NKR 10 Rehabilitering af KOL. Rehabilitation versus usual care for mild to moderate COPD

Characteristics of studies

Characteristics of included studies

Abrazado 2014

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention 1 ● *COPD severity (GOLD/MRC score)*: 63.6 (7.6) FEV1% of predicted ● *Male (%)*: 33 % ● *Age (range)*: 66.8 (8.1) age (year) Intervention 2 ● *COPD severity (GOLD/MRC score)*: ● *Male (%)*: ● *Age (range)*: Control ● *COPD severity (GOLD/MRC score)*: 60.8 (10.9) FEV1% of predicted ● *Male (%)*: 60 % ● *Age (range)*: 72.0 (10.1) age (year) Overall ● *COPD severity (GOLD/MRC score)*: ● *Male (%)*: ● *Age (range)*: **Included criteria:** Patients with moderate COPD as defined by the GOLD [17] criteria (FEV1/FVC, % 70%;FEV1 70% and >50% predicted), a 10 pack-year smoking history and self-reported functional impairment. **Excluded criteria:** Exclusion criteria included current smokers, pulmonary diseases other than COPD, use of supplemental oxygen, musculo-skeletal disease that impaired exercise performance and unstable coronary artery disease or congestive heart failure. **Pretreatment:** There is no difference between subjects at baseline.
Interventions	**Intervention Characteristics** Intervention 1 ● *Description*: Exercise. Those subjects assigned to theexercise program were assigned to a personal trainer op-erating out of one of three local health clubs. They metat mutually convenient times, twice per week for12 weeks. Each of the clubs provided facilities for aer-obic exercise and resistance training. ● *Longest follow-up (after end of treatment)*: After end of treatment ● *Duration (week)*: 12 weeks Intervention 2 ● *Description*: ● *Longest follow-up (after end of treatment)*: ● *Duration (week)*: Control ● *Description*: Subjects assigned to the control group were told tocontinue their activities of daily living. They were con-tacted by telephone every month to see assess theirprogress ● *Longest follow-up (after end of treatment)*: After end of treatment ● *Duration (week)*: 12 weeks
Outcomes	*Quality of life, SE* ● **Outcome type**: ContinuousOutcome *Quality of life, CI* ● **Outcome type**: ContinuousOutcome *Quality of life, SD* ● **Outcome type**: ContinuousOutcome *Mortality, n* ● **Outcome type**: DichotomousOutcome *Bike test/cardio-pulmonary test, SE* ● **Outcome type**: ContinuousOutcome *Walk test (6-min or SWT), CI* ● **Outcome type**: ContinuousOutcome *Walk test (6-min or SWT), SD* ● **Outcome type**: ContinuousOutcome *Walk test (6-min or SWT), SE* ● **Outcome type**: ContinuousOutcome

	Dropout, n ● **Outcome type**: DichotomousOutcome *Quality of life, SD (longest follow-up)* ● **Outcome type**: ContinuousOutcome *Mortality, SD (longest follow-up)* ● **Outcome type**: ContinuousOutcome *Bike test/cardio-pulmonary test, SD (longest follow-up)* ● **Outcome type**: ContinuousOutcome *Walk test (6min or SWT), SD (longest follow-up)* ● **Outcome type**: ContinuousOutcome
Notes	**Sponsorship source:** This study was supported by a research grant awarded by Breathe LA(formerly the American Lung Association of Los Angeles County). Thecommunity-based exercise training sessions were provided at the EquinoxFitness Club, Century City, CA; at Phase VI Scientific Health and PerformanceCenter, Santa Monica, CA; and at Mitchell Fitness Systems, Torrance, CA **Country:** USA **Setting:** **Comments:** ClinicalTrials.gov Identifier NCT01985529. **Authors name:** Shefalee Amin **Institution:** Exercise Physiology Research Laboratory, Departments of Physiology **Email:** CCooper@mednet.ucla.edu **Address:** Exercise Physiology Research Laboratory, Departments of Physiology andMedicine, David Geffen School of Medicine at University of California, LosAngeles, 37-131 Center for Health Sciences, 10833 Le Conte Avenue, LosAngeles, CA 90095-1690, USA Notes: **Outcomes** Quality of life: SGRQ, end of treatment SEMBike test: Endurance-time for constant work rate test (s), end treatment, mean(SEM)Dropout: no. of patients end of treatment

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Nothing mentioned
Allocation concealment (selection bias)	Unclear risk	Nothing mentioned
Blinding of participants and personnel (performance bias)	Unclear risk	Nothing mentioned
Blinding of outcome assessment (detection bias)	Unclear risk	Nothing mentioned
Incomplete outcome data (attrition bias)	Low risk	The n of each group is not clearly stated.
Selective reporting (reporting bias)	Low risk	Matches protocol
Other bias	Low risk	No other apparent bias

deRoos 2017

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention 1 ● *COPD severity (GOLD/MRC score)*: 68 (7.7) FEV1 % of predicted ● *Male (%)*: 69% female ● *Age (range)*: 69.4 (9.7) age (years) Intervention 2 ● *COPD severity (GOLD/MRC score)*: ● *Male (%)*: ● *Age (range)*: Control ● *COPD severity (GOLD/MRC score)*: 65 (10.3) FEV1% of predicted ● *Male (%)*: 62% female ● *Age (range)*: 71.40 (9.4) age (years) Overall ● *COPD severity (GOLD/MRC score)*: ● *Male (%)*: ● *Age (range)*: **Included criteria:** Clinically stable patients withknown COPD, diagnosed as GOLD Stage II [50%≤ forcedexpiratory volume in 1 second (FEV1) 80%] according tothe GOLD criteria[1], were eligible if they also had ascore of two or more on the Medical Research CouncilDyspnoea Scale, including dyspnoea on this level as a impor-tant prognostic predictor of decreased PA **Excluded criteria:** Patients with exercise-restricting, non-COPD-related complaints (e.g.severe cardiac or musculoskeletal diseases) were excluded from this study

Interventions	**Intervention Characteristics** Intervention 1 ● *Description*: Group-based circuit exercise training programme, ● *Longest follow-up (after end of treatment)*: After end of treatment ● *Duration (week)*: 10 weeks Intervention 2 ● *Description*: ● *Longest follow-up (after end of treatment)*: ● *Duration (week)*: Control ● *Description*: Standard medical care ● *Longest follow-up (after end of treatment)*: After end of treatment ● *Duration (week)*: 10 weeks
Outcomes	*Quality of life, SE* ● **Outcome type**: ContinuousOutcome *Quality of life, CI* ● **Outcome type**: ContinuousOutcome *Quality of life, SD* ● **Outcome type**: ContinuousOutcome *Mortality, n* ● **Outcome type**: DichotomousOutcome *Bike test/cardio-pulmonary test, SE* ● **Outcome type**: ContinuousOutcome *Walk test (6-min or SWT), CI* ● **Outcome type**: ContinuousOutcome *Walk test (6-min or SWT), SD* ● **Outcome type**: ContinuousOutcome *Walk test (6-min or SWT), SE* ● **Outcome type**: ContinuousOutcome *Dropout, n* ● **Outcome type**: DichotomousOutcome *Quality of life, SD (longest follow-up)* ● **Outcome type**: ContinuousOutcome *Mortality, SD (longest follow-up)* ● **Outcome type**: ContinuousOutcome *Bike test/cardio-pulmonary test, SD (longest follow-up)* ● **Outcome type**: ContinuousOutcome *Walk test (6min or SWT), SD (longest follow-up)* ● **Outcome type**: ContinuousOutcome
Notes	**Sponsorship source:** Funding: Eight activity monitors were provided withoutcharge by PAM. PAM had no involvement in the study. **Country:** The Netherlands **Setting:** **Comments:** Clinical trial registration number NL24766.018.08. **Authors name:** P. de Roos **Institution:** Physiotherapy Centre De Oppers, De Oppers 3, 9203 GD Drachten, The Netherlands **Email:** pieterderoos@chello.nl, p.deroos@hotmail.com **Address:** Physiotherapy Centre De Oppers, De Oppers 3, 9203 GD Drachten, The Netherlands

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	All possible sequences in permuted blocks of four with two intervention and two control tickets were created and placed at random in sequentially numbered order by an individual not affiliated to the study. At intake and under the supervision of the physiotherapist in the primary care centre, participants were instructed to open the first enve- lope. Block randomisation was necessary as no specific data on PA of patients with moderate COPD were available at the outset of the trial.
Allocation concealment (selection bias)	Low risk	Allocation was randomised and concealed using opaque- sealed envelopes.
Blinding of participants and personnel (performance bias)	Unclear risk	Nothing mentioned
Blinding of outcome assessment (detection bias)	Unclear risk	Nothing mentioned
Incomplete outcome data (attrition bias)	Low risk	No other apparent bias

Selective reporting (reporting bias)	Low risk	Matches the study protocol
Other bias	Low risk	No other apparent bias

Gottlieb 2011

Methods	RCT
Participants	Patients with moderate COPD, FEV1 of predicted=64-67%, MRC=1.91-2.0 Participants comprised 61 of 133 referred subjects with moderate COPD. Of the 61 participants, 35 were randomized to receive rehabilitation and 26 subjects to receive standard COPD care from their GP. After randomization 19 subjects dropped out
Interventions	7-week pulmonary rehabilitation programme and an 18-month follow-up survey or usual care (no rehab) (1) A preliminary motivational personal interview, V1. (2) An intensive 7-week physical training and educational phase led by a multidisciplinary team starting within 1 month of V1. (3) A final interview following completion of the intensive program, V2 (6 months after V1 for subjects in the control group). (4) Follow-up, V3 at 12months afterV1 andV4 at 18months after V1.
Outcomes	HRQoL(SGRQ), walking test(6MWT), Lung function
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	not stated
Allocation concealment (selection bias)	Low risk	sealed envelopes
Blinding of participants and personnel (performance bias)	High risk	not blinded
Blinding of outcome assessment (detection bias)	High risk	not blinded
Incomplete outcome data (attrition bias)	High risk	high drop out rate
Selective reporting (reporting bias)	Low risk	not detected
Other bias	Low risk	not detected

Liu 2012

Methods	RCT
Participants	Patients wih mild to moderate COPD FEV1 of predicted= 74-75%. GOLD stage 1-2. A total of 132 patients with confirmed diagnosis of COPD but no serious comorbidities were randomly allocated to the HQG group (n=51), PR group (n=32), or medical treatment group (n=35).
Interventions	The HQG group received 1 week of HQG training under the supervision of professional coaches, and were then encouraged to participate in a peer-led weekly practice group thrice a week, lasting 1 hour each time, for 6 months. The conventional PR group received the same amount of professional coaching on breathing and aerobic exercises, and peer-led walking or ball game groups. The medical treatment group only received health education on self-exercise.
Outcomes	HRQoL(Zhongshen questionnaire), walking test(6MWT), Lung function, immune cell factors, COPD related admissions
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	block randomisation
Allocation concealment (selection bias)	Unclear risk	not stated
Blinding of participants and personnel (performance bias)	High risk	not blinded
Blinding of outcome assessment (detection bias)	Low risk	blinded
Incomplete outcome data (attrition bias)	Low risk	1 drop out
Selective reporting (reporting bias)	Low risk	not detected
Other bias	Low risk	none detected

Roman 2013

Methods	RCT
Participants	97 patients with moderate COPD. MRC=2 or less. FEV1 of predicted= 60%. 3-month Pulmonary Rehabilitation (PR) program with a further 9 months of maintenance (RHBM group n=32) compared with both PR for 3 months without further maintenance (RHB group N=33) and usual care N=32. Follow-up at 4 (after PR) and 12 months
Interventions	a) Education program. During weeks 1, 6, and 12, patients received a 45-minute education session on the anatomy and physiology of the respiratory system, the correct use of inhalers and brief counseling on smoking cessation. b) Respiratory Physiotherapy. Each session included a series of exercises, lasting a total of 15 minutes and including self-conscious breathing control, diaphragmatic breathing control, and exercises for the chest wall and abdominal muscle walls. c) Low intensity peripheral muscle training. Each session included abdominal and upper and lower limb exercises, shoulder and full arm circling, weight-lifting and other exercises. This training has been described previously [21] and used in other clinical trials [22,23]. Each exercise was repeated 8– 10 times over 45 minutes. Control group These patients did not participate in either of the intervention programs; rather, they remained under the routine care of their general practitioner and nurse throughout
Outcomes	HRQoL(CRQ), walking test(6MWT), COPD related admissions
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	computer randomisation
Allocation concealment (selection bias)	Low risk	computer randomisation
Blinding of participants and personnel (performance bias)	High risk	not blinded
Blinding of outcome assessment (detection bias)	Low risk	blinded
Incomplete outcome data (attrition bias)	High risk	More than 50% drop out rate
Selective reporting (reporting bias)	Low risk	not detected
Other bias	Low risk	non detected

van Wetering 2009

Methods	RCT
Participants	199 patients with COPD, baseline FEV1 of predicted 58-60%, MRC score 1.5-1.7. Randomised into INTERCOM rehab=102 or usual care 97
Interventions	The intervention: 4-month standardised supervised rehabilitation phase and a 20-month active maintenance phase. The programme was designed to improve and subsequently maintain exercise capacity, to promote selfmanagement skills and improve knowledge of COPD. Nutritional intervention and smoking cessation support were provided when indicated.During the first 4 months the patients visited the physiotherapists twice a week (30 min per visit) for intensive exercise training consisting of endurance training (cycling and walking) and four specific exercises for upper and lower extremities to improve both strength and endurance without the use of special equipment. Patients were instructed to perform the same exercises twice a day during 30 min in their home environment in addition to walking and cycling outside. Furthermore, all patients participated in an individualised education programme that was structured using a patient education book. All smokers were assigned to the respiratory nurse for standardised smoking cessetion.12 Nutritionally depleted patients received scheduled counselling (four visits) by a dietician and nutritional supplements (Respifor, Nutricia, The Netherlands).

Outcomes	Primary outcomes were change from baseline in disease-specific quality of life as assessed by the St George's Respiratory Questionnaire (SGRQ) total score and the total number of exacerbations (moderate plus severe) Secondary outcomes were change from baseline in subscores of the SGRQ (symptom, activity and impact scores), dyspnoea (modified MRC dyspnoea scale),16 exercise performance (Wmax), cycle endurance test (CET) at 50% Wmax for maximal 10 min and thereafter at 70% Wmax until exhaustion,13 6-minute walking test (6MWD), muscle strength (handgrip force (HGF), isometric quadriceps peak torque (QPT), maximal inspiratory mouth pressure (Pimax)),17 body composition (fatfree mass (FFM))18 and lung function.
Notes	SGRQ, C-P exercise test, 6MWT, muscle strength

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	computer randomisation
Allocation concealment (selection bias)	Unclear risk	computer randomisation
Blinding of participants and personnel (performance bias)	High risk	not blinded
Blinding of outcome assessment (detection bias)	Low risk	blinded
Incomplete outcome data (attrition bias)	High risk	difference between groups in drop outs
Selective reporting (reporting bias)	Low risk	not detected
Other bias	Low risk	none detected

Footnotes

Characteristics of excluded studies

Footnotes

Characteristics of studies awaiting classification

Footnotes

Characteristics of ongoing studies

Footnotes

Summary of findings tables

Additional tables

References to studies

Included studies

Abrazado 2014

[Empty]

deRoos 2017

[Empty]

Gottlieb 2011

[Empty]

Liu 2012

[Empty]

Roman 2013

[Empty]

van Wetering 2009

[Empty]

Excluded studies

Studies awaiting classification

Ongoing studies

Other references

Additional references

Other published versions of this review

Classification pending references

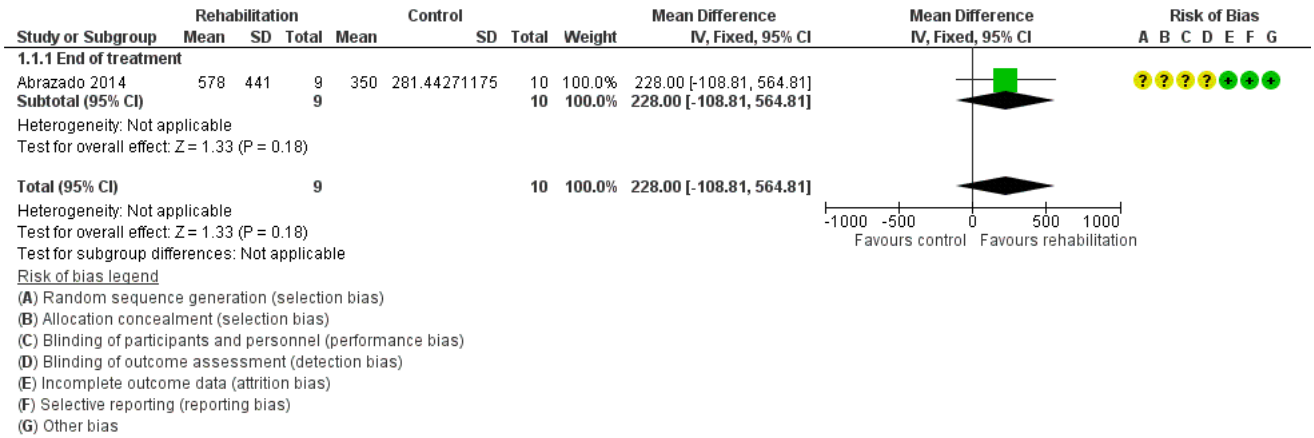
Data and analyses

1 Rehabilitation versus no rehabilitation

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 CP exercise test. End of treatment	1	19	Mean Difference (IV, Fixed, 95% CI)	228.00 [-108.81, 564.81]
1.1.1 End of treatment	1	19	Mean Difference (IV, Fixed, 95% CI)	228.00 [-108.81, 564.81]
1.2 CP exercise test. Longest follow-up. Change	1	175	Mean Difference (IV, Fixed, 95% CI)	205.00 [-11.19, 421.19]
1.2.2 Longest follow-up. Change	1	175	Mean Difference (IV, Fixed, 95% CI)	205.00 [-11.19, 421.19]
1.3 Walking test. End of treatment	1	45	Mean Difference (IV, Fixed, 95% CI)	43.00 [-8.18, 94.18]
1.3.1 End of treatment	1	45	Mean Difference (IV, Fixed, 95% CI)	43.00 [-8.18, 94.18]
1.4 Walking test. Longest follow-up	4	313	Mean Difference (IV, Random, 95% CI)	13.66 [-5.57, 32.89]
1.4.2 Longest follow-up	4	313	Mean Difference (IV, Random, 95% CI)	13.66 [-5.57, 32.89]
1.6 Quality of life. End of treatment	3	99	Std. Mean Difference (IV, Random, 95% CI)	0.06 [-0.34, 0.46]
1.6.1 End of treatment	3	99	Std. Mean Difference (IV, Random, 95% CI)	0.06 [-0.34, 0.46]
1.7 Quality of life. Longest follow-up. Change	1	175	Mean Difference (IV, Random, 95% CI)	-4.20 [-4.51, -3.89]
1.7.2 Longest follow-up. Change	1	175	Mean Difference (IV, Random, 95% CI)	-4.20 [-4.51, -3.89]
1.8 Mortality. Longest follow-up	4	328	Odds Ratio (M-H, Fixed, 95% CI)	1.33 [0.51, 3.43]
1.8.1 Longest follow-up	4	328	Odds Ratio (M-H, Fixed, 95% CI)	1.33 [0.51, 3.43]
1.9 Dropout. End of treatment	2	71	Risk Ratio (M-H, Random, 95% CI)	3.67 [0.93, 14.44]
1.9.1 End of treatment	2	71	Risk Ratio (M-H, Random, 95% CI)	3.67 [0.93, 14.44]

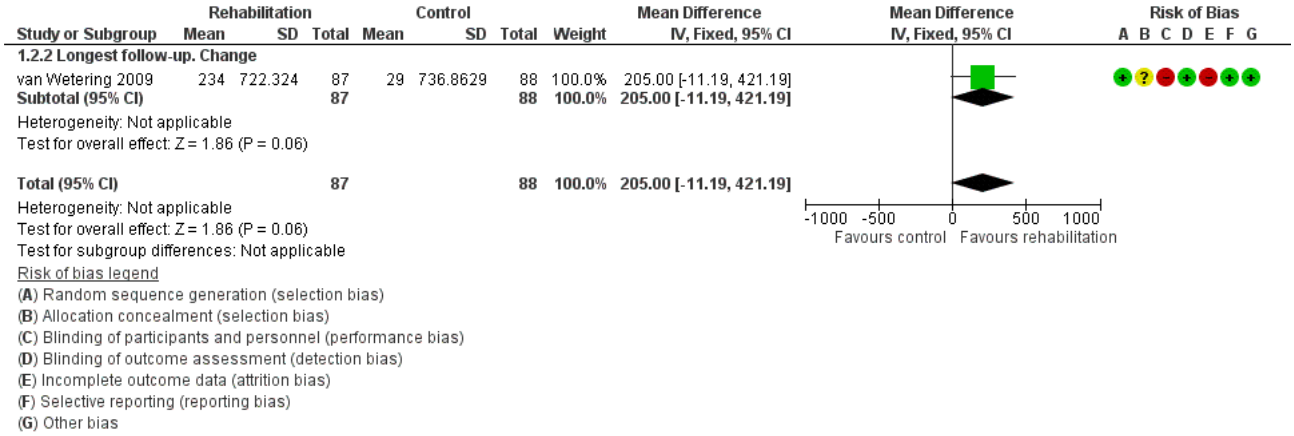
Figures

Figure 1 (Analysis 1.1)



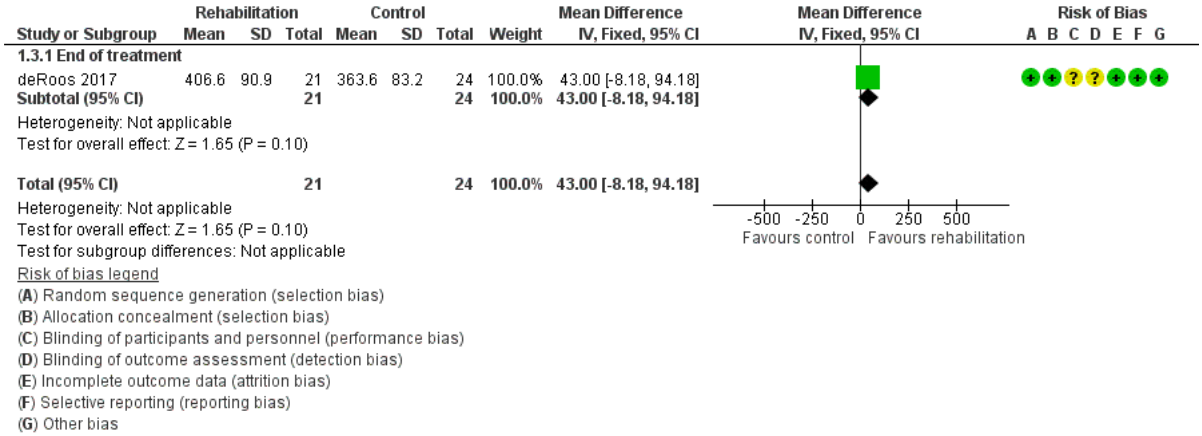
Forest plot of comparison: 1 Rehabilitation versus no rehabilitation, outcome: 1.1 CP exercise test. End of treatment.

Figure 2 (Analysis 1.2)



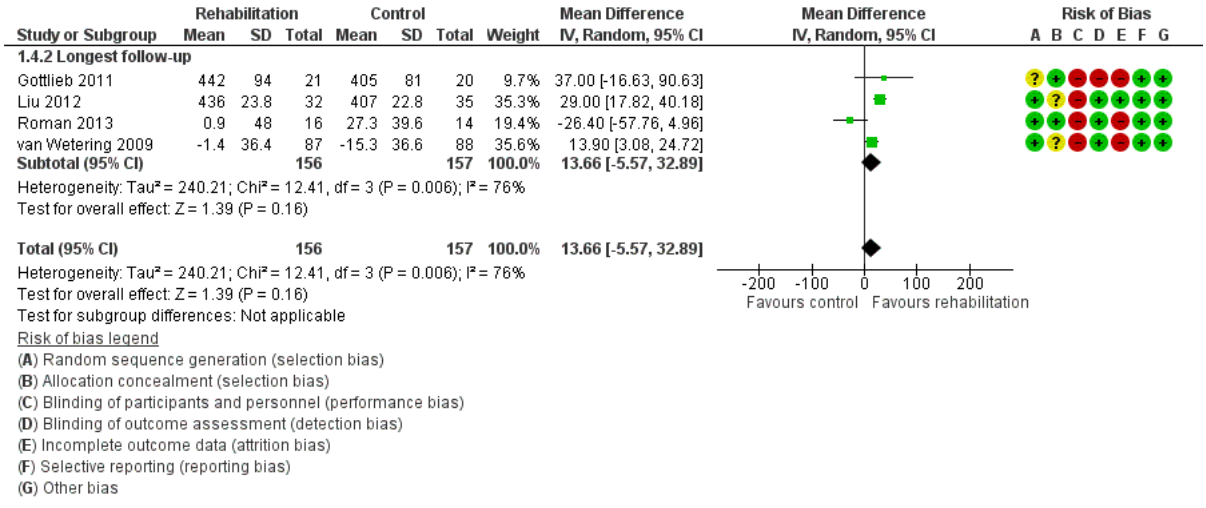
Forest plot of comparison: 1 Rehabilitation versus no rehabilitation, outcome: 1.2 CP exercise test. Longest follow-up. Change.

Figure 3 (Analysis 1.3)



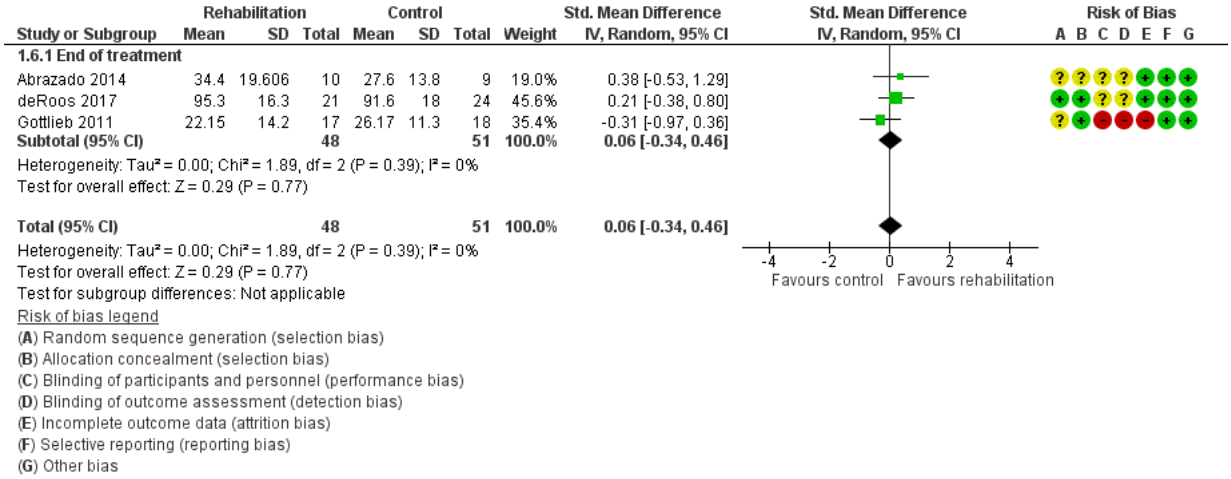
Forest plot of comparison: 1 Rehabilitation versus no rehabilitation, outcome: 1.3 Walking test. End of treatment.

Figure 4 (Analysis 1.4)



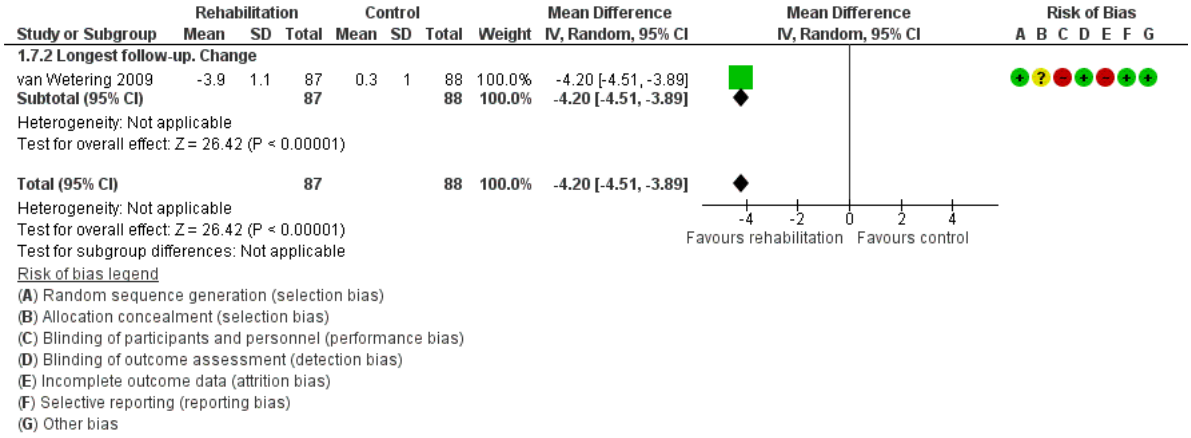
Forest plot of comparison: 1 Rehabilitation versus no rehabilitation, outcome: 1.4 Walking test. Longest follow-up.

Figure 6 (Analysis 1.6)



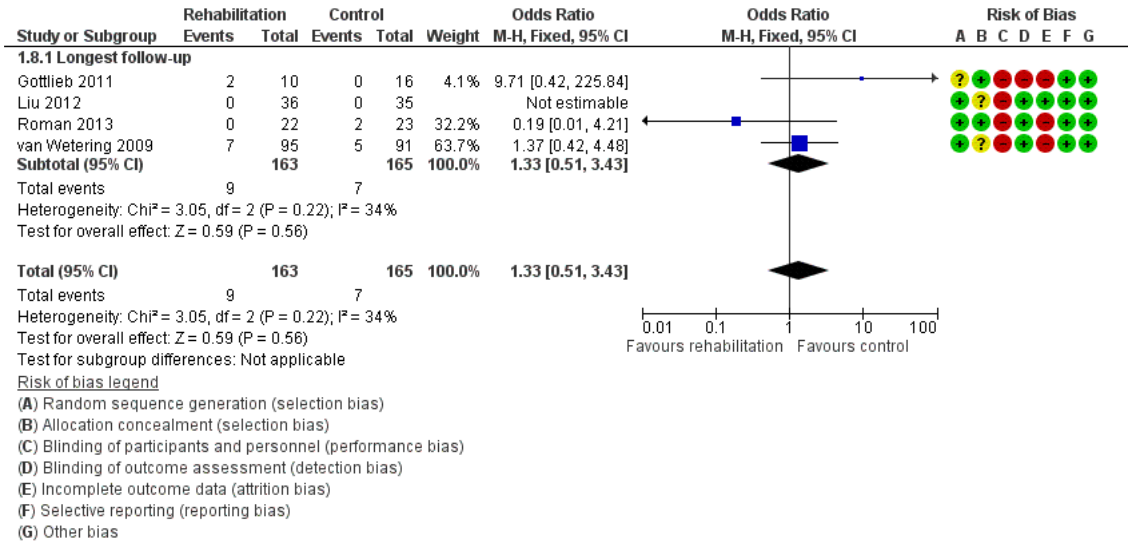
Forest plot of comparison: 1 Rehabilitation versus no rehabilitation, outcome: 1.6 Quality of life. End of treatment.

Figure 7 (Analysis 1.7)



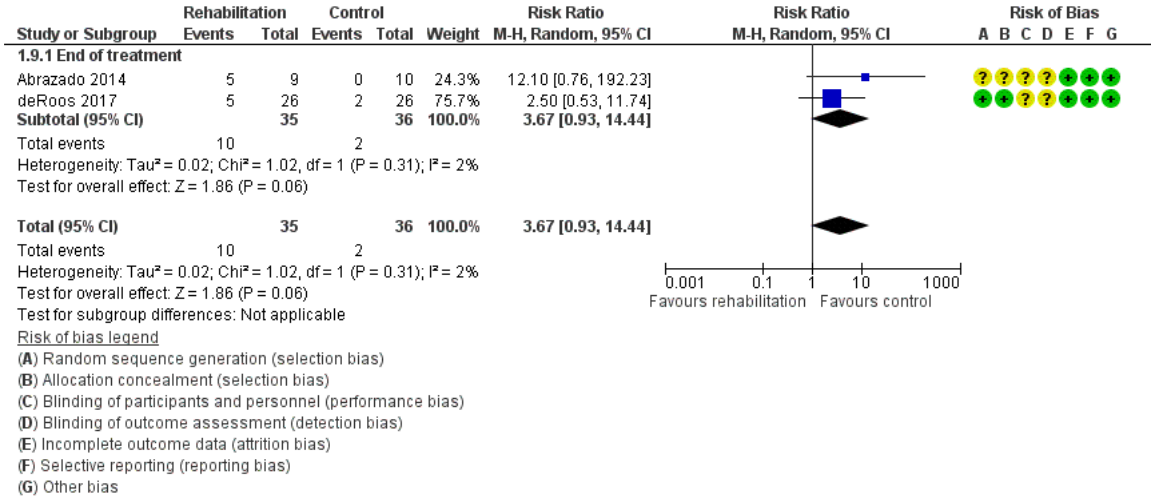
Forest plot of comparison: 1 Rehabilitation versus no rehabilitation, outcome: 1.7 Quality of life. Longest follow-up. Change.

Figure 8 (Analysis 1.8)



Forest plot of comparison: 1 Rehabilitation versus no rehabilitation, outcome: 1.8 Mortality. Longest follow-up.

Figure 9 (Analysis 1.9)



Forest plot of comparison: 1 Rehabilitation versus no rehabilitation, outcome: 1.9 Dropout. End of treatment.