Gait adaptability therapy in people post-stroke: design of a randomized controlled trial

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Background:
Walking in everyday life requires the ability to adapt gait to the environment. This gait adaptability is often impaired after stroke, which may contribute to the increased risk of falling after stroke. To improve safe community ambulation, gait adaptability training seems beneficial to this population.

Aim:
The present study protocol is designed to compare the effects of treadmill-based C-Mill therapy and the overground FALLS program. We hypothesize that C-Mill therapy will result in better outcomes than the FALLS program due to its expected higher amount of movement practice per session of equal duration.

Methods:
Fifty persons after stroke with gait and/or balance deficits will be randomly allocated to either the overground FALLS program or treadmill-based C-Mill therapy. Assessments before and after intervention, as well as 6 weeks and 1 year after intervention, will include:
- walking speed (10MWT) and gait adaptability (Interactive Walkway)
- balance (BBS) and balance confidence (ABC-Scale)
- amount of movement practice (number of performed steps; with the instrumented treadmill or by observation of video registrations)

Discussion:
The present study will unveil the relative importance of the amount of movement practice per session as a key aspect for effective intervention programs directed at improving gait adaptability and walking speed after stroke.