NKR 50_PICO 4_vestibulær rehabilitering til patienter med vestibulær dysfunktion

Review information

Authors

Sundhedsstyrelsen[1]

[1][Empty affiliation]

Citation example: S. NKR 50_PICO 4_vestibulær rehabilitering til patienter med vestibulær dysfunktion. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

Characteristics of studies

Characteristics of included studies

Cohen 2002

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Included criteria:** The subjects were 31 patients scheduled for resectionof unilateral acoustic neuromas by a neurotologist inthe faculty of our department. Each subject's diag- nosis was based on history, clinical examination, objective audiometric and vestibulometric tests andMRI findings. **Excluded criteria:** Not reported **Pretreatment:** Preoperatively, the groups did not differ significantly and subjects did not complain of vertigo **No mention of consecutive asignation. One physician reffered nearly all participants:**
Interventions	**Intervention Characteristics** Intervention 1 ● *Description*: Subjects received head movement exercisesduring all treatments. On POD 1 subjects receivedpassive range of motion (PROM) to the head andneck in yaw, roll and pitch, in that order, while lyingsemi-reclined in bed. Yaw to the normal side wasgiven through the full extent of PROM. To theoperated side, yaw was limited by the size of thedressing. On PODs 2 and 3, PROM was also given, but with the subject's head away from the bed so thatPROM could be given through the full range. Subjectsthen performed active head rotations, as rapidlyas possible. On POD 2 this program was usuallyperformed in bed while sitting up. If tolerated, how-ever, it was performed in a chair near the bed. OnPOD 3 to the day of discharge, treatment startedwith subjects

	sitting in the chair. The program onPOD 3 was augmented with trunk rotations in all planes in space combined with upper limb reachingmovements that required the subject to turn the headto look towards an object while reaching, and walkingif tolerated. On PODs 4 and 5 the programincluded active head motion exercises while sittingand walking progressively longer distances, from 3 to10 m, as tolerated, with augmented head rotations inpitch and yaw. This exercise program was the moststrenuous that most subjects could tolerate in the rstpostoperative week ● *Duration*: Five days ● *Lenght of follow-up after end of intervention*: Week 13 ● Kontrol ● *Description*: Overseen while in bed or while sitting in a bedside chair. Each control subject received attention from a laboratory technician, who was told that paying attention to the subject would benet that individual by encouraging him:her to be alert and by providing psychological support.The technician conversed with the subject but did not handle him/her or in anyway encourage additional head movement. ● *Duration*: Five days ● *Lenght of follow-up after end of intervention*: Week 13
Outcomes	● Ingen relevante outcome
Identification	**Sponsorship source:** This work was supported by the Clayton Foundation for Research and NIH grant DC01732. **Country:** USA **Setting:** Tertiary care center **Comments:** **Authors name:** Helen S. Cohen **Institution:** Department of Otorhinolaryngolog **Email:** hcohen@bcm.tmc.ed **Address:** Department of Otorhinolaryngology Baylor College of Medicine OneBaylor Plaza Houston Texas 77030USA
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "Subjects were randomly assigned to one of two post- operative treatment groups: exercise or control." Judgement Comment: It is unclear how the randomination was performed
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: Not described
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: No blinding of participants
Blinding of outcome assessment (detection bias)	Unclear risk	Judgement Comment: Not described
Incomplete outcome data (attrition bias)	Low risk	na
Selective reporting (reporting bias)	Low risk	na
Other bias	Low risk	na

Enticott 2008

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention Kontrol Overall **Included criteria:** All public patients attending for vestibular function testing and who fulfilled the study inclusion requirements (i.e. adults reporting significant vestibular symptoms negatively affecting daily life, and who also had objective evidence of vestibular dysfunction) were invited to participate in this study- if the patient agreed **Excluded criteria:** 4 subjects were excluded because of the following reasons: (1) one had insufficient written and spoken English and was unable to complete study questionnaires; (2) another had a knee replacement operation in the study period; (3) another had assessments performed outside the study timelines; (4) the fourth subject was erroneously enrolled into the study as no objective evidence of vestibular dysfunction had actually been noted in the initial assessment. **Pretreatment:** ingen åbenlyse

Interventions	**Intervention Characteristics** Intervention ● *Intervention*: Test subjects received a programme of individualised vestibular rehabilitation exercises designed to improve gaze stability, habituation and balance. The physiotherapist designed the specific exercises for the individual in order to treat their particular symptoms. Vestibular adaptation exercises were used for treating impairments in gaze stability. Habituation exercises were used for treating subjective dizziness during specific position changes. Exercises that manipulate the balance sensory modalities were used to improve postural stability. Kontrol ● *Intervention*: Control subjects received a set of 4 generalised exercises designed to work on strength and endurance only (table 3). Exercise sets consisted of repeating each exercise 10 times. Bridging was done lying on the bed with the knees bent up, and then raising the bottom off the bed by pushing through the feet, and holding for 3 s before lowering. Straight-leg raises were also done lying on the bed, and contracting abdominal muscles whilst raising one leg off the bed about 5 cm. The knee is kept straight and elevation held for 3 s before lowering, then repeated 10 times on each leg. Heel raises were performed standing and holding onto a kitchen bench, and then rising onto the toes whilst contracting abdominal muscles for 3 s before releasing slowly. Wall squats involved slowly lowering the back down a wall with feet 20 cm apart, bending knees slightly and then sliding back up again.
Outcomes	*Mobilitet* ● **Outcome type**: ContinuousOutcome ● **Scale**: 10 meter walk test (constable speed) ● **Unit of measure**: sec ● **Direction**: Lower is better ● **Data value**: Change from baseline ● **Notes**: begge grupper går langsommere efter intervention (=forværring). kontrol går blot mere langsomt end intervention ●
Identification	**Sponsorship source:** Funding to initiate the pilot study was gratefully obtained from Deafness Foundation, Vic. Other study supporters included the RVEEH, Cedar Court Rehabilitation Hospital and the University of Melbourne. This work was supported by the Royal Victorian Eye and Ear Hospital Human Research and Ethics Committee project No. 05/590H **Country:** Australia **Setting:** university hospital

	Comments: **Authors name:** joanne enticott **Institution:** dep of otolaryngology **Email:** enticott@unimelb.edu.au **Address:**
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Quote: "Randomisation was achieved by aflocating every second subject into the test group, and therefore the remaining subjects became the controls." Judgement Comment: not random
Allocation concealment (selection bias)	High risk	Judgement Comment: hver anden , der accepterede at indgå, blev automatisk control
Blinding of participants and personnel (performance bias)	Low risk	Quote: "Control subjects received a set of 4 generalised exercises de signed to work on strength and endurance osily (table 3). Exercise sets consisted of repeating each exercise 10 times." Judgement Comment: mild styrketræning virker som "sham"
Blinding of outcome assessment (detection bias)	Unclear risk	Judgement Comment: ikke beskrevet ikke beskrevet
Incomplete outcome data (attrition bias)	Low risk	Quote: "group they were assigned to. Forty-one subjects were initially recruited into this study; however, 5 subjects withdrew, and another 4 subjects were ex cluded because of the following reasons: (1) one had insufficient written and spoken English and was unable to complete study questionnaires; (2) another had a knee replacement operation in the study period; (3) another had assessments performed cutside the study timelines; (4) the fourth subject was erroneously en rolled into the study as no objective evidence of vestibular dys function had actually been noted in the initial assessment. Audiol Neurotol 2008;13:19—28 21 ej" Judgement Comment: 10% drop out ok
Selective reporting (reporting bias)	Low risk	Judgement Comment: alle planlagte tests er rapporteret
Other bias	High risk	Judgement Comment: For mobilitet er der forværring! forværringen er blot mindre i interventionsgruppen - hvilket får det til at se ud som om der er effekt (ift. kontrol)

Herdman 2003

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Included criteria:** Vestibular hy-pofunction complain of imbalance, head movementinduced dizziness, and headmovementinduced visual blurring (oscillopsia). Only patients with abnormal visual acuity during head movements (dynamic visual acuity [DVA]) were included. Abnormal DVA was defined as greater than the mean + 2 SDs of the DVA of healthy subjects of the same age **Excluded criteria:** Not reported **Pretreatment:** No differences **No mention of consecutive asignation. One physician reffered nearly all participants:**
Interventions	**Intervention Characteristics** Intervention 1 ● *Description*: Exercises that consisted of adaptation exercises and eye-head exercises to targets, which were designed to improve gaze stability. They also performed gait and balance exercises. ● *Length of treatment*: 4 weeks ● *Longest follow-up*: Intervention 2 ● *Description*: ● *Length of treatment*: ● *Longest follow-up*: Control ● *Description*: Exercises designed to be “vestibular neutral.” These placebo exercises consisted of saccadic eye movements with the head stationary while viewing a Ganzfeld (a large featureless surface). The placebo exercise group also performed gait and balance exercises, but exercises that specifically incorporated head movements were avoided ● *Length of treatment*: 4 weeks ● *Longest follow-up*:
Outcomes	● Ingen relevante outcome
Identification	**Sponsorship source:** This study was supported by grant 03196 from the Na-tional Institute on Deafness and Other Communication Dis-orders, Bethesda, Md (Drs Herdman and Tusa), and the Foun-dation for Physical Therapy, Alexandria, Va (Dr Schubert). **Country:** USA

	Setting: Ambulatory referral center **Comments:** **Authors name:** Susan J. Herdman, **Institution:** Departments of Rehabilitation Medicine **Email:** sherdma@emory.edu **Address:** Department of Rehabilitation Medicine, Emory University, 1441 Clifton Rd NE, Atlanta, GA 30322
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "Patients were randomly assigned to either the vestibular exer- cise or placebo exercise group." Judgement Comment: Unclear how this was done
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: Unclear how this was done
Blinding of participants and personnel (performance bias)	Unclear risk	Judgement Comment: Nothing mentioned
Blinding of outcome assessment (detection bias)	Unclear risk	Judgement Comment: Nothing mentioned
Incomplete outcome data (attrition bias)	Low risk	Quote: "Two control patients were dropped from the study; one came for only 2 visits and the other did the exercises in- correctly."
Selective reporting (reporting bias)	Low risk	na
Other bias	Low risk	na

Krebs 2003

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Included criteria:** The BVH subjects' inciusion criteria were similar to those of a preliminary report (3) **Excluded criteria:** Excluded were subjects with benign paroxysmal positianal vertigo, Meniere's disease, or unstable vestibulopathies **Pretreatment:**

	No mention of consecutive asignation. One physician reffered nearly all participants:
Interventions	**Intervention Characteristics** Intervention 1 ● *Description*: 6 weeks of once-weekly outpatient VR followed by 6weeks of home VR exercises ● *Duration*: 12 weeks ● *Lenght of follow-up after end of intervention*: 1 year follow-up Kontrol ● *Description*: 6weeks of once-weekly outpatient placebo treatment (isometric strengthening exercises) followed by 6weeks of once-weekly outpatient Vk ● *Duration*: 12 weeks ● *Lenght of follow-up after end of intervention*: 1 year follow-up
Outcomes	● Ingen relevante outcome
Identification	**Sponsorship source:** Study supported by the National Institutes of Health grants ROI-AG-I1255 and R21-AT-000553 **Country:** USA **Setting:** large tertiary care hospital **Comments:** **Authors name:** David E. Krebs **Institution:** From the Biomotion Laboratory, Massachuseus General hospital **Email:** krebs@helix.mgh.hanard.edu. **Address:** Institute of Health Professions, 36 First Ave, Boston. MA02129-4557
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Judgement Comment: Insufficient information
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: Not reported

Blinding of participants and personnel (performance bias)	Unclear risk	Judgement Comment: Not reported
Blinding of outcome assessment (detection bias)	Unclear risk	Judgement Comment: Not reported
Incomplete outcome data (attrition bias)	Low risk	Quote: "Four of the 124 were bier excluded because they were found to have cerebeilopath y during subsequent VVI testing; 4 died from unrelated causes during the 12-week period; 12 were ex cluded because they had concealed ti pending ht igation, or developed a mental disorder (almost always clinical depression) that prevented ‘dR par ticipation; and 18 dropped mit for unknown rea sons or were lost to follow-up before compieting VR. Forty-five" Quote: "There were an average number of dropouts (30%) for a clinical research project, in the present long-term analysis of Vk, particularly given the advanced age of these subjects. The age, gender, and other demographic features were similar among those who completed, compared with those who dropped out."
Selective reporting (reporting bias)	Low risk	na
Other bias	Low risk	Judgement Comment: No other source of bias

Mruzek 1995

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Included criteria:** Subjects scheduled for unilateral vestibular ablation **Excluded criteria:** **Pretreatment:** **No mention of consecutive asignation. One physician reffered nearly all participants:**
Interventions	**Intervention Characteristics** Intervention 1 ● *Description*: habituation exercises, balance exercises, daily walking program ● *Duration*: 8 week ● *Lenght of follow-up after end of intervention*: Intervention 2 ● *Description*: Vestibular rehabilitation ● *Duration*: 8 weeks ● *Lenght of follow-up after end of intervention*:

	Kontrol ● *Description*: Range of motion + social rehabilitation ● *Duration*: 8 weeks ● *Lenght of follow-up after end of intervention*:
Outcomes	● Ingen relevante outcome
Identification	**Sponsorship source:** Not described **Country:** USA **Setting:** **Comments:** **Authors name:** Maria Mruzek **Institution:** Balance disorder clinic, Columbia **Email:** **Address:** Balance disorder clinic, Columbia, 456, 10th avenue, Columus, OH 43210
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Judgement Comment: Subjects were randomly assigned to one of the three groups. Unknown how this is done.
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: Nothing mentioned
Blinding of participants and personnel (performance bias)	Unclear risk	Judgement Comment: Nothing mentioned
Blinding of outcome assessment (detection bias)	Unclear risk	Judgement Comment: Nothing mentioned
Incomplete outcome data (attrition bias)	Low risk	na
Selective reporting (reporting bias)	Low risk	na
Other bias	Low risk	na

Vereeck 2008

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Included criteria:** Fifty-seven consecutive patients underwentretrosigmoid surgical removal of an acoustic neu-roma between November 2001 and February 2005.The diagnosis of an acoustic neuroma was sug-gested by gadolinium-enhanced magnetic reso-nance imaging and was confirmed by histologicalexamination of the tissue after the operation. **Excluded criteria:** Four subjects were excluded for different rea-sons. Two of them did not give their informedconsent (‘too busy’ and ‘too far away’) and twopatients had central neurological disorders imped-ing postural control prior to surgery. One patienthad a manifest paresis in the left leg and onepatient with a history of cerebral palsy was wheel-chair bound **Pretreatment:** intet angivet
Interventions	**Intervention Characteristics** Intervention ● *Intervention*: During hospital stay theyreceived identical encouragement to engage in regulardaily activities, but in addition, basic exerciseswere initiated 3–5 days after surgery, depending onthe condition of the patient. These exercisesincluded activities such as supervised walking, narrowingstepwise the base of support while walkingand, if possible, incorporating head movements.At the end of the first week patients had to dosome treadmill walking in order to regain theirregular level of activity as soon as possible. Afterapproximately one week (discharge from hospital),based on the results of their balance assessment,patients received a written customized homeexercise programme. This usually consisted of fiveactivities based on the patient’s individual complaints,each item usually addressing a differenttreatment goal (see Appendix). Elements of thisprogramme were designed to optimize gaze stabilizationnot only by using exercises that stimulatevisual and ocular motor systems but especially byusing visuo-vestibular interaction activities.5,32,33Special attention was paid to walking with increasinglevel of difficulty. Furthermore this protocolincorporated exercises to improve postural stabilityand to decrease motion sensitivity if it wasapparent.34,35These home Kontrol ● *Intervention*: After surgery,while still admitted to the hospital, patients wereinstructed to walk to the bathroom, to take mealsat the table and to walk around as much as possible.They were also asked to do stairs at the endof the week, especially if they needed to do stairs athome. During the first days they were, if necessary,assisted by a nurse, relative or friend. Theywere also encouraged to watch television and readnewspapers or books as soon as possible. Oncethey were discharged from the hospital, aftereach assessment session, the participants wereinformed about their actual level of postural controland their general level of activity was discussed. Frightening movements and situationswere discussed as well as their effect on thesubjects’ behaviour. Subjects were encouragedto increase their level of activity, and theirengagement in walking, cycling, driving andsports was

	promoted. No formal home programmewas given to the patients. If a subject had specificcomplaints (respiratory problems, neck-pain, etc.),specialized care was provided. This routine wascontinued for 12 weeks after surgery.
Outcomes	*Dynamisk balance* ● **Outcome type**: ContinuousOutcome ● **Scale**: Dynamic gait index ● **Direction**: Higher is better ● **Data value**: Endpoint *Mobilitet* ● **Outcome type**: ContinuousOutcome ● **Scale**: TUG ● **Unit of measure**: sec ● **Direction**: Lower is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** **Country:** Belgium **Setting:** univeritetshosp **Comments:** **Authors name:** Luc Vereeck **Institution:** Division of Neuro- and Psychomotor Physical Therapy, Department of Health Sciences, University College ofAntwerp, Merksem; AUREA (Antwerp University Research Centre for Equilibrium and Aerospace), Department ofOtorhinolaryngology, Antwerp Unive **Email:** **Address:**
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "Subsequently, for each of the two age groups, patients were randomly assigned (using a closed envelope system) to either the group receiv- ing general instructions or the group receiving cus- tomized vestibular rehabilitation." Judgement Comment: fortæller ikke hvordan

Allocation concealment (selection bias)	Low risk	Quote: "randomly assigned (using a closed envelope system) to either the group receiv- ing general instructions or the group receiving cus- tomized vestibular rehabilitation. We"
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: ikke rigtig sham kontrol intervention
Blinding of outcome assessment (detection bias)	Low risk	Quote: "In order to remove any bias in the testing proce- dure, the assessors were blinded with respect to the treatment group to which the patients belonged."
Incomplete outcome data (attrition bias)	Low risk	Quote: "There were no drop-outs during the study but, because of the multiple assessments over time, some patients did not attend all sessions (Figure"
Selective reporting (reporting bias)	Unclear risk	Judgement Comment: angiver at anvendt DHI, men ingen effektværdier angivet for dette. De har 12 mdr. FU, så kunne man vel også have spurgt om fald for de 15 ældre!?
Other bias	Low risk	Judgement Comment: intet oplagt

Yardley 1998

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Included criteria:** Patients over 18 years of age were considered eligible if theyconsulted their doctor with a complaint of dizziness or vertigo. **Excluded criteria:** Patients were excluded if the performance of vigorous head orbody movements during exercise therapy was contraindicated, orif they had a diagnosed non-vestibular cause for the dizziness, ormultiple, life-threatening or progressive central disorders. **Pretreatment:** The groups did not differ significantly onany demographic or clinical characteristic at baseline **No mention of consecutive asignation. One physician reffered nearly all participants:**
Interventions	**Intervention Characteristics** Intervention 1 ● *Description*: 30- to 40-minute VR session ● *Duration*: 6 weeks ● *Lenght of follow-up after end of intervention*: 6 months follow-up Kontrol ● *Description*: normal medical care ● *Duration*: 6 weeks ● *Lenght of follow-up after end of intervention*: 6 months follow-up

Outcomes	*Svimmelhed (mean, SD, endpoint)* ● **Outcome type**: ContinuousOutcome ● **Reporting**: Fully reported ● **Scale**: Vertigo symptom scale ● **Notes**: Data after 6 months
Identification	**Sponsorship source:** This project was funded by grantnumber 4/93 from the PrimaryCareDevelopment Fund of the SouthThames Regional Health Authority **Country:** UK **Setting:** **Comments:** **Authors name:** Lucy Yardley **Institution:** Department of Psychology, UCL **Email:** **Address:**
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "After baseline assessment, patients were randomly assigned by the research nurse (using random number tables) either to 'vestibular rehabilitation' (VR; described below) or to the normal medical care control group who were given VR only after their six-month follow-up assessment. Outcome"
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: Insufficient information
Blinding of participants and personnel (performance bias)	Unclear risk	Judgement Comment: Insufficient information
Blinding of outcome assessment (detection bias)	Unclear risk	Judgement Comment: Insufficient information
Incomplete outcome data (attrition bias)	Low risk	Quote: "Of these 159 patients, 16 dropped out of the study before follow-up and were excluded from the analysis. Some individuals failed to complete either the physical or the question- naire assessments at the six-week or six-month follow-ups, and so precise figures are given for the sample size in all the analyses below."

Selective reporting (reporting bias)	Low risk	na
Other bias	Low risk	na

Yardley 2004

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Included criteria:** Patients with dizziness **Excluded criteria:** Exciusion criteria were as Follows: idendfiabie nonlabyrinthine cause of dizziness in patient records, duration of dizziness less than 2 months during the past 2 years. medical contraindicadons For making required head movements (for example,severe cervical disorder), and serious comorbid conditions (for example, liFe-threatening condidon or progressive central disorder). Before randomization, we also excluded patients if they were no longer Found to be dizzy at the baseline assessment or IF none ofthe rehabilitation exercisesprovoked dizziness. **Pretreatment:** None **No mention of consecutive asignation. One physician reffered nearly all participants:**
Interventions	**Intervention Characteristics** Intervention 1 ● *Description*: Vestibular rehabilitation ● *Duration*: 3 month ● *Lenght of follow-up after end of intervention*: 6 months follow-up Kontrol ● *Description*: Usual medical care ● *Duration*: 3 month ● *Lenght of follow-up after end of intervention*: 6 months follow-up from start of treatment
Outcomes	*Svimmelhed,* ● **Outcome type**: ContinuousOutcome ● **Reporting**: Fully reported ● **Scale**: Vertigo symptom scale
Identification	**Sponsorship source:** By grant SEC083 from the Director at PHealth and SocialCare South London, United Kingdom **Country:** UK **Setting:** 20 general pracfices in southern England. **Comments:** **Authors name:** Lucy Yardley

	Institution: **Email:** **Address:**
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "We used a single-blind randomized, controlled design to compare vesribular rehabilitation with usual medical care. Participants" Judgement Comment: Insufficient information about the sequence generation process
Allocation concealment (selection bias)	Unclear risk	Judgement Comment: Insufficient information to permit jugement
Blinding of participants and personnel (performance bias)	Unclear risk	Judgement Comment: Insufficient information
Blinding of outcome assessment (detection bias)	Low risk	Quote: "participant. In a single crossover design (29), during the next 3 months, the usual medical care group received vestibular rehabilitation, and both groups were reassessed by the blinded research assistant at 6 months."
Incomplete outcome data (attrition bias)	Low risk	na
Selective reporting (reporting bias)	Low risk	na
Other bias	Low risk	Judgement Comment: The study appears to be free of other sources of bias

Yardley 2006

Methods	**Study design:** Randomized controlled trial **Study grouping:** Crossover
Participants	**Included criteria:** Participants were recruited in 2003 by sending members of the Me´nie`re'sSociety (n4800) an information sheet and consent form and screeningquestions for stratification. Members were eligible for participation if theyhad experienced symptoms of dizziness or imbalance over the past 12 months,had not had any severe vertigo attacks within the last 6 weeks, had consultedtheir GP to check there were no medical reasons why they should not take partin the trial, and could be contacted by post for the key stages of the trial.

	Excluded criteria: Members were excluded if they reported having a vestibular disorder otherthan Me´nie`re disease. **Pretreatment:** intet angivet
Interventions	**Intervention Characteristics** Intervention ● *Intervention*: The VR booklet explained in lay terms how inadequate central compen-sation could contribute to symptoms and why balance training should facil-itate habituation. Details were given of daily balance training exercises tocarry out in the home and how to tailor these to the particular symptomsexperienced. Participants were encouraged to resume activities in their dailylives that they had avoided because of dizziness, to promote generalization ofhabituation Kontrol ● *Intervention*: waiting list control
Outcomes	*Svimmelhed* ● **Outcome type**: ContinuousOutcome ● **Scale**: Dizziness handicap inventory ● **Range**: 0-100 ● **Direction**: Lower is better ● **Data value**: Endpoint
Identification	**Sponsorship source:** **Country:** UK **Setting:** **Comments:** **Authors name:** LUCY YARDLEY **Institution:** School of Psychology, University of Southampton, Highfield, Southampton **Email:** **Address:**
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Judgement Comment: Participants were stratified by symptom severity into blocks of 30 andthen sent baseline questionnaires to complete. When all baseline questionnairesin a block had been returned, an independent research administratorallocated participants to the intervention arms using a computer randomizationprogram and sent each participant a letter informing them which interventiongroup they had been assigned to
Allocation concealment (selection bias)	Low risk	Quote: "an independent research administrator allocated participants to the intervention arms using a computer randomiza- tion program and sent each participant a letter informing them which inter- vention group they had been assigned to. Those" Judgement Comment: rækkefølgen gør at ikke kan forudsiges hvor næste deltager allokeres til
Blinding of participants and personnel (performance bias)	High risk	Judgement Comment: ingen kontrol sham intervention Those in the VR and SC groups werealso sent the corresponding self-management booklet to use for 3 months. Atthe end of the 3-month intervention period, a follow-up questionnaire packwas sent. A final follow-up questionnaire pack was administered at 6 months.
Blinding of outcome assessment (detection bias)	Unclear risk	Judgement Comment: ikke beskrevet
Incomplete outcome data (attrition bias)	Low risk	Quote: "Dropout was very low, with only 17 participants out of the sample of 360 failing to complete the final follow-up (Figure 1)."
Selective reporting (reporting bias)	Unclear risk	Quote: "fullness in the ear (53). Our primary outcome measures were assessed at 3 and 6 months after baseline. Subjective improvement in health was assessed by a previously validated single item (48) asking whether, during the past week, the partici- pant had felt better, much the same, or worse than when completing the baseline assessment. The Patient Enablement Instrument (PEI) (54) was used to assess" Judgement Comment: lidt underligt at bruge et ikke almindelig brugt outcome som primære outcome. hvorfor ingen funktionelle outcomes, kun PROM
Other bias	Low risk	Judgement Comment: intet åbenlyst

Yardley 2012

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Included criteria:** Patients were 18 years or older with a complaint of dizziness during the past two years **Excluded criteria:** Patients were reviewed by their general practitioner and excluded if the dizziness was attributed to non-vestibular causes or there were contraindications to treatment by vestibular rehabilitation. **Pretreatment:** We observed baseline differencesbetween study groupsforsex, age when leaving school, durationof dizziness, consultation with a healthcare professional in thepast year, and number of patients exceeding the threshold foranxiety or depression on the hospital anxiety and depressionscale. **No mention of consecutive asignation. One physician reffered nearly all participants:**
Interventions	**Intervention Characteristics** Intervention 1 ● *Description*: booklet based vestibular rehabilitation only ● *Duration*: 12 weeks ● *Lenght of follow-up after end of intervention*: 1 year follow-up Intervention 2 ● *Description*: Vestibular rehabilitation with telephone support ● *Duration*: 12 weeks ● *Lenght of follow-up after end of intervention*: 1 year follow-up Kontrol ● *Description*: Routine medical care ● *Duration*: 12 weeks ● *Lenght of follow-up after end of intervention*: 1 year follow-up
Outcomes	*Livskvalitet (QALY)* ● **Outcome type**: ContinuousOutcome ● **Reporting**: Fully reported ● **Scale**: EQ-5D *Svimmelhed (mean, SD, endpoint)* ● **Outcome type**: ContinuousOutcome ● **Reporting**: Fully reported ● **Scale**: DHI ● **Data value**: Endpoint

Identification	**Sponsorship source:** The trial was funded by the National Institute for HealthResearch under its Research for Patient Benefit Programme (grantPB-PG-0107-12069). The study was sponsored by the University ofSouthampton. The sponsor and the funder of the study had no role inthe study design, data collection and analysis, interpretation or reportingof this work, or the decision to submit the work for publication. All authorsare independent of the funding source **Country:** UK **Setting:** General practices **Comments:** ClinicalTrials.gov NCT00732797 **Authors name:** L. Yardley **Institution:** Faculty of Human and Social Sciences, University of Southampton **Email:** L.Yardley@soton.ac.uk **Address:** Southampton SO17 1BJ, UK
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "An independent randomisation service allocated participants to the three intervention arms using a block size of nine, stratifying by severity of symptoms on the vertigo symptom scale-short form (low severity <12 points, high severity ≥ 12 points). Within each block of nine, patients randomised to receive telephone support were then randomised to one of three therapists."
Allocation concealment (selection bias)	Low risk	Quote: "Allocations were emailed to trial administrator"
Blinding of participants and personnel (performance bias)	High risk	Quote: "Participants, therapists, and the trial administrator could not be blinded"
Blinding of outcome assessment (detection bias)	Low risk	Judgement Comment: Researchers who assessed and analysed data remained blinded
Incomplete outcome data (attrition bias)	Low risk	Quote: "item assessment of subjective improvement. At 12 months, 263 participants (78%) completed the follow-up questionnaires and 295 (88%) completed the single item assessment of subjective improvement. Figure 1⇓ shows the flow of participants through the trial. Of 5223 patients sent an invitation, most did not reply (3250, 62%); but among the 1461 (28%) who completed the refusal slip, a large proportion (1052, 72%) reported that they were no longer dizzy. Table 1⇓ shows participants' characteristics at baseline. We observed baseline differences between"

Selective reporting (reporting bias)	Low risk	na
Other bias	Low risk	na

Footnotes

Characteristics of excluded studies

Cohen 2004

Reason for exclusion	Wrong comparator

Cohen 2005

Reason for exclusion	Wrong intervention

Essery 2015

Reason for exclusion	Wrong study design

Giray 2009

Reason for exclusion	Wrong intervention (only 4 weeks)

Herdman 1995

Reason for exclusion	Wrong patient population

Kammerlind 2005

Reason for exclusion	Wrong comparator

Marioni 2013

Reason for exclusion	Wrong intervention

Marioni 2013a

Reason for exclusion	Wrong patient population

Morozetti 2011

Reason for exclusion	Wrong comparator

Pavlou 2004

Reason for exclusion	Wrong comparator

Resende 2003

Reason for exclusion	Wrong indication

Ricci 2010

Reason for exclusion	Wrong study design

Rossi Izquierdo 2011

Reason for exclusion	Wrong comparator

Scott 1994

Reason for exclusion	Wrong intervention

SotoVarela 2001

Reason for exclusion	Wrong intervention

Stoian 2012

Reason for exclusion	Wrong study design

Toledo 2000

Reason for exclusion	Wrong intervention

Venosa 2007

Reason for exclusion	Wrong outcomes

Zimbelman 1999

Reason for exclusion	Wrong comparator

Footnotes

Characteristics of studies awaiting classification

Footnotes

Characteristics of ongoing studies

Footnotes

Summary of findings tables

Additional tables

References to studies

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Cohen 2002

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Studies awaiting classification

Ongoing studies

Other references

Additional references

Other published versions of this review

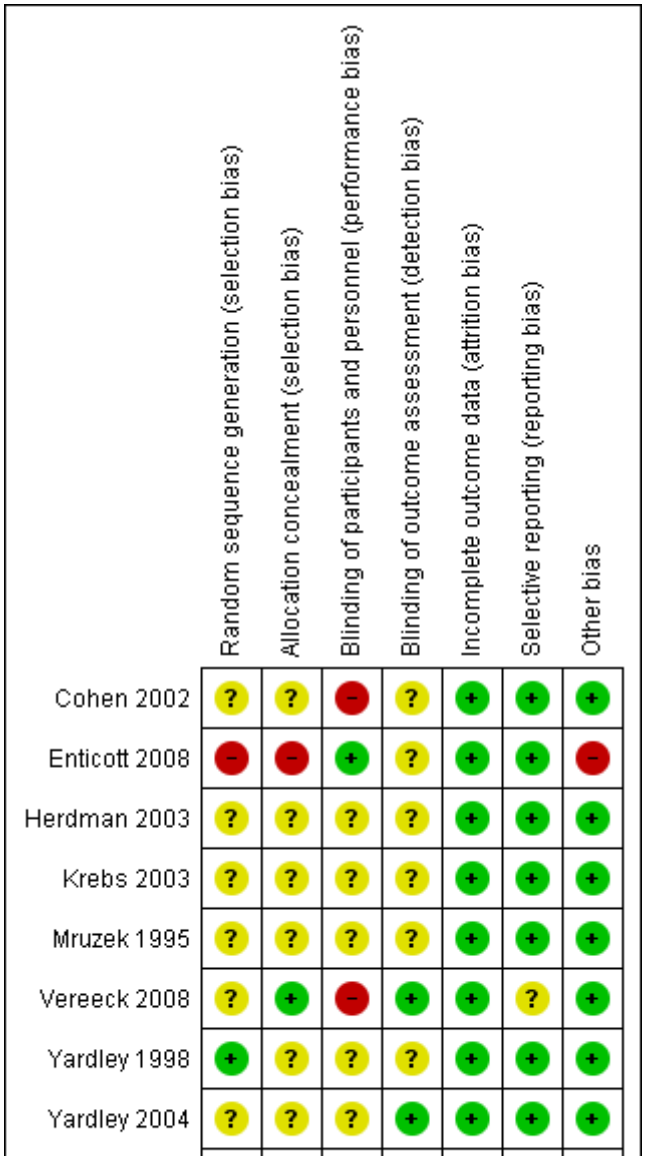
Data and analyses

1 Vestibulær rehabilitering vs. ingen træning

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Dynamisk balance (gait stability, dynamic gait index), EoT	2	112	Std. Mean Difference (IV, Random, 95% CI)	-0.34 [-0.90, 0.21]
1.1.1 Dynamisk balance, EoT	2	112	Std. Mean Difference (IV, Random, 95% CI)	-0.34 [-0.90, 0.21]
1.2 Mobilitet, (TUG, gait velocity, 10 m walk test), EoT	3	144	Std. Mean Difference (IV, Random, 95% CI)	-0.32 [-0.65, 0.01]
1.6 Svimmelhed	3	594	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-0.41, 0.03]
1.6.3 Svimmelhed, ½-1 år efter start af behandling	3	594	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-0.41, 0.03]
1.8 Livskvalitet (EQ-5D 0-1), 1 års FU	1	256	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.09, 0.05]
1.8.1 1 år efter afsluttet intervention	1	256	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.09, 0.05]
1.9 Antal af fald	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.10 Antal af personer som falder	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.11 Fald med fraktur (major injury)	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.12 Frygt for fald	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.13 Dagligt aktivitetsniveau	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.14 Utilsigtet fald under træning	0	0	Odds Ratio (M-H, Random, 95% CI)	Not estimable

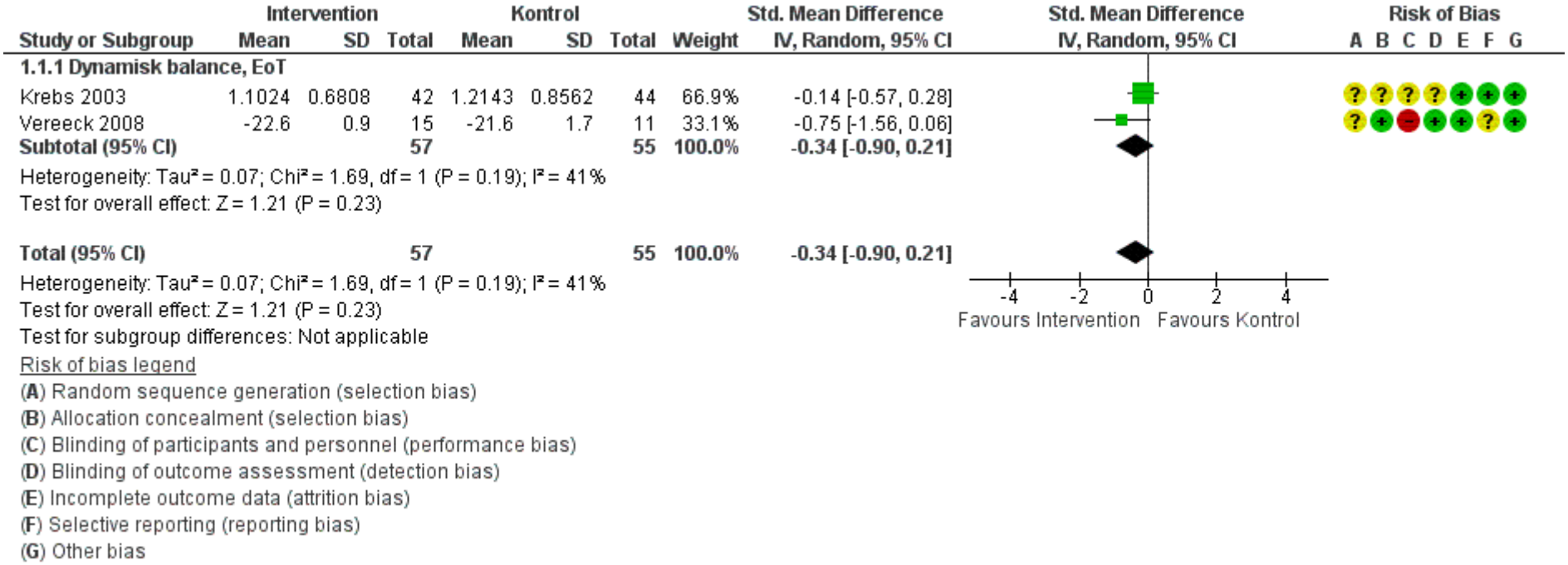
Figures

Figure 1



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

Figure 2 (Analysis 1.1)

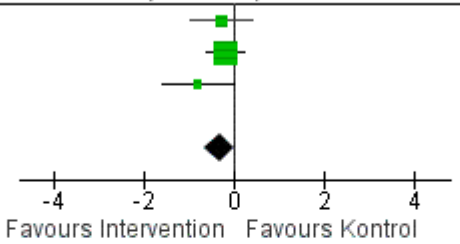


Forest plot of comparison: 1 Vestibulær rehabilitering vs. ingen træning, outcome: 1.1 Dynamisk balance (gait stability, dynamic gait index), EoT.

Figure 3 (Analysis 1.2)

Study or Subgroup	Intervention Mean	SD	Total	Kontrol Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Enticott 2008	0.48	1.7	17	1.18	3.1	15	22.5%	-0.28 [-0.98, 0.42]
Krebs 2003	-113.7619	92.2139	42	-88.8182	147.7494	44	61.0%	-0.20 [-0.62, 0.22]
Vereeck 2008	7.5	2	15	9.1	1.8	11	16.5%	-0.81 [-1.62, 0.01]
Total (95% CI)			**74**			**70**	**100.0%**	**-0.32 [-0.65, 0.01]**

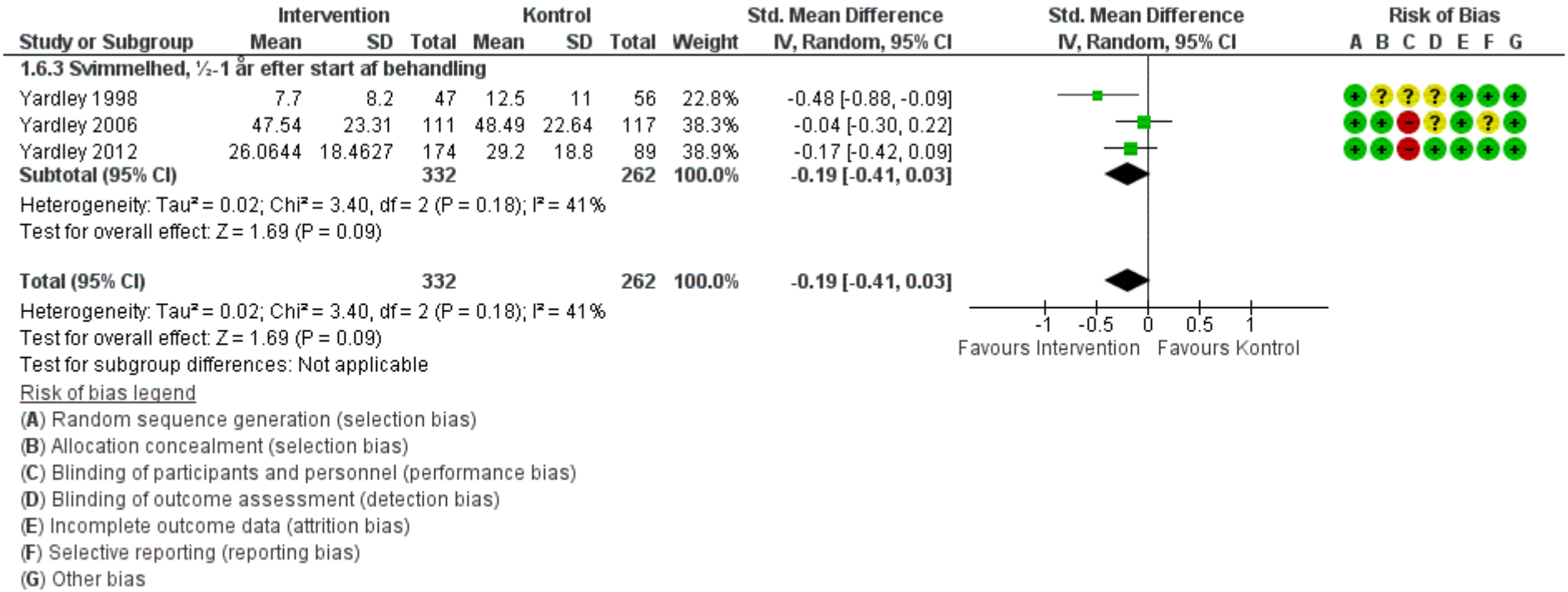
Heterogeneity: Tau² = 0.00; Chi² = 1.70, df = 2 (P = 0.43); I² = 0%
Test for overall effect: Z = 1.88 (P = 0.06)



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

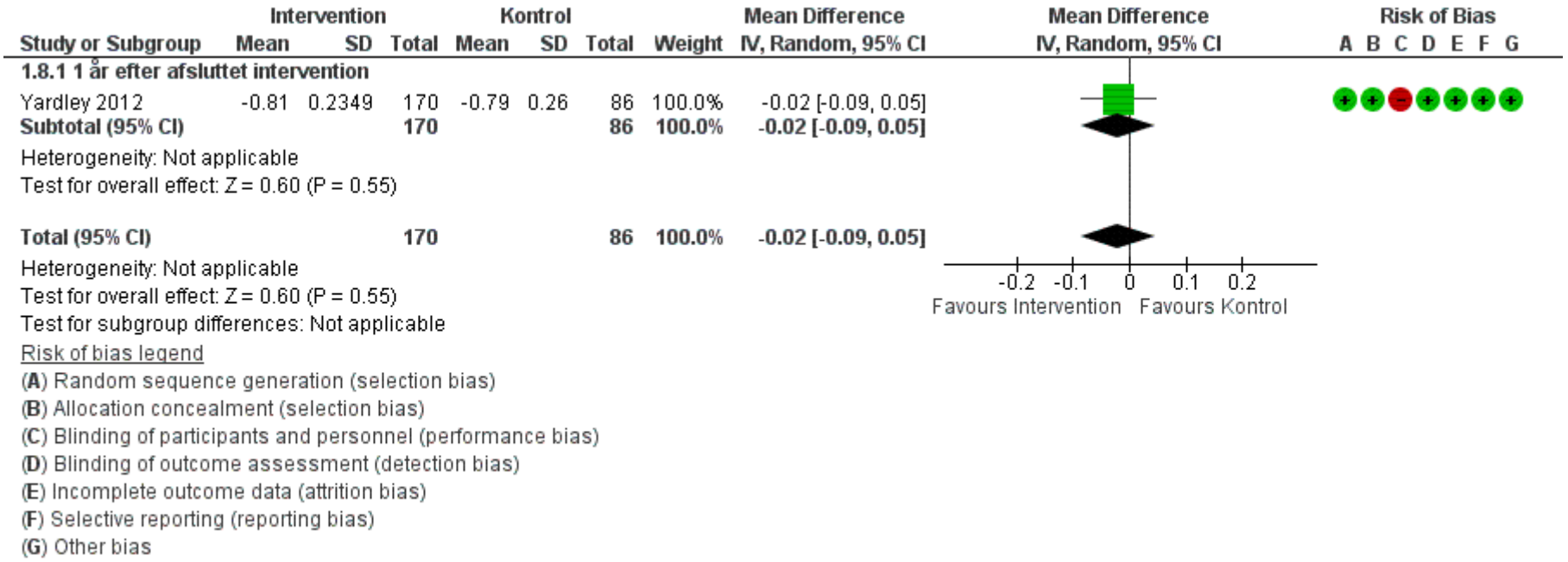
Forest plot of comparison: 1 Vestibulær rehabilitering vs. ingen træning, outcome: 1.2 Mobilitet, (TUG, gait velocity, 10 m walk test), EoT.

Figure 7 (Analysis 1.6)



Forest plot of comparison: 1 Vestibulær rehabilitering vs. ingen træning, outcome: 1.6 Svimmelhed.

Figure 9 (Analysis 1.8)



Forest plot of comparison: 1 Vestibulær rehabilitering vs. ingen træning, outcome: 1.8 Livskvalitet (EQ-5D 0-1), 1 års FU.