

Motion Sickness - Newly Engineering Glasses may Offer a Solution

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Background

What is the motion sickness?

This widespread trouble is well known under the name “seasick”. The Most Classic symptoms are in The Loss of alertness, the occurrence of yawning, pallor, sweating, nausea, vomiting and other symptoms called “archaic”. It’s still called motion sickness, because it concerns the full range of transport and even more with the moving images. Indeed, the only playing back motion pictures or not can be enough to trigger it [1]. Very common, it is nonetheless the cause of very uncomfortable and debilitating situations.

Who is affected by motion sickness?

Motion sickness affects many people. For instance, all astronauts are affected; 15% of passengers travelling by car; 12% of train commuters; 15% of people travelling by plane; 5% of divers; and, anywhere between 1 and 100 % of seafarers, depending on the state of the sea and passenger’s health.

What is the origin of motion sickness?

The origin of this disorder is disharmony of perception, a conflict sensory, or better, a differential perception essentially between the inner ear (center of balance) and the view (what the eyes perceive). These two systems mean that motion sickness may be felt and not seen or not felt and seen or a combination of these two. This, the basic idea brought by Irwin. Note also that in addition the labyrinthine system of the inner ear, there are many receptors involved including muscles and tendons that are sensitive to changes in movement, but these sensitive to inertial accelerations receptors are specifically less organized according to the Earth’s gravity.

The eyes perceive the external environment. At the same time, the inner ear, the primary sense of balance, perceives movement relative to the external environment. Any difference in between vision and feeling leads to a difference in perception and leads a defence reaction with symptoms that may include loss of alertness, stimulation of the vagal nerves to the heart and accompanying sickness. The body is freed from ancillary activities.

Note also that a study by Eden [2] highlights the role of behavioural, e.g. against the triggered response, and psychological operations, e.g. increased awareness of motion sickness, in prevention-learning as a defence against motion sickness.

Treatments for Motion Sickness

Interventions include changes in posture, for example lying down and closing the eyes closed, although this not always practical. Pharmacological approaches are also an option, although their benefit-to-risk needs to be considered, for instance a drug may be effective but associated with side effects that include loss of alertness and drowsiness [1] Other proposed interventions include the use of magnets attached to the wrists using bracelets [3] and the ingestion of foods such as ginger root [4], but their effectiveness is equivocal [5,6].

New Therapy Being Explored in the Treatment of Motion Sickness

One current approach being explored is the use of glasses to address both what is seen and what is felt. For example, ‘Boarding Ring’ is a peripheral visual wedge device which combines a pair of traditional glasses (for central vision) with a peripheral pair of glasses (to address the peripheral vision). Indeed, pharmacological therapies suppress eye movements (i.e., depress the input from peripheral vision) and by doing so suppress the symptoms of motion sickness. The glasses by Boarding Ring, for example, don’t suppress eye movements, but are hypothesized to work by providing a peripheral and stable focus of the environment.

Both central and peripheral lenses contain a core lens with a rim that is partially filled with ink. The motion of the ink provides an input of the inertia from the peripheral vision and this is detected by the retina and matched against what is seen in the central vision. Thus effectively matching what is felt with what is seen. Boarding Ring glasses are currently being commercialised in Europe and case studies will be reported once data is available.

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