

The reason is that DTTC training involves executive tasks that are the control of goal-oriented actions and adaptive behaviors. Additionally, VFT was also not significantly improved after DTTC training. It includes recalling tasks as their main elements; however, DTTC training does not involve recalling the task. This is considered the reason why the result of VFT was not significantly changed.

Previous studies reported that other “exergames,” based on Nintendo Wii Fit (Nintendo, Kyoto, Japan) or other devices, improved balance and leg muscle functions [23,24]. However, in these cases, the user needs control devices to capture motions and longer and more frequent exercise is required, compared with DTTC training, to obtain physical effects. DTTC overcomes these weaknesses and can offer comparable cognitive and physical benefits to users. Other previous studies have shown that a home-based dance device, using videogame technology, also improved the physical and cognitive parameters of fall risk in elderly people [25]. These home-based training tools are expected to increase the improvement of various functions and lead to fall prevention; our DTTC device is similar to these tools.

Limitations

There are several limitations to this study. First, the intervention effects in this study were not due solely to the DTTC training. That means the rhythmic stepping exercise involving cognitive ability in both groups also improves cognitive ability. Second, participants in both groups may have had higher motivation and interest in health issues and fall risk minimization than the general elderly population. An investigation into the effects of DTTC training on functions in frail, elderly adults is necessary, in the future.

Conclusions

In this study, the ANCOVA results of delta-TMT reveal that group × time interactions were statistically significant. They suggest that DTTC training is effective at improving executive cognitive functions in particular.

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Abbreviations

CG control group
DT dual task
DTTC Dual-Task Tai Chi
TG training group
TMT trail-making test
VFT verbal fluency test

Footnotes

Conflicts of Interest:

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