



Preventing falls in older people with home-based exergaming

A RESEARCH BRIEF BY THE UNSW AGEING FUTURES INSTITUTE

Scalable prevention strategies are required to address the issue of falls, as one in three people aged over 65 years will fall annually. A large clinical trial has found that active-play videogames can prevent falls in older people living in the community.

BACKGROUND AND CURRENT ISSUE

Falls are a significant public health issue, contributing to mobility-related disability and loss of independence, and are a leading cause of injury related hospitalisation and death [1]. With a steadily ageing population, scalable and effective fall prevention strategies are needed to address the growing impact of falls. Using 20 years of falls research knowledge, we developed an exergame system to train both physical and cognitive functions that are known fall risk factors. In addition to easily integrating physical and cognitive exercise, exergaming incorporates motivational elements to make exercise engaging and enjoyable.

SUMMARY OF CURRENT RESEARCH

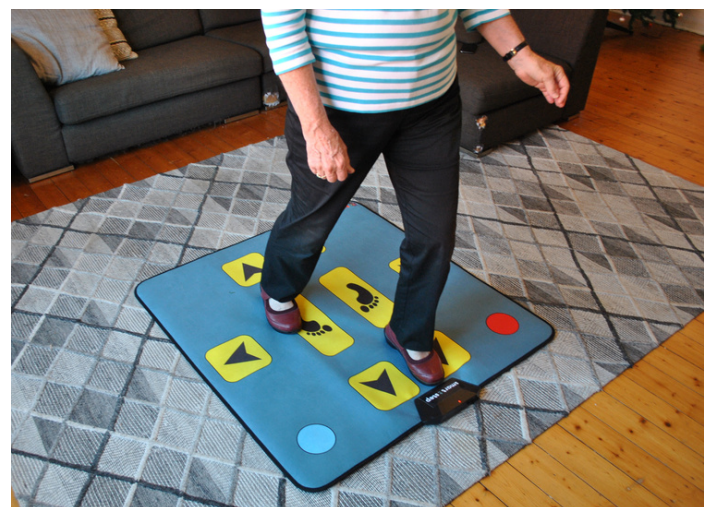
One in three people over the age of 65 living in the community will experience a fall every year, rising to one in two over the age of 80 years. The best evidence for fall prevention in the community is balance challenging exercise [2], yet, adherence is often low, especially in the longer term. We decided to gamify balance challenging exercise by developing exergames that also challenge cognition. Our pilot studies showed our exergames significantly improved balance and cognitive functions, leading us to undertake this definitive trial for fall prevention [3].

RECOMMENDATIONS AND IMPLICATIONS

We conducted a clinical trial in 769 older people to test the fall prevention effects of exergame step training (playing games while taking quick and accurate steps on a wireless mat) [2]. We had a second intervention group play the games while seated at a desk, to test the effects of cognitive training alone. Participants had the exergame system installed in their homes and were asked to play for a total 120 minutes per week over a 12-month period, during which they reported monthly whether they had had a fall. We found those doing the step exergame training had 26% fewer falls than the control group. We also found a smaller proportion of fallers in group that did the cognitive training, which seems to be beneficial for previous fallers. These findings are encouraging as the training was safe and is easily scalable as a fall prevention strategy.

REFERENCES

1. World Health Organisation. Falls. 2021 26 April 2021; Available from: <https://www.who.int/news-room/fact-sheets/detail/falls>.
2. Sherrington C et al. Exercise for preventing falls in older people living in the community. *Cochrane Database Syst Rev.* 2019;1(1):CD012424.
3. Sturnieks, D.L., Hicks, C., Smith, N. et al. 2024. Exergame and cognitive training for preventing falls in community-dwelling older people: a randomized controlled trial. *Nature Medicine* 30, 98–105



ABOUT THE AUTHOR

Daina Sturnieks is Senior Lecturer in the Faculty of Medicine and Health at the University of New South Wales Sydney Australia and Senior Research Scientist at Neuroscience Research Australia. She has a PhD in human biomechanics (University of Western Australia) and has spent most of her career as a research scientist in the Falls, Balance and Injury Research Centre at Neuroscience Research Australia. Her research focuses on understanding biomechanical, sensorimotor and neurocognitive contributions to balance and falls in older people and clinical groups, and randomised controlled trials of novel interventions to prevent falls involving balance, stepping and cognitive training. She is active in translating and disseminating research evidence related to fall prevention.