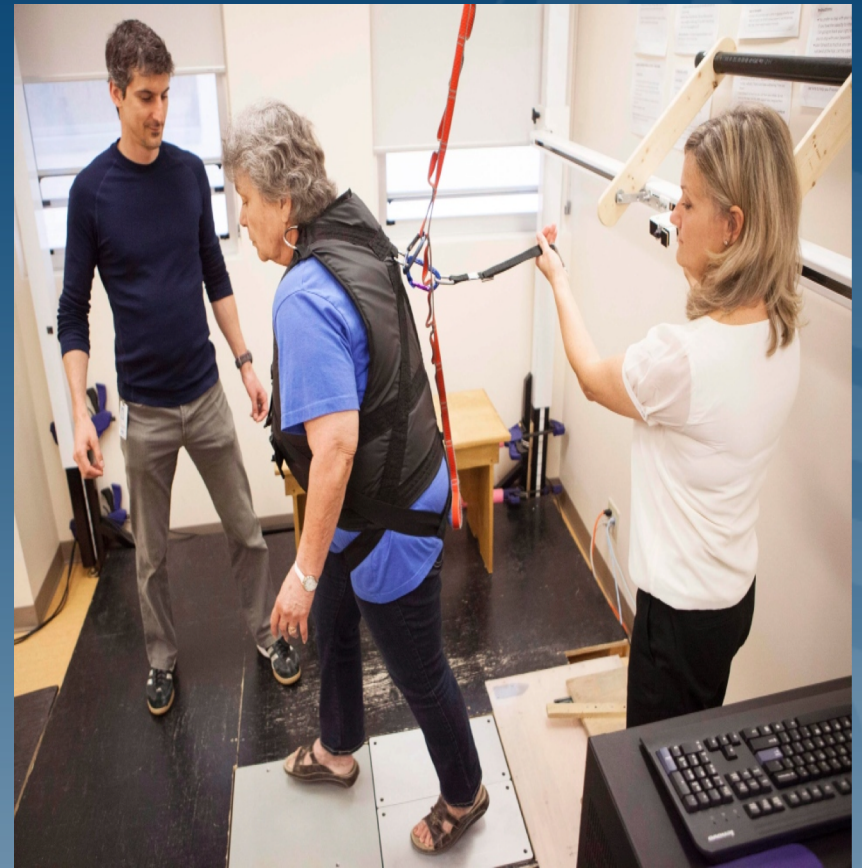


Response Inhibition and Reactive Balance in Older Adults

Derek England & Dr. Bolton





Introduction

- ❧ Response Inhibition (RI)
 - ❧ Suppression of automatic & unwanted actions (Verbruggen & Logan, 2008)
- ❧ Cognitive function & balance control linked (Liu-Ambrose, Nagamatsu, Hsu, & Bolandzadeh, 2013)
- ❧ RI plays role in balance control (van der Wardt 2015; Saverino, 2016)

Stroop Effect

YELLOW BLUE ORANGE
BLACK RED GREEN
PURPLE YELLOW RED
ORANGE GREEN BLUE
BLUE RED PURPLE
YELLOW RED GREEN



Introduction

- ❧ Cognitive decline in older adults linked to fall risk (Mirelman et al, 2012)
- ❧ Underlying mechanisms of cognitive ability unknown (Bolton, 2015)
- ❧ Balance control tests too simple to require RI (Dakin & Bolton, 2018)
- ❧ Stop-signal reaction time correlates with compensatory balance response in young adults (Rydalch, Bell, Ruddy, Bolton, submitted to Gait & Posture)

Purpose

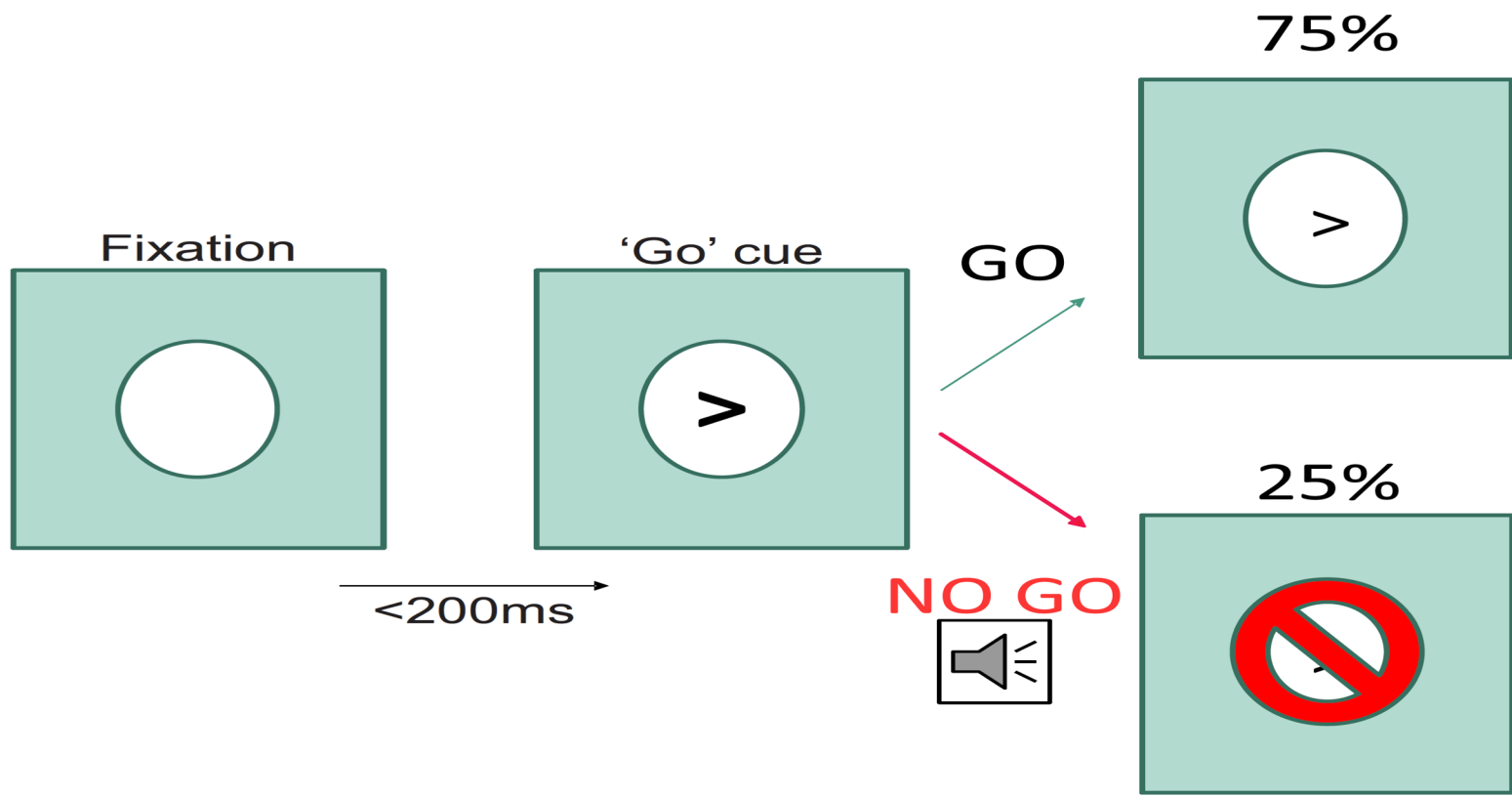
- ∞ Explore the possibility of a relationship between a postural recovery task requiring response inhibition and a seated cognitive task that measures response inhibition in older adults
- ∞ Is nature of RI generalizable and similar to results in young adults?



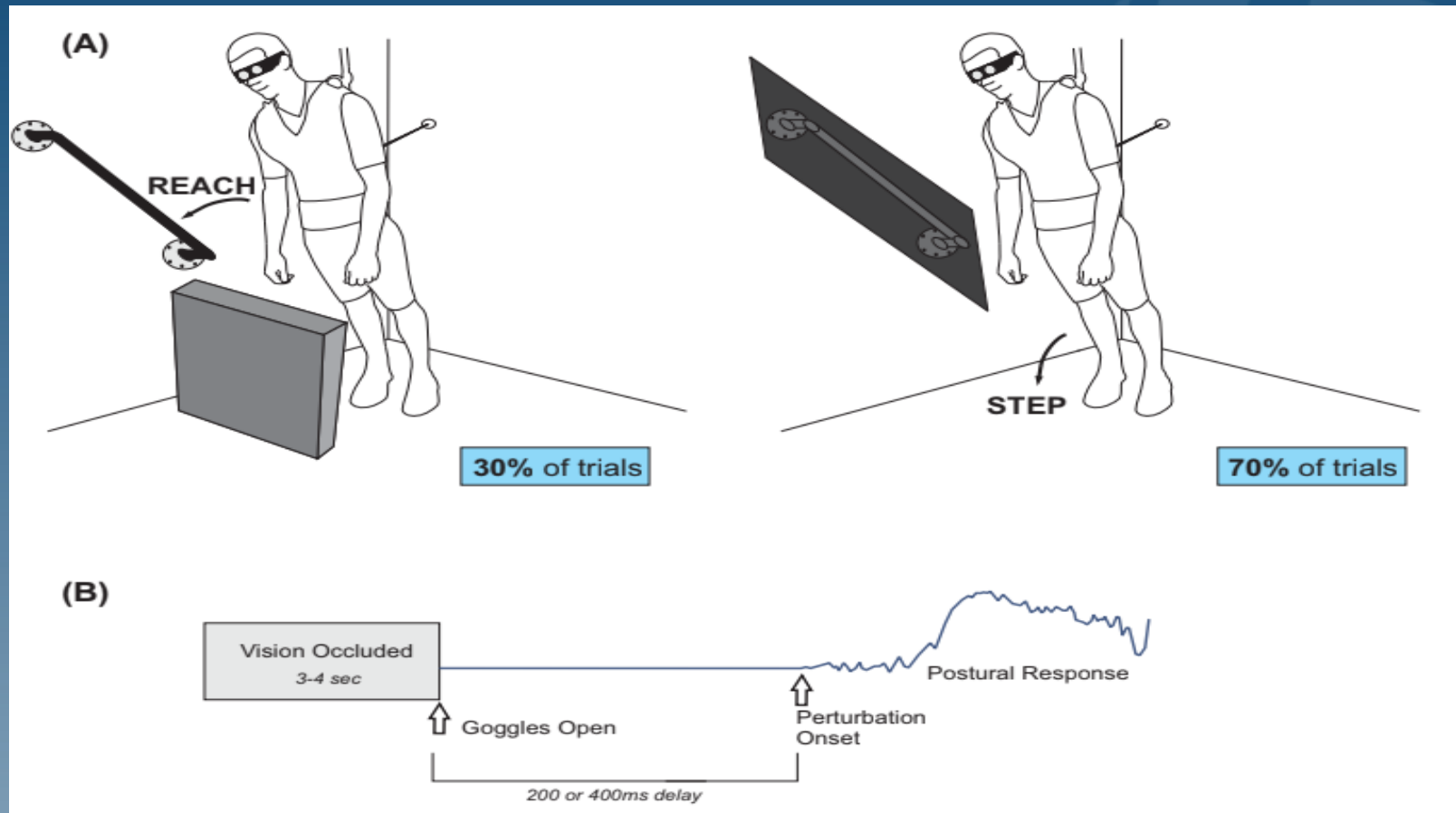
Participants

- ❧ 19 participants 50-85yrs of age
- ❧ Performed stop signal task followed by reactive balance testing

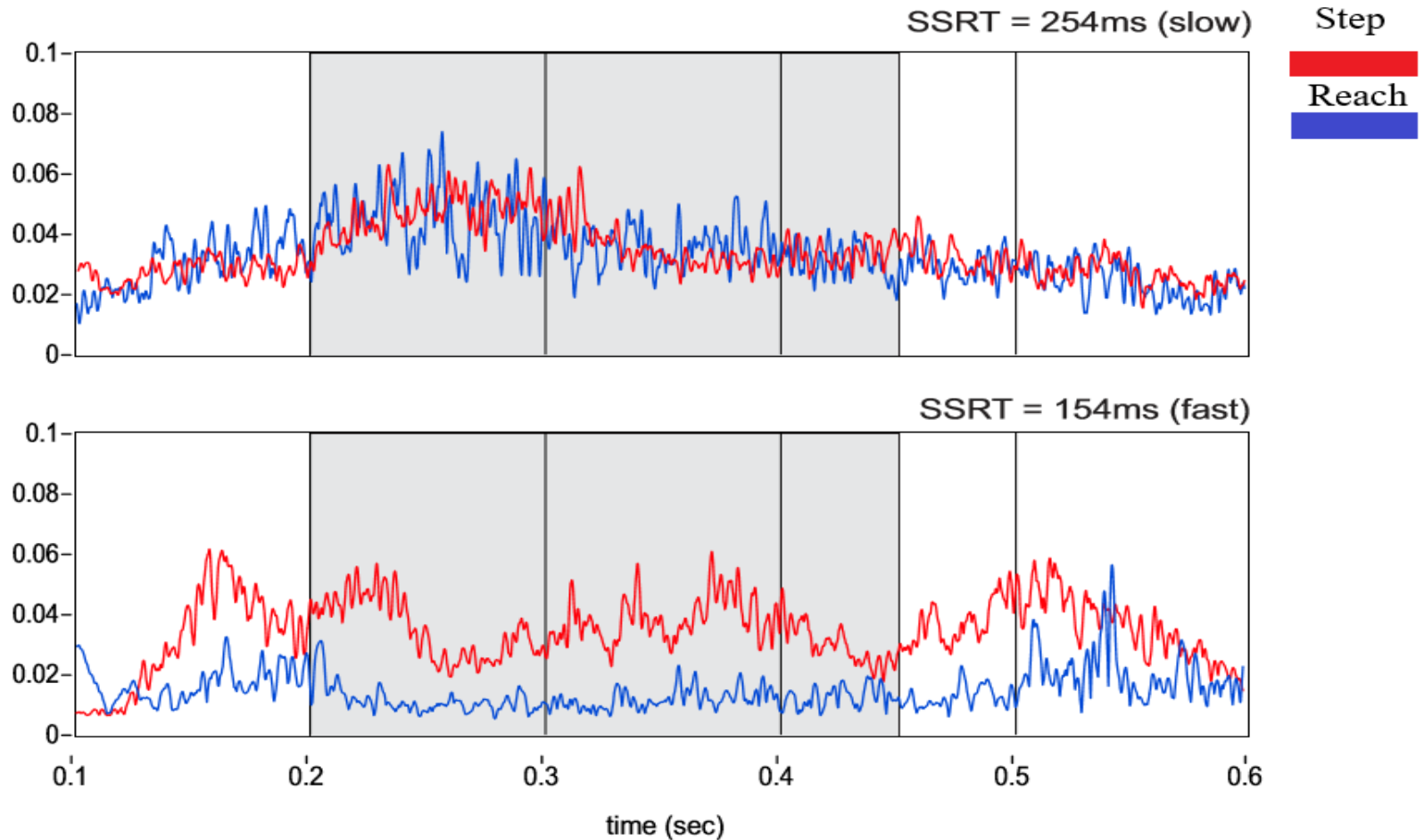
Stop Signal Task



Reactive Balance Testing

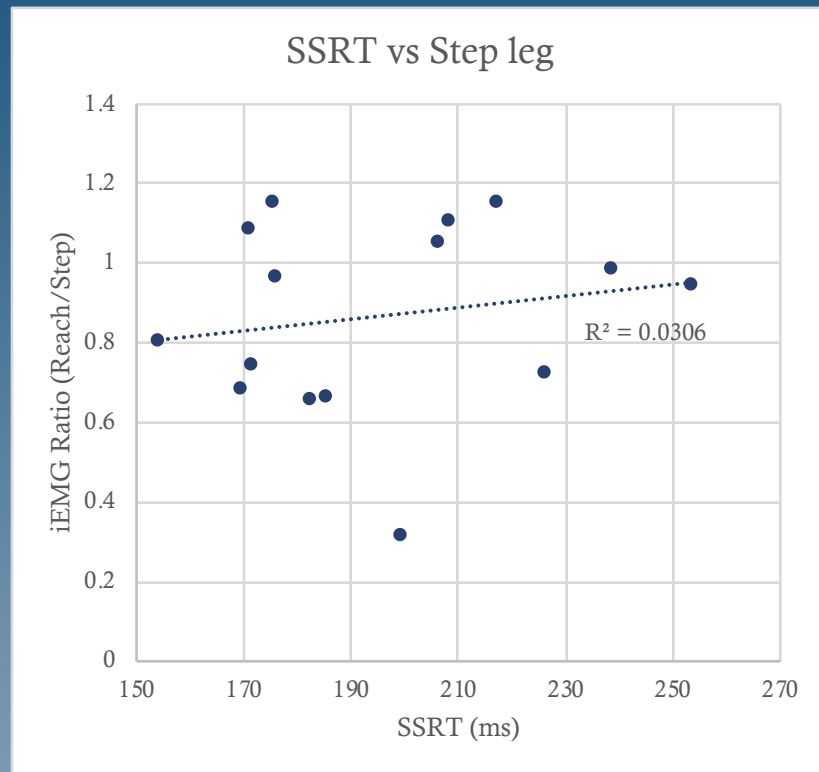


Results

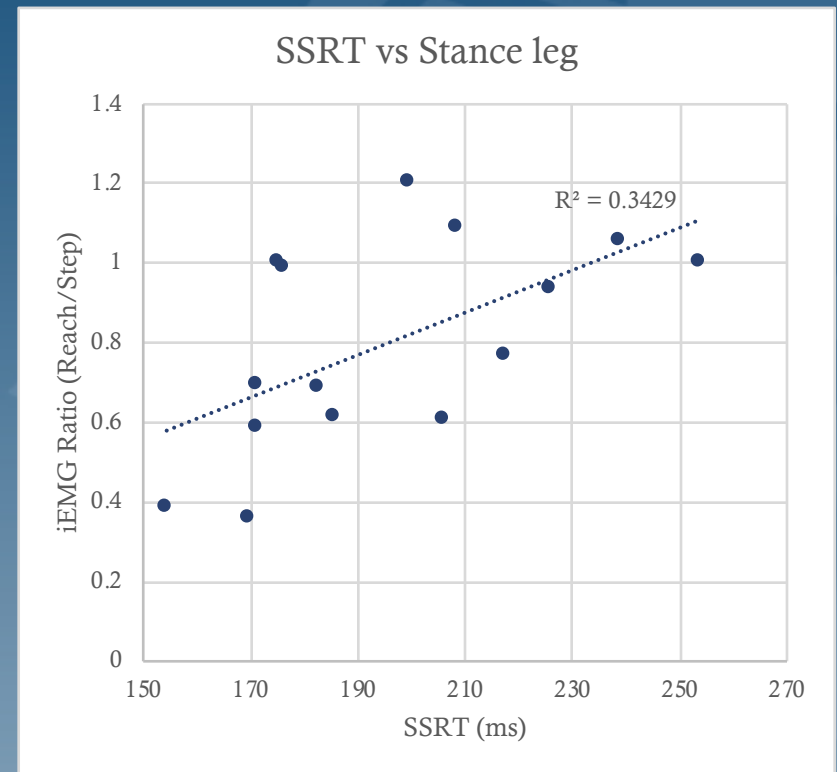


Results

$r = 0.18, p = 0.267$



$r = 0.59, p = 0.011$



Discussion

- ❧ SSRT & muscle response in stance leg are correlated
- ❧ Similar results to young adults
 - ❧ Slower (Cohen, Nutt, & Horak, 2011; Thelen et al., 2000)
- ❧ SSRT from seated task compares to whole-body task
 - ❧ Clinical application

Thank You

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