

The outcomes of physical activity and health education on cognition level in sedentary seniors

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Dear Editor,

It is perceived that there is an association between physical activity and dementia rate reduction according to epidemiological studies. However, the results from clinical trials are a subject of controversy. Despite some trials finding any benefits between physical activity and cognitive complaints, the others revealed moderate positive impacts between 12-month lifestyle intervention and cognitive performance (1). Considering the upward trend in life expectancy, the numerous risk factors affect seniors' health. In addition, the ability of individual life in elders is declined during their late life due to physical and functional incapacitation (2). Several studies are revealed that steady physical activity has a diminishing effect on the progress of this public health concern. However, there is no definite result on the effect and its difference in association with lifestyle interventions.

In this paper, we aimed to perform a brief review on investigations of the outcomes of physical activity and health education on cognition levels in sedentary seniors.

Groessl et al. performed a multisided randomized controlled trial (RCT) study among 1635 randomly assigned sedentary old men and women to evaluate physical activity's effect on the quality of life. Physical performance was measured by evaluating the ability of chair standing, balance, and 400-meter walk. Quality of well-being is measured by a scale ranging from 0 (death) to 1.0 (asymptomatic, optimum functioning). They resulted that however both groups declined in quality of life over time, and physical activity intervention could lead to a slower decline in quality of life (3). It was the same conclusion as Fielding et al. made in their study (4).

Larson et al. performed a prospective cohort study by including 1740 individuals older than 65 years who scored 25 or more in the cognitive ability screening instrument (CASI). The cases were followed for 6.2 years and the authors concluded that the cases with three times exercise or more in a week had less rate of Alzheimer's disease development. They concluded that regular exercise is associated with a delay in Alzheimer's disease development (5).

Pahor et al. ran a multicenter randomized clinical trial among 1635 sedentary men and women aged 70 to 89 years who had physical limitations but were able to walk 400 meters. 818 cases underwent physical activity intervention (twice a week in a center and 3-4 times a week at their home) including aerobics, resistance, and flexibility training. On the other hand, 817 cases underwent health education programs consisting of upper extremity stretching exercises in older adults. They finally resulted that a structured, moderate-intensity physical activity program could reduce major mobility disabilities over 2.6 years in comparison with a health education program (6).

Karsemeijer et al. performed a meta-analysis including 10 studies to evaluate the probable positive effects of combined cognitive and physical exercise training on cognitive function in older adults with mild cognitive impairment or dementia. A small to medium positive effect of combined cognitive-physical interventions were found in the primary analysis for older adults with mild cognitive impairment and dementia equally. Furthermore, it has a moderate to a larger positive effect on activities of daily living and a small to medium for mood in the older adults mentioned above (7). The same results were concluded by Erlenbach et al. who performed a systematic review and meta-analysis too. Their collective

findings suggest that light physical activity may benefit cognition across adulthood (8).

Jannique et al. performed a systematic review and meta-analysis including 23 RCT studies to evaluate the effect of exercise on older adults' cognition. They concluded that however, the majority of studies didn't show any effective aspect of exercise, benefits of exercising have been observed in cases with and without cognitive decline. It is worth noticing that this study ran in 2008 and various existing limitations might be the reason behind the conclusion difference between this study with the others mentioned above (9).

Zhang et al performed a study in China including sedentary young females. They ran a single-blinded, six months, randomized controlled pilot trial to assess the potential effects of training and health education. They concluded that only health education could reduce sedentary behaviors, While those with training plus health education resulted in a more marked cognition function improvement (10).

According to this survey, most studies did not find a remarkable outcome in home-based intervention in comparison with exercise intervention. The effect of both interventions on cognition and functional capacity was almost equal and the benefit of exercise was more than the other one in movement improvement. In this study, physical activity intervention is programmed as walking, resistance training, and flexibility exercises and the health education included educational workshops and upper-extremity stretching the participants were followed up for 24 months. Findings from the statistical analysis demonstrated that no significant differences in the results of the two aforementioned interventions were found in the rate of cognitive decline. Nevertheless, physical activity intervention improved executive performance in adults over 80 years with the lower physical ability (1).

Cognition could be affected by several factors especially aging. Potentially, cognitive skills as complex skills will show a decline as far age rises. There are several studies demonstrating the establishing etiology and preventive interventions for this matter of concern in elderly patients. Physical activity is a well-known intervention that improves several human health indexes, in addition, health education could improve health indexes, too. So it has been hypothesized that physical activity and health education could improve cognition in sedentary elderly patients. they both do their parts in direct or indirect pathways. Health indexes improvement could lead to a better cognitive level, which could be resulted from regular physical activity or/and health education. Several studies revealed that physical activity and health education could improve the cognitive level, directly or indirectly. But there is a matter of controversy yet since some studies found no significant effect. However, those studies that demonstrated a positive effect are more in number and power than those that don't, this theory is yet to be proven. Future RCTs should consider ethnicity, history of physical activity, potentially cognition affecting medical issues, and gender, to better investigate this issue.

Keywords: physical activity, health education, cognition

Deceleration

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Ethical approval

No need

Consent for publication

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