NKR_05_PICO1a_og_1b_Superviseret træning ved subakromiel smertesyndrom

Review information

Authors

Sundhedsstyrelsen[1]

[1][Empty affiliation]

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Characteristics of studies

Characteristics of included studies

Bennell 2010

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years (SD)*: 59.3 (10.1) ● *Duration of symptoms (months), median (IQR)*: 24 (6-54) ● *Number of women (%)*: 25 (42) Control ● *Mean age in years (SD)*: 60.8 (12.4) ● *Duration of symptoms (months), median (IQR)*: 14 (6-24) ● *Number of women (%)*: 31 (51) Overall ● *Number of women (%)*: 56 (47) **Included criteria:** Inclusion criteria were age over 18 years, shoulder pain for more than three months, severity of pain on movement rated greater than 3/10 on an 0-10 numerical rating scale, pain on active abduction or external rotation, and a positive quick test for shoulder impingement **Excluded criteria:** Exclusion criteria were resting severity of shoulder paingreater than 7/10; reason to suspect a complete rotatorcuff tear (for example, substantial shoulder weakness, a positive drop-arm sign, or a high riding humerus on plain radiograph); previous shoulder surgery; radiological evidence of shoulder osteoarthritis, calcification, or previous fracture; systemic pathology including inflammatory joint

	disease or neoplastic disorders; more than 50% restriction of passive range of motion in two or more planes; shoulder pain referred from vertebral structures diagnosed by spinal clearingtests; symptoms of complex regional pain syndrome;active intervention in the previous three months,including corticosteroid injection, arthrographic distension of the glenohumeral joint with corticosteroid and saline (hydrodilatation), or physiotherapy; anti-inflammatory drugs in the previous two weeks; and inability to understand written and spoken English.
Interventions	**Intervention Characteristics** Intervention ● *Description*: A manual therapy and home exercise programme. ● *Dose (Intensity of exercise)*: 10 visits, 30-45 minutes each ● *Duration of the intevention*: 10 sessions of individual standardised treatment over 10 weeks. For the following 12 weeks, the active group continued the home exercise programme Control ● *Description*: Inactive ultrasound therapy andapplication of an inert gel. ● *Dose (Intensity of exercise)*: 10 visits, 10 minutes each ● *Duration of the intevention*: 10 sessions of individual standardised treatment over 10 weeks.
Outcomes	*Smerte (pain on movement) VAS 0-10, Mean, SD* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: VAS ● **Range**: 0-10 ● **Direction**: Lower is better ● **Data value**: Endpoint *Smerte (pain at rest) VAS 0-10, Mean, SD* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: VAS ● **Range**: 0-10 ● **Direction**: Lower is better ● **Data value**: Endpoint *Funktion, SPADI, mean SD* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: SPADI ● **Range**: 0-100 ● **Direction**: Lower is better

- **Data value**: Endpoint

Livskvalitet, SF 36, mental, mean, SD
- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: SF 36 mental
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Livskvalitet, SF36, physical, mean SD
- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: SF 36 physical
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Patientoplevet effekt (overall successful outcome)
- **Outcome type**: Dichotomous Outcome
- **Reporting**: Fully reported
- **Scale**: overall successful
- **Direction**: Higher is better
- **Data value**: Endpoint

Bivirkninger (adverse events)
- **Outcome type**: DichotomousOutcome
- **Reporting**: Fully reported
- **Scale**: Bivirkninger, adverse events
- **Direction**: Lower is better
- **Data value**: Endpoint

Frafald, alle årsager
- **Outcome type**: Dichotomous Outcome
- **Reporting**: Fully reported
- **Scale**: frafald alle årsager
- **Direction**: Lower is better
- **Data value**: Endpoint

Adherence, attended all sessions
- **Outcome type**: Dichotomous Outcome

	● **Reporting**: Fully reported ● **Scale**: adherence, attended all sessions ● **Direction**: Higher is better ● **Data value**: Endpoint *Alvorlige bivirkninger (serious adverse events)* ● **Outcome type**: Dichotomous Outcome ● **Reporting**: Fully reported ● **Scale**: seroius adverse events ● **Direction**: Lower is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** KB is funded in part by an Australian Research Council futurefellowship. RB is funded in part by an Australian National Health andMedical Research Council practitioner fellowship. This work was fundedby the National Health and Medical Research Council (project grant#299840). Pilot funds were provided by ANZ Trustees, Department ofPhysiotherapy and Victor Hurley Grant Royal Melbourne Hospital and theSchool of Physiotherapy, University of Melbourne. The study sponsorshad no role in the design; in the collection, analysis, and interpretation ofthe data; or in the writing of the article and the decision to submit it forpublication **Country:** Australia **Setting:** Metropolitan region of Melbourne, Victoria **Comments:** No commercial funding **Authors name:** Kim Bennell, professor **Institution:** Centre for Health, Exercise andSports Medicine, Department ofPhysiotherapy, School of HealthSciences, University of Melbourne **Email:** k.bennell@unimelb.edu.au **Address:** Parkville 3010, Victoria, Australia
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "Participants had a baseline assessment and were randomised in permuted blocks of six and eight, stratified by treating physiotherapist, to receive either active manual therapy and home exer- cise treatment or placebo treatment according to a computer generated table of random numbers created by the study biostatistician (AF)."
Allocation concealment (selection bias)	Low risk	Quote: "Allocations were sealed in opaque and consecutively numbered envel- opes kept in a central locked location. An independent administrator opened the envelopes in sequence and then revealed the group allocation to the relevant physiotherapist by facsimile just before the participant presented for treatment."

Blinding of participants and personnel (performance bias)	Low risk	Quote: "Participants in the placebo group attended the same number of treatments as did those in the active treatment group but received sham ultrasound therapy and light application of a non-therapeutic gel to the shoulder region for 10 minutes each. They received no instruction in exercise techniques and no manual therapy. We have successfully used this same placebo protocol in previous studies. 28-30 During the 12 week follow-up period, placebo participants did not receive any intervention and were not instructed to do any home exercises."
Blinding of outcome assessment (detection bias)	Low risk	Judgement Comment: The same blinded assessor evaluated all participants at 11 weeks at the conclusion of the supervised active or placebo intervention. Patient reported outcomes partly blinded (the patient did not know which treatment was placebo). Observer reported outcomes were blinded.
Incomplete outcome data (attrition bias)	Low risk	Quote: "We did analyses on an intention to treat principle, using all randomised participants. We replaced miss- ing data by the last score carried forward. For" Judgement Comment: Low numbers of dropout, reasons stated. ITT analyses Flow chart. Only 1 dropout at 11 weeks.
Selective reporting (reporting bias)	High risk	Quote: "Trial registration Clinical trials NCT00415441." Judgement Comment: SF 36 were not pre specified in the protocol. Average pain on movement were stated as a primary outcome in the article and as a secondary outcome in the protocol at clinical trials.gov
Other bias	Low risk	Quote: "Funding: KB is funded in part by an Australian Research Council future fellowship. RB is funded in part by an Australian National Health and Medical Research Council practitioner fellowship. This work was funded by the National Health and Medical Research Council (project grant #299840). Pilot funds were provided by ANZ Trustees, Department of Physiotherapy and Victor Hurley Grant Royal Melbourne Hospital and the School of Physiotherapy, University of Melbourne. The study sponsors had no role in the design; in the collection, analysis, and interpretation of the data; or in the writing of the article and the decision to submit it for publication. Competing interests: All authors have completed the Unified Competing Interest form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declare (1) RB and KB are partly supported by fellowships from the National Health and Medical Research Council and the Australian Research Council respectively. None of the other authors have financial support for the submitted work from anyone other than their employer; (2) No financial relationships with commercial entities that might have an interest in the submitted work; (3) No spouses, partners, or children with relationships with commercial entities that might have an interest in the submitted work; (4) No non-financial interests that may be relevant to the submitted work." Judgement Comment: The study seems to be free of other sources of bias

Brox 1993/1999

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years*: 47

	● *Number of women (%)*: 28 (56) Control ● *Mean age in years*: 48 ● *Number of women (%)*: 15 (50) Overall ● *Number of women (%)*: 43 (54) **Included criteria:** Patients were included if they were aged 18-66; had had pain in the shoulder for at least three months that had been resistant to outpatient physiotherapy and non-steroid and steroid anti-inflammatory drugs; had dysfunction or pain on abduction; had a normal passive glenohumeral range of movement; had pain during two of the three isometric-eccentric tests (abduction at 00 and 300 and external rotation)15; and had positive results in tests for impingement. **Excluded criteria:** Patients were excluded if they had arthritis of the acromioclavicular joint; had the cervical syndrome; had rotator cuff rupture; had glenohumeral instability; had bilateral muscular pain with tendemess and severely decreased ability to relax the shoulder, neck, and temporomandibular joints on examination; and were reluctant to o accept one or more of the treatment regimens of the study. **Pretreatment:** **Intervention, treat diff.:** n=8, age 44, women 3 (38%), no mean duration of complaints **Control, treat diff.:** n=4, age 47, women 4 (100%), no mean duration of complaints
Interventions	**Intervention Characteristics** Intervention ● *Description*: Exercise regimen over three to six months supervised by one experienced physiotherapist; ● *Dose (Intensity of exercise)*: Patients were supervised twice weekly. On the other days they followed the same exercise programme at home. Resistance was added gradually to strengthen the short shoulder rotator and the scapular stabilising muscles. The training continued for three to sixmonths, with the supervision gradually being reduced. ● *Duration of the intevention*: Control ● *Description*: 12 sessions of detuned soft laser treatment over six weeks. ● *Dose (Intensity of exercise)*: ● *Duration of the intevention*: 6 weeks
Outcomes	*Smerte (pain on movement) VAS 0-9, median change between groups* ● **Outcome type**: Continuous Outcome ● **Reporting**: Partially reported ● **Scale**: VAS ● **Range**: 0-9 ● **Direction**: Lower is better ● **Data value**: Change

	Smerte (pain at rest) VAS 0-9, median change between groups ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: VAS ● **Range**: 0-9 ● **Direction**: Lower is better ● **Data value**: Change *Smerte, Neer pain (pain), median change between groups* ● **Outcome type**: Continuous Outcome ● **Reporting**: Partially reported ● **Scale**: Neer pain ● **Range**: 0-35 ● **Direction**: Higher is better ● **Data value**: Change *Funktion, Neer, median change between groups* ● **Outcome type**: Continuous Outcome ● **Reporting**: Partially reported ● **Scale**: Neer ● **Range:** 10-100 ● **Direction**: Higher is better ● **Data value**: Change *Funktion, Neer, % > 80 point* ● **Outcome type**: Dichotomous Outcome ● **Reporting**: Partially reported ● **Direction**: Higher is better ● **Data value**: Endpoint *Tilbagevenden til arbejde (absence from work)* ● **Outcome type**: Dichotomous Outcome ● **Reporting**: Partially reported ● **Scale**: absence from work ● **Direction**: Lower is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** Grants from the Norwegian Research Council. **Country:** Norway **Setting:** Hospital departments of orthopaedics and physical medicine rehabilitation

	Authors name: Jens Ivar Brox **Institution:** Department of Physical Medicine and Rehabilitation **Address:** Ullevaal University Hospital, 0407 Oslo,Norway
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Judgement Comment: No information of how the allocation sequence was generatedRandom permuted blocks to ensure allocation. Random sequence generation probably done.
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: No information of allocation concealment
Blinding of participants and personnel (performance bias)	High risk	Quote: "The patients who were randomised to receive supervised exercises and placebo laser treatment were all treated by the same experienced physiotherapist at the department of physical medicine and rehabilitation at this hospital." Judgement Comment: No blinding of personel, all participants were treated by the same physiotherapist. Participants in the placebo-laser group were blinded to having recieved placebo laser treatment.
Blinding of outcome assessment (detection bias)	Low risk	Quote: "Blind follow up measurements were carried out at three and six months after the first day of treatment. At follow up tests the patients wore a T-shirt to hide a possible scar from surgery. They were carefully told not to talk about their treatment." Judgement Comment: Outcome assessors of objective outcomes were blinded
Incomplete outcome data (attrition bias)	Low risk	Judgement Comment: There were 8/50 in the supervised training group and 3/30 in the placebo laser treatment group who were lost to follow-up. Reasons for dropout not stated. Intention to treat analyses performed.
Selective reporting (reporting bias)	Unclear risk	Judgement Comment: From Cochrane: No protocol was available to confirm all measured outcomes were reported. AEs were not reported and it is unclear if these were measured. Length of sick leave was measured but incompletely reported. Change in the main symptom and disability to carry 5 kg object and take down something was only reported at 2.5 years and as proportion 50% improved. Global success was also not reported as an outcome in the first paper but included as an outcome at 6 months and 2.5 years. This measure was based on Neer score and unclear if post hoc definition of cut-off caused bias.
Other bias	High risk	Judgement Comment: We judged other bias to be at high risk due to an unplanned interim analysis performed after 68 participants had been followed up for 6 months. At this point randomisation to the placebo-laser group was ceased, which led to unbalanced numbers across the 3 treatment groups. 9/45 (20%) allocated to surgery did not undergo ASD, and 7/50 (14%) allocated to exercises did not complete the planned exercises and 1 of these had ASD. However the analysis was performed on an ITT basis irrespective of whether or not the allocated treatment was received

Cha 2014

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years (SD)*: 21.31 (1.74) ● *Duration of symptoms (months), mean (SD)*: 6.06 (1.44) ● *Number of women (%)*: 0 Control ● *Mean age in years (SD)*: 22.57 (1.79) ● *Duration of symptoms (months), mean (SD)*: 5.64 (1.22) ● *Number of women (%)*: 0 **Included criteria:** The inclusion criteria for baseball players with impingement symptoms were as follows: complaints of posterosuperior shoulder pain during the throwing motion; pain during the apprehension test and pain relief during the relocation test; or a positive response in one of the abovementioned tests associated with another of the following diagnostic indicators: Neer, Hawkins, or Jobe. An impignement syndrome can be usually diagnosed by subjects' history and due to physical examination. During the physical examination, a researcher twisted or elevated the player's arm totest for reproducible pain (Neer's sign and Hawkin's sign) **Excluded criteria:** The exclusion criteria were as follows: generalized joint laxity according to the Beighton and Horan score; 17 systemic or neurological illnesses; previous shoulder dislocation; previous shoulder or neck surgery or physical therapy treatment in the 12 months prior to the study.
Interventions	**Intervention Characteristics** Intervention ● *Description*: The rehabilitation program consisted of physical therapy, warm-up, work-out, and cool-down. First, subjects began physical therapy with ultrasonic wave (5 min) and laser therapy (10 min). Then they performed an exercise session with warm-up including stationary cycling (15 min) and standing stretching for 5 min. Stationary cycling was performed at 60% VO2 max. ● *Dose (Intensity of exercise)*: A supervised progressive rehabilitation program. The work-out was performed on Monday, Wednesday and Friday depending on the program schedule and was followed by the 1st work-out phase (from 1 day to 12 weeks). ● *Duration of the intevention*: 12 weeks Control ● *Description*: No training.
Outcomes	*Smerte (pain at rest) NRS 0-10, Mean, SD* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: NRS

	● **Range**: 0-10 ● **Direction**: Lower is better ● **Data value**: Endpoint *Smerte (pain strenuous activity) NRS 0-10, Mean, SD* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: NRS ● **Range**: 0-10 ● **Direction**: Lower is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** This research was supported by the grant of 2013 Hanseo University **Country:** Republic of Korea **Setting:** **Comments:** No potential conflict of interest relevant to this article was reported. **Authors name:** Yong-Seok Jee **Institution:** Department of Exercise Physiology & Prescription, Graduate School of Health Promotion, Hanseo University **Email:** eeys@hanseo.ac.kr **Address:** 46 Hanseo 1-ro, Haemi-myeon, Seosan 356-706, Korea j
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Judgement Comment: No information of how the allocation sequence was generated
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: No information on concealment allocation
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: No information of blinding of personnel and participants, blinding not feasible
Blinding of outcome assessment (detection bias)	High risk	Judgement Comment: No blinding of outcome assessors.outcomes where self-reported and patients nor blinded
Incomplete outcome data (attrition bias)	Low risk	Quote: "No dropouts were noticed during this study." Judgement Comment: No dropouts

Selective reporting (reporting bias)	High risk	Judgement Comment: No protocol available, only reports on pain
Other bias	Low risk	Quote: "CONFLICT OF INTEREST No potential conflict of interest relevant to this article was reported. ACKNOWLEDGMENTS This research was supported by the grant of 2013 Hanseo University, Republic of Korea." Judgement Comment: The study appears to be free of other sources of bias

Dickens 2005

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years (range)*: 55 (range 27-68) ● *Duration of symptoms, mean*: Not stated ● *Number of women (%)*: 19 (42) Control ● *Mean age in years (range)*: 54 (range 26-73) ● *Duration of symptoms, mean*: Not stated ● *Number of women (%)*: 18 (45) Overall ● *Mean age in years (SD)*: 55 ● *Number of women (%)*: 37 (44) **Included criteria:** Waiting list patients. The diagnosis of subacromial impingement was made using the clinical history, clinical examination and radiographic findings, together with diagnostic local anaesthetic injections into the subacromial space and acromioclavicular joint. These patients underwent three steroid injections into the subacromial space, given at 6-weekly intervals as part of an existing protocol. Subsequent to this, patients were reviewed and their outcome assessed. If the patients had no improvement in their symptoms, they still complained of pain, loss of function and objectively presented with positive impingement tests, subacromial decompression surgery was recommended. **Excluded criteria:** Not stated.
Interventions	**Intervention Characteristics** Intervention ● *Description*: A combination of supervised therapy at the hospital and a home exercise programme. The need for joint mobilisations was decided upon at the physiotherapy assessment ● *Dose (Intensity of exercise)*: The exercise programme was progressed to involve strengthening ● *Duration of the intevention*: 6 months

	Control ● *Description*: Not stated
Outcomes	*Funktion, Constant Score, mean change, range* **Outcome type**: Continuous Outcome ● **Reporting**: Partially reported ● **Scale**: Constant Score ● **Range**: 0-100 ● **Direction**: Lower is better ● **Data value**: Change from baseline *Frafald, alle årsager* ● **Outcome type**: Dichotomous Outcome ● **Reporting**: Fully reported ● **Scale**: frafald alle årsager ● **Direction**: Lower is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** Supported in part by the Physiotherapy ResearchFoundation, Project Reference No. PRF/99/2 **Country:** UK **Setting:** Orthopaedic department in a district general hospital **Authors name:** Victoria A. Dickens **Institution:** Department of Orthopaedic Surgery, Rotherham General Hospital NHS Trust **Email:** victoria.dickens@srht.nhs.uk **Address:** Moorgate Road, Rotherham S60 2UD, UK
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Judgement Comment: No information of how the allocation sequence was generated. The random sequence may have been generated by shuffling of envelopes (given that the envelopes were unmarked), but this is not clear.
Allocation concealment (selection bias)	Unclear risk	Quote: "Patients were randomised into two groups using unmarked envelopes in clinic to achieve simple randomisation. There were 100 envelopes, 50 of which contained the word "control" and 50 of which contained the word "physiotherapy" Judgement Comment: Insufficient information on allocation concealment. The envelopes were unmarked rather than sequentially numbered,which suggests that they were shuffled, though this is not clear

Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: No information on blinding of personnel and participants, blinding not feasible
Blinding of outcome assessment (detection bias)	Low risk	Judgement Comment: The assessor of the constant score was blinded to treatment allocation.
Incomplete outcome data (attrition bias)	High risk	Quote: "All 85 patients were included in the analysis on an intention-to-treat basis, where possible. Where a yes/no response was missing, patients were assumed not to have benefited (no "response") for primary outcomes. For continuous outcomes, where missing values were encountered, values were not imputed and analysis was restricted to cases that had outcome data." Judgement Comment: 3/45 dropped out in the physiotherapy group and 9/40 in the control group, because they felt that surgery was inevitable.Only Intention to treat analyses for the dichotomous outcome Operation yes/no. No intention to treat analyses for our outcome of interest Constant score.Quote: "Three patients in the physiotherapy group were unable to complete the physiotherapy programme for social reasons and were therefore excluded, leaving 42 patients".Quote: "In the control group, nine patients initially randomised not to undergo a physiotherapy programme refused to attend follow-up for repeat assessment. These patients felt that surgery was inevitable and that further assessment was not indicated. Although we have not been able to analyse the Constant score results on this group of nine patients, they all underwent surgery.These patients were included in the statistical analysis on an intention-to-treat basis." Comment: Participants who did not complete follow-up were analyzed using a worst-case scenario intention-to-treat method where possible (i.e., it wasassumed they showed no improvement). This is an appropriate imputation method given the reasons for missing data, but were only used for the dichotomous outcome. Dropouts not equally distributed 3 vs 9.
Selective reporting (reporting bias)	Unclear risk	Judgement Comment: No protocol available. The study reports on the outcomes stated in the methods section, but only one of our outcome of interest is reported in the study, function (constant score). Two of our critical outcomes are not reported in the study (pain and global perceived effect)
Other bias	Unclear risk	Quote: "Funding: Supported in part by the Physiotherapy Research Foundation, Project Reference No. PRF/99/2." Judgement Comment: High and unequal dropout rate. No blinding. SD not reported. Errors in reporting. No protocol reg.

Erdem 2018

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Median age in years (range)*: 47 (27-63) ● *Duration of symptoms*: Not stated ● *Number of women (%)*: 4 (31) Control ● *Median age in years (range)*: 43 (19-65)

	● *Duration of symptoms*: Not stated ● *Number of women (%)*: 9(47) Overall ● *Number of women (%)*: 13 (41) **Included criteria:** Inclusion criteria were having shoulder pain, positive painful arc test, and extreme sensation to palpation of biceps orrotator cuff tendons, pain aggravation due to resisted range of shoulder movements. **Excluded criteria:** Exclusion criteria were shoulder surgery and/or dislocation history, having cervical spine problems and having a previous traumatic injury of shoulder.
Interventions	**Intervention Characteristics** Intervention ● *Description*: Both groups performed the exercises for six weeks. Supervised group was appointed biweekly in order to check whether they perform the exercises correctly. ● *Dose (Intensity of exercise)*: Not stated ● *Duration of the intevention*: 6 weeks Control ● *Description*: Both groups performed the exercises for six weeks. ● *Dose (Intensity of exercise)*: Not stated ● *Duration of the intevention*: 6 weeks
Outcomes	*Funktion, SPADI, median change, range* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: SPADI ● **Range**: 0-100 ● **Direction**: Lower is better ● **Data value**: Endpoint *Frafald, alle årsager* ● **Outcome type**: Dichotomous Outcome ● **Reporting**: Fully reported ● **Scale**: frafald alle årsager ● **Direction**: Lower is better ● **Data value**: Endpoint *Funktion, DASH, median, range* ● **Outcome type**: Continuous Outcome ● **Reporting**: Partially reported

	● **Scale**: DASH ● **Range**: 0-100 ● **Direction**: Lower is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** None **Country:** Turkey **Setting:** Physiotherapy clinic **Authors name:** Emin Ulaş Erdem **Institution:** Bülent Ecevit University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation **Email:** e_ulaserdem@yahoo.com **Address:** Zonguldak, Türkiye.
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Judgement Comment: No information on how the allocation sequence was generated
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: No information on allocation concealment
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: No information on blinding of personnel and participants, blinding not feasible
Blinding of outcome assessment (detection bias)	High risk	Judgement Comment: No information on blinding of outcome assessors. High risk for self-reported outcomes.
Incomplete outcome data (attrition bias)	High risk	Judgement Comment: 7/20 dropped out in the control group (hometraining without supervision) and 2/21 dropped out in the supervised training group. Reasons for dropout not stated. No intention to treat analyses. Imbalance and risk of bias.
Selective reporting (reporting bias)	Unclear risk	Judgement Comment: No protocol available, only one outcome of interest (function) for this review is covered by the study.
Other bias	High risk	Quote: "Conflict of interest: None. Funding: None.". Huge baseline differences for the SPADI score. Poor reporting of methods.

Granviken 2015

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years (SD)*: 47.6 ● *Duration of symptoms (months), median (IQR)*: 17 (10 to 48) ● *Number of women (%)*: 11 (48) Control ● *Mean age in years (SD)*: 48.2 (9.8) ● *Duration of symptoms (months), meadian (IQR)*: 12 (6 to 36) ● *Number of women (%)*: 11 (48) Overall ● *Number of women (%)*: 22 (48) **Included criteria:** To be eligible for the study, patients had to be between 18 and 65 years old and have unilateral shoulder pain lasting more than12 weeks. Furthermore, they underwent three diagnostic clinical tests based on criteria in previous recommendations. The painful arc test was positive if pain was present in any parts of the motion path between 60 and 120 deg either on the way up or down during active abduction. A positive infraspinatus test was indicated by pain and/or weakness in isometric external rotation against force performed with 90 deg of elbow flexion and the upper arm in neutral position along the side of the body. The KennedyHawkins test was positive if pain was experienced when the arm was passively positioned at 90 deg of flexion and internally rotated by the therapist. For a patient to be included in the study, all three tests had to be positive. In addition, they had to have normal passive glenohumeral physiological range of motion. **Excluded criteria:** Exclusion criteria were: glenohumeral instability, acromioclavicular joint pathology, labrum pathology on imaging, proven fullthickness ruptures/total ruptures of the rotator cuff, or signs of glenohumeral osteoarthritis. Patients were also excluded if theyhad: undergone shoulder surgery, insufficient language capability, cervical spine problems (if the patient reported more pain in the neck than the shoulder), rheumatoid arthritis, or other physical or serious mental illness. Earlier treatment, but no other treatment during the study period, was allowed.
Interventions	**Intervention Characteristics** Intervention ● *Description*: The supervised exercise group was offered 10 treatmentsof supervised exercise therapy, in addition to home exercises.Exercises and overall training dose were the same for both groups. ● *Dose (Intensity of exercise)*: Based on individual needs, participants were later givenstretching exercises for tight structures in addition to the other exercises. ● *Duration of the intevention*: 6 weeks

	Control ● *Description*: The home exercise group had one supervised treatment session with a physiotherapist in order to set up a tailored home-exercise program ● *Dose (Intensity of exercise)*: Based on individual needs, participants were later givenstretching exercises for tight structures in addition to the other exercises. ● *Duration of the intevention*: 6 weeks
Outcomes	*Smerte (pain average previous week), Mean, SD* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: Pain average previous week ● **Range**: 0-10 ● **Direction**: Lower is better ● **Data value**: Endpoint *Funktion, SPADI, mean SD* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: SPADI ● **Range**: 0-100 ● **Direction**: Lower is better ● **Data value**: Endpoint *Tilbagevenden til arbejde (work status, number on sick leave)* ● **Outcome type**: Dichotomous Outcome ● **Reporting**: Fully reported ● **Scale**: work status, number on sick leave ● **Direction**: Lower is better ● **Data value**: Endpoint *Frafald, alle årsager* ● **Outcome type**: Dichotomous Outcome ● **Reporting**: Fully reported ● **Scale**: frafald alle årsager ● **Direction**: Lower is better ● **Data value**: Endpoint

Identification	**Sponsorship source:** The study was funded by St. Olav. **Country:** Norway **Setting:** Interdisciplinary outpatient clinic of physical medicine and rehabilitation at a university hospital in Norway **Authors name:** Fredrik Granviken **Institution:** Department of Physical Medicine and Rehabilitation, St. Olav **Email:** fredrikgranviken@hotmail.com **Address:** Trondheim, Norway
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "The participants were randomised via online access to the randomisation program at the Unit for Applied Clinical Research at Norwegian University of Science and Technology. Randomisation was stratified by gender to obtain gender-balanced groups because symptoms and pain intensity may differ between women and men. 14,15 Randomisation also used variable block sizes to assign participants to the two treatment groups."
Allocation concealment (selection bias)	Low risk	Judgement Comment: Central web-based allocation. Allocation was concealed
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: No information on blinding of personnel and participants, blinding not feasible
Blinding of outcome assessment (detection bias)	Low risk	Quote: "Data were obtained before randomisation and at the end of the 6-week intervention period by an examiner blinded to the participants group assignment. The particioants were instructed not to discuss their treatment with the examiner who performed the testing. Twenty-six weeks after randomisation, participants were also assessed without blinding via a mailed questionnaire." Judgement Comment: Outcome assessor was blinded when assessing outcomes at the end of treatment (after 6 weeks). This is the timepoint closed to out timepoint of interests.
Incomplete outcome data (attrition bias)	Low risk	Quote: "Data were analysed according to the intention-to-treat principle." Judgement Comment: 2/23 were lost to follow-up in the home exercise group, 0/23 in the supervised exercice group. All dropouts accounted for. Balance between groups.
Selective reporting (reporting bias)	High risk	Judgement Comment: Our outcome of interest quality of life were stated in the protocol, but not reported in the publication. The Short-Form 36 questionnaire were pre specified at 6 weeks in the trial registration.
Other bias	Low risk	Quote: "Competing interests: None. Source(s) of support: The study was funded by St. Olav 's University Hospital, Department of Physical Medicine and rehabilitation and St. Olav 's University Hospital project funds.

Kachingwe 2008

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years (SD)*: 47.3 (20.1) ● *Duration of symptoms, mean (SD)*: 32.5 (60.2) ● *Number of women (%)*: 50 Control ● *Mean age in years (SD)*: 45.6 (13.0) ● *Duration of symptoms, mean (SD)*: 70.0 (92.4) ● *Number of women (%)*: 43 Overall ● *Mean age in years (SD)*: ● *Duration of symptoms, mean (SD)*: ● *Number of women (%)*: **Included criteria:** Diagnosed with primary shoulder impingement by the referring physician. Superiolateral shoulder pain and two out of four specified objective signs and symptoms: a positive (painful) Neer impingement test, a positive (painful) Hawkins-Kennedy impingement test, painful limitation of active shoulder elevation (flexion, abduction, scaption), and pain or limitation with the functional movement patterns of hand-behind-back or hand-behind-head. **Excluded criteria:** A physician diagnosis of adhesive capsulitis, grade III rotator cuff tear, calcific tendonitis confirmed by radiology, systemic or neurological disorder, cervical radiculopathy, a history of shoulder surgery, corticosteroid injection within the past month, and subjects who had received physical therapy treatment for their shoulder within the past three months. **Pretreatment:**
Interventions	**Intervention Characteristics** Intervention ● *Description*: The exercise-only group, performed exercises under the direct one-on-one supervision of the primary investigator. These exercises included posterior capsule stretching, postural correction exercises, and an exercise program focusing on rotator cuff strengthening and scapular stabilization Participants were also educated in the etiology of shoulder impingement syndrome and the im-portance of proper posture, and they were instructed to modify overhead ac-tivities. each session ended with subjects receiving a cold pack for 10–15 minutes to decrease potential inflam-mation and delayed muscle soreness. ● *Dose (Intensity of exercise)*: 1 x week supervised Participants were instructed to perform a home exercise program once a day mimicking the exercises performed in he clinic ● *Duration of the intevention*: 6 weeks

	Control ● *Description*: Participants in Group 4 served as the control group. Subjects in this group received patient education on postural awareness and limitation of overhead activities by the referring physician during his/her initial examination session. The physician also provided the subject with a standard shoulder impingement home exercise program without any in-put from the physical therapist. Thus, subjects in this group did not receive physical therapy intervention, nor were they instructed in a home exercise pro-gram by a physical therapist during the course of the study. - ● *Dose (Intensity of exercise)*: ● *Duration of the intevention*:
Outcomes	*Smerte, VAS 0-10, % change from baseline, sd* ● **Outcome type**: ContinuousOutcome ● **Reporting**: Fully reported ● **Scale**: VAS ● **Range**: 0-10 ● **Direction**: Lower is better ● **Data value**: Change from baseline *Funktion, SPADI 0-130, % ændring fra baseline, sd* ● **Outcome type**: ContinuousOutcome ● **Reporting**: Fully reported ● **Scale**: SPADI ● **Range**: 0-130 ● **Direction**: Higher is better ● **Data value**: Change from baseline *Frafald, alle årsager* ● **Outcome type**: Dichotomous Outcome ● **Reporting**: Fully reported ● **Scale**: frafald alle årsager ● **Direction**: Lower is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** Supported by the California State University, Northridge Research, Scholarship and Creative Activity Award. **Country:** USA **Authors name:** Aimie F. Kachingwe **Institution:** Department of Physical Therapy, California State University, Northridge. **Email:** aimie.kachingwe@csun.edu
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "Participants were randomly assigned to one of four intervention groups according to the block randomization method:" Quote: "Block randomization was used to ensure that an equal number of patients were assigned to each treatment group. As an example, subject #1 had an equal chance of drawing an envelope assigning him/ her to group A, B, C, or D. If he/she drew “A, ” the card was removed. Subject #2 then had an equal chance of drawing an envelope with group B, C, or D, subject #3 with the remaining two groups, and subject #4 received the final group as- signment." Judgement Comment: Block size not reported, e.g. random size.
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: No information on allocation concealment
Blinding of participants and personnel (performance bias)	Unclear risk	Quote: "Each subject was informed of his/her treatment protocol but remained blinded to other group assignments to avoid subject bias." Judgement Comment: Subjects were blinded. Principal investigator performed all interventions. Patients were blinded for the treatment of the other participants. Despite not knowing what other participants received, expectations about the effectiveness of interventions received may have differed between our two groups of interests groups, because one group received an active interventioen and the other group received advice only.
Blinding of outcome assessment (detection bias)	High risk	Quote: "The assessor was blinded to group assignment and all intervention protocols." Judgement Comment: Objective outcomes: The outcome assessor was blinded. Subjective outcomes: no blinding for self-reported outcomes (pain and function). patients were aware of their own group allocation.
Incomplete outcome data (attrition bias)	Low risk	Judgement Comment: No dropouts. Outcome data reported as based on total number of randomised participants
Selective reporting (reporting bias)	Low risk	Judgement Comment: No protocol available. Outcome data were fully reported for all outcomes reported in themethods section.
Other bias	Low risk	Judgement Comment: the study seems to free from of other sources of bias

Lombardi 2008

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years (SD)*: 56.3 (11.6) ● *Duration of symptoms (months), mean (SD)*: 13.7 (9.6) ● *Number of women (%)*: Not stated Control

	● *Mean age in years (SD)*: 54.8 (9.4) ● *Duration of symptoms (months), mean (SD)*: 13.9 (9.3) ● *Number of women (%)*: Not Stated **Included criteria:** Patients had demonstrated a positive Neer test and Hawkin test for the diagnosis of shoulder impingement syndrome in the previous 2 months and pain between 3 and 8 on the numeric pain scale in the arc of movement that produces the greatest shoulder pain. A positive Neer test occurs if the patient reports pain when performing passive elevation (14); a positive Hawkins test occurs if the patient reports pain when the arm is flexed at 90° and passively positioned in internal rotation. **Excluded criteria:** Patients with a history of shoulder fractures or dislocation; cervical radiculopathy; degenerative joint disease of the glenohumeral joint; surgery on the shoulder, back, or thorax; inflammatory arthropathy; infiltration of the shoulder in the previous 3 months; and those undergoing any type of physical intervention for the shoulder were excluded from the study.
Interventions	**Intervention Characteristics** Intervention ● *Description*: Progressive resistance training program for the musculature of the shoulder, which was held twice a week for 2 months ● *Dose (Intensity of exercise)*: Progressive resistance training ● *Duration of the intevention*: 2 months Control ● *Description*: Patients in the control group remained on a waiting list and were informed that they would receive physiotherapeutic treatment after 2 months had passed. ● *Duration of the intevention*: 2 months
Outcomes	*Smerte (pain on movement) VAS 0-10, Mean, SD* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: VAS ● **Range**: 0-10 ● **Direction**: Lower is better ● **Data value**: Endpoint *Smerte (pain at rest) VAS 0-10, Mean, SD* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: VAS ● **Range**: 0-10 ● **Direction**: Lower is better ● **Data value**: Endpoint *Funktion, DASH 2, labor, mean, SD* ● **Outcome type**: Continuous Outcome

- **Reporting**: Fully reported
- **Scale**: DASH 2, labor
- **Range**: 0-100
- **Direction**: Lower is better
- **Data value**: Endpoint

Funktion, DASH 3, ADL, mean, SD

- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: DASH 3, ADL
- **Range**: 0-100
- **Direction**: Lower is better
- **Data value**: Endpoint

Livskvalitet, SF36, physical function, mean SD

- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: SF36, physical function
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Livskvalitet, SF36, physical role limitation, mean SD

- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: SF36, physical role limitation
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Livskvalitet, SF36, pain , mean SD

- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: SF36, pain
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Livskvalitet, SF 36, general health, mean SD

- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported

- **Scale**: SF 36, general health
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Livskvalitet, SF 36, Vitality, mean SD

- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: SF 36, Vitality
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Livskvalitet, SF 36, social function, mean SD

- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: SF 36 social function
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Livskvalitet, SF 36, emotional role limitation, mean SD

- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: SF 36, emotional role limitation
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Livskvalitet, SF 36, mental health, mean SD

- **Outcome type**: Continuous Outcome
- **Reporting**: Fully reported
- **Scale**: SF 36, mental health
- **Range**: 0-100
- **Direction**: Higher is better
- **Data value**: Endpoint

Frafald, alle årsager

- **Outcome type**: Dichotomous Outcome
- **Reporting**: Fully reported
- **Scale**: frafald alle årsager

	● **Direction**: Lower is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** Not stated **Country:** Brazil **Setting:** Outpatient clinics at the Federal Hospital of Sao Paulo **Authors name:** Jamil Natour **Institution:** Rheumatology Division **Email:** jnatour@reumato.epm.br **Address:** Rua Botucatu, 740, 04023-900 Sao Paulo,SP, Brazil
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Judgement Comment: A computer-generated randomization list was utilized to randomly allocate patients into experimentaland control groups and a concealed randomization with an opaque sealed envelope was performed.
Allocation concealment (selection bias)	Low risk	Quote: "Paulo. A computer-generated randomization list was utilized to randomly allocate patients into experimental and control groups and a concealed randomization with an opaque sealed envelope was performed."
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: Blinding of participants and personel not feasible
Blinding of outcome assessment (detection bias)	Low risk	Quote: "Evaluations were carried out at the beginning and end of the treatment program by the same blinded examiner for both groups and consisted of the following instruments." Judgement Comment: high risk for self-reported outcomes
Incomplete outcome data (attrition bias)	Low risk	Quote: "In cases of interruption or abandonment of treatment, the data were analyzed as intent-to-treat." Judgement Comment: Four patients from the control group failed to finish the study: 1 who started having difficulties appearing at the rehabilitation center but for the final evaluation, and 3 who failed to return for the final evaluation, stating diffi- culties appearing at the evaluation locale. Data from the prior evaluation of the patients from the control group were used for the intent-to-treat analysis. All dropouts (4/60) accounted for. All in control group
Selective reporting (reporting bias)	Low risk	Judgement Comment: No information of a trial protocol. The study reports on all the outcomes stated in the methods section
Other bias	Low risk	Judgement Comment: No information of funding or conflicts of interest. The study appears to be free of other sources of bias

Ludewig 2003

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years (SE)*: 48.0 (1.8) ● *Duration of symptoms: Not stated* ● *Number of women (%)*: 0 (0) Control ● *Mean age in years (SE)*: 49.2 (1.8) ● *Duration of symptoms*: Not stated ● *Number of women (%)*: 0 (0) **Included criteria:** For inclusion, symptomatic subjects had to present with at least two positive shoulder impingement tests (Neer, Hawkins/Kennedy,Yocum, Jobe, and/or Speeds tests) and pain reproduction during two of three additional categories of clinical tests.These categories included: (1) a painful arc on active scapularplane abduction of the arm (2) tenderness to palpation ofthe biceps or rotator cuff tendons; and (3) pain with one ormore resisted glenohumeral joint motions (flexion, abduction, internal rotation, or external rotation). Flexion and abduction were resisted at 90* of elevation, and internal and external rotation were resisted both at the subject's side and at 90* of abduction. **Excluded criteria:** excluded if they: (1) had a history of rotator cuff surgery; (2) reported ahistory of glenohumeral dislocation, or other traumatic injury to the shoulder; (3) reported only periscapular or cervical pain during arm elevation; or (4) had shoulder symptoms reproduced by a cervical assessment.
Interventions	**Intervention Characteristics** Intervention ● *Description*: A standardised eight week home exercise programme were instructed to perform progressive resistance strengthening exercises three days per week for two musclegroups. ● *Dose (Intensity of exercise)*: three days per week ● *Duration of the intevention*: 8 weeks Control ● *Description*: No intervention ● *Duration of the intevention*: 8 weeks
Outcomes	*Smerte (pain work related), mean, SEM* ● **Outcome type**: Continuous Outcome ● **Scale**: Pain work related ● **Range**: 0-10

	● **Direction**: Lower is better ● **Data value**: Endpoint *Funktion, SRQ score, mean, SEM* ● **Outcome type**: Continuous Outcome ● **Reporting**: Partially reported ● **Scale**: SRQ score ● **Range**: 0-100 ● **Direction**: Higher is better ● **Data value**: Endpoint *Patientoplevet effekt, patient satisfaction, mean, SEM* ● **Outcome type**: Continuous Outcome ● **Reporting**: Partially reported ● **Scale**: patient satisfaction ● **Range**: 0-10 ● **Direction**: Higher is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** Funded by the Center to protect Worker's rights the Public Health Service , and University of Iowa; USA (grant#U60/CCU317202) **Country:** Iowa, USA **Authors name:** P M Ludewig **Institution:** Program in PhysicalTherapy, Department ofPhysical Medicine & Rehabilitation, The University of Minnesota **Email:** ludew001@umn.edu **Address:** MMC 388, 420 DelawareStreet, Minneapolis, MN55455, USA
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Quote: "Randomisation was performed by an investigator blindly selecting one of two slips of paper indicating group assignment. Asymptomatic subjects" Judgement Comment: Randomisation was performed by an investigator blindly selecting one of two slips of paper indicating group assignment.(Risikabel randomiseringsprocedure. Tilbagelægning mulig)

Allocation concealment (selection bias)	Unclear risk	Judgement Comment: No information on how the allocation sequence was concealed and it is unclear if adequate safeguards were put in place to conceal the allocation sequence
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: Blinding of personnel and participants not feasible
Blinding of outcome assessment (detection bias)	High risk	Quote: "Outcome measures were all patient self report," Judgement Comment: Self-reported outcomes and participants not blinded
Incomplete outcome data (attrition bias)	Low risk	Judgement Comment: Attrition in the two groups were similar in numbers and reasons.Quote: "Ninety two per cent of subjects completed the study. Seven subjectswere lost to follow up, four (11.8 %) in the exercise intervention group, andthree control subjects (one symptomatic (3%) and two asymptomatic (8%)).One intervention subject withdrew after experiencing a new injury at workthat interfered with continuation of the exercises. Another intervention subject was referred by his physician for additional outpatient physical therapy and subsequently withdrew from the study. A third intervention and onesymptomatic control subject were not able to return for follow up for personal reasons (death in the family, custody dispute). The remaining three subjects either were no shows or were unable to be reached after multiple attempts atthe time of post-test. Subjects lost to follow up were similar to the full samplewith regard to demographic characteristics."Quote: "The initial analysis included all subjects from whom post-test data were obtained, regardless of their level of compliance with the exercise programme. A secondary compete Intention to Treat analysis where all subjects initially enrolled were analysed. Missing posttest data were replaced with imputed values based on the average observedmeans from the two symptomatic groups." Results of the intetion to treat analysis were similar to the primary analysis for most dependent variables. Dropouts accounted for. ITT analyses provided
Selective reporting (reporting bias)	Low risk	Judgement Comment: No protocol available. Outcome data were reported for all outcomes specified in the methods section.
Other bias	High risk	Judgement Comment: Funded by the Center to protect Worker's rights the Public Health Service , and University of Iowa; USA (grant#U60/CCU317202). No information on conflicts of interest. Baseline imbalance SRQ

Melegati 2000

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years (SD)*: 53.66 (7.35) ● *Duration of symptoms*: Not stated ● *Number of women (%)*: 23/30 (76.6%) Control ● *Mean age in years (SD)*: 55.76 (13.08) ● *Duration of symptoms*: Not stated

	● *Number of women (%)*: 19/30 (63.3%) **Included criteria:** Neer stage I and II subacromial impingement **Excluded criteria:** Calcific tendinitis of the cuff, Neer stage III, neurophaty, rheumatoid atrthritis, age < 18 or > 65, prior cortisone infiltrations, pregnancy, inflammation, tomours, coagulophaty
Interventions	**Intervention Characteristics** Intervention ● *Description*: Kinesiotherapy with the following exercises: 1) Codman, 2) capsular stretching, 3) isometric for the rotators and deltoiid, 4) elastic resistance for the rotatord, deltoid and trapezius. Exercises were performed under the direction of a rehabilitation therapist, after the last session the subjects were asked to continue the exercises at home on alterante days. Adviced to: 1) during desk work, rest the elbow on a support abducting the shoulder 30*-40*. 2) avoid long hanging of the upper limb. 3) do not sleep on the affected shoulder and apply a small pillow under the armpit on the affected side. 4) When handling loads keep the weight near the trunk so as to shorten the lever arm. ● *Dose (Intensity of exercise)*: 6 sessions og 40 minutes with three-weeks intervals ● *Duration of the intevention*: 15 weeks. outcomes were measured 8 month after the last session Control ● *Description*: Adviced to: 1) during desk work, rest the elbow on a support abducting the shoulder 30*-40*. 2) avoid long hanging of the upper limb. 3) do not sleep on the affected shoulder and apply a small pillow under the armpit on the affected side. 4) When handling loads keep the weight near the trunk so as to shorten the lever arm. ● *Duration of the intevention*: Outcomes were measured 8 month after the initial examination in the department.
Outcomes	● Outcomes were reported only after 8 months, our timeframe of interest were 3 months after start of the intervention. No useable outcome in the study.
Identification	**Sponsorship source:** Not reported **Country:** Italy **Authors name:** G. Melegati **Institution:** Department of Physcical Therapy and Rehabilitation of the Instituto Ortopedico G. Pini Milan.
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Judgement Comment: No information on how the allocation sequence was generated

Allocation concealment (selection bias)	Unclear risk	Judgement Comment: No information on how the allocation sequence was concealed
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: No information on blinding of personnel and participants, blinding not feasible
Blinding of outcome assessment (detection bias)	Unclear risk	Judgement Comment: No information on blinding of outcome assessors
Incomplete outcome data (attrition bias)	Unclear risk	Judgement Comment: No protocol available. Only one outcome of interest were reported, function (Constant score). The two critical outcomes pain and global perceived effect were not reported.
Selective reporting (reporting bias)	Unclear risk	Judgement Comment: No information of attrition, no information of intention to treat analyses
Other bias	Unclear risk	Judgement Comment: Poor reporting making it difficult to judge if there is other sources of bias. No reporting of conflicts of interests and funding.

Wiener 2005

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Mean age in years (SD)*: Not stated ● *Duration of symptoms, mean (SD)*: Not stated ● *Number of women (%)*: 0/8 (0%) Control ● *Mean age in years (SD)*: Not stated ● *Duration of symptoms, mean (SD)*: Not stated ● *Number of women (%)*: 0/9 (0%) **Included criteria:** diagnosed wiht supraspinatus tendinose **Excluded criteria:** rupture of the rotator cuff, shoulder instability, a restricted range of motion or pain over the entire range of motion.
Interventions	**Intervention Characteristics** Intervention ● *Description*: All subjects were subjected to the same isokinetic torque measurement and pain assessment twice every 35 days. During this period, the intervention group received physiotherapy treatment consisting of ten appointments, each lasting 30 minutes. Each treatment consisted of stretching the chest muscles, strengthening the shoulder muscles near the spine, the rotator cuff, the humeral head depressors and the deltoid muscle, supplemented by neurophysiological techniques with activation of entire muscle loops (PNF) and transverse friction. In addition, there was physical therapy with ice treatment and electrotherapy or ultrasound of the

	structures in question. ● *Dose (Intensity of exercise)*: 10 sessions of 30 min distributed over 35 days ● *Duration of the intevention*: 35 days Control ● *Description*: The participants in the control group received no therapy
Outcomes	No outcome of interest were reported in the study. Only biomechanical outcomes.
Identification	**Sponsorship source:** Not reported **Country:** Germany
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Judgement Comment: No information on how the allocation sequence was generated
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: No information on how the allocation sequence was concealed
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: No information on blinding of personnel and participants, blinding not feasible
Blinding of outcome assessment (detection bias)	Unclear risk	Judgement Comment: No information on blinding of outcome assessors
Incomplete outcome data (attrition bias)	Low risk	Judgement Comment: No dropouts
Selective reporting (reporting bias)	Low risk	Judgement Comment: No protocol available. Outcome data were reported for all outcomes specified in the methods section.
Other bias	Low risk	Judgement Comment: The study appears to be free of other sources of bias. No reporting of conflicts of interests and funding

Footnotes

Characteristics of excluded studies

Aghilinejad 2015

Reason for exclusion	Wrong patient population

Andersen 2012

Reason for exclusion	Wrong patient population

Bae 2011

Reason for exclusion	Wrong intervention

Bang 2000

Reason for exclusion	Wrong comparator

Barbosa 2008

Reason for exclusion	Wrong comparator

Baskurt 2011

Reason for exclusion	Wrong comparator

Beaudreuil 2011

Reason for exclusion	Wrong comparator

Beaudreuil 2012

Reason for exclusion	Wrong study design

Beaudreuil 2015

Reason for exclusion	Wrong comparator

BjornssonHallgren 2017

Reason for exclusion	Wrong comparator

Blume 2014

Reason for exclusion	Wrong comparator

Celik 2009

Reason for exclusion	Wrong comparator

Conroy 1998

Reason for exclusion	Wrong comparator

Cook 2014

Reason for exclusion	Wrong comparator

Dalager 2015

Reason for exclusion	Wrong patient population

Dziedzic 2001

Reason for exclusion	Wrong study design

Engebretsen 2009

Reason for exclusion	Wrong comparator

Engebretsen 2011

Reason for exclusion	Wrong comparator

Ginn 2005

Reason for exclusion	Wrong comparator

Giombini 2006

Reason for exclusion	Wrong comparator

Gram 2014

Reason for exclusion	Wrong patient population

Hay 2003

Reason for exclusion	Wrong comparator

Holmgren 2012

Reason for exclusion	Wrong comparator

Horneij 2001

Reason for exclusion	Wrong patient population

itaker 2005

Reason for exclusion	Wrong comparator

JansevanRensburg 2012

Reason for exclusion	Wrong study design

Jay 2015

Reason for exclusion	Wrong patient population

Jorgensen 2011

Reason for exclusion	Wrong patient population

Ketola 2002

Reason for exclusion	Wrong patient population

Kromer 2010

Reason for exclusion	Wrong comparator

Kromer 2013

Reason for exclusion	Wrong comparator

Kromer 2014

Reason for exclusion	Wrong comparator

Littlewood 2012

Reason for exclusion	Wrong study design

Littlewood 2014

Reason for exclusion	Wrong comparator

Lundblad 1999

Reason for exclusion	Wrong patient population

Maenhout 2013

Reason for exclusion	Wrong comparator

Martins 2012

Reason for exclusion	Wrong comparator

Marzetti 2014

Reason for exclusion	Wrong comparator

Osteras 2008

Reason for exclusion	Wrong comparator

Osteras 2009

Reason for exclusion	Wrong comparator

Osteras 2010

Reason for exclusion	Wrong comparator

Osteras 2010a

Reason for exclusion	Wrong comparator

Pekyavas 2017

Reason for exclusion	Wrong comparator

Rasotto 2015

Reason for exclusion	Wrong patient population

Rasotto 2015a

Reason for exclusion	Wrong patient population

Senbursa 2007

Reason for exclusion	Wrong comparator

Senbursa 2011

Reason for exclusion	Wrong patient population

Struyf 2013

Reason for exclusion	Wrong comparator

Subasi 2012

Reason for exclusion	Wrong comparator

Szczurko 2009

Reason for exclusion	Wrong comparator

Vinuesa Montoya 2017

Reason for exclusion	Wrong comparator

Walther 2004

Reason for exclusion	Wrong comparator

Wang 2006

Reason for exclusion	Wrong study design

Werner 2002

Reason for exclusion	

Winters 1997

Reason for exclusion	Wrong comparator

Winters 1999

Reason for exclusion	Wrong study design

Yiasemides 2011

Reason for exclusion	Wrong comparator

Zebis 2011

Reason for exclusion	Wrong patient population

Footnotes

References to studies

Included studies

Bennell 2010

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Data and analyses

1 Superviseret træing vs selvtræning

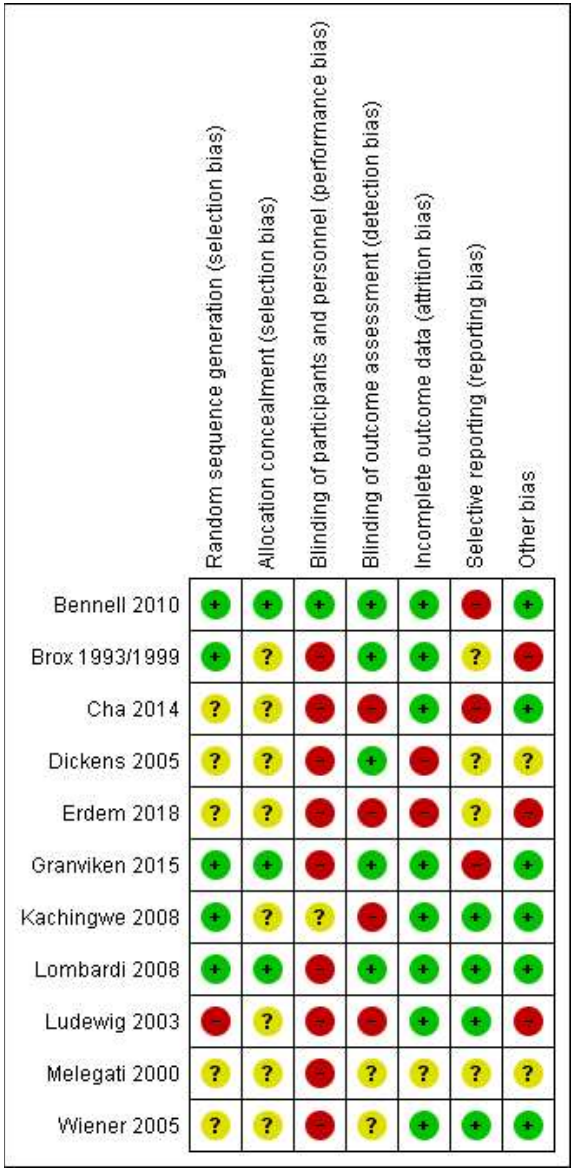
Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Smerte (pain)	1	44	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-1.47, 1.07]
1.2 Funktion (function)	2	76	Mean Difference (IV, Random, 95% CI)	1.00 [-8.80, 10.79]
1.3 Tilbagevenden til arbejde (return to work)	1	44	Risk Ratio (IV, Fixed, 95% CI)	0.85 [0.53, 1.36]
1.4 Frafald, alle årsager (dropout all causes)	2	87	Risk Ratio (IV, Random, 95% CI)	0.26 [0.07, 0.94]

2 Superviseret træning vs ingen instruktion i træning

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
2.1 Smerte i hvile (pain at rest)	4	286	Mean Difference (IV, Random, 95% CI)	-1.68 [-3.06, -0.31]
2.1.1 Low risk of bias	1	120	Mean Difference (IV, Random, 95% CI)	-0.60 [-1.35, 0.15]
2.1.2 High risk of bias	3	166	Mean Difference (IV, Random, 95% CI)	-2.08 [-3.58, -0.58]
2.2 Smerte ved bevægelse (pain on movement)	5	353	Mean Difference (IV, Random, 95% CI)	-1.84 [-2.76, -0.91]
2.2.1 Low risk of bias	1	120	Mean Difference (IV, Random, 95% CI)	-0.80 [-1.54, -0.06]
2.2.2 High risk of bias	4	233	Mean Difference (IV, Random, 95% CI)	-2.12 [-3.05, -1.20]
2.3 Funktion (function)	6	411	Std. Mean Difference (IV, Random, 95% CI)	0.31 [0.09, 0.52]
2.4 Livskvalitet, (quality of life)	2	176	Mean Difference (IV, Random, 95% CI)	6.75 [-0.81, 14.30]
2.5 Patientoplevet effekt, patient satisfaction	1	67	Mean Difference (IV, Fixed, 95% CI)	1.20 [0.24, 2.16]
2.6 Patientoplevet effekt (overall successful outcome)	1	118	Risk Ratio (IV, Fixed, 95% CI)	1.43 [0.87, 2.34]
2.7 Tilbagevenden til arbejde (number at work)	1	72	Risk Ratio (IV, Fixed, 95% CI)	1.33 [0.80, 2.18]
2.8 Frafald, alle årsager (dropout all causes)	4	280	Risk Ratio (IV, Random, 95% CI)	0.45 [0.08, 2.72]
2.9 Adherence til træning (adherence)	1	118	Risk Ratio (IV, Fixed, 95% CI)	0.98 [0.88, 1.08]
2.10 Bivirkninger (adverse events)	1	116	Risk Ratio (IV, Fixed, 95% CI)	3.77 [1.49, 9.54]
2.11 Alvorlige bivirkninger (serious adverse events)	1	116	Risk Difference (IV, Fixed, 95% CI)	0.00 [-0.03, 0.03]

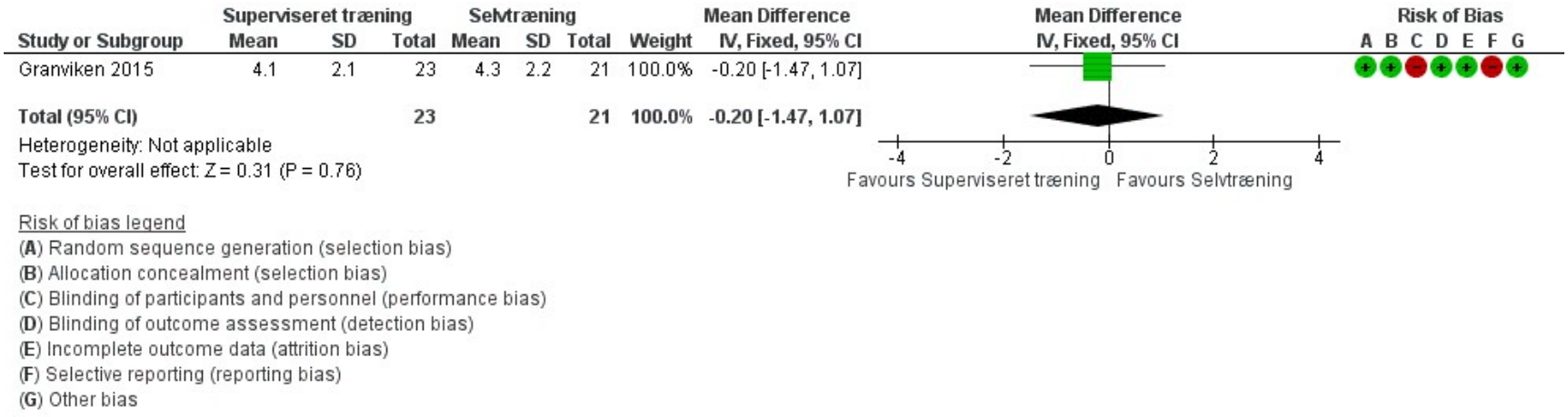
Figures

Figure 1


Random sequence generation (selection bias)
Allocation concealment (selection bias)
Blinding of participants and personnel (performance bias)
Blinding of outcome assessment (detection bias)
Incomplete outcome data (attrition bias)
Selective reporting (reporting bias)
Other bias
Bennell 2010
Brox 1993/1999
Cha 2014
Dickens 2005
Erdem 2018
Granviken 2015
Kachingwe 2008
Lombardi 2008
Ludewig 2003
Melegati 2000
Wiener 2005

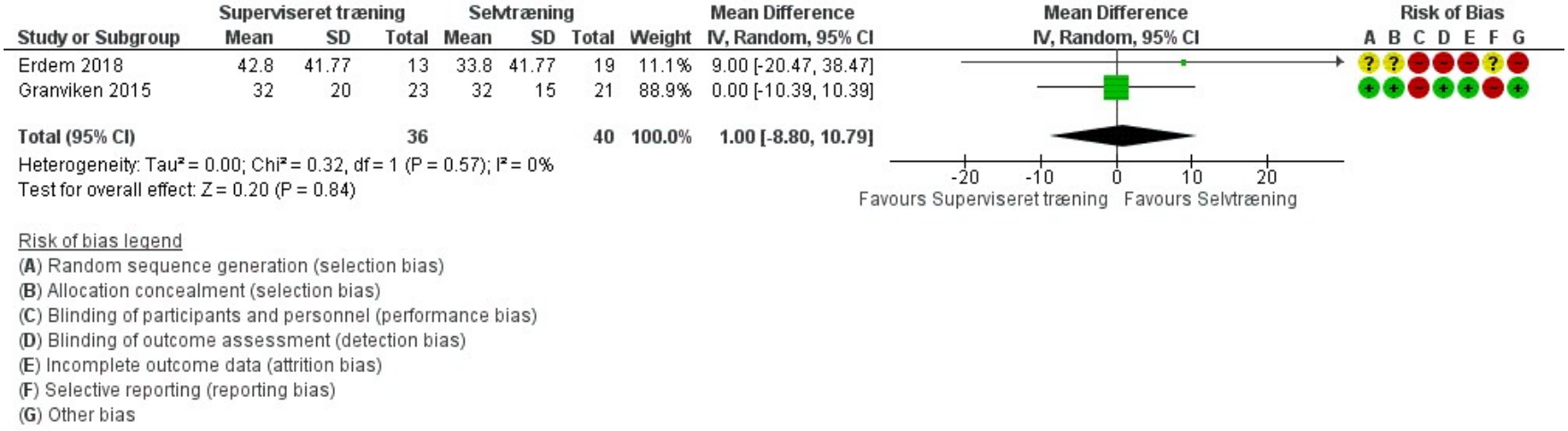
Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

Figure 2 (Analysis 1.1)



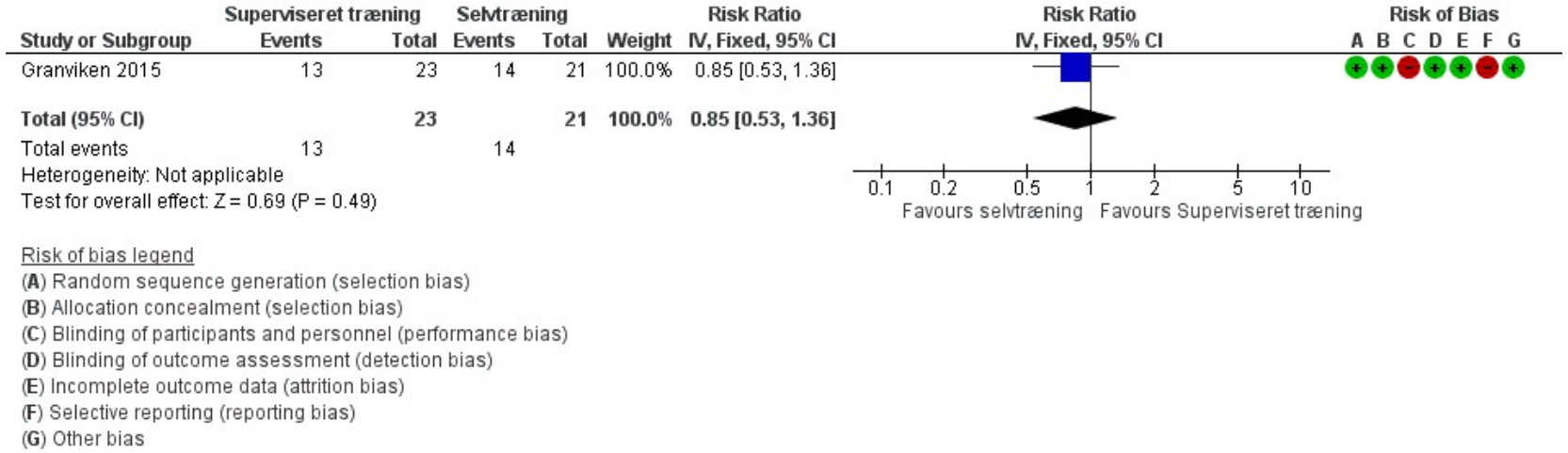
Forest plot of comparison: 1 Superviseret træing vs selvtræning, outcome: 1.1 Smerte (pain).

Figure 3 (Analysis 1.2)



Forest plot of comparison: 1 Superviseret træing vs selvtræning, outcome: 1.2 Funktion (function).

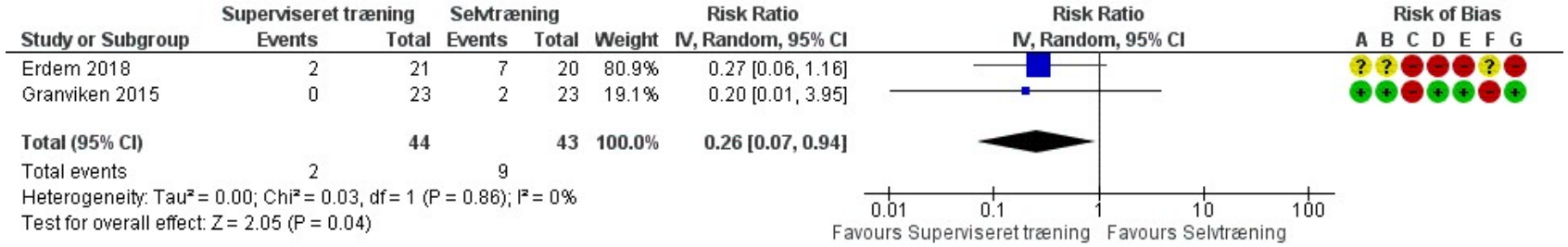
Figure 4 (Analysis 1.3)



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Forest plot of comparison: 1 Superviseret træing vs selvtræning, outcome: 1.3 Tilbagevenden til arbejde (return to work).

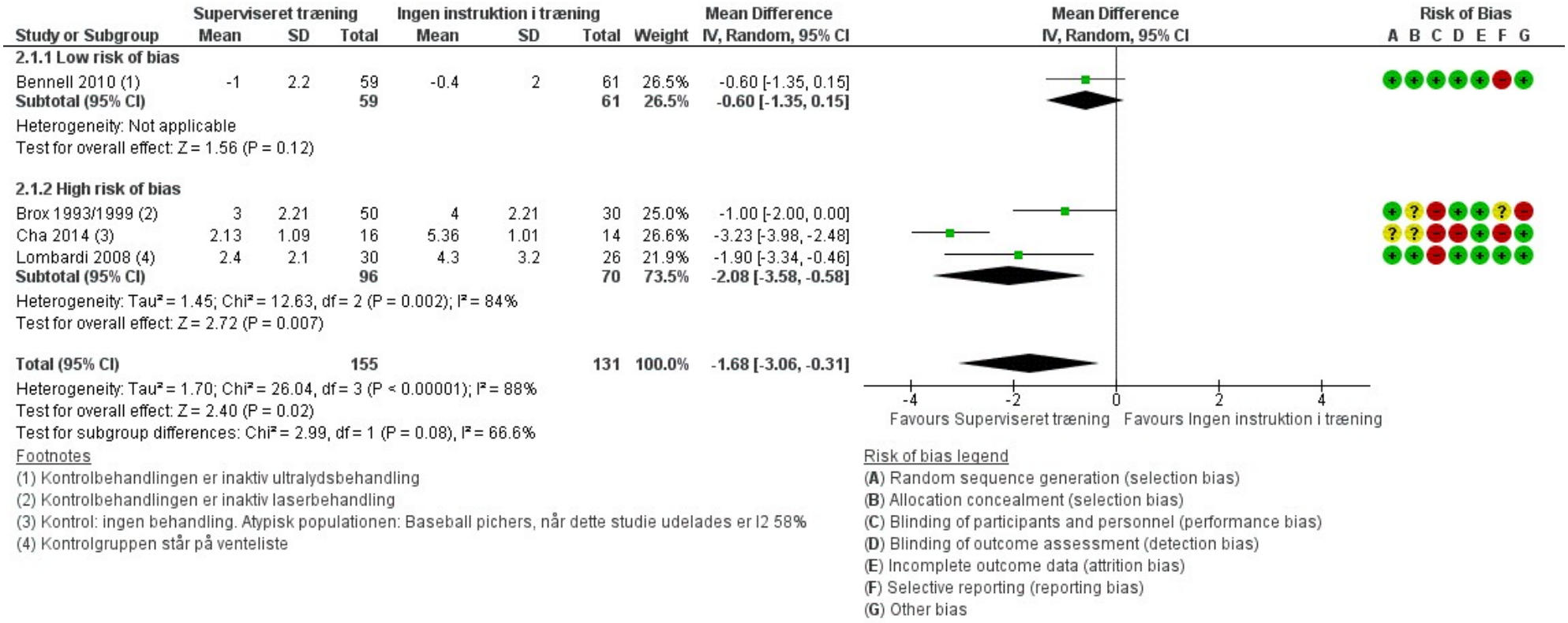
Figure 5 (Analysis 1.4)



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Forest plot of comparison: 1 Superviseret træing vs selvtræning, outcome: 1.4 Frafald, alle årsager (dropout all causes).

Figure 6 (Analysis 2.1)



Footnotes

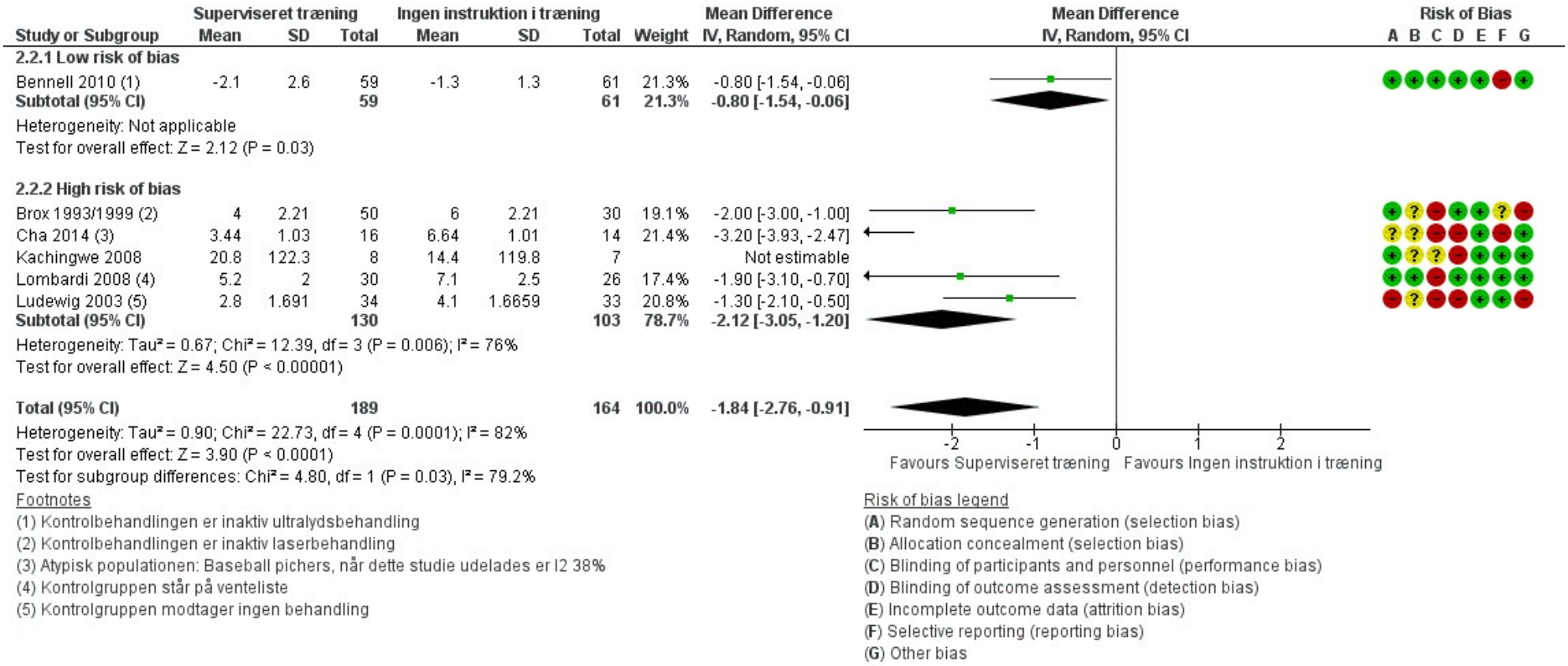
(1) Kontrolbehandlingen er inaktiv ultralydsbehandling
(2) Kontrolbehandlingen er inaktiv laserbehandling
(3) Kontrol: ingen behandling. Atypisk populationen: Baseball pichers, når dette studie udelades er I2 58%
(4) Kontrolgruppen står på venteliste

Risk of bias legend

(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.1 Smerte i hvile (pain at rest).

Figure 7 (Analysis 2.2)

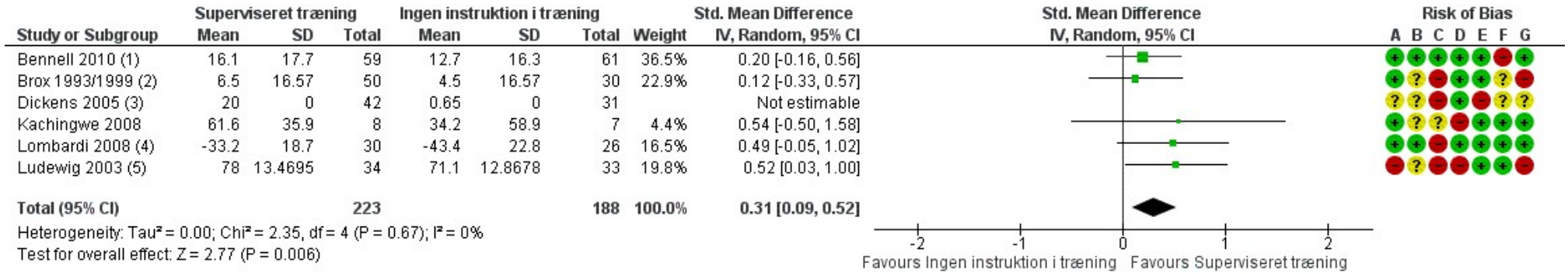


Footnotes
(1) Kontrolbehandlingen er inaktiv ultralydsbehandling
(2) Kontrolbehandlingen er inaktiv laserbehandling
(3) Atypisk populationen: Baseball pichers, når dette studie udelades er I2 38%
(4) Kontrolgruppen står på venteliste
(5) Kontrolgruppen modtager ingen behandling

Risk of bias legend
(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.2 Smerte ved bevægelse (pain on movement).

Figure 8 (Analysis 2.3)

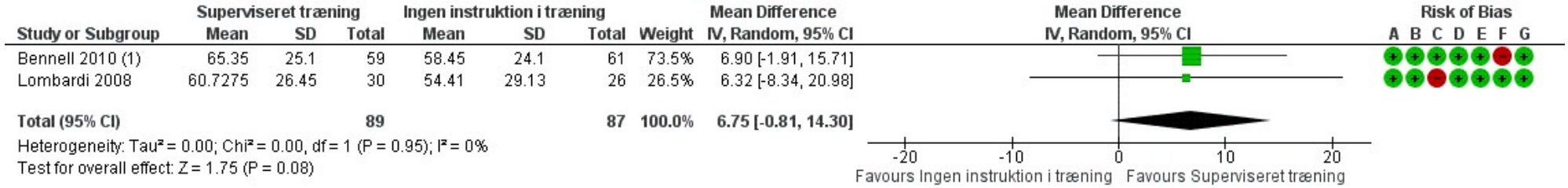


Footnotes
(1) Kontrolbehandlingen er inaktiv ultralydsbehandling
(2) Kontrolbehandlingen er inaktiv laserbehandling
(3) Kontrolgruppen modtager ingen behandling
(4) Kontrolgruppen står på venteliste
(5) Kontrolgruppen modtager ingen behandling

Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.3 Funktion (function).

Figure 9 (Analysis 2.4)

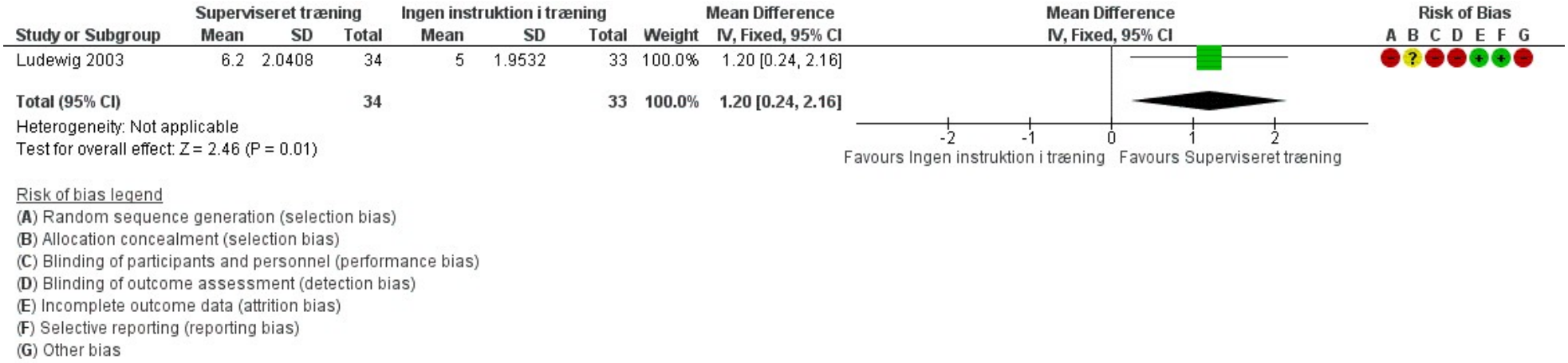


Footnotes
(1) Kontrolbehandlingen er inaktiv ultralydsbehandling

Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

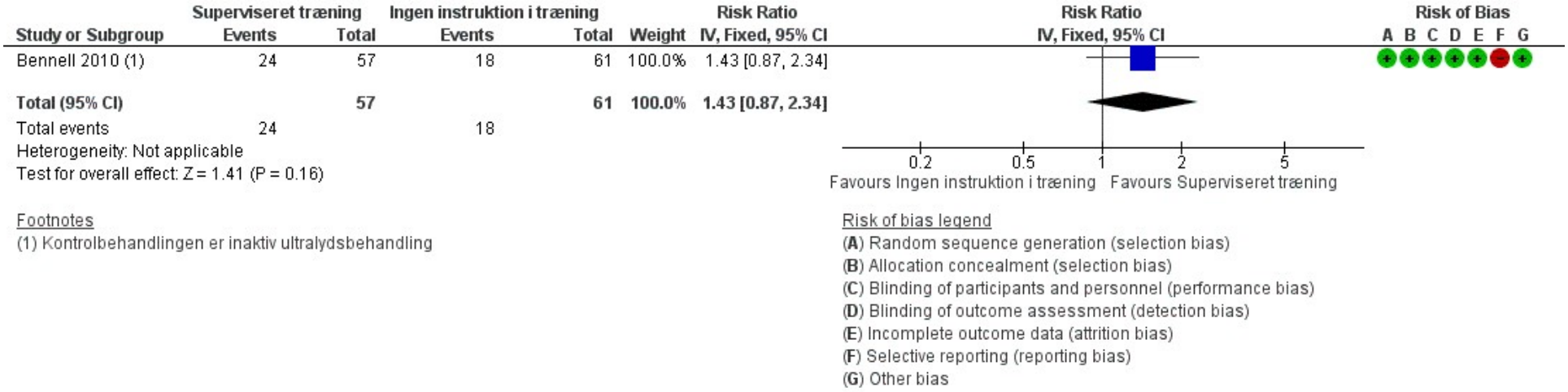
Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.4 Livskvalitet, (quality of life).

Figure 10 (Analysis 2.5)



Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.5 Patientoplevet effekt, patient satisfaction.

Figure 11 (Analysis 2.6)

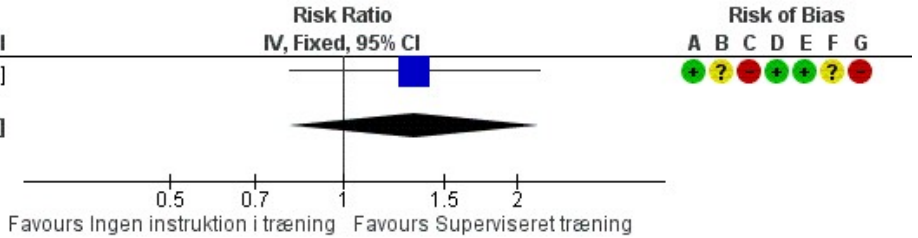


Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.6 Patientoplevet effekt (overall successful outcome).

Figure 12 (Analysis 2.7)

Study or Subgroup	Superviseret træning Events	Total	Ingen instruktion i træning Events	Total	Weight	Risk Ratio IV, Fixed, 95% CI
Brox 1993/1999 (1)	25	44	12	28	100.0%	1.33 [0.80, 2.18]
Total (95% CI)		**44**		**28**	**100.0%**	**1.33 [0.80, 2.18]**
Total events	25		12			

Heterogeneity: Not applicable
Test for overall effect: Z = 1.11 (P = 0.27)



Footnotes
(1) Kontrolbehandlingen er inaktiv laserbehandling

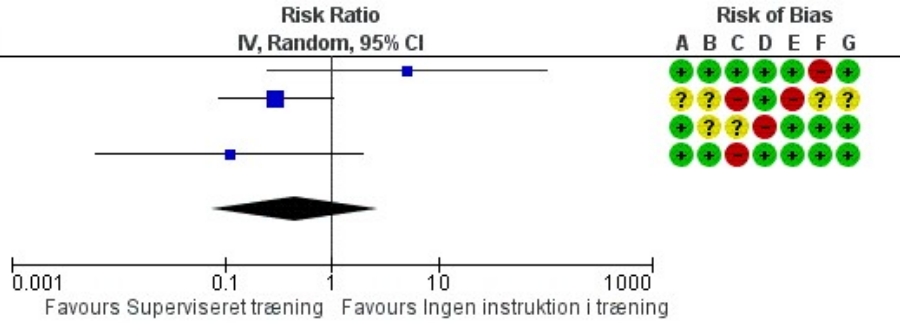
Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.7 Tilbagevenden til arbejde (number at work).

Figure 13 (Analysis 2.8)

Study or Subgroup	Superviseret træning Events	Total	Ingen instruktion i træning Events	Total	Weight	Risk Ratio IV, Random, 95% CI
Bennell 2010 (1)	2	59	0	61	23.3%	5.17 [0.25, 105.40]
Dickens 2005 (2)	3	45	9	40	51.9%	0.30 [0.09, 1.02]
Kachingwe 2008	0	8	0	7		Not estimable
Lombardi 2008 (3)	0	30	4	30	24.8%	0.11 [0.01, 1.98]
Total (95% CI)		**142**		**138**	**100.0%**	**0.45 [0.08, 2.72]**
Total events	5		13			

Heterogeneity: Tau² = 1.21; Chi² = 3.73, df = 2 (P = 0.15); I² = 46%
Test for overall effect: Z = 0.87 (P = 0.39)

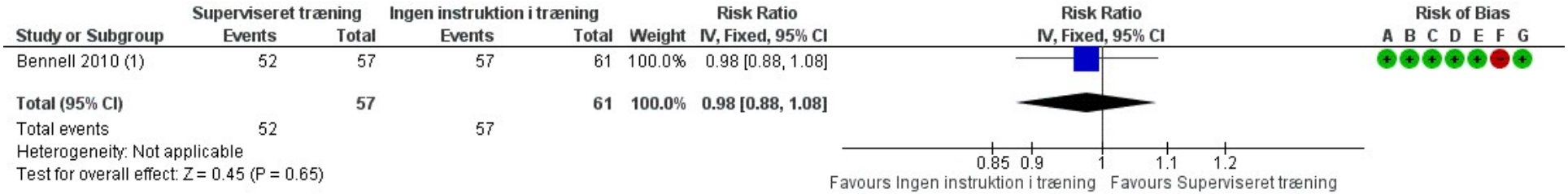


Footnotes
(1) Kontrolbehandlingen er inaktiv ultralydsbehandling
(2) Kontrolgruppen modtager ingen behandling
(3) Kontrolgruppen står på venteliste

Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.8 Frafald, alle årsager (dropout all causes).

Figure 14 (Analysis 2.9)

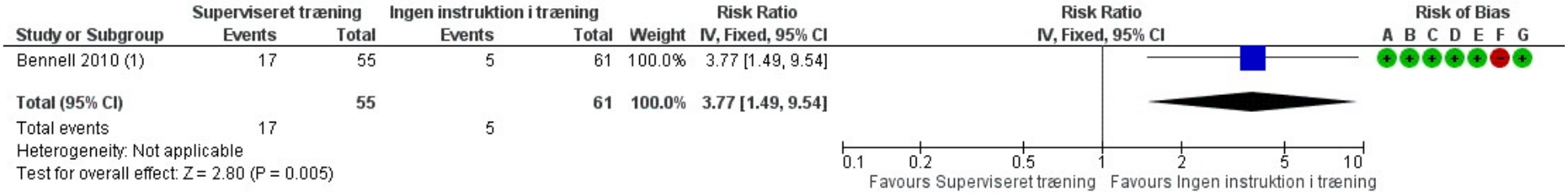


Footnotes
(1) Kontrolbehandlingen er inaktiv ultralydsbehandling

Risk of bias legend
(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.9 Adherence til træning (adherence).

Figure 15 (Analysis 2.10)

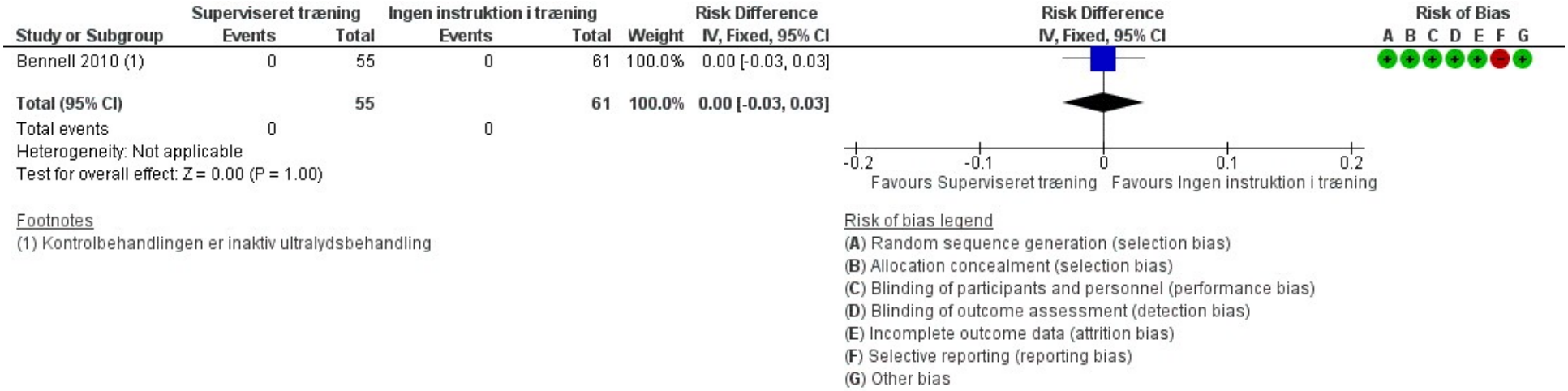


Footnotes
(1) KoKontrolbehandlingen er inaktiv ultralydsbehandling

Risk of bias legend
(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.10 Bivirkninger (adverse events).

Figure 16 (Analysis 2.11)



Forest plot of comparison: 2 Superviseret træning vs ingen instruktion i træning, outcome: 2.11 Alvorlige bivirkninger (serious adverse events).