

XR Best Practices - Risk mitigation for motion in XR

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Users engrossed in VR may lose awareness of their physical surroundings, increasing the risk of collisions and injuries from real-world obstacles, such as chairs, walls, tables, TV monitors, and other learners in the space.

In a lab or classroom event:

- A digital guardian should be set up in advance of any event (unless the students know how to set up a guardian) to ensure students don't bump into anything
- students should be assisted with the donning and doffing of VR equipment
- Students should be closely watched and assisted by the teacher or another student if at any point they look unsteady on their feet
- For large VR events, at least one volunteer should be assigned to provide supervision for every four VR users

Headset loans

- Students who borrow headsets need adequate instruction in safety measures
- A signed waiver to mitigate liability is recommended.

Motion Sickness

- Sometimes referred to as cybersickness, motion sickness typically happens because the person in VR is stationary (e.g. sitting) while their avatar in VR is in motion
- Other examples of motion in VR programs include driving, walking, cycling, flying, or riding a roller coaster.

There are several ways to move in VR with varying risk of motion sickness:

- Low: room scale VR where the users is physically walking
- Low: Teleportation, where the user (e.g. is social VR and is sitting) teleports from one location to another
- Medium - high: Smooth motion, which typically involves pushing the thumb stick to allow your avatar to walk more naturally. Moving the avatar slowly can reduce the risk of motion sickness. Changing the settings to allow for "blinders," also referred to as

dynamic FOV (field of view) restrictors, gives the user a tunnel vision effect when in motion and this narrowing of the peripheral vision minimizes VR induced motion sickness

- Medium: Turning motion is typically achieved by tapping the thumb stick right or left for a “snap-motion” experience. With the tap of the thumb stick the user will rotate a few degrees at a time instantly, like teleporting, but in a rotational manner. This, in contrast with smooth rotation helps to mitigate motion sickness - alternatively, the user can sit in a swivel chair and turn naturally.
- Low: Another strategy to deal with motion sickness is to use an omnidirectional treadmill for walking or running.
- Medium - high: Another form of motion in VR called a push pull motion, also called “world pulling.” In this type of VR motion, you reach out with your arms and controllers and grab the world in order to pull it toward you or push it away from you.
- To minimize push pull motion sickness, it is recommended that users do it slowly and infrequently.