



# 3M Working at Heights Awareness VR – VIVE

## User Instructions

July 2018

### Learning Objectives

The purpose of the “Fall Protection” virtual reality experience is to help influence worker safety behavior by providing:

- A virtual environment for all employees working at height to understand the basics of fall protection and the importance of protection against dropped objects.
- This module can be used for daily safety activities as well as supervisor awareness training.

### Settings Menu

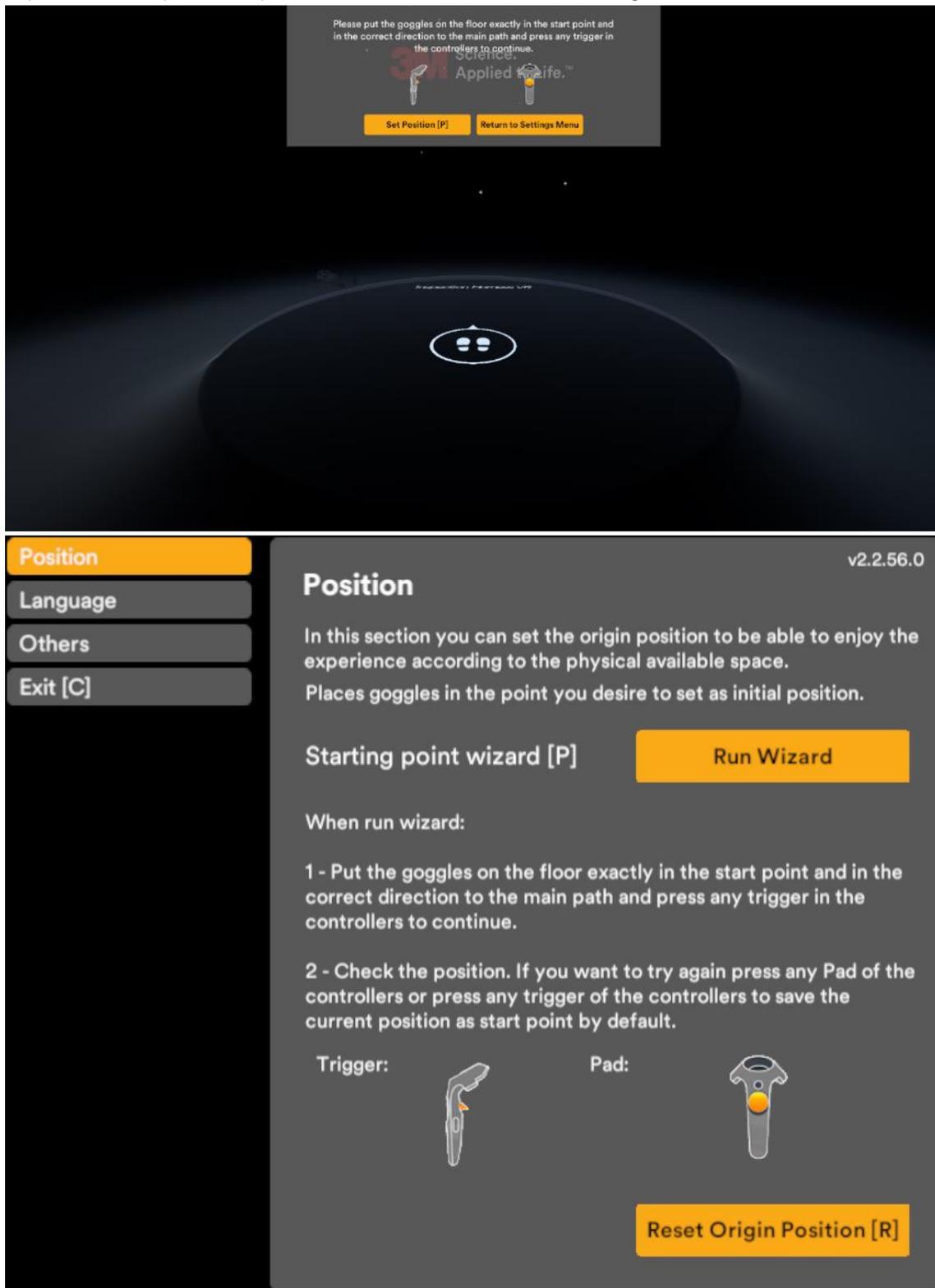
Using the **C** key, you will access the settings menu and general preferences of the application. This will allow you to set up how the application will run and establish the default values of features that can be customized by the staff in charge of managing the VR experience.

### Initial Position (*Very Important*)

Under this option, the system will allow you to establish the best starting point for the physical setup in terms of both the position and rotation of the play space so that the user is optimally positioned.

If you have problem with the starting position or the system does not detect that the user is standing in the starting position, please press **R** to reset the origin position and set the starting point again by using the Starting Point Wizard

If you need help, the steps to do this are listed on the settings screen.



The image shows a VR application interface. At the top, a dark grey box contains instructions: "Please put the goggles on the floor exactly in the start point and in the correct direction to the main path and press any trigger in the controllers to continue." Below this text are two small icons of VR controllers, one with a red trigger and one with a yellow trigger. At the bottom of this box are two yellow buttons: "Set Position [P]" and "Return to Settings Menu".

The main area of the interface is a dark, circular virtual space with a glowing white circle in the center containing two white eyes, representing the user's perspective.

At the bottom, there is a settings menu with a dark grey background and a vertical list of options on the left: "Position" (highlighted in orange), "Language", "Others", and "Exit [C]". To the right of this list, the "Position" settings screen is displayed. It has a dark grey background and a version number "v2.2.56.0" in the top right corner.

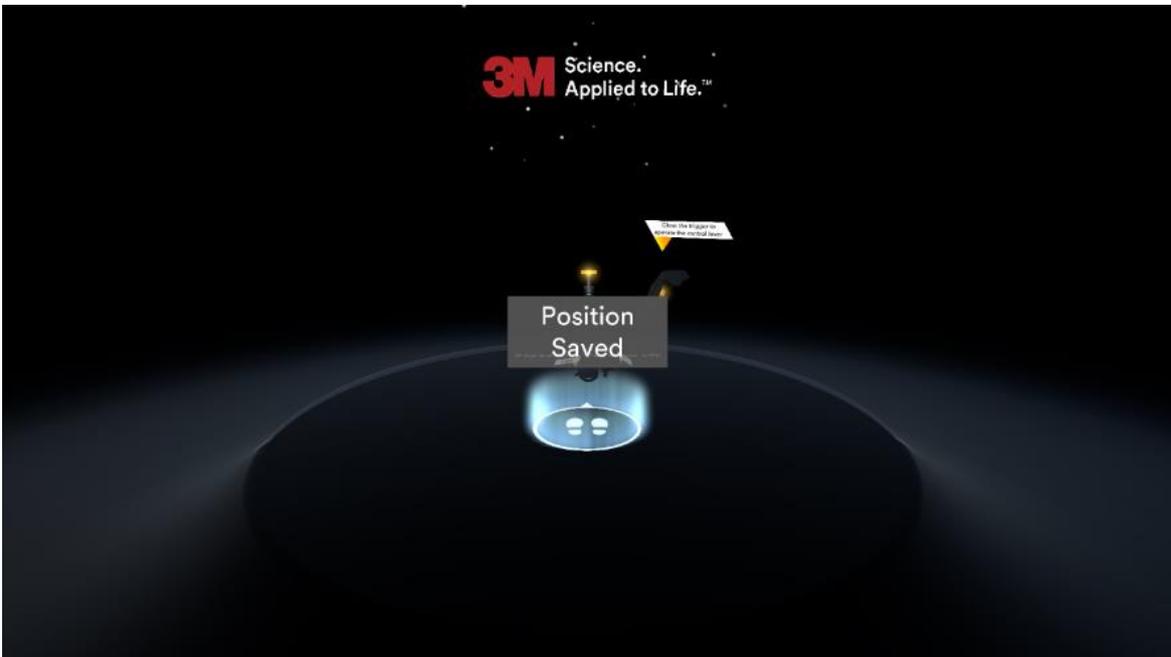
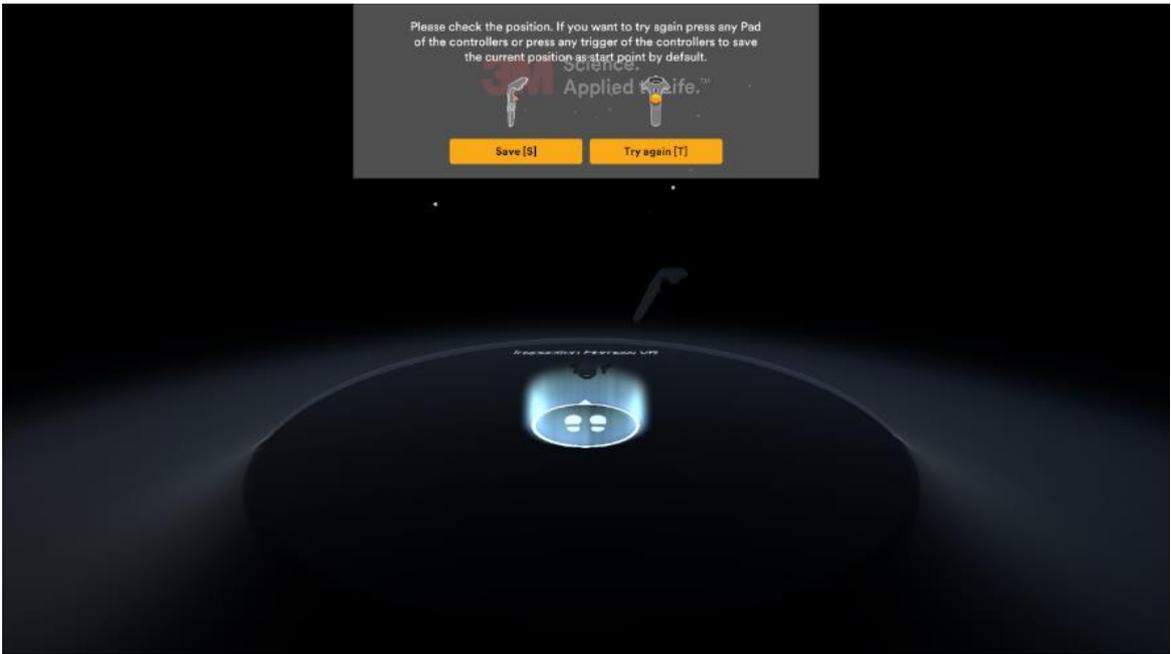
The "Position" section contains the following text:  
**Position**  
In this section you can set the origin position to be able to enjoy the experience according to the physical available space.  
Places goggles in the point you desire to set as initial position.

Below this text is a yellow button labeled "Run Wizard" next to the text "Starting point wizard [P]".

Underneath, it says "When run wizard:" followed by two numbered steps:  
1 - Put the goggles on the floor exactly in the start point and in the correct direction to the main path and press any trigger in the controllers to continue.  
2 - Check the position. If you want to try again press any Pad of the controllers or press any trigger of the controllers to save the current position as start point by default.

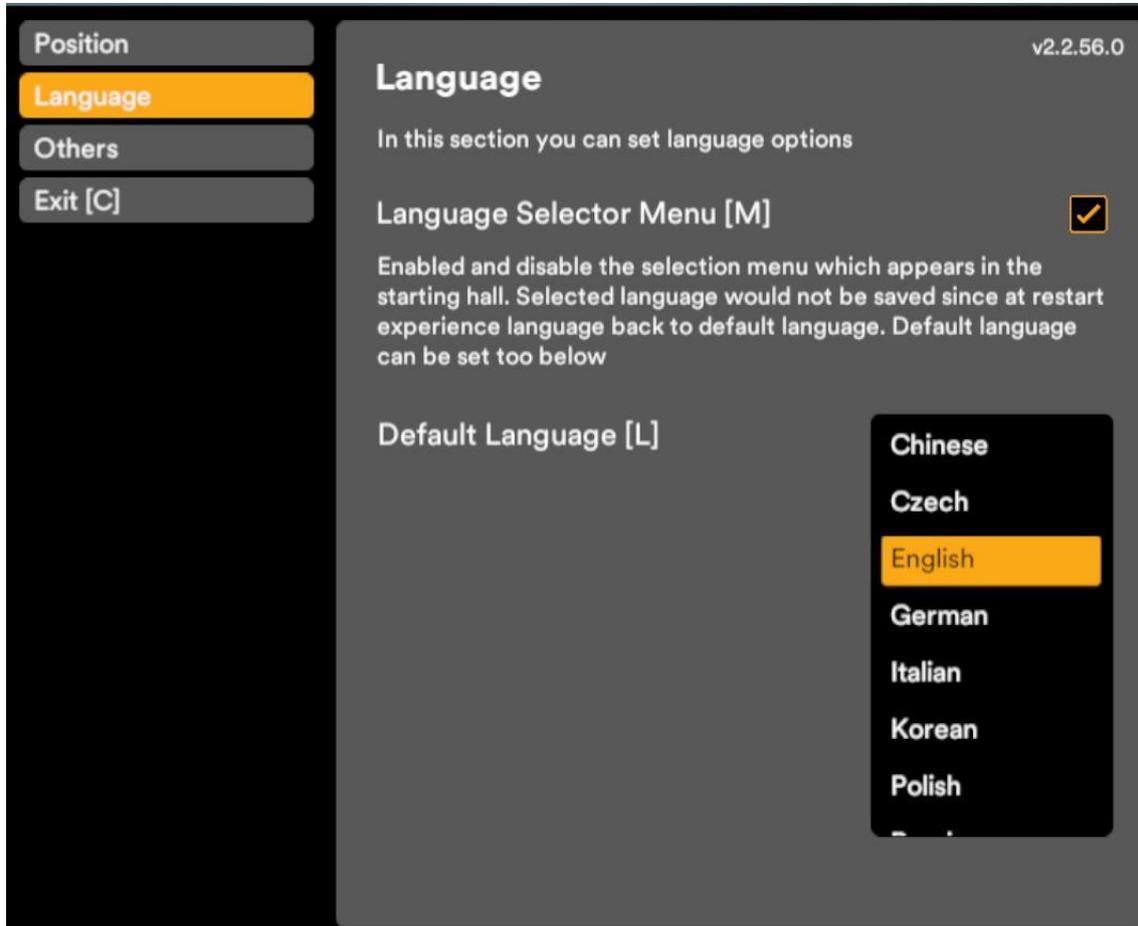
Below the steps are two controller icons. The first is labeled "Trigger:" and shows a controller with a red trigger highlighted. The second is labeled "Pad:" and shows a controller with a yellow pad highlighted.

At the bottom right of the settings screen is a yellow button labeled "Reset Origin Position [R]".



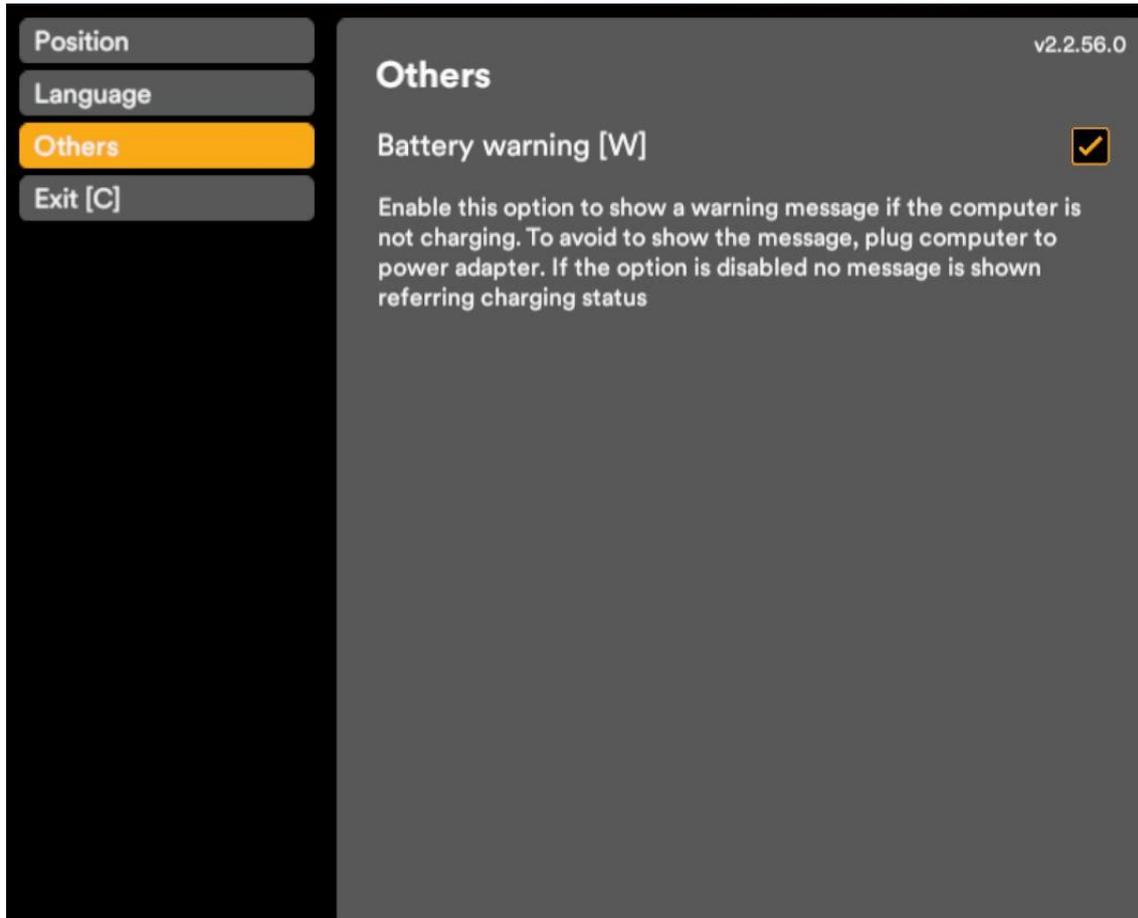
## Language

The application has been developed with a multilingual interface, which means you can set the default language and choose whether or not you want the user (customer) to be able to choose the language at the beginning of the experience.



## Battery Warning

If you are using a portable device, it is very important to have it connected to a power source at all times so that the application always runs at maximum performance. Failure to do so will result in the activation of energy saving settings that may reduce the level of performance of the experience and the image could jump, causing the user to get dizzy, etc. The system will alert the user if it detects that the device is not connected to a power source or for any other similar performance issues. Given the wide range of devices, not all computer hardware supports this feature so it can be deactivated if it is incompatible.



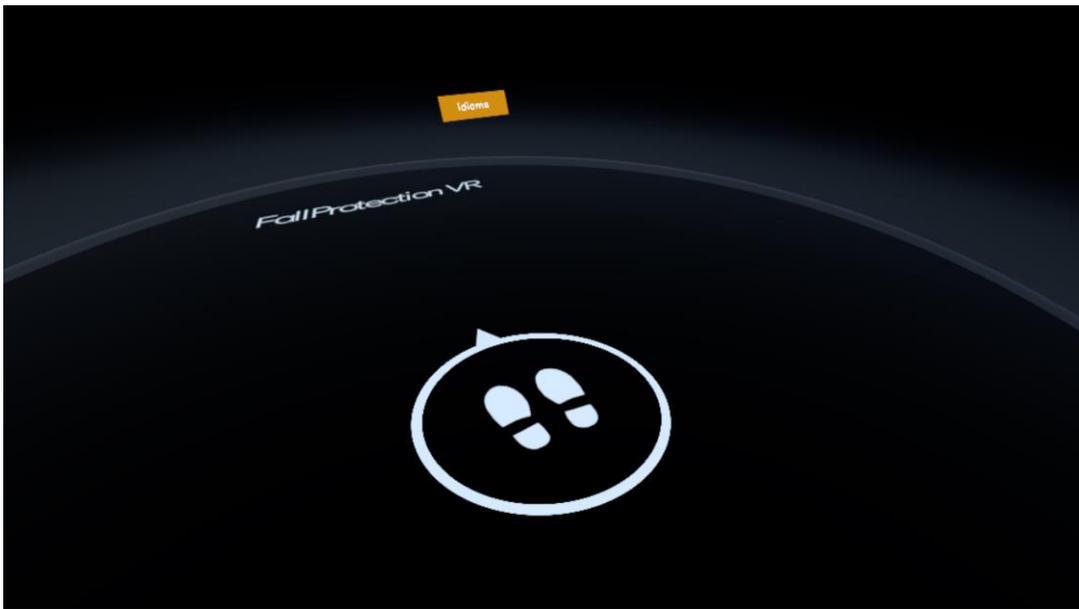
This initial configuration is only necessary the first time it's used and then the system will save these position settings.

## Keyboard Commands

Key	Command
C	Settings menu
B	Restart scene (back)
N	Skip to the next scene (next)
ESC	Exit the application

## Experience the Fall Protection Skyscraper VR Training

1. Verify that the user will appear in the 3M hall on the screen.
2. Place the HTC VIVE headset on the user at any spot within the play area and make sure that there is always another person close by who can easily assist the user if needed.
3. Once the user is wearing the headset, the user will appear inside the 3M positioning hall.
4. Instruct the user to walk to the starting point and stand on the circular white mark with their toes pointing in the direction indicated by the mark on the floor.



5. If the initial calibration has been made correctly, when the user stands on the white dot, the user will be in the best position to enjoy the virtual reality experience with the greatest possible freedom within the play area (we recommend that a corner of the room be used for this).
6. In this place, the user can select the language.
7. Once the user has been positioned correctly on the starting point a disclaimer will appear, and the user will be ready to begin the experience.

8. After the disclaimer or after the user clicks the triggers on both controllers, the user will be situated in a locker room in front of a harness.



9. The User can conduct a visual inspection of the harness and simulate how to don the harness. This harness inspection is just a simulation, and in order to complete the inspection, the user must touch all six triangles on the harness as a way to inspect the harness.

In real work situations, the harness inspection requires that an individual be trained or knowledgeable in how to complete equipment inspections. After the user inspects the harness and finishes viewing all six points of the harness, the user can grab the harness and move it toward their body to simulate wearing the harness.

## 10. At the Skyscraper

- Tell the user to grab the snap hook in front of them and find where to connect to an anchor or lifeline. If they can't find where to connect, tell them to look up and to their right.
- Once the user is connected, instruct them that there is a toolbox on the floor and that they need to pick up a tool to work. If they struggle to find where to connect, just point out that the correct connector is highlighted.
  - Example: If they choose the hammer, you can ask them to hit the wood or metal part of the structure. (Note: Pay attention and listen to the sounds that are generated in response to their actions.)



- At this point, invite the user to walk toward the catwalk. Once they reach the position where there is no railing is around them, ask them to either turn their body to the right or to the left. Next, ask them to look down to see birds flying and cars driving on the street.
- Now ask them if they want to experience a fall arrest event; if they do, they can take one or two steps forward.
  - Since they are connected to the lifeline, instruct the user that they will not fall too far before their fall is arrested. (You can also offer to hold their controllers to let them feel oriented and safe in the experience while they walk off the catwalk.)
  - If someone does want to know how it feels when falling without being connected to the lifeline, press the “b” key to go back, but this time, do not let them connect the snap hook to the lifeline.
- If the user *does not* want to experience the fall arrest event, do not force them to try it.