Dossier thématique : Prévention, promotion de la santé cognitive

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Prévention, promotion de la santé cognitive

Christian Lachance, B. Sc., B. A., M.S.I.

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Table des matières

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ACTIVITE PHYSIQUE

Decaix, T., C. Bonnin et al. (2025). "Benefits of physical activity on cognitive function in patients with neurocognitive disorders: A systematic review." The Journal of frailty & aging 14(5): 100069. https://dx.doi.org/10.1016/j.tjfa.2025.100069

Neurocognitive disorders, particularly in older adults, significantly affect functional abilities and global health. Physical activity has emerged as a potential non-pharmacological intervention to improve cognitive performance in patients with neurodegenerative diseases. This review specifically addressed the issue of tailored physical activity interventions for individuals with various neurocognitive disorders. This literature review analyzed studies investigating the effects of physical activity on cognitive function in patients with Alzheimer's disease (AD), vascular cognitive impairment, Parkinson's disease, and Lewy body dementia. The studies were evaluated for methodological rigor, participant characteristics, types of physical activities, and cognitive outcomes. Of the 21 studies reviewed, 14 reported beneficial effects of physical exercise on cognitive function, particularly with aerobic activities. While most studies observed improvements in cognitive performance and physical functional capacity, results were inconsistent, and effect sizes were modest. Mechanisms proposed for cognitive improvement in AD included reductions in beta-amyloid and tau protein burdens, improved glucose metabolism, and enhanced brain-derived neurotrophic factor levels. Specific improvements were noted in Parkinson's disease, with evidence suggesting mediation through dopamine pathways. Despite evidence of short-term benefits, significant variability exists among studies, highlighting the need for individualized exercise programs tailored to specific neurocognitive conditions. Physical activity stands as a cornerstone non-pharmacological intervention, essential for supporting cognitive health in individuals with neurodegenerative diseases. Further research is necessary to establish long-term effects and optimal exercise modalities, along with standardized evaluation criteria to assess the cognitive impacts of physical activity reliably. Copyright © 2025 The Author(s). Published by Elsevier Masson SAS.. All rights reserved.

Gogniat, M. A., J. Won et al. (2025). "Sedentary behavior, cognition, and brain health in older adults: a systematic review." Frontiers in aging neuroscience 17: 1622049. https://dx.doi.org/10.3389/fnagi.2025.1622049

Sedentary behavior has been associated with poor health outcomes, especially in older adulthood. Given that sedentary behavior is a highly prevalent, modifiable health behavior, there has been a recent increased interest in examining how sedentary behavior relates to cognition and brain health. The current body of literature is limited and mixed. The purpose of this systematic review was to examine the associations of sedentary behavior with cognition and brain health in older adults across the cognitive spectrum. This study was pre-registered with PROSPERO (CRD42023477868). Six comprehensive databases were searched with pre-registered search terms. A total of 33 studies were included. Overall, results indicated that greater sedentary behavior was associated with worse cognition and brain health, although associations varied based on differences in measurement and classification of sedentary behavior. We discuss next steps and implications for future research. Copyright © 2025 Gogniat, Won, Cruz, Aranda, Verma, Gujral, Weinstein, Zaheed, Cole, Full and Snitz.

Lee, J., D. West et al. (2025). "Walking Interventions and Cognitive Health in Older Adults: A Systematic Review of Randomized Controlled Trials." American journal of health promotion : AJHP 39(7): 1051-1067. https://dx.doi.org/10.1177/08901171251328858

Objective This systematic review summarizes the effectiveness and the dose of walking interventions on specific cognition domains in older adults, including executive function, memory, attention, processing speed, and global cognition.Data sourcePublished randomized controlled trials in PubMed, Embase, and Web of Science until 10 May 2023.Study Inclusion and Exclusion CriteriaStudies

include older adults without Alzheimer's or related dementias, involving a walking intervention and performance-based neuropsychological assessments for executive function, memory, processing speed, attention, or global cognition.Data ExtractionTwo independent research assistants reviewed 8424 studies and included 17 studies.Data SynthesisParticipant demographics, intervention features (type, intensity, time, frequency, duration, format, and context), cognitive assessment tools, and main findings. Results Nine studies found a favorable effect of walking interventions on at least one cognitive domain. Walking interventions improved executive function (n = 6) and memory (n = 3). These studies delivered the intervention individually (n = 3) for at least 40 minutes (n = 6) each time, three times per week (n = 8), between 6 to 26 weeks (n = 8), and walking at a moderate to vigorous intensity (n = 7). Conclusion Walking interventions may improve specific domains of cognitive function in older adults, particularly executive function and memory. More standardized reporting of intervention design and participant compliance based on published guidelines is needed to determine the dose-response association and the long-term effect of walking interventions on cognition.

Rice, P. E., D. Thumuluri et al. (2025). "Moving Towards a Medicine of Dance: A Scoping Review of Characteristics of Dance Interventions Targeting Older Adults and a Theoretical Framework." Journal of Alzheimer's disease : JAD 105(4): 1183-1221. https://dx.doi.org/10.3233/JAD-230741

BackgroundDance combines cultural and aesthetic elements with behaviors important for brain health, including physical activity, social engagement, and cognitive challenge. Therefore, dance could positively impact public health given the rapidly aging population, increasing incidence of Alzheimer's disease and related dementias, and lack of uptake of exercise in many older adults. Despite a high volume of literature, existing literature does not support evidence-based guidelines for dance to support healthy aging.ObjectiveTo conduct a scoping review of the dance intervention literature in older adults and provide information to facilitate a more consistent approach among scientists in designing dance interventions for older adults that stimulate physical and neurocognitive health adaptations. Methods Study characteristics (sample size, population, study design, outcomes, intervention details) were ascertained from 112 separate studies of dance reported in 127 papers that reported outcomes important for brain health (cardiorespiratory fitness, balance and mobility, cognition, mood, and quality of life). Results High heterogeneity across studies was evident. Class frequency ranged from < 1 to 5 classes per week, class length from 30-120 minutes, and intervention duration from 2 weeks to 18 months. Studies often did not randomize participants, had small (< 30) sample sizes, and used varied comparator conditions. Over 50 tests of cognition, 40 dance forms, and 30 tests of mobility were identified. Conclusions Based on these results, important future directions are establishing common data elements, developing intervention mapping and mechanistic modeling, and testing dosing parameters to strengthen and focus trial design of future studies and generate evidence-based guidelines for dance.

Zhang, J., W. Ye et al. (2025). "Comparative efficacy of exercise interventions for cognitive health in older adults: A network meta-analysis." Experimental gerontology 206: 112768.
https://dx.doi.org/10.1016/j.exger.2025.112768

BACKGROUND: Previous studies have consistently demonstrated that exercise mitigates cognitive decline in older adults. However, the most effective types of exercise, along with optimal frequency and duration of interventions, remain inadequately defined. To address these gaps, we conducted a network meta-analysis synthesizing direct and indirect evidence from existing literature to identify the most effective exercise interventions for enhancing cognitive function in older adults., METHODS: We conducted a systematic search across databases including PubMed and Web of Science to identify randomized controlled trials (RCTs) evaluating the impact of various exercise interventions on cognitive function in older adults. We assessed the quality of included studies and performed a traditional meta-analysis with Review Manager 5.3. Subsequently, a network meta-analysis was conducted using Stata 17.0 to evaluate the effects

of different exercise modalities on cognitive outcomes, specifically memory, inhibitory control, and task-switching abilities., RESULTS: A total of 37 studies encompassing 2585 older adults met the inclusion criteria. The network meta-analysis revealed that resistance training exerted the strongest effect on overall cognitive improvement. Aerobic exercise, multimodal exercise, and physical-mental training followed in effectiveness. Specifically, resistance training significantly enhanced inhibitory control compared to high-intensity interval training (HIIT), aerobic exercise, and other modalities. Physical-mental training emerged as the most effective intervention for improving task-switching ability and demonstrated superior efficacy in enhancing working memory compared to aerobic exercise. Conversely, aerobic exercise showed the strongest effect on memory function, outperforming resistance training, multimodal exercise, and physical-mental training., CONCLUSION: Resistance training is the most effective exercise modality for enhancing overall cognitive function and inhibitory control in older adults. Physical-mental training offers the greatest benefits for improving working memory and task-switching ability, while aerobic exercise is most beneficial for enhancing memory function. Based on these findings, the recommended exercise protocols are: Resistance Training: 12 weeks, 2-3 times per week, 45 min per session. Aerobic Exercise: 21 weeks, twice per week, 60 min per session. These tailored exercise interventions can inform public health strategies and clinical practices aimed at optimizing cognitive health in the aging population., REGISTRATION: The protocol for this review was registered in PROSPERO (CRD42024597545). Copyright © 2025 The Authors. Published by Elsevier Inc. All rights reserved.

Zhang, M., W. Fang et al. (2025). "Effects of human concurrent aerobic and resistance training on cognitive health: A systematic review with meta-analysis." International journal of clinical and health psychology : IJCHP 25(1): 100559. https://dx.doi.org/10.1016/j.ijchp.2025.100559

Background: The rising prevalence of cognitive decline and neurodegenerative diseases, projected to affect 150 million individuals by 2050, highlights the urgent need to enhance neurocognitive health. While both aerobic and resistance training are recognized as effective strategies, their combined effects on cognition remain underexplored., Objective: This study aimed to determine if concurrent aerobic and resistance training (CT) is effective in enhancing cognitive function., Methods: Seven English and three Chinese databases were searched from inception to August 2024. Randomised controlled trials (RCTs) examining the effects of CT on global cognition across diverse populations were included. A meta-analysis was performed using a random-effects model in R and Stata, supplemented by subgroup and meta-regression analyses to explore variability., Results: The meta-analysis included 35 RCTs with 5,734 participants, revealing a positive effect of CT on global cognition ($g = 0.32$, 95% CI: 0.17-0.46, $p < 0.001$). Notably, older adults (>=65 years) exhibited greater cognitive benefits ($g = 0.33$; 95% CI: 0.14-0.51, $p < 0.05$) compared to younger populations. Significant effects were also observed in clinical populations ($g = 0.28$; 95% CI: 0.11-0.46, $p < 0.001$). Exercise frequency and duration positively influenced outcomes, with medium-length interventions (13-26 weeks) demonstrating significant effects ($g = 0.21$; 95% CI: 0.05-0.37, $p = 0.011$)., Conclusion: The findings indicate that CT significantly enhances cognitive health, particularly in older adults and clinical populations. Prioritizing strength training, implementing short- to medium-term interventions (4-26 weeks), and maintaining session durations of 30-60 minutes are crucial for optimizing cognitive benefits. Copyright © 2025 Published by Elsevier B.V.

Keefer, A., K. Steichele, et al. (2023). "Does Voluntary Work Contribute to Cognitive Performance? - An International Systematic Review." Journal of multidisciplinary healthcare 16: 1097-1109.
https://dx.doi.org/10.2147/JMDH.S404880

Introduction: There is a need for knowledge on activities that can reduce cognitive decline and dementia risk. Volunteering is a productive activity that entails social, physical, and cognitive functions. Therefore, volunteering could be a protective factor for cognitive loss. Thus, this review aims to examine the associations between volunteering and volunteers' cognition and to identify influencing variables.,

Methods: Six international literature databases were searched for relevant articles published between 2017 and 2021 (ALOIS, CENTRAL, CINAL, Embase, PsycINFO, PubMed). Quantitative studies of all study designs were included. The primary outcome was the volunteers' cognition measured by objective, internationally established psychometric function tests. Two authors independently assessed the eligibility and quality of the studies. A narrative synthesis was performed using all studies included in this review. The methodology was in line with the PRISMA guidelines., Results: Fourteen studies met the inclusion criteria and were included. Seven of the included studies confirmed that volunteering positively affects the volunteers' cognitive function. Two other studies identified an association between volunteer activity and volunteers' cognition using cross-sectional measurements. In particular, women and people with a low level of education benefit from the positive effects and associations. The study quality of the included articles was moderate to weak., Discussion: Our review suggests that volunteering can improve volunteers' cognition. Unfortunately, little attention is given to specific volunteer activities and the frequency of engagement. Additionally, more attention is needed on various risk factors of cognitive impairment. Copyright © 2023 Keefer et al.

Li, J., M. V. McPhillips, et al. (2023). "Daytime Napping and Cognitive Health in Older Adults: A Systematic Review." The journals of gerontology. Series A, Biological sciences and medical sciences 78(10): 1853-1860. https://dx.doi.org/10.1093/gerona/glac239

BACKGROUND: Daytime napping may improve cognitive function in older adults. However, the association can be complicated by specific features of napping and the older adult's health. This systematic review aims to synthesize the current literature on napping and cognition in older adults and provide recommendations for future research and daytime sleep practice in older adults., METHODS: Systematic searches for relative research published between January 1995 and October 2022 were conducted at PubMed, MEDLINE, PsycINFO, and Google Scholar using keywords individually and in multiple combinations. Manual searches were performed to identify additional studies. All included studies were critically appraised by 2 authors., RESULTS: Thirty-five studies, including 23 observational and 12 intervention studies, were reviewed. Findings from observational studies suggest a possible inverted U-shaped association between napping duration and cognitive function: short and moderate duration of naps benefited cognitive health in older adults compared with both non-napping and long or extended napping. Findings from intervention studies suggest one session of afternoon napping might improve psychomotor function and working memory, although with some inconsistency. The effect of multiple nap sessions on cognition was inconclusive due to a limited number of studies., CONCLUSION: More rigorous research studies are needed to investigate what causes different patterns of daytime napping, the associations between these distinct patterns and cognitive function, and to determine whether interventions targeting napping patterns can improve cognition in older adults. In addition, future research needs to comprehensively assess daytime napping using a combination of measures such as sleep diary and actigraphy. Copyright © The Author(s) 2022. Published by Oxford University Press on behalf of The Gerontological Society of America. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com.

Chobe, S., M. Chobe, et al. (2020). "Impact of Yoga on cognition and mental health among elderly: A systematic review." Complementary therapies in medicine 52: 102421.
https://dx.doi.org/10.1016/j.ctim.2020.102421

BACKGROUND: Cognitive decline and psychological health problems are the most frequently observed and under-treated issues among the elderly. Many studies have assessed the efficacy of Yoga on cognitive and mental health parameters among the elderly. However, up to date, there is no systematic review done to evaluate the role of Yoga-based interventions on cognition and mental health in the elderly., OBJECTIVE: This review evaluates the beneficial effect of Yoga in improving cognitive and mental health in the elderly., METHODOLOGY: A comprehensive search has performed on Medline, Google Scholar,

PubMed, and PsycINFO electronic database from their inception to January 2019. The literature search was constructed around search term for "mental health", "cognition", "yoga" and "elderly". Out of 3388 records, we were considered only Randomized control trials (RCTs) with Yoga-based interventions on the older people for this review. Risk of bias was assessed using Delphi list and PEDro criteria., RESULTS: After filtering out irrelevant studies, in our search, we come across 13 RCTs, and they included in this systematic review. Of 13 RCTs, four studies assessed only cognitive parameters and five studies assessed only psychological parameters, and four studies evaluated both. Study quality was fair to moderate of included RCTs on the Delphi list and PEDro criteria. Maximum studied variables in cognition were executive functions, memory, attention, and language while in mental health depression, anxiety, stress, and mood. Yoga-based interventions have some beneficial effects on attention, executive functions among cognitive variables, and depression among mental health parameters among the elderly., CONCLUSION: The present review indicates that Yoga-based interventions have some positive evidence in improving attention, executive functions and memory of cognition, while depression in mental health compared to active control among the elderly. However, methodological limitations and small number of studies preclude confirming the potential benefits of Yoga-based interventions on cognition and mental health among the elderly. Further, this review strongly recommends more randomized control trials with standard study methodology, use of validated modules of Yoga intervention, and long term follow up to have definite conclusions. Copyright © 2020 Elsevier Ltd. All rights reserved.

Gaitan, J. M., E. A. Boots, et al. (2020). "Protocol of Aerobic Exercise and Cognitive Health (REACH): A Pilot Study." Journal of Alzheimer's disease reports 4(1): 107-121. https://dx.doi.org/10.3233/ADR-200180

A growing body of evidence supports that aerobic exercise can decrease the risk of future cognitive impairment and Alzheimer's disease (AD). There is a pressing need to rigorously determine whether cognitively normal yet at-risk individuals stand to benefit from the protective effects of exercise. The present study will test the feasibility of an aerobic exercise intervention in such a population and inform the design of a larger-scale randomized, controlled trial examining the effect of aerobic exercise on biomarkers of AD in late-middle-aged, at-risk individuals. This was a single-site, 1 : 1 block-randomized, parallel, two-arm trial. Cognitively normal participants aged 45-80 with documentation of familial and genetic AD risk factors were randomly assigned to one of two interventions. The Usual Physical Activity group was provided educational materials about exercise. The Enhanced Physical Activity intervention delivered 26 weeks of individualized and supervised aerobic exercise. Exercise duration and intensity were incrementally increased to 150 min/week and 70-80% of heart rate reserve, respectively. Retention and adherence were measured to assess study feasibility. In addition, pre- and post- intervention differences between the two arms were evaluated for cardiorespiratory fitness, physical activity, brain glucose metabolism, cerebral structure, vascular health, memory, executive function, and mood. Data from randomized controlled trials of exercise training are needed to identify the proper exercise prescription for reducing accumulation of AD biomarkers in cognitively normal individuals. The current trial will contribute to filling that gap while informing the design of large-scale trials. Copyright © 2020 - IOS Press and the authors. All rights reserved.

Castells-Sanchez, A., F. Roig-Coll, et al. (2019). "Effects and Mechanisms of Cognitive, Aerobic Exercise, and Combined Training on Cognition, Health, and Brain Outcomes in Physically Inactive Older Adults: The Projecte Moviment Protocol." Frontiers in aging neuroscience 11: 216.
https://dx.doi.org/10.3389/fnagi.2019.00216

INTRODUCTION: Age-related health, brain, and cognitive impairment is a great challenge in current society. Cognitive training, aerobic exercise and their combination have been shown to benefit health, brain, cognition and psychological status in healthy older adults. Inconsistent results across studies may be related

to several variables. We need to better identify cognitive changes, individual variables that may predict the effect of these interventions, and changes in structural and functional brain outcomes as well as physiological molecular correlates that may be mediating these effects. Projecte Moviment is a multi-domain randomized trial examining the effect of these interventions applied 5 days per week for 3 months compared to a passive control group. The aim of this paper is to describe the sample, procedures and planned analyses., METHODS: One hundred and forty healthy physically inactive older adults will be randomly assigned to computerized cognitive training (CCT), aerobic exercise (AE), combined training (COMB), or a control group. The intervention consists of a 3 month home-based program 5 days per week in sessions of 45 min. Data from cognitive, physical, and psychological tests, cardiovascular risk factors, structural and functional brain scans, and blood samples will be obtained before and after the intervention., RESULTS: Effects of the interventions on cognitive outcomes will be described in intention-to-treat and per protocol analyses. We will also analyze potential genetic, demographic, brain, and physiological molecular correlates that may predict the effects of intervention, as well as the association between cognitive effects and changes in these variables using the per protocol sample., DISCUSSION: Projecte Moviment is a multi-domain intervention trial based on prior evidence that aims to understand the effects of CCT, AE, and COMB on cognitive and psychological outcomes compared to a passive control group, and to determine related biological correlates and predictors of the intervention effects. Clinical Trial Registration: www.ClinicalTrials.gov, identifier NCT03123900.

Predovan, D., A. Julien, et al. (2019). "Effects of Dancing on Cognition in Healthy Older Adults: a Systematic Review." Journal of cognitive enhancement : towards the integration of theory and practice 3(2): 161-167. https://dx.doi.org/10.1007/s41465-018-0103-2

A growing body of research emphasizes the benefits of physical activity and exercise over the lifespan and especially in elderly populations. However, few studies have evaluated the impact of dance as a physical activity or exercise on cognition in healthy older adults. This review investigated if dance could be used as a promising alternative intervention to address physical inactivity and to cognitively stimulate older adults. This systematic review reports the effects of dancing in a healthy older adult population based on intervention studies using the EMBASE, Web of Science, and Ovid Medline databases. The Cochrane collaboration's tool for assessing risk of bias was used to assess each article quality. Seven out of 99 articles met the inclusion criteria, representing a total of 429 older adults (70% women), with a mean age of 73.17 years old. Dance interventions, lasting between 10 weeks and 18 months, were related to either the maintenance or improvement of cognitive performance. This systematic review suggests that dance as an intervention in the elderly could help improve or maintain cognition. This review outlines some of the possible mechanisms by which dance could positively impact cognition in older adults, addresses shortcomings in the existing literature, and proposes future research avenues. Copyright © The Author(s) 2018.

Gomes-Osman, J., D. F. Cabral, et al. (2018). "Exercise for cognitive brain health in aging: A systematic review for an evaluation of dose." Neurology. Clinical practice 8(3): 257-265. https://dx.doi.org/10.1212/CPJ.0000000000000460

PURPOSE OF REVIEW: We systematically appraised randomized controlled trials proposing exercise to influence cognition in older adults to (1) assess the methodologic quality using Cochrane criteria; (2) describe various exercise dose measures and assess their relationship with improved cognitive performance; and (3) identify consistent patterns of reported effects on cognition., RECENT FINDINGS: There was overall good methodologic quality in all 98 included studies. The assessment of the relationship between improved cognition and various measures of exercise dose (session duration, weekly minutes, frequency, total weeks, and total hours) revealed a significant correlation with total hours. Improvements in global cognition, processing speed/attention, and executive function were most stable and consistent.,

SUMMARY: We found that exercising for at least 52 hours is associated with improved cognitive performance in older adults with and without cognitive impairment. Exercise modes supported by evidence are aerobic, resistance (strength) training, mind-body exercises, or combinations of these interventions.

NUTRITION

Chen, J., Y. Li et al. (2025). "Neuroprotective synergy of vitamin D and exercise: a narrative review of preclinical and clinical evidence on aging-related neuroplasticity and cognitive health." Frontiers in nutrition 12: 1642363. https://dx.doi.org/10.3389/fnut.2025.1642363

Background: Both vitamin D and physical exercise have been independently associated with neuroprotective and anti-aging effects. However, their potential synergistic role in promoting healthy brain aging has not been fully clarified., Objective: This review examines the overlapping and potentially complementary effects of exercise and vitamin D on aging-related neurobiological and cognitive outcomes, with a focus on mechanisms relevant to older adults., Methods: We surveyed preclinical and clinical studies investigating the impact of vitamin D and exercise on neurotrophic signaling (e.g., BDNF, IGF-1), vascular and inflammatory pathways (e.g., VEGF, cytokines), and cognitive or functional outcomes in aging models and older human populations. Particular attention was given to recent randomized controlled trials (RCTs) such as SYNERGIC, DO-HEALTH, and PONDER, as well as large-scale epidemiological studies., Results: Preclinical findings suggest that vitamin D and exercise converge on shared biological pathways, including oxidative stress reduction, inflammation control, and neurogenesis promotion. Some animal studies demonstrated enhanced neuroprotection and cognitive improvement with combined interventions. In human trials, aerobic-resistance exercise with or without cognitive training improved cognitive scores in older adults with mild cognitive impairment, while vitamin D supplementation alone showed limited effect. Observational data further suggest that high serum vitamin D levels and regular physical activity are independently and jointly associated with delayed biological aging. However, evidence of clinically meaningful synergy remains limited, and no definitive conclusion can be drawn from current trials due to heterogeneity in design, population, and intervention protocols., Conclusion: While biologically plausible and supported by selective findings, the synergistic impact of vitamin D and exercise on brain aging has yet to be conclusively demonstrated in older adults. Future studies should focus on at-risk populations, standardized intervention models, and mechanistic outcomes to better evaluate their combined potential as low-cost, preventive strategies in aging. Copyright © 2025 Chen, Li, Wang, Liu and Qiu.

Tse, J. H. W., Q. P. S. Law et al. (2025). "The association between the MIND diet and cognitive health in middle-aged and older adults: A systematic review." The journal of nutrition, health & aging 29(9): 100630. https://dx.doi.org/10.1016/j.jnha.2025.100630

BACKGROUND: Cognitive decline, a natural aspect of aging, is linked to negative outcomes like increased mortality and social isolation. The Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diet, blending the Mediterranean diet and the Dietary Approaches to Stop Hypertension (DASH) diet elements, aims to slow cognitive decline and reduce dementia risk. Secondary analyses of population studies and randomized controlled trials (RCTs) show mixed results on the MIND diet's effectiveness in improving cognitive health. Existing reviews have explored the MIND diet's impact on cognitive health, though their focus can be broad or narrow. Our review offers an updated perspective by specifically targeting dementia risk and clinical cognitive function, integrating new studies for enhanced insights into clinical practice and research., METHODS: This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 and the Synthesis Without Meta-analysis (SWiM) guidelines and was registered in PROSPERO (CRD42023391972). We included quantitative studies on middle-aged and older adults (mean age >40 years) examining MIND diet adherence and cognitive health,

excluding non-original research. A systematic search was conducted in five databases from March 2023 to March 2024 using relevant search terms. Data were extracted and assessed for bias by multiple reviewers using Joanna Briggs Institute (JBI) tools. Heterogeneous data were synthesized using SWiM guidelines, focusing on cognitive function outcomes, with results presented in tables and figures., RESULTS: The search over five databases identified 898 articles, with 26 meeting the inclusion criteria. A hand search added 13 more, totaling 39 articles from 14 countries, including cohorts, cross-sectional, RCTs, and case-control studies. Most studies were conducted in the United States of America (USA), published between 2015 and 2024. Participant numbers ranged from 37 to 120,661, with follow-ups from 3 months to 24 years. Some studies explored more than one correlation. Of the studies, 14 out of 19 articles explored MIND diet adherence and global cognitive function, showing positive results. 10 out of 11 studies investigated MIND diet adherence and dementia/Alzheimer's risk, showing positive associations. 16 out of 18 articles examined the MIND diet's effect on domain-specific cognitive functions, with favorable outcomes., DISCUSSION: This systematic review reveals the significant promise of the MIND diet in enhancing cognitive health, specifically in global cognition, memory, and executive function. While observational studies strongly advocate for its inclusion in clinical guidelines to prevent and manage Alzheimer's disease (AD) and dementia, results from RCTs are mixed, suggesting further investigation is needed. The use of PRISMA and SWiM guidelines ensures robust and transparent findings, categorizing cognitive outcomes into critical areas for a holistic insight. Despite the effectiveness of alternative methods, such as MIND diet questionnaires, for adherence assessment apart from FFQ, variability in study populations, interventions, and scoring methods complicates pinpointing an optimal MIND score. This underscores the importance of standardized methodologies to refine dietary recommendations and consolidate the diet's cognitive health benefits across various populations. Copyright © 2025 The Authors. Published by Elsevier Masson SAS.. All rights reserved.

Chen, F., J. Wang et al. (2024). "Magnesium and Cognitive Health in Adults: A Systematic Review and Meta-Analysis." Advances in nutrition (Bethesda, Md.) 15(8): 100272.
https://dx.doi.org/10.1016/j.advnut.2024.100272

Magnesium (Mg) plays a key role in neurological functioning and manifestations. However, the evidence from randomized controlled trials (RCTs) and cohorts on Mg and cognitive health among adults has not been systematically reviewed. We aimed to examine the associations of various Mg forms (supplements, dietary intake, and biomarkers) with cognitive outcomes by summarizing evidence from RCTs and cohorts. PubMed, Embase, PsycINFO, and the Cochrane Central Register of Controlled Trials were searched for relevant peer-reviewed articles published up to May 3, 2024. Three random-effects models were performed, when appropriate, to evaluate the relationship between Mg and cognitive outcomes: 1) linear meta-regression, 2) nonlinear (quadratic) meta-regression, and 3) meta-analysis using Mg variables categorized based on pre-existing recommendations. Three RCTs and 12 cohort studies were included in this systematic review. Evidence from the limited number of RCTs was insufficient to draw conclusions on the effects of Mg supplements. Cohort studies showed inconsistent dose-response relationships between dietary Mg and cognitive disorders, with high heterogeneity across populations. However, consistent U-shape associations of serum Mg with all-cause dementia and cognitive impairment were found in cohorts, suggesting an optimal serum Mg concentration of ~0.85 mmol/L. This nonlinear association was detected in meta-regression (Pquadratic = 0.003) and in meta-analysis based on the reference interval of serum Mg (0.75-0.95 mmol/L) [<0.75 compared with 0.85 mmol/L: pooled hazard ratio (HR) = 1.43; 95% confidence interval (CI) = 1.05, 1.93; >0.95 compared with 0.85 mmol/L: pooled HR = 1.30; 95% CI = 1.03, 1.64]. More evidence from RCTs and cohorts is warranted. Future cohort studies should evaluate various Mg biomarkers and collect repeated measurements of Mg intake over time, considering different sources (diet or supplements) and factors affecting absorption (for example, calcium-to-Mg intake ratio). This systematic review was preregistered in PROSPERO (CRD42023423663). Copyright © 2024 The Authors. Published by

Elsevier Inc. All rights reserved.

Hong, Y., E. Clark, et al. (2023). "Evidence for Improved Cognitive Health with Diet: A Narrative Review." Alternative therapies in health and medicine 29(7): 12-17.
http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=medl&NEWS=N&AN=35180098

Background: Despite growing interest in nutrition as a behavioral intervention to improve cognitive health in clinical populations, many providers find it challenging to provide specific nutritional recommendations. We aimed to review and synthesize current empirical research on this topic and provide considerations for healthcare providers working with adults who wish to optimize their cognition via dietary improvements., Methods: We performed a narrative review of research published between January 2009 and May 2021 on 5 popular dietary interventions: the Mediterranean diet, Dietary Approaches to Stop Hypertension (DASH), the Mediterranean-DASH Intervention Diet for Neurodegenerative Delay (MIND), the ketogenic diet and intermittent fasting., Results and Conclusions: Of the 5 dietary interventions, the Mediterranean diet has been the most extensively investigated, and there is evidence supporting its cognitive benefits. However, operationalization of the Mediterranean diet varies across studies, rendering the results inconclusive. The DASH diet and the MIND diet have stronger operationalization and showed evidence of cognitive benefits. More longitudinal studies and/or randomized clinical trials should be conducted on these 2 relatively new interventions. Finally, there is limited research with human participants regarding the ketogenic diet and intermittent fasting, which are found to be cognitively protective within stringent parameters. Definitions for these 5 dietary patterns and practice tips and recommendations are provided.

Naomi, R., M. D. Yazid, et al. (2023). "Dietary Polyphenols as a Protection against Cognitive Decline: Evidence from Animal Experiments; Mechanisms and Limitations." Antioxidants (Basel, Switzerland) 12(5). https://dx.doi.org/10.3390/antiox12051054

Emerging evidence suggests that cognitive impairments may result from various factors, such as neuroinflammation, oxidative stress, mitochondrial damage, impaired neurogenesis, synaptic plasticity, blood-brain barrier (BBB) disruption, amyloid beta protein (Abeta) deposition, and gut dysbiosis. Meanwhile, dietary polyphenol intake in a recommended dosage has been suggested to reverse cognitive dysfunction via various pathways. However, excessive intake of polyphenols could trigger unwanted adverse effects. Thus, this review aims to outline possible causes of cognitive impairments and how polyphenols alleviate memory loss via various pathways based on in vivo experimental studies. Thus, to identify potentially relevant articles, the keywords (1) nutritional polyphenol intervention NOT medicine AND neuron growth OR (2) dietary polyphenol AND neurogenesis AND memory impairment OR (3) polyphenol AND neuron regeneration AND memory deterioration (Boolean operators) were used in the Nature, PubMed, Scopus, and Wiley online libraries. Based on the inclusion and exclusion criteria, 36 research papers were selected to be further reviewed. The outcome of all the studies included supports the statement of appropriate dosage by taking into consideration gender differences, underlying conditions, lifestyle, and causative factors for cognitive decline, which will significantly boost memory power. Therefore, this review recapitulates the possible causes of cognitive decline, the mechanism of polyphenols involving various signaling pathways in modulating the memory, gut dysbiosis, endogenous antioxidants, bioavailability, dosage, and safety efficacy of polyphenols. Hence, this review is expected to provide a basic understanding of therapeutic development for cognitive impairments in the future.

Wang, Y., C. Haskell-Ramsay, et al. (2023). "Effects of chronic consumption of specific fruit (berries, cherries and citrus) on cognitive health: a systematic review and meta-analysis of randomised controlled trials." European journal of clinical nutrition 77(1): 7-22. https://dx.doi.org/10.1038/s41430-022-01138-x

OBJECTIVES: The cognitive-protective effects related to the consumption of a variety of fruits are supported by several intervention studies. This systematic review and meta-analysis compared the magnitude of effects following chronic (>=1 week) consumption of frozen, freeze-dried powder including extracts and juices of fruits, covering berries, cherries and citrus, on cognition and mood in adults., METHODS: PubMed, Web of Science, Scopus, and psycARTICLES were searched from inception until February, 2021. Inclusion criteria were randomised controlled trials assessing memory, executive function, psychomotor speed, mood and mini mental state examination in adult participants >=18 years of age. Cognition was tested by global or domain specific tasks., RESULTS: Out of 13,861 articles identified, 16 papers were included; 11 studies provided suitable data for meta-analysis. Fourteen studies reported improvement or trend for improvement in cognition, five studies assessed mood and one study supplementing grape juice found trend for mood improvement. From the meta-analysis, cherry juice supplementation was suggested to improve psychomotor speed by -0.37 of standardised mean difference (95% CI [-0.74, 0.01]) in reaction time (P = 0.05)., CONCLUSIONS: The meta-analysis did not sufficiently support a role for fruits or fruit forms to improve cognition and mood. Copyright © 2022. The Author(s).

Fu, J., L.-J. Tan, et al. (2022). "Association between the mediterranean diet and cognitive health among healthy adults: A systematic review and meta-analysis." Frontiers in nutrition 9: 946361. https://dx.doi.org/10.3389/fnut.2022.946361

Background: An increasing prevalence of cognitive disorders warrants comprehensive systematic reviews on the effect of diet on cognitive health. Studies have suggested that the Mediterranean (MeDi) diet has protective effects against metabolic diseases. However, comprehensive systematic reviews on the effect of the MeDi diet on the cognitive decline are limited. We investigated whether adherence to the MeDi diet could lower the risk of the cognitive disorder or improve cognitive function in older adults., Methods: In this systematic review and meta-analysis, PubMed, Web of Science, PsycINFO, Scopus, and Cochrane databases were searched from inception to June 2021. Cohort studies and randomized controlled trials (RCTs) were included. The effect sizes were estimated as log risk ratios and standard mean differences (SMDs) with 95% confidence intervals (CIs). The Newcastle-Ottawa score and Cochrane Collaboration's tool were used to assess the risk of bias in cohort studies and RCTs, respectively., Results: Of the 1,687 screened studies, 31 cohort studies and five RCTs met the eligibility criteria for qualitative analysis; 26 cohort studies and two RCTs were included in the meta-analysis. In the cohort studies, high adherence to the MeDi diet was associated with lower risk of mild cognitive impairment (MCI) [risk ratio (RR) = 0.75 (0.66-0.86)], and Alzheimer's disease (AD) [RR = 0.71 (0.56-0.89)]. In the RCTs, high adherence to the MeDi diet was associated with better episodic [SMD = 0.20 (0.09-0.30)] and working memories [SMD = 0.17 (0.01-0.32)] than lowest group., Conclusion: Adherence to the MeDi diet may reduce the risk of MCI and AD. However, other associations with cognitive outcomes (global cognition, working memory, and episodic memory) remain open to interpretation. Overall, the MeDi diet is recommended to prevent or delay cognitive disorders and improve cognitive function. Further, long-term RCTs are warranted to strengthen the evidence., Systematic review registration: [https://www.crd.york.ac.uk], identifier [CRD42021276801]. Copyright © 2022 Fu, Tan, Lee and Shin.

Davinelli, S., S. Ali, et al. (2021). "Carotenoids and Cognitive Outcomes: A Meta-Analysis of Randomized Intervention Trials." Antioxidants (Basel, Switzerland) 10(2). https://dx.doi.org/10.3390/antiox10020223

Recent evidence suggests that diet can modify the risk of future cognitive impairment and

dementia. A biologically plausible rationale and initial clinical data indicate that the antioxidant activities of dietary carotenoids may assist the preservation of cognitive function. A meta-analysis of randomized controlled trials was conducted to examine the relationship between carotenoid supplementation and cognitive performance. A literature search was conducted in the MEDLINE (via PubMed), Scopus, Web of Science, and Cochrane databases from their inception to July 2020. A total of 435 studies were retrieved. Abstract screening using predefined inclusion and exclusion criteria was followed by full-text screening and data extraction of study characteristics and measured outcomes. A meta-analysis of eligible trials was performed using a random-effects model to estimate pooled effect size. We identified 9 studies with a total of 4402 nondemented subjects, whose age ranged from 45 to 78 years. Results of the pooled meta-analysis found a significant effect of carotenoid intervention on cognitive outcomes (Hedge's g = 0.14; 95% confidence interval: 0.08, 0.20, p < 0.0001). There was no evidence of heterogeneity among the studies (tau2 = 0.00, I2 = 0.00%, H2 = 1.00) or publication bias. Although further studies are needed, our results suggest that carotenoid interventions are associated with better cognitive performance. Thus, these dietary compounds may help to reduce the risk of cognitive impairment and dementia.

Iguacel, I., I. Huybrechts, et al. (2021). "Vegetarianism and veganism compared with mental health and cognitive outcomes: a systematic review and meta-analysis." Nutrition reviews 79(4): 361-381.
https://dx.doi.org/10.1093/nutrit/nuaa030

CONTEXT: Vegetarian and vegan diets are increasing in popularity. Although they provide beneficial health effects, they may also lead to nutritional deficiencies. Cognitive impairment and mental health disorders have a high economic burden., OBJECTIVE: A meta-analysis was conducted to examine the relationship between vegan or vegetarian diets and cognitive and mental health., DATA SOURCES: PubMed, Scopus, ScienceDirect, and Proquest databases were examined from inception to July 2018., STUDY SELECTION: Original observational or interventional human studies of vegan/vegetarian diets were selected independently by 2 authors., DATA EXTRACTION: Raw means and standard deviations were used as continuous outcomes, while numbers of events were used as categorical outcomes., RESULTS: Of 1249 publications identified, 13 were included, with 17 809 individuals in total. No significant association was found between diet and the continuous depression score, stress, well-being, or cognitive impairment. Vegans/vegetarians were at increased risk for depression (odds ratio = 2.142; 95%CI, 1.105-4.148) and had lower anxiety scores (mean difference = -0.847; 95%CI, -1.677 to -0.018). Heterogeneity was large, and thus subgroup analyses showed numerous differences. CONCLUSIONS: Vegan or vegetarian diets were related to a higher risk of depression and lower anxiety scores, but no differences for other outcomes were found. Subgroup analyses of anxiety showed a higher risk of anxiety, mainly in participants under 26 years of age and in studies with a higher quality. More studies with better overall quality are needed to make clear positive or negative associations. SYSTEMATIC REVIEW REGISTRATION: PROSPERO registration no. CRD42018097204. Copyright © The Author(s) 2020. Published by Oxford University Press on behalf of the International Life Sciences Institute. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com.

Chen, X., B. Maguire, et al. (2019). "Dietary Patterns and Cognitive Health in Older Adults: A Systematic Review." Journal of Alzheimer's disease : JAD 67(2): 583-619.
https://dx.doi.org/10.3233/JAD-180468

While the role of diet and nutrition in cognitive health and prevention of dementia in older adults has attracted much attention, the efficacy of different dietary patterns remains uncertain. Previous reviews have mainly focused on the Mediterranean diet, but either omitted other dietary patterns, lacked more recent studies, were based on cross-sectional studies, or combined older and younger populations. We followed PRISMA guidelines, and examined the efficacy of current research from randomized controlled trials and cohort studies on the effects of different dietary patterns. We reviewed the Mediterranean diet,

Dietary Approach to Stop Hypertension (DASH) diet, the Mediterranean-DASH diet Intervention for Neurodegenerative Delay (MIND) diet, Anti-inflammatory diet, Healthy diet recommended by guidelines via dietary index, or Prudent healthy diets generated via statistical approaches, and their impact on cognitive health among older adults. Of 38 studies, the Mediterranean diet was the most investigated with evidence supporting protection against cognitive decline among older adults. Evidence from other dietary patterns such as the MIND, DASH, Anti-inflammatory, and Prudent healthy diets was more limited but showed promising results, especially for those at risk of cardiovascular disease. Overall, this review found positive effects of dietary patterns including the Mediterranean, DASH, MIND, and Anti-inflammatory diets on cognitive health outcomes in older adults. These dietary patterns are plant-based, rich in poly- and mono-unsaturated fatty acids with lower consumption of processed foods. Better understanding of the underlying mechanisms and effectiveness is needed to develop comprehensive and practical dietary recommendations against age-related cognitive decline among older adult.

PRÉVENTION

Deng, Y., M. Wang et al. (2025). "An umbrella review and meta-meta-analysis on the effectiveness of digital health interventions for cognitive function improvement in the elderly." European geriatric medicine 16(5): 1599-1615. https://dx.doi.org/10.1007/s41999-025-01257-1

PURPOSE: This study aimed to systematically evaluate the effectiveness of DHIs in improving cognitive function among older adults and to explore whether participant characteristics moderate these effects., METHODS: An umbrella review and meta-meta-analysis were conducted in accordance with PRISMA guidelines, with the study pre-registered on the PROSPERO database (CRD420251003146). The eligibility criteria were clearly defined using the PICOS framework. A comprehensive literature search was performed across multiple databases including Web of Science, PubMed, CINAHL, Scopus, and the Cochrane Library. Methodological quality was assessed with the AMSTAR 2 tool and the corrected covered area (CCA) was calculated to evaluate overlap between studies, ensuring the reliability of the meta-meta-analysis., RESULTS: A total of 31 systematic reviews and meta-analyses involving 31,093 older adults were included. The findings indicated that DHIs had a significant positive impact on global cognitive function (SMD = 0.50, 95% CI: 0.40-0.60, $p < 0.001$). The positive effects were also found across specific cognitive domains, including attention (SMD = 0.41), memory (SMD = 0.37), executive function (SMD = 0.35), and processing speed (SMD = 0.21). Furthermore, the subgroup analyses demonstrated that individuals with MCI and dementia experienced greater cognitive improvements from the interventions., CONCLUSION: The results suggest that DHIs hold substantial potential for enhancing cognitive function in the elderly population. By providing timely and personalized interventions, they can effectively improve cognitive outcomes, offering practical utility in clinical settings, and informing the development of policies aimed at expanding access to cognitive health services. Copyright © 2025. The Author(s), under exclusive licence to European Geriatric Medicine Society.

Mendes, A. J., F. Ribaldi et al. (2025). "Single-domain and multidomain lifestyle interventions for the prevention of cognitive decline in older adults who are cognitively unimpaired: a systematic review and network meta-analysis." The lancet. Healthy longevity 6(9): 100762.
https://dx.doi.org/10.1016/j.lanhl.2025.100762

BACKGROUND: Preventing cognitive impairment in older adults is a public health priority. Although multidomain interventions have shown promise as preventive strategies, the optimal combination of interventions remains unclear. This network meta-analysis aimed to compare and rank the relative efficacy of single-domain and multidomain lifestyle interventions for the prevention of cognitive impairment in older

adults who are cognitively unimpaired., METHODS: We did a systematic review and network meta-analysis of randomised controlled trials (RCTs) published in PubMed and Embase from inception until the date of our search on May 7, 2024 following a preregistered protocol in PROSPERO (CRD42024601975). We included RCTs in older adults who are cognitively unimpaired evaluating lifestyle interventions targeting diet, physical exercise, cognitive training, social activity, and health education, either alone or in combination. The primary outcome was global cognition, analysed using random-effects network meta-analysis, reporting standardised mean differences (SMDs) and 95% CIs, and compared against health education, active control, or no intervention. Subgroup analyses explored potential age-related differences and the effect of intervention duration. Risk of bias was assessed using Cochrane Risk of Bias 2, and publication bias was evaluated by assessing funnel plot asymmetry., FINDINGS: Of the 10 200 citations identified and 1183 full texts screened for eligibility, we identified 109 eligible RCTs, including 23 010 participants (median age 70.1 years [IQR 68.7-73.8], 14 957 [65%] female and 8053 [35%] male). Compared with health education, significant improvements in global cognition were found for physical exercise and cognitive training combined (SMD 0.26 [95% CI 0.10-0.42; p=0.0011); cognitive training alone (SMD 0.21 [0.08-0.33]; p=0.00092); diet, physical exercise, cognitive training, and health education combined (SMD 0.14 [0.02-0.27]; p=0.028); and physical exercise alone (SMD 0.14 [0.05-0.22]; p=0.0014). Random-effects models using active control and no intervention as comparators yielded similarly significant effects for the aforementioned interventions, with effect sizes in the same order. Risk of bias was high in 44 (40%) studies, and publication bias was suggested in studies comparing interventions with health education., INTERPRETATION: Several single-domain and multidomain lifestyle interventions are efficacious at modulating global cognition in older adults who are cognitively unimpaired, with the combination of physical exercise and cognitive training demonstrating the strongest effect. Combining lifestyle interventions might enhance efficacy, but increased number of domains does not automatically translate into greater cognitive benefits. These findings support lifestyle interventions as key components of prevention strategies; however, their optimal combination requires further investigation., FUNDING: None. Copyright © 2025 The Author(s). Published by Elsevier Ltd.. All rights reserved.

Talebisiavashani, F. et M. Mohammadi-Sartang (2025). "The Effect of Mindfulness-Based Interventions on Mental Health and Cognitive Function in Older Adults: A Systematic Review and Meta-Analysis." Journal of aging and health 37(10): 619-631. https://dx.doi.org/10.1177/08982643241263882

Objectives To assess whether mindfulness-based interventions (MBIs) affect mental health and cognitive abilities in older adults. Methods A systematic search was performed in PubMed, SCOPUS, Web of Science, and Google Scholar up to June 2023. Weight mean difference and 95% confidence intervals were provided as summary statistics. Results In total, 26 articles were eligible. Overall, MBIs showed a statistically significant improvement in depression, anxiety, quality of life, and working memory compared to controls. However, no significant effects of MBIs on other cognitive parameters were found. In moderator analysis, less than eight weeks of MBIs showed greater improvement in anxiety and quality of life than longer periods. There was no evidence for publication bias.DiscussionMindfulness-based interventions can be an encouraging alternative in place of conventional treatments in improving depression, anxiety, quality of life and working memory in cognition among older adults. However, findings strongly recommend future research to have definite conclusion.

Guo, H., Z. Wang et al. (2024). "Effects of oral health interventions on cognition of people with dementia: a systematic review with meta-analysis." BMC oral health 24(1): 1030. https://dx.doi.org/10.1186/s12903-024-04750-4

BACKGROUND: Increasing studies have shown that poor oral health contributes to the progression of dementia. It is meaningful to find out the role of oral health interventions in maintaining people's cognition levels and delaying the progression of dementia. Thus, we conducted this review to summarize

the present evidence on the effect of oral health interventions on the cognition change of people with dementia., METHODS: Literature search was conducted in the databases of PubMed, Embase, Web of Science, Cochrane library, and Dentistry and Oral Sciences by two independent reviewers from inception to 6 March 2024. Clinical studies such as randomized controlled trials reporting on the effect of oral health interventions on the cognition of people with dementia were included in this review. Mini-Mental State Examination (MMSE) scores were used to measure cognition level. The mean deviation (MD), generated by subtracting the baseline MMSE score from the MMSE score at follow-up was used to assess the change in cognition. Studies with oral hygiene practice as an oral health intervention were further conducted with a meta-analysis., RESULTS: A total of 6646 references were identified by the literature search, and 5 studies were eligible to be included in this review. Among the included studies, 4 studies reported the cognition change after having various oral hygiene practice as oral health intervention, while the other study adopted oral exercises as the intervention. Two studies presented positive MD values after intervention provided, indicating improved cognition level at follow-up (MD = 0.6, MD = 0.9, respectively). Another two studies reported less cognition deterioration with smaller absolute MD values in the intervention group, (intervention vs. control, -0.18 vs. -0.75, $p < 0.05$ and - 1.50 vs. -3.00, $p < 0.05$, respectively). The random-effect model was selected in the meta-analysis, and the weighted mean difference (WMD) was 1.08 (95% confidence interval, 0.44 to 1.71), favoring the intervention group., CONCLUSION: With limited evidence, oral hygiene care may play a positive role in maintaining the cognition level of people with dementia. However, further studies are needed to provide direct evidence on the effectiveness of oral health interventions on oral health conditions as well as cognition status and to disclose the rationale behind it. Copyright © 2024. The Author(s).

Noroozian, M., A. Shakiba et al. (2024). "Effect of Controlling the Cardiovascular Risk Factors on the Cognitive Decline Prevention in the Elderly: A Systematic Review." Basic and clinical neuroscience 15(3): 273-286. https://dx.doi.org/10.32598/bcn.2022.1551.2

With the increasing proportion of the elderly population, neurodegenerative diseases such as dementia are becoming more prevalent worldwide. Vascular risk factors are considered significant targets for cognitive decline prevention. We reviewed the effect of cardiovascular risk factors on cognitive decline prevention in the elderly to evaluate the quantity and quality of evidence in managing the elderly population with cognitive decline. Data analysis was available from 25 studies that explored the effects of controlling cardiovascular risk factors on the risk of cognitive impairment. These risk factors include diabetes mellitus, high blood pressure, high cholesterol levels, and exercise and physical activity. The most positive evidence was found for exercise and physical activity. On the other hand, diabetes mellitus and cholesterol modifications showed no positive impact on cognitive function. Studies on hypertension control were incongruous. There is a need for large-sample, robust randomized clinical trials to provide sufficient evidence for the modification of various cardiovascular risk factors in preventing cognitive decline. Copyright© 2024 Iranian Neuroscience Society.

Tsai, Y. I. P., J. Beh et al. (2024). "Digital interventions for healthy ageing and cognitive health in older adults: a systematic review of mixed method studies and meta-analysis." BMC geriatrics 24(1): 217. https://dx.doi.org/10.1186/s12877-023-04617-3

BACKGROUND: Currently, there is no systematic review to investigate the effectiveness of digital interventions for healthy ageing and cognitive health of older adults. This study aimed to conduct a systematic review to evaluate the effectiveness of digital intervention studies for facilitating healthy ageing and cognitive health and further identify the considerations of its application to older adults., METHODS: A systematic review and meta-analysis of literature were conducted across CINAHL, Medline, ProQuest, Cochrane, Scopus, and PubMed databases following the PRISMA guideline. All included studies were appraised using the Mixed Methods Appraisal Tool Checklist by independent reviewers. Meta-analyses were

performed using JBI SUMARI software to compare quantitative studies. Thematic analyses were used for qualitative studies and synthesised into the emerging themes., RESULTS: Thirteen studies were included. Quantitative results showed no statistically significant pooled effect between health knowledge and healthy behaviour (I2 =76, p=0.436, 95% CI [-0.32,0.74]), and between cardiovascular-related health risks and care dependency I2=0, p=0.426, 95% CI [0.90,1.29]). However, a statistically significant cognitive function preservation was found in older adults who had long-term use of laptop/cellphone devices and had engaged in the computer-based physical activity program (I2=0, p<0.001, 95% CI [0.01, 0.21]). Qualitative themes for the considerations of digital application to older adults were digital engagement, communication, independence, human connection, privacy, and cost., CONCLUSIONS: Digital interventions used in older adults to facilitate healthy ageing were not always effective. Health knowledge improvement does not necessarily result in health risk reduction in that knowledge translation is key. Factors influencing knowledge translation (i.e., digital engagement, human coaching etc) were identified to determine the intervention effects. However, using digital devices appeared beneficial to maintain older adults' cognitive functions in the longer term. Therefore, the review findings suggest that the expanded meaning of a person-centred concept (i.e., from social, environmental, and healthcare system aspects) should be pursued in future practice. Privacy and cost concerns of technologies need ongoing scrutiny from policy bodies. Future research looking into the respective health benefits can provide more understanding of the current digital intervention applied to older adults., STUDY REGISTRATION: PROSPERO record ID: CRD42023400707 https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=400707 . Copyright © 2024. The Author(s).

Ye, K. X., L. Sun et al. (2023). "The role of lifestyle factors in cognitive health and dementia in oldest-old: A systematic review." Neuroscience and biobehavioral reviews 152: 105286.
https://dx.doi.org/10.1016/j.neubiorev.2023.105286

Oldest-old is the fastest growing segment of society. A substantial number of these individuals are cognitively impaired or demented. Given the lack of a cure, attention is directed to lifestyle interventions that could help alleviate the stress in patients, their families, and society. The aim of this review was to identify lifestyle factors with important roles in dementia prevention in oldest-old. Searches were conducted in PubMed, EMBASE, Scopus and Web of Science. We identified 27 observational cohort studies that met the inclusion criteria. Results showed that eating a healthy diet with plenty of fruits and vegetables, and participation in leisure and physical activities may protect against cognitive decline and cognitive impairment among oldest-old regardless of the APOE genotype. Combined lifestyles may generate multiplicative effects than individual factors. This is the first review known to systematically examine the association between lifestyle and cognitive health in oldest-old. Lifestyle interventions for diet, leisure, or a combination of lifestyles could be beneficial for cognitive function in oldest-old. Interventional studies are warranted to strengthen the evidence. Copyright © 2023 The Authors. Published by Elsevier Ltd.. All rights reserved.

Coley, N., C. Giulioli, et al. (2022). "Randomised controlled trials for the prevention of cognitive decline or dementia: A systematic review." Ageing research reviews 82: 101777.
https://dx.doi.org/10.1016/j.arr.2022.101777

Dementia prevention research has progressed rapidly in recent years, with publication of several large lifestyle intervention trials, and renewed interest in pharmacological interventions, notably for individuals with Alzheimer's disease biomarkers, warranting an updated review of results and methodology. We identified 112 completed trials testing the efficacy of single-domain pharmacological (n = 33, 29%), nutritional (n = 27, 24%), physical activity (n = 18, 16%) and cognitive stimulation (n = 13, 12%), or multidomain (n = 22, 20%) interventions on incident dementia, or a relevant intermediate marker (e.g. cognitive function, biomarkers or dementia risk scores) in people without dementia. The earliest trials

tested pharmacological interventions or nutritional supplements, but lifestyle interventions predominated in the last decade. In total, 21 (19%) trials demonstrated a clear beneficial effect on the pre-specified primary outcome (or all co-primary outcomes), but only two (10%) were large-scale (testing blood pressure lowering (Syst-Eur) or multidomain (FINGER) interventions on incident dementia and cognitive change in cognitive function, respectively). Of the 116 ongoing trials, 40% (n = 46) are testing multidomain interventions. Recent methodological shifts concern target populations, primary outcome measures, and intervention design, but study design remains constant (parallel group randomised controlled trial). Future trials may consider using adaptive trials or interventions, and more targeted approaches, since certain interventions may be more effective in certain subgroups of the population, and at specific times in the life-course. Efforts should also be made to increase the representativeness and diversity of prevention trial populations. Copyright © 2022. Published by Elsevier B.V.

Costello, M. M., C. E. McCarthy, et al. (2022). "Household-level lifestyle interventions for the prevention of cognitive decline; A Systematic review." Archives of gerontology and geriatrics 98: 104565. https://dx.doi.org/10.1016/j.archger.2021.104565

BACKGROUND: Lifestyle interventions targeting households may be an effective means of promoting healthier cognitive function in later life, with extended benefit to other household members. In this systematic review and meta-analysis, we sought to assess the effect of targeting lifestyle behaviours of households on cognitive outcomes METHODS: An electronic search strategy was designed to identify randomised controlled trials (RCTs) where households were randomised to receive a lifestyle intervention for the prevention of cognitive decline, from database inception until April 2020. Our initial search identified no eligible studies, so we revised our search strategy to include trials enroling dyads. We reported the cognitive outcomes, functional outcomes, caregiver outcomes and long-term care (LTC) admissions for eligible studies., FINDINGS: We identified no RCTs which randomised households to receive a lifestyle intervention for preventing cognitive decline. We identified five RCTs (n = 1721, with mean follow-up of 9.6 months) which randomised dyads, which evaluated diet (two trials) and physical activity (three trials)., CONCLUSION: Trials evaluating dietary and exercise interventions in dyads were identified. No trial demonstrated a significant association of interventions with change in cognitive testing, functional outcomes or long-term care admissions, although trials were small with short-term follow-up. Future studies should consider targeting lifestyle behaviours of households for prevention of dementia. Copyright © 2021 Elsevier B.V. All rights reserved.

Oberlin, L. E., A. Jaywant, et al. (2022). "Strategies to Promote Cognitive Health in Aging: Recent Evidence and Innovations." Current psychiatry reports 24(9): 441-450.
https://dx.doi.org/10.1007/s11920-022-01348-x

PURPOSE OF REVIEW: We review recent work on applications of non-pharmacologic strategies to promote cognitive health in older adulthood and discuss potential network mechanisms, limitations, and considerations for improving intervention uptake and efficacy., RECENT FINDINGS: In healthy older adults and patients with mild cognitive impairment, cognitive training produces global and domain-specific cognitive gains, though effect sizes tend to be modest and transfer is variable. Non-invasive brain stimulation has shown moderate success in enhancing cognitive function, though the optimum approach, parameters, and cortical targets require further investigation. Physical activity improves cognitive functions in late life, with emerging trials highlighting key intervention components that may maximize treatment outcomes. Multimodal interventions may be superior to single-component interventions in conferring cognitive gains, although interpretation is limited by modest sample sizes and variability in training components and parameters. Across modalities, individual differences in patient characteristics predict therapeutic response. These interventions may advance cognitive health by modulating functional networks that support core cognitive abilities including the default mode, executive control, and salience networks.

Effectiveness of cognitive enhancement strategies may be increased with clinician-led coaching, booster sessions, gamification, integration of multiple intervention modalities, and concrete applications to everyday functioning. Future trials involving rigorous comparisons of training components, parameters, and delivery formats will be essential in establishing the precise approaches needed to maximize cognitive outcomes. Novel studies using patient-level clinical and neuroimaging features to predict individual differences in training gains may inform the development of personalized intervention prescriptions to optimize cognitive health in late life. Copyright © 2022. The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature.

Studer-Luethi, B., M. Brasser, et al. (2021). "A cross-sectional survey of a public, evidence-based multimodal program for cognitive health in older adults." Archives of public health = Archives belges de sante publique 79(1): 165. https://dx.doi.org/10.1186/s13690-021-00670-9

BACKGROUND: In recent decades, the proportion of older adults in the population has continued to rise, and with it, the need for intervention programs to maintain cognitive functions into old age. Multiple lifestyle factors, including physical, cognitive, and social activities, are crucial to forestalling a decline in cognitive functions. However, Covid-19 curtailed most activities, and therefore, strategies are needed to support older adults in remaining cognitively healthy. This study describes a newly developed and publicly available multimodal program, called "brain coach", to support and stimulate cognitive activity in older adults. The autonomy supportive program integrates into daily life recommendations for evidence-based physical, cognitive, social, mindful, and creative activation exercises., METHODS: The study design corresponds to a correlational, analytical, and cross-sectional study with 660 older adults, who participated in the program for at least 3 months and completed an online survey., RESULTS: The survey results demonstrate that the average age of the participants was 71 years and 75 % were female. Participants experienced benefits in memory, well-being, attitudes towards the brain, and lifestyle habits. Importantly, time invested in the intervention and participant's positive attitude toward brain health and neuroplasticity, show positive relationships with the experienced benefits. CONCLUSIONS: The results reveal the potential of a public program with a multimodal approach to increase cognitive health and promote an active lifestyle. Further research will explore the effects of such a multimodal intervention in a longitudinal randomized controlled trial study. Copyright © 2021. The Author(s).

Matyas, N., F. Keser Aschenberger, et al. (2019). "Continuing education for the prevention of mild cognitive impairment and Alzheimer's-type dementia: a systematic review and overview of systematic reviews." BMJ open 9(7): e027719. https://dx.doi.org/10.1136/bmjopen-2018-027719

OBJECTIVE: To summarise evidence on the preventive effects of continuing education on mild cognitive impairment and Alzheimer's-type dementia in adults 45 years or older., DESIGN: Systematic review and overview of systematic reviews., DATA SOURCES: We systematically searched MEDLINE, PsycINFO, EMBASE, Cochrane Central Register of Controlled Trials, Cumulative Index to Nursing and Allied Health Literature, and Scopus for published studies and grey literature databases for unpublished studies from January 1990 to April 2018., METHODS: To assess evidence directly addressing our objectives, we conducted a systematic review. Because we were aware of a dearth of direct evidence, we also performed an overview of systematic reviews on leisure activities that mimic formal continuing education. We a priori established the inclusion and exclusion criteria. Two authors independently assessed inclusion and exclusion at the abstract and full-text level, rated the risk of bias, and determined the certainty of evidence using the Grading of Recommendations Assessment, Development and Evaluation. We resolved all discrepancies by consensus. We synthesised the available evidence narratively., RESULTS: Our searches identified 4933 citations. For the systematic review, only two publications on the same prospective cohort study (Tasmanian Healthy Brain Project) met the inclusion criteria; for the overview of reviews, we included five systematic reviews. Based on 459 participants, preliminary data of the ongoing cohort study indicated that

cognitive reserve statistically significantly increased in persons attending university classes compared with the control group (92.5% vs 55.7%, p<0.01). Likewise, language processing capacities statistically significantly improved (p<0.01). Episodic memory, working memory and executive function did not differ significantly between groups. Systematic reviews consistently reported a positive association between participation in cognitively stimulating leisure activities and reduced incidence of dementia and improved cognitive test performance., CONCLUSION: Available results demonstrate that cognitive reserve increases through continuing education and show a positive association of cognitive leisure activities with both improved cognitive function and lower dementia incidence., PROSPERO REGISTRATION NUMBER: CRD42017063944. Copyright © Author(s) (or their employer(s)) 2019. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

Gorelick, P. B. (2018). "Prevention of cognitive impairment: scientific guidance and windows of opportunity." Journal of neurochemistry 144(5): 609-616. https://dx.doi.org/10.1111/jnc.14113

Cognitive impairment of later life is an important medical and public health challenge. Worldwide it is estimated that the number of persons with dementia will continue to increase, especially in low- and middle-income countries. An important public health challenge relates to the prevention of cognitive decline and dementia. Specifically, is it possible to maintain cognitive vitality or prevent or slow cognitive decline? In this opinion-based piece, I review United States-based guidance statements for maintenance of cognition and select single and multidomain trials designed to preserve cognitive function. Guidance statements now recommend that we treat or prevent cardiovascular risks in hopes of preventing cognitive impairment or decline. I discuss potential gaps between guidance statements and interventional studies, and provide comments on where windows of opportunity may exist to close potential gaps in our quest to maintain cognitive vitality. This article is part of the Special Issue "Vascular Dementia". Copyright © 2017 International Society for Neurochemistry.

ENVIRONNEMENT SOCIAL

Rodrigues, P. M. F. et A. Delerue-Matos (2025). "The effect of social exclusion on the cognitive health of middle-aged and older adults: A systematic review." Archives of gerontology and geriatrics 130: 105730. https://dx.doi.org/10.1016/j.archger.2024.105730

This systematic review aimed to evaluate the independent and joint effects of social exclusion in three specific domains-economic, social relations, and civic participation-on the cognitive health of middle-aged and older adults. Longitudinal studies from January 2000 to October 2023 were identified via Web of Science, Scopus, and PubMed, with sixty-five studies meeting inclusion criteria. The quality of the studies was assessed with Newcastle-Otawa Scale. Analysis revealed a strong association between economic exclusion and cognitive decline, with most studies indicating a significant negative impact. Ten studies found a positive link between volunteering and cognitive health for civic participation, while eight did not, showing mixed evidence. In social relations, most studies connected loneliness, social isolation, smaller social networks, reduced contact with family and friends, lower engagement in activities, and negative social interactions with cognitive decline. Notably, one study found that older adults experiencing social exclusion in multiple domains simultaneously face even greater cognitive decline. In summary, this review shows that social exclusion in economic, social relations, and civic participation and all together domains is associated with greater cognitive decline in older adults. Copyright © 2024 The Author(s). Published by Elsevier B.V. All rights reserved.

Simon, S. S., C. Cappi et al. (2025). "The role of social participation in cognitive health in an underserved older population: Evidence from AfroBrazilian-Quilombola Communities." International psychogeriatrics: 100138. https://dx.doi.org/10.1016/j.inpsyc.2025.100138

OBJECTIVES: Quilombos are settlements founded by descendants of runaway enslaved populations in Brazil, and often present social vulnerabilities, high levels of illiteracy, and limited health access. The Quilombola population likely presents an increased risk for dementia; however, it is underrepresented in aging research. This study aimed to investigate the association between cognition and social participation, which remains unclear in underserved communities., METHODS: This cross-sectional study was conducted in 11 Quilombola rural underserved communities in Brazil. The study comprised 221 older adults (60-104 years). Participants completed a health survey and a cognitive screening. Demographics, cardiovascular risk factors, mood, cognition, and social participation were assessed. Regression models examined the association between social participation and cognition, accounting for demographics and health measures. Our models also examined the moderation role of age and sex., RESULTS: Higher social participation was associated with better cognition ($p<0.001$) above and beyond demographics, functional capacity, mood, and a cardiovascular risk factor (waist-to-hip ratio). The social activity that mostly drove the result was attending "religious/faith services". Age and sex did not moderate the associations., CONCLUSION: Our findings extend the scope of the potential protective role of social participation for cognitive health to socially vulnerable contexts. In a disadvantaged context, social participation may be a crucial aspect for promoting cognitive and brain health. We hypothesize that social participation may provide not only cognitive stimulation and emotional support, but also facilitate access to the community's needs (e.g., health services). The results are limited by the cross-sectional design and survival bias, which restrict the interpretation of causality, although they may inform future research in underserved populations. Copyright © 2025 The Authors. Published by Elsevier Inc. All rights reserved.

Joshi, P., K. Hendrie et al. (2024). "Social connections as determinants of cognitive health and as targets for social interventions in persons with or at risk of Alzheimer's disease and related disorders: a scoping review." International psychogeriatrics 36(2): 92-118.
https://dx.doi.org/10.1017/S1041610223000923

BACKGROUND: Social connections have a significant impact on health across age groups, including older adults. Loneliness and social isolation are known risk factors for Alzheimer's disease and related dementias (ADRD). Yet, we did not find a review focused on meta-analyses and systematic reviews of studies that had examined associations of social connections with cognitive decline and trials of technology-based and other social interventions to enhance social connections in people with ADRD., STUDY DESIGN: We conducted a scoping review of 11 meta-analyses and systematic reviews of social connections as possible determinants of cognitive decline in older adults with or at risk of developing ADRD. We also examined eight systematic reviews of technology-based and other social interventions in persons with ADRD., STUDY RESULTS: The strongest evidence for an association of social connections with lower risk of cognitive decline was related to social engagement and social activities. There was also evidence linking social network size to cognitive function or cognitive decline, but it was not consistently significant. A number of, though not all, studies reported a significant association of marital status with risk of ADRD. Surprisingly, evidence showing that social support reduces the risk of ADRD was weak. To varying degrees, technology-based and other social interventions designed to reduce loneliness in people with ADRD improved social connections and activities as well as quality of life but had no significant impact on cognition. We discuss strengths and limitations of the studies included., CONCLUSIONS: Social engagement and social activities seem to be the most consistent components of social connections for improving cognitive health among individuals with or at risk for ADRD. Socially focused technology-based and other social interventions aid in improving social activities and connections and deserve more research.

Sullivan, A., M. Armendariz et al. (2024). "A Scoping Review of Neighborhoods and Cognitive Health Disparities Among US Midlife and Older Adults." Journal of aging and health 36(3-4): 257-270.
https://dx.doi.org/10.1177/08982643231185379

Objectives: The neighborhood environment may be an important determinant of racial/ethnic disparities in cognitive function. To understand how neighborhoods are linked to cognition across racial/ethnic groups, this scoping review organizes research investigating relationships between multiple neighborhood domains and cognitive function in diverse samples of US midlife and older adults. Methods: PubMed/MEDLINE, Web of Science, and CAHL were used to extract quantitative disparities-focused studies (n = 17) that included US adults ages 50+, racial/ethnic minoritized populations, cognitive dependent variable(s), and neighborhood-level independent variable(s) published from January 2010 to October 2021. Results: Studies demonstrate variation within and between racial/ethnic groups in how neighborhood factors are associated with cognition. Economically and socially advantaged neighborhoods were associated with better cognition. Findings were mixed for built and neighborhood composition measures. Discussion: More research with greater racial/ethnic representation is needed to disentangle which aspects of the neighborhood are most salient for specific cognitive function domains across diverse populations.