Effects of the ReacStep training program on balance recovery and fall risk factors in older people: An assessor-blinded randomised controlled trial

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ABSTRACT NO. 4622

INTRODUCTION

Problem : Trips and slips are **the leading of falls** in community-dwelling older people in Australia *(AIHW, 2025)*

Evidence : Reactive balance training (RBT) has shown **reduction in falls** over the time *(Sharma et al 2026, Devasahayam et al 2023)*

Gap : Despite growing interest and evidence of RBT, accessible low-cost methods remain **limited** for clinicians

This study : Evaluated efficacy of **ReacStep** training program

RESEARCH QUESTION?

Does a *6-week low-cost reactive balance training program* ***(ReacStep)*** improve balance recovery and fall-related outcomes in older adults?

METHODOLOGY

Two-arm, 1:1 allocation, Single-center, Parallel-superiority, Intention-to-treat **(ITT)**

88 healthy and community-dwelling older adults **(aged ≥ 65)**

Primary outcome: Lab-induced trip & slip (8-m walkway) at week 8;

Secondary outcomes:

- Max step length,
- Choice-stepping reaction time (CSRT),
- Falls diary (12 months via SMS), enjoyment, safety

ReacStep Program

(45-minutes, once/week, 6 weeks)

Tether-release reactive step training
(Progressive tether-loading)

Volitional slip training
(Progressive slip distance)

Home-based strength exercise
(2 sets/day, 2 day/week, 6 week)

Intervention group (n = 43)
- ReacStep training
- Home-based strength exercise

Control group (n=45)
- Home-based strength exercise

STATISTICAL ANALYSIS

- Fall risk factors – Analysis of Covariance (**ANCOVA**)
- Laboratory falls - **Modified Poisson** regression
- Daily life falls - **Negative binomial** regression

KEY FINDINGS

Excellent adherence (90%) & **enjoyment** in ReacStep group

Task-specific improvements in reactive balance (tether-loading) during training

Significant improvements in **maximum step length** and **choice stepping reaction time (CSRT)**

No improvement in lab-based falls (trips/slips) or 12 month daily-life falls

Increased near-fall experiences (trips) in ReacStep group but fall rate remains equal in both groups

CLINICAL IMPACT AND FUTUE DIRECTION

ReacStep is **feasible, accessible** and **safe**

Improve measures of **reactive stepping**

Transfer to real-world falls requires more **ecological training approaches**

Connect with me

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