

Does age affect time to restabilize during a balance test?

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Introduction

- Forward falls are the most common fall direction and pose a concern for all ages.
- Understanding mechanisms of forward fall stability in varying age groups may help us reduce future falls.

Methods

1. Participants were positioned into a forward lean using a harness hooked to a magnet.

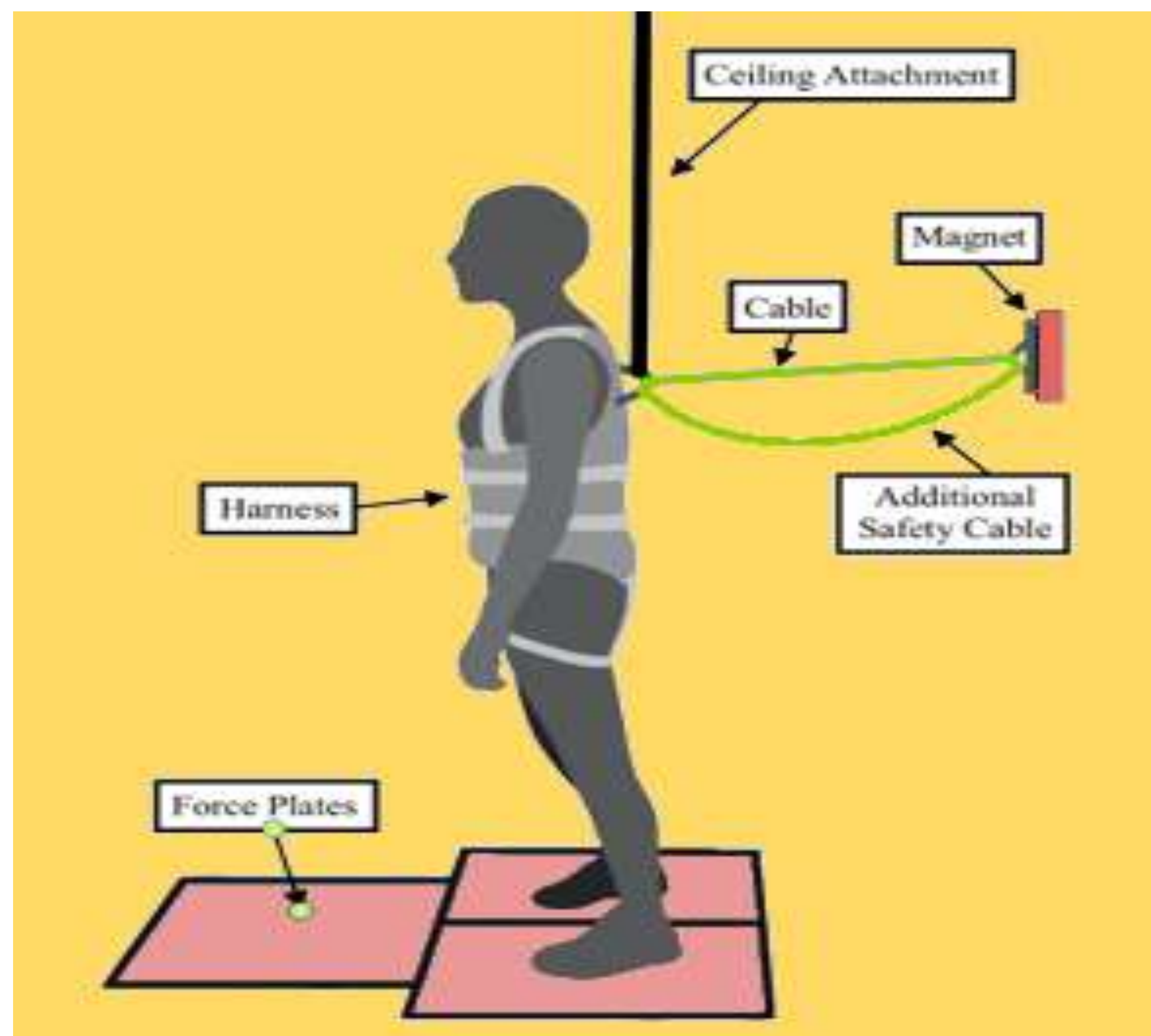


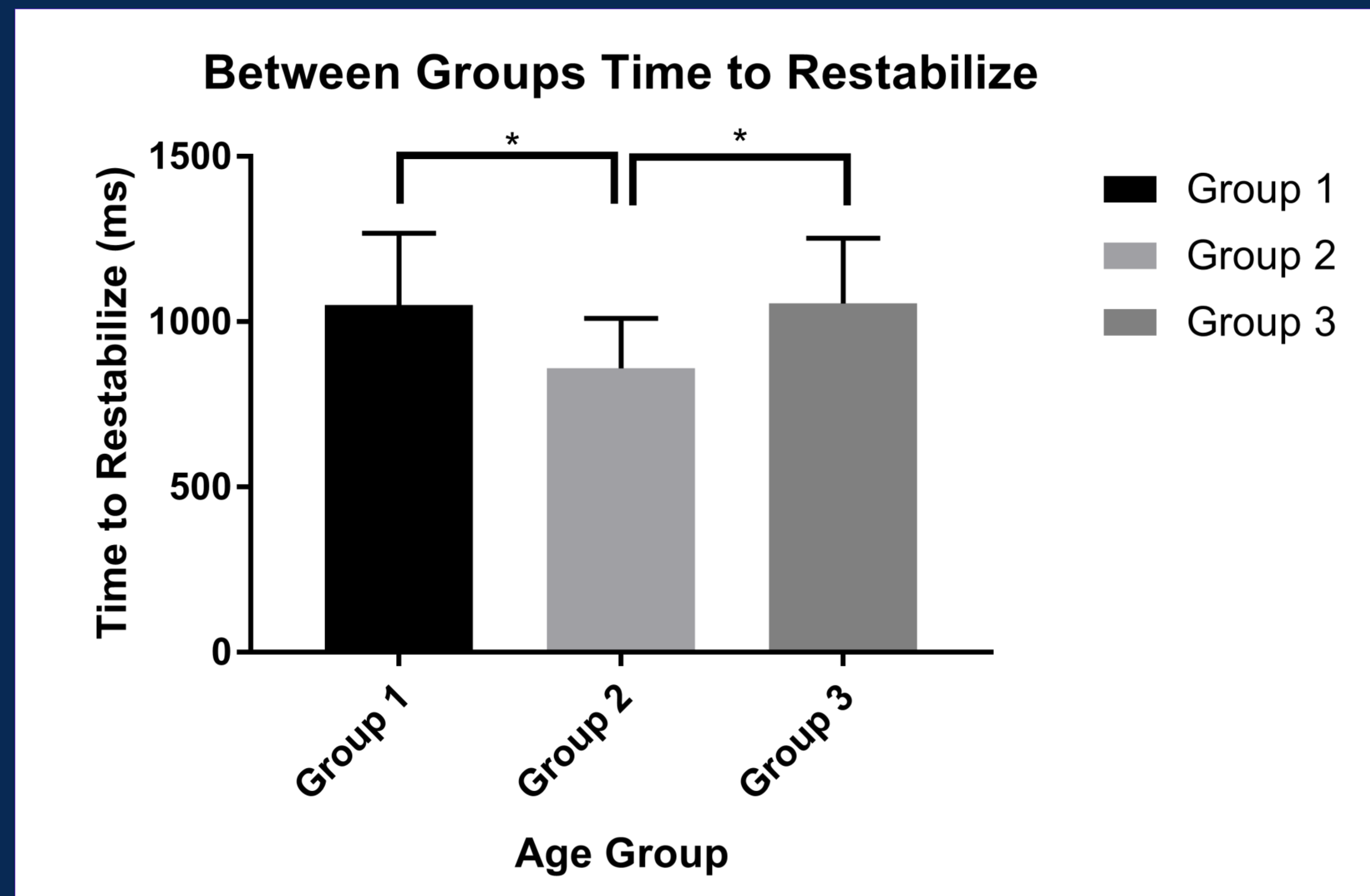
Figure 1. Lean and release visual setup.

2. 24 trials of forward, unanticipated perturbations (falls) were performed.
3. Time to restabilize was evaluated from initial foot contact on the front, force plate.
4. Time to restabilize = net anterior-posterior center of pressure velocity.

Research

Balance recovery time was different across age groups.

Figure 2. Time taken to restabilize across age groups.



Age groups: group 1 (18-24 years old), group 2 (25-30 years old), and group 3 (40-58 years old).

The time to restabilize was significantly different across age groups, $F(3, 28) = 3.213, P = 0.040$.

Results

Descriptive statistics

- Group 1: 18-24 years old, n= 11
- Group 2: 25-30 years old, n=11
- Group 3: 40-58 years old, n=7

One-way ANOVA

The time to restabilize was significantly different across age groups, $F(3, 28) = 3.213, P = 0.040$.

Pairwise comparisons using the least significant difference

- group 1 to group 2: 0.2 ms (95% CI, 0.286 to 0.354), $p = 0.023$

- group 2 to group 3, 0.2 ms (95% CI, .0159 to 0.385), $p = 0.034$

Limitations

- We did not test individuals ages 60 years and older, a population with greater risk for balance recovery concerns.

Future Directions

- To address this limitation, we will replicate this assessment in older adults.

Conclusion

- These preliminary results suggest that balance recovery time was different across age groups.

Study conducted with funding from the American Heart Association (20POST34990005: SAH)