

A Meta-analysis On The Effectiveness Of Multidomain Interventions In Preventing Cognitive Decline In Older Adults (Preliminary Results)

P-7131

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Multidomain interventions including cognitive training significantly stabilize global cognitive performance in at-risk older adults. Focusing on large-scale RCTs provides robust, high-quality evidence supporting structured lifestyle prevention in clinical practice.

INTRODUCTION	RESULTS		CONCLUSIONS																					
Multidomain interventions targeting various lifestyle and behavioral risk factors have gained growing attention as a strategy to prevent or slow cognitive decline in older adults at increased risk for or with established cognitive impairment. While individual trials have suggested potential benefits, findings have remained heterogeneous, and the effectiveness of interventions on global cognition has not been comprehensively quantified through meta-analytic synthesis of large, well-powered randomized controlled trials.	A total of 5 large-scale RCTs encompassing over 11,000 participants met the strict inclusion criteria. • Random-effects meta-analysis revealed a statistically significant positive effect of multidomain lifestyle interventions on global cognition compared to control groups. • Between-study heterogeneity was moderate ($I^2 = 49.13\%$). The effect was largely driven by well-powered, high-compliance trials. • Excluding cluster-RCTs confirmed the robust clinical effect in individually randomized trials. In exploratory subgrouping, interventions with a duration of ≥ 24 months showed the most pronounced cognitive stabilization.	<table><thead><tr><th>Study</th><th></th><th>SMD [95% CI]</th></tr></thead><tbody><tr><td>AgeWell.de</td><td></td><td>0.01 [-0.13, 0.15]</td></tr><tr><td>FINGER</td><td></td><td>0.08 [-0.04, 0.19]</td></tr><tr><td>MAPT</td><td></td><td>0.09 [0.00, 0.18]</td></tr><tr><td>MYB</td><td></td><td>0.18 [0.13, 0.23]</td></tr><tr><td>THISCE</td><td></td><td>0.12 [-0.02, 0.26]</td></tr><tr><td>Random-Effects Model</td><td></td><td>0.11 [0.03, 0.19]</td></tr></tbody></table> Observed Outcome	Study		SMD [95% CI]	AgeWell.de		0.01 [-0.13, 0.15]	FINGER		0.08 [-0.04, 0.19]	MAPT		0.09 [0.00, 0.18]	MYB		0.18 [0.13, 0.23]	THISCE		0.12 [-0.02, 0.26]	Random-Effects Model		0.11 [0.03, 0.19]	This meta-analysis provides robust evidence on the effectiveness of multidomain interventions including cognitive training in preventing or delaying global cognitive decline in older adults at increased risk for or with established cognitive impairment. By focusing on large, randomized trials and standardized global cognitive outcomes, the findings offer important implications for clinical practice, the design of multidomain interventions, and future preventive strategies in cognitive aging and dementia care.
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METHODS	REFERENCES	CONTACT																						
This meta-analysis included randomized controlled trials enrolling (1) senior participants aged 50 years or older with dementia, mild cognitive impairment (MCI), or at increased risk for cognitive decline, (2) multidomain interventions comprising at least two components including cognitive training, (3) a minimum of 100 participants per study arm (intervention and control), and (4) a control condition receiving usual care, minimal intervention, or health education. Studies were required to report global cognition outcomes.	Andrieu S, et al. Lancet Neurol. 2017;16(5):377-389. (MAPT) Brodaty H, et al. Lancet Healthy Longev. 2025;6(1):e12-e22. (Maintain Your Brain) Chen S, et al. J Am Geriatr Soc. 2020;68(8):1790-1798. (THISCE) Ngandu T, et al. Lancet. 2015;385(9983):2255-2263. (FINGER) Zülke A, et al. Alzheimers Dement. 2023;19(4):1135-1145. (AgeWell.de)	Maria-Christina Weber maria.weber1@uk-koeln.de Aging and Dementia Clinic and Polyclinic for Neurology 																						
																								