

Motion sickness vs. cybersickness: Two different problems or the same condition?

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Contrary to previous research, severe motion sickness and cybersickness—a type of motion sickness that stems from exposure to virtual reality—may be considered the same clinical condition, according to researchers. The findings, the first to study both conditions in the same group of people, are published ahead of print in the *Journal of Applied Physiology*.

Motion sickness is a common consequence of "sensory mismatch." This happens when what a person sees, feels and senses don't match up, such as when there is a conflict between sensory channels that define body orientation and position in space. The disconnect occurs between the eyes and the vestibular system, which controls the workings of the inner ear, overall balance and orientation of a person in a physical space. Because motion sickness does not involve only the eyes, research has shown that people who are blind can still experience "classic" motion sickness. Cybersickness has been thought to be a sub-type of motion sickness because it does not involve the vestibular system and is triggered only by visual stimuli. However, the two conditions share many of the same symptoms, including nausea, sweating, dizziness and fatigue.

Researchers from the University of Newcastle in Australia studied the physiological responses to motion sickness and cybersickness in 30 young adult volunteers. Two different trials were separated by at least one week. One trial consisted of exposure to a vestibular stimulus: being blindfolded and riding a motorized rotating chair while tilting their heads at regular intervals. For the visual stimulus trial, the participants "rode" a

virtual reality rollercoaster. Both trials were designed to span a maximum of 15 minutes. Volunteers were instructed to continue for as long as they could tolerate uncomfortable symptoms. During both trials, the researchers measured the participants' sweat rate through sensors placed on the skin of their foreheads. The volunteers completed questionnaires before and after the study, including a post-trial questionnaire that rated the severity of their discomfort.

Only one of the study participants was able to complete the full 15 minutes of either trial, indicating that the majority of the group experienced advanced or severe motion sickness and cybersickness throughout the trials. Nausea, dizziness and feeling hot and sweaty were the symptoms most often reported on the post-trial questionnaire. There was little difference in self-reported severity rating and in objective physiological measures between the motion and cybersickness [trials](#), suggesting "the clinical picture of advanced [motion sickness](#) (assessed as a spectrum of symptoms and as their intensity) is very similar, independently of whether it is induced by pure visual or pure vestibular stimuli. This conclusion contradicts previously published results," the researchers wrote.

These results may have practical significance that could affect public safety, the research team noted. "Simple and relatively inexpensive [virtual reality] technology [may be used] for occupational pre-selection tests in those professions where [motion sickness](#) is an exclusion criterion or represents a common occupational hazard (e.g., pilots, drivers of public transport, crane operators, etc.)."

More information: Alireza Mazloumi Gavgani et al, A comparative study of cybersickness during exposure to virtual reality and "classic" motion sickness: are they different?, *Journal of Applied Physiology* (2018). [DOI: 10.1152/jappphysiol.00338.2018](https://doi.org/10.1152/jappphysiol.00338.2018)

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