DO WE NEED ACTUAL WALKING IN VR?

Leaning with Actual Rotation Might Suffice for Efficient Locomotion

Thinh Nguyen-Vo Bernhard E. Riecke Wolfgang Stuerzlinger Duc-Minh Pham Ernst Kruijff[+]

School of Interactive Arts + Technology (SIAT) , Simon Fraser University, BC, Canada
[+]Institute of Visual Computing (IVC), Bonn-Rhein-Sieg University of Applied Sciences, Germany

MOTIVATION

In order to go beyond restricted tracked spaces, locomotion interfaces are used, however, some of them provide minimal motion cues which reduces movement fidelity and even causes motion sickness.
We aim to investigate **how translational cues affect the efficiency of a navigational search task in VR?**

METHOD

Comparing 4 levels of translational motion cues (see below)

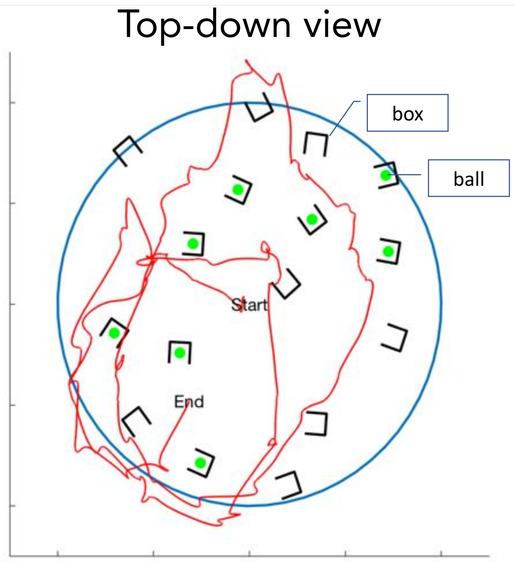
Participants: 24 people

Experiment design: within-subjects

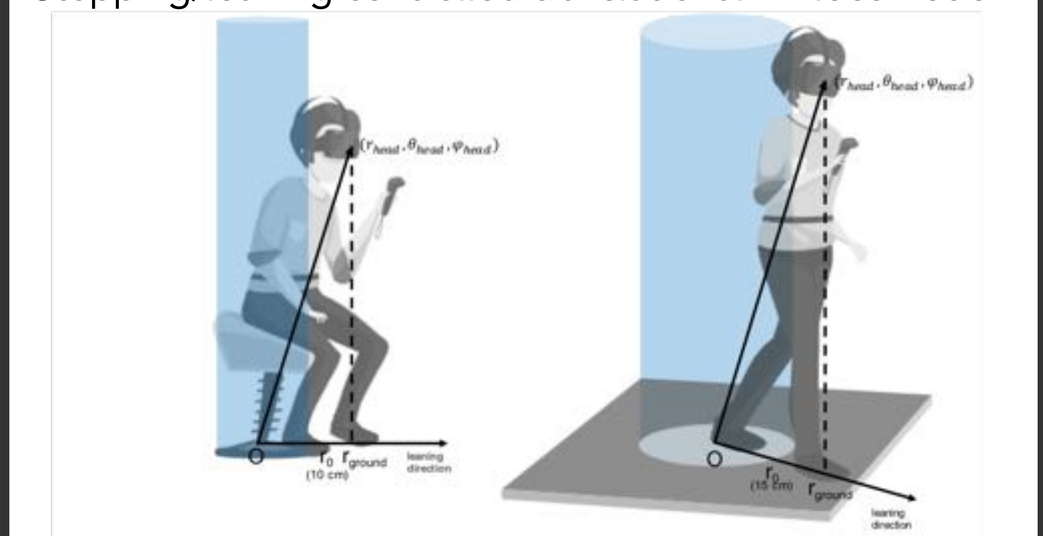
Display: HTC Vive

Task: find 8 balls hidden in 16 boxes

Top-down view



Stepping/leaning controlled translational VR locomotion



Trackpad Controller
(no translational cues)

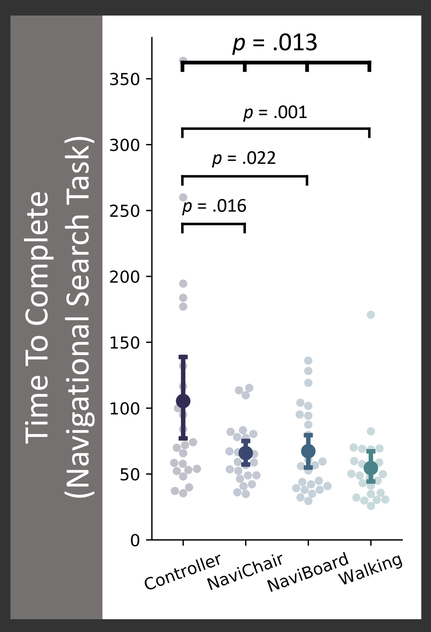
NaviChair
(upper-body leaning)

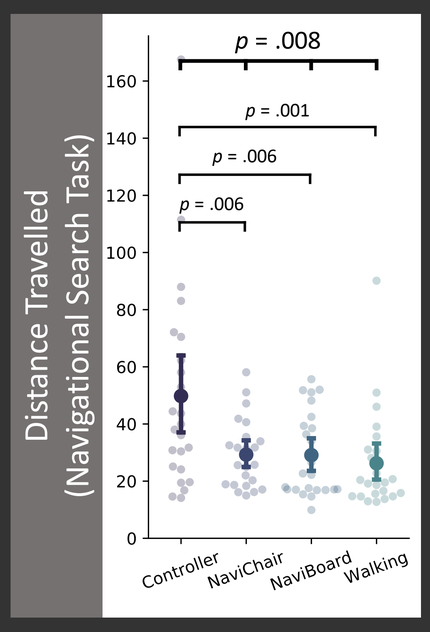
NaviBoard
(whole-body leaning/stepping)

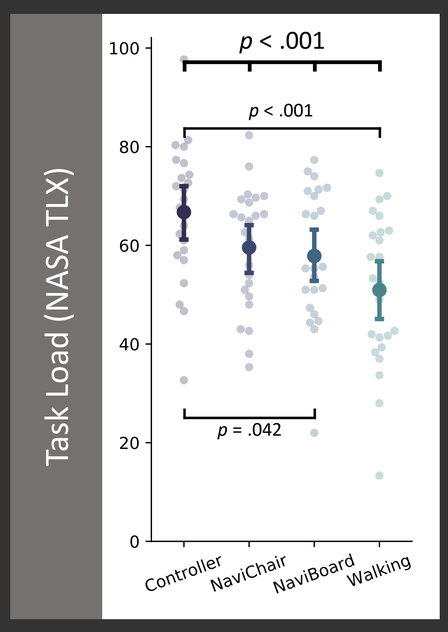
Walking
(full translational cues)

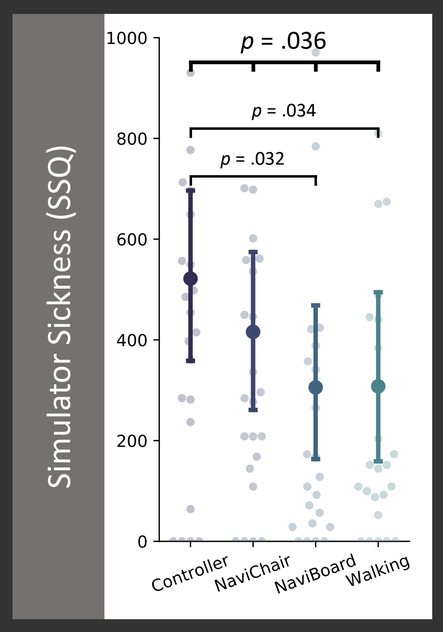
RESULTS

Participants performed significantly better and experienced significantly less motion sickness and task load in **NaviBoard** and **Walking** conditions, compared to **Controller**.









CONCLUSIONS

Body-based information from a leaning interface might suffice for a cost-effective alternative to actual walking, which is highly applicable to several VR setups.

Proudly presented at SPATIAL COGNITION 2018