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Background

A slower reaction time (RT) performance is considered a risk factor for falls. Different approaches as a psychomotor intervention (involving neuromotor exercises) or the whole-body vibration (inducing neurophysiological changes) may reduce the risk of falls. Nevertheless, a combined program may promote greater gains. This study aimed to investigate the acceptability and the effect of two multimodal programs on RT in community-dwelling older adults fallers or balance-impaired.

Methods

A total of 37 participants (74.3 ± 5.2 years) were divided into two groups (3x/week): experimental group 1 (psychomotor intervention); experimental group 2 [EG2] (combined program: psychomotor intervention + whole-body vibration). The Deary-Liewald reaction time task assessed RT. Simple and choice reaction time [CRT] (ms) tasks were recorded under single and dual-task (DT) paradigms. DT cost was also computed.

Results

The attendance rate was 86.3%. Wilcoxon test comparisons revealed significant differences between baseline and post-intervention evaluations in the EG2. The improvement was observed in the variable 'CRT-DT', in which participants spent less time to perform the task (1026.0 ± 153.4 vs. 960.4 ± 160.9 , $P=0.040$). The correspondent effect size was medium ($r=0.33$). The DT cost was also decreased in CRT-DT by 3.9%. No significant differences between groups were found.

Conclusions

This study demonstrated that both programs were safe and highly attended. The results suggest that a combined intervention (psychomotor intervention + whole-body vibration) should be privileged to improve RT and reduce the risk of falls. Trial Registration: ClinicalTrials.gov Identifier: NCT03446352. Funding: This study was supported by the ESACA Project (Grant ALT20-03-0145-FEDER-000007) and by FCT (SFRH/BD/147398/2019).

Keywords: aging, falls, exercise, feasibility study.

Benefits of two twelve-week multimodal programs on reaction time in community dwellings at risk of falling: preliminary results

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