Supplementary Table S1. Search strategies

Search strategy in PubMed

#1 acceleromet*[Text Word] OR actimeter[Text Word] OR actigraph[Text Word] OR actiwatch[Text Word] OR GT3X[Text Word] OR pedomet*[Text Word] OR (activity monitor)[Text Word] OR (step count*)[Text Word] OR (step sensor)[Text Word] OR (step meter)[Text Word]

#2 (pulmonary disease, chronic obstructive)[MeSH Terms] OR (lung diseases, obstructive)[MeSH Terms] OR (pulmonary emphysema)[MeSH Terms] OR (bronchitis, chronic)[MeSH Terms] OR (obstructive lung disease)[Text Word] OR (chronic obstructive lung disease)[Text Word] OR (chronic obstructive airways disease)[Text Word] OR (chronic airways limitation)[Text Word] OR (chronic airways obstruction)[Text Word] OR copd[Text Word] OR coad[Text Word] OR cobd[Text Word] OR aecd[Text Word]

#3 #1 AND #2

#4 #3 Filter: Publication date to May 22, 2018

Search strategy in Web of SCI

#1 acceleromet*[Topic] OR actimeter[Topic] OR actigraph[Topic] OR actiwatch[Topic] OR GT3X[Topic] OR pedomet*[Topic] OR (activity monitor)[Topic] OR (step count*)[Topic] OR (step sensor)[Topic] OR (step meter)[Topic]

#2 (chronic obstructive pulmonary disease)[Title] OR (chronic obstructive pulmonary disease)[Topic] OR (obstructive lung disease)[Title] OR (obstructive lung disease)[Topic] OR (pulmonary emphysema)[Title] OR (pulmonary emphysema)[Topic] OR (chronic bronchitis)[Title] OR (chronic bronchitis)[Topic] OR (obstructive lung disease)[Title] OR (obstructive lung disease)[Topic] OR (chronic obstructive lung disease)[Title] OR (chronic obstructive lung disease)[Topic] OR (chronic obstructive airways disease)[Title]

OR (chronic obstructive airways disease)[Topic] OR (chronic airways limitation)[Title] OR chronic airways limitation)[Topic] (chronic airways obstruction) [Title] OR (chronic airways obstruction) [Topic] OR copd[Title] OR copd[Topic] OR coad[Title] OR coad[Topic] OR cobd[Title] OR cobd[Topic] OR aecd[Title] OR aecd[Topic]

#3   #1 AND #2

#4   #3 Filter: Publication date to May 21, 2018

Search strategy in the Cochrane Library

#1   acceleromet*[Title/Abstract/Keywords] OR actimeter[Title/Abstract/Keywords] OR actigraph[Title/Abstract/Keywords] OR actiwatch[Title/Abstract/Keywords] OR GT3X[Title/Abstract/Keywords] OR pedomet*[Title/Abstract/Keywords] OR (activity monitor) [Title/Abstract/Keywords] OR (step count*)[Title/Abstract/Keywords] OR (step sensor)[Title/Abstract/Keywords] OR (step meter)[Title/Abstract/Keywords]

#2   (pulmonary disease, chronic obstructive)[MeSH Terms] OR (lung diseases, obstructive)[MeSH Terms] OR (pulmonary emphysema)[MeSH Terms] OR (bronchitis, chronic)[MeSH Terms] OR (obstructive lung disease)[Title/Abstract/Keywords] OR (chronic obstructive lung disease)[Title/Abstract/Keywords] OR (chronic obstructive airways disease)[Title/Abstract/Keywords] OR (chronic airways limitation)[Title/Abstract/Keywords] OR (chronic airways obstruction)[Title/Abstract/Keywords] OR copd[Title/Abstract/Keywords] OR coad[Title/Abstract/Keywords] OR cobd[Title/Abstract/Keywords] OR aecd[Title/Abstract/Keywords]

#3   #1 AND #2

#4   #3 Filter: Publication date to May 22, 2017

Supplementary Table S2. Data abstraction

Approaches for data abstraction on standard deviations (SDs)

For studies failing to provide change scores from baseline and corresponding SDs, they were imputed using the formulas suggested by Cochrane Handbook (1). Specifically, a mean correlation coefficient of 0.97 calculated from the study by Demeyer *et al*. (3) was used to obtain the SDs for change scores from baseline. For studies providing 95% CIs instead of SDs, the SDs were calculated by dividing the length of the CIs by 3.92, and multiplying them by the square-root of sample size (1). For studies reporting medians with interquartile ranges, means were imputed using medians directly and SDs were imputed by dividing the width of interquartile ranges by 1.35 (1).

Approaches for data abstraction on daily steps and 6-min walking distance

For the study reporting daily walking time (2), daily steps were calculated as daily walking time multiplying by walking speed, which was imputed to be 69 steps per minute with reference to the study by Demeyer *et al*. 2017 (3). For the study reporting outcome of exercise capacity using Incremental Shuttle Walk Test (4), 6-min walking distance was imputed to be 0.5 times higher than Incremental Shuttle Walk Test with reference to the finding from Eiser *et al*. (5). And for the study using 2-minute walking steps (6), the 6-min walking distance was found to be about 1.7 times higher than the 2-minute walking distance according to the study by Eiser *et al*. (5), with the latter being calculated as 2-minute walking steps multiplied by the average gait speed, which is about 0.83 m for every step based on the result from Kon *et al*. (7).

References

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3. Demeyer H, Louvaris Z, Frei A, *et al.* Physical activity is increased by a 12-week semiautomated telecoaching programme in patients with COPD: a multicentre randomised controlled trial. Thorax 2017;72:415-423

4. Nolan CM, Maddocks M, Canavan JL, *et al.* Pedometer Step Count Targets during Pulmonary Rehabilitation in Chronic Obstructive Pulmonary Disease. A Randomized Controlled Trial. Am J Respir Crit Care Med 2017;195:1344-1352

5. Eiser N, Willsher D, Dore CJ. Reliability, repeatability and sensitivity to change of externally and self-paced walking tests in COPD patients. Respir Med 2003;97:407-414

6. de Blok BM, de Greef MH, ten Hacken NH, *et al.* The effects of a lifestyle physical activity counseling program with feedback of a pedometer during pulmonary rehabilitation in patients with COPD: a pilot study. Patient Educ Couns 2006;61:48-55

7. Kon SS, Patel MS, Canavan JL, *et al.* Reliability and validity of 4-metre gait speed in COPD. Eur Respir J 2013;42:333-340

Supplementary Table S3. Quality assessment for each included study[a].

Author, year	Random sequence generation	Allocation concealment	Blinding of participants and personnel[b]	Blinding of outcome assessment[b]	Incomplete outcome data addressed	Selective reporting
Altenburg *et al.* 2015[c]	Low	High	Low	Low	High	Low
Cruz *et al.* 2016	Low	Low	Low	Low	High	Low
de Blok *et al.* 2006	Unclear	Unclear	Low	Low	High	Low
Demeyer *et al.* 2017	Low	Low	Low	Low	Low	Low
Hornikx *et al.* 2015	Unclear	Unclear	Low	Low	High	Low
Hospes *et al.* 2008	Unclear	Unclear	Low	Low	High	Low
Kawagoshi *et al.* 2015	Unclear	Unclear	Low	Low	High	Low
Mendoza *et al.* 2015	Low	Unclear	Low	Low	Low	Low
Moy *et al.* 2016	Low	Unclear	Low	Low	Low	Low
Nolan *et al.* 2017	Low	High	Low	Low	Low	Low
Tabak *et al.* 2014	Low	Unclear	Low	Low	High	Low
Vorrink *et al.* 2016	Low	Unclear	Low	Low	Low	Low
Holland *et al.* 2017	Low	Low	Low	Low	Low	Low

[a] Classifications of the risk of bias for each randomized controlled trial within studies: Low risk of bias, low risk of bias for all key domains; Unclear risk of bias, unclear risk of bias for one or more key domains; High risk of bias, high risk of bias for one or more key domains.

[b] Since individual studies are intended to use step counter to promote physical outcomes, which were measured using objective approaches, the lack of blinding of participants and personnel and blinding of outcome assessment is not likely to affect the overall analysis. As a result, the risk of blinding of participants and personnel and blinding of outcome assessment was all judged to be low.

[c] This study enrolled patients from general practices, hospital clinics, or pulmonary rehabilitation centers.