

# NKR 47: PICO 3, Kombineret balance og styrketræning eller styrketræning

## Review information

### Authors

Sundhedsstyrelsen<sup>1</sup>

<sup>1</sup>[Empty affiliation]

Citation example: S. NKR 47: PICO 3, Kombineret balance og styrketræning eller styrketræning. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

## Characteristics of studies

### Characteristics of included studies

#### deBruin 2007

<b>Methods</b>	<p><b>Study design:</b> Randomized controlled trial</p> <p><b>Study grouping:</b> Parallel group</p> <p><b>Open Label:</b></p> <p><b>Cluster RCT:</b></p>
<b>Participants</b>	<p><b>Baseline Characteristics</b></p> <p>Intervention</p> <ul style="list-style-type: none"> <li>● Age (SD): 85.39 (5.4)</li> <li>● Gender (Male %): 8.3</li> <li>● Cognitive impairments (yes/no): N</li> <li>● Frail (yes/no): NR</li> <li>● Comorbidity (yes/no): NR</li> <li>● Undernourished (yes/no): NR</li> <li>● Impairment (body function and structure description (yes/no): NR</li> <li>● Limitations (activity description) (yes/no): Y</li> <li>● Restrictions (participation description) (yes/no): Yes</li> <li>● Housing (eg. residential living, own home): Own home: Senior hostel</li> <li>● Living alone (%): NR</li> <li>● In risk of falling/balance impairments (yes/no): Y</li> </ul>

	<p>Control</p> <ul style="list-style-type: none"> <li>● <b>Age (SD):</b> 86.59 (4.9)</li> <li>● <b>Gender (Male %):</b> 38.5</li> <li>● <b>Cognitive impairments (yes/no):</b> N</li> <li>● <b>Frail (yes/no):</b> NR</li> <li>● <b>Comorbidity (yes/no):</b> NR</li> <li>● <b>Undernourished (yes/no):</b> NR</li> <li>● <b>Impairment (body function and structure description (yes/no):</b> NR</li> <li>● <b>Limitations (activity description) (yes/no):</b> Y</li> <li>● <b>Restrictions (participation description) (yes/no):</b> Yes</li> <li>● <b>Housing (eg. residential living, own home):</b> Own home: Senior hostel</li> <li>● <b>Living alone (%):</b> NR</li> <li>● <b>In risk of falling/balance impairments (yes/no):</b> Y</li> </ul> <p><b>Included criteria:</b> Participants were recruited from a senior citizens hostel in Zurich, Switzerland. Inclusion criteria were residential status, age over 70 years, signed informed consent statement, and the ability to walk 6 m</p> <p><b>Excluded criteria:</b> Participants were excluded if they had severe cognitive impairment (Mini-Mental State Examination 18), rapidly progressive terminal illness, acute illness or unstable chronic illness, myocardial infarction, fracture of a lower extremity within six months prior to study beginning, or insulin-dependent diabetes mellitus. Participants who were undergoing resistance training at the time of enrolment or whose muscle strength test revealed musculoskeletal or cardiovascular abnormalities were also excluded.</p> <p><b>Pretreatment:</b> At baseline the resistance and balance group had a significantly lower body mass compared to the resistance group. Though there is not a significant difference reported in gender at baseline the control group has 38% male versus 8% in the intervention group</p>
<p><b>Interventions</b></p>	<p><b>Intervention Characteristics</b></p> <p>Intervention</p> <ul style="list-style-type: none"> <li>● <b>Description:</b> All classes started with 5-10 min of warm-up activities, followed by 20-25 min of skills training in game-like and co-operative activities, such as throwing and catching a ball while standing on a foam surface. plus Machine driven strength training</li> <li>● <b>Duration:</b> Participants randomized into experimental group received an additional half-hour of balancetraining on the same day as the second weekly strength training for 12 weeks.</li> <li>● <b>Dose:</b> The intensity was gradually increased and previously formulated recommendations were applied: participants performed 12 sets of 10 different exercises emphasizing dynamic postures with progressive difficulty as tolerated.<sup>2</sup></li> <li>● <b>Personel:</b> Supervised by a physical therapist and exercise trainer</li> </ul> <p>Control</p>

	<ul style="list-style-type: none"> <li>● <i>Description:</i> All participants underwent a regimen of progressive resistance training of the hip and knee, the hip abductors and the foot plantarflexors</li> <li>● <i>Duration:</i> Two days per week / each session lasted 45 min. for 12 weeks</li> <li>● <i>Dose:</i> The total training period was divided into two phases of six weeks each. In the first phase participants performed progressive resistance training with four sets for every exercise. The first set was performed with no weight or with 50% of the maximal exercise weight and 15 repetitions. The second set 100% of the maximal exercise weight was taken with the aim of 8- 12 repetitions. To maintain the intensity of the stimulus in this phase, the load was increased at each training session, as tolerated by the participants. Progression in sets performed went from one to three sets in the six-week training time.</li> <li>● <i>Personel:</i> All exercise sessions were supervised individually by a single experienced exercise trainer</li> </ul>
<p><b>Outcomes</b></p>	<p><i>Muskelstyrke (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> Continuous Outcome</li> <li>● <b>Reporting:</b> Fully reported</li> <li>● <b>Scale:</b> Maximal isometric knee extensor muscle force</li> <li>● <b>Unit of measure:</b> Newton</li> <li>● <b>Direction:</b> Higher is better</li> <li>● <b>Data value:</b> Endpoint</li> <li>● <b>Notes:</b> The muscle strength is measured in both right and left leg. The value for the right leg is used as the data point</li> </ul> <p><i>Mobilitet (Bevægelse og færden) (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> Continuous Outcome</li> <li>● <b>Reporting:</b> Fully reported</li> <li>● <b>Scale:</b> Chair stand from SPPB</li> <li>● <b>Unit of measure:</b> time/5xRepetitions</li> <li>● <b>Direction:</b> Higher is better</li> <li>● <b>Data value:</b> Endpoint</li> </ul> <p><i>Mobilitet (Bevægelse og færden) (LF)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> Continuous Outcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Balance (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> Continuous Outcome</li> <li>● <b>Scale:</b> The Tinetti Assessment Tool - balance subscale</li> <li>● <b>Range:</b> 0-16</li> <li>● <b>Unit of measure:</b> Points</li> </ul>

	<ul style="list-style-type: none"> <li>● <b>Direction:</b> Higher is better</li> <li>● <b>Data value:</b> Endpoint</li> <li>● <b>Notes:</b> The score from the subscale balance are used as the data point. The maximum score for the gait component is 12 points. The maximum score for the balance component is 16 points.</li> </ul> <p><i>Balance (LF)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Fald (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> DichotomousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Fald (LF)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> DichotomousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>ADL (inkluderer både IADL og ADL) (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Forblive i eget hjem (ændring af bopælsstatus) (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> DichotomousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Serious adverse events (SAE)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> DichotomousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Utilsligtet vægttab</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul>
<b>Identification</b>	<p><b>Sponsorship source:</b> This study was made possible through ETHresources. No external funding was available. There are no competing interests</p> <p><b>Country:</b> Zurich, Switzerland</p> <p><b>Setting:</b> Participants were recruited from a senior citizens hostel in Zurich, Switzerland</p> <p><b>Comments:</b> No further comments</p> <p><b>Authors name:</b> Eling D de Bruin</p> <p><b>Institution:</b> Institute of Human Movement Sciences and Sport, D-Biology, ETH Zurich and Department of</p>

	<p>Rheumatology and Institute of Physical Medicine, University Hospital Zurich. - And Institute of Human Movement Sciences and Sport, D-Biology, ETH Zurich, Swi  <b>Email:</b> <a href="mailto:debruin@move.biol.ethz.ch">debruin@move.biol.ethz.c</a>  <b>Address:</b> Institut für Bewegungswissenschaften und Sport ETH, Nelkenstrasse 11,ETH Zentrum, NEL C11, CH-8092 Zurich, Switzerland.</p>
<b>Notes</b>	

**Risk of bias table**

<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Blinding of participants and personnel	High risk	Quote: "All test sessions were performed by the exercise trainer who was aware of participants' group allocation." Judgement Comment: No blinding of personnel and blinding of participants not described but in difficult to manage in this type of studies
Incomplete outcome data	High risk	Quote: "The progress of participants through the various stages of the study is presented in Figure 1. Two" Judgement Comment: The dropouts with causes are well described but more than 10% dropped out and their analysis is per protocol and not intention to treat corresponding to a high risk of bias
Blinding of outcome assessors	Low risk	Judgement Comment: For strength assessment assessor not blinded. For balance test (Tinetti test) and mobility test assessors were blinded
Sequence Generation	Low risk	Quote: "The couples were then given two digit numbers (01 through 16) and were randomized using a table of random numbers. 19 Figure 1 shows the recruitment process"
Allocation concealment	Unclear risk	Judgement Comment: No information available on how the allocation concealment was performed No information available on how the allocation concealment was performed
Selective outcome reporting	Low risk	Judgement Comment: No protocol is available - however their outcome measures seems reasonable
Other sources of bias	Low risk	Judgement Comment: Non detected

**Joshua 2014**

	<p><b>Methods</b></p> <p><b>Study design:</b> Randomized controlled trial  <b>Study grouping:</b> Parallel group  <b>Open Label:</b>  <b>Cluster RCT:</b></p>
<p><b>Participants</b></p>	<p><b>Baseline Characteristics</b></p> <p>Intervention</p> <ul style="list-style-type: none"> <li>● Age (SD): 75,22 (5.25)</li> <li>● Gender (Male %): 5.6</li> <li>● Cognitive impairments (yes/no): N</li> <li>● Frail (yes/no): NR</li> <li>● Comorbidity (yes/no): Y</li> <li>● Undernourished (yes/no): NR</li> <li>● Impairment (body function and structure description (yes/no): NR</li> <li>● Limitations (activity description) (yes/no): NR</li> <li>● Restrictions (participation description) (yes/no): NR</li> <li>● Housing (eg. residential living, own home): Own home: N (nursing home residents)</li> <li>● Living alone (%): NR</li> <li>● In risk of falling/balance impairments (yes/no): Y</li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>● Age (SD): 75.11 (5.50)</li> <li>● Gender (Male %): 33.3</li> <li>● Cognitive impairments (yes/no): N</li> <li>● Frail (yes/no): NR</li> <li>● Comorbidity (yes/no): Y</li> <li>● Undernourished (yes/no): NR</li> <li>● Impairment (body function and structure description (yes/no): NR</li> <li>● Limitations (activity description) (yes/no): NR</li> <li>● Restrictions (participation description) (yes/no): NR</li> <li>● Housing (eg. residential living, own home): Own home: nursing home</li> <li>● Living alone (%): NR</li> <li>● In risk of falling/balance impairments (yes/no): Y</li> </ul> <p><b>Included criteria:</b> Subjects aged 65 years and older, of both gender, medical screening clearance, Berg balance scale (BBS) score of 41 to 52 [18], Mini Mental State Examination (MMSE) score of <math>\geq 23</math>, a minimum score of 17.5 cm (7 inches) on FRT [19] and a muscle strength grade of 4 or above for the lower limb muscle groups were considered as the criteria for including subjects for the study.</p>

	<p><b>Excluded criteria:</b> Symptomatic cardiovascular diseases, neurological conditions, peripheral neuropathy of lower limbs with significant dorsal column sensory loss, musculoskeletal condition of the lower quarter which could interfere with measuring outcome, malignancies, medications which carry the risk of causing falls, diagnosed vestibular disorders and subjects who underwent lower limb strength training and/or balance training during the past 3 months were the criteria to exclude the subjects.</p> <p><b>Pretreatment:</b> No differences between resistance training group and combi group</p>
<p><b>Interventions</b></p>	<p><b>Intervention Characteristics</b> Intervention</p> <ul style="list-style-type: none"> <li>● <i>Description:</i> The COMBI group received PRT (progressive resistance training) and balance training (45 min) alternately, thus making 2 days of PRT and 2 days of balance training in a week.</li> <li>● <i>Duration:</i> 4 days a week for 26 weeks</li> <li>● <i>Dose:</i> PRT gradually increased intensity over the 6 month with lower intensity during the first four weeks</li> <li>● <i>Personel:</i> well-qualified physiotherapist</li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>● <i>Description:</i> The PRT group received resistance training for the key muscles of both lower extremities. which lasted for approximately an hour per session. The muscle groups strengthened were hip flexors, extensors and abductors, knee flexors, and extensors, and ankle dorsiflexors and plantarflexors</li> <li>● <i>Duration:</i> 2 days a week for 26 weeks</li> <li>● <i>Dose:</i> PRT gradually increased intensity over the 6 month with lower intensity during the first four weeks. Similarly, to minimize musculoskeletal injuries, the subjects were given 15RM (65% of 1RM) instead of prescribed 10RM of DeLormes and Watkins protocol during the first four weeks</li> <li>● <i>Personel:</i> well-qualified physiotherapist</li> </ul>
<p><b>Outcomes</b></p>	<p><i>Muskelstyrke (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Mobilitet (Bevægelse og færden) (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Mobilitet (Bevægelse og færden) (LF)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Balance (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> </ul>

	<ul style="list-style-type: none"> <li>● <b>Scale:</b> Functional reach test</li> <li>● <b>Unit of measure:</b> cm</li> <li>● <b>Direction:</b> Higher is better</li> <li>● <b>Data value:</b> Endpoint</li> </ul> <p><i>Balance (LF)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Fald (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> DichotomousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Fald (LF)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> DichotomousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>ADL (inkluderer både IADL og ADL) (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Forblive i eget hjem (ændring af bopælsstatus) (EOT)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> DichotomousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Serious adverse events (SAE)</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> DichotomousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul> <p><i>Utilsligtet væggtab</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> <li>● <b>Reporting:</b> Not reported</li> </ul>
<b>Identification</b>	<p><b>Sponsorship source:</b> No financial or other competing interests</p> <p><b>Country:</b> India</p> <p><b>Setting:</b> Participants from the elderly care centres of Mangalore city in Southern India</p> <p><b>Comments:</b> No further comments</p> <p><b>Authors name:</b> Abraham m. Joshua</p> <p><b>Institution:</b> Department of Physical Therapy, Kasturba Medical College (Manipal University), Mangalore, India. Phone: +919886188221,</p>



	<p><b>Email:</b> E-mail: abraham.joshua@manipal.edu  <b>Address:</b> Department of Physical Therapy, Kasturba Medical College (Manipal University), Mangalore, India.</p>
<b>Notes</b>	

### Risk of bias table

Bias	Authors' judgement	Support for judgement
Blinding of participants and personnel	High risk	Judgement Comment: Blinding of participants is not described, thus, the intervention was 'stength training' and 'balance training', it is not possible to blind the participants.
Incomplete outcome data	Low risk	Judgement Comment: Over all four patients (2/18=I, 2/18=C) dropped out during the intervention phase. The analysis was performed using both per-protocol and intention to treat.
Blinding of outcome assessors	Low risk	Judgement Comment: Following medical screening by a qualified medical practitioner, the independent blinded observer administered the BBS, FRT, manual muscle testing and MMSE on the identified subjects. All the subjects irrespective of the group were encouraged to perform to their best capability at all times including the test for 1RM calculation. At the end of 3rd and 6th month the blinded outcome assessor re-assessed and recorded the outcome measure.
Sequence Generation	Low risk	Judgement Comment: The eligible subjects were assigned to the study groups by sequenced generation using block randomisation. Block size of 6 was used in the trial to allocate the participants to the three interventions i.e. each block consisted of 2 PRT, 2 TBE and 2 COMBI interventions.
Allocation concealment	Low risk	Judgement Comment: The allocation concealment was done using sealed opaque envelopes which was sequentially arranged.
Selective outcome reporting	High risk	Judgement Comment: No protocol located. Even though they measure 1-Rm tests every other week (to avoid the possibility of undue fatigue and tiredness) and to minimize musculoskeletal injuries, the subjects were given 15RM (65% of 1RM) instead of prescribed 10RM of DeLormes and Watkins protocol during the first four weeks, they do not report any data on muscle strength, which was to expect when doing an trial on muscle strength and balance.
Other sources of bias	Low risk	Judgement Comment: None detected

### Footnotes

## Characteristics of ongoing studies

### Footnotes

## References to studies

### Included studies

#### *de Bruin 2007*

de Bruin, Eling, D.; Murer, Kurt. Effect of additional functional exercises on balance in elderly people. *Clinical rehabilitation* 2007;21(2):112-21. [DOI: ]

#### *Joshua 2014*

Joshua, Abraham M.; D'Souza, Vivian; Unnikrishnan, B.; Mithra, Prasanna; Kamath, Asha; Acharya, Vishak; Venugopal, Anand. Effectiveness of progressive resistance strength training versus traditional balance exercise in improving balance among the elderly - a randomised controlled trial. *Journal of clinical and diagnostic research* : JCDR 2014;8(3):98-102. [DOI: ]

### Excluded studies

#### *Almeida 2013*

Almeida, Tais L.; Alexander, Neil B.; Nyquist, Linda V.; Montagnini, Marcos L.; Santos A, C.S.; Rodrigues G, H.P.; Negro, Carlos E.; Trombetta, Ivani C.; Wajngarten, Mauricio. Minimally supervised multimodal exercise to reduce falls risk in economically and educationally disadvantaged older adults. *Journal of Aging and Physical Activity* 2013;21(3):241-59. [DOI: ]

#### *Ansai 2015*

Ansai, Juliana Hotta; Rebelatto, Jose Rubens. Effect of two physical exercise protocols on cognition and depressive symptoms in oldest-old people: A randomized controlled trial. *Geriatrics & gerontology international* 2015;15(9):1127-34. [DOI: ]

#### *Banez 2008*

Banez, Carol; Tully, Sandra; Amaral, Lina; Kwan, Debbie; Kung, Anita; Mak, Kitty; Moghabghab, Rola; Alibhai, Shabbir M. H. Development, implementation, and evaluation of an Interprofessional Falls Prevention Program for older adults. *Journal of the American Geriatrics Society* 2008;56(8):1549-55. [DOI: ]

#### *Bergland 2012*

Bergland A.. Effect of exercise on falls efficacy in osteoporotic women with a history of vertebral fracture: A randomized, controlled trial. *European Geriatric Medicine* 2012;3(Web Page):S67. [DOI: ]

**ChinAPaw 2006**

Chin A Paw,Marijke,J.M.; van Poppel,Mireille,N.M.; Twisk, Jos W. R.; van Mechelen,Willem. Once a week not enough, twice a week not feasible? A randomised controlled exercise trial in long-term care facilities [SRCTN87177281]. Patient education and counseling 2006;63(1-2):205-14. [DOI: ]

**Chulvi Medrano 2009**

Chulvi-Medrano I.; Colado J.C.; Pablos C.; Naclerio F.; Garcia-Masso X. A lower-limb training program to improve balance in healthy elderly women using the T-bow device. Physician and Sportsmedicine 2009;37(2):127-135. [DOI: ]

**deVries 2010**

de Vries,Oscar,J.; Peeters,G M E G.; Elders,Petra J. M.; Muller,Majon; KnoI,Dirk L.; Danner,Sven A.; Bouter, Lex M.; Lips,Paul. Multifactorial intervention to reduce falls in older people at high risk of recurrent falls: a randomized controlled trial. Archives of Internal Medicine 2010;170(13):1110-7. [DOI: ]

**Duckham 2015**

Duckham R.L.; Masud T.; Taylor R.; Kendrick D.; Carpenter H.; Iliffe S.; Morris R.; Gage H.; Skelton D.A.; Dinan-Young S.; Brooke-Wavell K.. Randomised controlled trial of the effectiveness of community group and home-based falls prevention exercise programmes on bone health in older people: The ProAct65+ bone study. Age and Ageing 2015;44(4):573-579. [DOI: ]

**Fox 2010**

Fox,Patrick J.; Vazquez,Laurie; Tonner,Chris; Stevens,Judy A.; Fineman,Norman; Ross,Leslie K.. A randomized trial of a multifaceted intervention to reduce falls among community-dwelling adults. Health education & behavior : the official publication of the Society for Public Health Education 2010;37(6):831-48. [DOI: ]

**Freiberger 2012**

Freiberger E.; Haberle L.; Spirduso W.W.; Rixt,Zijlstra G.. Long-term effects of three multicomponent exercise interventions on physical performance and fall-related psychological outcomes in community-dwelling older adults: A randomized controlled trial. Journal of the American Geriatrics Society 2012;60(3):437-446. [DOI: ]

**Gusi 2012**

Gusi,Narcis; Carmelo Adsuar,Jose; Corzo,Hector; Del Pozo-Cruz,Borja; Olivares,Pedro R.; Parraca,Jose A.. Balance training reduces fear of falling and improves dynamic balance and isometric strength in institutionalised older people: a randomised trial. Journal of physiotherapy 2012;58(2):97-104. [DOI: ]

**Haines 2007**

Haines, Terry P.; Hill,Keith D.; Bennell, Kim L.; Osborne,Richard H.. Additional exercise for older subacute hospital inpatients to prevent falls: benefits and barriers to implementation and evaluation. Clinical rehabilitation 2007;21(8):742-53. [DOI: ]

## ***Kyrdalen 2014***

Kyrdalen, Ingebjorg L.; Moen, Kjersti; Roysland, Anne Sofie; Helbostad, Jorunn L.. The Otago Exercise Program performed as group training versus home training in fall-prone older people: a randomized controlled Trial. *Physiotherapy Research International* : The Journal for Researchers and Clinicians in Physical Therapy 2014;19(2):108-16. [DOI: ]

## ***Liu Ambrose 2008***

Liu-Ambrose, Teresa; Donaldson, Meghan G.; Ahamed, Yasmin; Graf, Peter; Cook, Wendy L.; Close, Jacqueline; Lord, Stephen R.; Khan, Karim M.. Otago home-based strength and balance retraining improves executive functioning in older fallers: a randomized controlled trial. *Journal of the American Geriatrics Society* 2008;56(10):1821-30. [DOI: ]

## ***Rosendahl 2008***

Rosendahl E.; Gustafson Y.; Nordin E.; Lundin-Olsson L.; Nyberg L.. A randomized controlled trial of fall prevention by a high-intensity functional exercise program for older people living in residential care facilities. *Aging Clinical and Experimental Research* 2008;20(1):67-75. [DOI: ]

## ***Seo 2012***

Seo B.D.; Kim B.J.; Singh K.. The comparison of resistance and balance exercise on balance and falls efficacy in older females. *European Geriatric Medicine* 2012;3(5):312-316. [DOI: ]

## ***Sherrington 2014***

Sherrington C.; Lord S.R.; Vogler C.M.; Close J.C.T.; Howard K.; Dean C.M.; Heller G.Z.; Clemson L.; O'Rourke S.D.; Ramsay E.; Barracough E.; Herbert R.D.; Cumming R.G.. A post-hospital home exercise program improved mobility but increased falls in older people: A randomised controlled trial. *PLoS ONE* 2014;9(9): no pagination. [DOI: ]

## ***Yang 2012***

Yang, Xiao Jing; Hill, Keith; Moore, Kirsten; Williams, Susan; Dowson, Leslie; Borschmann, Karen; Simpson, Julie Anne; Dharmage, Shyamali C.. Effectiveness of a targeted exercise intervention in reversing older people's mild balance dysfunction: a randomized controlled trial. *Physical Therapy* 2012;92(1):24-37. [DOI: ]

## **Data and analyses**

### **1 Strength + balance vs Strength**

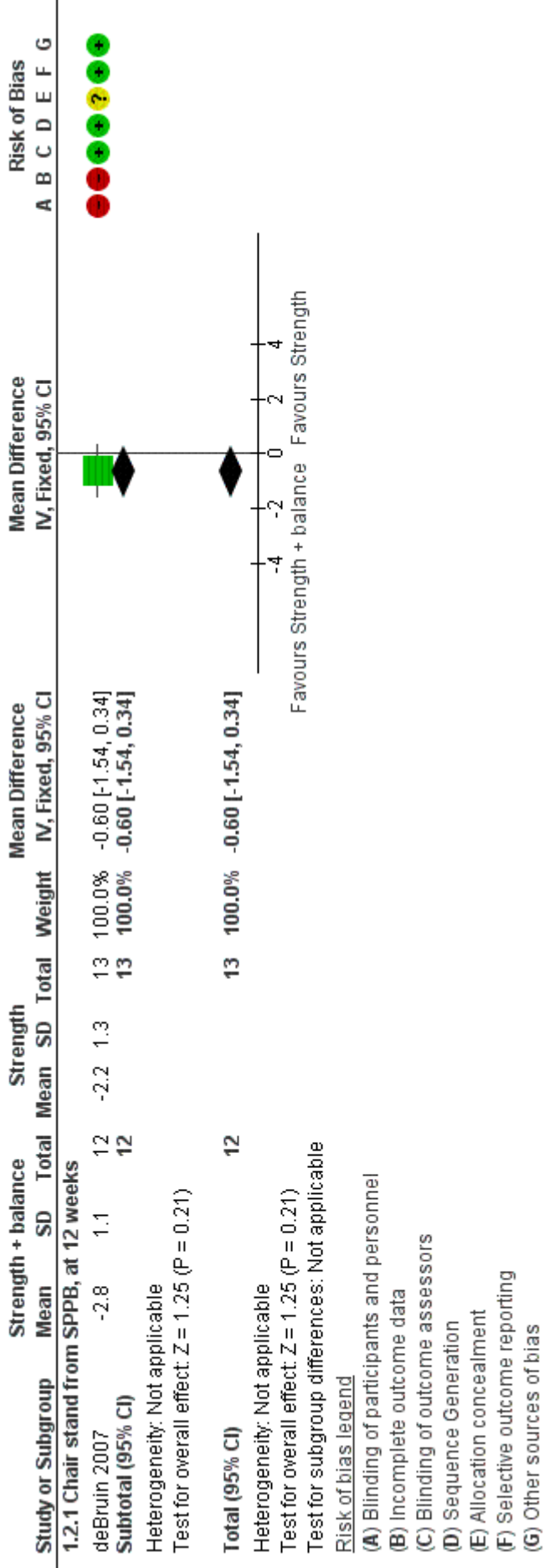
Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
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1.1 Muskelstyrke (EOT)	1	25	Mean Difference (IV, Fixed, 95% CI)	16.60 [-38.25, 71.45]
1.1.1 Maximal isometric knee extensor muscle force, at 12 weeks	1	25	Mean Difference (IV, Fixed, 95% CI)	16.60 [-38.25, 71.45]
1.2 Mobilitet (Bevægelse og færden) (EOT)	1	25	Mean Difference (IV, Fixed, 95% CI)	-0.60 [-1.54, 0.34]
1.2.1 Chair stand from SPPB, at 12 weeks	1	25	Mean Difference (IV, Fixed, 95% CI)	-0.60 [-1.54, 0.34]
1.3 Mobilitet (Bevægelse og færden) (LF)	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.4 Balance (EOT)	2	61	Std. Mean Difference (IV, Random, 95% CI)	-0.23 [-0.76, 0.30]
1.4.1 At 12-26 weeks	2	61	Std. Mean Difference (IV, Random, 95% CI)	-0.23 [-0.76, 0.30]
1.5 Balance (LF)	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.6 ADL (inkluderer både IADL og ADL) (EOT)	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.7 Utilsigtet vægttab	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.8 Fald (EOT)	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.9 Fald (LF)	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.10 Forblive i eget hjem (ændring af bopælsstatus) (EOT)	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.11 Serious adverse events (SAE)	0		Risk Ratio (IV, Fixed, 95% CI)	No totals

## Figures

Figure 1 (Analysis 1.1)





Forest plot of comparison: 1 Strength + balance vs Strength, outcome: 1.2 Mobilitet (Bevægelse og færden) (EOT).

**Figure 3 (Analysis 1.4)**



