

Publication**A Novel Square-Stepping Exercise Program for Older Adults (Steplt): Rationale and Implications for Falls Prevention****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4597134**Author(s)** Giannouli, Eleftheria; Morat, Tobias; Zijlstra, Wiebren**Author(s) at UniBasel** [Giannouli, Eleftheria](#) ;**Year** 2020**Title** A Novel Square-Stepping Exercise Program for Older Adults (Steplt): Rationale and Implications for Falls Prevention**Journal** Frontiers in Medicine**Pages / Article-Number** 318**Keywords** Aging, Dual-task training, Gait, Mind-motor training, Rhythmic Auditory Stimulation (RAS), Variable practice, balance, rhythmic auditory cueing

The ability to effectively execute compensatory steps is critical for preventing accidental falls, and consequently stepping training is an essential ingredient of fall prevention programs. In this paper, we propose a concept for stepping training that aims to maximize training effects by taking into account recent research evidence and a precise dosing of training ingredients. The concept addresses motor as well as cognitive falls-related aspects, it is suitable for individual as well as group based training, and it does not require costly equipment. Theory and evidence behind all of the training principles is reviewed, and an example of an exercise protocol is described in detail. Participants are presented with stepping patterns which they have to memorize and implement on a mat. In order to enable investigation of dose-response effects, the difficulty level systematically and gradually increases session by session based on four principles: execution speed, pattern complexity, pattern length and execution in dual-/multi-tasking conditions. The presented concept can be used as a framework for the development of further prevention and/or rehabilitation stepping exercise programs. Further studies using this exercise regimen or modified versions of it are encouraged.

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