Effects of perturbation-based training on balance and falls in people with stroke: A systematic review

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Background: People living with stroke are at an increased risk of balance deficit and falls. Conventional balance training has been shown to be effective to improve balance and reduce falls in this population. A newer form of balance training, perturbation-based training (PBT), has been recently introduced to people with different neurological conditions. The effects of PBT on balance and falls in people with stroke, however, have not been systematically evaluated.

Purpose: The aim of this systematic review was to evaluate the effects of PBT on balance and falls in people with stroke.

Methods: Studies were identified with searches in the PubMed, EMBASE, CINAHL, COCHRANE, Medline, and PsyINFO. Randomized controlled trials that evaluated the effects of PBT compared to a control condition on improving balance, enhancing balance confidence, or reducing falls in people with a diagnosis of stroke were included. The risk of bias of each article was assessed based on PEDro score.

Results: Four studies (n = 166) were included in this systematic review. Two out of 2 studies showed that the PBT significantly improved balance measured by the Mini-Balance Evaluation Systems Test in people with stroke. No significant improvement in the Berg Balance Scale was reported in 2 studies. The PBT improved balance confidence in people with stroke in 1 out of 2 studies. No significant reduction in falls was reported in 1 study.

Conclusion: The PBT may improve balance in people with stroke. The effects of PBT on falls are uncertain due to limited evidence.