Journal of Clinical Case Reports

4Active Intervention for Promoting Physical Activity and Cognitive Flexibility in Older Adults

Weiyun Chen, University of Michigan
Zhanjia Zhang, Peking University
Bruno Giordani, University of Michigan
Janet Larson, University of Michigan

Abstract

Background: Physical activity is essential to delaying cognitive decline and preventing cognitive impairment in older adults. We used the Social Ecological Model as the framework for designing an interpersonal-level and individual-level multicomponent PA intervention, 4Active, to increase PA participation and cognitive function in older adults living in retirement communities. The purpose of this study was to examine the effectiveness of the 4Active intervention to promote physical activity and cognitive function in older adults.

Methods: Fifty-eight eligible older adults with a mean age of 83.83 years (76.3% females) living in two retirement communities voluntarily participated in this study. Forty subjects participated in the two-level 4Active intervention for 12 weeks and 18 subjects were in the control group. Each participant was pre- and posted tested on physical activity (PA) and cognitive flexibility. Data were analyzed by means of descriptive statistics, independent sample t-tests, and Analysis of Covariance (ANCOVA) with repeated measures

Results: ANCOVA with repeated measures indicated that the intervention group had overall higher levels of the total PA and the moderate PA than the control group ($F = 8.71$, $p = 0.005$, $\eta2 = 0.141$; $F = 8.85$, $p = 0.004$, $\eta2 = 0.143$). In addition, the intervention group showed pronounced increases in light PA (walking) over time, while the control group decreased light PA from baseline to the post-test ($F = 6.91$, $p = 0.011$, $\eta2 = 0.115$). Regarding the results of cognitive flexibility, the ANCOVA with repeated measures revealed that intervention group had overall higher levels of cognitive function compared to the control group ($F = 7.88$, $p = 0.007$, $\eta2 = 0.129$). Both groups showed significant increases in cognitive flexibility over time ($F = 6.68$, $p = 0.013$, $\eta2 = 0.112$), but the intervention group had a smaller change in cognitive flexibility over time compared to the control group ($F = 6.75$, $p = 0.012$, $\eta2 = 0.113$).

Conclusions: The study indicated that engaging in technology-enhanced multicomponent exercises is an effective approach to contributing to physically active and cognitively competent aging.

Keywords: Ideal Clinic; infrastructure; professional nurses

Biography

Weiyun Chen is Associate Professor and Director of Physical Activity and Health Laboratory in School of Kinesiology at University of Michigan. She obtained Ph.D degree in Pedagogy at the University of Alabama in 1997. Her expertise is designing and testing physical activity interventions for youth and adults. Her research focuses on developing innovative physical activity intervention strategies for promoting physically active habits to enhance physical and cognitive health and psychological well-being in youth, adults, and older adults.

3rd International Conference on Nursing Science and Technology
Webinar | February 21, 2022

Citation: Weiyun Chen, 4Active Intervention for Promoting Physical Activity and Cognitive Flexibility in Older Adults, Nursing 2022, 3rd International Conference on Nursing Science and Technology, Webinar | February 21, 2022, 2165 7920-12:05-05