ACM VRST'25 MONTREAL

Not All WIP Are Perceived Equally: Different Speed Expectations in Seated Walk-in-Place Locomotion

○Yusuke Kitaura[1], Keigo Hattori[1], Fumihiko Nakamura[1],

Yuta Kataoka[1], Fumihisa Shibata[1], Asako Kimura[1], Shohei Mori[2]

[1] Ritsumeikan University, Japan

[2] Visualization Research Center (VISUS), University of Stuttgart, Germany

Seated Gesture-Based VR Locomotion

- Provides a highly **immersive experience**.
- Ensures both **safety** and **suitability for long-time use**.

Research Question

How do different seated gestures influence users' expected walking speed?

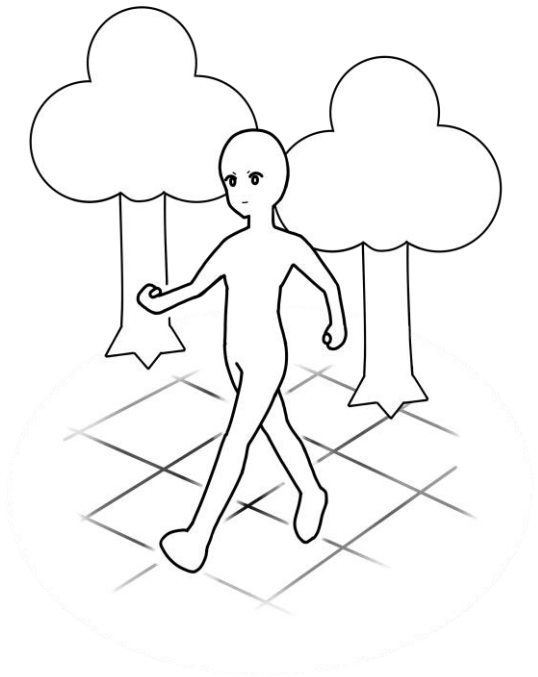
Research Question Video

Three Investigated Seated Gestures

Swing-in-Place (SIP) Grip-in-Place (GIP) Tap-in-Place (TIP)

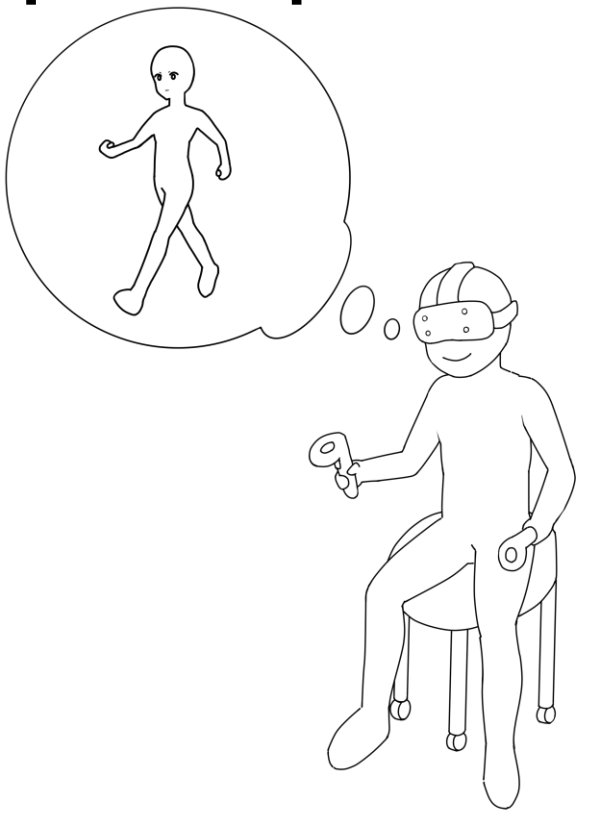
Overview of the Three-Part Study

Study 1
User Experience

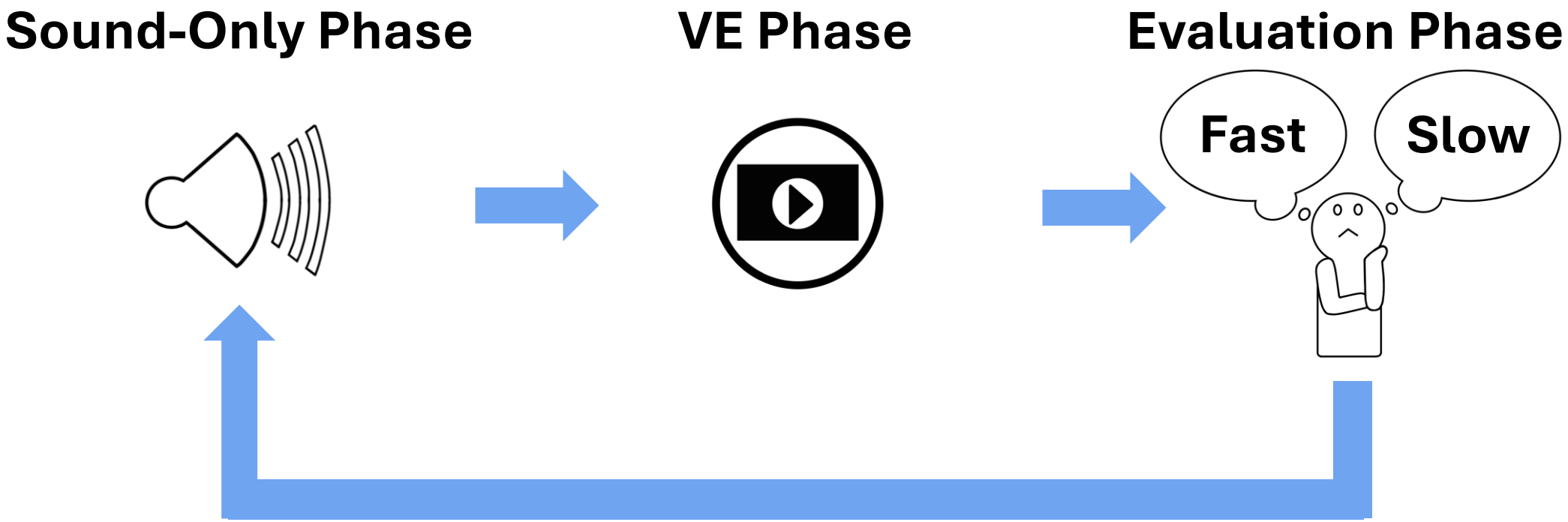


Study 2
Motor Characteristics

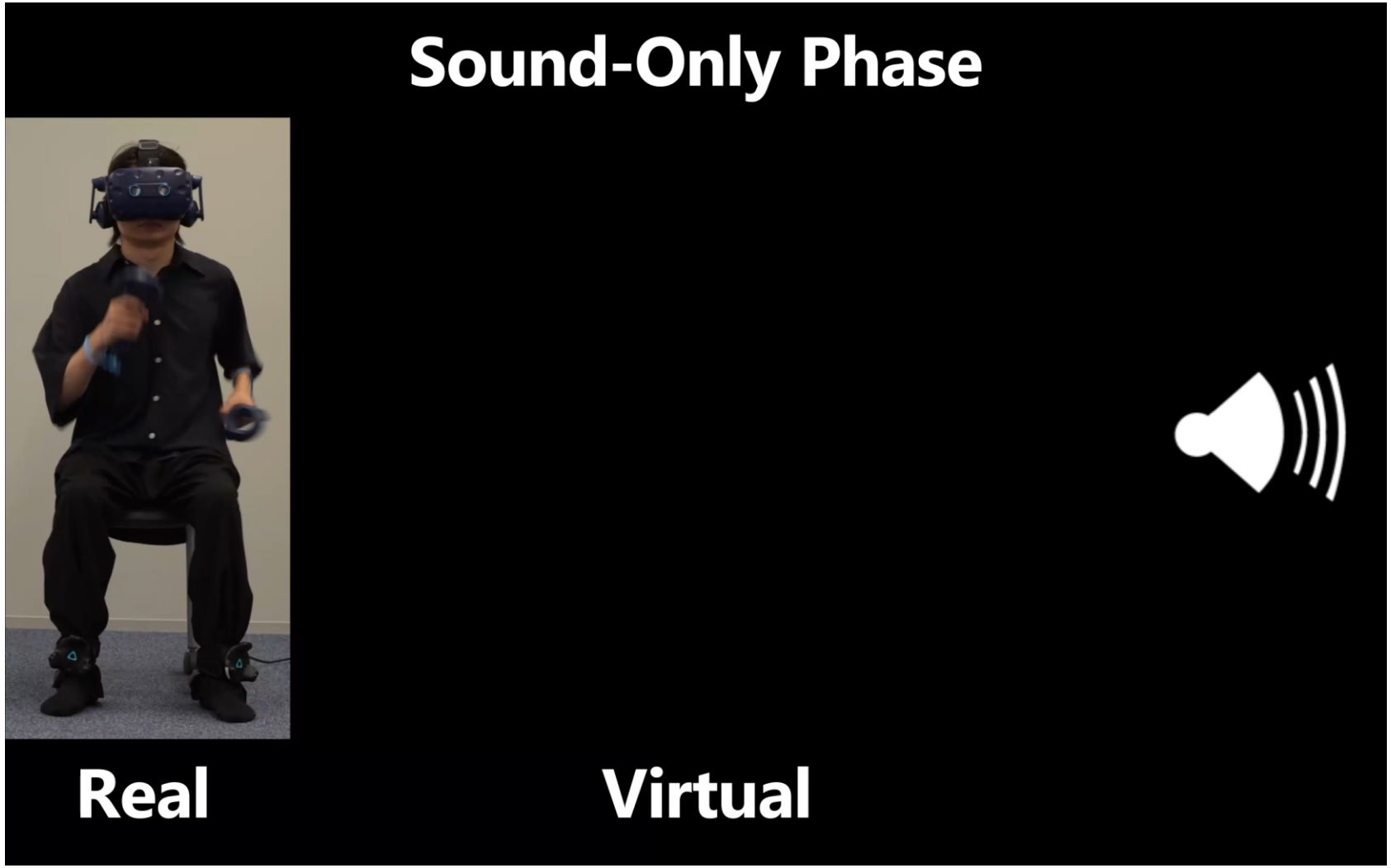
Study 3
Speed Expectations



Method: How We Measured "Natural" Speed

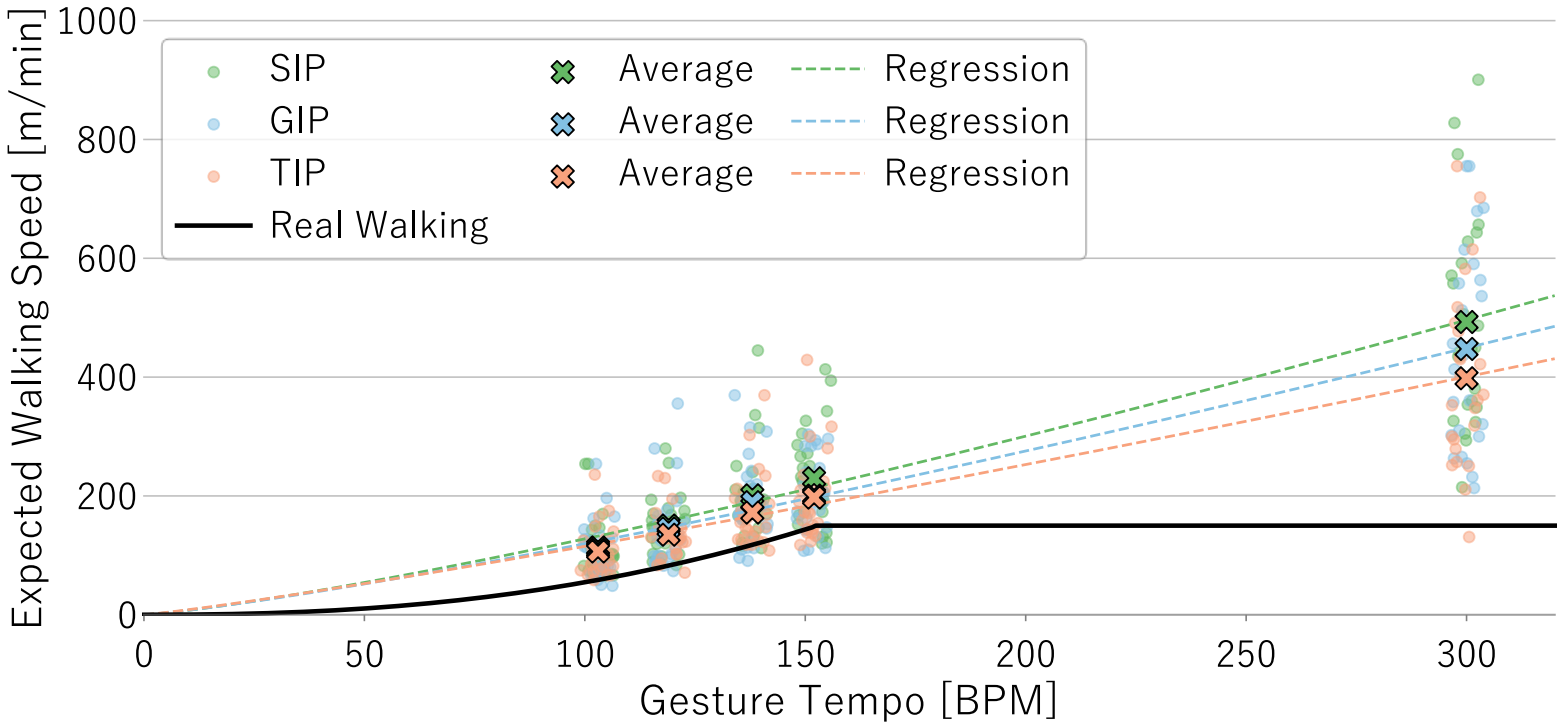


Method: How We Measured "Natural" Speed



Key Finding: Speed Expectations

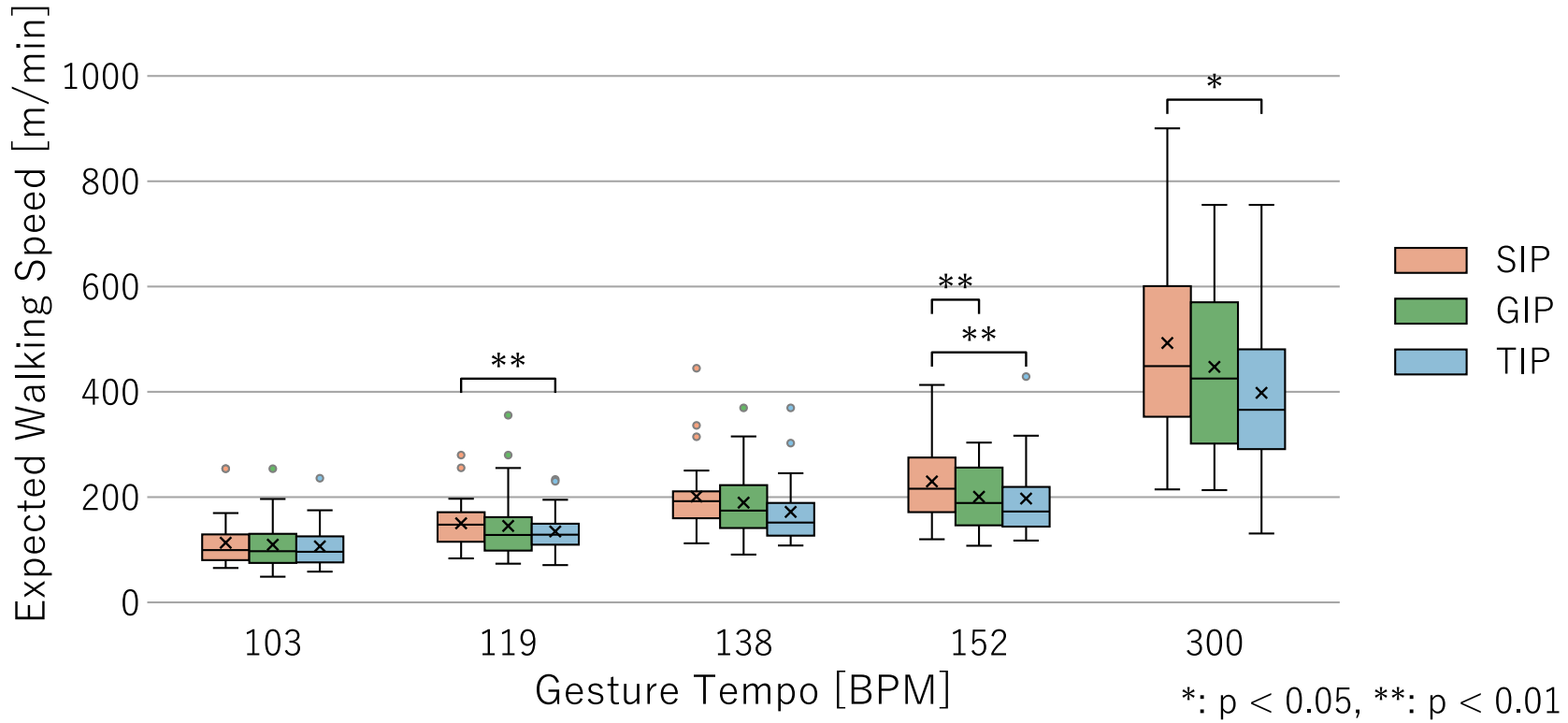
- We found a consistent pattern in the expectation of walking speed: **SIP (Arm swings) > GIP (Gripping) > TIP (Foot taps)**



Note: Jitter has been applied to the x-axis for better visualization of data distribution.

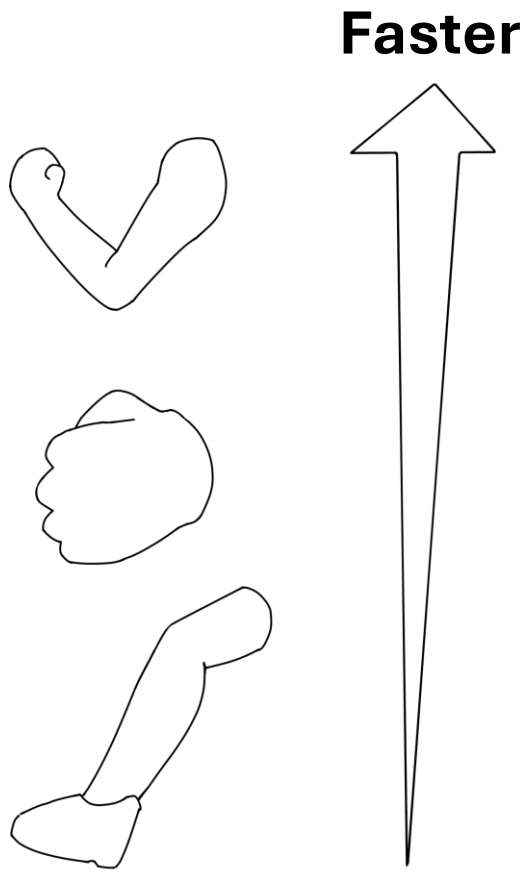
Detailed Results: Comparison by Tempo

- **SIP (Arm swings)** tends to be perceived as **faster** and **TIP (Foot taps)** as **slower**.



Discussion: The SIP > GIP > TIP Pattern

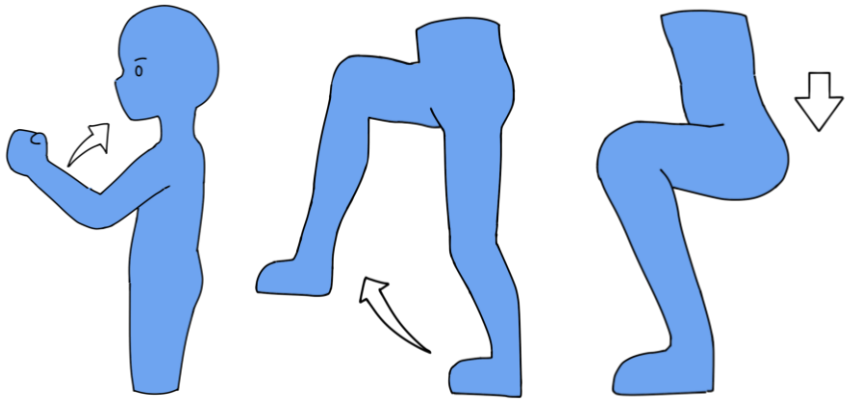
- **Dynamic Nature:**
  - SIP (Arm Swings) involves larger, more dynamic body movements.
  - This may naturally elicit an expectation of **faster** movement.
- **Real-world Analogy:**
  - Gestures analogous to actual walking (like arm swinging) might make it easier to perceive speed.



Conclusion & Future Work

- **Conclusion:** We provide the first empirical evidence that walking speed expectations in seated VR are gesture-dependent.
- Future Work:

Gesture Variations



Viewpoint Heights