

# Simulation Learning System with Virtual Reality (SLS VR): Managing the Play Space

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## Contents

VR Play Space .....	1
Setting Up the Guardian .....	2
Centering the Simulation Play Space .....	2
Synchronizing Headsets .....	7
Troubleshooting .....	8
Losing Synchronization .....	8
Floor is Wrong .....	9
Oculus Quest Support .....	9

Portions of this guide are adapted from the SimX Instruction Manual and from the Oculus website. Elsevier, RELX, and their affiliates are not responsible for the information taken from the SimX manual or the Oculus website.

- Before using VR hardware, consult the **Oculus Health and Safety Warnings** at [www.oculus.com/legal/health-and-safety-warnings](http://www.oculus.com/legal/health-and-safety-warnings).
- See **Using VR Hardware** for guidance on headset fit and using the Oculus controllers.

## VR Play Space

**\*\*\* NOTE:** Your instructor may have already completed the following steps (Guardian, Centering, Synchronizing) for setting up the VR play space before you arrive at your simulation session. These instructions are provided in case of using the devices remotely or for troubleshooting purposes. **\*\*\***



- You will need a minimum 10' x 10' (maximum 25' x 25') physical space indoors clear of obstructions for the VR play space.
  - NOTE: We recommend using pieces of masking tape or other markers to mark the physical boundaries of the play space.
- NOTE: The VR system uses light to track participants, so avoid shiny surfaces such as highly reflective walls and windows, which may cause errors. We recommend covering windows, glass, and other shiny surfaces with a cloth or window shade.

### Setting Up the Guardian

The in-VR Guardian is Oculus' name for the virtual boundary to keep participants safe within physical space.

Follow the directions for setting up the Guardian on Oculus' support sites:

- **Consumer Edition Guardian Instructions** at [support.oculus.com/1217524098600450](https://support.oculus.com/1217524098600450) ↗ – Click **How do I set up Guardian?**
- **Enterprise Edition Guardian Instructions** at [business.oculus.com/support/755360251634157](https://business.oculus.com/support/755360251634157) ↗ – Scroll to **Guardian** and click **How do I set up Guardian for my Oculus for Business headset?**

**NOTE:** Oculus notes the minimum space requirement is 6.5' x 6.5', but for an optimal experience in the SimX VR environment, follow our guidelines to create a minimum 10' x 10' space.

- The VR boundaries will not be visible during play until approached.
- The in-VR Oculus Guardian will be remembered if you continue using the headset in the same play space. If you move to a different play space, you will need to set up the Guardian in the new play space.

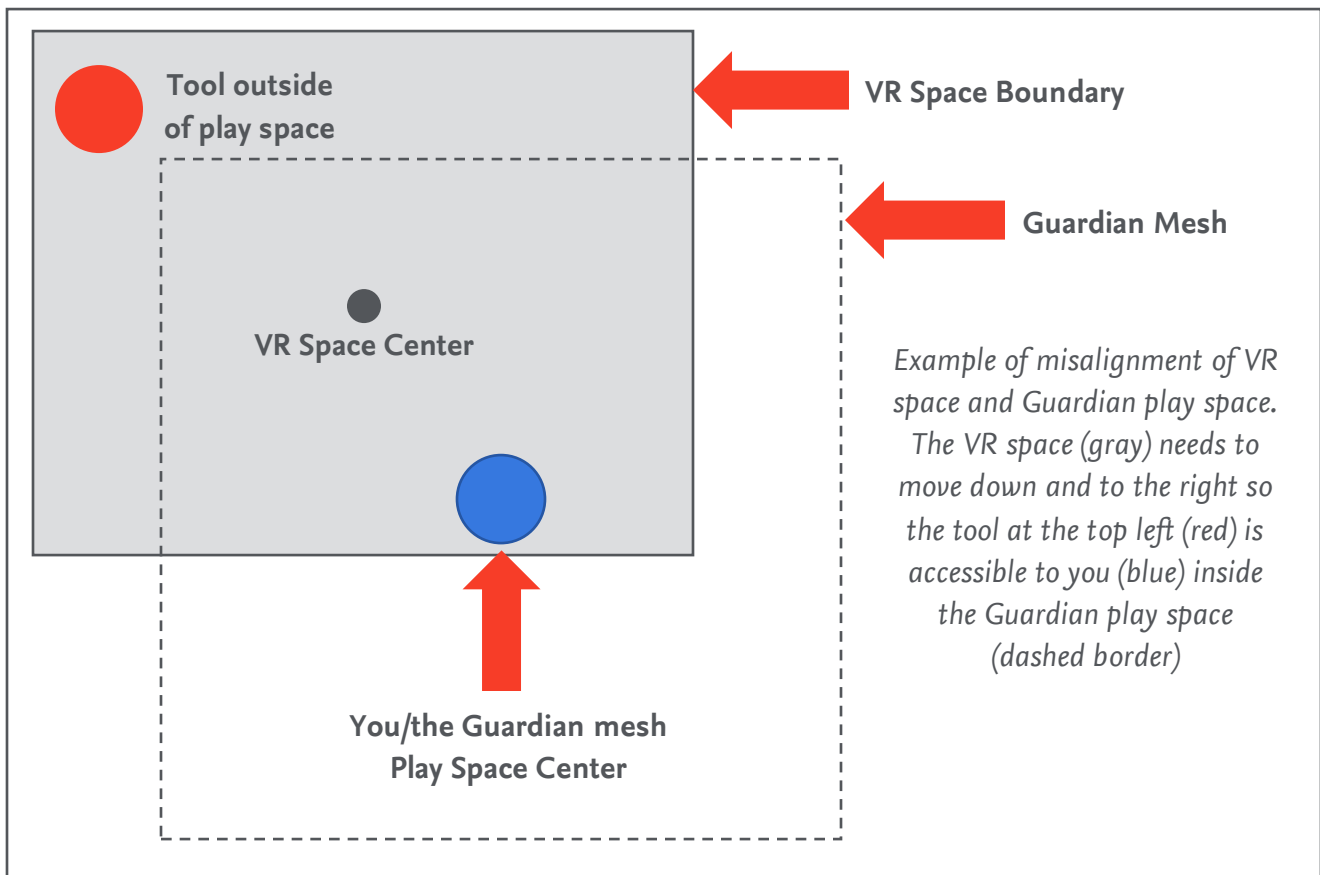
### Centering the Simulation Play Space

Part of preparing for the simulation includes ensuring the physical play space meshes well with the virtual play space. After delineating your physical play space with the Guardian in the previous section, do the following to find the optimal virtual environment center for the physical play space.

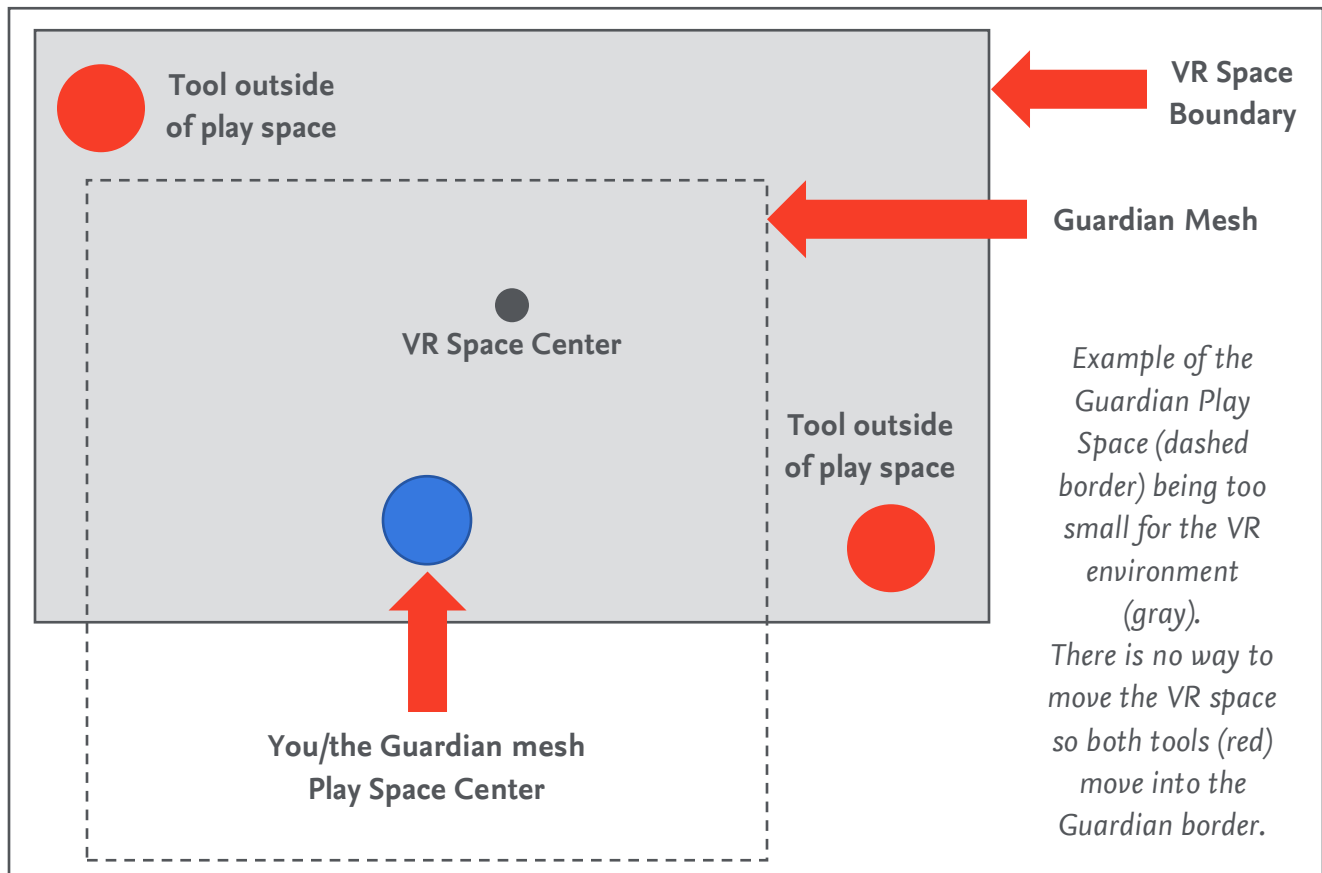
1. Stand in the center of your physical play space and press the **Oculus** button on the **right controller for 3 seconds**.



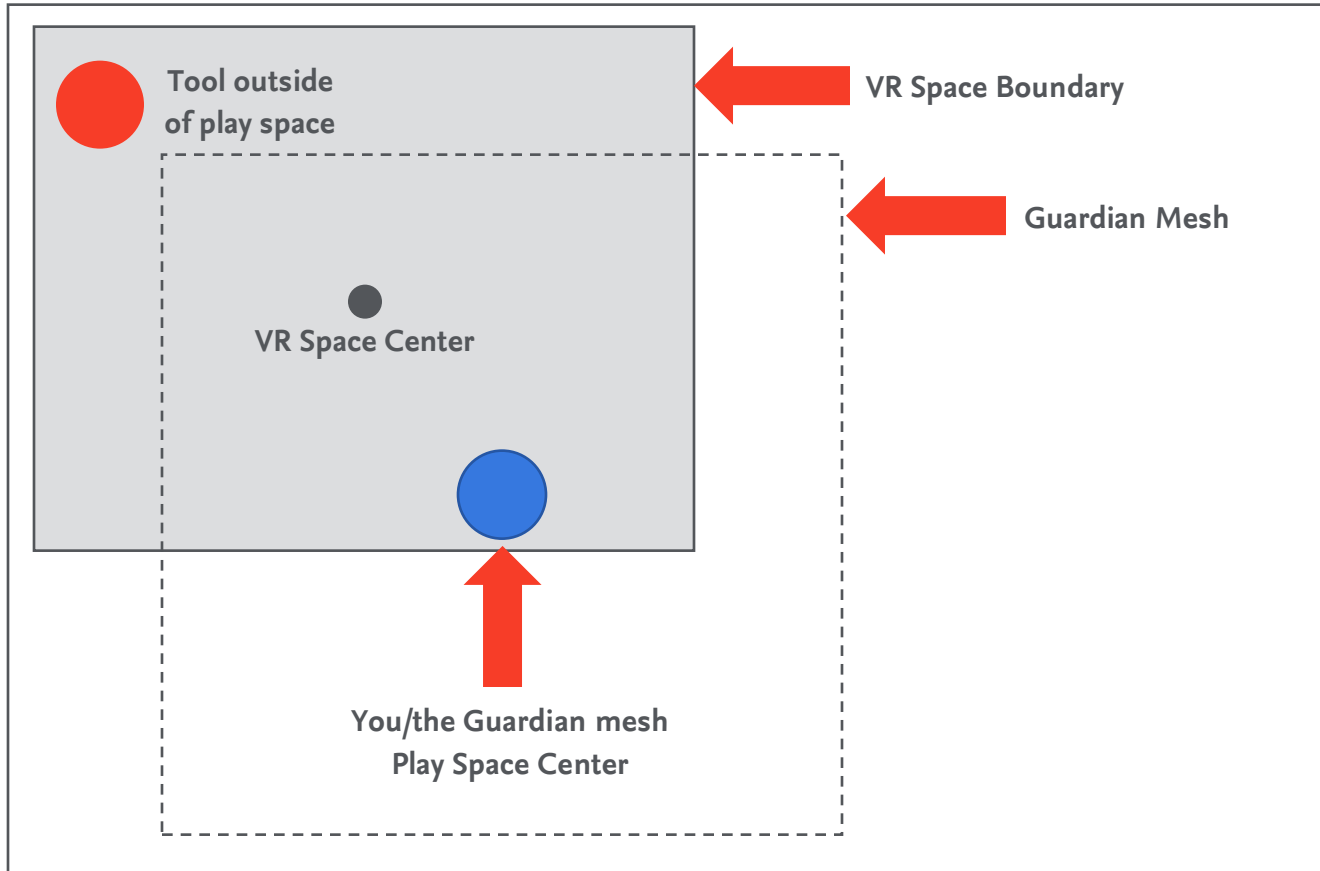
- SimX places you into the virtual room. Make note of where the scenario starts you, including where you are in the VR environment and the direction you are facing. For example, *I'm facing the side of a hospital bed, standing at its middle and about a foot away, or I'm facing a cardiac monitor standing about three feet away.*
2. Walk to the edge of the play space to activate the Guardian mesh. Look around the VR scenario and make sure all necessary parts of the environment (patient and tools) are within the Guardian mesh. If you cannot reach everything, you must recenter the VR environment, so everything falls inside the Guardian mesh.



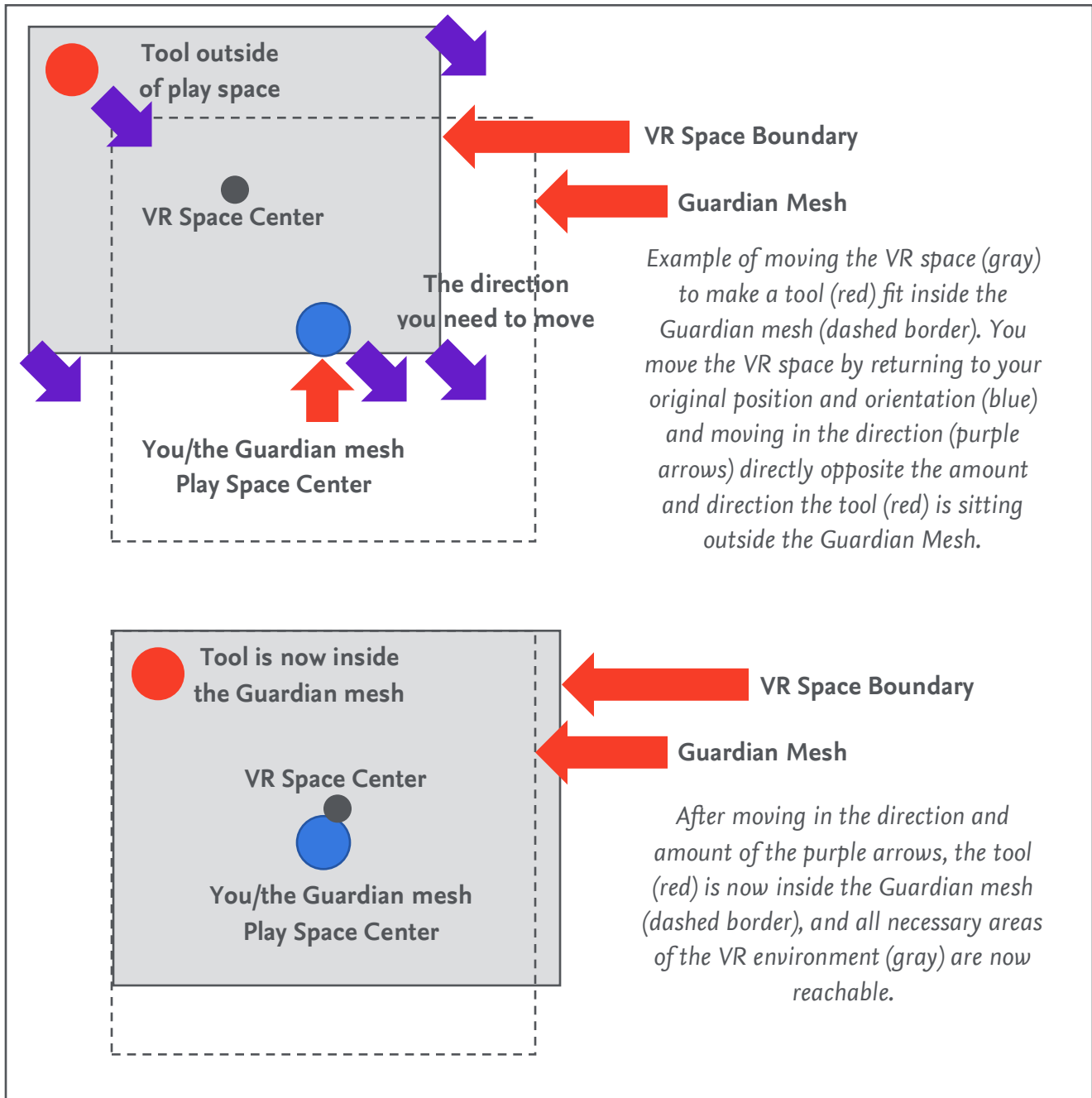
3. If two necessary objects in the VR environment are BOTH outside the Guardian mesh and located on opposite sides of you, your physical play space is likely too small for the selected scenario, and you must move to a larger physical play space.



4. If your play space is large enough, note which direction and what distance the VR space needs to move to make the problem area fall within the Guardian mesh. Let us look at the first example again. It appears the tool at the top-left corner is in the 10:30 direction (315 degrees) about 3 feet from the Guardian mesh.



5. To have the tool move inside the boundaries, the entire VR environment needs to move in the **opposite** direction, i.e. in the 4:30 direction (135 degrees) about 3 feet.
  - a. To accomplish this, walk back to your starting location and orientation (i.e. *facing the side of the hospital bed, standing at its middle and about a foot away*).
  - b. Now without changing your orientation, move in the 4:30 direction about three feet. Make sure you are still facing the same direction as you were at the beginning.
  - c. Press and hold the **Oculus** button on the **right controller for 3 seconds** to move the VR space over to the new starting point.



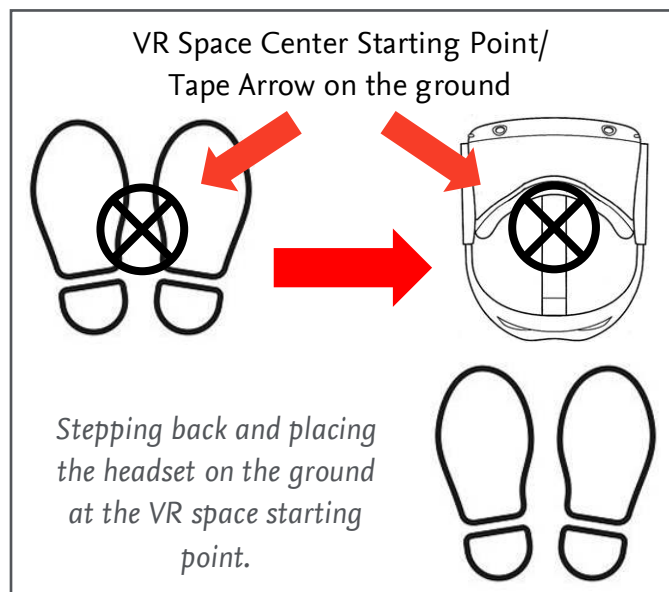
6. The relevant parts of the VR space should now lie within the Guardian mesh play space, and you should be able to reach the tool that was out of reach. Continue to adjust as needed if other tools may still be out of the Guardian bounds or have moved out of bounds while you were recentering.
7. When you have found the optimal VR environment center, mark that spot down in the physical play space using masking tape in the shape of an arrow in the direction you were facing. By

doing this, users can always go stand on that arrow to recenter the play space as well as synchronize headsets.

## Synchronizing Headsets

If participating in a VR simulation with another learner in the same physical play space (as opposed to remote multiplayer), the headsets must be synchronized so their VR spaces overlap. Your instructor may have already prepared this, but headsets occasionally lose synchronization, so it is best to check this prior to starting the simulation.

1. Both VR participants should stand within the prepared play space with the headsets fitted on.
2. Enter the same Sim Group as your fellow participant (see **Joining a Sim Group in VR**). Your instructor should have already started a case in that Sim Group on the SimX Moderator so that you are in a simulation environment.
3. To check if headsets are synchronized, VR participants should attempt a gentle “high-five” or handshake in VR. If synchronization is correct, their real hands (holding the controllers) should collide as their virtual hands meet.
4. If headsets are not synchronized, please follow these instructions:
  - a. Lift your headset so you can see the physical space and walk to the optimal center that should have been marked by your simulation facilitator after following **Centering the Simulation Play Space** directions.
  - b. Place the headset gently on the marked optimal center in the designated direction.



- c. Press and hold the **Oculus** button on the **right controller for 3 seconds** to recenter the space again for the headset.
- d. Set this headset aside and repeat steps **b** and **c** for additional headsets.
- e. Re-attempt a gentle “high-five” or handshake in VR once synchronization is complete.

**\*\*\* NOTE: If VR spaces are NOT synchronized, then players will not appear in the correct location in the VR space with respect to their physical location, which may lead to collisions and injury. \*\*\***

**NOTE:** Headsets lose synchronization when they leave the play space, such as someone walking out of the play space with it on, or someone placing a headset outside the play space between simulations, so a best practice to implement is to synchronize your headset in the marked optimal center in the play space (the taped arrow on the ground) before every simulation begins and attempt a gentle “high-five” or handshake in VR with your peer that is participating in VR simulation with you.

**\*\*\* NOTE: Other users’ avatars may not be to scale when synchronizing multiple headsets in the same play space. Be sure to keep adequate physical space between yourself and other users to avoid collisions that could result in injury. A spotter should always be used to monitor the play space and physical positions of participants when using multi-participant single play spaces. \*\*\***

## Troubleshooting

### Losing Synchronization

Occasionally, headsets may fall out of sync with each other or the play space. To avoid this:

1. Avoid blocking the front of the headset completely when it is not in use.
  - Do not carry the headset with the front facing you.
  - If resting the headset on the ground or other object, do not walk in front of it.
2. Do not leave the headset outside the play space for too long.
3. Avoid using the headsets in the center of large open spaces.
  - If operating in large gymnasiums or conference rooms, set up play space in a corner or at least near one wall.
  - If flooring is very uniform and walls are far off, try using tape that contrasts with the floor to mark out your play space, and try decorating the floor with random pieces of tape.



4. Avoid using headsets with glass or shiny walls.
  - If unavoidable, pull down shades/blinds or cover walls/windows with crepe paper or cloth to minimize reflections.

### Floor is Wrong

If there are tools on the floor out of reach, reset the play space by setting up the Guardian again, starting with re-calibrating the floor. Refer to your Oculus instruction manual or Oculus Support to make sure the Guardian is properly set up.

### Oculus Quest Support

For detailed guidance on the Oculus Quest hardware, please talk to your instructor or review the **Oculus Support Center** at [support.oculus.com/quest](https://support.oculus.com/quest) ↗.

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**END OF GUIDE**