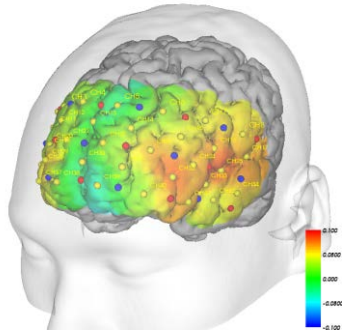


COGNICISE



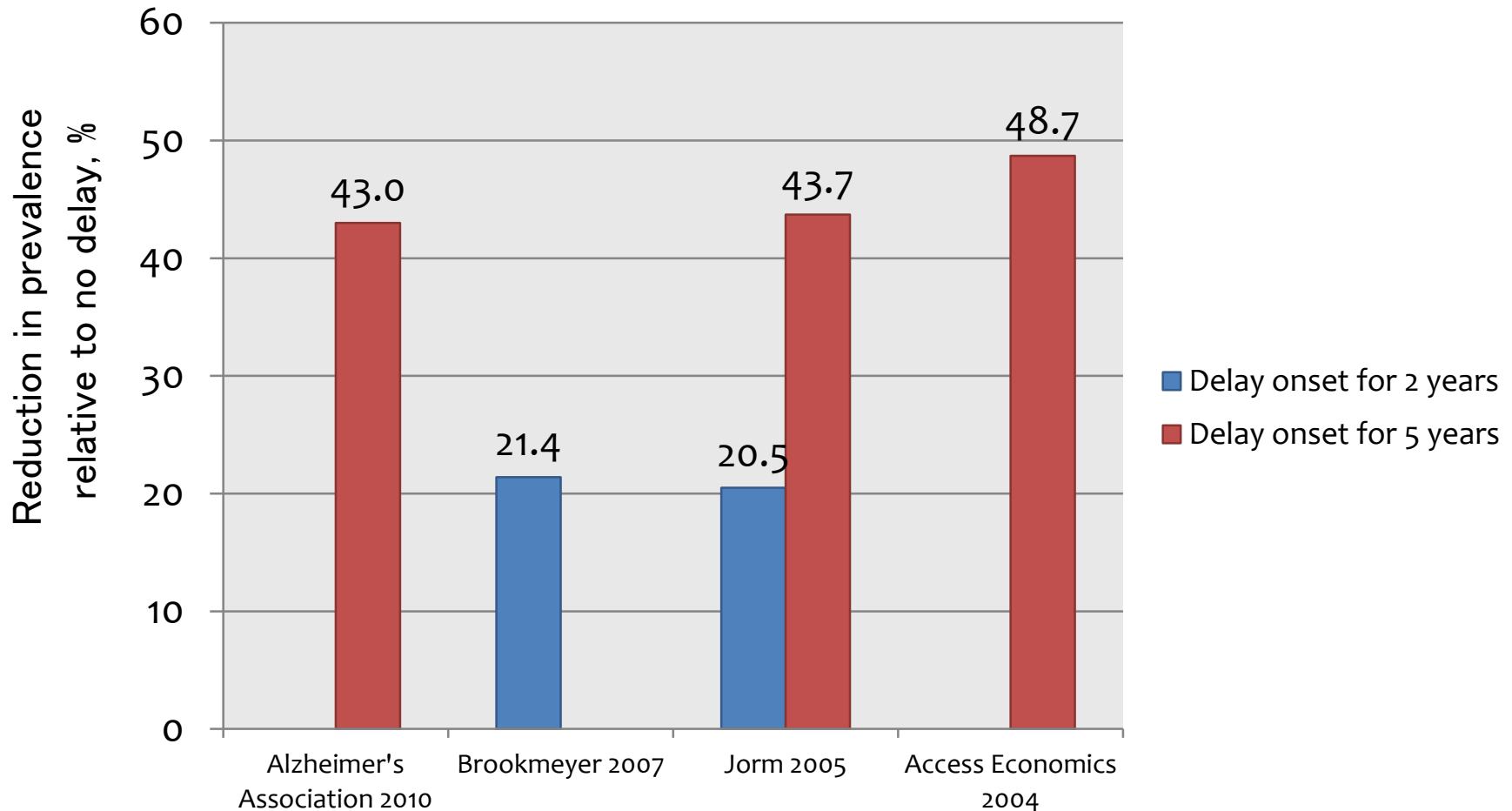
A Scheme for Preventing Cognitive Decline in the Community



National Center for Geriatrics &
Gerontology

Hiroyuki Shimada

Changes in Prevalence in 2050 Associated with Delaying Onset of Dementia by Up to 5 Years

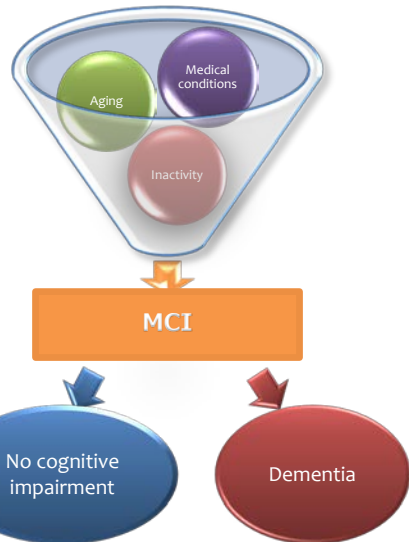


Recovery to No Cognitive Impairment from MCI

The Sydney Memory and Ageing Study (N=837)

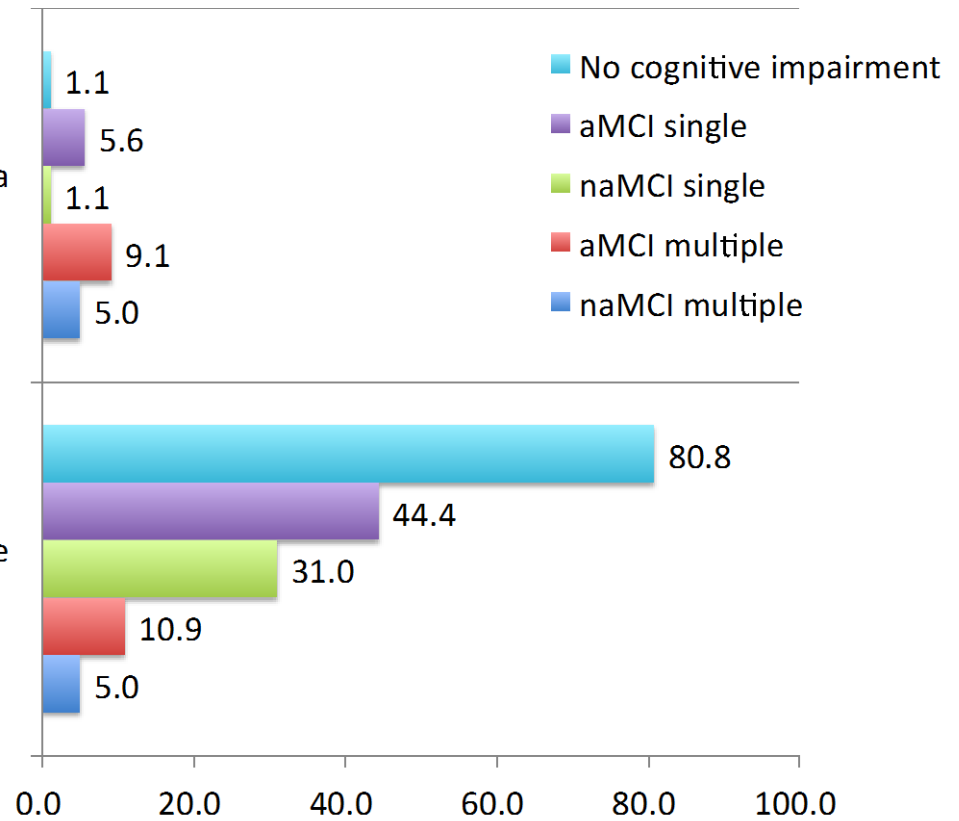
Participants: community-dwelling adults aged 70 to 90 years

Design: 2 years follow-up observational study



Participants with dementia after 2 years

Participants with no cognitive impairment after 2 years



Schema for Preventing Cognitive Decline in the Community

National Center for Geriatrics and Gerontology

Examinations for identifying risks of functional decline



Questionnaire

Participation in physical and cognitive activities
In the community



Physical Assessments

Cognitive Assessments

Blood Exam

Programs for Preventing Dementia Using Community resources



ILLUSTRATION BY GECJALIAM



PREVENTION

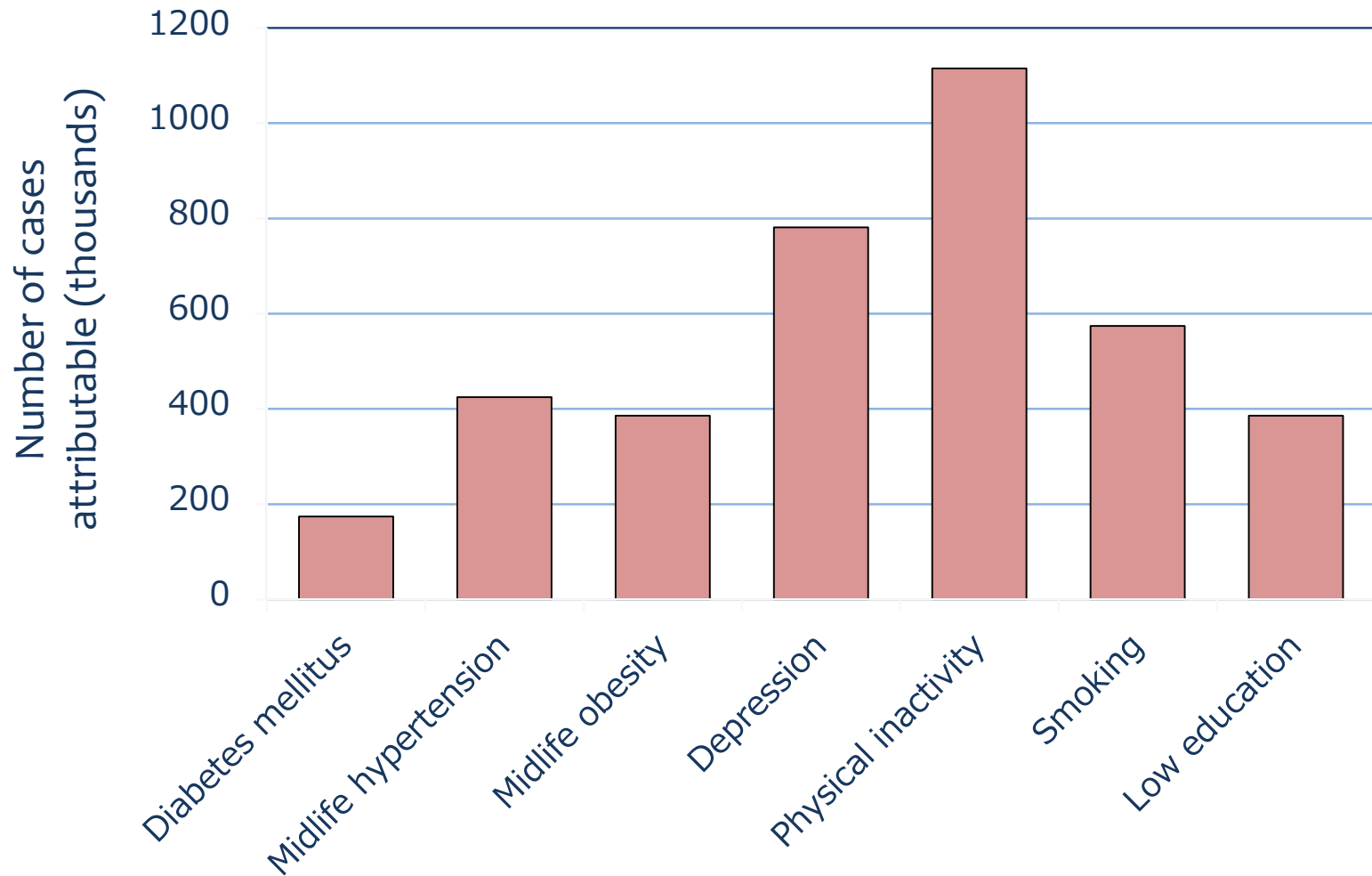
Activity is the best medicine

Can exercise, social interaction and the Mediterranean diet really help to keep the cognitive decline of Alzheimer's disease at bay?

Deweerd S, Nature 2011



Alzheimer's disease cases attributable to potentially modifiable risk factors in the USA



Potential Mechanisms of Exercise

Cardiovascular Health

- Improves body composition
- Improves the lipid profile
- Aid in the prevention and control of hypertension
- Peak and prevents hyperglycemia and decreases insulin resistance
- Decreases the levels of inflammatory markers
- Increased capillarization
- Decreased cerebral hypoperfusion
- Consequent increase in brain oxygenation levels

Neurotrophic factors

- Improve protective neurotrophines (such as BDNF and IGF-1)
- Production of endorphins and serotonin
- Increased neurogenesis
- Facilitate synaptogenesis

Brain Health

- Reduce disorder protein deposition
- Increases brain volume
- Stimulates neurogenesis and synaptogenesis
- Decreases neuronal death

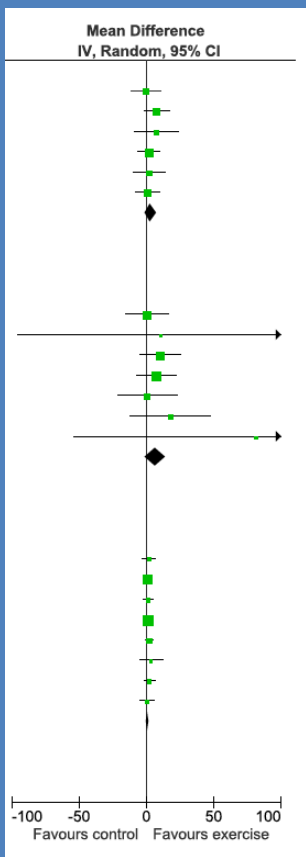
Physical Health

- Improves aerobic resistance
- Increases muscular mass
- Increases bone density
- Decreases body fat
- Improve coordination and balance
- Decrease the risk of falls

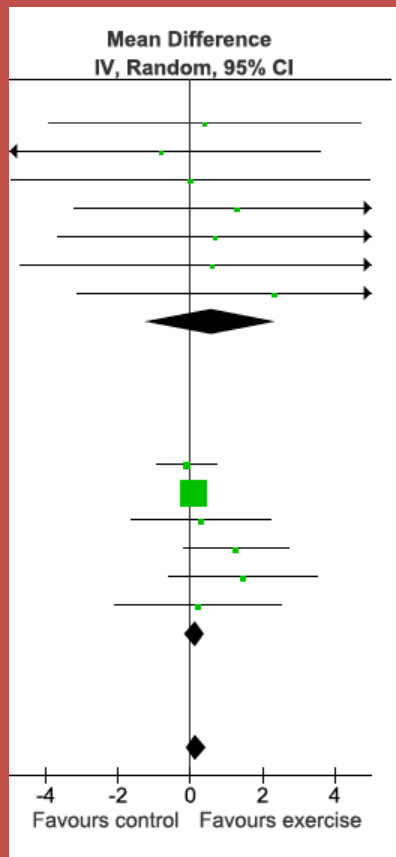
Kirk-Sanchez, N. J., & McGough, E. L. (2014). Physical exercise and cognitive performance in the elderly: current perspectives. *Clinical interventions in aging*, 9, 51.

The Effect of Exercise Training on Cognitive Function in Older Adults with Mild Cognitive Impairment: A Meta-analysis of Randomized Controlled Trials

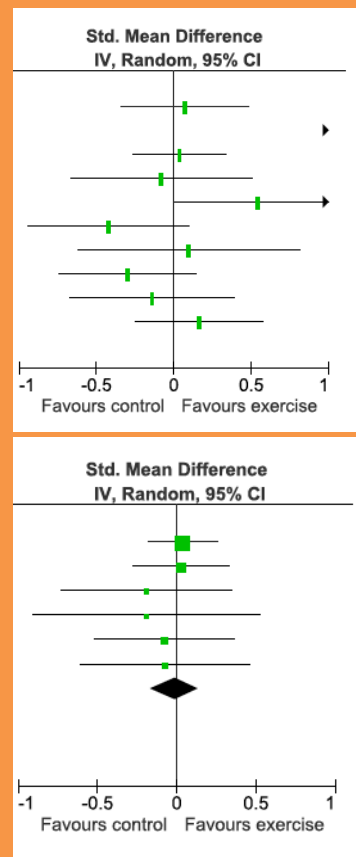
Executive function



Processing speed

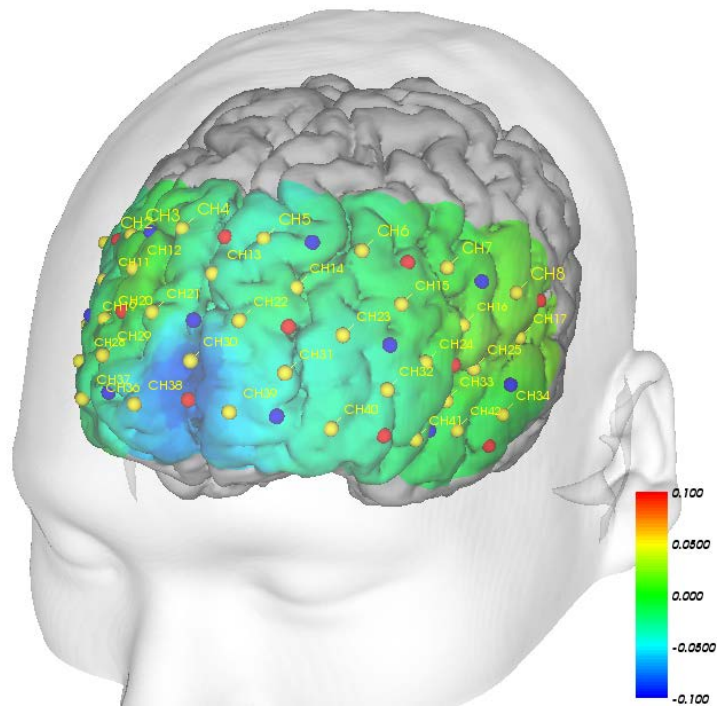


Memory

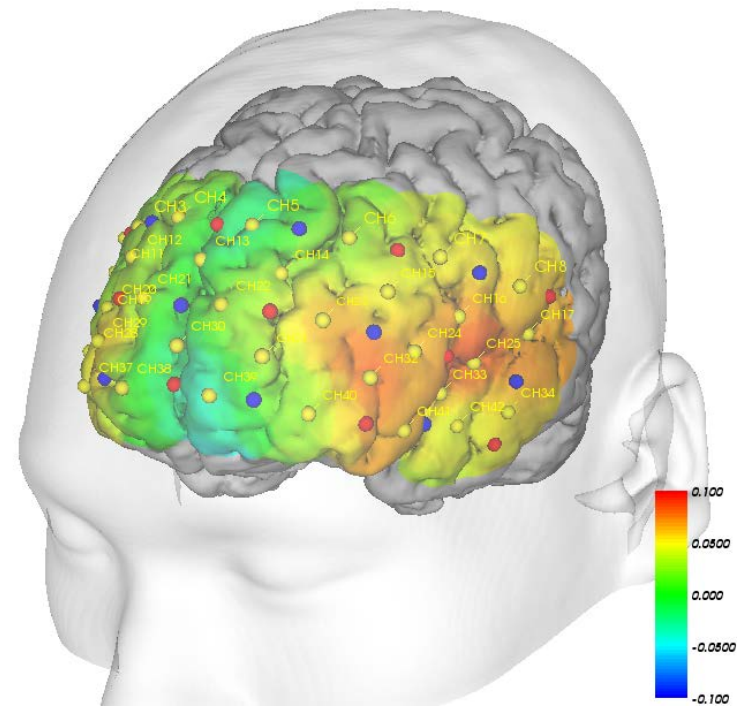


New Exercise Program for Improving Cognitive Performances

Aerobic Exercise



COGNICISE



Effects of COGNICISE on Cognitive Performances

Subjects: 308 older adults with MCI

Design: RCT

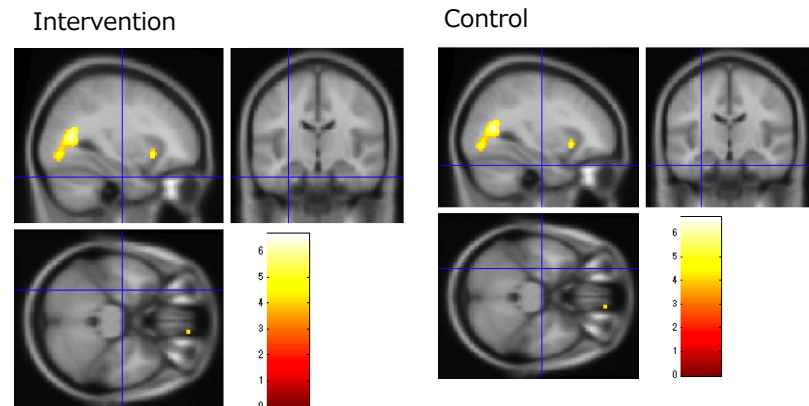
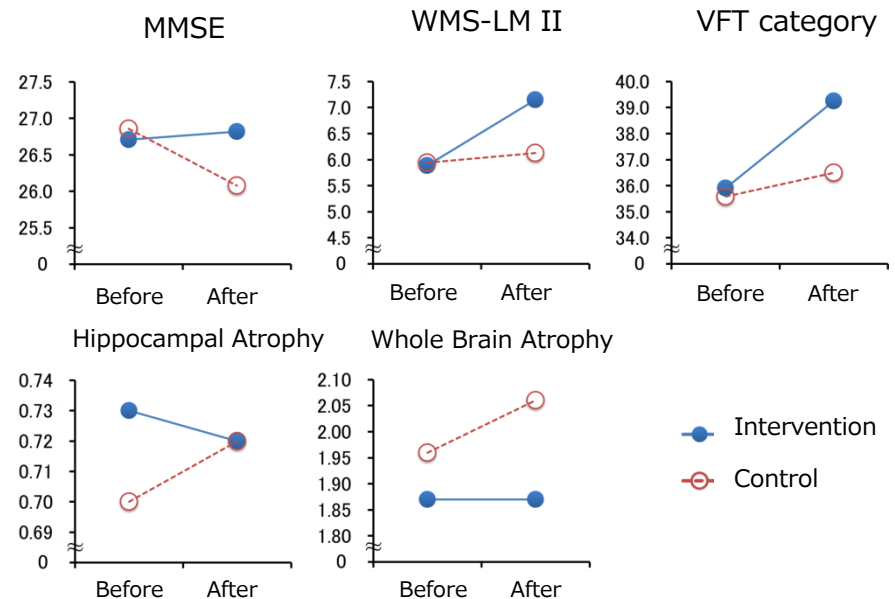
Setting: Community

Intervention:

Multicomponent exercise program
10 months, weekly, 90 min/session

RESULTS:

1. Mini-mental state examination, $p < .01$
2. Wechsler Memory Scale-logical memory II, $p < .01$
3. Verbal Fluency Test, $p < .01$
4. Hippocampal atrophy, $p < .05$
5. Whole brain atrophy, $p < .01$



Conclusion

1. To prevent dementia, early detection of MCI in the community is a critical issue
2. Exercise, especially COGNICISE, may be useful to maintain cognitive functions in MCI subjects



Thank You!

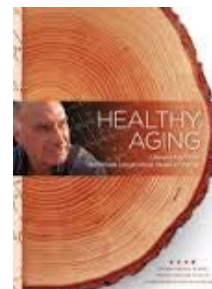


Exercise Your Brain

Hippocampus hypertrophy and asymptomatic AD



The Nun Study



BLSA: Baltimore Longitudinal Study of Aging

