

## Dementia care research: Behavioral interventions

## Effectiveness of lifestyle and psychosocial interventions in reducing cognitive decline in older people: Systematic review

Hassan Mansour<sup>1</sup> | Emma Whitty<sup>1</sup> | Elisa Aguirre<sup>1</sup> | Marina Palomo<sup>1</sup> |  
Georgina Charlesworth<sup>1</sup> | Serena Ramjee<sup>2</sup> | Michaela Poppe<sup>1</sup> | Henry Brodaty<sup>3</sup> |  
Helen C Kales<sup>4</sup> | Sarah Morgan-Trimmer<sup>5</sup> | Samuel Nyman<sup>6</sup> | Iain A Lang<sup>7</sup> |  
Kate Walters<sup>1</sup> | Irene Petersen<sup>1</sup> | Jennifer Wenborn<sup>8</sup> | Anne-Maire Minihane<sup>9</sup> |  
Karen Ritchie<sup>10</sup> | Jonathan D Huntley<sup>11</sup> | Zuzana Walker<sup>12</sup> | Claudia Cooper<sup>1</sup>

<sup>1</sup> University College London, London, United Kingdom

<sup>2</sup> Queen Mary University of London, London, United Kingdom

<sup>3</sup> Centre for Healthy Brain Ageing, UNSW, Sydney, NSW, Australia

<sup>4</sup> University of Michigan, Ann Arbor, MI, USA

<sup>5</sup> University of Exeter, Exeter, United Kingdom

<sup>6</sup> Bournemouth University, Bournemouth, United Kingdom

<sup>7</sup> PenCLAHRC, Medical School, College of Medicine and Health, University of Exeter, Exeter, United Kingdom

<sup>8</sup> North East London NHS Foundation Trust, London, United Kingdom

<sup>9</sup> University of Reading, Reading, United Kingdom

<sup>10</sup> INSERM, Montpellier University, Neuropsychiatry: Epidemiological and Clinical Research, Montpellier, France

<sup>11</sup> Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, United Kingdom

<sup>12</sup> Mental Health Unit, St. Margaret's Hospital, Epping, Essex, United Kingdom

**Correspondence**

Hassan Mansour, University College London, London, United Kingdom.

Email: [hassan.mansour.17@ucl.ac.uk](mailto:hassan.mansour.17@ucl.ac.uk)

**Abstract**

**Background:** Observational findings suggest that a third of dementia cases are attributable to modifiable risk factors (Livingston et al, 2017). However, we are still unclear on what non-pharmacological interventions should look like or what a manualised dementia prevention programme might include.

**Method:** PubMed, EMBASE (Ovid), PsycINFO, CINAHL, Web of Science, and reference lists of included studies were systematically searched and screened by two independent reviewers. We included lifestyle and psychosocial interventions that aimed to reduce cognitive decline in healthy people aged 50+, and people of any age with Subjective Cognitive Decline or Mild Cognitive Impairment. We narratively synthesised evidence, prioritising results from studies rated at lower Risk of Bias (ROB) and used Centre for Evidence Based Medicine guidelines to grade levels of evidence. These findings were used to inform co-production of an internationally collaborated APPLE-Tree (Active Prevention in People at risk of dementia: Lifestyle, bEhaviour change and Technology to REduce cognitive and functional decline) programme.

**Result:** A total of 64 studies were included describing psychosocial (n=12), multi-domain (n=10), exercise (n=36) and dietary (n=6) interventions. We found Grade A evidence that 4+ months of aerobic exercise twice weekly had a moderate effect on global cognition. With interventions that integrate, cognitive and motor challenges (e.g. dance or dumb bell training) had small to moderate effects on memory or global cognition. We also found Grade B evidence that 4+ months of creative art or storytelling groups; 6 months of resistance training and a two-year, dietary, exercise, cognitive training and social intervention had small but positive effect on global cognition. Conflicting evidence was observed for interventions solely focusing on increasing Mediterranean diet adherence. With effects for some interventions remaining up to a year beyond facilitated sessions. Only two lower ROB studies measured impact of

non-pharmacological interventions onto dementia incidence with neither finding significant effects.

**Conclusion:** Based on current published findings an evidence-based intervention strategy to improve global cognition, memory and executive functioning should include group therapy carried out for 4+ months, promoting engagement in regular (at least weekly) activity, involving aerobic or resistance exercise, and cognitively demanding (visuospatial/memory) or creative tasks.

## Summary of evidence regarding interventions to improve memory or global cognitive functioning

Doesn't work	Evidence	Does work
Resistance training for < 4 months	Very good evidence (Grade A)	4-6 months of: <ul style="list-style-type: none"> <li>• Aerobic exercise, twice a week</li> <li>• 1-3 weekly combining cognitive and motor challenges (Tai Chi, dance or dumb bell training, simulated task exercise)</li> </ul>
Self-guided meditation Goal-setting or problem-focussed therapies 6 weeks of home-based mental activities Clinician-delivered lifestyle advice	Good evidence (Grade B)	4-6 months of: <ul style="list-style-type: none"> <li>• Creative art or art and story-telling groups</li> <li>• Resistance training interventions for 6 months+</li> <li>• Tai Chi for 15 weeks +</li> </ul> Two-year, dietary, exercise, cognitive training and social multi-component intervention
In-home reminiscence	Fair evidence (Grade C)	

**FIGURE 1**