McRoberts BV, Den Haag, Netherlands	Nottingham Extended Activities of Daily Living (EADL) scale (Lincoln, 1992)
Waschki, B. 2011, Chest ^{S80}	cohort	G1: 143 G2: 26	G1: 107 (75) G2: 20 (77)	G1: 64 (7) G2: 66 (6)	G1: 59 (21) G2: 41 (22)	G1: 26.7 (5.1) G2: 23.5 (4.3)	Accelerometer: SenseWear Armband PRO3; BodyMedia, Pittsburgh, PA, USA	--
Watz, H. 2008, Am J Respir Crit Care Med ^{S81}	cross-sectional	170	128 (75)	64 (7)	56 (22)	not available	Accelerometer: SenseWear Armband PRO3; BodyMedia, Pittsburgh, PA, USA	--
Watz, H. 2009, Chest ^{S82}	cross-sectional	stage I: 34 stage II: 57 stage III: 43 stage IV: 36	stage I: 25 (74) stage II: 41 (72) stage III: 35 (81) stage IV: 27 (75)	stage I: 66 (6) stage II: 63 (7) stage III: 63 (7) stage IV: 64 (6)	stage I: 90 (9) stage II: 63 (8) stage III: 41 (5) stage IV: 33 (11)	stage I: 27.0 (4.2) stage II: 27.8 (5.3) stage III: 25.0	Accelerometer: SenseWear Armband PRO3; BodyMedia, Pittsburgh, PA,	--

Reference	Study design	Study group characteristics					Measure of physical activity	
		n	Sex (male), n (%)	Age (yr), mean (SD)	FEV ₁ (%pred), mean (SD)	BMI (kg/m ²), mean (SD)	Direct method	Indirect method
						(5.0) stage IV: 24.6 (5.3)	USA	
Watz, H. 2009, Eur Respir J ^{S83}	cross-sectional	stage I: 34 stage II: 52 stage III: 41 stage IV: 36	stage I: 25 (74) stage II: 37 (71) stage III: 33 (80) stage IV: 27 (75)	stage I: 66 (6) stage II: 64 (6) stage III: 63 (7) stage IV: 64 (6)	stage I: 90 (9) stage II: 63 (8) stage III: 41 (5) stage IV: 33 (11)	stage I: 27.0 (4.2) stage II: 27.3 (5.0) stage III: 25.1 (5.1) stage IV: 24.6 (5.3)	Accelerometer: SenseWear Armband PRO3; BodyMedia, Pittsburgh, PA, USA	--
Weekes, CE. 2009, Thorax ^{S84}	randomised controlled trial	EG: 31 CG: 28	EG: 16 (52) CG: 14 (50)	median (<i>P</i> ₂₅ - <i>P</i> ₇₅) EG: 69 (48-89) CG: 69 (46-85)	EG: 31 (13) CG: 33 (15)	EG: 19.9 (1.4) CG: 19.5 (1.9)	--	Townsend score (Bond, 1982)
Wewel, A. 2008, Respir Med ^{S85}	non-controlled study	21	17 (81)	65 (9)	32 (9)	25.9 (4.7)	Pedometer: Kasper & Richter GmbH & Co. KG; Uttenreuth, Germany; and accelerometer: ActiTrac-Monitor; Somnomedics, Kist, Germany	--
Yeo, J. 2006, Age Ageing ^{S86}	cross-sectional	27	16 (59)	76 (4)	n (%) mild: 10 (37) moderate: 12 (44) severe: 5 (19)	not available	--	Manchester Respiratory Activity of Daily Living Score (Yohannes, 2000)

Abbreviations: EG: experimental group; CG: control group, CA: cases; CO: controls; na: not available; MRC: Medical Research Council.

*Patients were asked how many days during the previous week they performed lower-extremity endurance exercises, such as walking or cycling, and for how many minutes each day.

[†]Subjects were asked “How much did your COPD affect your normal daily activities during the previous 24h?” and were required to indicate, by placing a cross on a 10 cm scale, how their COPD affected their normal daily activities.

[§]Scale from 0 to 3: 0, ‘doesn’t leave the house, life is limited to the bed or armchair, or to doing some domestic chores’, or ‘leaves the house, but walks less than 100 m’; 1, ‘leaves the house and walks a few hundred meters, runs errands, but walks less than 100 m’; 1, ‘leaves the house and walks a few hundred meters, runs errands, but does not walk regularly’; 2, ‘engages in physical activity in the vegetable garden’, or ‘takes walks for up to 8 km, no less than 5 days a week’; and 3, ‘takes walks regularly for >8km, no less than 5 days a week’, or ‘practices sports’.

[§]Seven standard items related to ADL (eating, toileting, shampooing, bathing, face washing and teeth brushing, dressing, and indoor walking) (Christiansen, 1998).

^{||}Questions Q1A, Q1B, Q2, Q3, Q4 and Q7 from COPEX questionnaire.

[¶]Physical activity scale (validated instrument (Deenen, 1996 - originally from Baecke, 1982)

^{**}Physical activity checklist were based on the Pulmonary Functional Status and Dyspnea Questionnaire Activity Assessment (PFSDQ) (Lareau, 1994).

^{††}The physical activity performed by the patients was classified in 3 categories: (1) home-bound, (2) less than 6hours out of home, or (3) more than 6 hours.

^{‡‡}ADL was assessed using questionnaire based on velocity of motion and shortness of breath in daily activity with various grades of exertion during a list of ADL.

^{§§}Independence in ADL was assessed with a questionnaire designed for the study including domestic and physical activities at home and outside the home.

^{||||}Questionnaire about patient’s activity and its location.

^{¶¶}Self-reported physical activity was recorded using the question: “How has your physical activity been in your spare time the last year?”

Online supplement Table 3a. Determinants covered by at least 2 articles and their association with physical activity, grouped in main categories and sorted by alphabetical order.

Determinant: Age

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Age (years)	Mean (SD) 71 (10) in low energy expenditure (0-53 kcal/d); 68 (8) in moderate (54-210 kcal/d); 68 (8) in high (>210 kcal/d); p=0.032 Adjusted OR (95% CI) of low physical activity: 1.04 (1.01 to 1.07); p=0.013	---
Garcia-Aymerich, J. 2009, Chest ^{S33}	Age (years)	Mean (SD) 71 (8) in quartile 1 (Q1) of energy expenditure in physical activity; 69 (7) in Q2; 67 (8) in Q3; 63 (10) in Q4; p for trend<0.001	---
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	Age (years)	---	Mean (SD) 65 (6) in quartile 1 (Q1) of physical activity; 62 (8) in Q2; 62 (8) in Q3; 62 (8) in Q4; p=0.48
Pitta, F. 2006, J Bras Pneumol ^{S57}	Age (years)	---	Median (P25-P75) 61 (58-67) in active group vs. 63 (60-70) in inactive group; p=0.406
Troosters, T. 2010, Respir Med ^{S71}	Age (years)	Correlation coefficient -0.33 with number steps per day; p=0.006 Correlation coefficient -0.23 with time spent in activities of mild intensity; p=0.05	---

Watz, H. 2008, Am J Respir Crit Care Med ^{S81}	Age (years)	---	Unstandardized regression coefficient (95% CI) <0.001 (-0.006 to 0.007) for steps per day; p=0.91
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Determinant: Alcohol consumption

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Alcohol consumption	N (%): 29 (26) in low energy expenditure (0-53 kcal/d); 39 (39) in moderate (54-210 kcal/d); 51 (44) in high (>210 kcal/d); p=0.015	---
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	Alcohol consumption (g/d)	---	Mean (SD): 21 (19) in quartile 1 (Q1) of physical activity; 21 (14) in Q2; 19 (15) in Q3; 20 (15) in Q4; p=0.93

Determinant: BODE index

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	BODE index	Mean (SD): 5.9 (1.9) in quartile 1 (Q1) of physical activity; 4.9 (1.7) in Q2; 2.9 (1.4) in Q3; 2.3 (1.4) in Q4; p=0.001. Mean (SD) daily physical activity (VMU): 259 (91) in quartile 1 of BODE index (0-2) vs. 200 (67) in quartile 2 (3-4); p=0.003. Mean (SD) daily physical activity (VMU): 259	Mean (SD) daily physical activity (VMU): 142 (51) in quartile 3 of BODE index (5-6) vs. 89 (26) in quartile 4 (7-10); p=0.09.

		<p>(91) in quartile 1 vs. 142 (51) in quartile 3 (5-6); p=0.001.</p> <p>Mean (SD) daily physical activity (VMU): 259 (91) in quartile 1 vs. 89 (26) in quartile 4 (7-10); p=0.001.</p> <p>Mean (SD) daily physical activity (VMU): 200 (67) in quartile 2 vs. 142 (51) in quartile 3; p=0.01.</p> <p>Mean (SD) daily physical activity (VMU): 200 (67) in quartile 2 vs. 89 (26) in quartile 4; p=0.001.</p>	
Moy, ML. 2009, J Rehabil Res Dev ^{S49}	BODE index	Unadjusted coefficient (95% CI): -0.34 (-0.58 to -0.10) for number of checklist physical activity performed; p=0.008	---
Pitta, F. 2006, J Bras Pneumol ^{S57}	BODE index	Median (P25-P75): 2.5 (1.5-3.5) in active group vs. 5 (5-8) in inactive group; 0.001	---
Watz, H. 2008, Am J Respir Crit Care Med ^{S81}	BODE index	<p>Adjusted unstandardized regression coefficient (95% CI) BODE score quintile 4: -0.119 (-0.235 to -0.003) for physical activity level; p=0.044</p> <p>Adjusted unstandardized regression coefficient (95% CI) BODE score quintile 5: -0.282 (-0.403 to -0.160) for physical activity level; p<0.001</p> <p>Adjusted unstandardized regression coefficient (95% CI) BODE score quintile 4: -2646 (-4052 to -1240) for steps per day; p<0.001</p> <p>Adjusted unstandardized regression coefficient (95% CI) BODE score quintile 5: -4874 (-6346 to -3401) for steps per day; p<0.001</p>	<p>Adjusted unstandardized regression coefficient (95% CI) BODE score quintile 2: -0.073 (-0.186 to 0.040) for physical activity level; p=0.21</p> <p>Adjusted unstandardized regression coefficient (95% CI) BODE score quintile 3: -0.065 (-0.181 to 0.050) for physical activity level; p=0.27</p> <p>Adjusted unstandardized regression coefficient (95% CI) BODE score quintile 2: -982 (-2352 to 388) for steps per day; p=0.16</p> <p>Adjusted unstandardized regression coefficient (95% CI) BODE score quintile 3: -1365 (-2767 to 38) for steps per day; p=0.06</p>

Watz, H. 2009, Eur Respir J ^{S83}	BODE index	<p>Mean steps per day: 8100 in BODE score 0, 7000 in BODE score 1, 6100 in BODE score 2, 5000 in BODE score 3-4, and 2100 in BODE score 5-10; p-trend<0.001</p> <p>Mean minutes >3 METs: 152 in BODE score 0, 132 in BODE score 1, 135 in BODE score 2, 110 in BODE score 3-4, and 55 in BODE score 5-10; p-trend<0.001</p> <p>Mean physical activity level: 1.68 in BODE score 0, 1.57 in BODE score 1, 1.50 in BODE score 2, 1.46 in BODE score 3-4, and 1.28 in BODE score 5-10; p-trend<0.001</p> <p>(Note: Numbers derived from the figure)</p>	---
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Determinant: Body Mass Index

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Body Mass Index (kg/m ²)	---	Mean (SD): 26 (6) in low energy expenditure (0-53 kcal/d); 26 (5) in moderate (54-210 kcal/d); 26 (5) in high (>210 kcal/d); p=0.916
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	Body Mass Index (kg/m ²)	---	Mean (SD): 27 (4) in quartile 1 (Q1) of physical activity; 27 (3) in Q2; 28 (4) in Q3; 28 (4) in Q4; p=0.38

Monteiro, F. 2012, Lung ^{S48}	Body Mass Index (kg/m ²)	<p>Mean (SD) time spent per day in PA at least moderate activity (min/day): 42 (43) in underweight subjects vs. 11 (12) in obese subjects; p<0.05</p> <p>Mean (SD) time spent walking per day (min/day): 73 (31) in underweight subjects vs. 46 (26) in obese subjects; p<0.05</p> <p>Mean (SD) time spent walking per day (min/day): 69 (34) in normal weight subjects vs. 46 (26) in obese subjects; p<0.05</p>	---
Pitta, F. 2006, J Bras Pneumol ^{S57}	Body Mass Index (kg/m ²)	---	Median (P25-P75) 25 (22-30) in active group vs. 21 (21-26) in inactive group; p=0.281
Watz, H. 2008, Am J Respir Crit Care Med ^{S81}	Body mass index ≥ 30	---	<p>Adjusted unstandardized regression coefficient (95% CI): 0.048 (-0.051 to 0.146) for physical activity level; p=0.34</p> <p>Adjusted unstandardized regression coefficient (95% CI): -859 (-2104 to 385) for steps per day; p=0.18</p>

Determinant: Cardiovascular

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	High blood pressure	---	N (%): 20 (18) in low energy expenditure (0-53 kcal/d); 16 (16) in moderate (54-210 kcal/d); 27 (23) in high (>210 kcal/d); p=0.335

	Varicose veins	---	N (%): 20 (18) in low energy expenditure (0-53 kcal/d); 18 (18) in moderate (54-210 kcal/d); 28 (24) in high (>210 kcal/d); p=0.432
	Cardiac diseases	---	N (%): 34 (31) in low energy expenditure (0-53 kcal/d); 34 (34) in moderate (54-210 kcal/d); 29 (25) in high (>210 kcal/d); p=0.384
Watz, H. 2008, Am J Respir Crit Care Med ^{S81}	N-terminal pro-B-type natriuretic peptide (pg/ml)	Adjusted unstandardized regression coefficient (95% CI): -0.049 (-0.093 to -0.006) for physical activity level; p=0.026 Adjusted unstandardized regression coefficient (95% CI): -677 (-1225 to -130) for steps per day; p=0.016	---
	Deceleration time of the early transmittal flow (ms)	Adjusted unstandardized regression coefficient (95% CI): -0.001 (-0.002 to <0.000) for physical activity level; p=0.004 Adjusted unstandardized regression coefficient (95% CI): -15 (-24 to -6) for steps per day; p=0.001	---

Determinant: Cultural groups

Paper	Variable / Category	Association	
		Significant	Non-significant
Chen, Y. 2006, West J Nurs Research ^{S14}	Cultural groups	---	Mean daily functioning score: 3.16 in Fukiens and Hakkas, 3.26 in Aboriginies, and 2.63 in Mainlanders; p=0.06

Pitta, F. 2009, Respir Med ^{S59}	Cultural groups	<p>Mean (SD) time spent walking (min/day): 40 (36) in Austrian vs. 56 (32) in Brazilian; p=0.04</p> <p>Mean (SD) movement intensity: 1.5 (0.4) in Austrian vs. 1.9 (0.4) in Brazilian; p=0.0001</p> <p>Mean(SD) time spent sitting (min/day): 388 (208) in Austrian vs. 296 (109) in Brazilian; p=0.02</p>	---
Troosters, T. 2010, Respir Med ^{S71}	Cultural groups	---	<p>Mean (SEM) time spent at moderate intensity (min): 27 (7) in Leuven, 21 (7) in Pittsburgh, 10 (8) in Palermo.</p> <p>Mean (SEM) time in mild physical activity (min): 93 (15) in Leuven, 62 (15) in Pittsburgh, 64 (18) in Palermo.</p>

Determinant: Day of the week

Paper	Variable / Category	Association	
		Significant	Non-significant
Lores, V. 2006, Arch Bronconeumol ^{S45}	Monday to Wednesday vs. Friday to Sunday	---	Bland-Altman 95% CI: -29.21 to 28.81 of mean VMU between Mon-Wed and Fri-Sun vs. difference in VMU between Mon-Wed and Fri-Sun
	Tuesday to Thursday vs. Friday to Sunday	---	Bland-Altman 95% CI: -32.13 to -28.43 of mean VMU between Tue-Thu and Fri-Sun vs. difference in VMU between Tue-Thu and Fri-Sun
Moy, ML. 2009, J Rehabil	Weekends or weekday	---	"The day of the week, categorized as either

Res Dev ^{S49}			weekend or weekday, was not significantly associated with either steps per day or daily number of checklist activities performed"
Watz, H. 2009, Eur Respir J ^{S83}	Sunday vs. Weekday	Mean (SD) steps per day in Sunday 6084 (4155) vs. a weekday 8081 (4144) in GOLD I; p<0.001; 6109 (3471) vs. 7674 (3619) in GOLD II; p<0.001; 3960 (2983) vs. 5410 (3995) in GOLD III; p<0.001	Mean (SD) steps per day in Sunday 2439 (1734) vs. a weekday 2439 (1734) in GOLD IV; p=ns

Determinant: Dyspnoea

Paper	Variable / Category	Association	
		Significant	Non-significant
Bestall, JC. 1999, Thorax ^{S8}	MRC dyspnoea	Median (P ₁₀ -P ₉₀) EADL score: 19 (15-21) in MRC grade 3 vs. 17 (12-20) in MRC grade 4; p<0.003; median(P ₁₀ -P ₉₀) EADL score: 17 (12-20) in MRC grade 4 vs. 13 (6-18) in MRC grade 5; p<0.0001 <i>(Note: Numbers derived from the figure)</i>	---
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Dyspnoea at rest (VAS)	Mean (SD): 5.5 (2.9) in low energy expenditure (0-53 kcal/d); 4.7 (2.7) in moderate (54-210 kcal/d); 4.6 (2.7) in high (>210 kcal/d); p=0.031	---
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	MRC dyspnoea	Mean (SD): 2.9 (1.2) in quartile 1 (Q1) of physical activity; 2.5 (1.0) in Q2; 1.8 (0.7) in Q3; 1.8 (0.8) in Q4; p=0.001	---
	SGRQ symptoms	Mean (SD): 50.8 (22.2) in quartile 1 (Q1); 44.5 (21.3) in Q2; 29.4 (16.9) in Q3; 31.6 (14.9) in	---

		Q4; p=0.001	
Katajisto, M. 2012, Int J Chron Obstr Respir Dis ^{S41}	MRC dyspnoea	Adjusted OR (95% CI) for inactivity: 7 and 12 at dyspnoea levels 3 and 4, respectively, p<0.05	
Nguyen, HQ. 2013, Chest ^{S52}	Dyspnoea (Shortness of Breath Questionnaire)	Adjusted standardized coefficient: -0.27 for total steps/day; p=0.001	---
Pitta, F. 2006, J Bras Pneumol ^{S57}	mMRC dyspnoea (0-4)	Median (P ₂₅ -P ₇₅): 2 (1-2) in active group vs. 3 (3-4) in inactive group; p=0.002	---
Watz, H. 2009, Eur Respir J ^{S83}	mMRC dyspnoea (0-4)	<p>Mean steps per day: 8100 in mMRC 0, 6300 in mMRC 1, 4800 in mMRC 2, 3000 in mMRC 3, and 1800 in mMRC 4; p-trend<0.001</p> <p>Mean minutes >3 METs min: 165 in mMRC 0, 125 in mMRC 1, 95 in mMRC 2, 75 in mMRC 3, and 40 in mMRC 4; p-trend<0.001</p> <p>Mean physical activity level: 1.65 in mMRC 0, 1.55 in mMRC 1, 1.43 in mMRC 2, 1.38 in mMRC 3, and 1.25 in mMRC 4; p-trend<0.001</p> <p>(Note: Numbers derived from the figure)</p>	---

Determinant: Education

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Less than primary school education	---	N (%): 61 (55) in low energy expenditure (0-53 kcal/d); 59 (58) in moderate (54-210 kcal/d); 77 (67) in high (>210 kcal/d); p=0.165

Garcia-Aymerich, J. 2009, Chest ^{S33}	Less than primary school education	---	N (%): 51 (60) in quartile 1 (Q1) of energy expenditure in physical activity; 45 (53) in Q2; 48 (57) in Q3; 56 (65) in Q4; p for trend=0.425
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	University studies	---	Mean (SD): 4 (15) in quartile 1 (Q1) of physical activity; 2 (7) in Q2; 3 (11) in Q3; 2 (7) in Q4; p=0.87

Determinant: Emotional status

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Self-reported depression	---	N (%): 31 (28) in low energy expenditure (0-53 kcal/d); 28 (28) in moderate (54-210 kcal/d); 19 (17) in high (>210 kcal/d); p=0.141
Nguyen, HQ. 2013, Chest ^{S52}	Depression (HADS-D)	Adjusted standardized coefficient: -0.19 for total steps per day; p=0.02	---
	Anxiety (HADS-A)	Adjusted standardized coefficient: 0.32 for total steps per day; p<0.001	---

Determinant: Exacerbation

Paper	Variable / Category	Association	
		Significant	Non-significant
Bourbeau, J. 2007, Eur	Acute Exacerbation of	Mean (SD) change in ADL score from baseline:	---

Respir J ^{S11}	COPD (AECOPD) onset	8.7 (31.3); p=0.01	
	4-8 days after AECOPD	Mean (SD) change in ADL score from baseline: 10.2 (34.2); p=0.004	---
	11-15 days after AECOPD	---	Mean (SD) change in ADL score from baseline: 3.7 (30.1); p=ns
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	COPD admissions in the previous year	Mean (SD): 1.9 (2.3) in low energy expenditure (0-53 kcal/d); 1.4 (2.1) in moderate (54-210 kcal/d); 1.3 (1.6) in high (>210 kcal/d); p=0.049	---
Pitta, F. 2006, Chest ^{S56}	Patients with exacerbation in previous year vs. patients without exacerbation	Median (P ₂₅ -P ₇₅) walking time (min/d): 9 (4 to 18) vs. 26 (14 to 56); p=0.03	---
	Patients readmitted for another exacerbation in the year following discharge vs. patients not readmitted	Median (P ₂₅ -P ₇₅) walking time (min/d): 12 (9 to 27) vs. 30 (21 to 100); p=0.03	---

Determinant: Exercise capacity

Paper	Variable / Category	Association	
		Significant	Non-significant
Altenburg, WA. 2013, Respir Med ^{S1}	6MWD (m)	Adjusted regression standardized coefficient: 0.378 for daily physical activity; p<0.001	---
Berry, MJ. 2006, Chest ^{S6}	VO ₂ peak (mL/kg/min)	Adjusted regression coefficient: -0.041 for self-reported function; p<0.005	---

Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	6MWD (m)	Mean (SD): 199 (82) in quartile 1 (Q1) of physical activity; 263 (76) in Q2; 377 (117) in Q3; 416 (83) in Q4; p=0.001 Adjusted unstandardized regression coefficients (95% CI): 0.39 (0.24 to 0.55) for physical activity level; p=0.001	---
	Work peak (watts)	Mean (SD): 48 (20) in quartile 1 (Q1); 53 (19) in Q2; 60 (22) in Q3; 79 (20) in Q4; p=0.001	---
	V _E peak (L/min)	Mean (SD): 34.3 (9.9) in quartile 1 (Q1); 34.6 (8.3) in Q2; 40.7 (8.5) in Q3; 47.1 (11.4) in Q4; p=0.001	---
	HR peak (beats/min)	---	Mean (SD): 122 (16) in quartile 1 (Q1); 127 (15) in Q2; 126 (12) in Q3; 131 (17) in Q4; p=0.24
	VO ₂ peak (mL/min/kg)	Mean (SD): 14.9 (3.3) in quartile 1 (Q1); 16.8 (3.1) in Q2; 19.2 (3.9) in Q3; 21.7 (3.8) in Q4; p=0.001	---
	Endurance time (s)	Mean (SD): 158 (104) in quartile 1 (Q1); 256 (110) in Q2; 301 (133) in Q3; 386 (117) in Q4; p=0.001	---
Hartman, JE. 2013, Arch Phys Med Rehab ^{S37}	6MWD (m)	Adjusted regression coefficient (SE): 0.015 (0.003) for percentage locomotion; p<0.001	---
Moy, ML. 2009, J Rehabil Res Dev ^{S49}	6MWD (m)	Unadjusted coefficient (95% CI): 10 (4 to 17) for steps per day; p=0.01	---
Nguyen, HQ. 2013, Chest ^{S52}	6MWD (ft)	Adjusted standardized coefficient: 0.39 for total steps per day; p<0.001	---

Pitta, F. 2006, J Bras Pneumol ^{S57}	6MWD (% pred)	Median (P ₂₅ -P ₇₅): 76 (69-79) in active group vs. 66 (42-72) in inactive group; p=0.019	---
	VO ₂ peak (% pred)	Median (P ₂₅ -P ₇₅): 71 (55-102) in active group vs. 49 (36-78) in inactive group; p=0.049	---
	Wmax (% pred)	Median (P ₂₅ -P ₇₅): 69 (58-77) in active group vs. 40 (27-67) in inactive group; p=0.013	---
Van Remoortel, H. 2013, Thorax ^{S74}	6MWD (m)	Adjusted coefficient (SEM): 23 (6) for steps per day; p=0.0002 Adjusted coefficient (SEM): 0.33 (0.09) for MVPA; p=0.0006 Adjusted coefficient (SEM): 0.0008 (0.0003) for PAL; p=0.02	---
Watz, H. 2009, Eur Respir J ^{S83}	6MWD (m)	Correlation coefficient: 0.63 with steps per day; p<0.001 Correlation coefficient: 0.47 with minutes of at least moderate activity; p<0.001 Correlation coefficient: 0.46 with physical activity level; p<0.001	---

Determinant: FEV₁

Paper	Variable / Category	Association	
		Significant	Non-significant
Berry, M. 2006, Chest ^{S6}	FEV ₁ (% pred)	Adjusted regression coefficient: -0.005 for self-reported function; p<0.005	---

Eisner, MD. 2008, Am J Epi ^{S22}	FEV ₁ (L)	Adjusted regression coefficient (SE): -1.4 (0.30) for self-reported functional limitation; p<0.0001; -1.28 (0.32) for limitation in moderate activities; p<0.0001; -1.87 (0.31) for limitation in climbing several flights of stairs; p<0.0001	---
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	FEV ₁ (% pred)	---	Mean (SD): 35 (18) in low energy expenditure (0-53 kcal/d); 33 (13) in moderate (54-210 kcal/d); 36 (16) in high (>210 kcal/d); p=0.311
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	FEV ₁ (% pred)	Mean (SD): 43 (13) in quartile 1 (Q1) of physical activity; 42 (12) in Q2; 49 (14) in Q3; 54 (13) in Q4; p=0.01	---
	FEV ₁ (GOLD stage)	Mean (SD) daily physical activity (VMU): 223 (95) in GOLD II vs. 170 (75) in GOLD III; p=0.01; Mean (SD) daily physical activity (VMU): 223 (95) in GOLD II vs. 134 (67) in GOLD IV; p=0.001	---
Katajisto, M. 2012, Int J Chron Obstr Pulm Dis ^{S41}	FEV ₁ (% pred)	Adjusted OR (95% CI) of exercise inactivity: 3.5 (1.8 to 6.9) in patients with FEV ₁ <40% compared to FEV ₁ >40%	---
Lahajje, A. 2013, Respir Med ^{S42}	FEV ₁ (% pred)	---	Adjusted unstandardized coefficients (SE): -0.006 (0.084) for mean daily physical activity; p=0.939
Moy, ML. 2009, J Rehabil Res Dev ^{S49}	FEV ₁ (%pred)	Unadjusted coefficient (95% CI): 0.023 (0.005 to 0.041) for number of checklist physical activity performed; p=0.01	---
Pitta, F. 2006, J Bras	FEV ₁ (%pred)	Median (P ₂₅ -P ₇₅): 50 (40-58) in active group vs.	---

Pneumol ^{S57}		34 (33-44) in inactive group; p=0.021	
Pitta, F. 2008, Respir Med ^{S58}	FEV ₁ (l)	---	Correlation coefficients (95% CI) of 0.31 (-0.01 to 0.58) with EEA>3METs, p=0.05; 0.25 (-0.08 to 0.53) with steps/day, p=ns; -0.26 (-0.53 to 0.06) with sedentary activities, p=ns; 0.29 (-0.04 to 0.56) with moderate activities, p=ns; 0.31 (-0.01 to 0.59) with vigorous activities, p=0.05
Troosters, T. 2010, Respir Med ^{S71}	FEV ₁ (GOLD stage)	<p>Mean (SD) daily steps (% healthy pairs): 87(35) in GOLD I; 70(32) in GOLD II; 49(34) in GOLD III; 29(19) in GOLD IV; p<0.05</p> <p>Correlation coefficient FEV₁ %predicted: 0.51 with number steps per day; p<0.0001</p> <p>Mean(SD) daily time in moderate physical activity (% healthy pairs): 53(48) in GOLD I; 41(45) in GOLD II; 31(48) in GOLD III; 22(33) in GOLD IV; p<0.05</p> <p>Correlation coefficient FEV₁ %predicted: 0.33 with time spent in activities of mild intensity; p<0.006</p>	---
Watz, H. 2008, Am J Respir Crit Care Med ^{S81}	FEV ₁ (GOLD stage)	<p>Mean (SD) steps per day: 7990 (3370) in GOLD I; 7160 (3284) in GOLD II; 5126 (3692) in GOLD III and 2773 (1897) in GOLD IV; p<0.001</p> <p>Unstandardized regression coefficient (95% CI) GOLD III: -2714 (-4155 to -1273) for steps per day; p<0.001</p> <p>Unstandardized regression coefficient (95% CI) GOLD IV: -4272 (-5801 to -2742) for steps per day; p<0.001</p>	<p>Adjusted unstandardized regression coefficient (95% CI) GOLD II: -939 (-2226 to 349) for steps per day; p=0.28</p> <p>Adjusted unstandardized regression coefficient (95% CI) GOLD II: -0.009 (-0.111 to 0.093) for physical activity level; p=0.86</p>

		<p>Mean (SD) physical activity level: 1.63 (0.25) in GOLD I; 1.62 (0.27) in GOLD II; 1.45 (0.25) in GOLD 3 and 1.27 (0.17) in GOLD IV; $p<0.001$</p> <p>N (%) physical activity level ≥ 1.70: 9 (26) in GOLD I; 18 (32) in GOLD II; 9 (21) in GOLD III and 1 (3) in GOLD IV; $p<0.01$</p> <p>Unstandardized regression coefficient (95% CI) GOLD III: -0.128 (-0.242 to -0.014) for physical activity level; $p=0.028$</p> <p>Unstandardized regression coefficient (95% CI) GOLD IV: -0.263 (-0.384 to -0.142) for physical activity level; $p<0.001$</p>	
Watz, H. 2009, Chest ^{S82}	FEV ₁ (GOLD stage)	<p>Mean (SD) physical activity level: 1.63 (0.25) in GOLD I; 1.62 (0.27) in GOLD II; 1.45 (0.25) in GOLD 3 and 1.27 (0.17) in GOLD IV; $p<0.001$</p>	---
Watz, H. 2009, Eur Respir J ^{S83}	FEV ₁ (GOLD stage)	<p>Mean steps per day: 5000 in GOLD III vs. 8000 in GOLD I; $p<0.001$; 5000 in GOLD III vs. 7600 in GOLD II; $p=0.001$; 4500 in GOLD IV vs. 8000 in GOLD I; $p<0.001$; 4500 in GOLD IV vs. 7600 in GOLD II; $p<0.001$; 4500 in GOLD IV vs. 5000 in GOLD III; $p=0.003$</p> <p>Mean minutes >3 METs min: 110 in GOLD III vs. 145 in GOLD I; $p=0.04$; 110 in GOLD III vs. 145 in GOLD II; $p=0.02$; 55 in GOLD IV vs. 145 in GOLD I; $p<0.001$; 55 in GOLD IV vs. 145 in GOLD II; $p<0.001$; 55 in GOLD IV vs. 110 in GOLD III; $p=0.002$</p> <p>Mean physical activity level: 1.46 in GOLD III vs. 1.63 in GOLD I; $p<0.001$; 1.46 in GOLD III vs. 1.62 in GOLD II; $p<0.001$; 1.29 in GOLD IV vs. 1.63 in GOLD I; $p<0.001$; 1.29 in GOLD IV vs. 1.62 in GOLD II; $p<0.001$; 1.29 in GOLD IV</p>	---

		vs. 1.46 in GOLD III; p=0.006 (Note: Numbers derived from the figure)	
Yeo, J. 2006, Age and ageing ^{S86}	FEV ₁ (Severity)	Mean (SD) Manchester ADL score: 11.7 (6.5) in mild COPD vs. 13.4 (4.6) in moderate COPD; p=0.75; 11.7 (6.5) in mild COPD vs. 5.2 (2.8) in severe COPD; p=0.09; 13.4 (4.6) in moderate COPD vs. 5.2 (2.8) in severe COPD; p=0.02	---

Determinant: FVC

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	postPBD FVC (% pred)	Mean (SD): 71 (14) in quartile 1 (Q1) of physical activity; 70 (14) in Q2; 80 (15) in Q3; 79 (15) in Q4; p=0.02;	---
Pitta, F. 2006, J Bras Pneumol ^{S57}	FVC (% pred)	---	Median (P25-P75): 80 (74-113) in active group vs. 80 (78-87) in inactive group; p=0.902

Determinant: Gas exchange

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	DL _{CO} (% predicted)	Mean (SD): 61(27) in quartile 1 (Q1) of physical activity; 75(22) in Q2; 77(25) in Q3; 94(23) in	---

		Q4; p=0.001	
Van Remoortel, H. 2013, Thorax ^{S74}	DL _{CO} (% predicted)	Adjusted coefficient (SEM): 591 (282) for steps per day; p=0.04 Adjusted coefficient (SEM): 0.04 (0.02) for steps per day; p=0.03	---
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	PCO ₂ (mmHg)	---	Mean (SD): 45.7 (9.3) in low energy expenditure (0-53 kcal/d); 46.2 (10.3) in moderate (54-210 kcal/d); 45.9 (7.05) in high (>210 kcal/d); p=0.955
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	PCO ₂ (mmHg)	---	Mean (SD): 41.8 (5.5) in quartile 1 (Q1); 40.4 (5.8) in Q2; 40.2 (3.5) in Q3; 38.7 (5.1) in Q4; p=0.27
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	PO ₂ (mmHg)	Mean (SD): 63.3 (13.3) in low energy expenditure (0-53 kcal/d); 61 (11.7) in moderate (54-210 kcal/d); 65.8 (12.6) in high (>210 kcal/d); p=0.042	---
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	PO ₂ (mmHg)	Mean (SD): 64.0 (8.7) in quartile 1 (Q1); 64.3 (8.6) in Q2; 68.3 (6.9) in Q3; 71.0 (6.6) in Q4; p=0.01	---

Determinant: Hyperinflation (Static and Dynamic)

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Rio, F. 2009, Am J	TLC (% pred)	Mean (SD): 112 (16) in quartile 1 (Q1) of physical activity; 112 (21) in Q2; 107 (13) in Q3;	---

Respir Crit Care Med ^{S34}		99 (17) in Q4; p=0.02	
	RV/TLC (%)	Mean (SD): 60 (7) in quartile 1 (Q1) of physical activity; 59 (9) in Q2; 56 (9) in Q3; 52 (8) in Q4; p=0.002	---
	ΔEELV (l)	Mean (SD): 0.83 (0.49) in quartile 1 (Q1) of physical activity; 0.60 (0.29) in Q2; 0.35 (0.38) in Q3; -0.05 (0.20) in Q4; p=0.001 Adjusted standardized regression coefficients: -0.24 for physical activity level; p=0.001	---
	ΔEILV (l)	Mean (SD): 1.43 (0.53) in quartile 1 (Q1) of physical activity; 1.15 (0.42) in Q2; 1.17 (0.57) in Q3; 0.77 (0.52) in Q4; p=0.001	---
	Dynamic hyperinflation (Y/N)	Adjusted standardized regression coefficients: -0.34 for physical activity level; p=0.001	---
Hartman, JE. 2013, Arch Phys Med Rehab ^{S37}	RV (l)	Adjusted regression coefficient (SE): -0.612 (0.200) for percentage locomotion; p=0.003	---
Lahaije, AJ. 2013, Respir Med ^{S42}	IC/TLC	Adjusted unstandardized coefficients (SE): 78.546 (24.677) for mean physical activity; p=0.002	---
	%ΔIC	Adjusted unstandardized coefficients (SE): 0.27 (0.132) for mean physical activity; p=0.046	---
	IRV/TLC	---	Adjusted unstandardized coefficients (SE): -0.027 (0.354) for mean physical activity; p=0.940
Pitta, F. 2006, J Bras Pneumol ^{S57}	IC/TLC	---	Median (P ₂₅ -P ₇₅): 0.28 (0.21-0.34) in active group vs. 0.27 (0.26-0.31) in inactive group;

			p=0.923
Pitta, F. 2008, Respir Med ^{S58}	IC (I)	Correlation coefficients (95% CI) of 0.35 (0.02 to 0.60) with steps/day, p<0.05; 0.33 (0.01 to 0.59) with vigorous activities; p<0.05	Correlation coefficients (95% CI) of 0.30 (-0.03 to 0.57) with EEA>3METs, p=ns; -0.27 (-0.54 to 0.06) with sedentary activities, p=ns; 0.25 (-0.08 to 0.53) with moderate activities, p=ns

Determinant: Intervention – Long-acting β 2-agonist/Corticosteroids

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Oral corticosteroids	N (%): 34 (31) in low energy expenditure (0-53 kcal/d); 20 (20) in moderate (54-210 kcal/d); 17 (15) in high (>210 kcal/d); p=0.013	---
	Inhaled corticosteroids	---	N (%): 59 (53) in low energy expenditure (0-53 kcal/d); 64 (63) in moderate (54-210 kcal/d); 70 (61) in high (>210 kcal/d); p=0.282
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	Inhaled corticosteroids	---	N (%): 21 (78) in quartile 1 (Q1) of physical activity; 23 (82) in Q2; 22 (79) in Q3; 19 (70) in Q4; p=0.77
Hataji, O. 2013, Int J Chron Obstruct Pulmon Dis ^{S38}	Before vs. After inhalation	Mean (SEM) steps: 6241 (653) vs. 7858 (848); p=0.0002 Mean (SEM) physical activity time: 876 (171) vs. 1496 (285) seconds; p<0.0001 Mean (SEM) kilocalories: 148 (18) vs. 194 (23); p<0.0001	---

Determinant: Intervention – Dietary

Paper	Variable / Category	Association	
		Significant	Non-significant
dal Negro, RW. 2010, Monaldi Arch Chest Dis ^{S16}	Essential amino acids supplementation group vs. Placebo group	Mean (SD) number of steps after 4 weeks: 880 (837) vs. 652 (558); and after 12 weeks: 1141 (524) vs. 563 (602); p group x time interaction=0.0027	---
Weekes, CE. 2009, Thorax ^{S84}	Intervention group vs. Control group (intention-to-treat analysis)	Median (P ₂₅ -P ₇₅) ADL score after intervention: 11 (7 to 17) vs. 13 (8 to 18); p=0.02	---
	Intervention group vs. Control group (who completed study)	Median (P ₂₅ -P ₇₅) ADL score at 6 months: 11 (7 to 17) vs. 13 (8 to 18); p=0.02	Median (P ₂₅ -P ₇₅) ADL score at 12 months: 10 (7 to 16) vs. 13 (9 to 19); p=0.06

Determinant: Intervention – Exercise training

Paper	Variable / Category	Association	
		Significant	Non-significant
Behnke, M. 2005, Respir Med ^{S3}	Intervention vs. Control group	Mean (SD) activity per day (counts): 126.2 (37.0) vs. 72.2 (13.6); p<0.0005	---
Bendstrup, KE. 1997, Eur Respir J ^{S4}	Intervention vs. Control group at week 12	Mean (SEM) ADL score: 17.7 (5.6) vs. -4.4 (4.1); p=0.004	---
	Intervention vs. Control group at week 24	Mean (SEM) ADL score: 14.4 (4.7) vs. -9.8 (6.7); p=0.007	---

Berry, MJ. 2010, Respir Med ^{S7}	Baseline vs. at 3 month	Mean physical activity (kcal/week) in traditional exercise therapy program: 1860 vs. 2500; p=0.002 Mean physical activity (kcal/week) in behavioural lifestyle activity program: 1860 vs. 2498; p=0.004	---
	Baseline vs. at 6 month	Mean physical activity (kcal/week) in traditional exercise therapy program 1860 vs. 2210; p=0.039; Mean physical activity (kcal/week) in behavioural lifestyle activity program 1860 vs. 2456; p=0.005	---
	Baseline vs. at 12 month	Mean physical activity (kcal/week) in behavioural lifestyle activity program 1850 vs. 2342; p=0.048	Mean physical activity (kcal/week) in traditional exercise therapy program 1850 vs. 2213; p=0.089;
Breyer, MK. 2010, Respir Research ^{S12}	Intervention vs. Control at 3 months	Increase in movement intensity, p<0.01 Increase in walking time, p=0.034 Decrease in sitting time, p=0.014	---
	Intervention vs. Control at 6 months	Increase in movement intensity, p<0.01 Increase in walking time, p=0.05 Decrease in sitting time, p<0.01 Increase in standing time, p<0.01	---
	Intervention vs. Control at 9 months	Increase in movement intensity, p<0.01 Increase in standing time, p<0.01	---
Coronado, M. 2003, J	Baseline vs. after 3-week	Mean (SD) % of total time of medium activity: 4	Mean (SD) % of total time of inactivity: 82 (5)

Cardiopulm Rehab ^{S15}	rehabilitation program (including training sessions)	(4) vs. 7(5); p=0.04	vs. 78 (8); p=0.09 Mean (SD) % of total time of low activity: 13 (4) vs. 15 (5); p=0.07
	Baseline vs. after 3-week rehabilitation program (excluding training sessions)	---	Mean (SD) % of total time of inactivity: 85 (5) vs. 82 (9); p=0.13 Mean (SD) % of total time of low activity: 11 (3) vs. 13 (5); p=0.24 Mean (SD) % of total time of medium activity: 4 (3) vs. 5 (5); p=0.42
Dallas, MI. 2009, Chron Respir Dis ^{S17}	Baseline vs. after 6- to 12-week rehabilitation program	---	Mean (SD) change in pedometer counts per hour: 33 (149); p=0.14
Daly, C. 2011, Physiot Ireland ^{S18}	Baseline vs. after 8-week NMES training program	---	Mean difference in VMU/day: 40158; p=0.401 Mean difference in VMU/min: 21; p=0.575 Mean difference in % activity > 500 VMU: 4; p=0.674 Mean difference in % time > 500 VMU: 3; p=0.327
Effing, T. 2011, Respir Med ^{S20}	Intervention vs. Control group	Mean difference (95% CI) in steps per day at 12 months: 1190 (256 to 2125)	---
Egan, C. 2012, Respir Med ^{S21}	Baseline vs. after 7-week rehabilitation program (short term effects)	---	Mean (SD) total energy expenditure: 1951 (471) vs. 1860 (420); p=ns Mean (SD) active energy expenditure: 256 (401) vs. 208 (232); p=ns Mean (SD) physical activity duration: 48 (67) vs. 51 (53); p=ns

			<p>Mean (SD) % time spend in moderate activity: 74 (104) vs. 79 (82); p=ns</p> <p>Mean (SD) METs: 1.2 (0.3) vs. 1.2 (0.3); p=ns</p> <p>Mean (SD) daily steps: 3611 (2863) vs. 3527 (2870); p=ns</p> <p>Mean (SD) %time sedentary: 94 (8) vs. 94 (4); p=ns</p>
	Baseline vs. after 20-week (medium term effects)	---	<p>Mean (SD) total energy expenditure: 1951 (471) vs. 1953 (485); p=ns</p> <p>Mean (SD) active energy expenditure: 256 (401) vs. 227 (312); p=ns</p> <p>Mean (SD) physical activity duration: 48 (67) vs. 48 (64); p=ns</p> <p>Mean (SD) % time spend in moderate activity: 74 (104) vs. 74 (99); p=ns</p> <p>Mean (SD) METs: 1.2 (0.3) vs. 1.1 (0.3); p=ns</p> <p>Mean (SD) daily steps: 3611 (2863) vs. 3242 (3436); p=ns</p> <p>Mean (SD) %Time Sedentary: 94 (8) vs. 92 (7); p=ns</p>
	Baseline vs. after 52-week (long term effects on a subsample, n=17)	---	<p>Mean (SD) total energy expenditure: 1917 (500) vs. 2123 (871); p=ns</p> <p>Mean (SD) active energy expenditure: 270 (432) vs. 477 (736); p=ns</p> <p>Mean (SD) physical activity duration: 62 (98) vs. 79 (112); p=ns</p> <p>Mean (SD) METs: 1.2 (0.3) vs. 1.2 (0.3); p=ns</p>

			Mean (SD) daily steps: 3702 (2270) vs. 3083 (1938); p=ns Mean (SD) %Time Sedentary: 93 (7) vs. 92 (9); p=ns
Faager, G. 2004, J Rehabil Med ^{S27}	Intervention vs. Control group	Mean (P ₂₅ -P ₇₅) ADL score after the rehabilitation program: 0.9 (0.3-1.4) vs. 1.3 (0-2.3); p<0.01	---
Faulkner, J. 2010, Prim Care Resp J ^{S28}	Intervention vs. Control group	---	Difference mean (95%CI) of 7 day total physical activity (kcal) after 8-week program: -85.5 (-807 to 636)
Mador, MJ. 2011, J Cardiopulmon Rehab Prev ^{S46}	Baseline vs. after 8-week rehabilitation program	---	Absolute difference of means (SD) of total VMU/min: 3.7 (39.1); p=0.65
Nield, M. 2005, J Cardiopulm Rehab ^{S53}	Baseline vs. after 6-week rehabilitation program	Mean (SD) Human Activity Scale (maximal activity score): 55 (14) vs. 64 (13); p=0.001 Mean (SD) Human Activity Scale (adjusted activity score): 42 (15) vs. 48 (13); p<0.001	---
Pomidori, L. 2012, J Cardiopulmon Rehab Prev ^{S60}	Group walked with metronome vs. Group walked a fixed distance	Absolute difference between baseline and after 12 months (SD) in METs daily average: 0.17 (0.14) vs. 0.04 (0.13); p<0.05 Absolute difference between baseline and after 12 months (SD) in time >3 METs (h): 35 (32) vs. 13 (28); p<0.05	---
Probst, VS. 2011, Respir Care ^{S61}	Baseline vs. after 12-week in low-intensity and in high-intensity training program	---	Mean (SD) in time spent per day walking (min): 58 (24) vs. 43 (26) in low-intensity group; p=0.051; and 57 (32) vs. 53 (39) in high-intensity group; p>0.05 Mean (SD) in time spent per day standing

			<p>(min): 270 (139) vs. 228 (127) in low-intensity group; $p>0.05$; and 248 (95) vs. 245 (105) in high-intensity group; $p>0.05$</p> <p>Mean (SD) in time spent per day sitting (min): 283 (121) vs. 326 (129) in low-intensity group; $p>0.05$; and 296 (91) vs. 312 (106) in high-intensity group; $p>0.05$</p> <p>Mean (SD) in time spent per day laying (min): 108 (100) vs. 116 (90) in low-intensity group; $p>0.05$; and 113 (109) vs. 100 (78) in high-intensity group; $p>0.05$</p> <p>Mean (SD) in total energy expenditure (Kcal): 1331 (596) vs. 1365 (824) in low-intensity group; $p>0.05$; and 1295 (635) vs. 1298 (565) in high-intensity group; $p>0.05$</p> <p>Mean (SD) in energy expenditure >3 METS (Kcal): 428 (620) vs. 337 (466) in low-intensity group; $p>0.05$; and 408 (620) vs. 396 (542) in high-intensity group; $p>0.05$</p> <p>Mean (SD) in time spent activities >3 METS (min): 76 (99) vs. 54 (67) in low-intensity group; $p>0.05$; and 76 (89) vs. 74 (85) in high-intensity group; $p>0.05$</p> <p>Mean (SD) in steps per day: 5002 (4195) vs. 4336 (3910) in low-intensity group; $p>0.05$; and 4568 (3381) vs. 4290 (3253) in high-intensity group; $p>0.05$</p>
Schou, L. 2013, J Telemed Telecare ^{S64}	Telemedicine intervention vs. conventional hospital treatment	---	<p>Mean (SD) in activity of daily living: 2.0 (2.6) vs. 1.5 (1.7) 3 days after discharge; $p=0.86$</p> <p>Mean (SD) in activity of daily living: 1.5 (2.7) vs. 2.2 (2.7) at follow-up after 6 weeks; $p=0.79$</p>

			Mean (SD) in activity of daily living: 1.9 (2.9) vs. 1.1 (1.5) at follow-up after 3 months; p=0.93
Sewell, L. 2005, Chest ^{S65}	Baseline vs. after 7-week in individually targeted exercise program (ITEP)	Mean (95%CI) % change in activity counts: 41% (7 to 74) in individually targeted exercise program (ITEP) rehabilitation program; p=0.02 Mean (95%CI) change in COPM performance score: 1.46 (1.05 to 1.87); p=0.0001 Mean (95%CI) change in COPM satisfaction score: 2.04 (1.56 to 2.52); p=0.0001	---
	Baseline vs. after 7-week in general exercise program (GEP)	Mean (95%CI) % change in activity counts: 29% (3 to 55); p= 0.03 Mean (95%CI) change in COPM performance score: 1.71 (1.37 to 2.05); p=0.0001 Mean (95%CI) change in COPM satisfaction score: 2.27 (1.74 to 2.81); p=0.0001	---
Sewell, L. 2010, J Cardiopulm Rehab Prev ^{S66}	Baseline vs. after 7-week rehabilitation	---	Mean change (95% CI) in activity monitor counts (%): 33 (-3 to 70) in spring, 2 (-33 to 37) in summer, 38 (-2 to 78) in autumn, 130 (-2 to 263); p=ns
Skumlien, S. 2008, Respir Med ^{S69}	Baseline vs. after 12-week in resistance training program	---	Mean (95%CI) change in ADL time (min): -0.1 (-0.6 to 0.5); p=ns Mean (95%CI) change in HPAQ score: -60 (-614 to 495); p=ns
	Baseline vs. after 12-week in endurance training program	---	Mean (95%CI) change in ADL time (min): -0.3 (-0.6 to 0); p=ns Mean (95%CI) change in HPAQ score: 241 (-498 to 982); p=ns

Takigawa, N. 2007, Respir Med ^{S70}	Baseline vs. after 4- to 8-week rehabilitation program	<p>Mean (SD) velocity of motion in GOLD II: 24.6 (4.1) vs. 25.9 (4.2); p=0.023</p> <p>Mean (SD) velocity of motion in GOLD III: 22.8 (6.0) vs. 25.2 (4.5) post-PR; p=0.000</p> <p>Mean (SD) velocity of motion in GOLD IV: 18.1 (6.5) vs. 21.1 (5.9); p=0.000</p>	---
Walker, PP. 2008, Thorax ^{S79}	Baseline vs. after 8-week rehabilitation program	<p>Mean (SE) intensity of activity score: 156 (69.2) vs. 208.5 (123.4); p=0.001</p> <p>Mean (SE) activity score: 81.5 (53.2) vs. 117.2 (84.2); p=0.002</p> <p>Mean (SE) % time spent mobile: 50.0 (2.7) vs. 55.2 (2.6); p=0.014</p> <p>Mean (SE) NEADL score: 16.4 (0.5) vs. 18.2 (0.5); p<0.001</p>	---

Determinant: Intervention – Oxygen therapy

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Long term oxygen therapy (LTOT) utilization	<p>N (%): 51 (46) in low energy expenditure (0-53 kcal/d); 30 (30) in moderate (54-210 kcal/d); 27 (23) in high (>210 kcal/d); p=0.001</p> <p>Adjusted OR (95% CI) of low physical activity: 2.07 (1.19 to 3.60); p=0.010</p>	---

	Time using LTOT	---	<p>N (%) <1 month: 4 (8) in low energy expenditure (0-53 kcal/d); 5 (17) in moderate (54-210 kcal/d); 3 (11) in high (>210 kcal/d)</p> <p>N (%) 1-5.9 months: 5 (10) in low energy expenditure (0-53 kcal/d); 4 (14) in moderate (54-210 kcal/d); 3 (11) in high (>210 kcal/d)</p> <p>N (%) 6 months-1.9 yr: 13 (25) in low energy expenditure (0-53 kcal/d); 3 (10) in moderate (54-210 kcal/d); 7 (26) in high (>210 kcal/d)</p> <p>N (%) 2-3.9 yr: 13 (25) in low energy expenditure (0-53 kcal/d); 3 (10) in moderate (54-210 kcal/d); 6 (22) in high (>210 kcal/d)</p> <p>N (%) ≥4 yr: 16 (31) in low energy expenditure (0-53 kcal/d); 14 (48) in moderate (54-210 kcal/d); 8 (30) in high (>210 kcal/d)</p> <p>p=0.436</p>
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	Long term oxygen therapy (LTOT) utilization	---	<p>N (%): 4 (15) in quartile 1 (Q1) of physical activity; 4 (14) in Q2; 2 (7) in Q3; 0 (0) in Q4; p=0.19</p>
Okubadejo, AA. 1997, Eur Respir J ^{S54}	LTOT group vs. no LTOT group	Median (P ₂₅ -P ₇₅) Nottingham EADL score: 10 (2-20) vs. 17 (6-22); p=0.01	---
Sandland, C.J. 2008, Chest ^{S63}	Before vs. after intervention	---	<p>In oxygen group, mean (SD) domestic activity counts: 4694 (1902) vs. 6912 (4171); p=0.46</p> <p>In air group, mean (SD) domestic activity counts: 6430 (5002) vs. 6000 (3808); p=ns</p>
Tsara, V. 2008, Respir Care ^{S72}	LTOT group vs. no LTOT group	Mean (SD) ADL score: 74.5 (37.3) vs. 97.4 (2.0); p=0.001	---

Vergeret, J. 1989, Eur Respir J ^{S75}	Fixed O ₂ group vs. Portable O ₂ group	Mean (SD) walked outdoors (m/day): 520 (370) vs. 480(397); p<0.05	---
	Fixed O ₂ group vs. Portable O ₂ group (in oxygen therapy <15 h/day)	---	Mean rest time (h/day): 13 vs. 14; p=ns Mean outdoor activity (h/day): 2 vs. 2; p=ns Mean distance walked outdoor (m/day): 658 vs. 432; p=ns
	Fixed O ₂ group vs. Portable O ₂ group (in oxygen therapy > 18 h/day)	Mean outdoor activity (h/day): 0.1 vs. 2; p<0.05 Mean distance walked outdoor (m/day): 20 vs. 385; p<0.01	Mean rest time (h/day): 15 vs. 14; p=ns

Determinant: Intervention – Physical activity advice

Paper	Variable / Category	Association	
		Significant	Non-significant
de Blok, BMJ. 2006, Patient Educ Couns ^{S19}	Physical activity counselling with pedometer group vs. control group	---	Mean steps/day at follow-up: 3927 in intervention group, 3554 in control group, p=0.38
Nguyen, HQ. 2009, Int J Chron Obstruct Pulmon Dis ^{S51}	MOBILE self-monitored (control group) vs. MOBILE coached (intervention group)	Mean (SE) total steps/day: 5229 (1068) at baseline, 4452 (1082) at 3 months, and 5838 (1096) at 6 months, in MOBILE-self monitored vs. 6692 (1007) at baseline, 5879(1016) at 3 months, and 5675 (1007) at 6 months, in MOBILE-coached; p group x time interaction=0.04; Mean (SE) % active time at moderate-high	---

		<p>activity: 19.1 (2.7) at baseline, 18.6 (2.8) at 3 months, and 23.5 (2.9) at 6 months, in MOBILE-self monitored vs. 27.1 (2.6) at baseline, 24.2 (2.6) at 3 months, and 23.6(2.6) at 6 months, in MOBILE-coached; p group x time interaction=0.003;</p> <p>Mean (SE) total average steps/minute of the best 30 minutes of the day: 61.2 (5.4) at baseline, 59.0 (5.6) at 3 months, and 68.2 (5.8) at 6 months, in MOBILE-self monitored vs. 68.4 (5.0) at baseline, 59.0 (5.2) at 3 months, and 56.6 (5.0) at 6 months, in MOBILE-coached; p group x time interaction=0.002</p>	
Wewel, AR. 2008, Respir Med ^{S85}	Baseline period vs. phone call period	<p>Mean (SD) total activity (counts): 192614 (127247) vs. 235489 (116953); p=0.017</p> <p>Mean (SD) activity per hour of monitoring (counts/h): 1061 (636) vs. 1330 (726); p=0.007</p>	<p>Mean (SD) total activity without training sessions (counts): 192614 (127247) vs. 194476 (103389); p=0.433</p> <p>Mean (SD) total pedometer reading (m): 31215 (23673) vs. 37186 (20341); p=0.079</p> <p>Mean (SD) pedometer reading per hour (m/h): 184 (119) vs. 214 (121); p=0.140</p>

Determinant: Marital status

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Married	---	N (%) 74 (67) in low energy expenditure (0-53 kcal/d); 77 (76) in moderate (54-210 kcal/d); 88 (77) in high (>210 kcal/d); p=0.172

Garcia-Aymerich, J. 2009, Chest ^{S33}	Married	N (%): 75 (88) in quartile 1 (Q1) of energy expenditure in physical activity; 73 (86) in Q2; 62 (73) in Q3; 64 (74) in Q4; p for trend=0.005	---
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Determinant: Osteoarticular condition

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Arthrosis or rheumatism	---	N (%): 45 (41) in low energy expenditure (0-53 kcal/d); 33 (33) in moderate (54-210 kcal/d); 47 (4) in high (>210 kcal/d); p=0.385
Moy, ML. 2009, J Rehabil Res Dev ^{S49}	Joint problems	Unadjusted coefficient (95% CI): -2742 (-3723 to -1761) for steps per day; p=0.0002 Unadjusted coefficient (95% CI): -1.1 (-2.2 to -0.083) for number of checklist physical activity performed; p=0.04	---

Determinant: Quality of Life / Health Related Quality of Life

Paper	Variable / Category	Association	
		Significant	Non-significant
Altenburg, WA. 2013, Respir Med ^{S1}	SGRQ activity	Adjusted regression standardized coefficient: -0.275 for daily physical activity; p=0.006	---

Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	SF-12 physical summary	Mean (SD): 33 (7) in low energy expenditure (0-53 kcal/d); 37 (9) in moderate (54-210 kcal/d); 39 (10) in high (>210 kcal/d); p<0.001 Adjusted OR (95% CI) of low physical activity: 0.93 (0.90 to 0.96); p<0.001	---
	SF-12 mental summary	Mean (SD): 42 (12) in low energy expenditure (0-53 kcal/d); 47 (11) in moderate (54-210 kcal/d); 49 (10) in high (>210 kcal/d); p<0.001 Adjusted OR(95% CI) of low physical activity: 0.96 (0.93 to 0.98); p<0.001	---
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	SGRQ symptoms	Mean (SD): 50.8 (22.2) in quartile 1 (Q1) of physical activity; 44.5 (21.3) in Q2; 29.4 (16.9) in Q3; 31.6 (14.9) in Q4; p=0.001	---
	SGRQ activity	Mean (SD): 62.2 (18.4) in quartile 1 (Q1) of physical activity; 49.7 (17.7) in Q2; 47.9 (17.2) in Q3; 39.0 (14.6) in Q4; p=0.001	---
	SGRQ impact	Mean (SD): 51.3 (17.9) in quartile 1 (Q1) of physical activity; 29.4 (16.3) in Q2; 24.8 (15.0) in Q3; 30.8 (18.8) in Q4; p=0.001	---
	SGRQ total score	Mean (SD): 54.5 (17.5) in quartile 1 (Q1) of physical activity; 38.1 (16.3) in Q2; 33.6 (12.5) in Q3; 34.4 (13.2) in Q4; p=0.001	---
Moy, ML. 2009, J Rehabil	VR-36 physical function	Unadjusted coefficient (95% CI): 29 (12 to 47) for steps per day; p=0.002	---

Res Dev ^{S49}	SF-36 physical summary	Unadjusted coefficient (95% CI): 67 (35 to 99) for steps per day; p=0.0003	---
	SF-36 mental summary	Unadjusted coefficient (95% CI): -72 (-125 to -19) for steps per day; p=0.002	---
Pitta, F. 2006, J Bras Pneumol ^{S57}	CRDQ total	---	Median (P ₂₅ -P ₇₅): 82 (63-88) in active group vs. 87 (65-104) in inactive group; p=0.399

Determinant: Self-efficacy

Paper	Variable / Category	Association	
		Significant	Non-significant
Altenburg, WA. 2013, Respir Med ^{S1}	PPAS (Perceived Physical Ability Subscale)	Adjusted standardized coefficient: 0.400 for daily physical activity; p=0.000	---
Hartman, JE. 2013, Arch Phys Med Rehab ^{S37}	LIVAS (Self-efficacy for physical activity)	Adjusted regression coefficient (SE): 0.096 (0.034) for percentage locomotion; p=0.006	---

Determinant: Sex

Paper	Variable / Category	Association	
		Significant	Non-significant

Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Male	N (%) 94 (85%) in low energy expenditure (0-53 kcal/d); 95 (94%) in moderate (54-210 kcal/d); 110 (95%) in high (>210 kcal/d); p=0.007	---
	Female	Adjusted OR (95% CI) of low physical activity: 2.92 (1.11 to 7.70); p=0.031	---
Garcia-Aymerich, J. 2009, Chest ^{S33}	Male	N (%) 83 (98) in quartile 1 (Q1) of energy expenditure in physical activity; 81 (95) in Q2; 75 (88) in Q3; 78 (91) in Q4; p for trend=0.025	---
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	Male	---	N (%) 26 (96) in quartile 1 (Q1) of physical activity; 26 (93) in Q2; 25 (89) in Q3; 27 (100) in Q4; p=0.34
Pitta, F. 2006, J Bras Pneumol ^{S57}	Male		N (%) 8 (50) male in active group vs. 8 (50) male in inactive group; p=na
	Female		N (%) 4 (57) female in active group vs. 3 (43) female in inactive group; p=na
Skumlien, S. 2006, Chron Respir Dis ^{S68}	Sex	Mean (SD) activity score in home management: 3.9 (2.6) in men vs. 4.8 (2.2) in women; p<0.05	---
Watz, H. 2008, Am J Respir Crit Care Med ^{S81}	Male	---	N (%) 25 (74) in GOLD I; 41 (72) in GOLD II; 35 (81) in GOLD III and 27 (75) in GOLD IV; p=0.74
	Female	---	Unstandardized regression coefficient (95% CI) 0.065 (-0.027 to 0.157) for physical activity level; p=0.16;

Determinant: Smoking habit

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Ex-smoker, current smoker, never smoker	N (%): 70 (65) ex-smoker, 23 (21) current smoker, 15 (14) never smoker in low energy expenditure (0-53 kcal/d); 71 (71) ex-smoker, 25 (25) current smoker, 4 (4) never smoker in moderate (54-210 kcal/d); 74 (65) ex-smoker, 34 (30) current smoker, 6 (5) never smoker in high (>210 kcal/d); p=0.041	---
Garcia-Aymerich, J. 2009, Chest ^{S33}	Current smoker	N (%): 24 (28) in quartile 1 (Q1) of energy expenditure in physical activity; 28 (33) in Q2; 39 (46) in Q3; 54 (63) in Q4; p for trend=0.007	---
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	Current smoker	---	N (%): 5 (20) in quartile 1 (Q1) of physical activity; 6 (23) in Q2; 5 (19) in Q3; 4 (16) in Q4; p=0.74
	Pack-years	---	Mean (SD): 83 (89) quartile 1 (Q1) of physical activity; 49 (12) in Q2; 48 (29) in Q3; 53 (16) in Q4; p=0.21

Determinant: Socioeconomic status

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004,	Low socioeconomic status	N (%): 70 (63) in low energy expenditure (0-53 kcal/d); 73 (72) in moderate (54-210 kcal/d); 94	---

Med Sci Sports Exerc ^{S30}	(grade IV or V)	(81) in high (>210 kcal/d); p=0.007	
	High socioeconomic status (grade I to III)	Adjusted OR (95% CI) of low physical activity: 2.23 (1.24 to 4.02); p=0.007	---
Garcia-Aymerich, J. 2009, Chest ^{S33}	Low socioeconomic status (grade IV or V)	---	N (%): 68 (83) in quartile 1 (Q1) of energy expenditure in physical activity; 64 (83) in Q2; 64 (80) in Q3; 62 (81) in Q4; p for trend=0.595

Determinant: Systemic inflammation

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	IL-6 (pg/ml)	Mean (SD): 2.1 (3.3) in quartile 1 (Q1) of physical activity; 6.3 (7.8) in Q2; 1.9 (3.2) in Q3; 1.7 (2.5) in Q4; p=0.04;	---
	8-isoprostane (pg/ml)	Mean (SD): 58.9 (20.3) in quartile 1 (Q1); 45.6 (23.8) in Q2; 33.6 (23.0) in Q3; 11.1 (7.1) in Q4; p=0.001	---
	soluble TNF- α receptor 1 (pg/ml)	---	Mean (SD): 4.0 (5.4) in quartile 1 (Q1); 4.4 (10.4) in Q2; 1.0 (1.0) in Q3; 3.2 (4.7) in Q4; p=0.59
Watz, H. 2008, Am J Respir Crit Care Med ^{S81}	Fibrinogen (mg/dl)	Adjusted unstandardized regression coefficient (95% CI): -0.001 (-0.001 to <0.000) for physical activity level; p=0.001 Adjusted unstandardized regression coefficient (95% CI): -7 (-12 to -2) for steps per day; p=0.006	---

Determinant: Working status

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Current workers	---	N (%): 6 (5) in low energy expenditure (0-53 kcal/d); 7 (7) in moderate (54-210 kcal/d); 7 (6) in high (>210 kcal/d); p=0.898
Garcia-Aymerich, J. 2009, Chest ^{S33}	Occupationally active	N (%): 0 (0) in quartile 1 (Q1) of energy expenditure in physical activity; 5 (6) in Q2; 17 (20) in Q3; 39 (46) in Q4; p for trend<0.001.	---
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	Retired or disabled	---	N (%): 20 (74) in quartile 1 (Q1) of physical activity; 13 (46) in Q2; 14 (50) in Q3; 12 (44) in Q4; p=0.10

Online supplement Table 3b. Other potential determinants (only evidenced in 1 study) and their association with physical activity, grouped in main categories and sorted by alphabetical order.

Determinant: Cardiac autonomic function

Paper	Variable / Category	Association	
		Significant	Non-significant
van Gestel, AJR. 2012, COPD ^{S73}	RR interval (ms)	Unadjusted coefficient: 0.42 for steps per day; p=0.001	---
	HR at rest (bpm)	Unadjusted coefficient: -0.29 for steps per day; p=0.010	---
	Heart Rate Reserve (bpm)	Unadjusted coefficient: 0.28 for steps per day; p=0.015	---

Determinant: Caregivers

Paper	Variable / Category	Association	
		Significant	Non-significant
Wakabayashi, R. 2011, J Am Geriatr Soc ^{S78}	Living alone vs. Living with 1 caregiver	Mean (SD) in instrumental ADLs (range 0-31): 29.1 (3.6) vs. 25.6 (3.9); p<0.001	---
	Living alone vs. Living with ≥2 caregiver	Mean (SD) in instrumental ADLs (range 0-31): 29.1 (3.6) vs. 25.6 (4.2); p<0.001	---

	Living with 1 caregiver vs. Living with ≥2 caregiver	---	Mean (SD) in instrumental ADLs (range 0-31): 25.6 (3.9) vs. 25.6 (4.2); p>0.99
	Living alone vs. Living with 1 caregiver vs. Living with ≥2 caregiver	Mean (SD) in ADLs (range 0-31): 29.1 (3.6) vs. 25.6 (3.9) vs. 29.1 (3.6); p <0.001	Mean (SD) in ADLs (range 0-20): 19.9 (0.5) vs. 20.0 (0.3) vs. 19.9 (0.8); p=0.79

Determinant: Cataracts

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Cataracts	---	N (%): 43 (39) in low energy expenditure (0-53 kcal/d); 29 (29) in moderate (54-210 kcal/d); 26 (23) in high (>210 kcal/d); p=0.053

Determinant: Diabetes

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	Diabetes	N (%): 32 (29) in low energy expenditure (0-53 kcal/d); 18 (18) in moderate (54-210 kcal/d); 15 (13) in high (>210 kcal/d); p=0.010 Adjusted OR (95% CI) of low physical activity: 2.66 (1.40 to 5.06); p=0.003	---

Determinant: Disease control

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2004, Med Sci Sports Exerc ^{S30}	≥3 visits per year to control the disease	---	N (%): 44 (43) in low energy expenditure (0-53 kcal/d); 30 (32) in moderate (54-210 kcal/d); 36 (33) in high (>210 kcal/d); p=0.167
	Correctly performed essential inhaler manoeuvres	---	N (%): 54 (53) in low energy expenditure (0-53 kcal/d); 49 (57) in moderate (54-210 kcal/d); 53 (56) in high (>210 kcal/d); p=0.830

Determinant: Intervention – Integrated education

Paper	Variable / Category	Association	
		Significant	Non-significant
Wakabayashi, R. 2011, Geriatr Gerontol ^{S77}	Integrated education group vs. Usual care group (baseline, 6 months, and 12 months)	Mean (SD) instrumental activities of daily living: 26 (4), 27 (4), and 27 (4) vs. 27 (4), 26 (4), and 27 (4); p group x time interaction=0.030	---

Determinant: Intervention - Lung volume reduction surgery

Paper	Variable / Category	Association	
		Significant	Non-significant

<p>Goto, Y. 2004, Respiriology^{S36}</p>	<p>LVRs group vs. non-LVRs group</p>	<p>Mean in bathing score at 3 months 0.54 in LVRs group vs. 1.64 in non-LVRs group, $p<0.005$</p> <p>Mean in indoor walking score at 3 months 0.25 in LVRs group vs. 0.73 in non-LVRs group, $p<0.005$</p> <p>Mean in bathing score at 12 months 0.53 in LVRs group vs. 1.50 in non-LVRs group, $p<0.005$</p>	<p>Mean in eating score at 3 months 0.15 in LVRs group vs. 0.18 in non-LVRs group; $p=ns$</p> <p>Mean in toileting score at 3 months 0.23 in LVRs group vs. 0.27 in non-LVRs group; $p=ns$</p> <p>Mean in shampooing score at 3 months 0.62 in LVRs group vs. 1.10 in non-LVRs group; $p=ns$</p> <p>Mean in face and teeth washing score at 3 months 0.39 in LVRs group vs. 0.73 in non-LVRs group; $p=ns$</p> <p>Mean in dressing score at 3 months 0.54 in LVRs group vs. 0.55 in non-LVRs group; $p=ns$</p> <p>Mean in eating score at 12 months 0.22 in LVRs group vs. 0.42 in non-LVRs group; $p=ns$</p> <p>Mean in toileting score at 12 months 0.44 in LVRs group vs. 0.50 in non-LVRs group; $p=ns$</p> <p>Mean in shampooing score at 12 months 0.83 in LVRs group vs. 1.42 in non-LVRs group; $p=ns$</p> <p>Mean in face and teeth washing score at 3 months 0.56 in LVRs group vs. 0.92 in non-LVRs group; $p=ns$</p> <p>Mean in dressing score at 12 months 0.56 in LVRs group vs. 1.17 in non-LVRs group; $p=ns$</p> <p>Mean in indoor walking score at 3 months 0.39 in LVRs group vs. 1.17 in non-LVRs group, $p=ns$</p>
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Determinant: Intervention - Lung transplant

Paper	Variable / Category	Association	
		Significant	Non-significant
Bossenbroek, L. 2009, J Heart Lung Transplant ^{S10}	Lung transplant candidates vs. Lung transplant recipients	Mean (SD) steps/day: 1407 (1166) vs. 6642 (2886); p<0.001 Mean (SD) step equivalents/day: 2636 (2275) vs. 9038 (4583); p<0.001 Mean (SD) SQUASH MET/day: 1349 (990) vs. 5434 (2945); p<0.001	---

Determinant: Muscle strength

Paper	Variable / Category	Association	
		Significant	Non-significant
Pitta, F. 2006, J Bras Pneumol ^{S57}	Plmax (% pred)	---	Median (P ₂₅ -P ₇₅): 66 (48-88) in active group vs. 74 (62-102) in inactive group; 0.644
	PEmax (% pred)	---	Median (P ₂₅ -P ₇₅): 101 (89-109) in active group vs. 78 (67-121) in inactive group; 0.132
	QF (% pred)	---	Median (P ₂₅ -P ₇₅): 75 (54-87) in active group vs. 76 (58-97) in inactive group; 0.806

Determinant: Other lung function measures (not FEV₁, not FVC, not hyperinflation)

Paper	Variable / Category	Association	
		Significant	Non-significant
Garcia-Rio, F. 2009, Am J Respir Crit Care Med ^{S34}	postPBD FEV ₁ /FVC	---	Mean (SD): 48 (13) in quartile (Q1) quartile 1 (Q1) of physical activity; 49 (11) in Q2; 49 (12) in Q3; 55 (11) in Q4; p=0.15
	FRC (% pred)	Mean (SD): 143 (25) in quartile (Q1) quartile 1 (Q1) of physical activity; 144 (42) in Q2; 130 (22) in Q3; 114 (28) in Q4; p=0.002	---
Pitta, F. 2006, J Bras Pneumol ^{S57}	VE/MVV	---	Median (P25-P75): 100 (85-114) in active group vsvs. 83 (64-105) in inactive group; p=0.178
Pitta, F. 2008, Respir Med ^{S58}	MVV (l)	Correlation coefficients (95% CI) of 0.48 (0.18 to 0.69) with EEA>3METs, p<0.001; 0.49 (0.20 to 0.70) with steps/day, p<0.001; -0.41 (-0.65 to 0.10) with sedentary activities, p<0.001; 0.42 (0.11 to 0.66) with moderate activities, p<0.001; 0.49 (0.20 to 0.71), p<0.001	---

Determinant: Season

Paper	Variable / Category	Association	
		Significant	Non-significant
Sewell, L. 2010, J Cardiopulmon Rehab Prev ^{S66}	Summer vs. Winter	Mean (SD) activity monitor counts: 8857 (7497) vs. 3201 (2637); p=0.01	---

Online supplement Table 4a. Outcomes covered by at least 2 articles and their association with physical activity, grouped in main categories and sorted by alphabetical order.

Outcome: Balance

Paper	Variable	Association	
		Significant	Non-significant
Beauchamp, MK. 2012, Chest ^{S2}	BESTest score	Correlation coefficient: 0.40 with self-reported physical activity (PASE); p=0.008 Standardized regression coefficient: 0.341 for self-reported physical activity (PASE); p=0.033	---
Roig, M. 2011, Respir Med ^{S62}	Falls	---	Mean (95% CI) in PASE score: 109 (92 to 126) in non-fallers vs. 86 (66 to 106) in fallers; p=0.1

Outcome: Bone mineral density

Paper	Variable	Association	
		Significant	Non-significant
Bon, J. 2011, Am J Respir Crit Care Med ^{S9}	Bone mineral density	---	Mean (SD) in leisure score: 2.4 (1.2) in normal group vs. 2.3 (1.1) in osteopenia group vs. 1.9 (1.3) in osteoporosis group; p=ns Mean (SD) in on-the-job score: 1.6 (0.8) in normal group vs. 1.6 (0.8) in osteopenia group vs. 1.1 (0.4) in osteoporosis group; p=ns
Silva, DR. 2011, Respir	Bone mass (T-score)	---	Median (P ₂₅ -P ₇₅) METs (min/week): 720 (0-2520) in osteoporosis group vs. 560 (25-3548)

Care ^{S67}			in osteopenia group vs. 1104 (136-17000) in normal bone mass; p=0.24
	Femoral-neck (T-score)	Correlation coefficient: 0.378 with total activity; p<0.001	---
	Lumbar spine (T-score)	---	Correlation coefficient: 0.150 with total activity; p=0.15

Outcome: Dyspnea

Paper	Variable	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2009, Chest ^{S33}	severe dyspnea (mMRC score, 3, 4, 5)	N (%) 52 (62) in quartile 1 (Q1) of energy expenditure in physical activity; 34 (40) in Q2; 28 (33) in Q3; 40 (47) in Q4; p for trend=0.036	---
Lemmens, KM. 2008, Patient Educ Couns ^{S44}	MRC dyspnea	Adjusted regression coefficient 0.20 for physical activity; p<0.01	---

Outcome: Exacerbations

Paper	Variable	Association	
		Significant	Non-significant
Benzo, RP. 2010, Respiration ^{S5}	No hospital admission during 12-month period	Mean (SD) self-reported time of physical activity per week (minutes) 109 (62) in patients with no hospital admission during 12-month period vs. 94(65) in patients with at least one	---

		<p>hospital admission during 12-month period; p=0.01</p> <p>Mean self-reported time of ≥ 2 h of physical activity per week (%): 42 in patients with no hospital admission during 12-month period vs. 30 in patients with at least one hospital admission during 12-month period; p=0.003</p> <p>Adjusted OR (95% CI) of hospitalization: 0.6 (0.41 to 0.88) in self-reported time of ≥ 2 h of physical activity per week; p=0.01</p>	
Chen, Y. 2006, Western journal nursing research ^{S14}	Readmission at 14 days	Adjusted OR (95% CI) of daily functioning: 0.99 (0.53 to 1.85); p<0.05	---
	Readmission at 90 days	Adjusted OR (95% CI) of daily functioning: 0.56 (0.33 to 0.97); p<0.05	---
Garcia-Aymerich, J. 2003, Thorax ^{S29}	Readmission to hospital for COPD exacerbation	<p>Adjusted HR (95% CI): 0.85 (0.59 to 1.24) usual physical activity 79-232 kcal/day; p=0.400; 0.49 (0.31 to 0.79) usual physical activity >232 kcal/day; p=0.003</p> <p>Adjusted HR (95% CI): 0.87 (0.60 to 1.27) usual physical activity 79-232 kcal/day; p=0.469; 0.54 (0.34 to 0.86) usual physical activity >232 kcal/day; p=0.010</p>	---
Garcia-Aymerich, J. 2006, Thorax ^{S31}	COPD admissions	Adjusted IRR (95% CI): 0.72 (0.53 to 0.97) in low/moderate/high physical activity; p=0.033	---
Garcia-Aymerich, J. 2008, Ann Epidemiol ^{S32}	COPD admissions	Weighted IRR (95% CI): 1.10 (0.82 to 1.49) in moderate physical activity; p=0.522; 0.68 (0.47 to 0.99) in high physical activity; p=0.044	---
Garcia-Rio, F. 2012,	COPD admissions	Adjusted IRR (95% CI): 0.099 (0.033 to 0.293)	---

Chest ^{S35}		in quartile 4 (Q4) of physical activity; p<0.0001; 0.529 (0.291 to 0.962) in Q3; p=0.0369; and 0.537 (0.285 to 1.013) in Q2; p=0.0547	
Moy, M. 2013, PLoS ONE ^{S50}	Acute exacerbations	Adjusted RR (95% CI): 1.07 (1.003 to 1.15) in mean daily step count (per 1000 step decrease); p=0.04	---
	COPD-Related hospitalizations	Adjusted RR (95% CI): 1.24 (1.08 to 1.42) in mean daily step count (per 1000 step decrease); p=0.003	---
Pitta, F. 2006, Chest ^{S56}	Readmission in the year following discharge	Median (P ₂₅ -P ₇₅) walking time per day at 1 month 12 (9-27) min/d in patients readmitted in the year following discharge vs. 30 (21-100) min/d in patients not readmitted; p=0.03	---

Outcome: Exercise capacity

Paper	Variable	Association	
		Significant	Non-significant
Chao, PW. 2011, COPD ^{S13}	6MWD (ft)	Mean (SD) 1124 (210) in inactive COPD patients vs. 1468 (240) in active COPD patients	---
Eliason, G. 2011, COPD ^{S23}	6MWD (m)	Adjusted regression coefficient 0.381 for time spent moderately or vigorously active (MVPA); p=0.01 Adjusted regression coefficient 0.333 for mean physical activity; p=0.02	Adjusted regression coefficient -0.155 for time spent sedentary; p=0.32
Garcia-Aymerich, J. 2009,	6MWD (m)	Mean (SD) 397 (115) in quartile 1 (Q1) of energy expenditure in physical activity; 446 (79)	---

Chest ^{S33}		in Q2; 456 (86) in Q3; 467 (85) in Q4; p for trend<0.001 Adjusted regression coefficient (95% CI) 40.8 (14.4 to 67.2) for Q2 of energy expenditure in physical activity; 41.5 (13.2 to 69.7) for Q3; 44.8 (14.8 to 74.7) for Q4; p for trend=0.006	
	VO2 peak (mL/min)	Mean (SD) 1043 (235) in quartile 1 (Q1) of energy expenditure in physical activity; 1139 (300) in Q2; 1296 (445) in Q3; 1234 (398) in Q4; p for trend=0.004	---
Waatevik, M. 2012, COPD ^{S76}	6MWD (m)	Adjusted regression coefficient (95% CI) -41.9 (-65.7 to -18.3) for 1-2 hours physical activity per week; and -81.6 (-117.9 to -45.4) for no physical activity per week; p<0.001	---

Outcome: FEV₁

Paper	Variable	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2009, Chest ^{S33}	post-BD FEV ₁ (% pred)	Mean (SD) 49 (16) in quartile 1 (Q1) of energy expenditure in physical activity; 50 (15) in Q2; 57 (16) in Q3; 54 (17) in Q4; p for trend=0.002	---
Lemmens, KM. 2008, Patient Educ Couns ^{S44}	FEV ₁ (% pred)	Adjusted regression coefficient: 0.17 for physical activity; p<0.05	---

Outcome: Mortality

Paper	Variable	Association	
		Significant	Non-significant
Esteban, C. 2006, QJM ^{S24}	Deaths	N (%) 11 (28) in activity level 0; 25 (22) in activity level 1; 54 (16) in activity level 2; 4 (4) in activity level 3; p=0.0007	---
	Mortality	---	Adjusted HR: 1.12 in activity level 1, p=0.78; 0.94 in activity level 2, p=0.88; 0.38 in activity level 3, p=0.12
Esteban, C. 2011, Respir Med ^{S26}	Mortality	Unadjusted coefficient 1.0540 for very low physical activity level, p=0.0021; 0.7228 for low physical activity level, p=0.0303; 0.6786 for medium physical activity level, p=0.0172	---
Garcia-Aymerich, J. 2006, Thorax ^{S31}	All-cause mortality	Adjusted HR (95% CI): 0.76 (0.65 to 0.90) in low/moderate/high physical activity; p=0.001 Adjusted HR (95% CI): 1.04 (0.84 to 1.27) in low physical activity; 0.73 (0.61 to 0.86) in moderate physical activity; 0.72 (0.59 to 0.86) in high physical activity; p for trend<0.001	---
	Respiratory mortality	---	Adjusted HR (95% CI): 0.70 (0.48 to 1.02) in low/moderate/high physical activity; p=0.060 Adjusted HR (95% CI): 0.89 (0.55 to 1.44) in low physical activity; 0.64 (0.43 to 0.95) in moderate physical activity; 0.72 (0.46 to 1.12) in high physical activity; p for trend=0.072
	Cardiovascular mortality	---	Adjusted HR (95% CI): 0.77 (0.58 to 1.02) in

			low/moderate/high physical activity; p=0.065 Adjusted HR (95% CI): 0.84 (0.58 to 1.23) in low physical activity; 0.73 (0.54 to 0.98) in moderate physical activity; 0.81 (0.59 to 1.11) in high physical activity; p for trend=0.195
Garcia-Aymerich, J. 2008, Ann Epidemiol ^{S32}	All-cause mortality	Adjusted HR (95% CI): 0.83 (0.74 to 0.94) in moderate physical activity; 0.80(0.69 to 0.91) in high physical activity; p for trend=0.002 Weighted HR (95% CI): 0.88 (0.76 to 1.01) in moderate physical activity; 0.81 (0.69 to 0.95) in high physical activity; p for trend=0.009	---
Garcia-Rio, F. 2012, Chest ^{S35}	All-cause mortality	Adjusted HR (95% CI) 0.986 (0.981 to 0.992) for every 10 VMUs increased; p=0.002	---
Palop Cervera, M. 2010, Rev Clin Esp ^{S55}	Death after ECOPD hospital readmission	N (%) 30 (68) of dead vs. 22 (27) of alive in none outside activity group; 14 (32) of dead vs. 38 (47) of alive in 1-6h outside activity group; 0 (0) of dead vs. 21 (25) of alive in >6h outside activity group; p<0.01	---
	Mortality	Adjusted OR (95% CI): 2.97 (1.2 to 7.3) in low or lack of physical activity; p<0.05	---
Waschki, B. 2011, Chest ^{S80}	All-cause mortality	Adjusted HR (95 %CI): 0.009 (0.001 to 0.085) in physical activity level; p<0.001	---

Outcome: QoL / HRQoL

Paper	Variable	Association	
		Significant	Non-significant
Esteban, C. 2006, QJM ^{S24}	SF-36 physical component	Mean (SD) 35.6 (7.0) in activity level 0; 42.8 (8.0) in activity level 1; 45.3 (7.3) in activity level 2; 47.8 (8.3) in activity level 3; p<0.0001 Adjusted HR: 2.86 in activity level 1; p=0.024; 3.99 in activity level 2; p=0.001; 3.60 in activity level 3; p=0.010	---
	SGRQ total	Mean (SD) 57.5 (20.3) in activity level 0; 46.1 (18.5) in activity level 1; 39.5 (16.1) in activity level 2; 31.3 (17.2) in activity level 3; p<0.0001	Adjusted HR: -1.22 in activity level 1; p=0.65; -4.04 in activity level 2; p=0.11; -5.27 in activity level 3; p=0.07
	CRQ total	Mean (SD) 82.6 (24.6) in activity level 0; 93.3 (26.2) in activity level 1; 99.9 (22.1) in activity level 2; 106.6 (25.2) in activity level 3; p<0.0001	Adjusted HR: 0.43 in activity level 1; p=0.91; 2.70 in activity level 2; p=0.47; 2.35 in activity level 3; p=0.59
Esteban, C. 2010, Eur Respir J ^{S25}	SGRQ total	Adjusted regression coefficient for each PA category (change baseline/5years), using low/low as reference category: - low/moderate-high: 15.9, p=0.0005 - moderate/moderate: 10.2, p=0.007 - moderate/high: 18.4, p<0.0001 - high/high: 16.9, p<0.0001	Adjusted regression coefficient for each PA category (change baseline/5years), using low/low as reference category: - moderate/low: -0.7, p=0.87 - high/moderate-low: 8, p=0.05
	CRQ total	Adjusted regression coefficient for each PA category (change baseline/5years), using low/low as reference category: - moderate/moderate: 10.3, p=0.005 - moderate/high: 14.8, p<0.0004	Adjusted regression coefficient for each PA category (change baseline/5years), using low/low as reference category: - low/moderate-high: 8.7, p=0.05 - moderate/low: 2.6, p=0.56

		- high/moderate-low: 10.7, $p<0.005$ - high/high: 13.6, $p<0.0003$	
Jehn, M. 2012, Med Sci Sports Exerc ^{S40}	SF-36 physical component	Adjusted regression coefficient (95% CI): 0.30 (0.06 to 0.57) for fast walk (min/d); $p=0.015$	---
	SF-36 mental component	Adjusted regression coefficient (95% CI): 0.23 (-0.03 to 0.49) for fast walk (min/d); $p=0.08$	---
	SGRQ symptoms	Adjusted regression coefficient (95% CI): 0.76 (-0.13 to 0.28) for fast walk (min/d); $p=0.08$	---
	SGRQ activity	Adjusted regression coefficient (95% CI): -0.07 (-0.25 to 0.12) for fast walk (min/d); $p=0.04$	---
	SGRQ impact	Adjusted regression coefficient (95% CI): -0.16 (-0.34 to 0.15) for fast walk (min/d); $p=0.042$	---
	SGRQ total	Adjusted regression coefficient (95% CI): -0.08 (-0.26 to 0.10) for fast walk (min/d); $p=0.045$	---
Lemmens, KM. 2008, Patient Educ Couns ^{S44}	CRQ dyspnea	Adjusted regression coefficient: 0.38 for physical activity; $p<0.01$	---
	CRQ emotional	Adjusted regression coefficient: 0.17 for physical activity; $p<0.05$	---
	CRQ fatigue	Adjusted regression coefficient: 0.43 for physical activity; $p<0.01$	---
	CRQ mastery	Adjusted regression coefficient: 0.19 for physical activity; $p<0.01$	---
	CCQ symptoms	Adjusted regression coefficient: 0.31 for physical activity; $p<0.01$	---

	CCQ mental state	Adjusted regression coefficient: 0.25 for physical activity; $p<0.01$	---
	CCQ functional state	Adjusted regression coefficient: 0.44 for physical activity; $p<0.01$	---
	Health status	Adjusted regression coefficient: 0.43 for physical activity; $p<0.01$	---

Online supplement Table 4b. Other potential outcomes (only evidence in 1 study) and their association with physical activity, grouped in main categories and sorted by alphabetical order.

Outcome: Bronchial colonization

Paper	Variable	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2009, Chest ^{S33}	Bronchial colonization	N (%) 24 (43) in quartile 1 (Q1) of energy expenditure in physical activity; 19 (33) in Q2; 20 (35) in Q3; 12 (22) in Q4; p for trend = 0.035.	---

Outcome: Depression

Paper	Variable	Association	
		Significant	Non-significant
Lee, H. 2011, Geriatr Nurs ^{S43}	Depression (CES-D ≥ 16)	---	Correlation coefficient: 0.15 with physical activity; p=ns

Outcome: Gas exchange

Paper	Variable	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2009,	D _{LCO} (% pred)	Mean (SD) 58 (20) in quartile 1 (Q1) of energy expenditure in physical activity; 66 (21) in Q2;	---

Chest ^{S33}		68 (20) in Q3; 68 (22) in Q4; p for trend=0.004 Adjusted regression coefficient (95% CI): 5.8 (-0.26 to 11.9) for Q2 of energy expenditure in physical activity; 5.9 (-0.31 to 12.2) for Q3; 8.7 (2.4 to 14.9) for Q4; p for trend=0.012	
	PO ₂ (mmHg)	---	Mean (SD) 74.5 (11.7) in quartile 1 (Q1) of energy expenditure in physical activity; 75.4 (11.1) in Q2; 75.0 (9.9) in Q3; 72.3 (10.7) in Q4; p for trend=0.187
	PCO ₂ (mmHg)	---	Mean (SD) 41.7 (5.6) in quartile 1 (Q1) of energy expenditure in physical activity; 41.4 (5.2) in Q2; 42.0 (4.7) in Q3; 42.1 (5.8) in Q4; p for trend=0.530

Outcome: Muscle strength

Paper	Variable	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2009, Chest ^{S33}	PEmax (% pred)	Mean (SD) 60 (21) in quartile 1 (Q1) of energy expenditure in physical activity; 68 (25) in Q2; 67 (22) in Q3; 71 (23) in Q4; p for trend=0.004	Adjusted regression coefficient (95% CI): 7.4 (-0.44 to 15.2) for Q2 of energy expenditure in physical activity; 4.5 (-3.4 to 12.4) for Q3; 8.5 (0.6 to 16.4) for Q4; p for trend=0.081
	Plmax (% pred)	---	Mean (SD) 61 (28) in quartile 1 (Q1) of energy expenditure in physical activity; 62 (17) in Q2; 68 (23) in Q3; 65 (23) in Q4; p for trend=0.169

	Non-dominant handgrip (% pred)	---	Mean (SD) 104 (29) in quartile 1 (Q1) of energy expenditure in physical activity; 105 (22) in Q2; 105 (29) in Q3; 102 (28) in Q4; p for trend=0.593
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Outcome: Nutritional status

Paper	Variable	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2009, Chest ^{S33}	BMI (kg/m ²)	Mean (SD) 27.5 (4.6) in quartile 1 (Q1) of energy expenditure in physical activity; 27.7 (4.4) in Q2; 28.6 (4.3) in Q3; 28.9 (5.3) in Q4; p for trend=0.023	---
	FFMI (kg/m ²)	---	Mean (SD) 19.8 (3.4) in quartile 1 (Q1) of energy expenditure in physical activity; 19.2 (2.9) in Q2; 19.5 (2.7) in Q3; 20.0 (3.2) in Q4; p for trend=0.524

Outcome: Other lung function parameters (not FEV₁)

Paper	Variable	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2009, Chest ^{S33}	post-BD FEV ₁ /FVC (%)	Mean (SD) 51 (13) in quartile 1 (Q1) of energy expenditure in physical activity; 51 (12) in Q2; 56 (11) in Q3; 55 (11) in Q4; p for trend=0.002	---

	IC/TLC (%)	Mean (SD) 0.30 (0.09) in quartile 1 (Q1) of energy expenditure in physical activity; 0.29 (0.09) in Q2; 0.33 (0.11) in Q3; 0.32 (0.09) in Q4; p for trend=0.033	---
	RV/TLC (%)	Mean (SD): 58 (9) in quartile 1 (Q1) of energy expenditure in physical activity; 57 (10) in Q2; 54 (10) in Q3; 54 (10) in Q4; p for trend=0.004	---

Outcome: Relapse

Paper	Variable	Association	
		Significant	Non-significant
Miravittles, M. 2011, Respir Med ^{S47}	Clinical failure on exacerbation (relapse)	Mean (SD) walking time per day (min) at baseline: 67 (45) in clinical success group vs. 48 (52) in clinical failure; p<0.001	---

Outcome: Self-efficacy

Paper	Variable	Association	
		Significant	Non-significant
Inal-Ince, D. 2005, Saudi Med J ^{S39}	Self-efficacy	Adjusted regression coefficient: 0.623 for activities of daily living; p<0.0001	---

Outcome: Systemic inflammation

Paper	Variable	Association	
		Significant	Non-significant
Garcia-Aymerich, J. 2009, Chest ^{S33}	TNF- α \geq 0.5 (pg/mL)	N (%) 38 (48) in quartile 1 (Q1) of energy expenditure in physical activity; 32 (38) in Q2; 29 (35) in Q3; 18 (21) in Q4; p for trend<0.001 Adjusted OR (95% CI): 0.8 (0.4 to 1.6) in Q2 of energy expenditure in physical activity; 0.6 (0.3 to 1.3) in Q3; 0.4 (0.2 to 0.8) in Q4; p for trend=0.011	---
	CRP \geq 3 (mg/L)	N (%) 53 (68) in quartile 1 (Q1) of energy expenditure in physical activity; 51 (60) in Q2; 40 (50) in Q3; 43 (52) in Q4; p for trend=0.023 Adjusted OR (95% CI): 0.7 (0.4 to 1.3) in Q2 of energy expenditure in physical activity; 0.5 (0.3 to 0.9) in Q3; 0.5 (0.3 to 1.0) in Q4; p for trend=0.036	---

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