

Secondary Effects of Stair Striping on Stair Negotiation

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Introduction

- Stairs can be concern for injury.
- A proposed strategy to reduce fall risk involves enhancing visual contrast of the stairs' edge and face.
- In evaluating the above strategy we also sought to determine:

- (1) Does staircase striping affect walk speed?
- (2) Do mobile phone distractions decrease handrail use?

Methods

- Black and white stripes were placed perpendicular on the stair face on the first and last steps for intervention and black strips placed on the step's edge.
- Four motion sensor security cameras recorded ascent and descent.
- Data collection included walk speed, handrail proximity, handrail use, and distractions (e.g., mobile phone use).

Results

- Stair striping did not increase walk speed ($p=.616$).
- Data are presented as mean \pm standard deviation
- Individuals who had mobile device distractions decreased handrail use.
- Distracted individuals used the handrail ($90/(90)/2,827$) = 3.1% of the time.
- Individuals who were not distracted used the handrail ($483/(483)/7,629$) = 5.4% of the time.

While stair striping did not alter walk speed, handrail use on stairs decreased among individuals who were distracted by a mobile device.

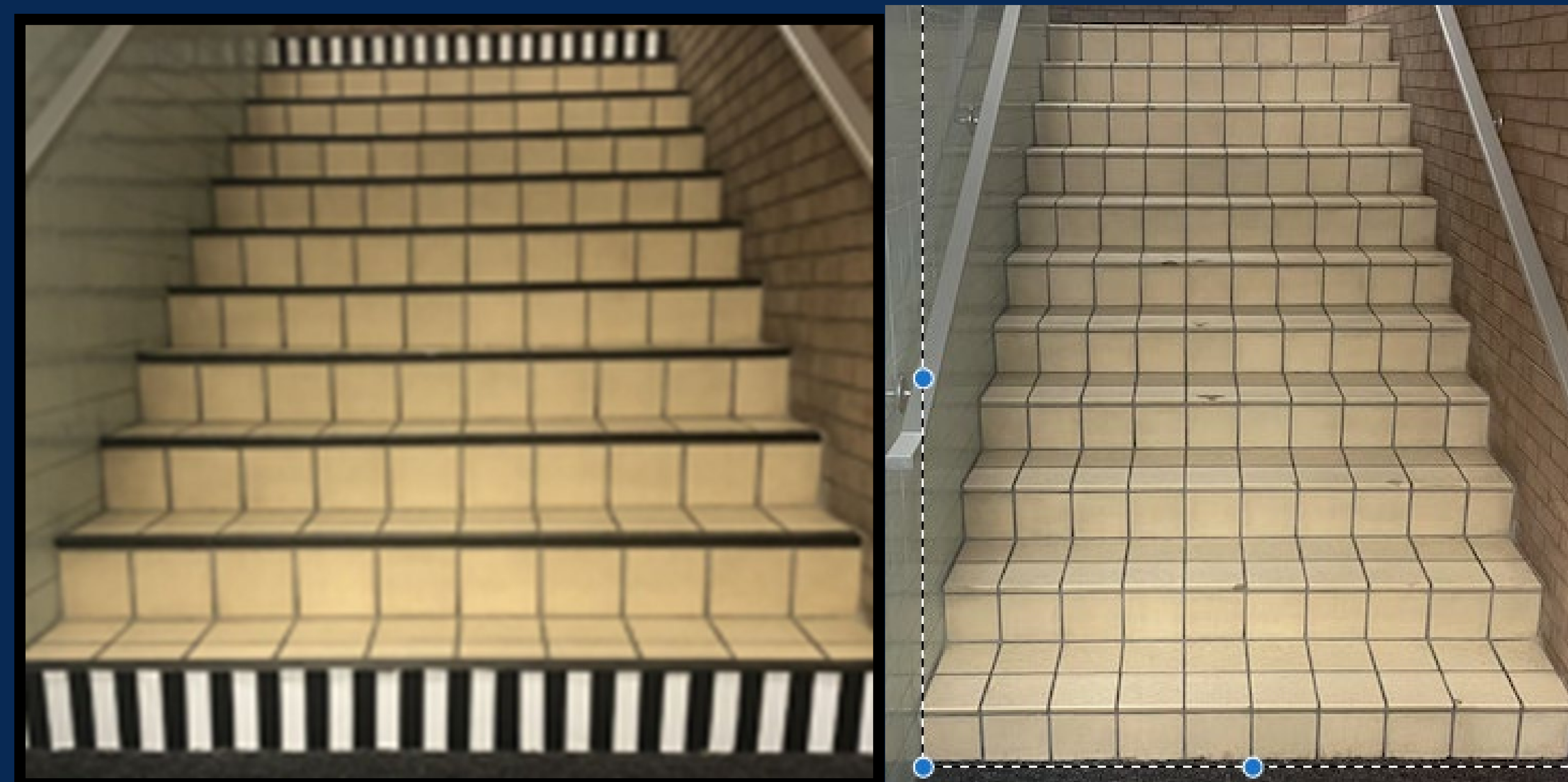


Figure 1. Ascending staircase intervention with visual contrast on each stair (left). Ascending staircase control (right).

Using a difference of proportions z test, there was a significant reduction of handrail use for individuals who were distracted by a mobile device ($p=.014$).

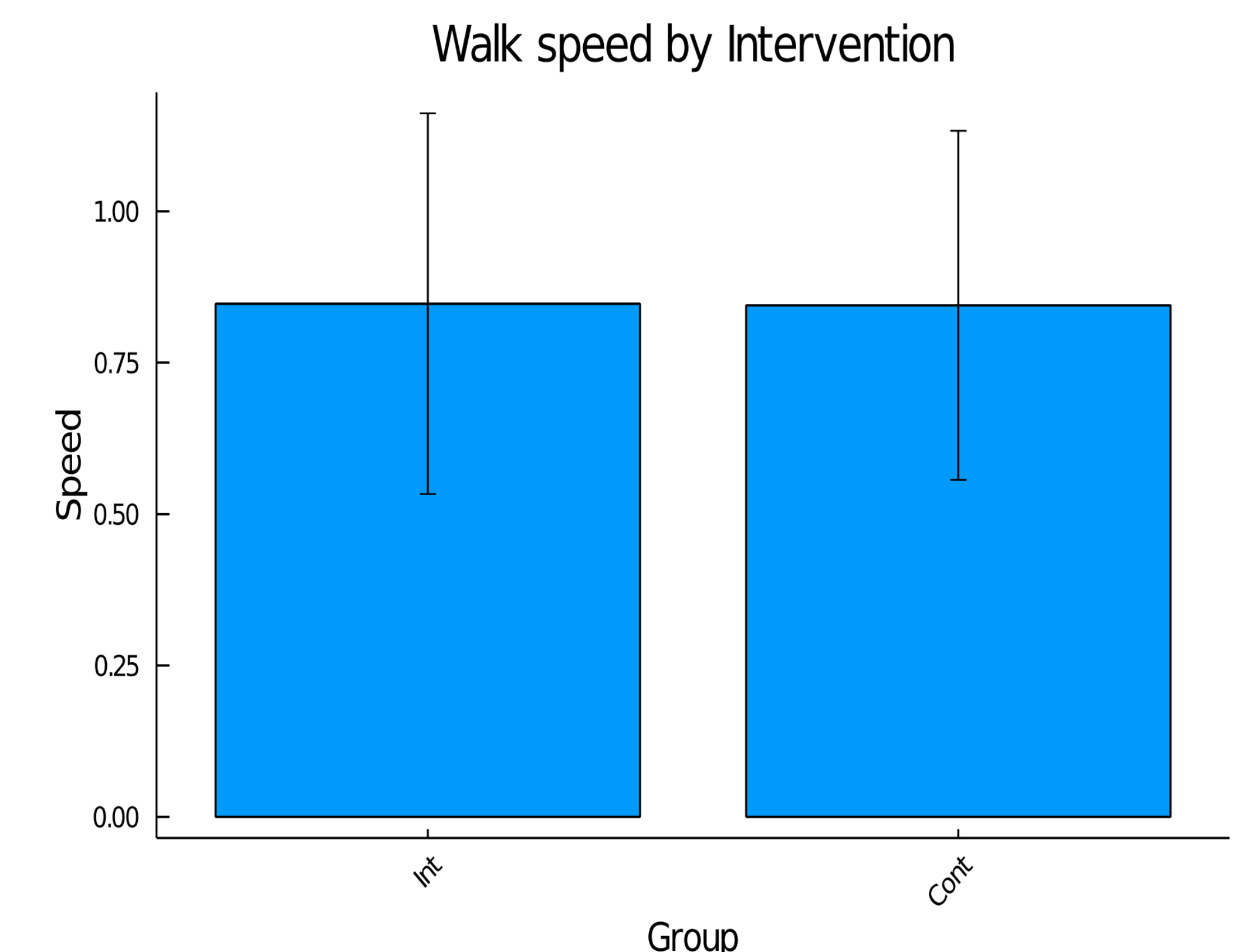


Figure 2. There was no difference in walk speed (m/s) between the intervention (int) and control (cont) conditions, $p=.616$.

Limitations

- COVID-19 affinity to touch handrails
- A proportions z test comparison limitation is that not all the observations might be considered independent due to the same people going up the stairs multiple times.

Implications

- Distractions during staircase negotiation may prevent handrail use
- Distractions could limit handrail use if an impending fall does occur.

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