30 Creating a walking sensation for the seated

A sensation of pseudo-walking expands peripersonal space

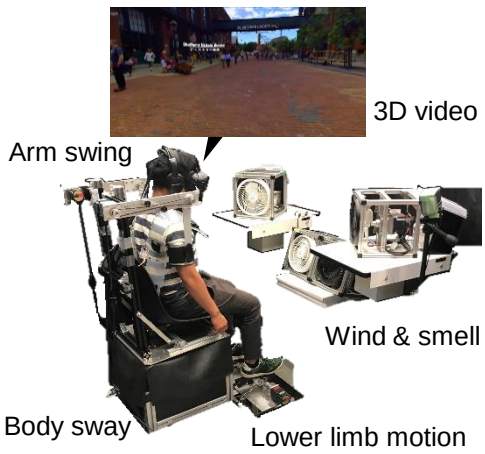
Abstract

Body action such as walking is known to extend the subjective boundaries of peripersonal space (**PPS; the space immediately surrounding our body**) and to facilitate the processing of audio-tactile multisensory stimuli presented within the PPS. However, it is unclear whether the boundaries change when a sensation of walking is induced with no physical body motion. Here, we presented several vibration patterns on the soles of the feet of seated participants to evoke a sensation of walking, together with a looming sound approaching the body. We measured reaction times for detecting a vibrotactile stimulus on the chest, which was taken as a behavioral proxy for the PPS boundary. Results revealed that a cyclic vibration consisting of lowpass-filtered walking sounds presented at the soles that clearly evoked a sensation of walking decreased the reaction times, indicating that the PPS boundary was expanded forward by inducing a sensation of walking.

A sensation of pseudo-walking created by multisensory stimulation

We have developed a method for creating a sensation of walking by combining multisensory information, such as a mechanism for moving the upper and lower limbs, a motorized chair for body sway, and wind and smell presentation, with the aim of achieving “generating a sensation of walking while seated”.

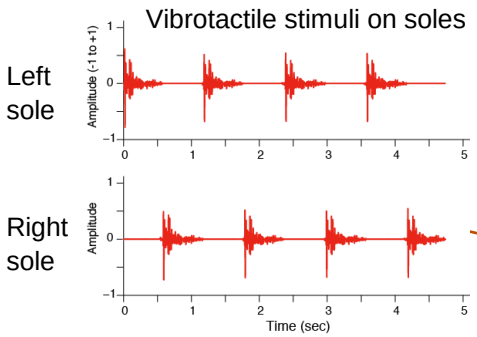
We focused on the soles of foot and presented a vibration to create a sensation of walking.

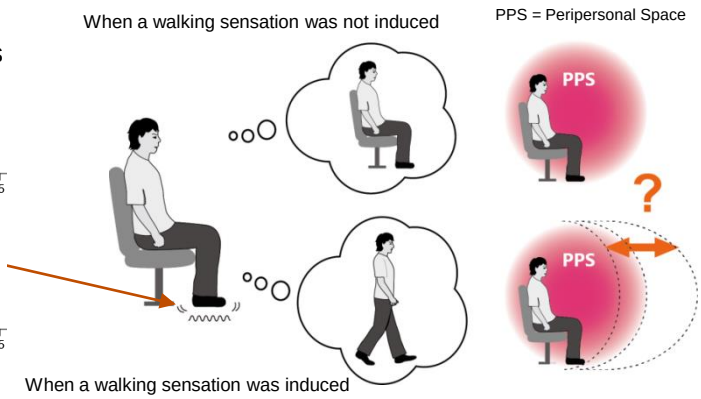


Collaboration with Tokyo Metropolitan University, & Toyohashi Tech University

PPS expanded by sensation of pseudo-walking

We found that reaction time to a stimulus approaching toward the body changed when a vibration stimulus was applied to the sole of the foot.





References

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Contact

Tomohiro Amemiya Email: cs-liaison-ml at hco.ntt.co.jp
Sensory and Motor Research Group, Human Information Laboratory

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