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1 June 2021

Interactive video games improve cognitive performance in older adults with memory complaints

The decrease in cognitive performance that occurs with aging leads to decreased health status and quality of life, and may lead to older adults experiencing memory complaints, associated with poor executive function and delayed recall.

A new study titled, *Efficacy of interactive video gaming in older adults with memory complaints: A cluster-randomized exercise intervention*, published in *PLOS ONE* journal found that playing interactive video games was more effective than traditional exercise in improving cognitive performance and functional capacity in older adults with subjective memory complaints.

Researchers at the University of Cape Town's (UCT) Research Centre for Health through Physical Activity, Lifestyle and Sport (HPALS) in the Department of Human Biology said the study aimed at determining the effects of a 12-week active gaming intervention, using the X-Box 360 gaming console with Kinect Sports games, on cognitive performance in South African older adults with subjective and objective memory complaints. The X-Box Kinect Sports video gaming software was comprised of 6 games namely: ten-pin bowling, boxing, track and field, table tennis, beach volleyball and soccer.

"Previous studies have also illustrated benefits of physical activity on cognitive performance and physical function in healthy functioning older adults," said Associate Professor Tracy Kolbe-Alexander and honorary academic at UCT. "However, few studies have investigated whether active gaming can improve cognitive function in individuals with subjective memory complaints."

The researchers measured cognitive performance, physical function and fitness of 45 older adults aged over 72 years from six different retirement homes in Cape Town through a series of tests before and after a 12-week trial.

Kolbe-Alexander said twenty-three participants attended two, one-hour interactive video game sessions per week, while the other 22 took part in low intensity conventional multimodal supervised exercise sessions.

"The participants who performed the interactive video games showed significant increase in cognitive performance and functional ability compared to those who did the conventional

exercises. They also improved significantly in physical performance such 6-minute walk, dynamic balance, timed up and go and functional reach," she said.

Professor Vicki Lambert, director of HPALS and co-author, said: "To our knowledge, few studies have shown improvements in cognitive or executive function in older adults with subjective memory complaints participating in interactive video gaming."

According to Lambert, one of the possible reasons for this improvement may be related to the fact that the interactive video gaming involves memory sequences in executing the game, while more conventional seated exercise with instruction and supervision is comprised of simply following instructions from an exercise leader.

"The interactive gaming package used for our study requires not only many fitness components such as flexibility, agility, balance, lower body strength and endurance, but participants must remember and be able to use gaming controls to play," she said.

"Interactive video gaming has the potential to increase physical activity in older adults as it may overcome many physical activity barriers for older adults such as built up suburbs and cities that may not be suitable for activities such as walking and cycling, inclement weather and social isolation," said Udhir Ramnath, UCT's PhD candidate and lead-author.

Ramnath commented: "Interventions of this nature will be sustainable and beneficial to older adults should volunteer workers be trained to conduct sessions at retirement homes and community centres."

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