Appendices for the Evidence-to-Recommendation Framework for the 2026 ACE Clinical Guideline on management of mild and moderate dementia in older adults

These appendices accompany the Evidence to Recommendation Framework document for the ACE Clinical Guideline (ACG) on "Management of mild and moderate dementia in older adults".

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APPENDIX 1. Executive summary and evidence tables for clinical questions on which interventions provide benefits for patients with dementia

Evidence base for non-pharmacological interventions for cognition or function

Purpose of this section
This section provides details of the evidence base underpinning the rationale for **Recommendation 2b**, with a focus on the criteria applied the non-pharmacological interventions examined for Table 2 inclusion in the ACG.

Identifying interventions for review
Six interventions were identified for evidence review: cognitive stimulation therapy (CST), cognitive rehabilitation (CR), reminiscence therapy (RT), physical exercise, art therapy, and music therapy. These were selected for review based on three scope criteria: (a) existing or emerging use in dementia care locally and internationally; (b) endorsement or consideration in reference international guidelines (NICE 2018; Malaysia CPG 2021); and (c) availability of at least one published systematic review or meta-analysis with cognition or function outcomes in the target population. To support meaningful interpretation, only interventions with **sufficiently consistent definitions** across included studies were included in the evidence synthesis. These criteria determined the scope of the evidence review. A separate set of criteria, described below, determined which reviewed interventions were included in ACG Table 2.

Criteria for inclusion in ACG Table 2
The following criteria were applied to determine inclusion in ACG Table 2:

1. **Reported benefits for cognition or function**: the intervention must demonstrate a positive effect on at least one in-scope outcome (cognition or function) in the target population (AD, VaD, or mixed dementia) in published literature.
2. **Absence of harm**: no evidence of significant adverse effects in included studies. All four interventions included in Table 2 have favourable safety profiles with no harms reported in the included studies of CST, RT, physical exercise, or CR. For physical exercise, minor adverse events (e.g. musculoskeletal discomfort, falls in frail participants) were reported infrequently and did not differ significantly from control conditions. For RT and CR, harms were not formally assessed as outcomes in the included reviews; the absence of reported harms should be interpreted as reflecting limited formal reporting rather than confirmed absernce. Absence of significant harms was a supporting criterion for inclusion in Table 2.
3. **At least moderate certainty of evidence** (based on GRADE): where source authors did not apply GRADE formally, ACE conducted an in-house assessment of evidence certainty based on GRADE. Any deviation from a source's own rating is explicitly noted and explained. A summary of the certainty of evidence by intervention and outcome is provided below in Table A1.

Where follow-up data were available, the **duration of benefit** was also considered (whether observed improvements were sustained or attenuated after the intervention ended).

By applying these criteria, four of the six reviewed interventions met the threshold for inclusion in ACG Table 2: CST, CR, RT, and physical exercise. Art therapy (very low certainty across all cognition outcomes; no functional outcome data available) and music therapy (low certainty; no statistically significant cognition benefit, low certainty for global cognition, below the moderate-certainty inclusion threshold) did not have sufficient certainty of evidence and are not included in ACG Table 2.

Table A1. Summary of certainty of evidence (CoE) by intervention and outcome domain

This table provides an at-a-glance view of the CoE for each outcome domain across all six reviewed interventions. Full evidence tables follow below, organised by intervention. References for each CoE rating are shown in the Source column. Where GRADE was formally applied by the source study, the source's own rating is used; where no formal GRADE assessment was available, CoE was determined by ACE in-house assessment using the same five GRADE domains (risk of bias, inconsistency, indirectness, imprecision, publication bias) and is marked as "ACE in-house assessment". Where multiple sources were available for a single intervention-outcome pair, the highest-quality source with formal GRADE (typically a Cochrane SR or recent MA with explicit GRADE) was selected as the primary rating; any conflicting ratings from other sources are noted in the full evidence tables.

Outcome	CST	RT	Exercise	CR	Art therapy	Music therapy
COGNITIVE OUTCOMES						
Global cognition (end of treatment)	⊕⊕⊕⊖ MODERATE *SMD=0.40; ~2 MMSE pts*	⊕⊕⊕⊖ MODERATE *MD=3.72 MMSE; exceeds MID*	⊕⊕⊕⊖ MODERATE* **Conflict: VERY LOW (Yang 2025, aerobic ex.)*	— *Secondary outcome; no pooled estimate*	⊕⊖⊖⊖ VERY LOW *No sig. difference vs active control*	⊕⊕⊖⊖ LOW *SMD=0.19; not sig.*
Global cognition (follow-up)	⊕⊕⊕⊖ MODERATE *SoF2 all measures (subset: LOW)*	⊕⊕⊕⊖ MODERATE *MD=2.53 MMSE; sustained*	— *No follow-up data in included sources*	—	—	⊕⊕⊖⊖ LOW *Not sig.*
Memory	— *Not reported as outcome in CST SoF*	⊕⊕⊕⊕ HIGH *MD=2.14; 2 RCTs only*	—	⊕⊕⊕⊕ HIGH (ACE in-house assessment) *Immediate recall*	—	—
Executive function / Attention	— *Not primary CST outcome*	⊕⊕⊕⊖ MODERATE *MD=0.59; NOT sig.*	—	⊕⊕⊕⊖MODERATE (ACE in-house assessment) *Sustained attention*	—	—
Language / Verbal fluency	⊕⊖⊖⊖ VERY LOW (ACE in-house assessment) *Desai 2024: d=0.51*	—	—	⊕⊖⊖⊖ VERY LOW (ACE in-house assessment) *Verbal letter fluency*	—	—
FUNCTIONAL OUTCOMES						
Instrumental ADL (IADL)	⊕⊕⊕⊕ HIGH *SMD=0.20 group CST (EOT); LOW at f/u*	—	⊕⊕⊖⊖ LOW *SMD=0.36 (ACE in-house assessment)*	— *Not targeted; no pooled estimate*	—	—
Targeted functional goals (ADL)	—	—	—	⊕⊕⊕⊕ HIGH *Goal attainment SMD=1.46–1.61*	—	—
General ADL (broad / untargeted)	⊕⊕⊕⊖ MODERATE *Basic ADL SMD=0.18 (ACE in-house assessment)*	—	⊕⊕⊖⊖ LOW *ADL overall SMD=0.33 (ACE in-house assessment)*	⊕⊕⊖⊖ LOW *General ADL SMD=0.05 (not sig.)*	—	—

*All CoE from formally GRADE-assessed sources except where marked (ACE in-house assessment). CST, cognitive stimulation therapy (source: Woods 2023 Cochrane, Desai 2024). CR, cognitive rehabilitation (source: Kudlicka 2023 Cochrane). Exercise (source: Sun 2025 umbrella review, Yang 2025, Xiao 2024). RT = reminiscence therapy (source: Wang 2026 SR+NMA). Art therapy (source: Deshmukh 2018 Cochrane). Music therapy (source: van der Steen 2025 Cochrane). *Exercise aerobic cognition conflict: Sun 2025 MODERATE vs Yang 2025 VERY LOW; see evidence tables for full detail. f/u = follow-up; MID = minimally important difference; sig. = statistically significant. | GRADE certainty levels CoE:: HIGH (⊕⊕⊕⊕), further research is very unlikely to change confidence in the effect estimate; MODERATE (⊕⊕⊕⊖, further research is likely to have an important impact on confidence; LOW (⊕⊕⊖⊖), further research is very likely to have an important impact; VERY LOW (⊕⊖⊖⊖), very uncertain about the estimate.*

Narrative evidence summaries by intervention type

Cognitive stimulation therapy (CST)

Woods 2023 et al. reported moderate-certainty evidence that CST demonstrates improvement in global cognition (Cochrane SR, SMD=0.40, 95% CI 0.25–0.55, ~2 MMSE points, 37 RCTs, n=2,766), corroborated by two other studies: Desai 2024 (original 14-session protocol, d=0.45 MMSE/MoCA, ACE in-house assessment MODERATE) and Chen 2022 (WMD=1.98 MMSE points).[1-3] For functional outcomes, there is high-certainty evidence of significant IADL benefit for group CST (SMD=0.20). Long-term functional follow-up (10–12 months post-treatment) is low certainty, with only one of two estimates statistically significant, suggesting maintenance sessions may be needed to sustain gains. CST meets the CoE threshold on both cognition and function and is included in Table 2.

Two additional outcomes assessed for CST fall below the inclusion threshold. Language/verbal fluency showed a statistically significant effect (d = 0.51, Narrative Language Test, 3 studies; confirmed by Chen 2022 WMD = 2.71) but at very low certainty (non-standard outcome measure, indirectness, imprecision).[3] Basic ADL showed a slight positive

effect (SMD = 0.18, 7 RCTs, n≈800, moderate certainty, ACE in-house assessment, Woods 2023 Analysis 1.11) but the confidence interval crossed zero and no beneficial effect can be concluded with confidence.[1] Neither outcome is included in Table 2.

Two additional outcomes from the CST evidence tables are noted for completeness but do not meet the threshold for Table 2 inclusion. First, language/verbal fluency showed a statistically significant effect (d = 0.51, 95% CI 0.34–0.69, Narrative Language Test, 3 studies, original CST protocol; confirmed by Chen 2022 WMD = 2.71, k=2), but certainty is very low (non-standard outcome measure, indirectness, imprecision), precluding a confident conclusion.[3] Second, basic ADL showed a slight positive effect that was not statistically significant (SMD = 0.18, 95% CI −0.01 to 0.38, 7 RCTs, n ≈ 800; moderate certainty, ACE in-house assessment, Woods 2023 Analysis 1.11).[1] Because the confidence interval crosses zero, no beneficial effect on basic ADL can be concluded with confidence, and it is not included in Table 2.

Reminiscence therapy (RT)

Evidence from the Wang 2026 study (SR+NMA, GRADE applied, 24 RCTs, n=1,963; search to May 2025) was filtered to consider only the dementia-only subgroup (21 RCTs), which provided moderate-certainty evidence of clinically meaningful improvement in global cognition (MD=3.72, 95% CI 3.13–4.31 MMSE, exceeding the 1.5-point minimally important difference).[4] Benefits are consistent across individual, group, and combined delivery formats (no significant between-format difference, p=0.58), and sustained at long-term follow-up (moderate certainty, MD=2.53). The MCI subgroup showed no statistically significant benefit, confirming the evidence is dementia-specific. A minimum of 12 sessions appears necessary; 8-session programmes did not achieve statistical significance. No GRADE-assessed functional outcomes are available for RT. RT meets the CoE threshold on cognition and is included in Table 2.

Physical exercise

For cognition in AD, there is a difference between the certainty of evidence assessment between two studies: Sun 2025 rates aerobic exercise moderate certainty (MD=2.95 MMSE, Zhou 2022 MA), while Yang 2025 rates the same outcome very low certainty (SMD=0.95, I^2=83%), attributable to broader inclusion criteria and higher heterogeneity.[5, 6] Both estimates are presented in the evidence tables.

For other modalities, moderate-certainty evidence is available for general exercise in AD (Liang 2022: SMD=0.46; Jia 2019: SMD=1.12; Ströhle 2015: MD=0.83) and for resistance training (SMD=0.60), Tai Chi (SMD=0.27), and home-based exercise (SMD=0.71) in dementia broadly (Sun 2025).[5] For function, all CoE is ACE in-house assessment; evidence rests on a single source (Xiao 2024, 27 RCTs, n=1,700 AD) and is low certainty (ADL overall: SMD=0.33, I^2=81.7%).[7] Programmes >6 months show the best functional results (SMD=0.83 for resistance/aerobic subgroup, ACE in-house assessment low certainty). Exercise meets the CoE threshold primarily on cognition, with limited supporting function evidence, and is included in Table 2.

Cognitive rehabilitation (CR)

Kudlicka 2023 (Cochrane SR, 9 RCTs, n=1,702) reports high-certainty evidence of large, sustained improvement in targeted functional ability and goal attainment (self-rated goal performance: SMD=1.46, 95% CI 1.26–1.66; informant-rated: SMD=1.61), maintained at 3–12 months follow-up.[8] CR effects on broad, untargeted ADL are small and rated low certainty, with a slight decline observed at medium-term follow-up (SMD=−0.23). This reflects that CR is not designed to improve untargeted functional domains. CR meets the CoE threshold on functional outcomes and is included in Table 2.

Art therapy

Deshmukh 2018 (Cochrane SR, 2 RCTs, n=88, confirmed dementia) reports all outcomes as very low certainty.[9] The two included RCTs used different art therapy approaches against active comparators and produced conflicting results that could not be pooled; one study (Hattori 2011, n=39) showed numerical MMSE improvement in the control group (+2.1 points) compared with the art therapy group (−0.2 points) against calculation drills, while the other (Rusted 2006, n=49) showed no benefit with 53% attrition. A broader meta-analysis (Masika 2020, 11 studies, n=831) was identified but excluded as 9 of 11 studies recruited populations outside the target population (cognitively normal n=6, undefined cognitive decline n=1, MCI n=2), and the 3 in-scope dementia studies were not poolable per the original authors. No functional outcome data available. Art therapy does not meet the CoE threshold and is not included in Table 2.

Music therapy

The van der Steen 2025 (Cochrane SR, GRADE applied, 30 RCTs, n=1,720, dementia only; search to November 2023; conclusions changed from the 2018 update) review reported no statistically significant effect on cognition versus usual

care (low certainty, SMD=0.19, 95% CI −0.02 to 0.41) or versus other activities (low certainty, SMD=0.12).[10] Long-term follow-up similarly showed no significant effect. The strongest supported finding is moderate-certainty reduction in depression (SMD=−0.23 vs usual care), which falls outside the cognition/function scope of this review. Lu 2025 (MA, CoE ACE in-house assessment as very low overall after accounting for 3/24 MCI studies) found significant cognition benefit with ≥12-week programmes, however this conflicts with the Cochrane finding.[11] No GRADE-assessed functional outcomes are available. Music therapy does not meet the CoE threshold and is not included in Table 2.

Evidence searches and tables

Clinical question: Does cognitive stimulation therapy support cognition or function for patients with dementia?

Table 2A. Search strategy for cognitive stimulation therapy (Filter: English); search period 5 March 2026

	Query	Results
1	(cognitive stimulation therapy[Title/Abstract]) OR (cognitive stimulation[Title/Abstract])	1608
2	((((((((Alzheimer Disease[MeSH Terms]) OR (alzheimer disease, late onset[MeSH Terms])) OR (Alzheimer's Disease[MeSH Terms])) OR (Dementia, Vascular[MeSH Terms])) OR (Vascular Dementia[MeSH Terms])) OR (Dementia[MeSH Terms])) OR (dementia[Title/Abstract])) OR (Alzheimer's disease[Title/Abstract])) OR (vascular dementia[Title/Abstract])	368,652
3	(((Cognition[MeSH Terms]) OR (cognitive function[MeSH Terms])) OR (Cognition[Title/Abstract])) OR (cognitive function[Title/Abstract])	357,612
4	((function[Title/Abstract]) OR (activities of daily living[Title/Abstract])) OR (ADL[Title/Abstract])	2,677,174
5	1 AND 2 AND (3 OR 4)	82
6	Filter by: meta-analysis AND systematic review	71
6	Filter only to studies following the original cognitive stimulation therapy protocol + Cochrane review	3

MeSH, Medical Subject Headings

Table 2B. Evidence table on the effectiveness of cognitive stimulation therapy on cognition outcomes in patients with dementia[1-3]

Patient or population: people with dementia
Setting: care homes and long-term care facilities; community settings including daycare and outpatients
Intervention: cognitive stimulation (Desai 2024 and Chen 2022 with original 14-session Cognitive Stimulation Therapy (CST) delivered by trained professionals: 14 group sessions, 45 minutes each, twice weekly over 7 weeks. Structured activities including topical discussions, reminiscence, problem-solving, creative exercises, multisensory experiences. Targets memory, attention, language, executive functions; Structured activities engaging multiple cognitive domains, including reality orientation, reminiscence, problem-solving, sensory stimulation, and word games. Group or individual format. Duration: 45-90 min sessions, typically 2 times/week. Length of the trials varied from four weeks to two years. Sessions per week varied from one to six. The overall number of sessions varied from eight to 520. Most studies lasted for around 10 weeks, with around 20 sessions.
Comparison: no cognitive stimulation (post-treatment); standard care

COGNITION OUTCOMES			
Outcomes	**Effect size/results**	**CoE**	**Reasons for downgrade / notes**
End-of-treatment effects vs no cognitive stimulation (post-treatment) — primary source: Woods 2023 (GRADE)			
Cognition — cognitive stimulation *ADAS-Cog, MMSE, Global Cognitive Score, Mattis DRS, MoCA, ACE-III, CAM-COG, ENB2; 34 RCTs, n=2,340*	SMD = 0.40 (95% CI 0.25 to 0.55), I^2=62%; small positive effect (statistically significant)	⊕⊕⊕⊖ MODERATE	−1 inconsistency (I^2=62%; moderate heterogeneity across diverse CS formats and populations) *Source: Woods 2023 SoF Table 1. Equivalent to approximately 6 months' slowing of cognitive decline on MMSE.*
Cognition — group cognitive stimulation *ADAS-Cog, MMSE, Global Cognitive Score, Mattis DRS, MoCA, ENB2; 27 RCTs, n=1,637*	SMD = 0.43 (95% CI 0.26 to 0.59), I^2=56%; small positive effect (statistically significant)	⊕⊕⊕⊖ MODERATE	−1 inconsistency (I^2=56%) *Source: Woods 2023 SoF Table 2. Group format is the primary modality in guidelines (NICE 2018).*
MMSE subgroup *Mini-Mental State Examination; 25 RCTs, n=1,893*	MD = 1.99 points (95% CI 1.24 to 2.74); clinically relevant improvement (statistically significant)	⊕⊕⊕⊖ MODERATE	−1 inconsistency (moderate heterogeneity) *Source: Woods 2023 Analysis 1.2. Clinically important threshold: ≥1.5 points (per Howard 2011 MID). Confirmed by Chen 2022 (WMD = 1.98, 95% CI 1.24–2.72, k=8, no GRADE) and Desai 2024 original-protocol sub-analysis (d=0.45, k=8, I^2=0%, no GRADE).*
ADAS-Cog subgroup *Alzheimer's Disease Assessment Scale-Cognitive subscale; 21 RCTs, n=1,742*	MD = 2.42 points (95% CI 1.21 to 3.63), I^2=51%; small improvement (statistically significant)	⊕⊕⊕⊖ MODERATE	−1 inconsistency (I^2=51%) *Source: Woods 2023 Analysis 1.3. Clinically relevant threshold: ≥3 points (Schrag 2012). Effect falls below this threshold. Chen 2022 (no GRADE): WMD = 0.55 (95% CI −3.04 to 4.14), not statistically significant — likely explained by less selective inclusion criteria (not restricted to original CST protocol).*
End-of-treatment effects — supporting evidence: original 14-session CST protocol only (Desai 2024; no GRADE)			
Global cognition (MMSE/MoCA)	d = 0.45 (95% CI 0.33 to 0.56), I^2=0%;	⊕⊕⊕⊖	−1 risk of bias (Jadad scale only;

MMSE and MoCA; 8 studies, n=~780 (original protocol only)	moderate positive effect (statistically significant)	MODERATE (ACE in-house assessment)	allocation concealment and assessor blinding not formally assessed). No downgrade for inconsistency (I^2=0%, Q=4.23, p=.75), indirectness (mild–moderate dementia; original protocol), or imprecision (CI 0.33–0.56; n=780, 8 studies). Publication bias could not be assessed (<10 studies). Source: Desai 2024. *Source: Desai 2024. CoE not formally assessed; estimate consistent with Woods 2023 MODERATE rating. Effect size appears higher, likely due to restriction to original protocol (greater protocol fidelity → reduced heterogeneity).*
Language (Narrative Language Test, NLT) *NLT; 3 studies (original protocol only)*	d = 0.51 (95% CI 0.34 to 0.69), I^2=0%; moderate positive effect (statistically significant)	⊕⊖⊖⊖ VERY LOW (ACE in-house assessment)	−1 risk of bias (Jadad scale only; no assessor blinding confirmed). −1 indirectness (NLT is a non-standard, non-validated outcome measure; limited clinical transferability). −1 imprecision (only 3 studies; n not fully reported). No downgrade for inconsistency (I^2=0%, Q=0.30, p=.86). Publication bias could not be assessed (<10 studies). Source: Desai 2024. Also confirmed by Chen 2022: WMD=2.71 (95% CI 1.07–4.35), k=2, no GRADE. *Source: Desai 2024. Also confirmed by Chen 2022: WMD = 2.71 (1.07–4.35) on NLT, k=2, statistically significant. Language is a plausible mechanism given CST's emphasis on verbal interaction.*
Working memory (Backward Digit Span, BDS) *BDS; 2 studies (original protocol only)*	d = 0.87 (95% CI 0.35 to 1.39), I^2=90.53%; large effect but highly heterogeneous (statistically significant)	⊕⊖⊖⊖ VERY LOW (ACE in-house assessment)	−2 inconsistency (I^2=90.53%, Q=10.57, p<0.01; very high heterogeneity severely limits pooled estimate reliability). −1 risk of bias (Jadad scale only; only 2 studies). −1 imprecision (only 2 studies; wide CI 0.35–1.39). Publication bias could not be assessed (<10 studies). Four domains downgraded; pooled estimate not reliably interpretable. Source: Desai 2024. *Source: Desai 2024. Effect size likely inflated by heterogeneity. Interpret with caution.*
Follow-up effects vs no cognitive stimulation			
Global cognition 8–12 month follow-up *ADAS-Cog, CAM-COG; 4 studies*	SMD = 0.13 (95% CI -0.16 to 0.42), I^2=0%; negligible effect (not statistically significant)	⊕⊕⊖⊖ LOW (ACE in-house assessment)	−2 imprecision (small n per study; CI crosses zero and benefit categories) *Source: Woods 2023. Cognitive benefits may not be maintained beyond the active intervention period without maintenance sessions.* *Note on CoE deviation: Woods 2023 SoF Table 2 rates global cognition at follow-up as MODERATE (27 RCTs, n=1,637, all cognitive measures).*

ADAS-Cog, Alzheimer's Disease Assessment Scale – Cognitive subscale; BDS, Blessed Dementia Scale; CAM-COG, Cambridge Cognitive Examination; CI, Confidence Interval; CoE, Certainty of Evidence; DRS, Dementia Rating Scale; MD, Mean Difference; MMSE, Mini Mental State Examination; MoCA, Montreal Cognitive Assessment; NLT, Narrative Language Test; RCT, Randomised Controlled Trial; SMD, Standardised Mean Difference; WMD, Weighted Mean Difference.

Table 2C. Evidence table on the effectiveness of cognitive stimulation therapy on function outcomes in patients with dementia [1, 3]

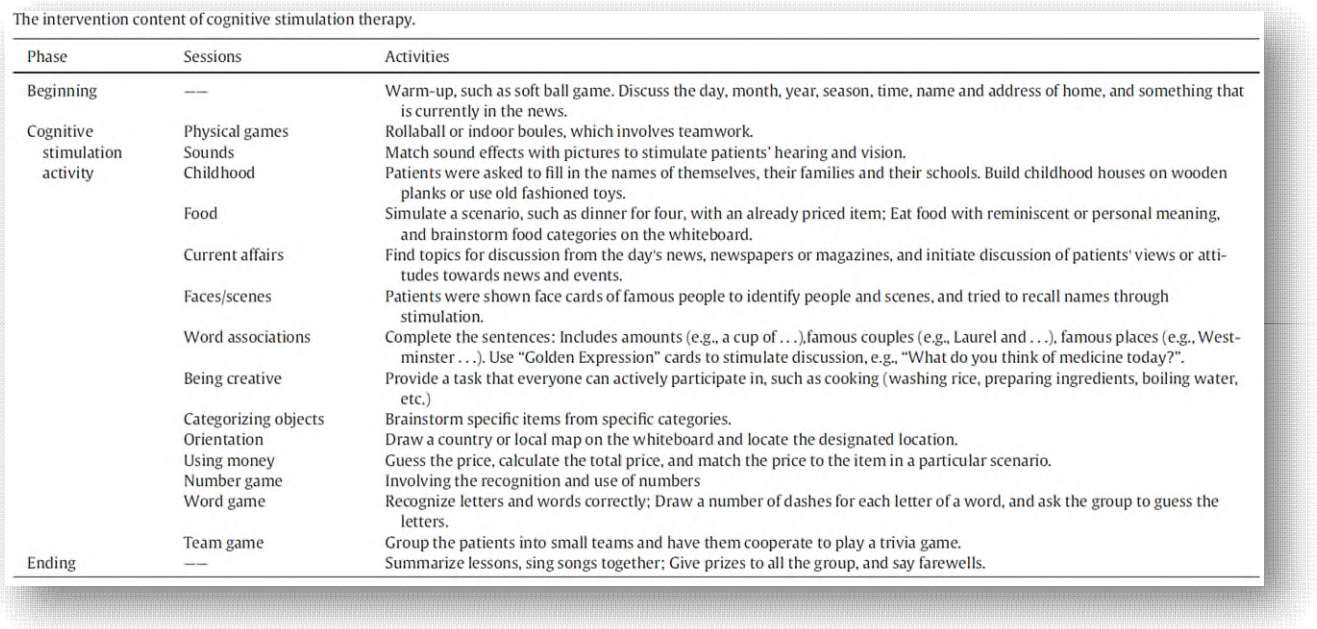
Patient or population: people with dementia
Setting: care homes and long-term care facilities; community settings including daycare and outpatients
Intervention: cognitive stimulation
Comparison: no cognitive stimulation (post-treatment); standard care

FUNCTION OUTCOMES

Outcomes	Effect size/results	CoE	Reasons for downgrade / notes
End-of-treatment effects vs no cognitive stimulation (post-treatment)			
Instrumental ADL (IADL) all cognitive stimulation *Lawton-Brody IADL, DAD, NOSGER IADL subscale, BADLS, ADCS-ADL; 13 RCTs, n=1,318*	SMD = 0.15 (95% CI 0.04 to 0.26), I²=0%; slight positive effect (statistically significant)	⊕⊕⊕⊕ HIGH	No downgrade *Source: Woods 2023 (Cochrane SR, SoF Table 1). Chen 2022 (no GRADE) provides supporting evidence: WMD = 7.27 (0.97–13.56) on DAD, statistically significant, k=3.*
Instrumental ADL (IADL) group cognitive stimulation *Lawton-Brody IADL, DAD, NOSGER IADL subscale, ADCS-ADL; 8 RCTs, n=687*	SMD = 0.20 (95% CI 0.05 to 0.35), I²=0%; slight positive effect (statistically significant)	⊕⊕⊕⊕ HIGH	No downgrade *Source: Woods 2023 (Cochrane SR, SoF Table 2). Effect is consistent with all-CS estimate.*
Basic ADL all cognitive stimulation *Stewart ADL, Barthel, Erlangen Test of ADL, Katz ADL; 7 RCTs, n=~800*	SMD = 0.18 (95% CI -0.01 to 0.38), I²=0%; slight positive effect (not statistically significant)	⊕⊕⊕⊖ MODERATE (ACE in-house assessment)	−1 inconsistency (substantial heterogeneity between studies) *Source: Woods 2023 (Analysis 1.11). Not included in published SoF table.*
Follow-up effects vs no cognitive stimulation			
IADL — 6–12 week follow-up *Various; 2 studies, n=182 (Carbone 2021, Middelstädt 2016)*	SMD = 0.12 (95% CI -0.19 to 0.42), I²=0%; slight effect (not statistically significant)	⊕⊕⊖⊖ LOW	−2 imprecision (only 2 studies; CI includes zero and spans both negligible and slight benefit) *Source: Woods 2023. Very limited evidence base at short-term follow-up.*
IADL — 10–12 month follow-up *Texas Functional Living Scale, Erlangen Test of ADL, Rapid Disability Rating Scale; 3 studies, n=156*	SMD = 0.40 (95% CI 0.07 to 0.72), I²=0%; small positive effect (statistically significant)	⊕⊕⊖⊖ LOW	−1 imprecision (n=156; small absolute sample); −1 imprecision (only 3 studies, each using a different scale) *Source: Woods 2023. Despite statistical significance, CoE rated LOW due to very small sample and heterogeneous instruments.*

ADCS-ADL, Alzheimer's Disease Cooperative Study Activities of Daily Living Scale; ADL, Activities of Daily Living; BADL, Basic Activities of Daily Living; BADLS, Bristol Activities of Daily Living Scale; BGSI, Bangor Goal Setting Interview; CDR, Clinical Dementia Rating; CI, Confidence Interval; CoE, Certainty of Evidence; COPM, Canadian Occupational Performance Measure; COWA, Controlled Oral Word Association; CR, Cognitive Rehabilitation; DAD, Disability Assessment for Dementia; DKEFS, Delis-Kaplan Executive Function System; DMT, Direct Measure of Training; FAQ, Functional Activities Questionnaire; GSES, General Self-Efficacy Scale; HADS, Hospital Anxiety and Depression Scale; IADL, Instrumental Activities of Daily Living; MA, Meta-analysis; MD, Mean Difference; MMSE, Mini Mental State Examination; NOSGER, Nurses' Observation Scale for Geriatric Patients; OT, Occupational Therapist; RBMT, Rivermead Behavioural Memory Test; RBMT-II, Rivermead Behavioural Memory Test – Second Edition; RCT, Randomised Controlled Trial; SD, Standard Deviation; SMD, Standardised Mean Difference; SR, Systematic Review; WMD, Weighted Mean Difference

Figure 1. The intervention content of cognitive stimulation therapy (extracted from Chen et al. 2022)[3]



The intervention content of cognitive stimulation therapy.

Phase	Sessions	Activities
Beginning	——	Warm-up, such as soft ball game. Discuss the day, month, year, season, time, name and address of home, and something that is currently in the news.
Cognitive stimulation activity	Physical games	Rollaball or indoor boules, which involves teamwork.
	Sounds	Match sound effects with pictures to stimulate patients' hearing and vision.
	Childhood	Patients were asked to fill in the names of themselves, their families and their schools. Build childhood houses on wooden planks or use old fashioned toys.
	Food	Simulate a scenario, such as dinner for four, with an already priced item; Eat food with reminiscent or personal meaning, and brainstorm food categories on the whiteboard.
	Current affairs	Find topics for discussion from the day's news, newspapers or magazines, and initiate discussion of patients' views or attitudes towards news and events.
	Faces/scenes	Patients were shown face cards of famous people to identify people and scenes, and tried to recall names through stimulation.
	Word associations	Complete the sentences: Includes amounts (e.g., a cup of . . .),famous couples (e.g., Laurel and . . .), famous places (e.g., Westminster . . .). Use "Golden Expression" cards to stimulate discussion, e.g., "What do you think of medicine today?".
	Being creative	Provide a task that everyone can actively participate in, such as cooking (washing rice, preparing ingredients, boiling water, etc.)
	Categorizing objects	Brainstorm specific items from specific categories.
	Orientation	Draw a country or local map on the whiteboard and locate the designated location.
	Using money	Guess the price, calculate the total price, and match the price to the item in a particular scenario.
	Number game	Involving the recognition and use of numbers
	Word game	Recognize letters and words correctly; Draw a number of dashes for each letter of a word, and ask the group to guess the letters.
	Team game	Group the patients into small teams and have them cooperate to play a trivia game.
Ending	——	Summarize lessons, sing songs together; Give prizes to all the group, and say farewells.

Clinical question: Does reminiscence therapy support cognition for patients with dementia?

Table 3A. Search strategy for reminiscence therapy (Filter: English); search period 6 March

	Query	Results
1	Reminiscence therapy[Title/Abstract]	1,106
2	(((((((Alzheimer Disease[MeSH Terms]) OR (alzheimer disease, late onset[MeSH Terms])) OR (Alzheimer's Disease[MeSH Terms])) OR (Dementia, Vascular[MeSH Terms])) OR (Vascular Dementia[MeSH Terms])) OR (Dementia[MeSH Terms])) OR (dementia[Title/Abstract])) OR (Alzheimer's disease[Title/Abstract])) OR (vascular dementia[Title/Abstract])	368,715
3	(((Cognition[MeSH Terms]) OR (cognitive function[MeSH Terms])) OR (Cognition[Title/Abstract])) OR (cognitive function[Title/Abstract])	357,656
4	((function[Title/Abstract]) OR (activities of daily living[Title/Abstract])) OR (ADL[Title/Abstract])	2,677,174
5	1 AND 2 AND (3 OR 4)	105
6	Filter by: meta-analysis AND systematic review	38
5	Exclude - scoping studies, - studies including other types of interventions - studies including majority of other types of populations - systematic reviews without pooled analyses	1

MeSH, Medical Subject Headings

Table 3B. Evidence table on the effectiveness of reminiscence therapy for cognition outcomes in patients with dementia[4]

Patient or population: Patient or population: people with cognitive impairment or dementia (aged ≥60 years; 21 dementia studies, 3 MCI studies — dementia subgroup used for all outcomes in this review)
Setting: hospital, nursing home, and care centre settings; community settings
Intervention: reminiscence therapy (RT) — individual, group, or combined format; using photographs, music, meaningful objects, or videos to facilitate recall of autobiographical memories; delivered by trained or untrained therapists
Comparison: standard care

COGNITION OUTCOMES

TARGET POPULATION NOTE: Wang 2026 (24 RCTs, n=1,963) includes 21 dementia studies and 3 MCI studies. As MCI is outside the target population (AD, VaD, or mixed dementia), the dementia-only subgroup (21 RCTs) is used as the primary estimate throughout this table. The full 24-RCT pooled estimate is noted for reference only.

Outcomes	Effect size/results	CoE	Reasons for downgrade / notes
Dementia — immediate (end-of-treatment) effects vs standard care | Source: Wang 2026			
Global cognition — RT (dementia, all modalities) *MMSE; 21 RCTs (dementia subgroup) | Source: Wang 2026*	MD = 3.72 (95% CI 3.13 to 4.31); clinically relevant improvement (p<0.001). Consistent across individual RT (MD=3.80, 11 RCTs), group RT (MD=3.84, 12 RCTs), and combined RT (MD=3.14, 3 RCTs). No significant between-modality difference (p=0.58). [Full 24-RCT pooled estimate including 3 MCI studies: MD=3.81 (2.40–5.21); not used as primary.]	⊕⊕⊕⊖ MODERATE	−1 risk of bias (blinding of participants and therapists not possible; inherent to psychosocial interventions); −1 inconsistency (I^2>90% for primary cognitive outcome). Upgraded: large effect size (MD=3.72 on MMSE) partially offsets downgrades. Net: MODERATE. Source: Wang 2026 (SR+NMA, GRADE formally applied, 24 RCTs, n=1,963; search to May 2025). Clinical threshold: ≥1.5 MMSE points (MID); MD=3.72 substantially exceeds this.
Memory *Memory Assessment Test or equivalent; 2 RCTs | Source: Wang 2026*	MD = 2.14 (95% CI 0.29 to 3.99); statistically significant (p=0.020)	⊕⊕⊕⊕ HIGH	Upgraded despite imprecision concerns: large effect size justifies HIGH rating (per Wang 2026 GRADE). Based on 2 studies only — replication needed.
Executive function *Frontal Assessment Battery or equivalent; 3 RCTs | Source: Wang 2026*	MD = 0.59 (95% CI −0.17 to 1.35); NOT statistically significant (p=0.130)	⊕⊕⊕⊖ MODERATE	−1 imprecision (CI crosses zero; 3 studies). Not statistically significant. RT primarily engages autobiographical memory systems; executive function relies on goal-directed prefrontal processing not directly targeted by RT.
Dementia — MCI subgroup (outside target population; shown for reference only)			
Global cognition — MCI only (subgroup; outside target population) *MMSE; 3 RCTs (MCI subgroup) | Source: Wang 2026*	MD = 4.96 (95% CI −3.48 to 13.40); NOT statistically significant (p=0.25).	⊕⊕⊖⊖ LOW	−1 imprecision (3 studies; very wide CI crossing zero); −1 indirectness (MCI outside target population). MCI is outside the target population for this evidence review. Shown for reference: no statistically significant benefit demonstrated for MCI.
Long-term follow-up effects (post-intervention) | Source: Wang 2026			
Global cognition — long-term follow-up (dementia) *MMSE; 2 RCTs | Source: Wang 2026*	MD = 2.53 (95% CI 1.19 to 3.87); sustained improvement (p<0.001)	⊕⊕⊕⊖ MODERATE	−1 risk of bias; −1 imprecision (2 studies). Upgraded: large effect size. Cognitive gains appear maintained beyond the active intervention period.
Subgroup analyses — exploratory (not GRADE-rated; Wang 2026)			
Global cognition by intervention frequency *8, 12–16, ≥18 sessions | Source: Wang 2026 subgroups*	8 sessions: MD=3.43 (−1.14–8.00), NOT significant (p=0.14). 12–16 sessions: MD=4.99 (3.85–6.13), significant. ≥18 sessions: MD=2.73 (1.36–4.09), significant. Significant between-frequency difference (p=0.04).	— (Subgroup)	Not GRADE-rated. Minimum effective dose appears to be 12 sessions; 8-session RT is insufficient.
Global cognition by setting	Hospital: MD=4.82 (2.50–7.14). Nursing	—	Not GRADE-rated. Nursing home

Hospital, nursing home, care centre | Source: Wang 2026 subgroups	home: MD=5.33 (2.97–7.70). Care centre: MD=1.80 (1.20–2.41). Significant between-setting difference (p=0.001).	(Subgroup)	setting shows largest effect. Care centre smallest, possibly reflecting less severe baseline impairment.

ADL, Activities of Daily Living; CI, Confidence Interval; CoE, Certainty of Evidence; COWA, Controlled Oral Word Association; CR, Cognitive Rehabilitation; DKEFS, Delis-Kaplan Executive Function System; MCI, Mild Cognitive Impairment; MD, Mean Difference; MMSE, Mini Mental State Examination; NMA, Network Meta-analysis; RBMT, Rivermead Behavioural Memory Test; RBMT-II, Rivermead Behavioural Memory Test – Second Edition; RCT, Randomised Controlled Trial; RT, Reminiscence Therapy; SMD, Standardised Mean Difference; SR, Systematic Review. Primary estimate uses dementia-only subgroup (21 RCTs) as MCI is outside target population. ADL: listed as secondary outcome in Wang 2026 but insufficient studies for pooled estimate. Clinical threshold for MMSE improvement: ≥1.5 points (Howard 2011 MID).

Clinical question: Does exercise support cognition or function for patients with dementia?

Table 4A. Search strategy for exercise (Filter: English); search period

	Query	Results
1	(((((((Exercise[MeSH Terms]) OR (Exercise Therapy[MeSH Terms])) OR (aerobic exercise[MeSH Terms])) OR (exercise, physical[MeSH Terms])) OR (Physical Activity[MeSH Terms])) OR (Exercise[Title/Abstract])) OR (Physical Activity[Title/Abstract])) OR (Exercise Therapy[Title/Abstract])) OR (physical exercise[Title/Abstract])	635,746
2	(((((((Alzheimer Disease[MeSH Terms]) OR (alzheimer disease, late onset[MeSH Terms])) OR (Alzheimer's Disease[MeSH Terms])) OR (Dementia, Vascular[MeSH Terms])) OR (Vascular Dementia[MeSH Terms])) OR (Dementia[MeSH Terms])) OR (dementia[Title/Abstract])) OR (Alzheimer's disease[Title/Abstract])) OR (vascular dementia[Title/Abstract])	368,652
3	(((Cognition[MeSH Terms]) OR (cognitive function[MeSH Terms])) OR (Cognition[Title/Abstract])) OR (cognitive function[Title/Abstract])	357,612
4	((function[Title/Abstract]) OR (activities of daily living[Title/Abstract])) OR (ADL[Title/Abstract])	2,677,174
5	1 AND 2 AND (3 OR 4)	3988
6	Filter by: meta-analysis AND systematic review	371
7	Exclude - studies including other types of interventions - studies including other types of populations - systematic reviews with no pooled analysis	3

MeSH, Medical Subject Headings

Table 4B. Evidence table on the effectiveness of exercise on cognition outcomes in dementia[5, 6]

Patient or population: people with AD
Setting: community and institutional settings
Intervention: Physical activity interventions
Comparison: Routine medical treatment, usual treatment, no intervention, social activities (therapeutic music, arts and crafts)

COGNITION OUTCOMES

NOTE ON PRIMARY GRADE SOURCE: No Cochrane systematic review with GRADE for exercise in dementia/AD exists. Sun 2025 is an umbrella review that formally applied GRADE (AMSTAR 2 + 5 GRADE domains, Supplementary Table S4) to outcomes from 55 meta-analyses. Where a source did not apply GRADE, CoE was ACE in-house assessment by the team using the same 5 GRADE domains, marked (ACE in-house assessment). Yang 2025 applied GRADE directly to primary RCT data and obtained VERY LOW for aerobic exercise cognition in AD — conflicting with Sun 2025 MODERATE. Both are shown separately below. TARGET POPULATION NOTE: Only sources restricted to AD, vascular dementia (VaD), or mixed dementia are included. de Sa Leitao 2025 was excluded as pooled estimates cannot be disaggregated from studies also including MCI participants.

Outcomes	Effect size/results	CoE	Reasons for downgrade / notes
Alzheimer's disease (AD) — aerobic exercise vs control (end of treatment)			
Global cognition — aerobic exercise (AD) *MMSE; 12 RCTs, n=795 | Source: Zhou et al. 2022 MA as assessed in Sun 2025*	MD = 2.95 (95% CI 2.49 to 3.40); clinically relevant improvement (statistically significant)	⊕⊕⊕⊖ MODERATE	−1 inconsistency. Source: Sun 2025 (umbrella review, GRADE applied to Zhou et al. 2022). Zhou 2022 restricted to aerobic exercise + confirmed AD — relatively clean population scope. *CONFLICTING GRADE ESTIMATE: see next row.*
Global cognition — aerobic exercise (AD) *MMSE; 17 study comparisons, n=1,286 | Source: Yang 2025 (primary MA, GRADE applied directly)*	SMD = 0.95 (95% CI 0.58 to 1.32), I^2=83%; statistically significant. ADAS-Cog: SMD = −0.67 (95% CI −1.15 to −0.20), I^2=84%; significant.	⊕⊖⊖⊖ VERY LOW (ACE in-house assessment)	−1 risk of bias; −1 inconsistency (I^2=83%); −1 imprecision (wide CI); −1 publication bias (Egger p=0.002 for MMSE). Source: Yang 2025 (primary MA, GRADE applied directly). Population: AD only, confirmed diagnosis. Discrepancy from Sun 2025 MODERATE reflects broader inclusion criteria and higher heterogeneity.
Alzheimer's disease (AD) — general exercise vs control, by constituent meta-analysis			
Global cognition — exercise (AD) *MMSE; n=1,991 AD | Source: Liang et al. 2022 MA as assessed in Sun 2025*	SMD = 0.46 (95% CI 0.29 to 0.63); statistically significant	⊕⊕⊕⊖ MODERATE	−1 inconsistency. Source: Sun 2025 (GRADE applied to Liang 2022). AD population confirmed.
Global cognition — exercise (AD) *MMSE; 13 RCTs, n=681 AD | Source: Jia et al. 2019 MA as assessed in Sun 2025*	SMD = 1.12 (95% CI 0.66 to 1.59); statistically significant (large effect)	⊕⊕⊕⊖ MODERATE	−1 inconsistency. Source: Sun 2025. AD population confirmed. Large effect size (SMD 1.12) should be interpreted cautiously; may reflect selection bias in constituent RCTs.
Global cognition — exercise (AD only) *Multiple scales; 4 RCTs, n=119 AD | Source: Ströhle et al. 2015 MA as assessed in Sun 2025*	MD = 0.83 (95% CI 0.59 to 1.07); statistically significant	⊕⊕⊕⊖ MODERATE	−1 imprecision (n=119, 4 RCTs). Source: Sun 2025 (AD section). Note: Sun 2025 also reports Ströhle 2015 in the MCI section with a different estimate:

			the AD-specific data (n=119) is used here.
Global cognition — physical activity (AD) *MMSE only; 13 RCTs, n=813 AD with confirmed diagnostic criteria | Source: Dai 2026*	WMD = 1.79 (95% CI 1.03 to 2.55), I²=69.4%; statistically significant. Moderate-intensity subgroup: WMD=2.12, I²=0%. >3 sessions/week: WMD=3.03, I²=0%.	⊕⊖⊖⊖ LOW (ACE in-house assessment)	−1 risk of bias (Cochrane moderate quality; allocation concealment often unclear); −1 inconsistency (I²=69.4% overall). CoE ACE in-house assessment. Population: AD with confirmed diagnostic criteria (DSM-IV, NINCDS-ADRDA, or ICD-10). Source: Dai 2026 (SR/MA, 13 RCTs, n=813).
Dementia broadly — exercise vs control, by constituent meta-analysis (GRADE from Sun 2025)			
Global cognition — resistance training (dementia) *MMSE, MoCA, CAMCOG; 4 RCTs, n=335 | Source: Coelho-Junior et al. 2022 as assessed in Sun 2025*	SMD = 0.60 (95% CI 0.25 to 0.95); statistically significant	⊕⊕⊕⊖ MODERATE	−1 imprecision (4 RCTs, n=335). Population: dementia (AD, VaD, mixed; no MCI). Source: Sun 2025.
Global cognition — Tai Chi (dementia) *MMSE; 3 RCTs, n=415 | Source: Liu et al. 2023 MA as assessed in Sun 2025*	SMD = 0.27 (95% CI 0.08 to 0.47); statistically significant (small effect)	⊕⊕⊕⊖ MODERATE	−1 imprecision (3 RCTs, n=415). Population: dementia (no MCI). Source: Sun 2025. *CONFLICTING ESTIMATE in same umbrella review; see next row.*
Global cognition — exercise programmes (dementia) *MMSE; 15 RCTs | Source: Li et al. 2019 MA as assessed in Sun 2025*	SMD = 0.44 (95% CI −0.21 to 1.09); NOT statistically significant	⊕⊕⊕⊖ MODERATE	−1 imprecision (wide CI crossing zero). Population: dementia (no MCI). Source: Sun 2025. Both Liu 2023 (significant) and Li 2019 (not significant) are rated MODERATE: having these conflicting estimates within the same umbrella review reflects uncertainty for Tai Chi/ exercise broadly in dementia.
Global cognition — home-based exercise (dementia) *MMSE; 3 RCTs | Source: de Almeida et al. 2020 MA as assessed in Sun 2025*	SMD = 0.71 (95% CI 0.43 to 0.99); statistically significant (moderate effect)	⊕⊕⊕⊖ MODERATE	−1 imprecision (3 RCTs only). Population: dementia (no MCI). Source: Sun 2025.
ADAS-Cog, Alzheimer's Disease Assessment Scale – Cognitive subscale; CI, Confidence Interval; CoE, Certainty of Evidence; MA, Meta-analysis; MCI, Mild Cognitive Impairment; MD, Mean Difference; MMSE, Mini Mental State Examination; MoCA, Montreal Cognitive Assessment; RCT, Randomised Controlled Trial; SMD, Standardised Mean Difference; SR, Systematic Review; WMD, Weighted Mean Difference.			

Table 4C. Evidence table on the effectiveness of exercise on function outcomes in dementia[7]

Patient or population: people with AD
Setting: community and institutional settings
Intervention: Physical activity interventions
Comparison: Routine medical treatment, usual treatment, no intervention, social activities (therapeutic music, arts and crafts)

FUNCTION OUTCOMES			
NOTE: No GRADE assessment is available for any exercise-ADL outcome from sources with formal GRADE. CoE ACE in-house assessment by the evidence review team using standard GRADE domains, marked (ACE in-house assessment). de Sa Leitao 2025 was excluded from this table as its pooled ADL estimates include MCI participants and cannot be disaggregated; target population is AD, VaD, or mixed dementia only. Xiao 2024 (all rows below) restricted inclusion to Alzheimer's disease patients.			
Outcomes	**Effect size/results**	**CoE**	**Reasons for downgrade / notes**
Activities of daily living — AD — end of treatment (CoE ACE in-house assessment; Xiao 2024)			
ADL overall — physical exercise (AD) *ADL, BADL, ADCS-ADL, IADL scales; 27 RCTs, n=1,700 | Source: Xiao 2024*	SMD = 0.33 (95% CI 0.12 to 0.54), I²=81.7%; statistically significant. Sensitivity analysis confirmed robustness (p>0.05). No significant publication bias (Egger p=0.145).	⊕⊕⊖⊖ LOW (ACE in-house assessment)	−1 risk of bias (most RCTs moderate quality; allocation concealment often unclear); −1 inconsistency (I²=81.7%). CoE ACE in-house assessment. Population: AD (CCMD-3 or DSM-IV with imaging confirmation). Source: Xiao 2024 (MA, 27 RCTs, n=1,700).
Instrumental ADL (IADL) — physical exercise (AD) *IADL scales; 10 RCTs | Source: Xiao 2024 subgroup*	SMD = 0.36 (95% CI 0.22 to 0.51), I²=83.9%; statistically significant	⊕⊕⊖⊖ LOW (ACE in-house assessment)	−1 risk of bias; −1 inconsistency (I²=83.9%). CoE ACE in-house assessment. Source: Xiao 2024 subgroup.
Basic ADL (BADL) — physical exercise (AD) *BADL scales; 6 RCTs | Source: Xiao 2024 subgroup*	SMD = 0.31 (95% CI 0.12 to 0.51), I²=92.4%; statistically significant	⊕⊖⊖⊖ VERY LOW (ACE in-house assessment)	−1 risk of bias; −1 inconsistency (I²=92.4% — very high, substantially limits reliability); −1 imprecision (wide between-study variance). CoE ACE in-house assessment. Source: Xiao 2024 subgroup.
ADL — resistance training or aerobic exercise (best subgroup, AD) *ADL/IADL scales; subgroup of Xiao 2024*	SMD = 0.83 (95% CI 0.60 to 1.05); moderate-to-large effect (statistically significant). Superior to multi-component, low-intensity, and walking subgroups.	⊕⊕⊖⊖ LOW (ACE in-house assessment)	−1 risk of bias; −1 imprecision (subgroup, exploratory — smaller effective n). CoE ACE in-house assessment. Optimal parameters: >6 months, 4–5 sessions/week, ≤30 min/session. Source: Xiao 2024 subgroup.
ADCS-ADL, Alzheimer's Disease Cooperative Study Activities of Daily Living Scale; ADL, Activities of Daily Living; BADL, Basic Activities of Daily Living; CI, Confidence Interval; CoE, Certainty of Evidence; IADL, Instrumental Activities of Daily Living; MA, Meta-analysis; MCI, Mild Cognitive Impairment; SMD, Standardised Mean Difference.			

Clinical question: Does cognitive rehabilitation support cognition or function for patients with dementia?

Table 5A. Search strategy for cognitive rehabilitation (Filter: English); search period 9 March 2026

	Query	Results
1	Cognitive rehabilitation[Title/Abstract]	2960
2	(((((((Alzheimer Disease[MeSH Terms]) OR (alzheimer disease, late onset[MeSH Terms])) OR (Alzheimer's Disease[MeSH Terms])) OR (Dementia, Vascular[MeSH Terms])) OR (Vascular Dementia[MeSH Terms])) OR (Dementia[MeSH Terms])) OR (dementia[Title/Abstract])) OR (Alzheimer's disease[Title/Abstract])) OR (vascular dementia[Title/Abstract])	348,841
3	(((Cognition[MeSH Terms]) OR (cognitive function[MeSH Terms])) OR (Cognition[Title/Abstract])) OR (cognitive function[Title/Abstract])	347,219
4	((function[Title/Abstract]) OR (activities of daily living[Title/Abstract])) OR (ADL[Title/Abstract])	2,677,174
4	1 AND 2 AND (3 OR 4)	260
5	Filter by: systematic review AND meta-analysis	17
6	Exclude - studies including other types of interventions - studies including other types of populations - systematic reviews with no pooled analysis	1

Note on search results: 50 studies were identified at the meta-analysis filter step but only Kudlicka et al. 2019 (Cochrane SR) is entered in the evidence table. The remaining identified studies were broad cognitive intervention reviews that bundle multiple intervention types (e.g. covering cognitive training, cognitive stimulation, and cognitive rehabilitation collectively) and cannot be disaggregated to isolate CR-specific effects for the target population. Only Kudlicka et al. 2019 applies GRADE and focuses exclusively on CR as defined for this review (goal-oriented, individual, therapist-led). It is therefore the sole source for GRADE-assessed CoE in this table. Supporting evidence from other studies is referenced in the narrative summary where applicable.

ADL, Activities of Daily Living; CoE, Certainty of Evidence; CR, Cognitive Rehabilitation; MeSH, Medical Subject Headings; SR, Systematic Review.

Table 5B. Summary of findings table: Cognitive rehabilitation compared to inactive control condition for cognition outcomes in mild-to moderate dementia (at the end of therapy)[8]

Patient or population: people with mild-to-moderate dementia
Setting: community dwelling
Intervention: cognitive rehabilitation: personalised, goal-oriented, one-to-one home-based sessions (8-14 sessions over 3 months, some with maintenance sessions); participants identify personally meaningful goals (up to 3); uses evidence-based CR techniques: spaced retrieval, prompting/fading, environmental modification, compensatory strategies, memory aids, action-based learning. Delivered by trained therapists (OTs, nurses, psychologists)
Comparison: inactive control condition (treatment as usual (medication, memory clinic monitoring, general support) or waiting-list control; no specific non-pharmacological therapy provided to control group)

COGNITION OUTCOMES			
Outcomes	**Effect size/results**	**CoE**	**Reasons for downgrade / notes**
End-of-treatment effects vs inactive control (1–3 months post-randomisation)			
Cognition: memory, immediate recall *RBMT-II; 2 RCTs, n=459*	MD = 0.27 (95% CI 0.02 to 0.52), I²=0%; small positive effect (statistically significant)	⊕⊕⊕⊕ HIGH (ACE in-house assessment)	No downgrade *CoE from Kudlicka 2023 text (not in Cochrane SoF table); own application of GRADE domains confirmed HIGH (low RoB, no inconsistency, no imprecision)*
Cognition: memory, delayed recall *RBMT-II; 2 RCTs, n=459*	MD = 0.09 (95% CI -0.57 to 0.75), I²=0%; negligible effect (not statistically significant)	⊕⊕⊖⊖ LOW (ACE in-house assessment)	−1 imprecision (CI crosses negligible and benefit categories); −1 imprecision (very wide CI, n=459 but large range) *CoE from Kudlicka 2023 text*
Cognition: memory, global score *Dementia Rating Scale-2; 2 RCTs, n=58*	SMD = -0.15 (95% CI -0.67 to 0.37), I²=0%; negligible effect (not statistically significant)	⊕⊕⊖⊖ LOW (ACE in-house assessment)	−1 imprecision (wide CI, very small n=58); −1 imprecision *CoE from Kudlicka 2023 text (reported under 'memory')*
Cognition: sustained attention *TEA Elevator Counting; 2 RCTs, n=446*	MD = 0.02 (95% CI -0.12 to 0.17), I²=0%; negligible effect (not statistically significant)	⊕⊕⊕⊖ MODERATE (ACE in-house assessment)	−1 imprecision (CI crosses negligible and benefit/harm categories) *CoE from Kudlicka 2023 text*
Cognition: auditory selective attention / working memory *TEA Elevator Counting with Distraction; 3 RCTs, n=452*	MD = 0.90 (95% CI -0.38 to 2.19); uncertain direction (not statistically significant)	⊕⊖⊖⊖ VERY LOW (ACE in-house assessment)	−2 inconsistency (substantial heterogeneity); −2 imprecision (very wide CI crossing negligible, benefit, and harm categories) *CoE from Kudlicka 2023 text*
Cognition: verbal letter fluency *COWA/DKEFS; 3 RCTs, n=495*	SMD = -0.20 (95% CI -0.85 to 0.45); negligible effect (not statistically significant)	⊕⊖⊖⊖ VERY LOW (ACE in-house assessment)	−2 inconsistency (substantial heterogeneity); −2 imprecision (very wide CI) *CoE from Kudlicka 2023 text*
Medium-term follow-up effects vs inactive control (3–12 months post-randomisation)			
Cognition: memory, immediate recall *RBMT-II; 2 RCTs, n=427*	MD = 0.13 (95% CI -0.12 to 0.38); negligible effect (not statistically significant)	⊕⊕⊕⊖ MODERATE (ACE in-house assessment)	−1 imprecision (CI crosses negligible and benefit/harm categories) *CoE from Kudlicka 2023 text*
Cognition: memory, global score *Dementia Rating Scale-2; 2 RCTs, n=51*	SMD = -0.43 (95% CI -1.24 to 0.38), I²=46%; small negative direction (not statistically significant)	⊕⊕⊖⊖ LOW (ACE in-house assessment)	−1 inconsistency (I²=46%); −1 imprecision (very wide CI, small n=51) *CoE from Kudlicka 2023 text*
Cognition: sustained attention *TEA Elevator Counting; 2 RCTs, n=413*	MD = 0.43 (95% CI -0.64 to 1.49), I²=66%; small positive direction (not statistically significant)	⊕⊕⊖⊖ LOW (ACE in-house	−1 inconsistency (I²=66%); −1 imprecision (wide CI crossing benefit and harm)

		assessment)	*CoE from Kudlicka 2023 text*
Cognition: auditory selective attention / working memory *TEA Elevator Counting with Distraction; 2 RCTs, n=386*	MD = 0.47 (95% CI 0.09 to 0.84), I²=0%; small positive effect (statistically significant)	⊕⊕⊕⊖ MODERATE (ACE in-house assessment)	−1 imprecision (CI crosses negligible and moderate benefit categories; n<400) *CoE from Kudlicka 2023 text; this is the only statistically significant cognition outcome*
Cognition: verbal letter fluency *COWA/DKEFS; 2 RCTs, n=425*	SMD = -0.03 (95% CI -0.69 to 0.63), I²=0%; negligible effect (not statistically significant)	⊕⊕⊖⊖ LOW (ACE in-house assessment)	−1 inconsistency; −1 imprecision (wide CI crossing benefit and harm categories) *CoE from Kudlicka 2023 text*
Cognition: memory, delayed recall *RBMT-II; 2 RCTs, n=426*	MD = 0.66 (95% CI -1.14 to 2.46); small positive direction (not statistically significant)	⊕⊕⊖⊖ VERY LOW (ACE in-house assessment)	−2 inconsistency; −2 imprecision (extremely wide CI crossing negligible, moderate benefit, and harm categories) *CoE from Kudlicka 2023 text*
CI, Confidence Interval; CoE, Certainty of Evidence; COWA, Controlled Oral Word Association; CR, Cognitive Rehabilitation; DKEFS, Delis-Kaplan Executive Function System; MD, Mean Difference; RBMT, Rivermead Behavioural Memory Test; RBMT-II, Rivermead Behavioural Memory Test – Second Edition; SMD, Standardised Mean Difference			

Table 5C. **Summary of findings table: Cognitive rehabilitation compared to inactive control condition for function outcomes in mild-to moderate dementia (at the end of therapy)[8]**

Patient or population: people with mild-to-moderate dementia
Setting: community dwelling
Intervention: cognitive rehabilitation: personalised, goal-oriented, one-to-one home-based sessions (8-14 sessions over 3 months, some with maintenance sessions); participants identify personally meaningful goals (up to 3); uses evidence-based CR techniques: spaced retrieval, prompting/fading, environmental modification, compensatory strategies, memory aids, action-based learning. Delivered by trained therapists (OTs, nurses, psychologists)
Comparison: inactive control condition (treatment as usual (medication, memory clinic monitoring, general support) or waiting-list control; no specific non-pharmacological therapy provided to control group)

FUNCTION OUTCOMES

Outcomes	**Effect size/results**	**CoE**	**Reasons for downgrade**
End-of-treatment effects vs inactive control (1-3 months post-intervention):			
Functional ability: personal goal performance - self-report	SMD = 1.46 (95% CI 1.26 to 1.66), I²=0%, 3 RCTs, 501 participants; large positive effect(statistically significant)	⊕⊕⊕⊕ HIGH	No downgrade
Functional ability: personal goal performance - informant-rated	SMD = 1.61 (95% CI 1.01 to 2.21), I²=41%, 3 RCTs, 476 participants; large positive effect (statistically significant)	⊕⊕⊕⊕ HIGH	No downgrade
General functional ability - informant-rated	SMD = 0.05 (95% CI -0.10 to 0.20), 3 RCTs, 673 participants; negligible effect (not statistically significant)	⊕⊕⊖⊖ LOW	• -1 for risk of bias: selective reporting in 2 of 3 contributing studies (Amieva 2016, Clarkson 2022) • -1 point for imprecision (wide 95% CI crossing benefit and harm categories)
Medium-term follow-up effects vs inactive control (3-12 months post-randomisation):			
Functional ability: personal goal performance - self-report	SMD = 1.46 (95% CI 1.25 to 1.68), I²=0%, 2 RCTs, 432 participants; large positive effect (statistically significant)	⊕⊕⊕⊕ HIGH	No downgrade
Functional ability: personal goal performance - informant-rated	SMD = 1.25 (95% CI 0.78 to 1.72), I²=29%, 3 RCTs, 446 participants; large positive effect (statistically significant)	⊕⊕⊕⊕ HIGH	No downgrade
General functional ability - informant-rated	SMD = -0.23 (95% CI -0.43 to -0.03); small negative effect (statistically significant)	⊕⊕⊕⊖ MODERATE	• -1 for imprecision (sample size <400 participants)
CI, Confidence Interval; CoE, Certainty of Evidence; CR, Cognitive Rehabilitation; SMD, Standardised Mean Difference.			

Clinical question: Does art therapy support cognition or function for patients with dementia?

Table 6A. Search strategy for art therapy (Filter: English); search period 27-28 Feb 2026

	Query	Results
1	(((art therapy[MeSH Terms]) OR (therapy, art[MeSH Terms])) OR (art therapy[Title/Abstract])) OR (art based intervention[Title/Abstract])	2,963
2	(((((((Alzheimer Disease[MeSH Terms]) OR (alzheimer disease, late onset[MeSH Terms])) OR (Alzheimer's Disease[MeSH Terms])) OR (Dementia, Vascular[MeSH Terms])) OR (Vascular Dementia[MeSH Terms])) OR (Dementia[MeSH Terms])) OR (dementia[Title/Abstract])) OR (Alzheimer's disease[Title/Abstract])) OR (vascular dementia[Title/Abstract])	368,652
3	(((Cognition[MeSH Terms]) OR (cognitive function[MeSH Terms])) OR (Cognition[Title/Abstract])) OR (cognitive function[Title/Abstract])	357,612
4	((function[Title/Abstract]) OR (activities of daily living[Title/Abstract])) OR (ADL[Title/Abstract])	2,677,174
5	1 AND 2 AND (3 OR 4)	70
6	Filter by: systematic review AND meta-analysis	13
7	Exclude - studies with other types of populations - studies before 2018 (mainly due to 2018 Cochrane study), - scoping studies, - non-art therapy interventions - Interventions are not conducted by trained professional	1

MeSH, Medical Subject Headings

Table 6B. Evidence table on the effectiveness of art therapy on cognition outcomes in dementia [9]

Patient or population: people with dementia
Setting: outpatient clinic, day-care, and residential settings
Intervention: art therapy — structured (facilitator-determined themes and materials) or unstructured (patient-led) sessions
Comparison: active control (calculation drills or recreational activity)

COGNITION OUTCOMES

EVIDENCE BASE NOTE: Only one source with formal GRADE assessment is available for art therapy in dementia — Deshmukh 2018 (Cochrane SR, 2 RCTs, n=88). All outcomes are rated VERY LOW. Data from the two included RCTs were not poolable (different art therapy types and comparators). Masika et al. 2020 (SR/MA, 11 studies, n=831) was identified but excluded: of the 11 included studies, 6 recruited cognitively normal older adults, 1 recruited participants with undefined cognitive decline, and 2 recruited MCI participants — only 3 studies (2 AD, 1 dementia) fall within the target population (AD, VaD, or mixed dementia), and these 3 dementia-specific studies were not poolable by the original review authors.

Outcomes	Comparator (control) change	Intervention effect size/results	CoE	Reasons for downgrade / notes
Dementia — individual study data vs active control (GRADE from Deshmukh 2018, Cochrane SR)				
Global cognition — art therapy vs active control (calculation drills) *MMSE; 1 RCT, n=39, 12 weeks | Hattori 2011 | Source: Deshmukh 2018*	Control (calculation drills): MMSE change +2.1 pts	Art therapy: MMSE change −0.2 pts. MMSE improved in the control group and declined in the art therapy group. No formal between-group statistical comparison reported in the Cochrane review.	⊕⊖⊖⊖ VERY LOW	−1 risk of bias (high performance bias — blinding not possible; unclear allocation concealment); −1 inconsistency (methodological heterogeneity; opposite directions between the 2 Cochrane-included studies); −1 imprecision (endpoint n=20 intervention, n=19 control). Source: Deshmukh 2018 (Cochrane SR, GRADE applied, 2 RCTs, n=88 total; search to October 2017). Active comparator (calculation drills): any null or negative finding may reflect equivalence of cognitive engagement rather than inferiority of art therapy.
Global cognition — art therapy vs recreational activities *MMSE; 1 RCT, n=initial 49 (53% attrition), 40 weeks | Rusted 2006 | Source: Deshmukh 2018*	Control (recreational activities): no significant change	Art therapy: no significant improvement. At 40 weeks, anxious and depressive symptoms worsened in the art therapy group compared with the control group (baseline depression imbalance present; not adjusted for). Very high dropout rate (53%).	⊕⊖⊖⊖ VERY LOW	−1 risk of bias (high attrition bias — 53% dropout; baseline depression imbalance); −1 inconsistency (conflicts with Hattori 2011 design and context); −1 imprecision (endpoint group sizes of 9 and 12 after attrition). Source: Deshmukh 2018. Very high attrition substantially undermines reliability at 40 weeks.

MA, Meta-analysis; MCI, Mild Cognitive Impairment; MMSE, Mini Mental State Examination; RCT, Randomised Controlled Trial; SR, Systematic Review.

Clinical question: Does music therapy support cognition or function for patients with dementia?

Table 7A. Search strategy for music therapy (Filter: English); search period 3-5 Mar 2026

	Query	Results
1	(Music Therapy[MeSH Terms]) OR (Music Therapy[Title/Abstract])OR (Music based intervention[Title/Abstract])	7,130
2	(((((((Alzheimer Disease[MeSH Terms]) OR (alzheimer disease, late onset[MeSH Terms])) OR (Alzheimer's Disease[MeSH Terms])) OR (Dementia, Vascular[MeSH Terms])) OR (Vascular Dementia[MeSH Terms])) OR (Dementia[MeSH Terms])) OR (dementia[Title/Abstract])) OR (Alzheimer's disease[Title/Abstract])) OR (vascular dementia[Title/Abstract])	368,652
3	(((Cognition[MeSH Terms]) OR (cognitive function[MeSH Terms])) OR (Cognition[Title/Abstract])) OR (cognitive function[Title/Abstract])	357,612
4	((function[Title/Abstract]) OR (activities of daily living[Title/Abstract])) OR (ADL[Title/Abstract])	2,677,174
5	1 AND 2 AND (3 OR 4)	227
6	Filter by: systematic review AND meta-analysis	57
7	Exclude studies that include other types of interventions, exclude studies with majority of other types of populations	3

MeSH, Medical Subject Headings

Table 7B. Evidence table on the effectiveness of music therapy on cognition outcomes in dementia[10, 11]

Patient or population: people with dementia (varying degrees of severity; most residing in institutions) **Setting:** long-term care facilities, specific hospital departments, or both; or unclear **Intervention:** music-based therapeutic interventions — active (music-making, instrument playing, singing, improvisation) and/or receptive (listening and responding to music); individual or group format **Comparison:** usual care; or other activities (separate analyses)			
COGNITION OUTCOMES			
NOTE: van der Steen 2025 (Cochrane, GRADE) found NO statistically significant cognition benefit (LOW CoE) at end of treatment or long-term follow-up, vs usual care or vs other activities. Lu 2025 (no formal GRADE; CoE ACE in-house assessment) found significant benefit, strengthening with ≥12-week programmes. Both are shown separately below. The conflict reflects differences in inclusion criteria and comparison conditions. TARGET POPULATION NOTE: van der Steen 2025 includes formally diagnosed dementia only. Lu 2025 includes 3 MCI studies among 24 RCTs (Lazarou 2017, Zhu 2018, Mahendran 2018); these 3 MCI studies cannot be disaggregated from the pooled estimates. This is noted in the relevant rows and taken into account in CoE ACE in-house assessment.			
Outcomes	**Effect size/results**	**CoE**	**Reasons for downgrade / notes**
Dementia: end-of-treatment effects vs usual care (GRADE from van der Steen 2025, Cochrane)			
Cognition, music-based therapy vs usual care *MMSE, SIB, ADAS-Cog; 7 RCTs, n=353 (dementia only) | Source: van der Steen 2025*	SMD = 0.19 (95% CI −0.02 to 0.41), I²=0%; CI crosses zero. NOT statistically significant. Conclusion: "no evidence that music-based therapy makes a difference to cognition."	⊕⊕⊖⊖ LOW	−1 risk of bias (blinding of therapists and participants not possible; outcome assessor blinding sometimes unclear); −1 imprecision (n=353; CI includes both no effect and small positive effect). Population: dementia only (DSM-IV/5, ICD-10 or equivalent). Source: van der Steen 2025 (Cochrane, GRADE, 30 RCTs, n=1,720; search to Nov 2023). I²=0% — null finding is consistent across contributing studies.
Global cognition, music-based therapy vs other activities *MMSE and other scales; 5 RCTs, n=147 (dementia only) | Source: van der Steen 2025*	SMD = 0.12 (95% CI −0.21 to 0.45); NOT statistically significant	⊕⊕⊖⊖ LOW	−1 risk of bias; −1 imprecision (n=147; wide CI). Population: dementia only. Source: van der Steen 2025.
Dementia: long-term follow-up (≥4 weeks after end of treatment; van der Steen 2025)			
Global cognition, long-term vs usual care *MMSE and other scales; 2 RCTs, n=146 | Source: van der Steen 2025*	SMD = 0.09 (95% CI −0.24 to 0.41); NOT statistically significant	⊕⊕⊖⊖ LOW	−1 risk of bias; −1 imprecision (2 studies, n=146, wide CI). Population: dementia only. Source: van der Steen 2025.
Global cognition, long-term vs other activities *1 RCT, n=47 | Source: van der Steen 2025*	SMD = 0.04 (95% CI −0.56 to 0.64); NOT statistically significant	⊕⊕⊖⊖ LOW	−1 risk of bias; −2 imprecision (1 RCT, very wide CI including harm). Source: van der Steen 2025.
Dementia/cognitive impairment : by intervention duration (CoE ACE in-house assessment; Lu 2025)			
Lu 2025 population note: 24 RCTs included, of which 3 recruited MCI participants (Lazarou 2017, Zhu 2018, Mahendran 2018). These cannot be disaggregated from pooled estimates. This has been accounted for as an additional downgrade consideration in CoE self-assessment below.			
Global cognition, music therapy (all durations) *MMSE and other scales; 22 RCTs, n=648 (21 dementia, 3 MCI ; cannot disaggregate) | Source: Lu 2025*	SMD = 0.53 (95% CI 0.24 to 0.82), I²=55%; statistically significant (p<0.001)	⊕⊖⊖⊖ VERY LOW (ACE in-house assessment)	−1 risk of bias (17/24 studies showed some bias); −1 inconsistency (I²=55%); −1 indirectness (3/24 studies are MCI, outside target population; cannot disaggregate). CoE ACE in-house assessment. Source: Lu 2025 (MA, 24 RCTs, n=648). Conflicts with van der Steen 2025 null finding (LOW CoE, dementia only).
Global cognition — music therapy ≥12 weeks *MMSE and other scales; subgroup of Lu 2025 (proportion with MCI unknown)*	SMD = 0.83 (95% CI 0.55 to 1.11), I²=6%; statistically significant (p<0.001). Minimum effective threshold per Lu 2025: ≥12 weeks, ≥16 sessions, ≥8 hours total.	⊕⊕⊖⊖ LOW (ACE in-house assessment)	−1 risk of bias. No inconsistency downgrade (I²=6%). −1 indirectness (MCI contamination; cannot confirm dementia-only effect for this subgroup). CoE ACE in-house assessment. Downgraded from MODERATE

			(previous assessment) due to inability to confirm whether MCI participants drive the

ADAS-Cog, Alzheimer's Disease Assessment Scale – Cognitive subscale; CI, Confidence Interval; CoE, Certainty of Evidence; MA, Meta-analysis; MCI, Mild Cognitive Impairment; MMSE, Mini Mental State Examination; RCT, Randomised Controlled Trial; SMD, Standardised Mean Difference.

APPENDIX 2. Reported evidence for cognitive enhancers, second-generation antidepressants, antipsychotics, and antiepileptics

AChE inhibitors: moderate-certainty evidence reporting no difference between donepezil and placebo for behavioural symptoms.[12]

Memantine: high-certainty evidence reporting small clinical benefit compared to placebo for BPSD; high-certainty evidence reporting no difference compared to placebo for adverse events.[13]

Second-generation antidepressants:
Agitation: most studies had small sample size and ranged from low to unclear risk of bias due to methodological issues (mainly selection and detection bias).[14, 15]

Depression and anxiety (in patients with dementia): Most studies on depression had unclear or low risks of bias.[16] Studies were low-certainty due to methodological limitations (e.g. small sample size, heterogenous study designs, measures not validated to diagnose depression).

Studies on anxiety in dementia had significant limitations: there were very few studies specifically conducted for anxiety in dementia – most treated anxiety as a secondary outcome with small sample sizes and measured it as part of broader BPSD inventories (e.g. Neuropsychiatric Inventory or Gottfries-Bråne-Steen scale), resulting in inadequate power to detect treatment effects.[17] Additionally, studies did not specifically recruit participants with clinically significant anxiety, meaning many participants may not have had anxiety levels that would respond to antidepressant treatment.

Sleep disorders: Studies reported low-certainty evidence due to very serious imprecision.

Antipsychotics:
Agitation: The certainty of evidence varies across outcomes for atypical antipsychotics in dementia. Studies reported moderate-certainty evidence that these medications probably reduce agitation slightly and have negligible effects on psychosis and overall adverse event risk.[18] For safety outcomes, there is high-certainty evidence for increased risk of somnolence, with moderate-certainty evidence for slightly increased risks of extrapyramidal symptoms, serious adverse events, and death, although the mortality estimate was imprecise.[18]

Antiepileptics:
Agitation: For valproate, a Cochrane review reported moderate-certainty evidence, for no effect over six weeks measured by total Brief Psychiatric Rating Scale and Brief Psychiatric Rating Scale agitation factor, and very-low certainty evidence from three studies using the Cohen-Mansfield Agitation Inventory which was consistent with the lack of effect.[19] Studies on carbamazepine are low-certainty due to methodological limitations.[20, 21]

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