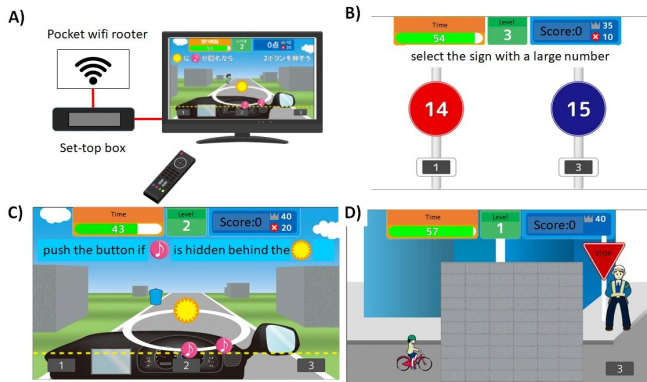


# New cognitive training game to improve driving skills among the elderly

22 May 2019



Credit: Tohoku University

The number of older car drivers worldwide is increasing, leading to accidents caused by age-related cognitive decline among drivers. Researchers at Tohoku University have developed a new cognitive training game aimed at improving road safety among elderly drivers. The game, Cognitive Training for Car Driving (CTCD), requires only a set-top box and a TV, and for users to play it regularly.

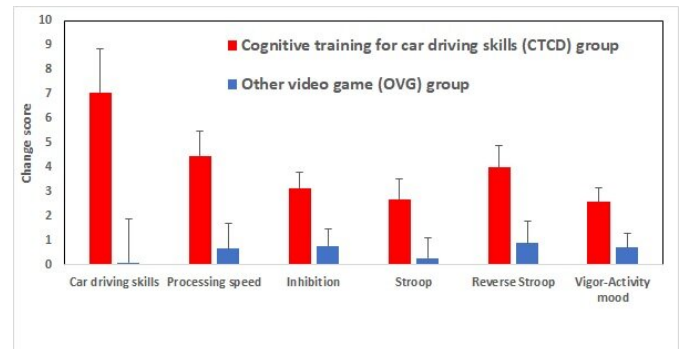
To investigate the effectiveness of CTCD on driving skills, the research team at the Institute of Development, Aging and Cancer, led by Dr. Rui Nouchi and Ryuta Kawashima, conducted a randomized controlled trial study (RCT).

Sixty adults between the ages of 65 and 80 were randomly divided into two groups—one group played CTCD while the other played other video games (OVG) for six weeks. They played for 20 minutes a day, for at least five days a week.

Car driving skills, cognitive functions and players' emotional states were measured before and after the six-week intervention period. The results showed that the [older adults](#) who played CTCD

had improved [car driving](#) skills, cognitive functions and felt more invigorated compared to those who played OVG (Fig2).

"These results extended our previous findings that regular use of a simple [cognitive training](#) game can benefit older adults who drive cars," said Nouchi. He added that the team now hopes to take the research further to investigate ways that CTCD can reduce road accidents among older drivers.



The summary of the results. The changed scores were calculated using the post-intervention score minus the pre-intervention score. Error bars were standard errors. Credit: Tohoku University

How the [game](#) works: Two signs with two numbers are presented on the TV screen. Participants are asked to select the sign with the larger number as quickly as possible. In the case shown in Figure 1B, the sign on the right is the correct choice.

In the dual attention training exercises, participants are asked to perform two tasks simultaneously.

For the first task (shown in Fig.1C), a stimulus (pink musical notes) moves along a circle. Participants are asked to push the button if the stimulus is hidden behind the mark (orange circle with a yellow

star). For the second task, participants are asked to identify an approaching target and push the button if the target is human. In the case presented in Figure 1C, participants do not push the button because the target is an obstacle.

In the speed prediction exercise (shown in Fig.1D), a target moves behind a wall from left to right on the TV monitor. Participants are asked to push the button when the target comes out from behind the wall.

**More information:** Rui Nouchi et al, Newly Developed TV-Based Cognitive Training Games Improve Car Driving Skills, Cognitive Functions, and Mood in Healthy Older Adults: Evidence From a Randomized Controlled Trial, *Frontiers in Aging Neuroscience* (2019). [DOI: 10.3389/fnagi.2019.00099](https://doi.org/10.3389/fnagi.2019.00099)

Provided by Tohoku University

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