

2nd Congress on Motion Sickness, August 12th - 15th 2025, Akureyri, Iceland

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Relevance of motion sickness

Motion sickness, in all its forms, remains a universal human challenge. Whether it is seasickness that plagued the Vikings as they crossed the North Atlantic, carsickness affecting millions of daily commuters, or cybersickness emerging with the rapid growth of immersive digital technologies, motion-induced discomfort continues to shape how humans travel, work, and interact with their environments. It is estimated that up to one-third of people experience significant motion sickness under certain conditions, while nearly everyone is susceptible given sufficient stimulus intensity. Such prevalence makes motion sickness not a niche concern, but a global issue at the intersection of health, safety, and performance.

In professional contexts, motion sickness has critical consequences. For example, naval personnel, pilots, astronauts, offshore workers, and even surgeons using robotic or virtual interfaces must perform with high precision in environments where motion-induced discomfort could impair concentration and operational ability. In everyday life, children experience high rates of carsickness, commuters struggle with nausea on buses and trains, and virtual reality users often abandon otherwise promising applications due to cybersickness. The costs are personal, economic, and societal.

Motion sickness in global context

The Icelandic setting for this congress provides a particularly resonant backdrop. As a nation built upon seafaring traditions, Icelanders have long faced the realities of motion sickness. Fishermen and sailors remain at risk during voyages that underpin the country's economy and cultural heritage. This lived experience emphasizes the urgency of advancing scientific solutions that not only reduce discomfort but also safeguard performance and safety.

Globally, the problem has broadened. Beyond seasickness and carsickness, the rise of autonomous vehicles, commercial spaceflight, and extended reality technologies (XR) introduces entirely new domains where motion sickness can emerge. For autonomous vehicles, passenger comfort and trust are essential for adoption. In space exploration, motion sickness continues to threaten mission performance during critical phases of travel. In the virtual domain, cybersickness challenges the adoption of VR/AR in healthcare, training, education, and entertainment.

Thus, Iceland hosts this congress not just as a symbolic center of maritime history but as an international hub where researchers, clinicians, and innovators unite to address one of humanity's oldest yet most pressing physiological challenges.

Scientific frontiers in motion sickness research

Over decades, research into motion sickness has evolved from descriptive accounts to highly sophisticated, interdisciplinary investigations. Several critical frontiers now define the field: i) quantitative evaluation – traditional reliance on subjective reporting is now complemented by

advanced biosignal monitoring, neuroimaging, and machine learning approaches. These enable real-time assessment of motion sickness onset, progression, and recovery; ii) pathophysiological understanding – competing theories of sensory conflict, postural instability, and vestibular-autonomic interaction continue to guide inquiry. Advances in neuroscience, including electroencephalography (EEG) and connectivity analyses, promise a more precise understanding of underlying processes; iii) technological countermeasures – from pharmacological interventions to novel behavioral, sensory, and cognitive strategies, researchers are exploring ways to mitigate symptoms without compromising alertness or function; iv) applied settings – investigations now span ships, aircraft, cars, trains, and virtual environments, reflecting the wide-reaching impact of motion sickness. Studies in autonomous vehicles, for example, explore prediction and mitigation strategies crucial for future mobility systems; v) individual differences – research increasingly accounts for age, sex, genetic predispositions, and psychological traits, moving toward personalized predictions of susceptibility and intervention strategies.

By addressing these frontiers, the Congress aims to bridge fundamental science with practical application, ensuring that theoretical insights translate into real-world benefits.

Congress theme and objectives

The theme of this congress, “Quantitative evaluation of motion sickness,” highlights the growing importance of objective, reproducible measures in advancing the field. Quantification allows researchers to compare findings across studies, develop predictive models, and evaluate the effectiveness of interventions. Without robust evaluation methods, progress risks being fragmented and anecdotal. The objectives of the congress are threefold: i) to foster innovation by bringing together experts from neuroscience, physiology, psychology, engineering, and clinical practice; ii) to inspire collaboration across national and disciplinary boundaries, ensuring that discoveries in one domain inform progress in others; iii) to translate science into application by linking laboratory findings to challenges in transportation, healthcare, and technology design. Through lectures, discussions, and interactive sessions, participants will gain exposure to cutting-edge techniques while sharing their own advances in research and practice.

The role of interdisciplinary collaboration

Motion sickness research exemplifies the necessity of interdisciplinary science. Understanding the condition requires expertise in vestibular physiology, neurocognitive processes, biomechanics, pharmacology, psychology, and ergonomics. At the same time, addressing the problem in real-world settings calls upon engineering, design, and industry collaboration.

For example, the design of autonomous vehicle interiors cannot ignore insights from vestibular science. Similarly, VR hardware and software developers must engage with

neuroscientists to reduce cybersickness and ensure user safety. The congress thus creates a rare platform for cross-sector dialogue, uniting clinicians, scientists, engineers, and industry leaders.

Human, societal, and economic impact

The importance of this congress also lies in recognizing motion sickness as not merely a personal inconvenience but a societal challenge with economic and human implications. Productivity losses, mission failures, and decreased technology adoption all translate into measurable costs. In transport and logistics, motion sickness can directly threaten safety. In digital technologies, unresolved cybersickness risks are stalling entire industries. By investing in motion sickness research, societies invest in safer, more comfortable, and more efficient systems.

Looking ahead

The International Congress on Motion Sickness in Akureyri offers not only a space for presenting cutting-edge findings but also for shaping the research agenda for years to come. By prioritizing quantitative evaluation, embracing interdisciplinary collaboration, and situating the conversation in a culturally resonant location, this congress underscores the enduring relevance of motion sickness research.

Participants are encouraged to approach this gathering not only as a scientific meeting but also as a call to action: to push forward understanding, to design effective countermeasures, and to ensure that future generations—whether sailors, astronauts, commuters, or virtual explorers—can navigate the world without the burden of motion sickness.

Key words

Motion sickness, postural control, virtual reality, quantitative control, balance disorders, biomarkers, electromyography (EMG), electroencephalography.

Conflict of interest

The authors declare no conflict of interest.

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