Review information

Authors

[Empty name][1]

[1][Empty affiliation]

Citation example: [Empty name]. NKR-nakke pico 3. Øvelser og ledmobilisering vs øvelser. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

Characteristics of studies

Characteristics of included studies

Akhter 2014

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Males (%)*: 37 ● *Mean age (SD)*: 38.1 ● *Pain duration (%)*: 4.12months Control ● *Males (%)*: 39 ● *Mean age (SD)*: 39.5 ● *Pain duration (%)*: 4.78months **Included criteria:** Subjects with history of more than 3 months neck pain with no related medical dysfunction were included **Excluded criteria:** Exclusion criteria were Spinal instability, Whiplash injury, Osteoporosis, Fracture of cervical spine, tumor of spine, Unexplained headache, pain postcervical spine surgery, disc herniation, injection therapy application in cervical spine, Radiculopathy of cervical spine, Stenosis of cervical spine, rheumatoid arthritis, behaviour therapy rehabilitation and VBI symptoms (Dizziness, Dropattack, Doublevision, Difficulty in swallowing, difficulty in finding words

	and patients who already had spinal manipulative session. **Pretreatment:** ingen markante
Interventions	**Intervention Characteristics** Intervention ● *Description*: manual therapy (Maitland's approach Grade V, High velocity thrust, low amplitude application, rotation/lateral flexion technique on painful and stiff cervical spinal segments in supine position, maximum 6 sessions in 3 weeks) with supervised exercise regime for 20 minutes. The exercise regime included a set of strengthening exercises consisted of isometric, concentric and eccentric exercises with rest in between and a set of stretching exercises of cervical spine; rotation side to side, lateral flexion side to side, Extension and Sternocleidomastoid stretches 10 repetitions each to the left and right, Levator scapulae and pectolaris muscles stretches10 repetitions each to the left and right ● *Duration (weeks)*: 3 ● *No. of treatments (total)*: uvist, max 6 Control ● *Description*: supervised exercise regime same as Intervention for 3 weeks ● *Duration (weeks)*: 3 ● *No. of treatments (total)*: uvist, max 6
Outcomes	*Smerte (pain) End of treatment* ● **Outcome type**: ContinuousOutcome *Smerte (pain) 4-12 weeks follow-up* ● **Outcome type**: ContinuousOutcome *Funktionsevne (level of function) 4-12 weeks follow-up* ● **Outcome type**: ContinuousOutcome *Forbrug af medicin (use of medicin) 4-12 weeks follow-up* ● **Outcome type**: DichotomousOutcome *Tilbage til arbejde (Return to work) 4-12 weeks follow-up* ● **Outcome type**: DichotomousOutcome *Sygefravær (sickleave) 4-12 weeks follow-up* ● **Outcome type**: DichotomousOutcome

	Livskvalitet (Quality of life) 4-12 weeks follow-up ● **Outcome type**: ContinuousOutcome *Frafald (dropout) Behandlingsafslutning* ● **Outcome type**: DichotomousOutcome *Skader under træning (injuries during training) Behandlingsafslutning* ● **Outcome type**: DichotomousOutcome *Skader på a.vertebralis (injuries on a.vertebralis)* ● **Outcome type**: DichotomousOutcome
Identification	**Sponsorship source:** Intet anført **Country:** Pakistan **Setting:** Depart. of Physiotherapy, Institute of Physical Medicine and Rehabilitation, Dow University of Health Sciences, Karachi **Comments:** Uoplyst hvorfra og hvordan deltagere er rekrutteret **Authors name:** Muhammad Khan **Institution:** Depart. of Physiotherapy, Institute of Physical Medicine and Rehabilitation, Dow University of Health Sciences, Karachi, Pakistan **Email:** mohdkhan50@yahoo.com **Address:** ikke oplyst
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Allocation concealment	Unclear risk	Ikke beskrevet
Blinding of outcome assessors	High risk	Patientrapporterede outcomes og ublindet intervention
Selective outcome reporting	Low risk	Alle outcomes rapporteret Table 2
Other sources of bias	High risk	Ubeskrevet rekrutterings-flow; ingen sample size beregning; ingen beskrivelse af dataindsamling

Sequence Generation	Low risk	using computer software.
Blinding of participants and personnel	High risk	ikke beskrevet, men blinding ikke mulig uden "sham" element Ingen beskrivelse af forsøg på blinding af hverken patienter eller behandlere
Incomplete outcome data	Low risk	Kun 2 "drop out's" med rimelige forklaringer, men ikke oplyst hvike grupper de tilhørte.

Celenay 2016

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group
Participants	**Baseline Characteristics** Intervention ● *Males (%)*: 23.5 ● *Symptom duration*: > 3 mdr ● *Age mean (SD)*: 47 (10) Control ● *Males (%)*: 31.4 ● *Symptom duration*: > 3 mdr ● *Age mean (SD)*: 44(13) **Included criteria:** Eligible patients had to be between 18 and 65 years of age and have generalized neck pain for more than 3 months, with symptoms provoked by neck postures, movements, or palpation. **Excluded criteria:** neck pain that included in-flammatory rheumatologic diseases, ma-lignity, or structural deformity; previous surgery related to cervical spine, cervical spinal stenosis, or bilateral upper extrem-ity symptoms; 2 or more positive radicular signs consistent with nerve root compres-sion (muscle weakness involving a major muscle group of the upper extremity, di-minished upper extremity deep tendon reflex, diminished or absent sensation to pinprick in any upper extremity derma-tome); severe referred pain (greater than 7 on a 0-to-10 visual analog scale [VAS]) in the related dermatome in the upper extremities; a capsular pattern indicative of arthritis; severe psychological disorder; pregnancy; and any intervention that in-cluded exercise or physical therapy in the last 3 months **Pretreatment:** No group difference at baseline

Interventions	**Intervention Characteristics** Intervention ● *Description*: Progressive Cervical and ScapulothoracicStabilization Exercise Program Anexperienced physical therapist (S.T.C.)carried out both cervical spinal stabilizationand scapulothoracic stabilizationexercise programs. Each exercise sessioncomprised 10-minute warm-up exercises,40-minute stabilization exercises, and10-minute cool-down and stretchingexercises, including neck and shouldergirdle muscles. The whole program wascarried out 3 days per week for 4 weeks.After the baseline assessments, sessionsbegan with postural education byhaving the participants sit with frontand side mirrors to find a neutral balancedposition of the lumbar, thoracic,and cervical spine.61 Before performingcervical stabilization exercises, they weretaught to perform the contraction of thedeep neck flexor muscle activity usingthe Chattanooga Stabilizer Pressure BiofeedbackUnit (DJO Global, Vista, CA)to provide biofeedback for correct deepneck flexor muscle contraction.43 The intraclasscorrelation coefficients for deepneck flexor muscle activation and performancemeasurements with the biofeedbackunit were declared to be 0.81and 0.93, respectively.37,39 The programswere designed to maintain the spine ina neutral position and activate the deepmuscles of the spine.For the cervical stabilization exercise,the cervical bracing technique with theactivation of deep neck flexors25 was performed.The participants were asked tomaintain the positions and contractionsduring the exercises and throughout theday as much as possible. The combinationand progression of the exercises weredesigned according to those presentedin the literature.19,46,47,58,77 The exercisesincluded workouts using the bracingtechnique in neurodevelopment stages(supine, prone, quadrupedal, bipedal)for the cervical spine. Participants heldthe contraction for 10 seconds at eachposition, with 10 repetitions. ExtremityROM exercises were conducted whilemaintaining a stable spine at the specificpositions. All exercise repetitionswere increased progressively from 8 to12 (FIGURE 1A). Then, cervical isometricexercises were performed directly forward,obliquely, toward right and left,and directly backward by maintaining astable spine with elastic resistive bands,with 10 repetitions and a holding time of6 to 10 seconds each (FIGURE 1B). The exercisesalso included functional trainingwith elastic resistance and exercise ballson unstable surfaces, with 10 repetitionsand a holding time of 10 to 15 secondseach (FIGURE 1C).The scapulothoracic stabilizationexercise consisted of specific exercisesfor the muscles affecting scapular orientationrelated to neck pain. The exercisesused were selected based on theliterature.29,46,58 First, the thoracic bracingtechnique, with postural alignmentand minimal multifidus muscle activationwith scapular orientation, for thescapulothoracic stabilization exercise was taught.57 The patients were asked tomaintain the positions and contractionsduring the exercises. The following exerciseswere administered: scapular adductionand shoulder external rotation,bilateral shoulder extension with scapularretraction, eccentric scapular retraction,Brügger's exercise, forward punch,and dynamic hug (FIGURE 2).29,47,58 Theparticipants began exercising using thelatex yellow or red band and a 200-cmlongprecut section of Thera-Band (TheHygenic Corporation, Akron, OH), withmild or medium tension. They carriedout 10 repetitions, with a holding timeof 6 to 10

seconds each. When they performed15 repetitions without significantpain or fatigue, they were progressed tothe next color of resistive band in the sequenceof green and blue. Mobilization Applications Cervical andscapular mobilization applications accordingto Cyriax16 and Maitland17 wereapplied by an experienced physical therapistcredentialed in manual therapypractice (S.T.C.). The applications werecarried out 3 days per week for 4 weeks.Cervical mobilization applicationswere composed of the bridging technique,manual traction, rotation during traction,anterior/posterior gliding during traction,and lateral gliding. Suitable techniqueswere chosen according to the patients'specific requirements. The applicationslasted 15 to 20 minutes (FIGURE 3).16Scapular mobilization was applied inthe sidelying position, with 10 repetitionsof gliding in superior/inferior and rotationaldirections and distraction of thescapula of both sides (FIGURE 3).17

- *Duration (weeks)*: 4
- *No. of sessions (total)*: 12

Control

- *Description*: Progressive Cervical and ScapulothoracicStabilization Exercise Program Anexperienced physical therapist (S.T.C.)carried out both cervical spinal stabilizationand scapulothoracic stabilizationexercise programs. Each exercise sessioncomprised 10-minute warm-up exercises,40-minute stabilization exercises, and10-minute cool-down and stretchingexercises, including neck and shouldergirdle muscles. The whole program wascarried out 3 days per week for 4 weeks.After the baseline assessments, sessionsbegan with postural education byhaving the participants sit with frontand side mirrors to find a neutral balancedposition of the lumbar, thoracic,and cervical spine.61 Before performingcervical stabilization exercises, they weretaught to perform the contraction of thedeep neck flexor muscle activity usingthe Chattanooga Stabilizer Pressure BiofeedbackUnit (DJO Global, Vista, CA)to provide biofeedback for correct deepneck flexor muscle contraction.43 The intraclasscorrelation coefficients for deepneck flexor muscle activation and performancemeasurements with the biofeedbackunit were declared to be 0.81and 0.93, respectively.37,39 The programswere designed to maintain the spine ina neutral position and activate the deepmuscles of the spine.For the cervical stabilization exercise,the cervical bracing technique with theactivation of deep neck flexors25 was performed.The participants were asked tomaintain the positions and contractionsduring the exercises and throughout theday as much as possible. The combinationand progression of the exercises weredesigned according to those presentedin the literature.19,46,47,58,77 The exercisesincluded workouts using the bracingtechnique in neurodevelopment stages(supine, prone, quadrupedal, bipedal)for the cervical spine. Participants heldthe contraction for 10 seconds at eachposition, with 10 repetitions. ExtremityROM exercises were conducted whilemaintaining a stable spine at the specificpositions. All exercise repetitionswere increased progressively from 8 to12 (FIGURE 1A). Then, cervical isometricexercises were performed directly forward,obliquely, toward right and left,and directly backward by maintaining astable spine with elastic resistive bands,with 10 repetitions and a holding time of6 to 10 seconds each (FIGURE 1B). The exercisesalso included

	functional trainingwith elastic resistance and exercise ballson unstable surfaces, with 10 repetitionsand a holding time of 10 to 15 secondseach (FIGURE 1C).The scapulothoracic stabilizationexercise consisted of specific exercisesfor the muscles affecting scapular orientationrelated to neck pain. The exercisesused were selected based on theliterature.29,46,58 First, the thoracic bracingtechnique, with postural alignmentand minimal multifidus muscle activationwith scapular orientation, for thescapulothoracic stabilization exercise was taught.57 The patients were asked tomaintain the positions and contractionsduring the exercises. The following exerciseswere administered: scapular adductionand shoulder external rotation,bilateral shoulder extension with scapularretraction, eccentric scapular retraction,Brügger's exercise, forward punch,and dynamic hug (FIGURE 2).29,47,58 Theparticipants began exercising using thelatex yellow or red band and a 200-cmlongprecut section of Thera-Band (TheHygenic Corporation, Akron, OH), withmild or medium tension. They carriedout 10 repetitions, with a holding timeof 6 to 10 seconds each. When they performed15 repetitions without significantpain or fatigue, they were progressed tothe next color of resistive band in the sequenceof green and blue. ● *Duration (weeks)*: 4 ● *No. of sessions (total)*: 12
Outcomes	*Smerte (pain) End of treatment* ● **Outcome type**: ContinuousOutcome *Smerte (pain) 4-12 weeks follow-up* ● **Outcome type**: ContinuousOutcome *Funktionsevne (level of function) 4-12 weeks follow-up* ● **Outcome type**: ContinuousOutcome ● **Scale**: NDI ● **Range**: 0-50 ● **Direction**: Lower is better *Forbrug af medicin (Use od medicin) 4-12 weeks follow-up* ● **Outcome type**: DichotomousOutcome *Tilbage til arbejde (Return to work) 4-12 weeks follow-up* ● **Outcome type**: DichotomousOutcome *Sygefravær (Sick leave) 4-12 weeks follow-up* ● **Outcome type**: DichotomousOutcome

	Livskvalitet (Quality of life) 4-12 weeks follow-up ● **Outcome type**: ContinuousOutcome ● **Scale**: SF-36 - physical ● **Range**: 0-100 ● **Direction**: Higher is better *Frafald (dropout) End of treatment* ● **Outcome type**: DichotomousOutcome *Skader under træning (Injuries during training) End of treatment* ● **Outcome type**: DichotomousOutcome *Skader på a.vertebralis (Injuries on a. vertebrae) End of treatment* ● **Outcome type**: DichotomousOutcome
Identification	**Sponsorship source:** not provided **Country:** Tyrkiet **Setting:** Patients diagnosed with MNP by their physicians and referred to the Hacettepe University Physiotherapy and Rehabilitation clinic **Comments:** **Authors name:** SEYDA TOPRAK CELENAY **Institution:** Department of Physiotherapy and Rehabilitation, Health Sciences Faculty, Yildirim Beyazit University, Ankara, Turke **Email:** deryaozer2000@yahoo. com **Address:** Dr Derya Ozer Kaya, Department of Physiotherapy and Rehabilitation, Izmir Katip Celebi University, Çiğli 35620, Izmir, Turkey
Notes	*Tina Metodekonsulent Povlsen* on 26/02/2016 01:22 **Select** Eligible patients had to be between 18and 65 years of age and have generalizedneck pain for more than 3 months, withsymptoms provoked by neck postures,movements, or palpation *Nkr45 Nakkesmerter* on 04/03/2016 00:43 **Outcomes** pain angives som "rest neck pain"Funktionsevne og livskvalitet er angivet ved EoT

Risk of bias table

Bias	Authors' judgement	Support for judgement
Allocation concealment	Low risk	
Blinding of outcome assessors	High risk	
Selective outcome reporting	Low risk	
Other sources of bias	Low risk	
Sequence Generation	Low risk	
Blinding of participants and personnel	High risk	
Incomplete outcome data	Low risk	

Footnotes

Characteristics of excluded studies

Beltran Alacreu 2015

Reason for exclusion	Wrong intervention

Footnotes

Characteristics of studies awaiting classification

Footnotes

Characteristics of ongoing studies

Footnotes

References to studies

Included studies

Akhter 2014

Akhter,Saeed; Khan,Muhammad; Ali,Syed Shahzad; Soomro,Rabial Rani. Role of manual therapy with exercise regime versus exercise regime alone in the management of non-specific chronic neck pain.. Pakistan Journal of Pharmaceutical Sciences 2014;27(6 Suppl):2125-2128. [DOI:]

Celenay 2016

Celenay,Seyda Toprak; Akbayrak,Turkan; Kaya,Derya Ozer. A Comparison of the Effects of Stabilization Exercises Plus Manual Therapy to Those of Stabilization Exercises Alone in Patients With Nonspecific Mechanical Neck Pain: A Randomized Clinical Trial.. Journal of Orthopaedic & Sports Physical Therapy 2016;46(2):44-55. [DOI: http://dx.doi.org/10.2519/jospt.2016.5979]

Excluded studies

Beltran Alacreu 2015

Beltran-Alacreu,Hector; Lopez-de-Uralde-Villanueva,Ibai; Fernandez-Carnero,Josue; La Touche,Roy. Manual Therapy, Therapeutic Patient Education, and Therapeutic Exercise, an Effective Multimodal Treatment of Nonspecific Chronic Neck Pain: A Randomized Controlled Trial.. American Journal of Physical Medicine & Rehabilitation 2015;94(10 Suppl 1):887-897. [DOI: http://dx.doi.org/10.1097/PHM.0000000000000293]

Data and analyses

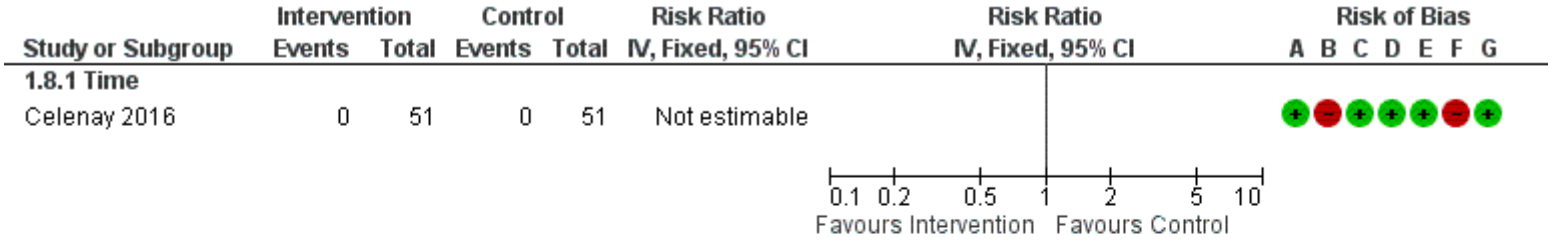
1 Manuel behandling+ træning vs.træning

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Smerte (pain) End of treatment	2	164	Mean Difference (IV, Random, 95% CI)	-0.77 [-1.17, -0.37]
1.1.2 Time - final	2	164	Mean Difference (IV, Random, 95% CI)	-0.77 [-1.17, -0.37]

1.2 Smerte (pain) 4-12 weeks follow-up	1	62	Mean Difference (IV, Random, 95% CI)	-0.70 [-1.27, -0.13]
1.2.1 Time (change)	1	62	Mean Difference (IV, Random, 95% CI)	-0.70 [-1.27, -0.13]
1.3 Funktionsevne (level of function) 4-12 weeks follow-up	1	62	Mean Difference (IV, Fixed, 95% CI)	-2.30 [-3.42, -1.18]
1.3.2 Time (final)	1	62	Mean Difference (IV, Fixed, 95% CI)	-2.30 [-3.42, -1.18]
1.4 Livskvalitet (Quality of life) 4-12 weeks follow-up	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.5 Forbrug af medicin (Use od medicin) 4-12 weeks follow-up	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.6 Tilbage til arbejde (Return to work) 4-12 weeks follow-up	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.7 Sygefravær (Sick leave) 4-12 weeks follow-up	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.8 Frafald (dropout) End of treatment	1		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.8.1 Time	1		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.9 Skader under træning (Injuries during training) End of treatment	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.10 Skader på a.vertebralis (Injuries on a. vertebrae) End of treatment	0		Risk Ratio (IV, Fixed, 95% CI)	No totals

Figures

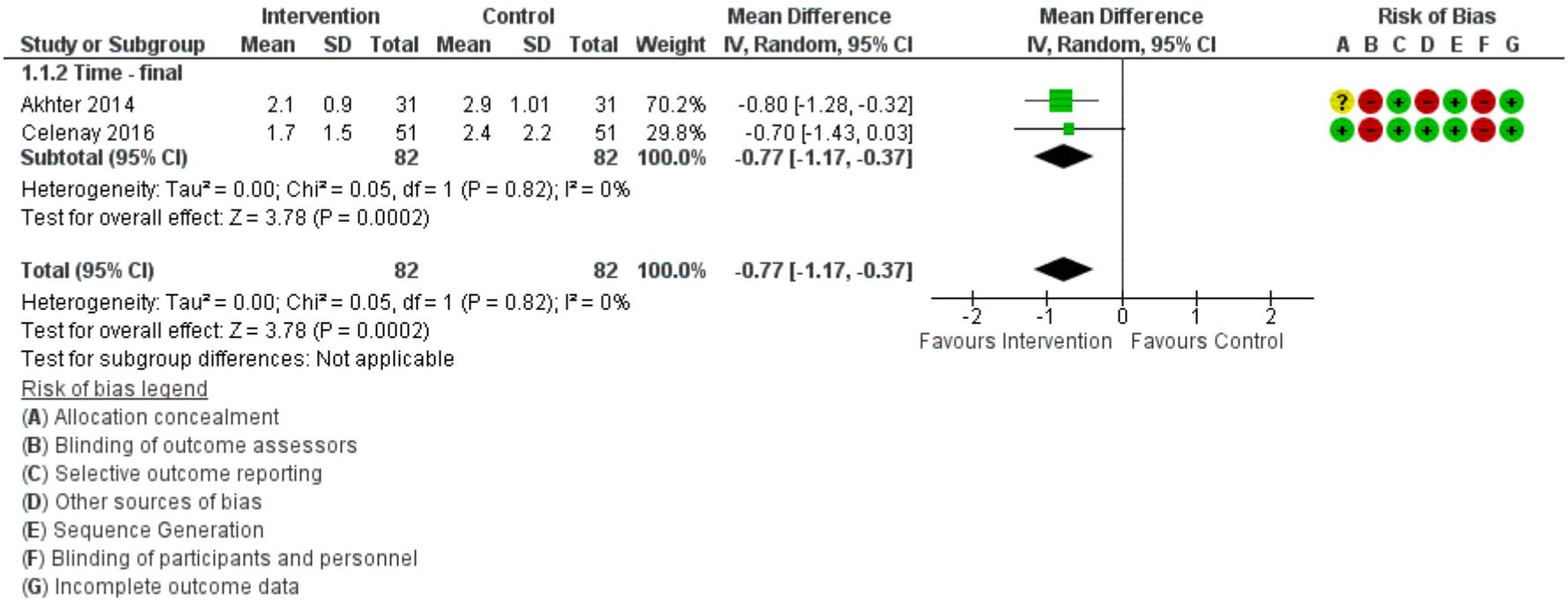
Figure 1 (Analysis 1.8)



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

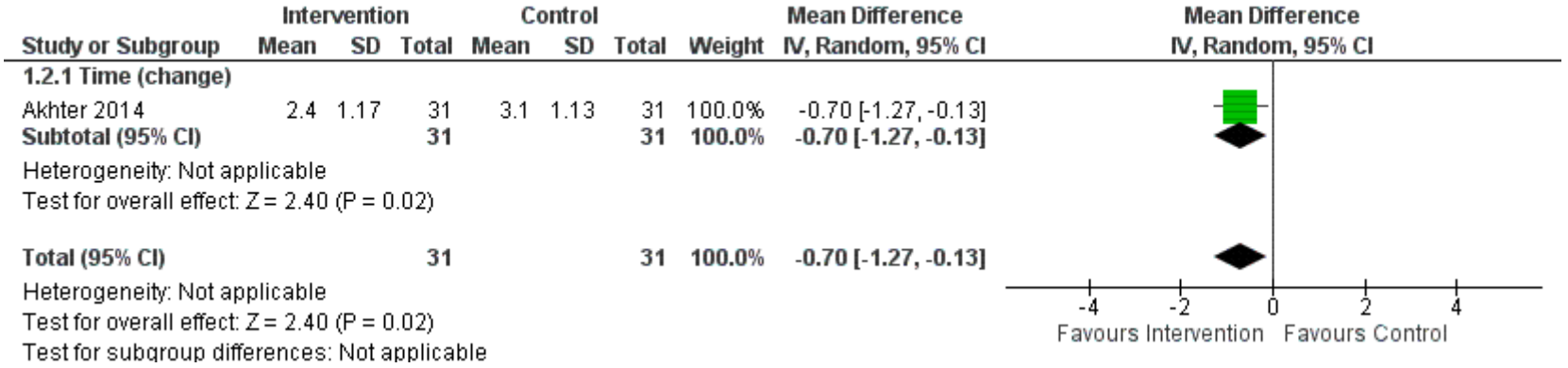
Forest plot of comparison: 1 Intervention vs Control, outcome: 1.8 Frafald (dropout) End of treatment.

Figure 2 (Analysis 1.1)



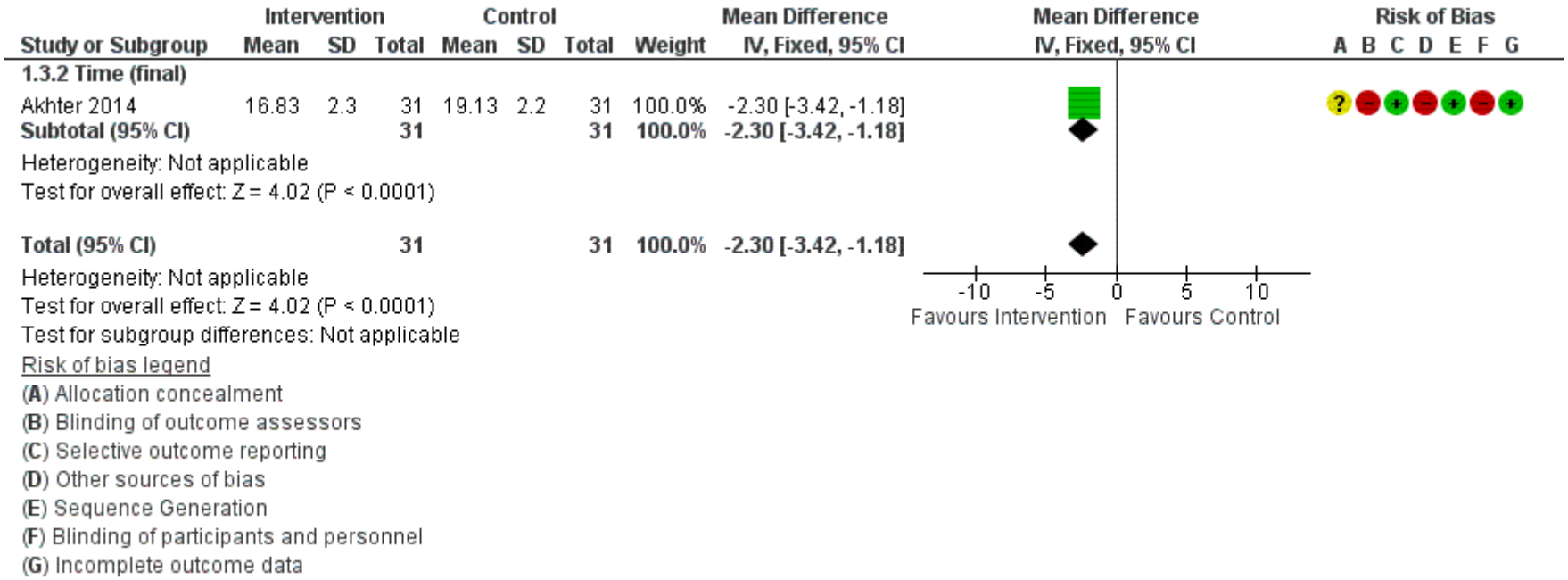
Forest plot of comparison: 1 Intervention vs Control, outcome: 1.1 Smerte (pain) End of treatment.

Figure 3 (Analysis 1.2)



Forest plot of comparison: 1 Manuel behandling+ træning vs.træning, outcome: 1.2 Smerte (pain) 4-12 weeks follow-up.

Figure 4 (Analysis 1.3)



Forest plot of comparison: 1 Manuel behandling+ træning vs.træning, outcome: 1.3 Funktionsevne (level of function) 4-12 weeks follow-up.