Appendix 1: Findings from studies rated as being at higher risk of bias

Table 1b: Evidence from studies with higher risk of bias, describing psychosocial interventions

Study	Setting & population	Intervention	N	Control group	N	Follow- up time	Between group cognitive outcome differences (primary outcomes = bold) favour	response below)			-		1
							intervention unless stated, p values shown where p≤ 0.05	1	2	3	4	5	6
Duru (2018)	Women (aged 50+) recruited from Turkish Family Health Centre; without a dementia or psychiatric diagnosis MMSE 24+	8 x weekly in-home individual reminiscence therapy (30-45 min); topics included: childhood and family life, food and cooking, days out and holidays.	27	TAU	23	8 weeks	MMSE – NS	N	Z	N	Y	Y	Υ
Bugos (2007)	USA community- dwelling adults (aged 60-85), no dementia, not experienced musicians	Weekly 30 min individual piano lessons, with 3 hours independent practice each week (which was recorded).	16	TAU	15	6 month s	WAIS-III: Digit Span, Block Design & Letter-Number sequencing – NS; Digit Symbol- F(2, 55) = 4.68, p<0.015; TMT A- F(2, 58), p<0.01; TMT B- F(2, 55)= 4.44, p<0.03	N	N	N	Υ	N	N
Clare (2015)	People aged 50+, living and functioning independently recruited from a community Agewell centre in Wales	90 min, Bangor Goal Setting Interview to identify ≤5 SMART goals related to physical or cognitive activity, physical health, diet or social engagement. 1. GS; 2. GS + mentoring + 5 follow up phone calls from researcher, bi-monthly to review progress & problem-solve.	1. 24 2. 24	90 min interview (general discussion/ information about activities and health)	27	12 month s	MoCA, VLT Immediate & delayed recall, TMT, VFT: NS	Υ	Υ	N	Υ	N	Y
Dawson (2014)	Canadian older adults with cognitive complaints but no objective MCI, dementia/depression, recruited from research centre	3 (1 hour) group and 9 (1 hour) individual sessions, by trained research assistant, over 8 weeks. Education about selfmanagement, successful aging and an occupation-based meta-cognitive strategy-training program	10	3 group, 9 (1 hour) individual sessions: brain health education and cognitively stimulating exercises	9	3 month s	DKEFS TMT & Tower test - NS VFT - NS	Υ	Υ	Υ	Υ	N	N

Mackin (2014)	Canadian, community-dwelling adults (aged 60+) with major depression (DSM-IV) and executive dysfunction, recruited by advertisements and from clinics.	12 weekly individual Problem-solving sessions, from clinical psychologists / social workers: participants set goals, discussed and evaluated how to reach them, created and evaluated action plans. Four PhD level served as therapists.	110	12 weekly individual supportive therapy, from clinical psychologists / social workers; warmth, empathy, active listening.	111	12 & 36 weeks	Executive function, HVLT, WCST, SCWT, TMT (Parts A & B) NS	N	Y	N	Υ	N	Υ
Oken (2017)	USA community- dwelling people recruited by University adverts; aged 50-85 & perceived stress scale score >9	6 x weekly, 60-90 min, individual meditation, facilitated by a research assistant. Based on mindfulness based cognitive therapy and stress reduction. Home practice advised, and supported by audio recordings	66	Waitlist control	68	2 month s	SCWT; Flanker attention Test COWAT: letter category & verbal fluency, letter-number sequence, reaction time tests - NS	Y	Υ	N	Υ	N	Y
Wahbeh (2016)	USA, recruited through flyers at a community retirement home. 16, 65-90 year olds	6 x weekly 1 hour online meditation group & 30 min of daily home practice. Based on mindfulness based cognitive therapy and stress reduction. Online enquiries were answered by facilitators. Participants received weekly reminder calls, but completed sessions 2-6 on their own	8	6 x weekly 1 hour online group. Participants watched & discussed a video; & listened to podcasts about healthy living	8	6 weeks	Simple reaction time, Flanker, Letter-number sequencing, VFT, RAVLT- NS	N	Y	N	Υ	Z	N
Wells (2013)	People with MCI (objectively determined) recruited from USA Medical centre, aged 55-90)	8 x 2 hour weekly mindfulness-based stress reduction, and mindful movement (yoga) sessions and a mindfulness retreat day; Home practice (30 min/d) with standard guided audio recordings.	9	Usual care	5	8 weeks	ADAS-Cog, RAVLT (total 1-5), COWAT: Animal & Boston Naming: NS TMT Part A/B: p=0.04/0.01 (favoured control)	Υ	Υ	N	N	N	N
Nakatsuk a et al. (2015)	Japanese community dwelling People aged >75 with CDR 0.5	12 x weekly 1 hour Cognitive Intervention computer based group sessions with quizzes, games and puzzles	45	Physical Activity (group 2) Group Reminisence Approach (group 3)	PA- 38 GRA- 44	12 weeks	MMSE- p< 0.005; TMT-A- p< 0.005; VFT- p< 0.005 Benefits found in Cl and P groups for MMSE, TMT-A and VFT.	Υ	N	I N	Υ	N	Υ
Thiel et al. (2012)	Community Dwelling 65-89 healthy older adults in Germany	1. 2 months of weekly 90 min groups discussing healthy eating, dementia risk factors, coping strategies with memory difficulties, & cognitive stimulating games. 2. Intervention + counselling	114	TAU	45	2 & 6 month s	ADAS-Cog- ns	Y	N	I N	Υ	Y	Υ

Legend for Tables: Validity Questions (see also Section 2.3): 1. Were participants randomised to intervention and control groups, using a process that is independent?; 2. Were participants and clinicians, as far as possible, masked to treatment allocation?; 3. Were all participants who entered the trial accounted for and an intention-to-treat analysis conducted?; 4. Was follow-up and data collection processes the same for all participants?; 5. Was a power calculation carried out based on one of our specified outcomes of interest (cognition)?; 6. Were 45 or more participants included in analyses comparing treatment and control effects?

Addenbrokes Cognitive Examination (ADAS-Cog); Auditory Verbal Learning Test (AVLT); Cardiovascular Health Study (CHS); Cambridge Cognitive Examination (CAMCOG); Category Verbal Learning/Fluency Test (CVL/FT); Clinical Dementia Rating Scale (CDR); Confidence Intervals (CI); Controlled Oral Word Association Test (COWAT); Delis-Kaplan Executive Function System (DKEFS); Digit Span Task (Forwards/ Backwards) (DSTF/B); Digit-Symbol Coding (DSC); Digit Symbol (Substitution) Test (DS(S)T) (F/B: Forwards/ Backwards); Dementia Rating Scale-2 (DRS-2); Frontal Assessment Battery (FAB); Functional Cognitive Assessment Scale (FUCAS); Global Deterioration Scale (GDS); Goal Setting (GS); Hopkins Verbal Learning Test (HVLT); Informant Questionnaire on Cognitive Decline (IQCODE); Letter Verbal Fluency Test (LVFT); Mild Cognitive Impairment (MCI); Mean Difference (MD); Minute(s) (min); MFQ: Memory Functioning Questionnaire; Mini-Mental State Examination (MMSE); Montreal Cognitive Assessment (MoCA); Neurobehavioral Cognitive Status Examination (NCSE); Neuropsychological test battery (NTB); Not Significant (NS); Paired Associate Learning Test (PALT); Problems in Everyday Living Test (PEDL); Repeatable Battery for Assessment of Cognitive Status (RBANS); Rey Auditory Verbal Learning Test (RAVLT); Rivermead Behavioural Memory Test (RBMT); Rey 15 item memory test (Rey-15); Rey-Osterrieth Complex Figure (ROCF); Symbol Digit Modalities Test (SDMT); Specific, Measurable, Achievable, Realistic, Time-bound (SMART); Stroop Color Word Interference Test (Stroop/ SCWT); Symbol Digit Modalities Test (SDMT); Treatment as Usual (TAU); Telephone Interview for Cognitive Status (TICS); Trail Making Test (TMT): United States of America (USA); Verbal Fluency Test (VFT); Verbal Learning and Memory Test (VLMT); Weschler Adult Intelligence Scale III (WAIS-III); Wechsler Memory Scale-Revised (WMS-R); Wechsler Memory Scale-Logical Memory (WMS-LM); Wisconsin Card Sorting Test (WCST)

Table 2b: Evidence from studies with lower/higher risk of bias, describing dietary interventions

Study	Setting & population	Intervention	N	Control group	N	Follow-up time	Between group cognitive outcome differences (primary outcomes = bold) Favour intervention unless stated, p values	Validity questic responses (see below) 1 2 3 4 5					
							shown where p≤0.05	1	2	3	4	5	6
Horie et al (2016)	People aged 60+ with MCI, BMI 30+, from French Out patients	Group caloric restriction counselling with nutritionists, 26-28 1hour sessions over 1 year	40	Conventional care	40	1 year	CAMCOG, IQCODE, RAVLT, TMT, digit span and VFT: NS	N	N	N	Υ	N	Υ
Krikorian et al (2012)	USA adults, recruited via advertisements; CDR=0.5 (MCI)	Low carbohydrate diet (5- 10% of calories) (weekly advice to support)	12	High carbohydrate (50% of calories) diet (weekly advice to support)	11	6 weeks	PALT: intervention > control: F(1,20) = 6.45, p = 0.01 (Cohen's f =0.26); TMT-B: NS	N	N	N	Υ	N	N
Kwok et al (2012)	Residents in Hong Kong hostels for older people without dementia (CDR <1)	Small 45 min group sessions 3 weekly/1 year then 6 weekly/21 months with residents; increased fruit, vegetables, fish & decreased salt on menus	204 - 6 hostels		225 - 8 hostels	33 months	Proportion CDR 1+: 22.2 vs 27.2, p=0.285	N	Υ	Υ	Υ	Υ	Υ
Valls-Pedret et al (2015)	Men (aged 55-80) & women (60-80), recruited at one Spanish centre for PREDIMED; no MCI/dementia	Mediterranean diet with 1. extravirgin olive oil (1 L/wk), 2. mixed nuts (30 g/d); quarterly dietician sessions (first session 1 hour, others not specified)	1. 130 2.113	advice to reduce dietary fat; yearly sessions with leaflet provided	97	Median 4.1 years	Group 1 > control, frontal (digit span and colour trail test (d=0.11°) & global (NTB and MMSE scores; d=0.10°): Group 2 > control memory (RAVLT and WMS paired associates); d=0.08; other comparisons NS	Y	N	N	N	N	Υ

For Legend, see Table 1b

Table 3b: Studies investigating exercise interventions, rated as being at high risk of bias

Study	Setting & population	Intervention	N	Control group	N	Foll ow- up	Between group cognitive outcome differences (primary outcomes = bold) Favour intervention unless			ty q nse: /)			1
						time	stated, p values shown where p≤0.05	1	2	3	4	5	6
Antu nes et al (2015)	Brazilian, Sedentary female volunteers aged 60-70. MMSE used as screen to exclude people with MCI and dementia.	1. Aerobic, stretching and flexibility exercise groups, 3x / week, 20 min sessions, increasing to 1 hour by 6 months; 2. Activity groups (dancing & handcraft) 2x/ week	1. 23 2. 11	Usual activities. Monthly phone calls conducted to monitor progress.	17	6 mon ths	Letter fluency, block design, backwards digit span, digit symbol, MMSE, Raven – NS both comparisons; Mental control, forwards digit span, logical memory – (p<0.05) both comparisons; ROCF, WCST, Toulose, group 1 > control (p<0.05)	N	Υ	Υ	Υ	N	N
Baker (2010 a)	USA, sedentary adults aged 57-83 with normal cognition and abnormal glucose intolerance.	Aerobic exercise, intensity and duration gradually increased until 75-85% of heart rate (HR) reserve reached. This was completed 4 d/wk	23	Stretching and balance exercises maintaining	11	6 mon ths	Executive Function: F (5,16) = 3.01; p = 0.04 (Cohen's f 0.36-0.39 for individual items) Memory: NS	N	Υ .	N	Υ	N	N
Baker (2010 b)	Adults aged 55-85, amnestic MCI (Petersen criteria)	for 45-60 min/session.	23	≤50% HR reserve.	10		Executive Function: F(5,19) = 3.05, p = .04; Memory: NS	N	Υ	N	Υ	N	N
Busse (2008)	Spanish memory clinic, adults aged 60+ with subjective & objective memory complaints, no dementia/ ADL impairment and MMSE in normal limits	9 month x 1 hour, 2x/week resistance training, under supervision	14	Not stated	17	9 mon ths	RBMT (p=0.021) CAMCOG: NS Digit Span: NS	N	N	Υ	Υ	N	N
Eyre (2016)	Community dwelling older adults aged 55+, MMSE>25, recruited from USA	1hour/ week yoga class led by certified KY yoga teacher & 12 min KK meditation daily as homework	14	1hr/week groups for 12 weeks,	11	12 wee ks	HVLT & ROCF: NS between-group differences (our calculations: -2.1 (95% CI -7.1 to 2.9))	Υ	Υ	N	Υ	N	N
Eyre (2017)	outpatient clinic and longevity centre program assignment for 12 weeks. 39 strategies for memory & anxiety		42	24 wee ks	TMT B: F (2,74) = 3.24, p = 0.04 Stroop, Word-Color and Animal naming tests, and memory (HVLT, WMS-IV and ROCF): NS	Y	Υ	N	Υ	N	Υ		

Fogar ty (2016)	Canadian Geriatric out- patient clinics; aMCI (Petersen)	20, twice weekly 90 min Taoist Tai Chi (TTC) group sessions. Experienced instructors taught 108 movements & encouraged home practice; + Memory intervention programme (MIP)	22	MIP only: 8 group sessions in 3 months about memory strategies	18	10 & 22 wee ks (rep eate d mea sure s)	HVLT, WAIS-III Digit Span/ symbol, TMT A/B, RBMT-II, TEA: NS	N	N	N	Y	N N
Harip rasad (2013)	Residents in Indian care homes; aged 60+, no dementia on assessment and MMSE 26+	Education session + Yoga program to a protocol, daily (1 hour) for 1 month, weekly for next 2 months, then home practice for last 3 months	62	Waitlist control: Education session + usual activities	58	6 mon ths	RAVLT: p=0.02; ROCF: copy, 3 mins NS; 30 mins: p=0.027; DST F/B: NS; Spatial span forwards (p=0.013) backwards (p=0.071); COWAT: NS; Stroop: interference 0.042/ error NS; TMT A/B: p=0.033/ NS	Υ		N		N Y
Hong (2018)	South Korea adults aged 65+ without MCI (24+ on Korean MoCA); and MCI (<24 on MoCA; normal ADLs, GDS indicates no dementia; subjective impairment)	1 hr 2x/week for 12 weeks: exercise groups, resistance exercises with an elastic bands and stretches	MCI 10 Nor 12	Usual lifestyle	MCI 12 Nor 13	12 wee ks	Digit Span Forwards, Stroop test, category/sematic & letter/phonemic short term & recognition memory test: all ns for MCI and normal cognition group; Digit span backwards significantly improved in MCI group only (p=0.032)	N	N	N	Y	N N
Iulian o (2015)	Aged 55+, without dementia or moderate functional impairment, sedentary or lightly active lifestyle	3x/week for 12 weeks, supervised by trainers: 1. High intensity resistance strength training; 2. High intensity cardiovascular training from 50-60% to 70-80% HRR in week-12. 3. Low intensity training	1; 20 2; 20 3; 20	No training	20	12 wee ks	Attentive matrices targets, Raven test correct answers and time improved in group 2 vs control (p<0.05); time to complete drawing copy test improved in group 1 vs control (p<0.05); otherwise these and attentive matrices time, stroop, TMT and drawing copy test were NS	Υ	N	N	Υ	N Y
Lam (2012)	Hong Kong adults aged 65+ recruited from health centres and residential homes, CDR	30 min, 3x/week of Tai Chi with expert instructor; initially weekly for 4-6 weeks and monthly for 1 year;	171	Stretching and toning group with	218	12 mon ths	Progression to dementia: odds ratio 0.28, (CI 0.05 - 0.92) P=0.06	N	Υ	Υ	Υ	N Y

Lango ni (2019	0.5 or amnestic-MCI (standard criteria) Brazilian, sedentary individuals with MCI aged 60+. Independent for ADLs &	other practice sessions arranged by centres with video instruction (choice of home practice for those in community) 1hr, 2x/week groups for 24 weeks, facilitated by therapist; strength and aerobic training to a protocol.	30	refreshers as for intervention No new activities; regular	30	24 wee ks	CDR sum of boxes 0.79, 95% CI 0.63-0.99, p=0.04 MMSE, ADAS-Cog, DST F/B, VFT, delayed recall: NS MMSE mean difference (favours intervention): M (SD) = 4.6 (3.3), p <0.01.	Υ	Υ	N	Υ	Υ	Υ
)	MCI diagnosis (NIAA criteria).	Monthly coffee meeting & birthdays celebrated. Catch-up sessions if groups missed		telephone contact to check on activities.									
Lazar ou (2017)	In Greece, adults aged 60-80 who can walk independently, MCI (Petersen criteria) diagnosed by expert assessment	1hr, 2x/week for 10 months dance class with expert instruction in 2-3 dances combined each time (tango, waltz, swing, and rumba).	89	Usual lifestyle	65	10 mon ths	MMSE: p< 0.001; MoCA: p = 0.03 FUCAS: p = 0.057; TEA: p = 0.02 RAVLT, p = 0.003; LVFT: p = 0.005 RBMT1: p . 0.004; RBMT2: p < 0.001 ROCF p<0.001; GDS: p = 0.022 (all favour intervention)	Υ		N			
Liu- Ambr ose (2010	Canadian women aged 65-75, MMSE 24+, living independently, no dementia	12 months x1hr classes, high intensity resistance training to a protocol: 1. 1x/ week 2. 2x/ week,	1. 54 2. 52	1hr, 2x/ week balance and tone classes	49	mon ths	Stroop: favoured both intervention groups vs control, p≤0.03 (d=0.26/0.17°) TMT A/B, DSTF/B: all NS	Y	Υ	N	Υ	Υ	Y
Liu- Ambr ose (2008	Community dwelling adults aged 70+ attending a Canadian falls clinic, MMSE 24+, meeting criteria defining high risk of falls	Home balance & strength training; 5 physio visits in 6 months to adjust exercise protocol to manual & encourage 30 min, 3x/ week exercise with manual	31	Standard care according to guidelines	28	6 mon ths	Stroop (p=0.05) TMT B: NS DST/B: NS	Υ	Υ			Υ	
Maki (2012)	In Japan, community dwelling adults aged 65+, dementia excluded through MMSE and interview by a specialist in dementia medicine.	90 min, 1x/ week for 12-weeks: walking and social interaction groups; pedometer to record no. of steps, recorded in diary & walking planned trips	75	Educational lectures on food, nutrition and oral care	75	3 mon ths	Categorical word fluency: F(1, 133) =7.420, P=.007; dual task test, delayed recall, Clock drawing, Abstract reasoning, TMT, DSST, Yamaguchi Kanji-Symbol Substitution Test: all NS	N	N	Υ	Υ	N	Υ

Musc ari (2010	In Italy, community-dwelling adults (65-74 years) with MMSE score 24+	1hr aerobic exercise group, 3x/week for 12-months; Heart rate monitored in to maintain 70% heart rate for > 20 minutes / session.	60	Lifestyle advice	60	mon ths	MMSE: interaction term of repeated measures ANOVA (p=0.02)d=0.16 ^c	N	Υ	Y	Υ	Υ	Υ
Nguy en (2012	Vietnam adults aged 60–79 years; MMSE 25+, no dementia, naïve to Tai Chi	1hr, 2x/ week for 6 months' Tai chi training with experienced instructor	48	Usual activities	48	6 mon ths	TMT A/B: p<0.001	N	N	N	Y	Υ	Y
Scher der (2005	Adults aged 76-93 with MCI (Petersen criteria) recruited from home for elderly/ nursing home in Netherlands. Mini-MMSE score 7+	1. Self-paced slow walking with an aid for 30 min, 3x/ week for 6 weeks 2. Hand/face exercises for 30 min, 3x/ week, 6 weeks	1. 15 2. 13	Normal social activities. Half the group received social visits	15	6 wee ks	TMT A/B, RBMT (faces, picture), DST, WMS Visual memory span, VLMT: NS; Category Naming: F (1,40) = 5.12, p = 0.03	N		N		N	
Shatil (2013)	Adults aged 50+ with MMSE 24+ recruited from USA retirement village	1. Computerised cognitive training: 40 min, 3x/week for 16 weeks; 2. Group aerobic, strength, flexibility exercise, to a video: 40 min, 3x/week for 16 weeks; 3. Both interventions	1. 33 2. 31 3. 29	Book about active life and met 1h, weekly to discuss in group	29	4 mon ths	Intervention groups relative to control group: NS (our calculations)	N	N	N	Y	N	Y
Shim ada (2018)	Adults 65+, community dwelling in Japan, without dementia, who report golf<2x a year and vigorous exercise <2x/ week	90-120 min/ weekly golf sessions for 24-weeks, by professional golfer and staff; physical, cognitive and social golf activities; daily home practice	53	2 x 90-minute health education	53	24 wee ks	MMSE; Immediate, delayed & composite – logical & word memory; TMT A/B & DSST: all NS	Y	Υ	N	Y	Υ	Υ
Suzuk i (2013);	Adults aged 65+, meeting MCI (Petersen) criteria (half with aMCI), from volunteer database in Japan	Multicomponent exercise group (aerobic exercise, postural balance, and dual-task training) supervised by physiotherapists for 90 min/day, 2 days/week, over 12 months. HR	50	3 health promotion classes	50	6 mon ths	MMSE, WMS-LM I/II, DSC, LVFT, VFT, SCWT I/II: NS	Y	Υ	N	Υ	Υ	Υ
Suzuk i (2012)	Adults aged 65+, aMCI (Petersen) criteria, from Japanese volunteer database	monitoring, some outdoor walking; daily home practice	25		25	mon ths	MMSE, ADAS-cog, WMS-LM: NS	N	Υ	Υ	Υ	N	Υ

Vaug han (2014)	Australian community- dwelling women aged 65-75, doing <60 min of exercise/ week, can walk 20 m unaided; TICS <30, no dementia	60 min multimodal class 2x/ week which included cardiovascular, strength and motor fitness training	25	Waiting list control	24	16 wee ks	TMT A/B: p=0.024/0.037 Letter Number Sequencing test: NS SCWT: p=0.06; stroop interference: p=0.002; total time; p<0.001 COWAT: p=0.024	Υ	Υ	N	Υ	Y	Y
Yoon (2018)	Recruited from community, South Korea aged 65+, CDR of 0.5, pre-frail or frail & able to walk 10 m without aid	Individual, high-speed resistance exercise training (with high tension elastic bands), supervised by an instructor, 1 hour, 3x/ week, 16 weeks	20	Stretching (using elastic exercise band) 1hr, 2x/ week for 16 weeks	23	16 wee ks	Rey-15, TMT-B, DSTF/B FAB p=0.02; TMT-A p=0.036;	N	N	N	Υ	N	N
Zhu (2018)	Recruited via Chinese memory clinic and media adverts Aged 50-85, meet MCI criteria	3 Physician counselling sessions; and 35 min, 3x/ week aerobic dance routine lessons for 3 months, then 3 months home practice encouraged	29	Usual care	31	6 mon ths	WMS-LM: MD (95% CI): 2.8 (0.2, 5.4)(d=0.27) MoCA, SDMT, TMT (A/B), DST: NS	Υ	Υ	N	Υ	Υ	Υ

For Legend, see Table 1b

Table 4b: Evidence from studies with higher risk of bias, describing multi-domain interventions

Study	Setting & Population	Intervention	N	Control group	N	Follow- up time	Between group cognitive outcome differences (primary outcomes = bold) Favour intervention unless stated, p values shown			nse v)	s (s		6
							where p≤0.05	*	_	*			*
Bruno (2018)	People aged 65-89, MMSE Score > 20; CDR = 0.5, MCI confirmed by neurological exam, recruited from GPs, health centres, adverts in Italy	7 month program: 2 x 1 hour sessions of supervised cognitive training and 1 x 1 hour physical (aerobic, balance and strength) training 3 x a week; in small groups (n=10) supervised of trained and experienced personnel, including physiotherapists and personal trainers.	55	TAU	58	7 month	ADAS-Cog mean difference- 2.17 (SE = 0.42; 95% CI (- 2.99, - 1.34) d=0.15°	Y	Y	N	Y	Y	Υ
Diamond et al. (2015)	Adults aged 50+ in Australia seeking help for cognition/ mood; no dementia, MMSE 25+	Groups 2x/week for 7 weeks: 1 hr covering cognitive strategies and modifiable lifestyle factors followed by one hour computer Cognitive Training.	36	TAU waitlist	28	7 weeks	RAVLT total NS; % retention: p=0.03; WMS-LM, VFT, ROCF, DST, TMT: NS	Υ	Υ	N	Υ	Y	Υ
Kwok et al. (2013)	Hong Kong Community dwelling elderly. MMSE 23+, aged 60+, memory concerns, no dementia	1 hr groups, 1x/week for 8 weeks, by social worker or occupational therapist; memory and dementia education, attention training, verbal fluency and association, memory strategies, environment awareness, lifestyle redesign. Homework to reinforce learning	86	TAU	90	8 weeks	Chinese version of the Mattis Dementia Rating Scale: p<0.001	Υ	Υ	N	Y	Υ	Υ

For Legend, see Table 1b

References

- ANTUNES, H. K., SANTOS-GALDUROZ, R. F., DE AQUINO LEMOS, V., BUENO, O. F., RZEZAK, P., DE SANTANA, M. G. & DE MELLO, M. T. 2015. The influence of physical exercise and leisure activity on neuropsychological functioning in older adults. *Age (Dordr)*, 37, 9815.
- BAKER, L. D., FRANK, L. L., FOSTER-SCHUBERT, K., GREEN, P. S., WILKINSON, C. W., MCTIERNAN, A., CHOLERTON, B. A., PLYMATE, S. R., FISHEL, M. A., WATSON, G. S., DUNCAN, G. E., MEHTA, P. D. & CRAFT, S. 2010a. Aerobic exercise improves cognition for older adults with glucose intolerance, a risk factor for Alzheimer's disease. *J Alzheimers Dis*, 22, 569-79.
- BAKER, L. D., FRANK, L. L., FOSTER-SCHUBERT, K., GREEN, P. S., WILKINSON, C. W., MCTIERNAN, A., PLYMATE, S. R., FISHEL, M. A., WATSON, G. S., CHOLERTON, B. A., DUNCAN, G. E., MEHTA, P. D. & CRAFT, S. 2010b. Effects of aerobic exercise on mild cognitive impairment: a controlled trial. *Arch Neurol*, 67, 71-9.
- BALL, K., BERCH, D. B., HELMERS, K. F., JOBE, J. B., LEVECK, M. D., MARSISKE, M., MORRIS, J. N., REBOK, G. W., SMITH, D. M. & TENNSTEDT, S. L. J. J. 2002. Effects of cognitive training interventions with older adults: a randomized controlled trial. 288, 2271-2281.
- BALLESTEROS, S., PRIETO, A., MAYAS, J., TORIL, P., PITA, C., DE LEON, L. P., REALES, J. M. & WATERWORTH, J. 2014. Brain training with non-action video games enhances aspects of cognition in older adults: a randomized controlled trial. *Frontiers in Aging Neuroscience*, 6.
- BRUNO, R. M., STEA, F., SICARI, R., GHIADONI, L., TADDEI, S., UNGAR, A., BONUCCELLI, U., TOGNONI, G., CINTOLI, S., DEL TURCO, S., SBRANA, S., GARGANI, L., D'ANGELO, G., PRATALI, L., BERARDI, N., MAFFEI, L., PICANO, E. & TRAIN THE BRAIN, C. 2018. Vascular Function Is Improved After an Environmental Enrichment Program: The Train the Brain-Mind the Vessel Study. *Hypertension*, 71, 1218-1225.
- BUGOS, J. A., PERLSTEIN, W. M., MCCRAE, C. S., BROPHY, T. S. & BEDENBAUGH, P. H. 2007. Individualized piano instruction enhances executive functioning and working memory in older adults. *Aging and mental health*, 11, 464-471.
- BUSSE, A. L. F., WJ; MAGALDI, RM; COELHO, VA; MELO, AC; BETONI, RA; SANAREM, KM 2008. Effects of resistance training exercise on cognitive performance in elderly individuals with memory impairment: results of a controlled trial. *Einstein*, 6, 5.
- CLARE, L., NELIS, S. M., JONES, I. R., HINDLE, J. V., THOM, J. M., NIXON, J. A., COONEY, J., JONES, C. L., EDWARDS, R. T. & WHITAKER, C. J. 2015. The Agewell trial: a pilot randomised controlled trial of a behaviour change intervention to promote healthy ageing and reduce risk of dementia in later life. *Bmc Psychiatry*, 15.
- DAWSON, D., RICHARDSON, J., TROYER, A., BINNS, M., CLARK, A., POLATAJKO, H., WINOCUR, G., HUNT, A. & BAR, Y. 2014. An occupation-based strategy training approach to managing agerelated executive changes: a pilot randomized controlled trial. *Clinical Rehabilitation*, 28, 118-127.
- DIAMOND, K., MOWSZOWSKI, L., COCKAYNE, N., NORRIE, L., PARADISE, M., HERMENS, D. F., LEWIS, S. J. G., HICKIE, I. B. & NAISMITH, S. L. 2015. Randomized Controlled Trial of a Healthy Brain Ageing Cognitive Training Program: Effects on Memory, Mood, and Sleep. *Journal of Alzheimers Disease*, 44, 1181-1191.
- DURU ASIRET, G. & DUTKUN, M. 2018. The effect of reminiscence therapy on the adaptation of elderly women to old age: A randomized clinical trial. *Complement Ther Med*, 41, 124-129.
- EYRE, H. A., ACEVEDO, B., YANG, H., SIDDARTH, P., VAN DYK, K., ERCOLI, L., LEAVER, A. M., CYR, N. S., NARR, K., BAUNE, B. T., KHALSA, D. S. & LAVRETSKY, H. 2016. Changes in Neural Connectivity and Memory Following a Yoga Intervention for Older Adults: A Pilot Study. *J Alzheimers Dis*, 52, 673-84.
- EYRE, H. A., SIDDARTH, P., ACEVEDO, B., VAN DYK, K., PAHOLPAK, P., ERCOLI, L., ST CYR, N., YANG, H., KHALSA, D. S. & LAVRETSKY, H. 2017. A randomized controlled trial of Kundalini yoga in mild cognitive impairment. *Int Psychogeriatr*, 29, 557-567.

- FINN, M. & MCDONALD, S. 2011. Computerised Cognitive Training for Older Persons With Mild Cognitive Impairment: A Pilot Study Using a Randomised Controlled Trial Design. *Brain Impairment*, 12, 187-199.
- FOGARTY, J. N., MURPHY, K. J., MCFARLANE, B., MONTERO-ODASSO, M., WELLS, J., TROYER, A. K., TRINH, D., GUTMANIS, I. & HANSEN, K. T. 2016. Taoist Tai Chi(R) and Memory Intervention for Individuals with Mild Cognitive Impairment. *J Aging Phys Act*, 24, 169-80.
- GILL, D. P., GREGORY, M. A., ZOU, G. Y., LIU-AMBROSE, T., SHIGEMATSU, R., HACHINSKI, V., FITZGERALD, C. & PETRELLA, R. J. 2016. The Healthy Mind, Healthy Mobility Trial: A Novel Exercise Program for Older Adults. *Medicine and Science in Sports and Exercise*, 48, 297-306.
- HARIPRASAD, V. R., KOPARDE, V., SIVAKUMAR, P. T., VARAMBALLY, S., THIRTHALLI, J., VARGHESE, M., BASAVARADDI, I. V. & GANGADHAR, B. N. 2013. Randomized clinical trial of yoga-based intervention in residents from elderly homes: Effects on cognitive function. *Indian J Psychiatry*, 55, S357-63.
- HONG, S. G., KIM, J. H. & JUN, T. W. 2018. Effects of 12-Week Resistance Exercise on Electroencephalogram Patterns and Cognitive Function in the Elderly With Mild Cognitive Impairment: A Randomized Controlled Trial. *Clin J Sport Med*, 28, 500-508.
- HORIE, N. C., SERRAO, V. T., SIMON, S. S., GASCON, M. R., DOS SANTOS, A. X., ZAMBONE, M. A., DEL BIGIO DE FREITAS, M. M., CUNHA-NETO, E., MARQUES, E. L., HALPERN, A., DE MELO, M. E., MANCINI, M. C. & CERCATO, C. 2016. Cognitive Effects of Intentional Weight Loss in Elderly Obese Individuals With Mild Cognitive Impairment. *J Clin Endocrinol Metab*, 101, 1104-12.
- IULIANO, E., DI CAGNO, A., AQUINO, G., FIORILLI, G., MIGNOGNA, P., CALCAGNO, G. & DI COSTANZO, A. 2015. Effects of different types of physical activity on the cognitive functions and attention in older people: A randomized controlled study. *Exp Gerontol*, 70, 105-10.
- KRIKORIAN, R., SHIDLER, M. D., DANGELO, K., COUCH, S. C., BENOIT, S. C. & CLEGG, D. J. 2012. Dietary ketosis enhances memory in mild cognitive impairment. *Neurobiology of Aging,* 33, e19-e27.
- KWOK, T., WONG, A., CHAN, G., SHIU, Y. Y., LAM, K. C., YOUNG, D., HO, D. W. H. & HO, F. 2013. Effectiveness of cognitive training for Chinese elderly in Hong Kong. *Clinical Interventions in Aging*, 8, 213-219.
- KWOK, T. C. Y., LAM, L. C. W., SEA, M. M. M., GOGGINS, W. & WOO, J. 2012. A randomized controlled trial of dietetic interventions to prevent cognitive decline in old age hostel residents. *European Journal of Clinical Nutrition*, 66, 1135-1140.
- LAM, L. C., CHAU, R. C., WONG, B. M., FUNG, A. W., TAM, C. W., LEUNG, G. T., KWOK, T. C., LEUNG, T. Y., NG, S. P. & CHAN, W. M. 2012. A 1-year randomized controlled trial comparing mind body exercise (Tai Chi) with stretching and toning exercise on cognitive function in older Chinese adults at risk of cognitive decline. *J Am Med Dir Assoc,* 13, 568 e15-20.
- LANGONI, C. D. S., RESENDE, T. L., BARCELLOS, A. B., CECCHELE, B., KNOB, M. S., SILVA, T. D. N., DA ROSA, J. N., DIOGO, T. S., FILHO, I. & SCHWANKE, C. H. A. 2019. Effect of Exercise on Cognition, Conditioning, Muscle Endurance, and Balance in Older Adults With Mild Cognitive Impairment: A Randomized Controlled Trial. *J Geriatr Phys Ther*, 42, E15-E22.
- LAZAROU, I., PARASTATIDIS, T., TSOLAKI, A., GKIOKA, M., KARAKOSTAS, A., DOUKA, S. & TSOLAKI, M. 2017. International Ballroom Dancing Against Neurodegeneration: A Randomized Controlled Trial in Greek Community-Dwelling Elders With Mild Cognitive impairment. *Am J Alzheimers Dis Other Demen*, 32, 489-499.
- LIU-AMBROSE, T., DONALDSON, M. G., AHAMED, Y., GRAF, P., COOK, W. L., CLOSE, J., LORD, S. R. & KHAN, K. M. 2008. Otago home-based strength and balance retraining improves executive functioning in older fallers: a randomized controlled trial. *J Am Geriatr Soc*, 56, 1821-30.
- LIU-AMBROSE, T., NAGAMATSU, L. S., GRAF, P., BEATTIE, B. L., ASHE, M. C. & HANDY, T. C. 2010. Resistance training and executive functions: a 12-month randomized controlled trial. *Arch Intern Med*, 170, 170-8.

- MACKIN, R. S., NELSON, J. C., DELUCCHI, K., RAUE, P., BYERS, A., BARNES, D., SATRE, D. D., YAFFE, K., ALEXOPOULOS, G. S. & AREAN, P. A. 2014. Cognitive Outcomes After Psychotherapeutic Interventions for Major Depression in Older Adults with Executive Dysfunction. *American Journal of Geriatric Psychiatry*, 22, 1496-1503.
- MAKI, Y., URA, C., YAMAGUCHI, T., MURAI, T., ISAHAI, M., KAIHO, A., YAMAGAMI, T., TANAKA, S., MIYAMAE, F. & SUGIYAMA, M. 2012. Effects of intervention using a community-based walking program for prevention of mental decline: a randomized controlled trial. *Journal of the American Geriatrics Society*, 60, 505-510.
- MILLAN-CALENTI, J. C., LORENZO, T., NUNEZ-NAVEIRA, L., BUJAN, A., RODRIGUEZ-VILLAMIL, J. L. & MASEDA, A. 2015. Efficacy of a computerized cognitive training application on cognition and depressive symptomatology in a group of healthy older adults: A randomized controlled trial. *Archives of Gerontology and Geriatrics*, 61, 337-343.
- MILLER, K. J., DYE, R. V., KIM, J., JENNINGS, J. L., O'TOOLE, E., WONG, J. & SIDDARTH, P. 2013. Effect of a Computerized Brain Exercise Program on Cognitive Performance in Older Adults. *American Journal of Geriatric Psychiatry*, 21, 655-663.
- MOWSZOWSKI, L., HERMENS, D. F., DIAMOND, K., NORRIE, L., COCKAYNE, N., WARD, P. B., HICKIE, I. B., LEWIS, S. J. G., BATCHELOR, J. & NAISMITH, S. L. 2014. Cognitive Training Enhances Pre-Attentive Neurophysiological Responses in Older Adults 'At Risk' of Dementia. *Journal of Alzheimers Disease*, 41, 1095-1108.
- MUSCARI, A., GIANNONI, C., PIERPAOLI, L., BERZIGOTTI, A., MAIETTA, P., FOSCHI, E., RAVAIOLI, C., POGGIOPOLLINI, G., BIANCHI, G., MAGALOTTI, D., TENTONI, C. & ZOLI, M. 2010. Chronic endurance exercise training prevents aging-related cognitive decline in healthy older adults: a randomized controlled trial. *Int J Geriatr Psychiatry*, 25, 1055-64.
- NAKATSUKA, M., NAKAMURA, K., HAMANOSONO, R., TAKAHASHI, Y., KASAI, M., SATO, Y., SUTO, T., NAGATOMI, R. & MEGURO, K. 2015. A Cluster Randomized Controlled Trial of Nonpharmacological Interventions for Old-Old Subjects with a Clinical Dementia Rating of 0.5: The Kurihara Project. *Dementia and Geriatric Cognitive Disorders Extra*, 5, 221-232.
- NGUYEN, M. H. & KRUSE, A. 2012. A randomized controlled trial of Tai chi for balance, sleep quality and cognitive performance in elderly Vietnamese. *Clin Interv Aging*, 7, 185-90.
- OH, S. J., SEO, S., LEE, J. H., SONG, M. J. & SHIN, M. S. 2018. Effects of smartphone-based memory training for older adults with subjective memory complaints: a randomized controlled trial. *Aging & Mental Health*, 22, 526-534.
- OKEN, B. S., WAHBEH, H., GOODRICH, E., KLEE, D., MEMMOTT, T., MILLER, M. & FU, R. W. 2017. Meditation in Stressed Older Adults: Improvements in Self-Rated Mental Health Not Paralleled by Improvements in Cognitive Function or Physiological Measures. *Mindfulness*, 8, 627-638.
- PANTONI, L., POGGESI, A., DICIOTTI, S., VALENTI, R., ORSOLINI, S., DELLA ROCCA, E., INZITARI, D., MASCALCHI, M. & SALVADORI, E. 2017. Effect of Attention Training in Mild Cognitive Impairment Patients with Subcortical Vascular Changes: The RehAtt Study. *J Alzheimers Dis*, 60, 615-624.
- SCHERDER, E. J., VAN PAASSCHEN, J., DEIJEN, J. B., VAN DER KNOKKE, S., ORLEBEKE, J. F., BURGERS, I., DEVRIESE, P. P., SWAAB, D. F. & SERGEANT, J. A. 2005. Physical activity and executive functions in the elderly with mild cognitive impairment. *Aging Ment Health*, 9, 272-80.
- SHATIL, E. 2013. Does combined cognitive training and physical activity training enhance cognitive abilities more than either alone? A four-condition randomized controlled trial among healthy older adults. *Front Aging Neurosci*, 5, 8.
- SHIMADA, H., LEE, S., AKISHITA, M., KOZAKI, K., IIJIMA, K., NAGAI, K., ISHII, S., TANAKA, M., KOSHIBA, H., TANAKA, T. & TOBA, K. 2018. Effects of golf training on cognition in older adults: a randomised controlled trial. *J Epidemiol Community Health*, 72, 944-950.

- SUZUKI, T., SHIMADA, H., MAKIZAKO, H., DOI, T., YOSHIDA, D., ITO, K., SHIMOKATA, H., WASHIMI, Y., ENDO, H. & KATO, T. 2013. A randomized controlled trial of multicomponent exercise in older adults with mild cognitive impairment. *PloS one*, 8, e61483.
- SUZUKI, T., SHIMADA, H., MAKIZAKO, H., DOI, T., YOSHIDA, D., TSUTSUMIMOTO, K., ANAN, Y., UEMURA, K., LEE, S. & PARK, H. 2012. Effects of multicomponent exercise on cognitive function in older adults with amnestic mild cognitive impairment: a randomized controlled trial. *BMC Neurol*, 12, 128.
- THIEL, C., VOGT, L., TESKY, V. A., MEROTH, L., JAKOB, M., SAHLENDER, S., PANTEL, J. & BANZER, W. 2012. Cognitive intervention response is related to habitual physical activity in older adults. Aging Clinical and Experimental Research, 24, 47-55.
- TORIL, P., REALES, J. M., MAYAS, J. & BALLESTEROS, S. 2016. Video Game Training Enhances Visuospatial Working Memory and Episodic Memory in Older Adults. *Front Hum Neurosci*, 10, 206.
- VALLS-PEDRET, C., SALA-VILA, A., SERRA-MIR, M., CORELLA, D., DE LA TORRE, R., MARTINEZ-GONZALEZ, M. A., MARTINEZ-LAPISCINA, E. H., FITO, M., PEREZ-HERAS, A., SALAS-SALVADO, J., ESTRUCH, R. & ROS, E. 2015. Mediterranean Diet and Age-Related Cognitive Decline A Randomized Clinical Trial. *Jama Internal Medicine*, 175, 1094-1103.
- VAUGHAN, S., WALLIS, M., POLIT, D., STEELE, M., SHUM, D. & MORRIS, N. 2014. The effects of multimodal exercise on cognitive and physical functioning and brain-derived neurotrophic factor in older women: a randomised controlled trial. *Age Ageing*, 43, 623-9.
- VIVEIROS, J., SETHARES, K. & SHAPIRO, A. 2017. Repeated recall as an intervention to improve memory performance in heart failure patients. *Eur J Cardiovasc Nurs*, 16, 724-732.
- WAHBEH, H., GOODRICH, E. & OKEN, B. S. 2016. Internet-based Mindfulness Meditation for Cognition and Mood in Older Adults: A Pilot Study. *Alternative Therapies in Health and Medicine*, 22, 44-53.
- WELLS, R. E., KERR, C. E., WOLKIN, J., DOSSETT, M., DAVIS, R. B., WALSH, J., WALL, R. B., KONG, J., KAPTCHUK, T., PRESS, D., PHILLIPS, R. S. & YEH, G. 2013. Meditation for adults with mild cognitive impairment: a pilot randomized trial. *J Am Geriatr Soc*, 61, 642-5.
- YOON, D. H., LEE, J. Y. & SONG, W. 2018. Effects of Resistance Exercise Training on Cognitive Function and Physical Performance in Cognitive Frailty: A Randomized Controlled Trial. *J Nutr Health Aging*, 22, 944-951.
- ZHU, Y., WU, H., QI, M., WANG, S., ZHANG, Q., ZHOU, L., WANG, S., WANG, W., WU, T., XIAO, M., YANG, S., CHEN, H., ZHANG, L., ZHANG, K. C., MA, J. & WANG, T. 2018. Effects of a specially designed aerobic dance routine on mild cognitive impairment. *Clin Interv Aging*, 13, 1691-1700.