NKR-41 Superviseret genoptræning versus ingen superviseret genoptræning efter total hofteallo plastik

Review information

Authors

Sundhedsstyrelsen [1]

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Citation example: S. NKR-41 Superviseret genoptræning versus ingen superviseret genoptræning efter total hofteallo plastik. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

Characteristics of studies

Characteristics of included studies

Austin 2017

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Age, mean (SD)*: 61.2 (8.4) ● *Female, N (%)*: 21 (39) ● *BMI, mean (SD)*: 30.4 (5.2) Control ● *Age, mean (SD)*: 62.3 (12.7) ● *Female, N (%)*: 26 (48) ● *BMI, mean (SD)*: 28.2 (7.0) **Included criteria:** Eligible participants were between 18 and 80 years of age undergoing primary, unilateral total hip arthroplasty for osteoarthritis. **Excluded criteria:** Inflammatory or posttraumatic arthritis; A history of septic arthritis of the involved hip; Undergoing revision total hip arthroplasty or conversion total hip arthroplasty with removal of previously implanted components; Requiring discharge to an acute rehabilitation center, skilled nursing facility, convalescent home, or long-term care facility
Interventions	**Intervention Characteristics** Intervention ● *Description*: Formal outpatient physical therapy: 2 weeks of in-home physical therapy followed by formal outpatient therapy, with 2 to 3 weekly sessions for an additional 8 weeks after the surgical procedure. Additionally, patients were provided with a list of suggested physical therapy exercises to be performed at home ● *Dose/duration*: 10 weeks Control ● *Description*: Unsupervised home exercise: 10-week unsupervised home exercise program based on a detailed physical therapy manual that was provided to patients prior to discharge. This manual provided images and written explanations for suggested exercises, which were performed 3 times daily and were graduated from week to week. Exercises were demonstrated to patients prior to hospital discharge ● *Dose/duration*: 10 weeks
Outcomes	*Patientrapporteret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: SF-36, Physical Component Summary (PCS) ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Change from baseline (4 weeks data) *Patientrapporteret funktionsevne, langtidseffekt* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: SF-36, Physical Component Summary (PCS) ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Change from baseline (6-12 months) *Helbredsrelateret livskvalitet, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: SF-36, Physical Component Summary (PCS) ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Change from baseline (4 weeks data) *Smerte (hofterelateret), efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Not reported *Hofteluksation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Reoperation, i interventionsperioden*

	● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Hævelse, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Træningsinducerede skader i bevægeapparatet, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Smerte (ikke hofterelateret), i interventionsperioden* ● **Outcome type**: Continuous Outcome ● **Reporting**: Not reported
Identification	**Sponsorship source:** This project did not receive any financial funding from external sources **Country:** USA **Authors name:** Matthew S. Austin **Institution:** The Rothman Institute, Department of Orthopaedic Surgery, Thomas Jefferson University, Philadelphia, Pennsylvania **Email:** matt.austin@rothmaninstitute.com
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Blinding of outcome assessors	High risk	SUPPORTING ANNOTATIONS: "As all outcomes were patient-reported, outcome assessors were not blinded to treatment group."
Other sources of bias	Unclear risk	SUPPORTING ANNOTATIONS: "A total of 30 patients (28%) crossed over between groups: 20 (37%) from the formal outpatient physical therapy group and 10 (19%) from the unsupervised home exercise group." COMMENTS: The high number of cross over between groups might induce a risk of bias.
Allocation concealment	Low risk	SUPPORTING ANNOTATIONS "...using sequentially numbered sealed envelopes that were opened just prior to the surgical intervention, at which time patients were informed of their group allocation. Separate individuals completed the random allocation sequence, patient enrollment, and outcome assessment."
Selective outcome reporting	Unclear risk	COMMENTS: Many of the outcomes reported are not included in the pre-registration of the study. A bit odd that there is no measure at end of intervention (10 weeks). NCT02687945.
Blinding of participants and personnel	High risk	COMMENTS: Not possible to blind participants or personnel.
Sequence Generation	Low risk	SUPPORTING ANNOTATIONS: "An Excel random number generator (Excel 2013; Microsoft) was used to determine the allocation order using sequentially numbered sealed envelopes that were opened just prior to the surgical intervention, at which time patients were informed of their group allocation."
Incomplete outcome data	Unclear risk	SUPPORTING ANNOTATIONS. "The primary analysis of outcomes for this trial was conducted on an intention-to-treat basis, in that patients were analyzed based on their group allocation and adherence was ignored." COMMENTS: It is stated that intention to treat analysis is performed, but this doesn't match the flow-chart and from the reporting of results, it is not entirely clear how many patients is included in analysis

Beaupre 2014

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Age, mean (SD)*: 51.7 (8.3) ● *Female, N (%)*: 7 (64) Control ● *Age, mean (SD)*: 55.9 (9.9) ● *Female, N (%)*: 3 (30) **Included criteria:** Subjects were less than 65 years old, had recently under-gone primary unilateral THA using a direct lateral (Hard-inge) approach. Subjects lived in the metropolitanarea so that they could attend the program. **Excluded criteria:** Those subjects for whom the surgeon recorded a primary diagnosis of developmental dysplasia of the hip were excluded **Pretreatment:** Intervention group better (lower) on WOMAC at baseline compared to control. The opposite concerning the RAND-36 physical scores.
Interventions	**Intervention Characteristics** Subjects commenced the program after their 6-week appointment and then continued the program until they were approximately 4 months post-operative. Subjects were instructed to use their cane for walking outside of the home until at least 3 months post-operative. Intervention ● *Description*: 10 weeks usual care + outpatient rehab with strength focus. Combined land and water-based training. ● *Dose/duration*: Dose: 2 x 2½ h/wk, external resistance, no info on intensity Control ● *Description*: 10 weeks usual care (Home exercises). Control subjects continued with usual care after their six-week appointment, which varied from the home exercises provided in hospital to communitybased rehabilitation programs. ● *Dose/duration*: a total of four to six sessions at patients' discretion
Outcomes	*Patientrapporteret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: WOMAC function score (omregnet) ● **Range**: 0-100

	● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint ● **Notes**: Obs fodnote Tabel 3 - Angiver "lower is better", men fortolker modsat. Antager der er omregnet til "higher is better", da det passer med fortolkning + forbedring postop. *Patientrapporteret funktionsevne, langtidseffekt* ● **Outcome type**: Continuous Outcome ● **Reporting**: Not reported *Præstationsbaseret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: Mean 6-minute walk test ● **Unit of measure**: meters ● **Direction**: Higher is better ● **Data value**: Endpoint, 4 months *Smerte (hofterelateret), efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: WOMAC mean pain score (omregnet) ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint ● **Notes**: Obs fodnote Tabel 3 - Angiver "lower is better", men fortolker modsat. Antager der er omregnet til "higher is better", da det passer med fortolkning + forbedring postop. *Helbredsrelateret livskvalitet, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: RAND-36 (general health score) ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint ● **Notes**: RAND-36 - same as SF-36. Obs: De angiver "higher is worse" i Tabel 3 fodnote, men modsiger det i fortolkning vedr forbedring. Antager at "higher is better" da det passer med fortolkning samt den (meget veldokumenterede) forventede udvikling postoperativt. *Hofteluksation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Reoperation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Hævelse, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Træningsinducerede skader i bevægeapparatet, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Partially reported ● **Data value**: Endpoint ● **Notes**: All Intervention subjects were able to tolerate the inter-vention and all 11 subjects completed the three-monthprogram without experiencing any adverse events. *Smerte (ikke hofterelateret), i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported
Identification	**Sponsorship source:** This work was supported by a research grant from the Royal Alexandra Hospital Foundation. **Country:** Canada **Authors name:** Lauren A Beaupre 2014
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Blinding of outcome assessors	High risk	Judgement Comment: Blinding not feasible
Other sources of bias	Low risk	Judgement Comment: No reason to suspect other sources of bias.
Allocation concealment	Low risk	Judgement Comment: "Randomization codes were sealed in consecutively numbered opaque envelopes that were opened at hospital discharge."
Selective outcome reporting	Unclear risk	Judgement Comment: No protocol available.
Blinding of participants and personnel	High risk	Judgement Comment: No blinding of participants. "Subjects were evaluated preoperatively, six weeks postoperatively (Pre-intervention), and at four and 12 months postoperatively (Post-intervention) by an evaluator blinded to group allocation."
Sequence Generation	Low risk	Judgement Comment: No baseline imbalances. "Subjects were assigned to Intervention or Control groups using computer-generated randomization."

Incomplete outcome data	Low risk	Judgement Comment: No drop outs or loss to follow-up

Beck 2019

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Age, mean (SD)*: median 59 (IQR 51.1; 69.7) ● *Female, N (%)*: 42 (52.5) ● *BMI, mean (SD)*: median 26.4 (IQR 23.8; 28.6) Control ● *Age, mean (SD)*: median 61.9 (IQR 52.5; 70.0) ● *Female, N (%)*: 51 (63.8) ● *BMI, mean (SD)*: median 25.9 (IQR 23.7; 30.4) **Included criteria:** The inclusion criteria were general medical eligibility for hip rehab sports therapy, a stable implant, age 18 years or older, and written consent to participate in the study **Excluded criteria:** The exclusion criteria included acute or chronic diseases and severe pain in the affected hip joint
Interventions	**Intervention Characteristics** Intervention ● *Description*: Following post-acute rehabilitation, the patients of the intervention group received hip rehab sports therapy once a week at a rehab sports therapy facility close to their home. For this purpose, they were issued a prescription for 50 units, each of 45 min duration ● *Dose/duration*: 6 weeks to 1 year post THR Control ● *Description*: No rehab ● *Dose/duration*: up to 12 months
Outcomes	*Patientrapporteret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: WOMAC ADL (omregnet) ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint (6 months data) *Smerte, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: WOMAC pain (omregnet) ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint (6 months data) *Helbredsrelateret livskvalitet, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: EQ-5D index score ● **Range**: 0-1 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint (12 months) *Patientrapporteret funktionsevne, langtidseffekt* ● **Outcome type**: Continuous Outcome ● **Reporting**: Not reported *Hofteluksation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Reoperation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Hævelse, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Træningsinducerede skader i bevægeapparatet* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Smerte (ikke hofterelateret), i interventionsperioden* ● **Outcome type**: Continuous Outcome ● **Reporting**: Not reported
Identification	**Sponsorship source:** Research funding was provided by the German Osteoarthritis Help Foundation (Deutsche Arthrose Hilfe). **Country:** Germany **Authors name:** Heidrun Beck **Institution:** University Center of Orthopedic and Trauma Surgery, TU Dresden, Section Sports Medicine and Rehabilitation, Dresden:
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Blinding of outcome assessors	High risk	COMMENTS: Blinding not mentioned. Critical outcome are patient-reported
Other sources of bias	Low risk	COMMENTS: No other sources of bias found
Allocation concealment	Unclear risk	SUPPORTING ANNOTATIONS: "Patients were randomized, using a randomization list (without blinding), into the following two groups:"
Selective outcome reporting	Low risk	COMMENTS: Outcomes reported matches the study registration (NCT03584451)
Blinding of participants and personnel	High risk	COMMENTS: Not possible to blind participants and personnel
Sequence Generation	Unclear risk	SUPPORTING ANNOTATIONS: "Patients were randomized, using a randomization list"
Incomplete outcome data	High risk	SUPPORTING ANNOTATIONS: "The high drop-out rate resulted in incomplete datasets, making it difficult to perform the planned modified ITT analysis so that a single imputation had to be performed."

Galea 2008

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Age, mean (SD)*: 68.6 (9.7) ● *Female, N (%)*: 8 (72.7) ● *BMI, mean (SD)*: 28.1 (4.5) Control ● *Age, mean (SD)*: 66.6 (7.9) ● *Female, N (%)*: 8 (66.7) ● *BMI, mean (SD)*: 29.6 (5.2) **Included criteria:** Uncomplicated, unilateral THR surgery for the primary diagnosis of OA of the hip. Inclusion criteria for the study included the ability to walk at least 45m independently with a mobility aid, independence insit-to-stand transfer, and the ability to adequately comprehend written and verbal instructions. Patients had been instructed by their surgeon that they were permitted to weight bear as tolerated on the operated hip. **Excluded criteria:** Exclusion criteria were uncontrolled systemic disease, a preexisting neurologic or other orthopedic condition affecting walking, more than 4 weeks physiotherapy postsurgery, and revision surgery or significant postoperative complications, such as significant residual pain or wound infection.
Interventions	**Intervention Characteristics** Intervention ● *Description*: The exercise intervention program consisted of 7 exercises that focused on functional tasks, daily living tasks, balance, strength, and endurance. participants in the center-based group were provided with advice about how to progress the exercises. The maximum time period for each exercise was 5 minutes, which included a rest period if required. Participants were instructed to stop an exercise if they felt pain or were tired. ● *Dose/duration*: 2 weekly sessions for 8 weeks (16) Control ● *Description*: The exercise intervention program consisted of 7 exercises that focused on functional tasks, daily living tasks, balance, strength, and endurance. Those in the home-based group were not given any further instruction on progressing or modifying the exercises. The maximum time period for each exercise was 5 minutes, which included a rest period if required. Participants were instructed to stop an exercise if they felt pain or were tired. ● *Dose/duration*: No supervision, instruction in an illustrated guide
Outcomes	*Patientrapporteret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: WOMAC function ● **Range**: 0-68 ● **Unit of measure**: Points ● **Direction**: Lower is better ● **Data value**: Endpoint *Præstationsbaseret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: 6 min walk test ● **Unit of measure**: meter ● **Direction**: Higher is better *Smerte (hofterelateret), efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: WOMAC pain ● **Range:** 0-100 ● **Unit of measure**: Points ● **Direction**: Lower is better ● **Data value**: Endpoint *Helbredsrelateret livskvalitet, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: The Assessment of Quality of Life (AQoL) ● **Range**: 0-1 ● **Unit of measure**: Points ● **Direction**: Higher is better

	Patientrapporteret funktionsevne, langtidseffekt ● **Outcome type**: Continuous Outcome ● **Reporting**: Not reported *Hofteluksation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Reoperation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Hævelse, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Træningsinducerede skader, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Smerte (ikke hofterelateret), i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported
Identification	**Sponsorship source:** Supported by Arthritis Australia and the National Arthritis and Musculoskeletal Health Initiative. **Country:** Australia **Authors name:** Galea, 2008
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Blinding of outcome assessors	High risk	COMMENTS: No information, but some outcomes are self-reported
Other sources of bias	Low risk	COMMENTS: No reasons to suspect other sources of bias.
Allocation concealment	Unclear risk	COMMENTS: No information on allocation concealment
Selective outcome reporting	Low risk	COMMENTS: No protocol, however no reasons to suspect introduction of selected outcome reporting.
Blinding of participants and personnel	High risk	COMMENTS: Not feasible to blind participants, NI about blinding of personnel.
Sequence Generation	High risk	COMMENTS: No information on randomisation method used. Likely baseline imbalance (pain)
Incomplete outcome data	Unclear risk	COMMENTS: No flowchart nor info about attrition or excluding of paticipants in analysis.

Heiberg 2012

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Female N (%)*: 21 (60) ● Age, mean (95% CI): 65 (63; 68) ● *HOOS ADL, mean (95% CI)*: 81 (77;86) ● BMI, mean (95% CI): 27 (26; 29) Control ● *Female N (%)*: 14 (42) ● Age, mean (95% CI): 66 (63; 69) ● *HOOS ADL, mean (95% CI)*: 87 (84;90) ● BMI, mean (95% CI): 27 (25, 28) **Included criteria:** Diagnosis of OA of the hip joint and residence close to the hospital so as to be able to attend training sessions, i.e., within a radius of approximately 30 km. **Excluded criteria:** They were excluded if they had OA in a knee or the contralateral hip that restricted theirwalking, a neurologic disease, dementia, heart disease, drug abuse, and inadequate ability to read and understand Norwegian **Pretreatment:** More female participants and worse HOOS ADL score (p<0.05) at baseline in intervention group compared to control. Results are adjusted for gender and baseline values (Table 4)
Interventions	**Intervention Characteristics** Intervention ● *Description*: The program was performed in groups of 2 to 8 patients, and the group was led by a physiotherapist. 70 minutes. The program was based on 2 main principles: to train neuromuscular functioning by doing several repetitions of different ambulatory tasks and activities, and to relearn more adequate movement patterns from guidance and feedback of the physiotherapist ● *Number of supervised sessions*: 12 sessions of 70 min over 6 weeks Control ● *Description*: The control group did not attend any supervised physiotherapy programs during the same time period, but were encouraged to continue with the exercises they had learned in the hospital or during their rehabilitation stay, and to keep generally active. ● *Number of supervised sessions*: 0
Outcomes	*Patientrapporteret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: HOOS ADL (adjusted) ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better

	● **Data value**: Endpoint ● **Notes**: Adjusted values *Præstationsbaseret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: 6 Minute Walk Test ● **Unit of measure**: Meter ● **Direction**: Higher is better ● **Data value**: Endpoint (5 months) ● **Notes**: Adjusted values *Smerte (hofterelateret), efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Scale**: HOOS Pain ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint ● **Notes**: Adjusted values *Helbredsrelateret livskvalitet, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: HOOS QOL ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint ● **Notes**: Adjusted values *Patientrapporteret funktionsevne, langtidseffekt* ● **Outcome type**: Continuous Outcome ● **Reporting**: Not reported *Hofteluksation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Fully reported ● **Data value**: Endpoint *Reoperation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Partially reported ● **Data value**: Endpoint ● **Notes**: Asked about prosthetic loosening, DVT, Thrombophlebitis *Hævelse, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Træningsinducerede skader, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Partially reported ● **Data value**: Endpoint ● **Notes**: No info on how it was measured. Only reported for intervention group *Smerte (ikke hofterelateret), i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported
Identification	**Sponsorship source:** Supported by the South-Eastern Norway Regional Health Authority **Country:** Norway **Authors name:** Heiberg, 2012
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Blinding of outcome assessors	High risk	Judgement Comment: High risk of bias for self-reported measures (critical outcome). The assessments were performed by a single physiotherapist, who was blinded for group allocation
Other sources of bias	Low risk	Judgement Comment: No reasons to suspect other sources of bias.
Allocation concealment	Low risk	Judgement Comment: Concealed using closed, opaque, sealed and mixed envelopes (Minns Lowe, 2015)
Selective outcome reporting	Low risk	Judgement Comment: No apparent problem (Minns Lowe, 2015)
Blinding of participants and personnel	High risk	Judgement Comment: Not feasible to blind
Sequence Generation	Low risk	Judgement Comment: The patients were randomized to either the training group orthe control group receiving no physiotherapy by drawing an opaque envelope containing a note assigning them to one of the groups
Incomplete outcome data	Low risk	Judgement Comment: < 10% drop out in both groups. Last observation carried forward to obtain full data set in the analysis. (Minns Lowe, 2015)

Mikkelsen 2014

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Female N (%):* 14 (44) ● *Age, mean (SD):* 64.8 (8) ● *BMI, mean (SD):* 27.5 (4) ● *Sit-to-stand test (repetitions in 30sec), mean (SD):* 11.56 (3.9) Control ● *Female N (%)*: 12 (40) ● *Age, mean (SD):* 65.1 (10) ● *BMI, mean (SD):* 25.4 (4) ● *Sit-to-stand test (repetitions in 30sec), mean (SD):* 11.90 (4.6) **Included criteria:** Inclusion criteria were: Primary unilateral THR for hip osteoarthrosis (OA), preoperative HOOS ADL67, age>18 years,residence within 30 km from the hospital and willing to participatein training twice a week for 10 weeks. **Excluded criteria:** Exclusion criteria were: Resurfacing hip implant,body mass index (BMI)>35, pre-planned supervised rehabilitation,pre-planned contralateral THR within 6 months, inability to speakor read Danish and mental or physical conditions impeding theintervention
Interventions	**Intervention Characteristics** Intervention ● *Description*: Strength training (ST) + home-based exercises ● *Dose/duration*: ST 2/wk for 10 weeks, 10-12RM - 8RM (60-80%) and home-based exercises 5 days a week Control ● *Description*: Home-based exercises: The standardised exercise program consisted of unloaded exercises in the movement directions: hip flexion, -extension, -abduction and knee flexion/extension. One set of 10 repetitions twice a day in their maximum possible range of motion ● *Dose/duration*: One set of 10 repetitions twice a day in their maximum possible range of motion, 7 days a week.
Outcomes	*Patientrapporteret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: HOOS ADL ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint *Præstationsbaseret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: Rejse/sættes sig test (30 sek) ● **Unit of measure**: Antal oprejsninger på 30 sek ● **Direction**: Higher is better ● **Data value**: Endpoint *Smerte (hofterelateret), efter endt behandling* ● **Outcome type**: ContinuousOutcome ● **Reporting**: Fully reported ● **Scale**: HOOS Pain ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint *Helbredsrelateret livskvalitet, efter endt behandling* ● **Outcome type**: ContinuousOutcome ● **Reporting**: Fully reported ● **Scale**: HOOS QOL ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint *Hofteluksation, i interventionsperioden* ● **Outcome type**: AdverseEvent ● **Reporting**: Fully reported ● **Data value**: Endpoint *Patientrapporteret funktionsevne, langtidseffekt* ● **Outcome type**: Continuous Outcome ● **Reporting**: Not reported *Reoperation, i interventionsperioden* ● **Outcome type**: AdverseEvent ● **Reporting**: Not reported ● **Data value**: Endpoint *Hævelse, i interventionsperioden* ● **Outcome type**: AdverseEvent ● **Reporting**: Not reported *Træningsinducerede skader i bevægeapparatet, i interventionsperioden* ● **Outcome type**: AdverseEvent ● **Reporting**: Fully reported ● **Data value**: Endpoint

	Smerte (ikke hofterelateret), i interventionsperioden ● **Outcome type**: AdverseEvent ● **Reporting**: Partially reported ● **Data value**: Endpoint
Identification	**Sponsorship source:** The study was supported by grants from The Health Research Fundof Central Denmark Region, The Danish Rheumatism Association(R70-A1104), The Association of Danish Physiotherapists,The Health Foundation and Aase and Ejnar Danielsens Foundation(10-000067). Thestudy sponsors had no role in the study design,collection, analysis and interpretation of data; nor in the writing ofthe manuscript or the decision to submit the manuscript forpublication **Country:** Danmark **Authors name:** Mikkelsen, 2014
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Blinding of outcome assessors	High risk	Judgement Comment: High risk of bias for self-reported measures (critical outcome). Outcome assessores were blinded
Other sources of bias	Low risk	Judgement Comment: None detected
Allocation concealment	Low risk	SUPPORTING ANNOTATION: "Sequence in permuted blocks with equal numbers of “intervention” and “control” assignments was obtained using a simple “shuffling envelope” procedure before study initiation by a secretary not involved in the study."
Selective outcome reporting	Low risk	Judgement Comment: None detected. pre-registered at ClinicalTrials.gov (NCT01214954).
Blinding of participants and personnel	High risk	Judgement Comment: Not feasible to blind.
Sequence Generation	Low risk	SUPPORTING ANNOTATION: "Block randomisationwas performed using random block sizes of four or six patients. Stratification for contralateral THR was performed to ensure an equal distribution between the groups. Sequence in permuted blocks with equal numbers of “intervention” and “control” assignments was obtained using a simple “shuffling envelope” procedure before study initiation by a secretary not involved in the study."
Incomplete outcome data	Low risk	Judgement Comment: Small and equal drop out rate i the groups.

Monaghan 2017

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Age, mean (SD)*: 68 (8) ● *Female, N (%)*: 12 (37) Control ● *Age, mean (SD)*: 69 (9) ● *Female, N (%)*: 8 (26) **Included criteria:** Patients who had undergone primary THR for osteoarthritis, aged≥50years, able to read and understand instructions in English, willing to attend classes twice weekly for 6 weeks, and willing to participate in an exercise pro-gramme without physical assistance **Excluded criteria:** Medical instability, underlying terminal disease and suspi-cion of infection following joint replacement. Patients with previous THR or total knee replacement were not excluded
Interventions	**Intervention Characteristics** Intervention ● *Description*: During the functional exercise classes, the participants were taught 12 exercises by the supervising physiotherapist. The physiotherapist moni-tored form and exercise intensity, progressing the exercises as necessary. ● *Dose/duration*: 12 to 18 weeks postoperative. Patients attended classes twice weekly for 6 weeks, and were not given any additional exercises as a home exercise programme. Each session was 35 minutes in length. Control ● *Description*: usual care: provision of an educational and immediate postoperative exercise booklet on admission ● *Dose/duration*: 6 weeks
Outcomes	*Patientrapporteret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: WOMAC function ● **Range**: 0-68 ● **Unit of measure**: Points ● **Direction**: Lower is better ● **Data value**: Endpoint (18 weeks) *Præstationsbaseret funktionsevne, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: 6 MWT (meter) ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint (18 weeks) *Smerte (hofterelateret), efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: WOMAC pain ● **Range**: 0-20

	● **Unit of measure**: Points ● **Direction**: Lower is better ● **Data value**: Endpoint (18 weeks) *Helbredsrelateret livskvalitet, efter endt behandling* ● **Outcome type**: Continuous Outcome ● **Reporting**: Fully reported ● **Scale**: SF-12 Physical Component Summary (PCS) ● **Range**: 0-100 ● **Unit of measure**: Points ● **Direction**: Higher is better ● **Data value**: Endpoint *Hofteluksation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Reoperation, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Hævelse, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported *Træningsinducerede skader i bevægeapparatet, i interventionsperioden* ● **Outcome type**: Adverse Event ● **Reporting**: Not reported Smerte (ikke hofterelateret), *i interventionsperioden* ● **Outcome type**: Continuous Outcome ● **Reporting**: Not reported
Identification	**Sponsorship source:** This study was funded by a research training fel-lowship for health care professional's award 2012–2014 as part of a PhD programme **Country:** Ireland **Authors name:** B.Monaghan **Institution:** Department of Physiotherapy, Our Lady's Hospital, Navan, Co Meath, Ireland **Email:** brenda.monaghan@hse.ie **Address:** Department of Physiotherapy, Our Lady's Hospital, Navan, Co Meath, Ireland
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Blinding of outcome assessors	High risk	SUPPORTING ANNOTATIONS: "All outcome measurements were recorded 12 weeks after surgery (baseline) and 18 weeks after surgery by the principal investigator, who was blinded to group allocation." COMMENTS: Critical outcome is self-reported The outcome assessor was blinded, but the critical outcome was patient-reported
Other sources of bias	Low risk	COMMENTS: No other sources of bias found
Allocation concealment	Low risk	SUPPORTING ANNOTATIONS: "Concealed allocation was achieved using sequentially numbered envelopes that were adminis- tered by an independent third party (physiotherapy manager)."
Selective outcome reporting	Low risk	COMMENTS:The outcomes matches the pre-registration (NCT01683201), despite a real time ultrasound imaging of the gluteus medius muscles which is pre-registered but nok mentioned in the paper
Blinding of participants and personnel	High risk	SUPPORTING ANNOTATIONS: "Patients were asked not to discuss their group allocation, and were asked not to disclose their group allocation until the final outcome assessments had been completed." COMMENTS: Not possible to blind participants and personnel involved in the intervention, however efforts were made to blind other personnel.
Sequence Generation	Low risk	SUPPORTING ANNOTATIONS: "Randomisation was achieved using a computer-generated random number table."
Incomplete outcome data	Low risk	COMMENTS: For most outcomes there was no attrition in either group

Footnotes

Characteristics of excluded studies

Barker 2013

Reason for exclusion	Wrong intervention

Barker 2013a

Reason for exclusion	Abstract only

Barker 2013b

Reason for exclusion	Wrong intervention

Chughtai 2018

Reason for exclusion	Wrong study design

Coulter 2017a

Reason for exclusion	Wrong intervention

Eichler 2019

Reason for exclusion	Wrong intervention

Elibol 2016

Reason for exclusion	Abstract only

Elibol 2018

Reason for exclusion	Abstract only

Fatoye 2020

Reason for exclusion	Wrong study design

Garvin 2018

Reason for exclusion	Abstract only

Hansen 2019

Reason for exclusion	Wrong study design

Jogi 2015

Reason for exclusion	Wrong intervention

Klugarova 2016

Reason for exclusion	Wrong study design

Mitrovic 2017

Reason for exclusion	Wrong comparator

Monaghan 2015

Reason for exclusion	Abstract only

Monaghan 2017a

Reason for exclusion	Abstract only

Monticone 2014

Reason for exclusion	Wrong intervention

Monticone 2014a

Reason for exclusion	Wrong comparator

Morishima 2014

Reason for exclusion	Wrong intervention

Morishima 2014a

Reason for exclusion	Wrong intervention

Nankaku 2016

Reason for exclusion	Wrong comparator

Nelson 2020

Reason for exclusion	Wrong intervention

Okoro 2016

Reason for exclusion	Wrong comparator

Suetta 2004

Reason for exclusion	Wrong comparator

Umpierres 2014

Reason for exclusion	Wrong intervention

Wijnen 2018

Reason for exclusion	Wrong study design

Wijnen 2018a

Reason for exclusion	Wrong study design

Winther 2018

Reason for exclusion	Wrong comparator

Wu 2019

Reason for exclusion	Wrong study design

Footnotes

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Wijnen 2018a

Wijnen, Annet; Bouma, Sjoukje E.; Seeber, Gesine H.; van der Woude,Lucas H V.; Bulstra, Sjoerd K.; Lazovic, Djordje; Stevens, Martin; van den Akker-Scheek, Inge. The therapeutic validity and effectiveness of physiotherapeutic exercise following total hip arthroplasty for osteoarthritis: A systematic review. PLoS ONE [Electronic Resource] 2018;13(3):e0194517. [DOI:]

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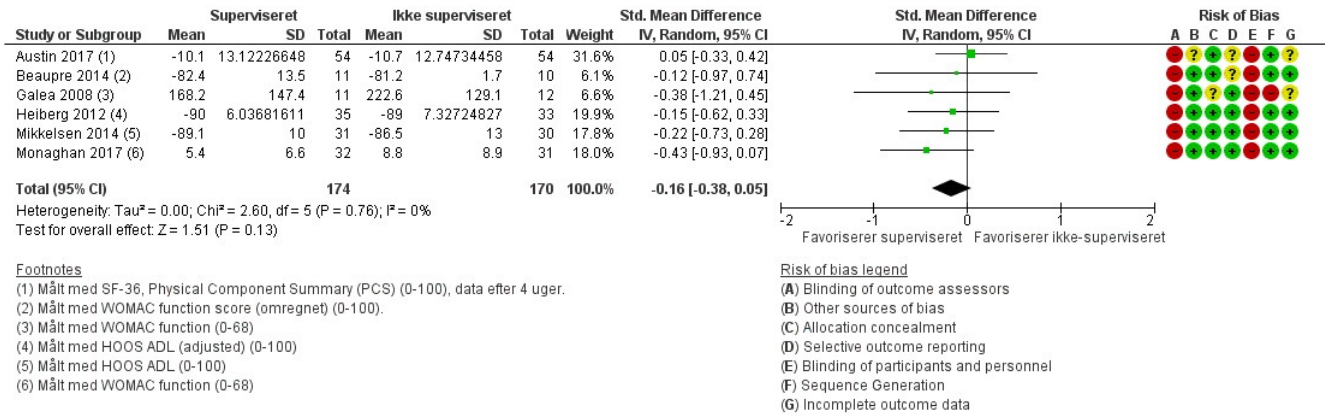
Data and analyses

1 Superviseret vs ingen superviseret genoptræning

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Patientsrapporteret funktionsevne, efter endt behandling	6	344	Std. Mean Difference (IV, Random, 95% CI)	-0.16 [-0.38, 0.05]
1.2 Patientrapporteret funktionsevne, langtidseffekt, længste follow-up (6-12 måneder efter endt behandling)	5	389	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.29, 0.11]
1.3 Præstationsbaseret funktionsevne målt ved fysisk test, efter endt behandling	5	235	Std. Mean Difference (IV, Random, 95% CI)	-0.37 [-0.79, 0.05]
1.3.1 6 minutter gangtest	4	173	Std. Mean Difference (IV, Random, 95% CI)	-0.36 [-0.93, 0.20]
1.3.2 Rejse/sætte sig test	1	62	Std. Mean Difference (IV, Random, 95% CI)	-0.31 [-0.81, 0.19]
1.4 Smerte (relateret til hofteregionen), efter endt behandling	6	366	Std. Mean Difference (IV, Random, 95% CI)	-0.30 [-0.50, -0.09]
1.5 Helbredsrelateret livskvalitet, efter endt behandling	7	473	Std. Mean Difference (IV, Random, 95% CI)	-0.10 [-0.28, 0.08]
1.6 Hofteluksation, i interventionsperioden	2	141	Risk Ratio (M-H, Random, 95% CI)	0.32 [0.01, 7.71]
1.7 Reoperation, i interventionsperioden	2	141	Risk Ratio (M-H, Random, 95% CI)	0.32 [0.01, 7.71]
1.8 Træningsinducerede skader i bevægeapparatet, i interventionsperioden	3	162	Risk Ratio (M-H, Random, 95% CI)	2.92 [0.12, 69.43]
1.9 Smerter der ikke er hofterelateret, i interventionsperioden	1	73	Risk Difference (M-H, Fixed, 95% CI)	0.03 [-0.05, 0.10]
1.10 Hævelse, i interventionsperioden	0		Risk Difference (M-H, Fixed, 95% CI)	No totals

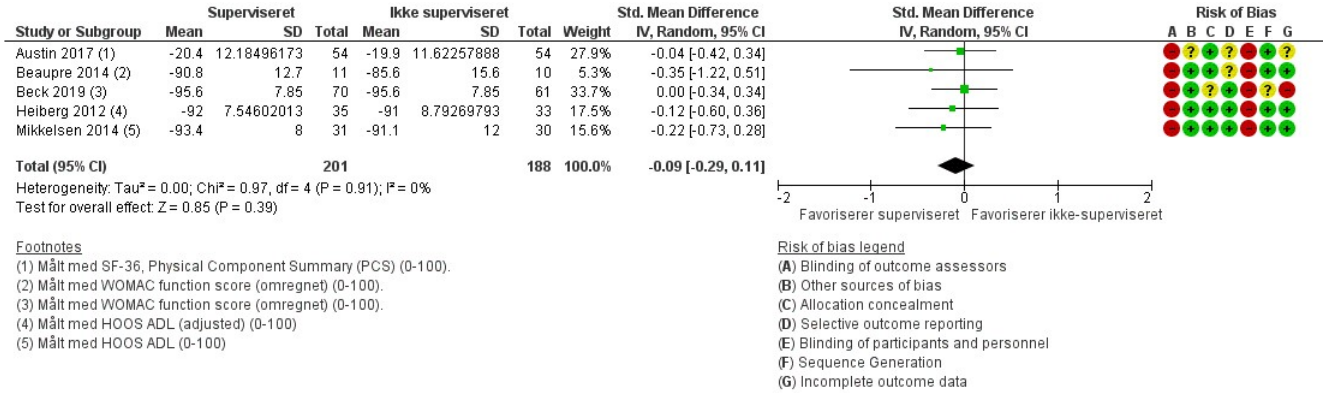
Figures

Figure 1 (Analysis 1.1)



Forest plot of comparison: 1 Intervention vs Control, outcome: 1.1 Patientsrapporteret funktionsevne, efter endt behandling.

Figure 2 (Analysis 1.2)

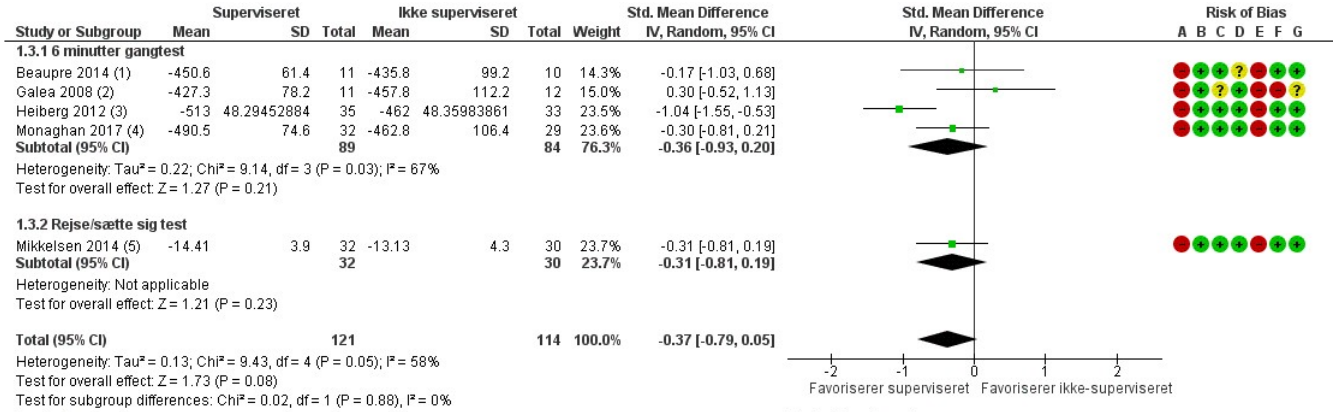


Footnotes
(1) Målt med SF-36, Physical Component Summary (PCS) (0-100).
(2) Målt med WOMAC function score (omregnet) (0-100).
(3) Målt med WOMAC function score (omregnet) (0-100).
(4) Målt med HOOS ADL (adjusted) (0-100)
(5) Målt med HOOS ADL (0-100)

Risk of bias legend
(A) Blinding of outcome assessors
(B) Other sources of bias
(C) Allocation concealment
(D) Selective outcome reporting
(E) Blinding of participants and personnel
(F) Sequence Generation
(G) Incomplete outcome data

Forest plot of comparison: 1 Intervention vs Control, outcome: 1.2 Patientrapporteret funktionsevne, langtidseffekt, længste follow-up (6-12 måneder efter endt behandling).

Figure 3 (Analysis 1.3)

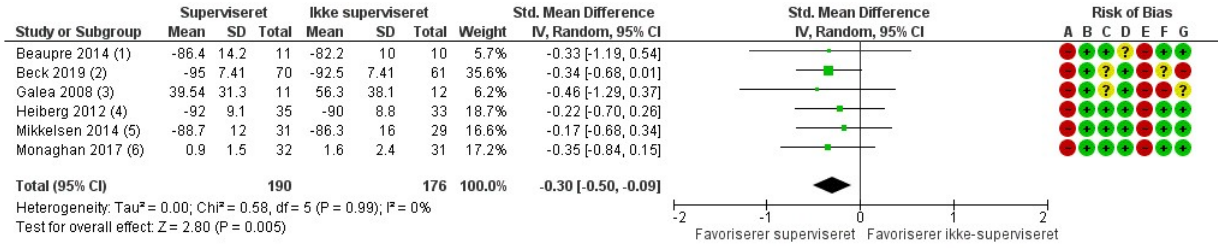


Footnotes
(1) Målt med 6 *minute walking test* (6MWT) (meter).
(2) Målt med 6 *minute walking test* (6MWT) (meter).
(3) Målt med *minute walking test* (6MWT) (meter).
(4) Målt med 6 *minute walking test* (6MWT) (meter).
(5) Målt med Rejse/sætte sig test (30 sek, reps).

Risk of bias legend
(A) Blinding of outcome assessors
(B) Other sources of bias
(C) Allocation concealment
(D) Selective outcome reporting
(E) Blinding of participants and personnel
(F) Sequence Generation
(G) Incomplete outcome data

Forest plot of comparison: 1 Superviseret vs ingen superviseret genoptræning, outcome: 1.3 Præstationsbaseret funktionsevne målt ved fysisk test, efter endt behandling.

Figure 4 (Analysis 1.4)

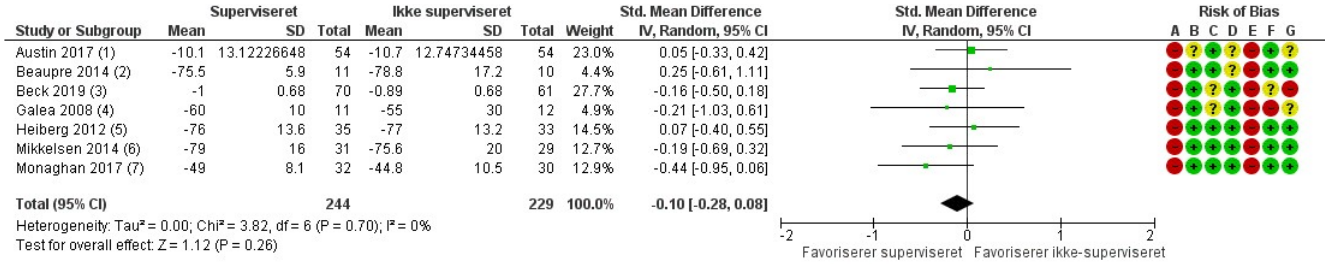


Footnotes
(1) Målt med WOMAC pain score (omregnet) (0-100). Ingen information om intensitet af styrketræning
(2) Målt med WOMAC pain (omregnet) (0-100). Mean imputeret fra median, SD fra IQR. Passiv...
(3) Målt med WOMAC pain (0-100).
(4) Målt med HOOS Pain (0-100)
(5) Målt med HOOS Pain (0-100)
(6) Målt med WOMAC pain (0-20). Opstart genoptræning 12-18 uger postoperativt. Passiv...

Risk of bias legend
(A) Blinding of outcome assessors
(B) Other sources of bias
(C) Allocation concealment
(D) Selective outcome reporting
(E) Blinding of participants and personnel
(F) Sequence Generation
(G) Incomplete outcome data

Forest plot of comparison: 1 Superviseret vs ingen superviseret genoptræning, outcome: 1.4 Smerte (relateret til hofteregionen), efter endt behandling.

Figure 5 (Analysis 1.5)

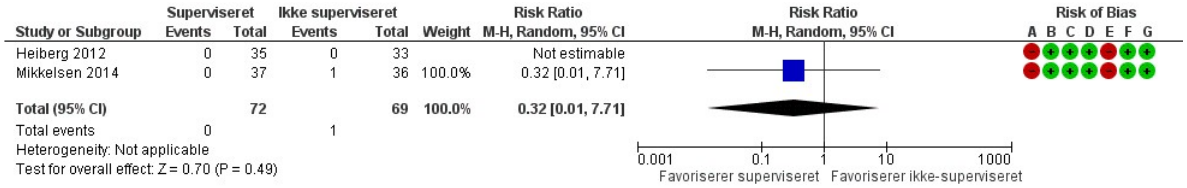


Footnotes
(1) Målt med SF-36, Physical Component Summary (PCS) (0-100). Change score efter 4 uger.
(2) Målt med RAND-36 (general health score) (0-100)
(3) Målt med EQ-5D index score (0-1)
(4) Målt med The Assessment of Quality of Life (AQoL) (0-1)
(5) Målt med HOOS QOL (0-100)
(6) Målt med HOOS QOL (0-100)
(7) Målt med SF-36, Physical Component Summary (PCS) (0-100)

Risk of bias legend
(**A**) Blinding of outcome assessors
(**B**) Other sources of bias
(**C**) Allocation concealment
(**D**) Selective outcome reporting
(**E**) Blinding of participants and personnel
(**F**) Sequence Generation
(**G**) Incomplete outcome data

Forest plot of comparison: 1 Intervention vs Control, outcome: 1.5 Helbredsrelateret livskvalitet, efter endt behandling.

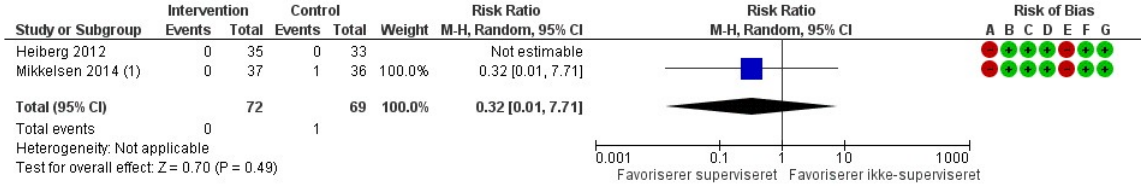
Figure 6 (Analysis 1.6)



Risk of bias legend
(**A**) Blinding of outcome assessors
(**B**) Other sources of bias
(**C**) Allocation concealment
(**D**) Selective outcome reporting
(**E**) Blinding of participants and personnel
(**F**) Sequence Generation
(**G**) Incomplete outcome data

Forest plot of comparison: 1 Intervention vs Control, outcome: 1.6 Hofteluksation, i interventionsperioden.

Figure 7 (Analysis 1.7)

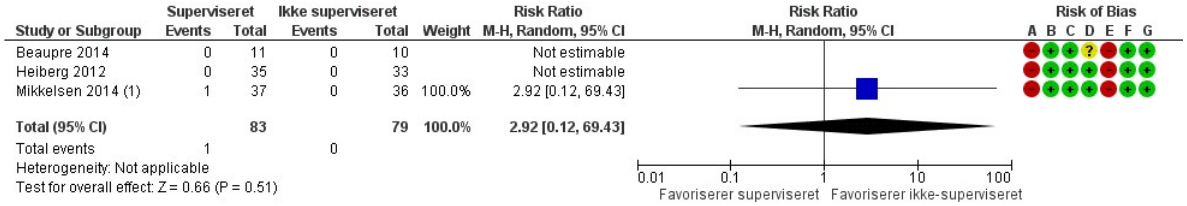


Footnotes
(1) Reoperation due to deep infection.

Risk of bias legend
(**A**) Blinding of outcome assessors
(**B**) Other sources of bias
(**C**) Allocation concealment
(**D**) Selective outcome reporting
(**E**) Blinding of participants and personnel
(**F**) Sequence Generation
(**G**) Incomplete outcome data

Forest plot of comparison: 1 Intervention vs Control, outcome: 1.7 Reoperation, i interventionsperioden.

Figure 8 (Analysis 1.8)

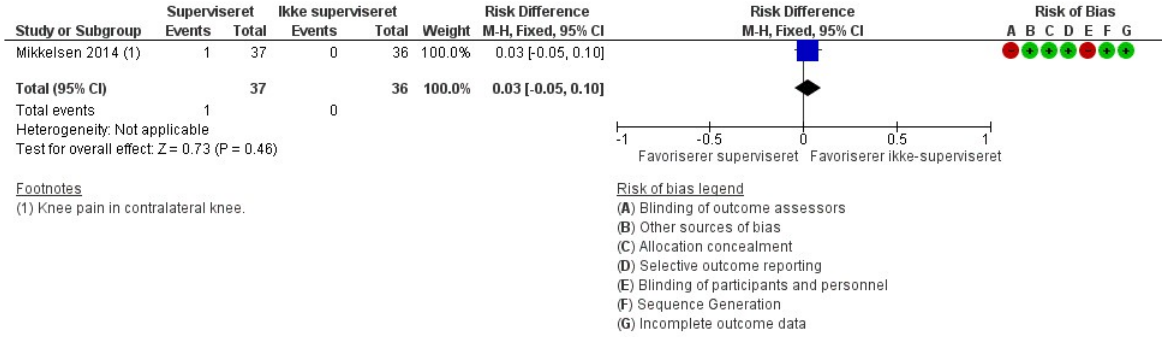


Footnotes
(1) Kneepain in the contra-lateral leg

Risk of bias legend
(**A**) Blinding of outcome assessors
(**B**) Other sources of bias
(**C**) Allocation concealment
(**D**) Selective outcome reporting
(**E**) Blinding of participants and personnel
(**F**) Sequence Generation
(**G**) Incomplete outcome data

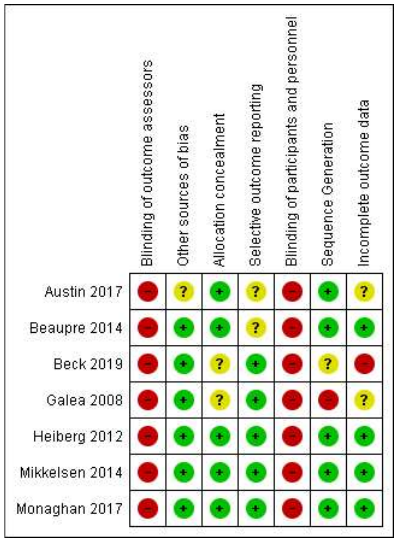
Forest plot of comparison: 1 Intervention vs Control, outcome: 1.8 Træningsinducerede skader i bevægeapparatet, i interventionsperioden.

Figure 9 (Analysis 1.9)



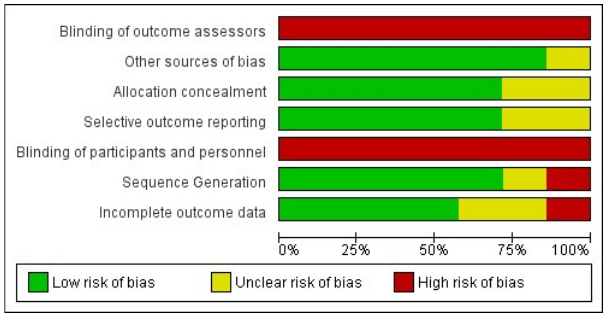
Forest plot of comparison: 1 Superviseret vs ingen superviseret genoptræning, outcome: 1.9 Smerter der ikke er hofterelateret, i interventionsperioden.

Figure 10



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

Figure 11



Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.