

# NKR 53 demens og adfærdsforstyrrelser PICO 5 årsagsanalyse

## Review information

### Authors

Sundhedsstyrelsen<sup>1</sup>

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Citation example: S. NKR 53 demens og adfærdsforstyrrelser PICO 5 årsagsanalyse. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

## Characteristics of studies

### Characteristics of included studies

#### *Burgio 2003*

<b>Methods</b>	
<b>Participants</b>	
<b>Interventions</b>	
<b>Outcomes</b>	
<b>Identification</b>	
<b>Notes</b>	<p>Outcomes målt ved 6mdr er afrapporteret i dette studie, selvom interventionen strakte sig til 12 mdr.</p> <p>Data obtained from:          Moniz, Cook E.; Swift K.; James I.; Malouf R.; De, Vugt M.; Verhey F.          Functional analysis-based interventions for challenging behaviour in dementiaCochrane database of systematic reviews          (Online) 2012;2(Journal Article):CD006929United Kingdom 2012</p>

### Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Allocation concealment (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Blinding of participants and personnel (performance bias)	High risk	reference: Moniz Cook et al. 2012
Blinding of outcome assessment (detection bias)	Low risk	reference: Moniz Cook et al. 2012
Incomplete outcome data (attrition bias)	Low risk	reference: Moniz Cook et al. 2012
Selective reporting (reporting bias)	Low risk	reference: Moniz Cook et al. 2012
Other bias	Low risk	reference: Moniz Cook et al. 2012

### Chenoweth 2009

<b>Methods</b>	
<b>Participants</b>	
<b>Interventions</b>	
<b>Outcomes</b>	
<b>Identification</b>	
<b>Notes</b>	<p>Data obtained from:  Moniz, Cook E.; Swift K.; James I.; Malouf R.; De, Vugt M.; Verhey F.  Functional analysis-based interventions for challenging behaviour in dementia  Cochrane database of systematic reviews  (Online) 2012;2(Journal Article):CD006929United Kingdom 2012</p> <p><b>Outcomes</b>  Antipsychotic usage: not clear if the numbers are proportions or percent. We have assumed they are proportions</p>

### Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Allocation concealment (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Blinding of participants and personnel (performance bias)	Low risk	reference: Moniz Cook et al. 2012
Blinding of outcome assessment (detection bias)	Low risk	reference: Moniz Cook et al. 2012
Incomplete outcome data (attrition bias)	Low risk	reference: Moniz Cook et al. 2012
Selective reporting (reporting bias)	Low risk	reference: Moniz Cook et al. 2012
Other bias	Unclear risk	reference: Moniz Cook et al. 2012

### Cohen Mansfield 2012

<b>Methods</b>	<p><b>Study design:</b> Randomized controlled trial</p> <p><b>Study grouping:</b> Parallel group</p>
<b>Participants</b>	<p><b>Baseline Characteristics</b></p> <p>Intervention 1</p> <ul style="list-style-type: none"> <li>● Age y (SD): 85.9 (8.62)</li> <li>● MMSE (mean, SD): 7.62 (6.33)</li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>● Age y (SD): 85.3 (9.62)</li> <li>● MMSE (mean, SD): 9.38 (6.76)</li> </ul> <p><b>Included criteria:</b> Resident 1) had been at the nursing home =&gt; 3 weeks 2) had been identified by nursing staff as agitated at least several times a day 3) was aged =&gt;60 years and 4) had a diagnosis of dementia</p> <p><b>Excluded criteria:</b> Resident 1) had life expectancy of 3months 2) had a diagnosis of bipolar disorder, schizophrenia or mental retardation 3) was expected to leave nursing home within 4 months 4) had MMSE = &gt; 25 or 5) had participated in a previous TREA trial</p>

<b>Interventions</b>	<p><b>Intervention Characteristics</b></p> <p>Intervention</p> <ul style="list-style-type: none"> <li>● <i>Description</i>: Treatment Routes for exploring Agitation (TREA)</li> <li>● <i>Length of treatment</i>: 2 weeks</li> <li>● <i>Longest follow-up after end of treatment</i>: none</li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>● <i>Description</i>: Treatment as usual</li> <li>● <i>Length of treatment</i>: 2 weeks</li> <li>● <i>Longest follow-up after end of treatment</i>: none</li> </ul>
<b>Outcomes</b>	<p>Agitation (ABMI), SD</p> <ul style="list-style-type: none"> <li>● <b>Outcome type</b>: ContinuousOutcome</li> </ul>
<b>Identification</b>	
<b>Notes</b>	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Judgement Comment: Participants were randomised either by units (for larger nursing homes with many eligible participants) or by nursing homes (when there were fewer eligible participants). Randomisation was performed using random numbers via a ration of 1.5:1
Allocation concealment (selection bias)	High risk	Judgement Comment: The research assistants were blind to group allocation, until the treatment began
Blinding of participants and personnel (performance bias)	Low risk	Judgement Comment: participants were blinded, but not the personnel
Blinding of outcome assessment (detection bias)	High risk	Judgement Comment: Blinding not possible

Incomplete outcome data (attrition bias)	Low risk	Judgement Comment: 62 participants withdrew from the intervention group and 36 from the placebo group. However, as ITT analyses was performed, the risk of bias is considered low. No apparent sources of bias
Selective reporting (reporting bias)	Low risk	Judgement Comment: Matches study protocol
Other bias	Low risk	Judgement Comment: No apparent sources of bias

### Gonyea 2006

<b>Methods</b>	
<b>Participants</b>	
<b>Interventions</b>	
<b>Outcomes</b>	
<b>Identification</b>	
<b>Notes</b>	Data obtained from: Moniz, Cook E.; Swift K.; James I.; Malouf R.; De, Vugt M.; Verhey F. Functional analysis-based interventions for challenging behaviour in dementiaCochrane database of systematic reviews (Online) 2012;2(Journal Article):CD006929United Kingdom 2012

### Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Allocation concealment (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Blinding of participants and personnel (performance bias)	Unclear risk	reference: Moniz Cook et al. 2012
Blinding of outcome assessment (detection bias)	Unclear risk	reference: Moniz Cook et al. 2012
Incomplete outcome data (attrition bias)	Low risk	reference: Moniz Cook et al. 2012
Selective reporting (reporting bias)	Unclear risk	reference: Moniz Cook et al. 2012
Other bias	Unclear risk	reference: Moniz Cook et al. 2012

**Gormley 2001**

<b>Methods</b>	
<b>Participants</b>	
<b>Interventions</b>	
<b>Outcomes</b>	
<b>Identification</b>	
<b>Notes</b>	Data obtained from: Moniz, Cook E.; Swift K.; James I.; Malouf R.; De, Vugt M.; Verhey F. Functional analysis-based interventions for challenging behaviour in dementiaCochrane database of systematic reviews (Online) 2012;2(Journal Article):CD006929United Kingdom 2012

**Risk of bias table**

<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Allocation concealment (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Blinding of participants and personnel (performance bias)	Unclear risk	reference: Moniz Cook et al. 2012
Blinding of outcome assessment (detection bias)	Low risk	reference: Moniz Cook et al. 2012
Incomplete outcome data (attrition bias)	Low risk	reference: Moniz Cook et al. 2012
Selective reporting (reporting bias)	Low risk	reference: Moniz Cook et al. 2012
Other bias	Unclear risk	reference: Moniz Cook et al. 2012

**Huang 2003**

<b>Methods</b>	
<b>Participants</b>	
<b>Interventions</b>	
<b>Outcomes</b>	
<b>Identification</b>	
<b>Notes</b>	Data obtained from: Moniz, Cook E.; Swift K.; James I.; Malouf R.; De, Vugt M.; Verhey F. Functional analysis-based interventions for challenging behaviour in dementia Cochrane database of systematic reviews (Online) 2012;2(Journal Article):CD006929 United Kingdom 2012

### Risk of bias table

<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Allocation concealment (selection bias)	Unclear risk	reference: Moniz Cook et al. 2012
Blinding of participants and personnel (performance bias)	Low risk	reference: Moniz Cook et al. 2012
Blinding of outcome assessment (detection bias)	Unclear risk	reference: Moniz Cook et al. 2012
Incomplete outcome data (attrition bias)	Low risk	reference: Moniz Cook et al. 2012
Selective reporting (reporting bias)	Low risk	reference: Moniz Cook et al. 2012
Other bias	Unclear risk	reference: Moniz Cook et al. 2012

### *Kovach 2006*

<b>Methods</b>	<b>Study design:</b> Randomized controlled trial <b>Study grouping:</b> Parallel group
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<p><b>Participants</b></p>	<p><b>Baseline Characteristics</b></p> <p>Intervention</p> <ul style="list-style-type: none"> <li>● <i>Age mean (SD): 7.35</i></li> <li>● <i>MMSE: 8.26</i></li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>● <i>Age mean (SD): 6.13</i></li> <li>● <i>MMSE: 6.29</i></li> </ul> <p><b>Included criteria:</b> MMSE score indicating moderate to severe cognitive impairment. Advanced functional impairment. No chronic psychiatric diagnosis. At least 4 weeks postadmission to skilled nursing care at this nursing home</p>
<p><b>Interventions</b></p>	<p><b>Intervention Characteristics</b></p> <p>Intervention</p> <ul style="list-style-type: none"> <li>● <i>Description: Serial trial intervention</i></li> <li>● <i>Length of treatment: 2 weeks</i></li> <li>● <i>Longest follow-up after end of treatment: 4 weeks</i></li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>● <i>Description: Standard care</i></li> <li>● <i>Length of treatment: 2 weeks</i></li> <li>● <i>Longest follow-up after end of treatment: 4 weeks</i></li> </ul>
<p><b>Outcomes</b></p>	<p><i>BPSD (BEHAVE-AD), SD</i></p> <ul style="list-style-type: none"> <li>● <b>Outcome type:</b> ContinuousOutcome</li> </ul>
<p><b>Identification</b></p>	
<p><b>Notes</b></p>	

Risk of bias table



Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Judgement Comment: Randomly assigned using coin toss
Allocation concealment (selection bias)	High risk	Judgement Comment: Randomly assigned using coin toss
Blinding of participants and personnel (performance bias)	Low risk	Judgement Comment: Research subjects described as blinded
Blinding of outcome assessment (detection bias)	Low risk	Judgement Comment: Data collectors described as blinded
Incomplete outcome data (attrition bias)	Low risk	Judgement Comment: 127 randomized and 114 completed
Selective reporting (reporting bias)	Low risk	Judgement Comment: None detected
Other bias	Low risk	Judgement Comment: No other apparent sources of bias

### McCabe 2015

<b>Methods</b>	<p><b>Study design:</b> Randomized controlled trial</p> <p><b>Study grouping:</b> Parallel group</p>
<b>Participants</b>	<p><b>Baseline Characteristics</b></p> <p>Intervention 1</p> <ul style="list-style-type: none"> <li>● <i>Age y (SD):</i> 82.85 (8.45)</li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>● <i>Age y (SD):</i> 81.25 (11.03)</li> </ul> <p><b>Included criteria:</b> The inclusion criteria required a positive diagnosis of dementia, and the presence of at least one challenging behavior, defined as 'any behavior associated with dementia which causes distress or danger to the person with dementia and/or others' (Bird et al., 2009).</p>
<b>Interventions</b>	<p><b>Intervention Characteristics</b></p> <p>Intervention</p> <ul style="list-style-type: none"> <li>● <i>Description:</i> Training. A two-hour training session in which staff were helped to work through and identify probably causal factors for the behavior of residents, and develop potential ways of ameliorating these causes (training/support and training conditions).</li> <li>● <i>Length of treatment:</i> 3 months</li> <li>● <i>Longest follow-up after end of treatment:</i> 6 months</li> </ul>

	<p>Control</p> <ul style="list-style-type: none"> <li>● <i>Description</i>: Care as usual</li> <li>● <i>Length of treatment</i>: 3 months</li> <li>● <i>Longest follow-up after end of treatment</i>: 6 months</li> </ul>
<b>Outcomes</b>	<p>Agitation (CMAI), SD</p> <ul style="list-style-type: none"> <li>● <b>Outcome type</b>: ContinuousOutcome</li> </ul>
<b>Identification</b>	
<b>Notes</b>	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "the study agreed to participate. <b>Facilities</b> were randomized to one of the four study/intervention conditions using a cluster randomized controlled design (i.e., the facility rather than the participants/residents or staff were the unit of randomization). Randomization occurred by facilities being allocated to one of the conditions as they were recruited into the study. The numbers 1, 2, 3, and 4 were placed in a box (in each of the two locations) in both year 1 and year 2. The number that was drawn out for the facility determined which of the four conditions the facility was allocated to." Aged-care residents were recruited through"
Allocation concealment (selection bias)	Low risk	Quote: "were recruited into the study. <b>The numbers 1, 2, 3, and 4</b> were placed in a box (in each of the two locations) in both year 1 and year 2. The number that was drawn out for the facility determined which of the four conditions the facility was allocated to." Aged-care residents were recruited through"
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)	High risk	Judgement Comment: Number of withdrawers are not described

Selective reporting (reporting bias)	Low risk	Judgement Comment: No apparent sources of bias
Other bias	Low risk	Judgement Comment: No other apparent sources of bias

**Pieper 2016**

<b>Methods</b>	<p><b>Study design:</b> Cluster randomized controlled trial</p> <p><b>Study grouping:</b> Parallel group</p>
<b>Participants</b>	<p><b>Baseline Characteristics</b></p> <p>Intervention</p> <ul style="list-style-type: none"> <li>● <i>Age y (SD): 84.3 (7.4)</i></li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>● <i>Age y (SD): 83.3(6.9)</i></li> </ul> <p><b>Included criteria:</b> et thecriteria, that at least one psychogeriatric unit was willing to participate and no major organizational changes or buildingactivities were planned or performed during the study per-iod. In each nursing home, residents with moderate to sev-ere cognitive impairment (Reisberg Global DeteriorationScale (GDS) Stage 5, 6, or 7),15no psychiatric diagnosisother than dementia, and clinically significant symptoms ofchallenging behavior (Neuropsychiatric Inventory—NursingHome version (NPI-NH) score&gt;4 or Cohen-Mansfield Agi-tation Inventory (CMAI) score&gt;44)16,17were eligible for participation, providing that written proxy consent wasreceived</p>
<b>Interventions</b>	<p><b>Intervention Characteristics</b></p> <p>Intervention</p> <ul style="list-style-type: none"> <li>● <i>Description: STA OP!</i></li> <li>● <i>Length of treatment: 3 months</i></li> <li>● <i>Longest follow-up after end of treatment: 6 months</i></li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>● <i>Description: Treatment as usual</i></li> <li>● <i>Length of treatment: 3 months</i></li> <li>● <i>Longest follow-up after end of treatment: 6 months</i></li> </ul>

<b>Outcomes</b>	<p><i>BPSD (NPI) CI</i>                  ● <b>Outcome type:</b> ContinuousOutcome</p> <p><i>Antipsychotic usage, OR</i>                  ● <b>Outcome type:</b> DichotomousOutcome</p> <p><i>Depression (Cornell), CI</i>                  ● <b>Outcome type:</b> ContinuousOutcome</p> <p><i>Agitation (CMAI), CI</i>                  ● <b>Outcome type:</b> ContinuousOutcome</p>
<b>Identification</b>	
<b>Notes</b>	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "An independent researcher (who was unaware of the identity of the units) performed the allocation using a computer-generated sequence program"
Allocation concealment (selection bias)	Low risk	Quote: "An independent researcher (who was unaware of the identity of the units) performed the allocation using a computer-generated sequence program (Random"
Blinding of participants and personnel (performance bias)	High risk	Quote: "The trial was single blinded (the researcher knew the condition, but the research assistants performing the measurements were blinded)." Judgement Comment: Participants were not blinded
Blinding of outcome assessment (detection bias)	Low risk	Quote: "The trial was single blinded (the researcher knew the condition, but the research assistants performing the measurements were blinded). 13 Residents"
Incomplete outcome data (attrition bias)	Low risk	Judgement Comment: No apparent sources of bias

Selective reporting (reporting bias)	High risk	Quote: "This trial is registered at the Netherlands National Trial Register (NTR1967)." Judgement Comment: According to the protocol, Quality of Life should have been measured using Qualidem. There is no reportings on Qualidem in thi study
Other bias	Low risk	Judgement Comment: No apparent sources of bias

**Proctor 1999**

<b>Methods</b>	
<b>Participants</b>	
<b>Interventions</b>	
<b>Outcomes</b>	
<b>Identification</b>	
<b>Notes</b>	Data obtained from: Moniz, Cook E.; Swift K.; James I.; Malouf R.; De, Vugt M.; Verhey F. Functional analysis-based interventions for challenging behaviour in dementia Cochrane database of systematic reviews (Online) 2012;2(Journal Article):CD006929United Kingdom 2012

## Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Allocation concealment (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Blinding of participants and personnel (performance bias)	Low risk	reference: Moniz Cook et al. 2012
Blinding of outcome assessment (detection bias)	Unclear risk	reference: Moniz Cook et al. 2012
Incomplete outcome data (attrition bias)	Low risk	reference: Moniz Cook et al. 2012
Selective reporting (reporting bias)	Low risk	reference: Moniz Cook et al. 2012
Other bias	Unclear risk	reference: Moniz Cook et al. 2012

**Teri 2005a**

<b>Methods</b>	
<b>Participants</b>	
<b>Interventions</b>	
<b>Outcomes</b>	
<b>Identification</b>	
<b>Notes</b>	<p>Data obtained from:  Moniz, Cook E.; Swift K.; James I.; Malouf R.; De, Vugt M.; Verhey F.  Functional analysis-based interventions for challenging behaviour in dementiaCochrane database of systematic reviews (Online) 2012;2(Journal Article):CD006929United Kingdom 2012</p> <p><b>Outcomes</b>  Only total no. of patient was reported (n=31). For the analysis we assumed that there was 16 in the intervention og 15 in the control group</p>

**Risk of bias table**

<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Allocation concealment (selection bias)	Unclear risk	reference: Moniz Cook et al. 2012
Blinding of participants and personnel (performance bias)	Unclear risk	reference: Moniz Cook et al. 2012
Blinding of outcome assessment (detection bias)	Low risk	reference: Moniz Cook et al. 2012
Incomplete outcome data (attrition bias)	Low risk	reference: Moniz Cook et al. 2012
Selective reporting (reporting bias)	Low risk	reference: Moniz Cook et al. 2012
Other bias	Unclear risk	reference: Moniz Cook et al. 2012

**Teri 2005b**

<b>Methods</b>	
<b>Participants</b>	
<b>Interventions</b>	
<b>Outcomes</b>	
<b>Identification</b>	
<b>Notes</b>	Data obtained from: Moniz, Cook E.; Swift K.; James I.; Malouf R.; De, Vugt M.; Verhey F. Functional analysis-based interventions for challenging behaviour in dementiaCochrane database of systematic reviews (Online) 2012;2(Journal Article):CD006929United Kingdom 2012

## Risk of bias table

<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	Low risk	reference: Moniz Cook et al. 2012
Allocation concealment (selection bias)	Unclear risk	reference: Moniz Cook et al. 2012
Blinding of participants and personnel (performance bias)	Unclear risk	reference: Moniz Cook et al. 2012
Blinding of outcome assessment (detection bias)	Low risk	reference: Moniz Cook et al. 2012
Incomplete outcome data (attrition bias)	Low risk	reference: Moniz Cook et al. 2012
Selective reporting (reporting bias)	Unclear risk	reference: Moniz Cook et al. 2012
Other bias	Low risk	reference: Moniz Cook et al. 2012

## Footnotes

**Characteristics of excluded studies*****Ballard 2016***

Reason for exclusion	Wrong intervention
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***Ballard 2017***

Reason for exclusion	Wrong intervention
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***Ballard 2017a***

Reason for exclusion	Abstract only
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***Dichter 2015***

Reason for exclusion	Wrong patient population
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***Farran 2004***

Reason for exclusion	Wrong intervention
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***Fernandez Calvo 2015***

Reason for exclusion	Wrong patient population
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***Fossey 2006***

Reason for exclusion	Wrong patient population
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***Gitlin 2003***

Reason for exclusion	Wrong intervention
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***Gitlin 2010***

Reason for exclusion	Wrong outcomes
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***Goga 2017***

Reason for exclusion	Wrong intervention
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***Halek 2013***

Reason for exclusion	Wrong study design
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***LosadaBaltar 2004***

Reason for exclusion	Not in English
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***Mador 2004***

Reason for exclusion	Wrong patient population
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***Moniz Cook 2008***

Reason for exclusion	Wrong patient population
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***Reisberg 2015***

Reason for exclusion	Wrong study design
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**Sampson 2011**

Reason for exclusion	Wrong intervention
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**Straubmeier 2017**

Reason for exclusion	Wrong intervention
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**Teri 2000**

Reason for exclusion	Wrong intervention
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**Teri 2003**

Reason for exclusion	Wrong intervention
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**Thyrian 2017**

Reason for exclusion	Wrong patient population
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**van 2013**

Reason for exclusion	Wrong patient population
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**VanHaitsma 2015**

Reason for exclusion	Wrong intervention
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**Weiner 2002**

Reason for exclusion	Wrong outcomes
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**Zarit 1987**

Reason for exclusion	Wrong patient population
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**Zwijzen 2013**

Reason for exclusion	Abstract only
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**Zwijzen 2014**

Reason for exclusion	Abstract only
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*Footnotes*

## References to studies

### Included studies

**Burgio 2003**

Burgio, L.; Stevens, A.; Guy, D.; Roth, D. L.; Haley, W. E.. Impact of two psychosocial interventions on white and African American family caregivers of individuals with dementia. *The Gerontologist* 2003;43(4):568-579. [DOI: ]

**Chenoweth 2009**

Chenoweth, L.; King, M. T.; Jeon, Y. H.; Brodaty, H.; Stein-Parbury, J.; Norman, R.; Haas, M.; Luscombe, G.. Caring for Aged Dementia Care Resident Study (CADRES) of person-centred care, dementia-care mapping, and usual care in dementia: a cluster-randomised trial. *The Lancet.Neurology* 2009;8(4):317-325. [DOI: 10.1016/S1474-4422(09)70045-6 [doi]]

**Cohen Mansfield 2012**

Cohen-Mansfield, Jiska; Thein, Khin; Marx, Marcia S.; Dakheel-Ali, Maha; Freedman, Laurence. Efficacy of nonpharmacologic interventions for agitation in advanced dementia: a randomized, placebo-controlled trial. *The Journal of clinical psychiatry* 2012;73(9):1255-61. [DOI: <https://dx.doi.org/10.4088/JCP.12m07918>]

**Gonyea 2006**

Gonyea, J. G.; O'Connor, M. K.; Boyle, P. A.. Project CARE: a randomized controlled trial of a behavioral intervention group for Alzheimer's disease caregivers. *The Gerontologist* 2006;46(6):827-832. [DOI: 46/6/827 [pii]]

**Gormley 2001**

Gormley, N.; Lyons, D.; Howard, R.. Behavioural management of aggression in dementia: a randomized controlled trial. *Age and Ageing* 2001;30(2):141-145. [DOI: ]

**Huang 2003**

Huang, H. L.; Shyu, Y. I.; Chen, M. C.; Chen, S. T.; Lin, L. C.. A pilot study on a home-based caregiver training program for improving caregiver self-efficacy and decreasing the behavioral problems of elders with dementia in Taiwan. *International journal of geriatric psychiatry* 2003;18(4):337-345. [DOI: 10.1002/gps.835 [doi]]

**Kovach 2006**

Kovach, C. R.; Logan, B. R.; Noonan, P. E.; Schlidt, A. M.; Smerz, J.; Simpson, M.; Wells, T.. Effects of the Serial Trial Intervention on discomfort and behavior of nursing home residents with dementia. *American Journal of Alzheimer's Disease and Other Dementias* 2006;21(3):147-155. [DOI: 10.1177/1533317506288949 [doi]]

**McCabe 2015**

McCabe, M. P.; Bird, M.; Davison, T. E.; Mellor, D.; MacPherson, S.; Hallford, D.; Seedy, M.. An RCT to evaluate the utility of a clinical protocol for staff in the management of behavioral and psychological symptoms of dementia in residential aged-care settings. *Aging & mental health* 2015;19(9):799-807. [DOI: 10.1080/13607863.2014.967659 [doi]]

**Pieper 2016**

Pieper, Marjoleine J. C.; Francke, Anneke L.; van der Steen, Jenny T.; Scherder, Erik J. A.; Twisk, Jos W. R.; Kovach, Christine R.; Achterberg, Wilco P.. Effects of a Stepwise Multidisciplinary Intervention for Challenging Behavior in Advanced Dementia: A Cluster Randomized Controlled Trial. *Journal of the American Geriatrics Society* 2016;64(2):261-269. [DOI: <https://dx.doi.org/10.1111/jgs.13868>]

**Proctor 1999**

Proctor, R.; Burns, A.; Powell, H. S.; TARRIER, N.; Faragher, B.; Richardson, G.; Davies, L.; South, B.. Behavioural management in nursing and residential homes: a randomised controlled trial. *Lancet (London, England)* 1999;354(9172):26-29. [DOI: S0140-6736(98)08237-3 [pii]]

**Teri 2005a**

Teri, L.; Huda, P.; Gibbons, L.; Young, H.; van Leynseele, J.. STAR: a dementia-specific training program for staff in assisted living residences. *The Gerontologist* 2005;45(5):686-693. [DOI: 45/5/686 [pii]]

**Teri 2005b**

[Empty]

**Excluded studies****Ballard 2016**

Ballard, Clive; Orrell, Martin; YongZhong, Sun; Moniz-Cook, Esme; Stafford, Jane; Whittaker, Rhiannon; Woods, Bob; Corbett, Anne; Garrod, Lucy; Khan, Zunera; Woodward-Carlton, Barbara; Wenborn, Jennifer; Fossey, Jane. Impact of antipsychotic review and nonpharmacological intervention on antipsychotic use, neuropsychiatric symptoms, and mortality in people with dementia living in nursing homes: A factorial cluster-randomized controlled trial by the Well-Being and Health for People with Dementia (WHELD) program. *The American Journal of Psychiatry* 2016;173(3):252-262. [DOI: ]

**Ballard 2017**

Ballard, Clive; Orrell, Martin; Sun, Yongzhong; Moniz-Cook, Esme; Stafford, Jane; Whitaker, Rhiannon; Woods, Bob; Corbett, Anne; Banerjee, Sube; Testad, Ingelin; Garrod, Lucy; Khan, Zunera; Woodward-Carlton, Barbara; Wenborn, Jennifer; Fossey, Jane. Impact of antipsychotic review and non-pharmacological intervention on health-related quality of life in people with dementia living in care homes: WHELD-a factorial cluster randomised controlled trial. *International journal of geriatric psychiatry* 2017;32(10):1094-1103. [DOI: <https://dx.doi.org/10.1002/gps.4572>]

**Ballard 2017a**

Ballard C.; Fossey J.; Corbett A.; Orrell M.; Romeo R.; Moniz-Cook E.; Woods B.; Whitaker R.. Impact of wheld intervention on neuropsychiatric symptoms, antipsychotic use and quality of life in people with dementia living in nursing homes: A cluster randomized trial. *Alzheimer's and Dementia* 2017;13(7):P171. [DOI: ]

**Dichter 2015**

Dichter M.N.; Quasdorf T.; Schwab C.G.G.; Trutschel D.; Haastert B.; Riesner C.; Bartholomeyczik S.; Halek M.. Dementia care mapping: Effects on residents' quality of life and challenging behavior in German nursing homes. A quasi-experimental trial. *International Psychogeriatrics* 2015;27(11):1875-1892. [DOI: <http://dx.doi.org/10.1017/S1041610215000927>]

**Farran 2004**

Farran, CJ; Gilley, DW; McCann, JJ; Bienias, JL; Lindeman, DA; Evans, DA. Psychosocial interventions to reduce depressive symptoms of dementia caregivers: A randomized clinical trial comparing two approaches. *Journal of Mental Health and Aging* 2004;10(4):337-350. [DOI: ]

***Fernandez Calvo 2015***

Fernandez-Calvo, Bernardino; Contador, Israel; Ramos, Francisco; Olazaran, Javier; Mograbi, Daniel C.; Morris, Robin G.. Effect of unawareness on rehabilitation outcome in a randomised controlled trial of multicomponent intervention for patients with mild Alzheimer's disease. *Neuropsychological rehabilitation* 2015;25(3):448-77. [DOI: <https://dx.doi.org/10.1080/09602011.2014.948461>]

***Fossey 2006***

Fossey, J.; Ballard, C.; Juszczak, E.; James, I.; Alder, N.; Jacoby, R.; Howard, R.. Effect of enhanced psychosocial care on antipsychotic use in nursing home residents with severe dementia: cluster randomised trial. *BMJ (Clinical research ed.)* 2006;332(7544):756-761. [DOI: [bmj.38782.575868.7C](https://doi.org/10.1136/bmj.38782.575868.7C) [pii]]

***Gitlin 2003***

Gitlin, L. N.; Winter, L.; Corcoran, M.; Dennis, M. P.; Schinfeld, S.; Hauck, W. W.. Effects of the home environmental skill-building program on the caregiver-care recipient dyad: 6-month outcomes from the Philadelphia REACH Initiative. *The Gerontologist* 2003;43(4):532-546. [DOI: ]

***Gitlin 2010***

Gitlin, L. N.; Winter, L.; Dennis, M. P.; Hodgson, N.; Hauck, W. W.. Targeting and managing behavioral symptoms in individuals with dementia: a randomized trial of a nonpharmacological intervention. *Journal of the American Geriatrics Society* 2010;58(8):1465-1474. [DOI: [10.1111/j.1532-5415.2010.02971.x](https://doi.org/10.1111/j.1532-5415.2010.02971.x) [doi]]

***Goga 2017***

Goga, Joshana K.; Depaolo, Antonio; Khushalani, Sunil; Walters, J. K.; Roca, Robert; Zisselman, Marc; Borleis, Christopher. Lean Methodology Reduces Inappropriate Use of Antipsychotics for Agitation at a Psychiatric Hospital. *The Consultant pharmacist : the journal of the American Society of Consultant Pharmacists* 2017;32(1):54-62. [DOI: <https://dx.doi.org/10.4140/TCP.n.2017.54>]

***Halek 2013***

Halek, Margareta; Dichter, Martin Nikolaus; Quasdorf, Tina; Riesner, Christine; Bartholomeyczik, Sabine. The effects of dementia care mapping on nursing home residents' quality of life and staff attitudes: design of the quasi-experimental study Leben-QD II. *BMC geriatrics* 2013;13(Journal Article):53. [DOI: <https://dx.doi.org/10.1186/1471-2318-13-53>]

***LosadaBaltar 2004***

Losada Baltar, A.; Izal Fernandez de Troconiz, M.; Montorio Cerrato, I.; Marquez Gonzalez, M.; Perez Rojo, G.. Differential efficacy of two psychoeducational interventions for dementia family caregivers. *Revista de neurologia* 2004;38(8):701-708. [DOI: [rn2003522](https://doi.org/10.1007/s12075-004-0052-2) [pii]]

***Mador 2004***

Mador, J. E.; Giles, L.; Whitehead, C.; Crotty, M.. A randomized controlled trial of a behavior advisory service for hospitalized older patients with confusion. *International journal of geriatric psychiatry* 2004;19(9):858-863. [DOI: 10.1002/gps.1165 [doi]]

***Moniz Cook 2008***

Moniz-Cook, E.; Elston, C.; Gardiner, E.; Agar, S.; Silver, M.; Win, T.; Wang, M.. Can training community mental health nurses to support family carers reduce behavioural problems in dementia? An exploratory pragmatic randomised controlled trial. *International journal of geriatric psychiatry* 2008;23(2):185-191. [DOI: 10.1002/gps.1860 [doi]]

***Reisberg 2015***

Reisberg B.; Monteiro I.; Torossian C.; Xu J.; Janjua K.; Ghimire S.; Sommese K.; Kenowsky S.. Effects of a comprehensive, individualized person-centered management program on persons with moderately severe Alzheimer's disease: A randomized controlled trial-comprehensive study findings. *Alzheimer's and Dementia* 2015;11(7):P608-P609. [DOI: ]

***Sampson 2011***

Sampson, Elizabeth L.; Jones, Louise; Thuné-Boyle, Ingela,C.V.; Kukkastenvehmas, Riitta; King, Michael; Leurent, Baptiste; Tookman, Adrian; Blanchard, Martin R.. Palliative assessment and advance care planning in severe dementia: An exploratory randomized controlled trial of a complex intervention. *Palliative medicine* 2011;25(3):197-209. [DOI: 10.1177/0269216310391691]

***Straubmeier 2017***

Straubmeier, Melanie; Behrndt, Elisa-Marie; Seidl, Hildegard; Ozbe, Dominik; Luttenberger, Katharina; Graessel, Elmar. Non-Pharmacological Treatment in People With Cognitive Impairment. *Deutsches Arzteblatt international* 2017;114(48):815-821. [DOI: <https://dx.doi.org/10.3238/arztebl.2017.0815>]

***Teri 2000***

Teri, L.; Logsdon, R. G.; Peskind, E.; Raskind, M.; Weiner, M. F.; Tractenberg, R. E.; Foster, N. L.; Schneider, L. S.; Sano, M.; Whitehouse, P.; Tariot, P.; Mellow, A. M.; Auchus, A. P.; Grundman, M.; Thomas, R. G.; Schafer, K.; Thal, L. J.; Alzheimer's Disease Cooperative Study. Treatment of agitation in AD: a randomized, placebo-controlled clinical trial. *Neurology* 2000;55(9):1271-1278. [DOI: ]

***Teri 2003***

Teri, L.; Gibbons, L. E.; McCurry, S. M.; Logsdon, R. G.; Buchner, D. M.; Barlow, W. E.; Kukull, W. A.; LaCroix, A. Z.; McCormick, W.; Larson, E. B.. Exercise plus behavioral management in patients with Alzheimer disease: a randomized controlled trial. *Jama* 2003;290(15):2015-2022. [DOI: 10.1001/jama.290.15.2015 [doi]]

**Thyrian 2017**

Thyrian, Jochen Rene; Hertel, Johannes; Wucherer, Diana; Eichler, Tilly; Michalowsky, Bernhard; Dreier-Wolfgramm, Adina; Zwingmann, Ina; Kilimann, Ingo; Teipel, Stefan; Hoffmann, Wolfgang. Effectiveness and Safety of Dementia Care Management in Primary Care: A Randomized Clinical Trial. *JAMA psychiatry* 2017;74(10):996-1004. [DOI: <https://dx.doi.org/10.1001/jamapsychiatry.2017.2124>]

**van 2013**

van, de Ven; Draskovic, Irena; Adang, Eddy M. M.; Donders, Rogier; Zuidema, Sytse U.; Koopmans, Raymond T. C. M.; Vernooij-Dassen, Myrra. Effects of dementia-care mapping on residents and staff of care homes: a pragmatic cluster-randomised controlled trial. *PloS one* 2013;8(7):e67325. [DOI: <https://dx.doi.org/10.1371/journal.pone.0067325>]

**VanHaitsma 2015**

Van Haitsma, Kimberly S.; Curyto, Kimberly; Abbott, Katherine M.; Towsley, Gail L.; Spector, Abby; Kleban, Morton. A Randomized Controlled Trial for an Individualized Positive Psychosocial Intervention for the Affective and Behavioral Symptoms of Dementia in Nursing Home Residents. *Journals of Gerontology Series B: Psychological Sciences & Social Sciences* 2015;70(1):35-45. [DOI: ]

**Weiner 2002**

Weiner, M. F.; Tractenberg, R. E.; Sano, M.; Logsdon, R.; Teri, L.; Galasko, D.; Gamst, A.; Thomas, R.; Thal, L. J.. No long-term effect of behavioral treatment on psychotropic drug use for agitation in Alzheimer's disease patients. *Journal of geriatric psychiatry and neurology* 2002;15(2):95-98. [DOI: [10.1177/089198870201500208](https://doi.org/10.1177/089198870201500208) [doi]]

**Zarit 1987**

Zarit, S. H.; Anthony, C. R.; Boutselis, M.. Interventions with care givers of dementia patients: comparison of two approaches. *Psychology and aging* 1987;2(3):225-232. [DOI: ]

**Zwijzen 2013**

Zwijzen S.; Hertogh C.; Smalbrugge M.; Gerritsen D.; Eefsting J.; Margriet, Pot A.. Grip on challenging behaviour: Effects of a structured multidisciplinary care program for management of challenging behaviour on dementia special care units. *International Psychogeriatrics* 2013;25(Journal Article):S65-S66. [DOI: <http://dx.doi.org/10.1017/S1041610213002147>]

**Zwijzen 2014**

Zwijzen, Sandra A.; Smalbrugge, Martin; Eefsting, Jan A.; Twisk, Jos W. R.; Gerritsen, Debby L.; Pot, Anne Margriet; Hertogh, Cees M. P. M.. Coming to grips with challenging behavior: a cluster randomized controlled trial on the effects of a multidisciplinary care program for challenging behavior in dementia. *Journal of the*



## Other references

### Additional references

### Other published versions of this review

## Data and analyses

### 2 Functional analysis vs Control, Longest FU, min 4 wk, max 6 mo

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
2.1 Antipsychotic usage	2	388	Risk Ratio (IV, Random, 95% CI)	1.00 [0.55, 1.81]
2.2 BPSD	9	990	Std. Mean Difference (IV, Random, 95% CI)	-0.25 [-0.38, -0.13]
2.3 Restraint	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
2.4 Agitation	5	717	Std. Mean Difference (IV, Random, 95% CI)	-0.43 [-0.74, -0.11]
2.5 Quality of life	2	242	Std. Mean Difference (IV, Random, 95% CI)	-0.06 [-0.32, 0.19]
2.6 ADL	1	105	Mean Difference (IV, Fixed, 95% CI)	-2.20 [-6.41, 2.01]
2.7 Depression	4	542	Std. Mean Difference (IV, Random, 95% CI)	-0.22 [-0.55, 0.12]

## Figures

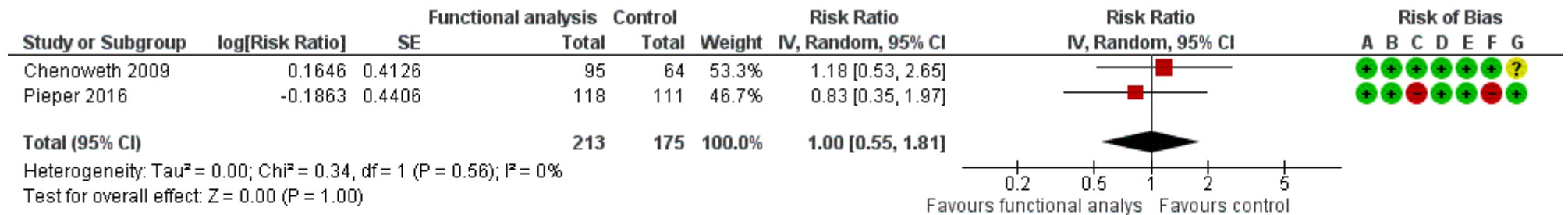
Figure 1

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Burgio 2003	+	+	-	+	+	+	+
Chenoweth 2009	+	+	+	+	+	+	?
Cohen Mansfield 2012	+	-	+	-	+	+	+
Gonyea 2006	+	+	?	?	+	?	?
Gormley 2001	+	+	?	+	+	+	?
Huang 2003	+	?	+	?	+	+	?
Kovach 2006	+	-	+	+	+	+	+
McCabe 2015	+	+	?	?	-	+	+
Pieper 2016	+	+	-	+	+	-	+

Proctor 1999	+	+	+	?	+	+	?
Teri 2005a	+	?	?	+	+	+	?
Teri 2005b	+	?	?	+	+	?	+

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

**Figure 2 (Analysis 2.1)**

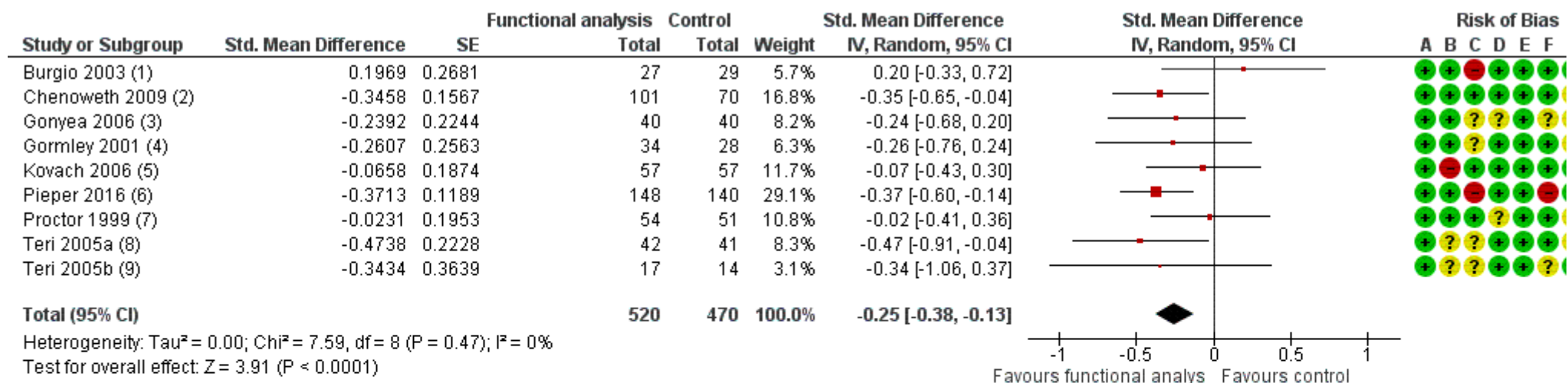


Risk of bias legend

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

Forest plot of comparison: 2 Functional analysis vs Control, Longest FU, min 4 wk, max 6 mo, outcome: 2.1 Antipsychotic usage.

**Figure 3 (Analysis 2.2)**



Footnotes

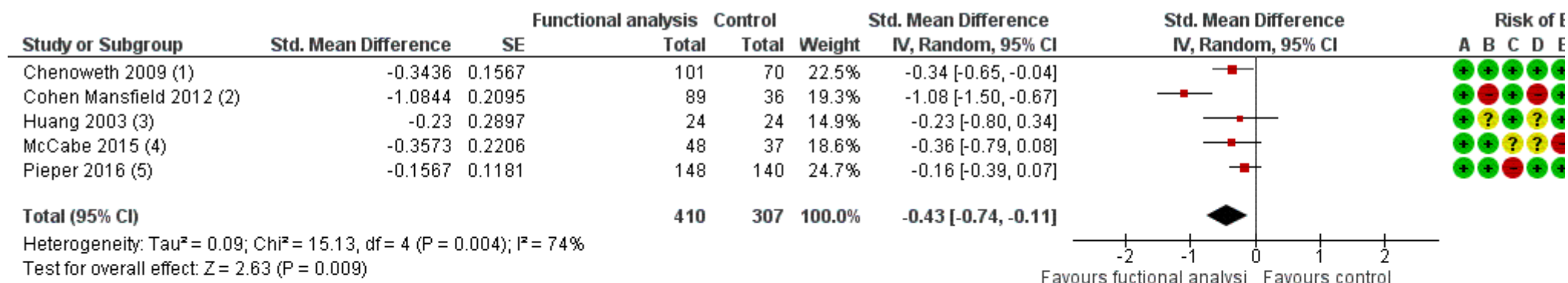
- (1) RMBPC
- (2) NPI
- (3) NPI
- (4) BEHAVE-AD
- (5) BEHAVE-AD
- (6) NPI
- (7) Crichton Royal behavioural rating scale
- (8) RMBPC
- (9) NPI

Risk of bias legend

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

Forest plot of comparison: 2 Functional analysis vs Control, Longest FU, min 4 wk, max 6 mo, outcome: 2.2 BPSD.

Figure 4 (Analysis 2.4)



Footnotes

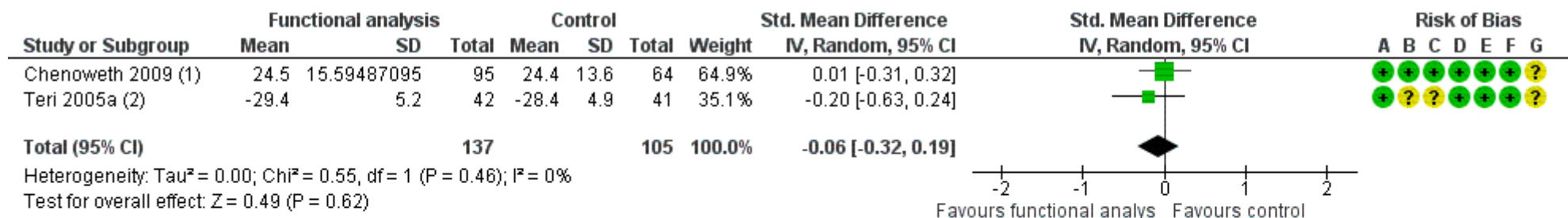
- (1) CMAI
- (2) ABMI
- (3) CMAI
- (4) CMAI
- (5) CMAI

Risk of bias legend

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

Forest plot of comparison: 2 Functional analysis vs Control, Longest FU, min 4 wk, max 6 mo, outcome: 2.4 Agitation.

**Figure 5 (Analysis 2.5)**



Risk of bias legend

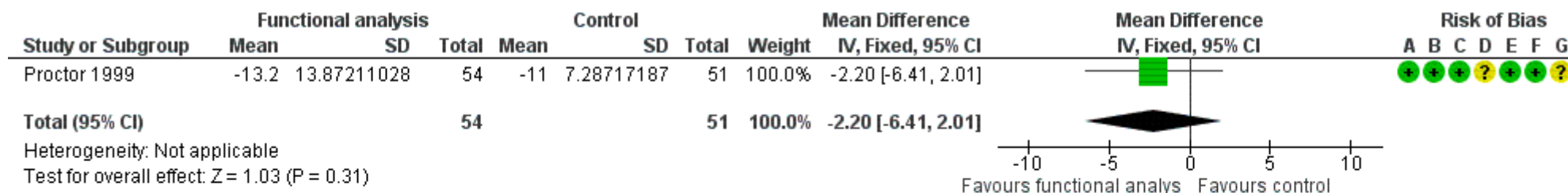
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)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

Footnotes

- (1) QUALID
- (2) QoL-AD proxy reported

Forest plot of comparison: 2 Functional analysis vs Control, Longest FU, min 4 wk, max 6 mo, outcome: 2.5 Quality of life.

**Figure 6 (Analysis 2.6)**

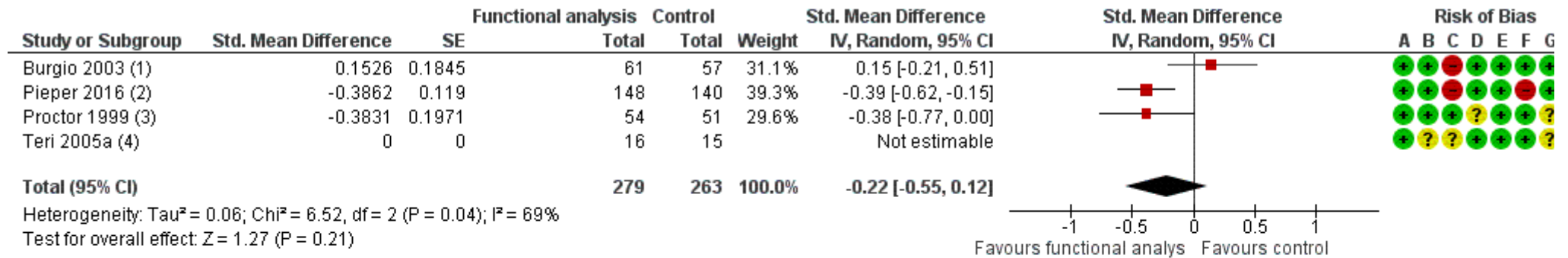


Risk of bias legend

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

Forest plot of comparison: 2 Functional analysis vs Control, Longest FU, min 4 wk, max 6 mo, outcome: 2.6 ADL.

Figure 7 (Analysis 2.7)



Footnotes

- (1) CES-D. Data for White and African American have been pooled.
- (2) Cornell (CSDD)
- (3) AGE-CAT, depression subscale
- (4) GDS

Risk of bias legend

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

Forest plot of comparison: 2 Functional analysis vs Control, Longest FU, min 4 wk, max 6 mo, outcome: 2.7 Depression.