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OPERATION OF AIRCRAFT

RESEARCH AND MEDICAL MATTERS

MOTION SICKNESS

Motion sickness is the name used to describe a group of symptoms that are generally associated with travel. People who are prone to motion sickness may experience cold sweating, excessive salivation, pale skin, nausea, and vomiting. Other associated symptoms can include drowsiness, headache, weakness, depression, and an overall feeling of discomfort.

THE ANATOMY OF BALANCE

Dizziness, vertigo, and motion sickness all relate to the sense of balance and equilibrium. Researchers in space and aeronautical medicine call this sense spatial orientation, because it tells the brain where the body is "in space:" what direction it is pointing, what direction it is moving, and if it is turning or standing still.

Your sense of balance is maintained by a complex interaction of the following parts of the nervous system:

- The **inner ears** (also called the labyrinth), which monitor the directions of motion, such as turning, or forward-backward, side-to-side, and up-and-down motions.
- The **eyes**, which monitor where the body is in space (i.e. upside down, right side up, etc.) and also directions of motion.
- The **skin pressure receptors** such as in the joints and spine, which tell what part of the body is down and touching the ground.
- The **muscle and joint sensory receptors**, which tell what parts of the body are moving.
- The **central nervous system** (the brain and spinal cord), which processes all the bits of information from the four other systems to make some coordinated sense out of it all.

The symptoms associated with motion sickness are believed to be caused by conflicting signals to the brain. Normally, the sense of motion is determined by learned expectations of sensory signals to our brain from the inner ear, muscles, tendons, and joints of the body.

*In motion sickness, a discrepancy exists between expected sensory stimuli and those that are actually perceived by the brain. These unexpected signals translate into a confused message by the brain, leading to the development of symptoms. Generally, symptoms disappear once the brain adapts to the new pattern of motion. Motion sickness can occur in just about any mode of travel. Children appear to be **more susceptible** to motion sickness than adults.*

PILOTS

A pilot who concentrates on the mental tasks required to fly an aircraft will be less likely to become airsick because his/her attention is occupied. This explains why sometimes a student pilot who is at the controls of an aircraft does not get airsick, but the experienced instructor who is only monitoring the student unexpectedly becomes airsick.

A pilot who has been the victim of airsickness knows how uncomfortable and impairing it can be. Most importantly, it jeopardizes the pilot's flying proficiency and safety, particularly under conditions that require peak piloting skills and performance (instrument flight conditions, equipment malfunctions, bad weather, final approach, and landing)

*Pilots who are susceptible to airsickness **should not** take anti-motion sickness medications (prescription or over-the-counter). These medications can make a person drowsy or affect brain functions in other ways. Research has shown that most anti-motion sickness medications cause a temporary deterioration of navigational skills or other tasks demanding keen judgment.*

An effective method to increase pilot tolerance to airsickness consists of repetitive exposure to the flying conditions that initially resulted in airsickness. In other words, repeated exposure to the flight environment decreases an individual's susceptibility to subsequent airsickness.

If you become airsick while piloting an aircraft, here's what to do: Open the air vents, loosen your clothing, use supplemental oxygen, keep your eyes on a point outside the aircraft, place your head against the seat's headrest, and avoid unnecessary head movements. Avoid abrupt manoeuvres and then cancel the flight and land as soon as possible.

And always keep a supply of **airsickness bags** close at hand.

PASSENGERS

The best way to treat motion sickness is to actually prevent the symptoms from occurring in the first place. Over-the-counter and prescription medications can help to prevent the onset of motion sickness. These medications must be taken prior to the onset of symptoms. However, people taking other medications or those who are pregnant or have chronic medical conditions should consult a doctor before taking any over-the-counter medication.

Once motion sickness has started, it can be tough to stop the symptoms. Oral medications don't get into the bloodstream because motion sickness slows the digestive process. And the scopolamine patch requires several hours to take effect. In severe cases, a physician can administer medication by injection to stop the symptoms.

WHAT CAN I DO FOR MOTION SICKNESS?

- *Always ride where your eyes will see the same motion that your body and inner ears feel, e.g. sit by the window of the airplane and look outside (over the wings where the motion is the least).*
- *Do not read while travelling if you are subject to motion sickness, and do not sit in a seat facing backward.*
- *Do not watch or talk to another traveller who is having motion sickness.*
- *Avoid strong odours and spicy or greasy foods immediately before and during your travel.*
- *Take one of the varieties of motion sickness medicine before your travel begins, as recommended by your physician.*
- *Pilots should not get distracted from flying the airplane safely when one of the passengers gets airsick. A priority is the safety of all and thus concentrates on piloting the aircraft to avoid accidents.*
- *Provision of air sick bags*

COMMISSIONER FOR CIVIL AVIATION