



## **NON-PHARMACOLOGICAL INTERVENTION FOR DEMENTIA: PHYSICAL ACTIVITY, COGNITIVE ACTIVATION, AND BRAIN HEALTH**

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### **Abstract**

Aging can increase the risk of physical and mental morbidity, but these age-related declines can be reversed by the maintenance of physical activity and exercise. A recent studies have shown positive association between regular participation in physical activity and a variety of cognitive benefits. Current results of randomized control trials showed the effect of exercise and/or physical activity on cognitive functions in the healthy and mild cognitive impairment (MCI) older adults. It is important that these non-pharmacological interventions are provided systematically to MCI individuals for preventing dementia in the community.

Our research team performed a randomized trial to test long-term supervised multi-component intervention for improving cognitive function among older adults with MCI.

The multi-component program includes aerobic exercise, muscle strength training, and postural balance retraining, which are conducted under multitask conditions to stimulate cognitive functions. We concluded that the cognitive stimulations during exercise improve or maintain cognitive performances, at least partly, in the older adults with amnesic MCI.

This presentation will also discuss our research related to the health implications associated with the pattern of physical activity. We have been conducting a longitudinal interdisciplinary study on physical activity and health benefits. The primary research aims are to determine what type of activity is most effective in promoting health, important factors determining whether people who continue the necessary physical activity delay aging. We found physical activity was associated with multiple aspects of cognitive functioning, suggesting that the quality of the habitual physical activity may be important factors for cognitive benefits. We also found that inactive older adults showed negative efficacy in the medial and inferior frontal gyrus, middle temporal gyrus and parietal gyrus regions compared to high active group. Our findings suggested that PA and higher aerobic fitness levels are associated with better brain and cognitive health for older adults.

Physical activity, Exercise, Cognitive function, Dementia, Aging

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Dr. Park is currently Professor of Health Promotion Program in the department of Health care and science, at Dong-A university, Visiting Scientist of the Japanese National Center for Geriatrics and Gerontology. He graduated from the Dong-A University, College of Sports Science in Republic of Korea with his undergraduate degree and a MSc. degree. He moved to the Japanese National Institute Health and Nutrition to further his research training.

He obtained a Ph.D. degree in Physical and Health Education at the University of Tokyo, Graduate school of Education. Exercise physiologist and applied gerontologist. After two year's working as a research/academic assistant to pursue postgraduate training at

the University of Tokyo, Dr Park moved to the Tokyo Metropolitan Institute of Gerontology as a research scientist. Since 2010 he had Chief Investigator in the Section of Motor Function Activation at the Center for Gerontology and Social Science, Japanese National Center for Geriatrics and Gerontology until 2014.

Research interests include the assessment/analysis of habitual physical activity and development of comprehensive assessment systems for older adults in the community. He has been conducting longitudinal interdisciplinary studies on the habitual physical activity and health implications of older adults. As a result of this, he has consulted and advised internationally for numerous organizations on the quantitative assessment of physical activity using wearable monitors and the development of analytical system/techniques for assessing physical and cognitive function for the promotion of health in older adults. His research focus is to enable the elderly to lead a healthy independent life without declining to a state that requires long-term care, particularly on the early screening and intervention of dementia and frailty, and development of feasible preventive strategies for independent life.