



Managing Cognitive Function and Physical Activity in Elderly with Disabilities

Eunjae Lee^{1,2}, **Seung-Taek Lim*^{2,3}

1. *Institute of Sports & Arts Convergence (ISAC), Inha University, Incheon, Republic of Korea*
2. *Waseda Institute for Sport Sciences, Waseda University, Saitama, Japan*
3. *College of General Education, Kookmin University, Seoul, Republic of Korea*

***Corresponding Author:** Email: limdotor@gmail.com

(Received 08 Apr 2024; accepted 20 Apr 2024)

Dear Editor-in-Chief

The relationship between cognitive function and physical activity in elderly with disabilities is insufficiently understood. Most previous studies have focused on the association between cognitive function and physical activity and/or exercise in the general population of elderly. More than one billion people, or 15% of the world's population, have some form of disability (1). The number of people with disabilities continues to rise due to an aging population and an increase in accidents and chronic illnesses. In addition, elderly may experience a decline in functional capacity due to physiological changes throughout their lives, resulting in impairments in basic activities of daily living and instrumental activities of daily living.

On the one hand, according to a 2017 Lancet study, there is a 90% chance that the life expectancy at birth of a South Korean woman in 2030 will be higher than 86-87 years, the same as the world's highest life expectancy in 2012, and a 45% chance that the life expectancy of a South Korean woman in 2030 will be the highest in the world (2). This phenomenon is of not only the elderly but also the elderly with disabilities need a lot of attention to improve their quality of life.

Moreover, the social distancing and isolation caused by the unprecedented COVID-19 pandemic had a profoundly negative impact on the health of all elderly.

Physical activity and/or exercise can promote not only healthy aging but also mental health in elderly. In particular, physical activity improves cognition, executive function, and independent functioning in mild cognitive impairment and dementia, and psychological well-being in dementia (3). An independent association was found between physical activity and cognitive function in Korean elderly, with participants who did not meet recommended moderate-to-vigorous physical activity levels 1.63 times more likely to have cognitive decline than those who did (4). The study of meta-analyses to compare different physical activity and exercise interventions for Alzheimer's disease in detail, suggests that physical activity and/or exercise can improve cognition in elderly with Alzheimer's disease, but the concomitant effects of high-frequency interventions on cognitive function were not greater than those of low-frequency interventions (5).

Research on the physical activity and cognitive function of elderly with disabilities, as opposed to



the general population, is very scarce. Most research on elderly with disabilities and physical activity has focused on physical functioning rather than cognitive functioning.

We investigated physical activity and cognitive function in elderly with disabilities. We found that Korean elderly with disabilities who did not meet the recommended physical activity time had about 2.29 times greater cognitive decline compared to those who met the recommended physical activity time. Besides, participants who exercised less than once a week experienced about 1.22 times greater cognitive decline compared to those who exercised more than once a week.

Elderly without disabilities who do not meet recommended PA levels are 1.63 times more likely to experience cognitive decline (4), the odds ratio was even more pronounced in the elderly population with disabilities (OR = 2.29, 95% CI = 1.32-3.97), emphasizing the importance of increasing physical activity and/or exercise for this population.

Physical activity and/or exercise is very important for elderly, whether they have a disability or not. Furthermore, the number of elderly exposed to cognitive decline and dementia continues to grow, making it important to pay attention and manage for them.

Acknowledgements

This work was supported by the Ministry of Education of the Republic of Korea and the Na-

tional Research Foundation of Korea (NRF-2022S1A5B5A16055088).

Conflict of interest

The authors declare that they have no competing interest.

References

1. WHO (2023). World Health Organization. World Report on Disability Summary (online). <https://www.who.int/publications/i/item/WHO-NMH-VIP-11.01>. Accessed August 19, 2023.
2. Kontis V, Bennett JE, Mathers CD, Li G, Foreman K, Ezzati M (2017). Future life expectancy in 35 industrialised countries: projections with a Bayesian model ensemble. *Lancet*, 389 (10076):1323-35.
3. Nuzum H, Stickel A, Corona M, Zeller M, Melrose RJ, Wilkins SS (2020). Potential Benefits of Physical Activity in MCI and Dementia. *Behav Neurol*, 2020:7807856.
4. Lim ST, Jung YZ, Akama T, Lee E (2020). Physical Activity Amount and Cognitive Impairment in Korean Elderly Population. *Brain Sci*, 10(11):804.
5. Jia RX, Liang JH, Xu Y, Wang YQ (2019). Effects of physical activity and exercise on the cognitive function of patients with Alzheimer disease: a meta-analysis. *BMC Geriatr*, 19(1):181.