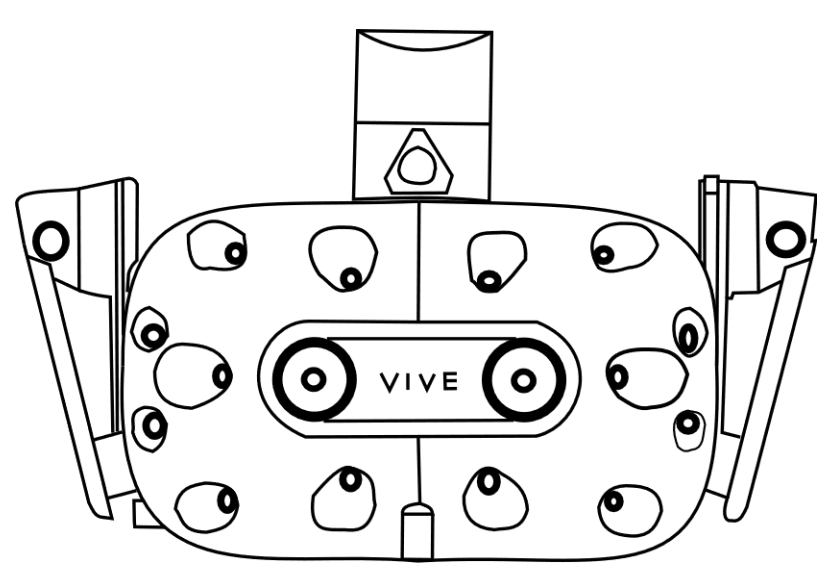


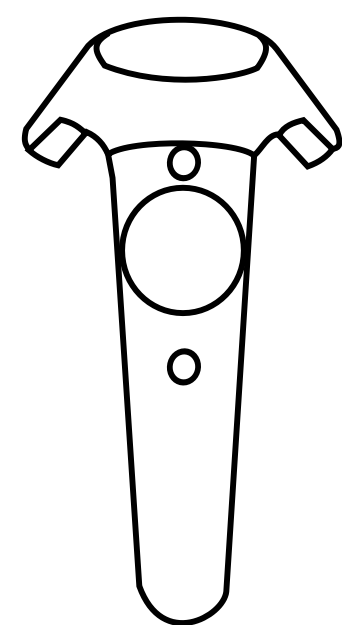
Introduction

- To date, existing measures of binocular rivalry have been conducted with stationary observers.
- Eye movements can affect binocular rivalry switch rate (1-2)
- Retinal stability is maintained during movement by reflexive eye movements (3-4)
- How is the rivalry rate affected by movements in humans?
- The **purpose** of this study was to explore binocular rivalry dynamics during locomotion in humans.

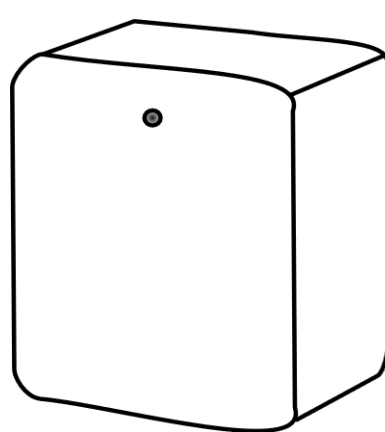
Methods



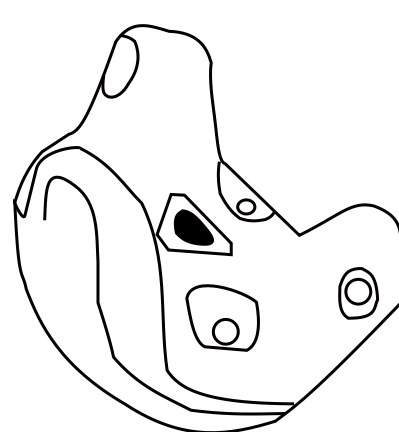
• HTC Vive Headset



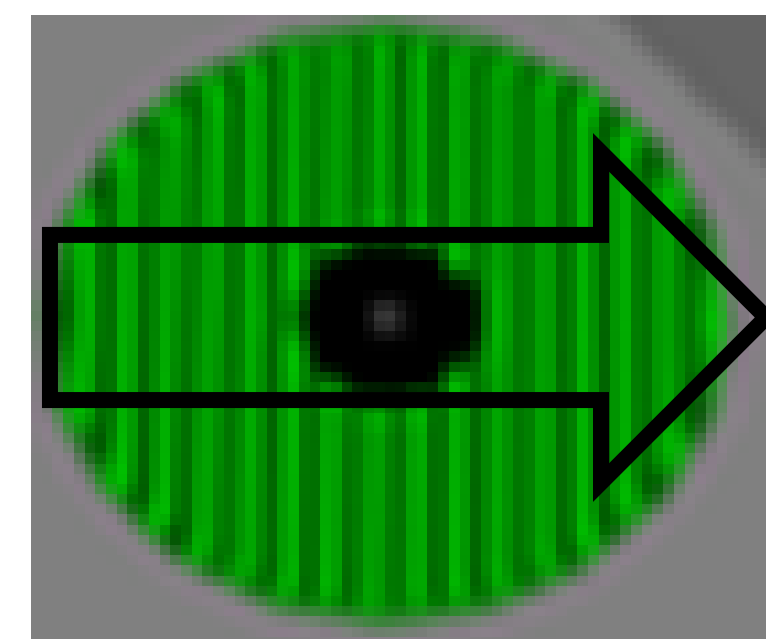
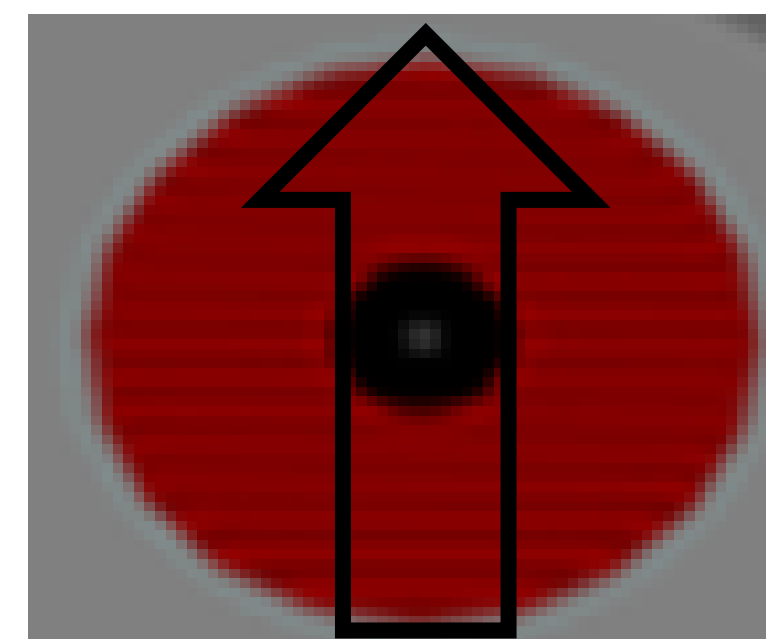
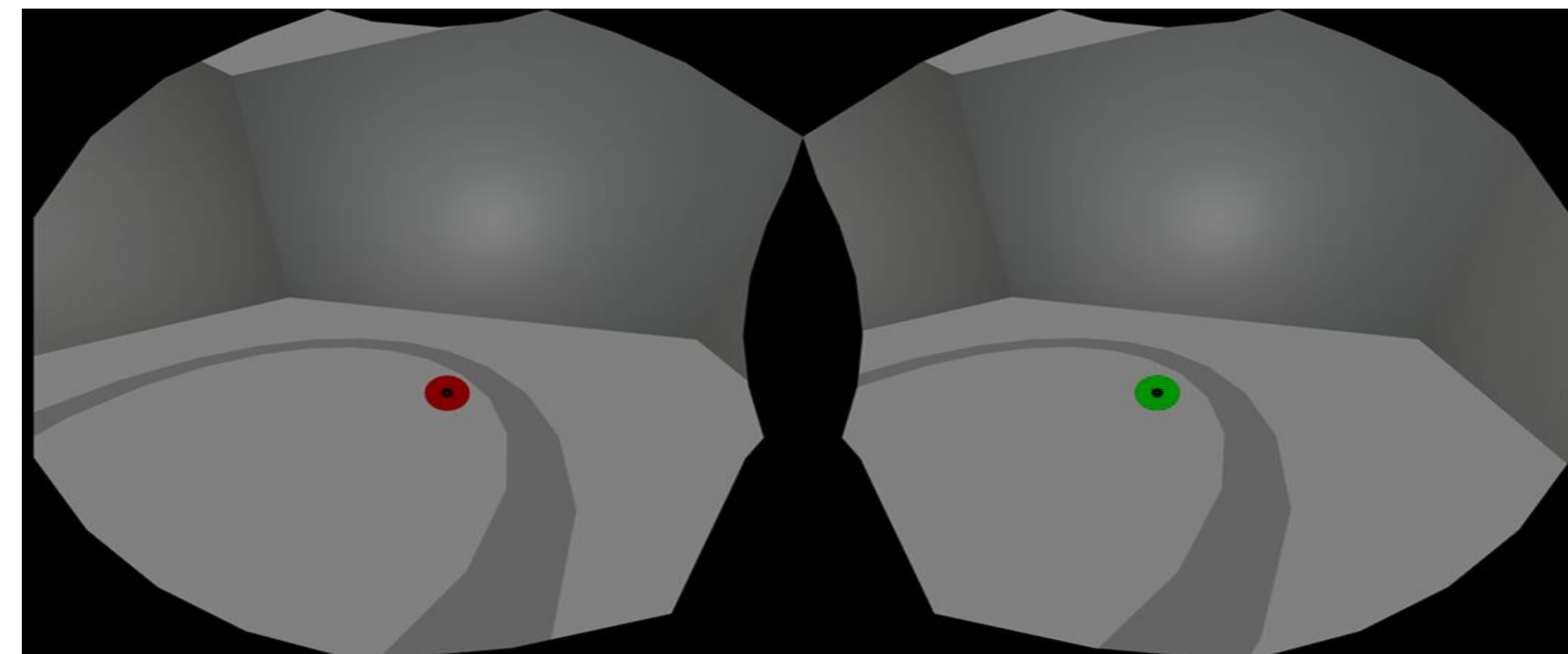
• HTC Vive Controller



• HTC Vive Base station

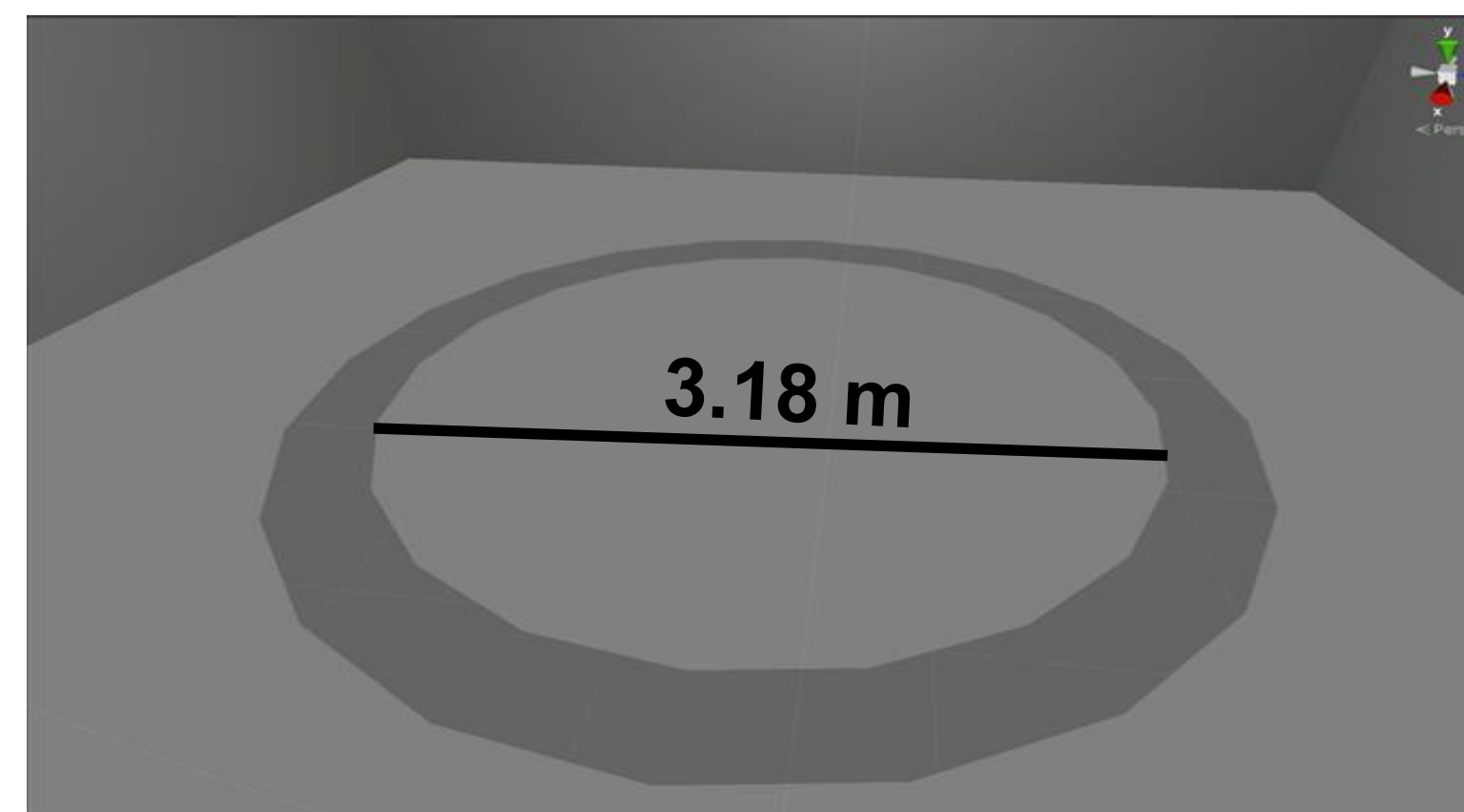


• HTC Vive Wireless Tracker



Red and green 0.8 Hz and 3.2 Hz drifting sine wave gratings

- Continuous Psychophysical Task
- Respond by holding down the triggers on the controllers when a certain color is dominating
- Conditions were counterbalanced for color, sine wave bar direction, and frequency
- 8 total 60 s trials

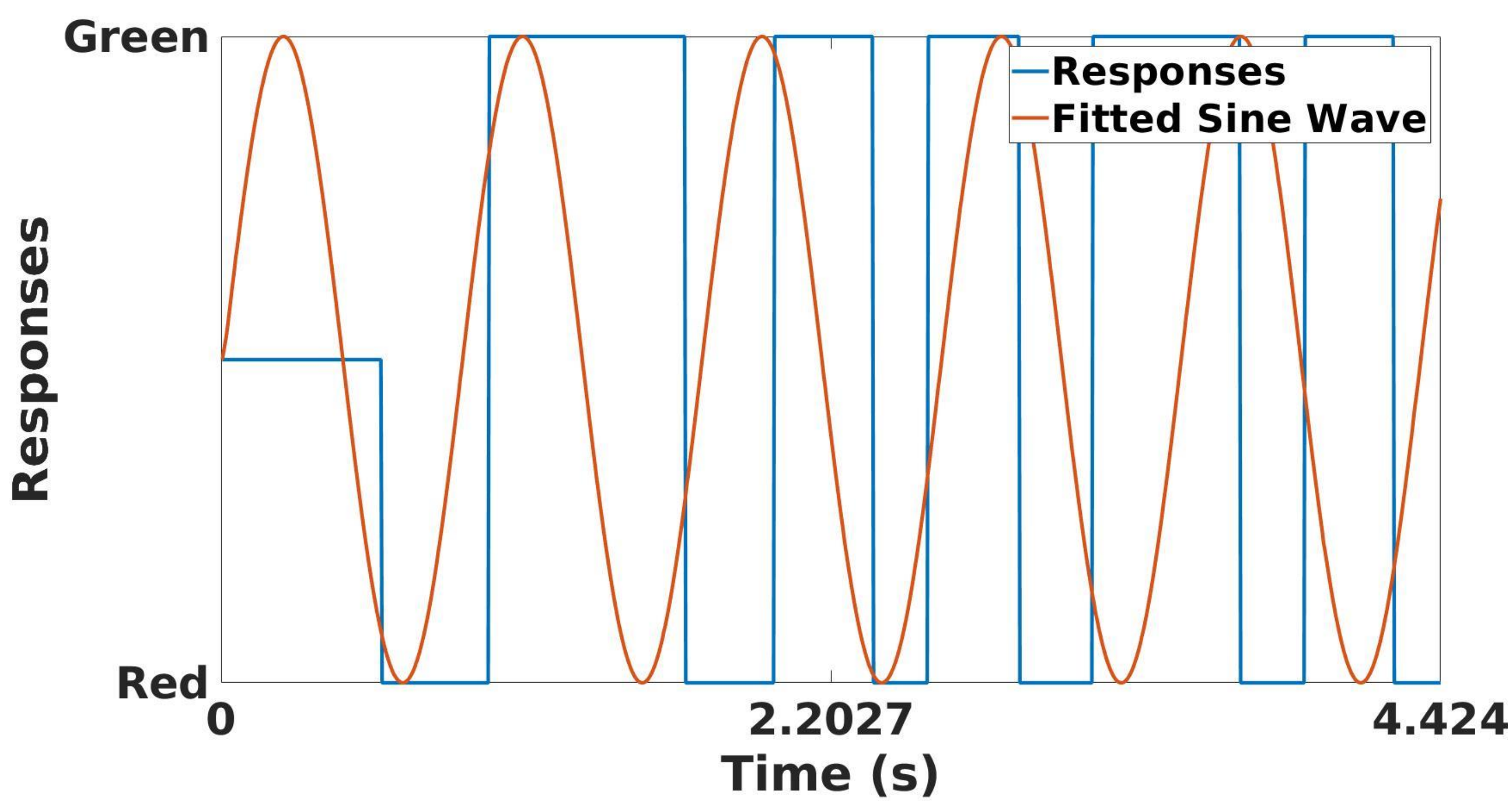


Walking Track

- 6 Subjects
- Mean age 25

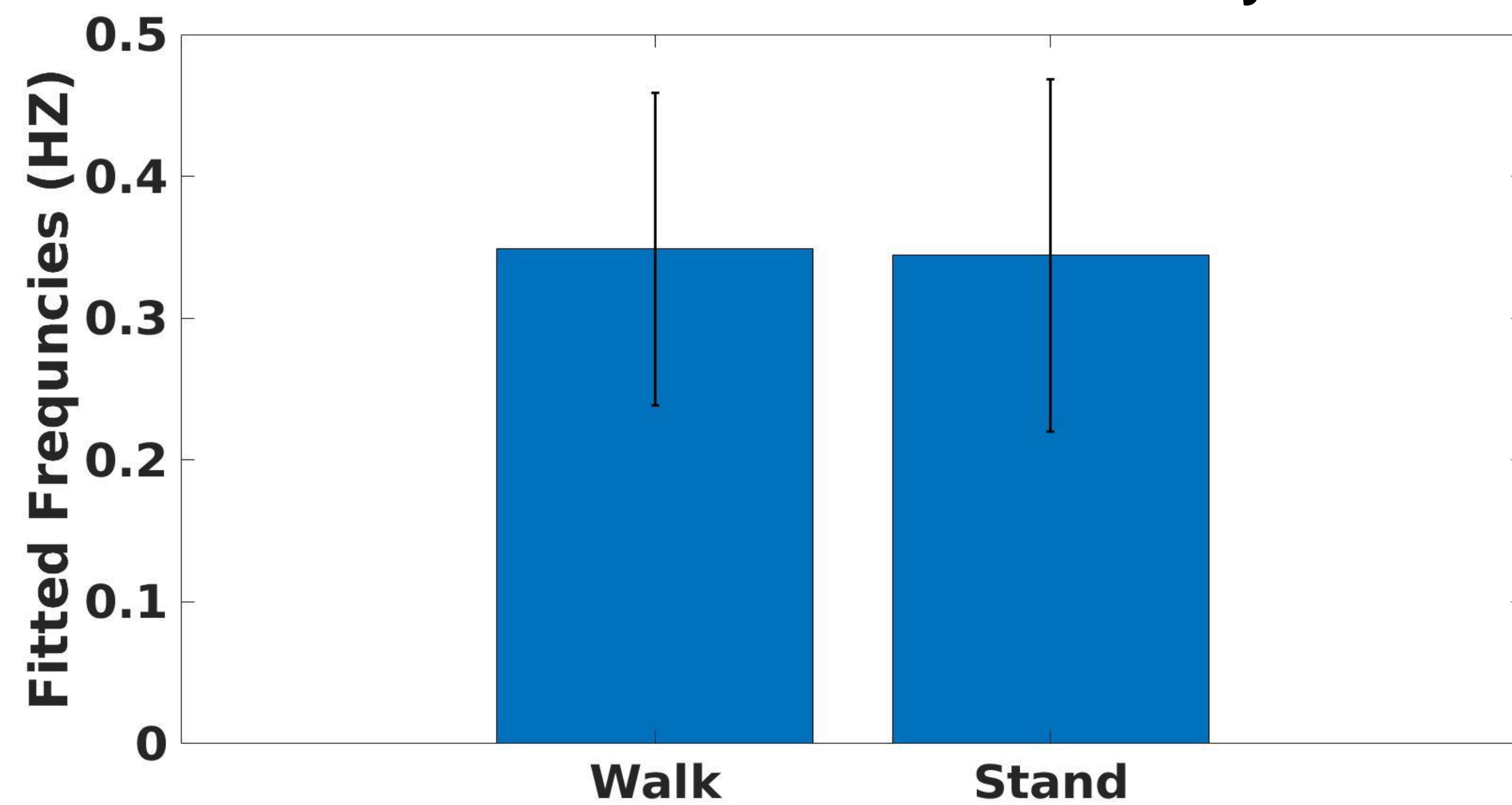
Results

Example of sine wave fit to response data



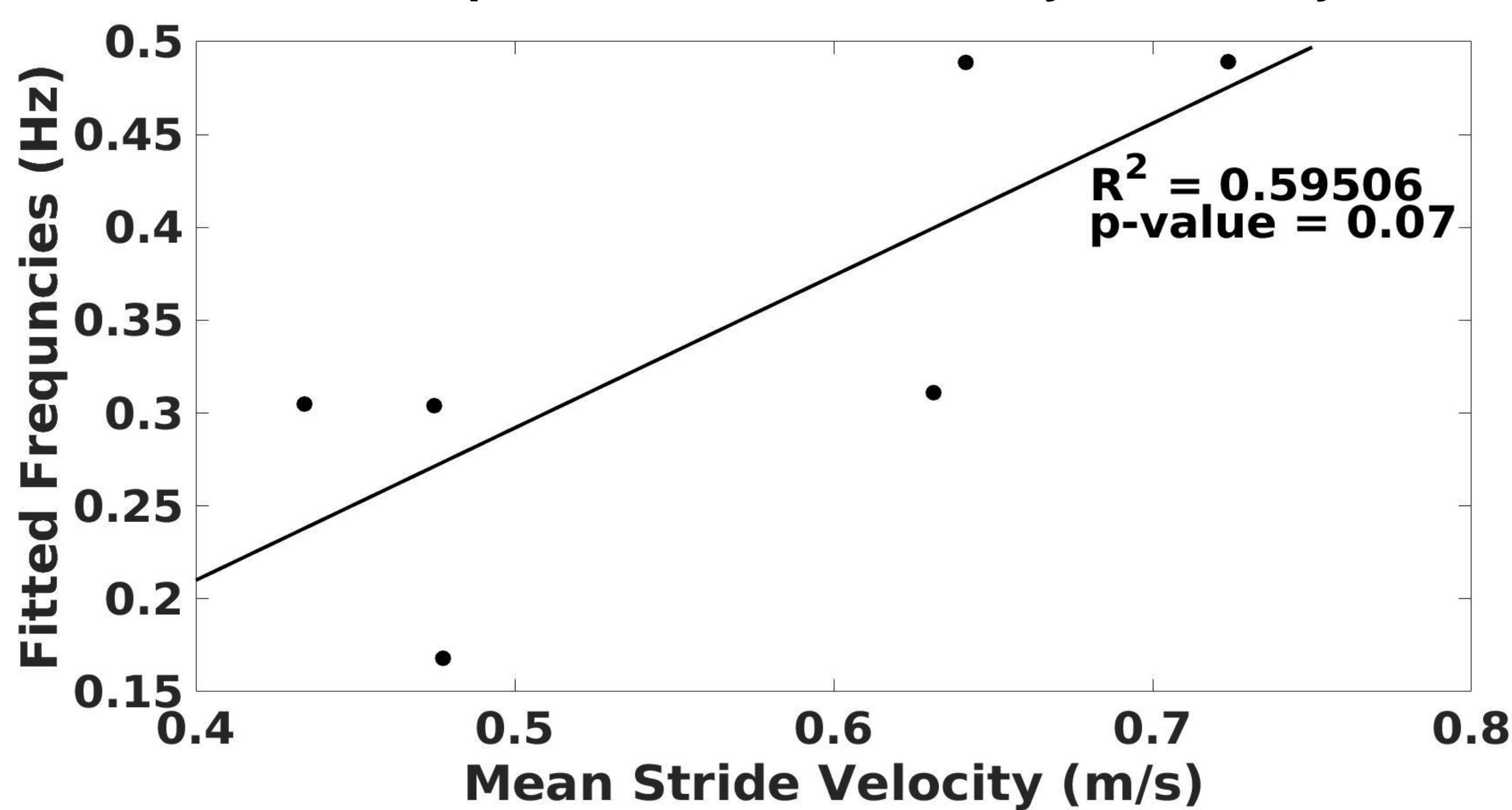
- Example of how the fitted rivalry rate was calculated per trial for each participant

Mean \pm standard deviation for rivalry rate



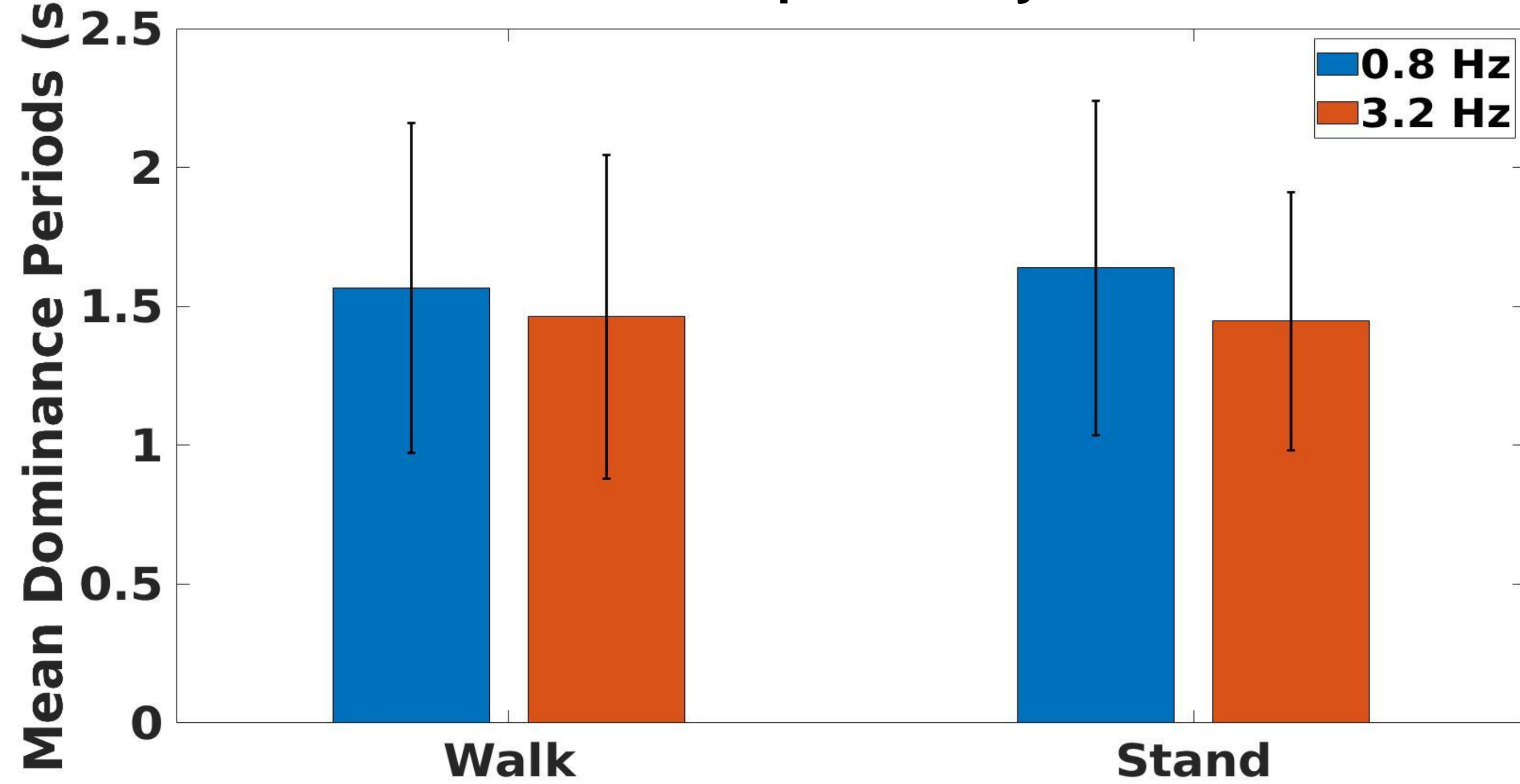
- Rivalry rate for standing and walking. No significant differences were observed

Relationship between stride velocity and rivalry rate



- Linear regression between fitted frequencies and mean stride velocity. Non-significant moderate correlation

Mean dominance periods by condition



- Mean time dominance periods for each grating and condition. Differences were not significant.

Discussion

- Walking has no affect on binocular rivalry dominance periods or switch rate frequencies.
- Near significant moderate positive correlation between binocular rivalry switch rates and mean stride velocities.

References

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