



INSTRUMENTED EXPLORER MINI + CLINICAL APP

USER MANUAL

June 2025 (Version 1.0)

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Contact Information

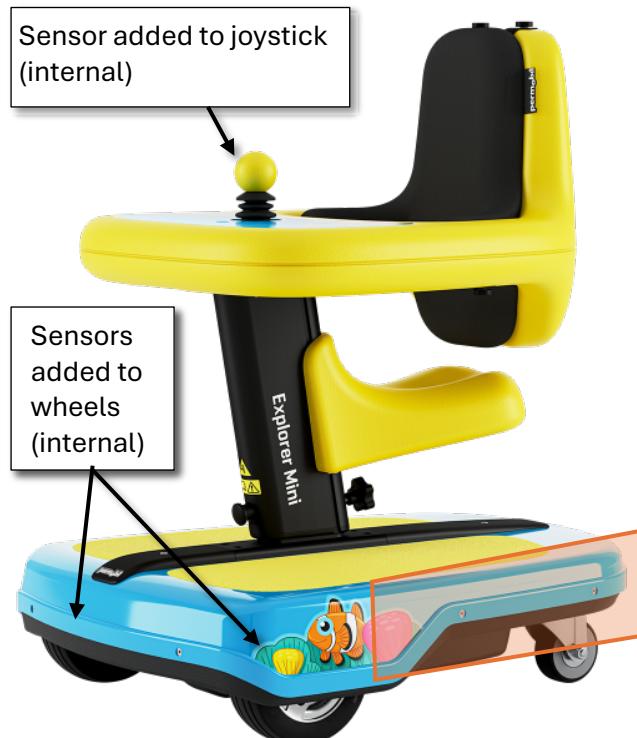
Need help? Email Kim Ingraham (kingra@uw.edu).

Acknowledgments

The UW development team behind this project was Mia Onodera, Bethany Sloane, Heather Feldner, and Kim Ingraham. Thank you to Jered Dean, Adam Morgan, Josh Burmeister, and the entire team and LUCI. This project was funded by the Shirley Ryan AbilityLab's C-STAR Pilot Program.

CHAPTER 1: THE INSTRUMENTED EXPLORER MINI

Hardware Quick Guide

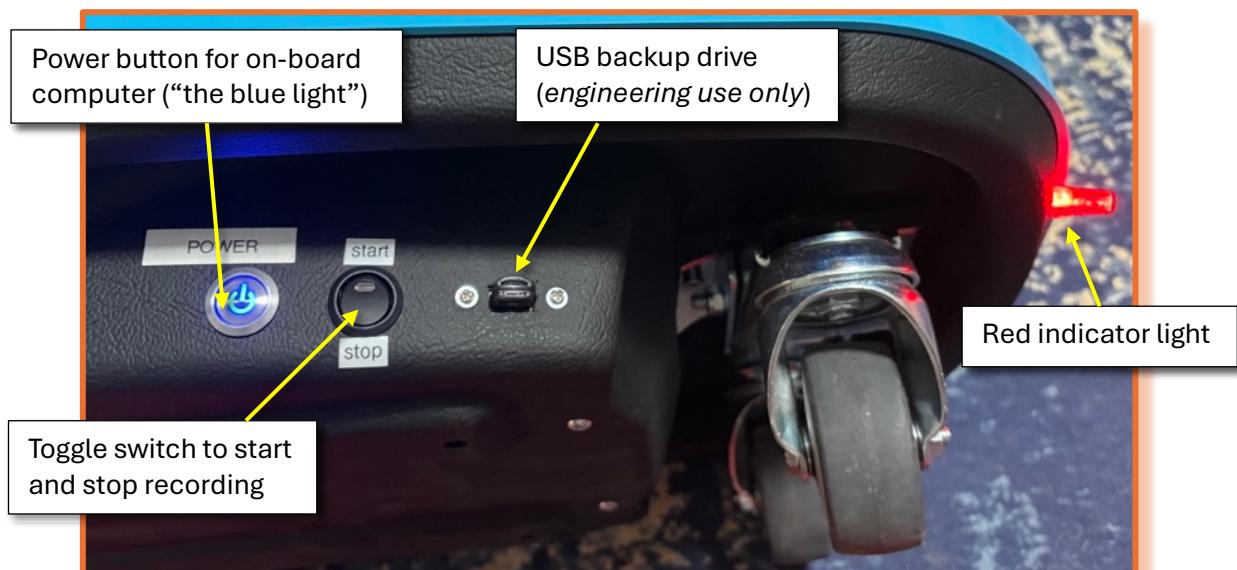


(A) Instrumented Explorer Mini

- The instrumented Explorer Mini is adapted from the commercially available product – all original device functionality is preserved.
- Use the Explorer Mini like you would normally, following the manufacturer's recommendations.
- We added internal sensors to the front driving wheels and to the joystick.
- All visible hardware changes to the device are located under the left footplate (shaded in orange)

(B) New hardware components added to the Explorer Mini

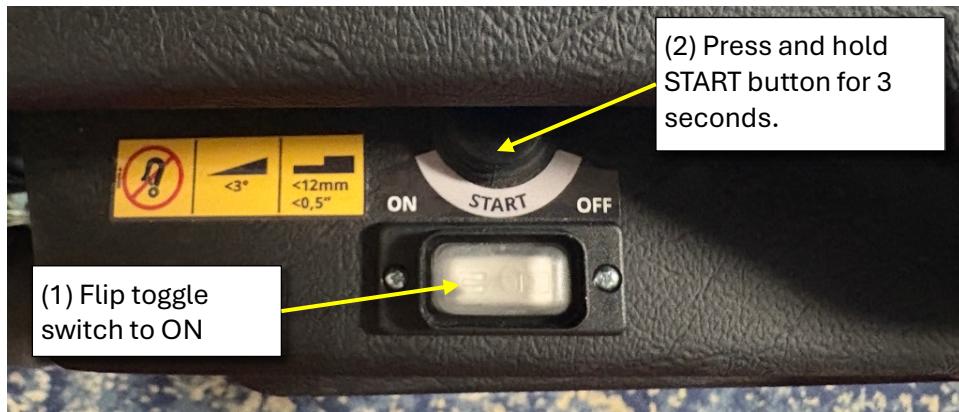
- You have also been given a single page with step-by-step instructions for recording a session for you to mount on the device or hang on the wall. This manual contains the same information with slightly more detail.



SECTION 1: Recording a session with the Explorer Mini

Step 1: Turn on the Explorer Mini

- 1.1. To turn on the Explorer Mini, locate the buttons underneath the **RIGHT** footplate. **These are the standard Explorer Mini power buttons.**

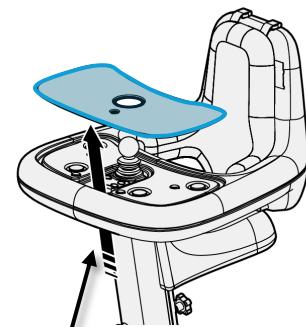


- 1.2. Make sure the toggle switch is flipped to the **ON** position.
- 1.3. Press and hold the **START** button for about 3 seconds.

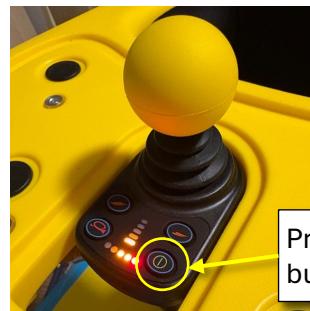
Note: If the device idles for more than 30 minutes, you will need to press and hold the **START** button again before turning on the joystick. If the joystick still does not turn on, flip **OFF** the toggle switch, then flip **ON** the toggle switch, then press and hold the **START** button.

Step 2: Turn on the joystick

- 2.1. Remove the blue tray cover from the Explorer Mini by placing your fingers in the hole underneath the table and pushing upwards. The tray is held by magnets and should release with gentle pressure. You will now see the joystick buttons exposed.



- 2.2. Press the power button (green circle with a vertical line).
- 2.3. Replace the tray.

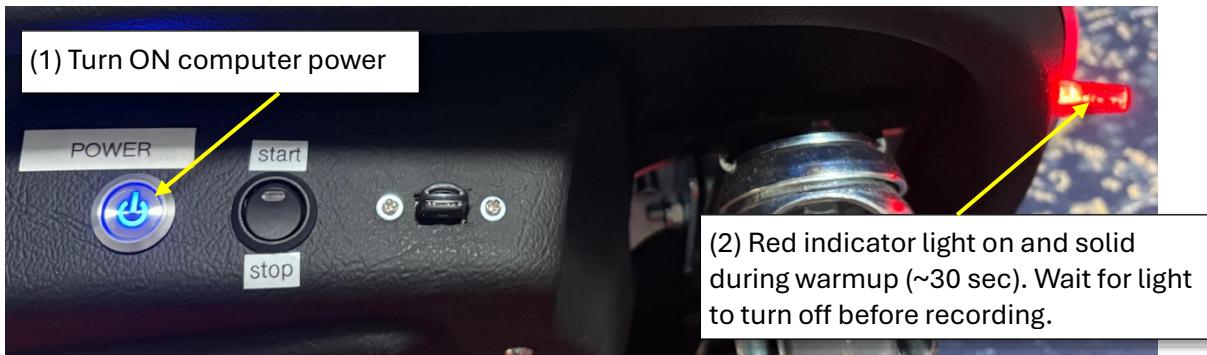


Place fingers in hole underneath table and push upwards.

Press joystick power button to turn on.

Step 3: Turn on the on-board computer

- 3.1. Locate the new buttons added under the LEFT footplate.



- 3.2. Press the POWER button to turn ON the computer power. You will see the **blue light** turn on.
- 3.3. The red indicator light will turn solid red during “warmup”.
- 3.4. Wait for the red indicator light to turn off before starting a recording (about 30 seconds).

Step 4: Start recording data

- 4.1. Flip the recording toggle switch to START. The light on the toggle switch will not turn on.
- 4.2. The red indicator light will flash 3 times, then continue flashing intermittently. **This means the device is recording!**



----- **You may now perform your Explorer Mini session!** -----

Step 5: Stop recording data

- 5.1. After your session, flip the recording toggle switch back to STOP to end the recording.
- 5.2. The red indicator light will flash 5 times then stop flashing.
- 5.3. Your data will now be automatically synced to the cloud. This takes ~30 sec.



Step 6: Turn off the on-board computer

- 6.1. Wait approximately 30 seconds after you end the recording before turning off the computer power. This gives the data time to sync to the cloud.
- 6.2. **Turn OFF the computer power button!!!**
The **blue light** will turn OFF.
- 6.3. Turn off joystick power.



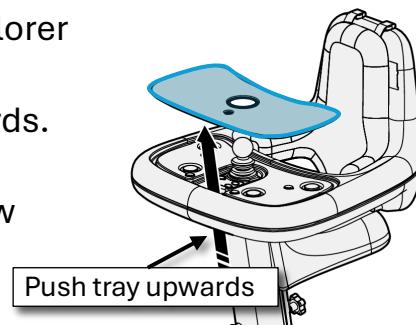
Note: It is VERY IMPORTANT that the on-board computer power (the **blue light**) gets turned off after every recording session. The computer draws power from the Explorer Mini batteries. If the **blue light** is left on, it will *completely drain* the Explorer Mini batteries.

If this happens, you will not be able to charge the Explorer Mini. When you plug it in to the charger the light on the charger will flash orange (in “standby” mode) and not recognize the device. You will not be able to turn on the joystick.

If this happens, the engineering team will need to come retrieve the device, take it apart, and recharge the batteries using a specialized charger. Please contact Kim Ingraham at kingra@uw.edu.

SECTION 2: Charging the Explorer Mini

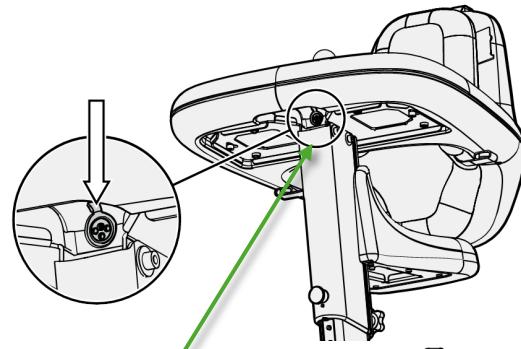
- 2.1. Remove the blue tray cover from the Explorer Mini by placing your fingers in the hole underneath the table and pushing upwards. The tray is held by magnets and should release with gentle pressure. You will now see the joystick controls exposed.



- 2.2. The battery indicator lights on the joystick display the current level of battery charge. Fully charged has all 5 lights on; the lowest charge has only 1 light on.

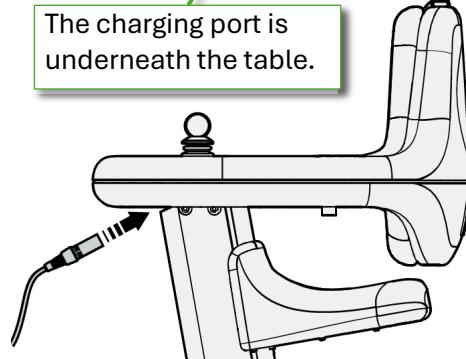


- 2.3. Plug in the charger to a standard wall outlet. Plug in the other end to Explorer Mini's charging port. The plug can only fit into the Explorer Mini one way, so make sure the pins of the connector are aligned with the holes in the charging port.



- 2.4. You should see the light on the charger turn **solid red** – this means it is charging!

The charging port is underneath the table.



- 2.5. Check that the battery indicator lights on the joystick are pulsing. If they are not, press the joystick power button (green line in a circle) to wake up the system.

- 2.6. When the device is fully charged, the light on the charger will turn **solid green**. Disconnect the charger from the Explorer Mini.

Troubleshooting:

- If the device is plugged in, but the light on the charger is *blinking red*, this indicates a charging error. Repeat steps 2.1 – 2.3 and try to charge again.
- If the device is plugged in but the charger is *blinking orange/yellow*, you may have accidentally drained the Explorer Mini batteries. Check to see if the computer's **blue POWER light** is on underneath the right footplate. If it is, turn the power OFF and email engineering support at kingra@uw.edu.

CHAPTER 2: THE CLINICAL APP

App Quick Start Guide

iPad Login	
App Web Address	https://alpdiagnostic-nu.vercel.app
App Login	
App Password	

SECTION 1: Logging into the iPad and the app

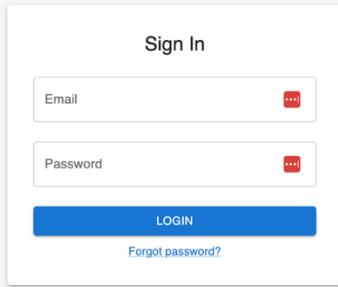
1.1. Log in to the iPad

1.2. Open Safari on the iPad



1.3. In the browser, navigate to: <https://alpdiagnostic-nu.vercel.app>

You will see the *Login* page:



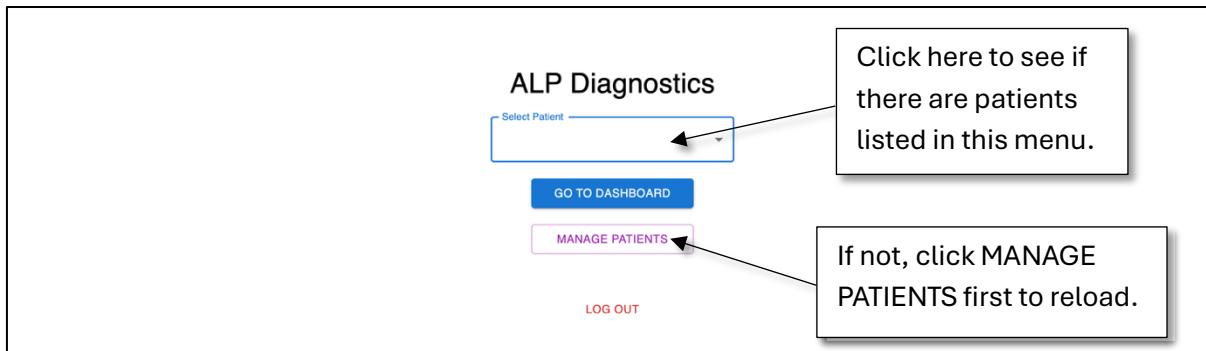
A screenshot of a "Sign In" form. It has two input fields: "Email" and "Password", each with a red "clear" button. Below the fields is a blue "LOGIN" button. Under the button, there is a link "Forgot password?".

1.4. Log in using your credentials.

Note: The app will stay logged in until someone clicks **LOG OUT**. You will not have to log in every time.

SECTION 2: Initial setup

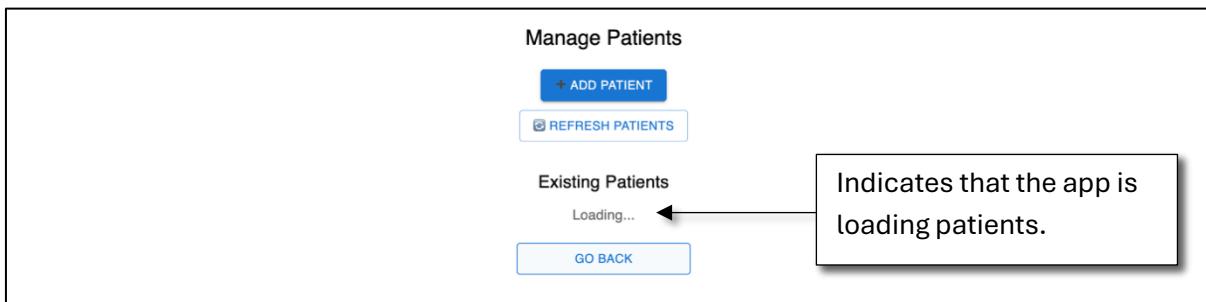
- 2.1. You will now see the *Home* page. Click on the Select Patient dropdown box to see if there are patients listed.



- 2.2. Click on the Select Patient dropdown menu.

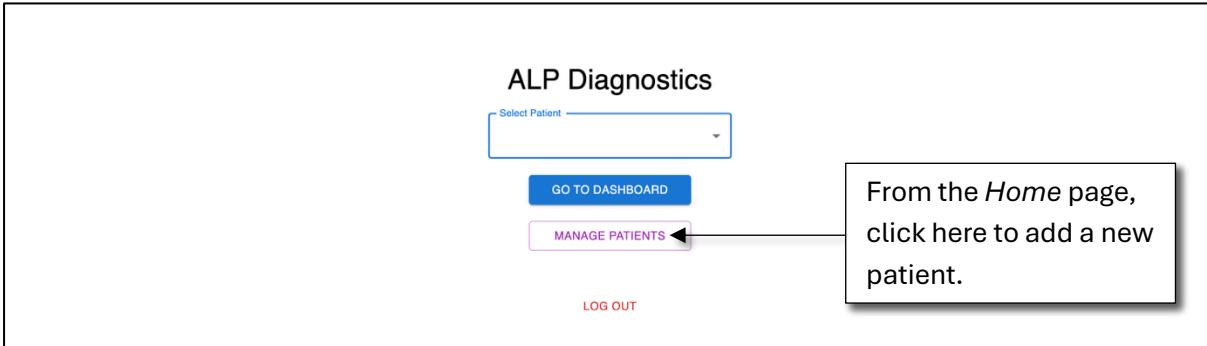
- If you do not see patients in the dropdown menu, click **MANAGE PATIENTS**. This will re-populate all the existing patients in the dashboard. This happens on a first login or if the app has refreshed after being inactive for awhile.
- If you do see patients in the dropdown menu, skip to Section 3.

- 2.3. Clicking **MANAGE PATIENTS** takes you to the *Manage Patients* page. After loading, you should see all your saved patients:

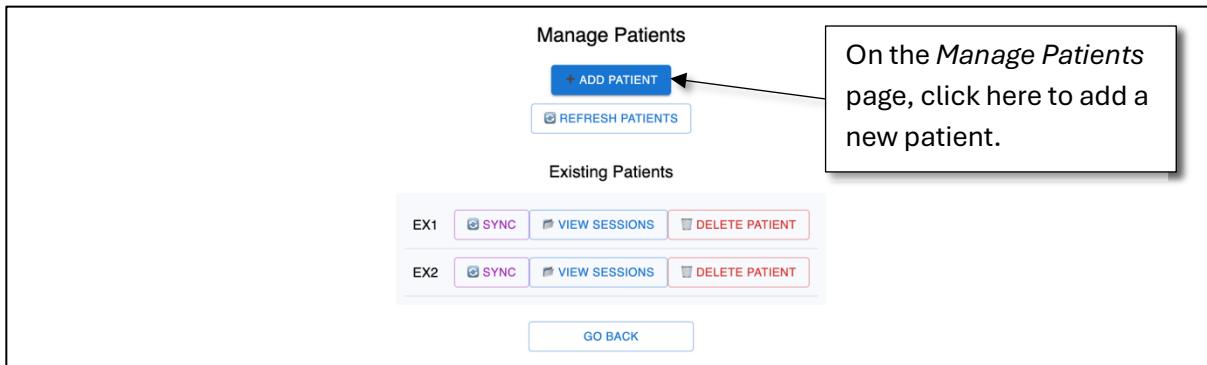


SECTION 3: Adding a new patient

3.1. To add a new patient, click **MANAGE PATIENTS** from the *Home* page.

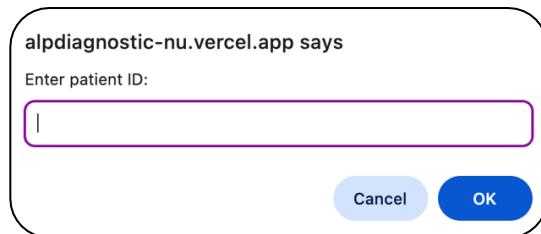


3.2. On the *Manage Patients* page, click **ADD PATIENT** again.



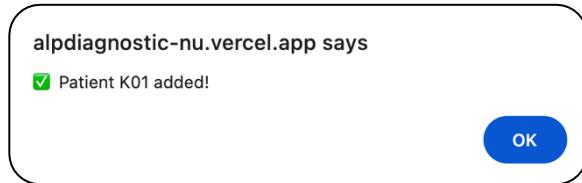
3.3. A pop-up window will appear, asking for you to enter your patient ID.

Type in your patient ID, then click **OK**.



Note: The patient ID will be used to identify data. We recommend using a numbering scheme and the therapist's initials (e.g., K01_KAI). Choose a system where it makes it easy for each clinician to keep track of their patients. Keep a written list or shared, secured electronic list of patient names and corresponding patient IDs. We *do not* recommend using names or identifying information in the app.

3.4. Another pop-up window will appear, confirming your new patient has been added. Click **OK**.



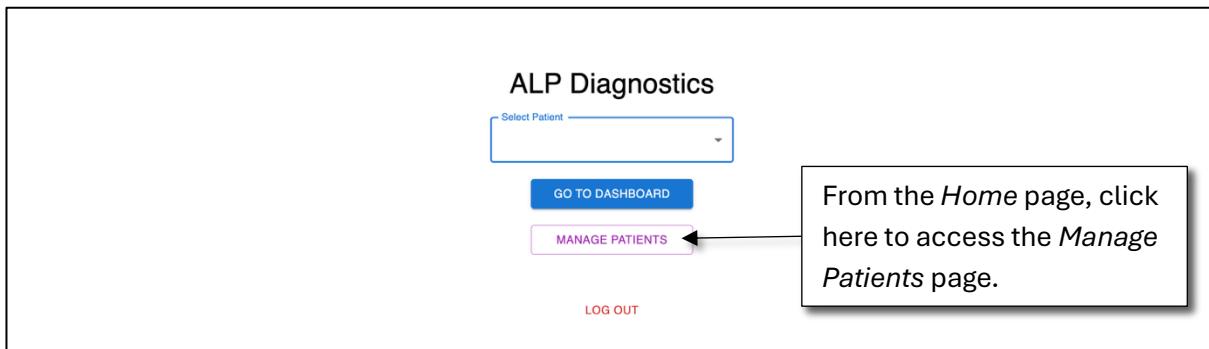
3.5. When the page refreshes, you will see your new patient in the list. You are now ready to record and sync sessions for this patient.

The image shows a "Manage Patients" interface. At the top, there are buttons for "ADD PATIENT" and "REFRESH PATIENTS". Below this, the heading "Existing Patients" is displayed. Three patient entries are listed: "EX1", "EX2", and "K01". Each entry has three buttons: "SYNC", "VIEW SESSIONS", and "DELETE PATIENT". A callout box on the left points to the "K01" entry with the text "New patient has been added to the list.". A callout box on the right points to the "GO BACK" button at the bottom with the text "You can always click GO BACK to return to Home.".

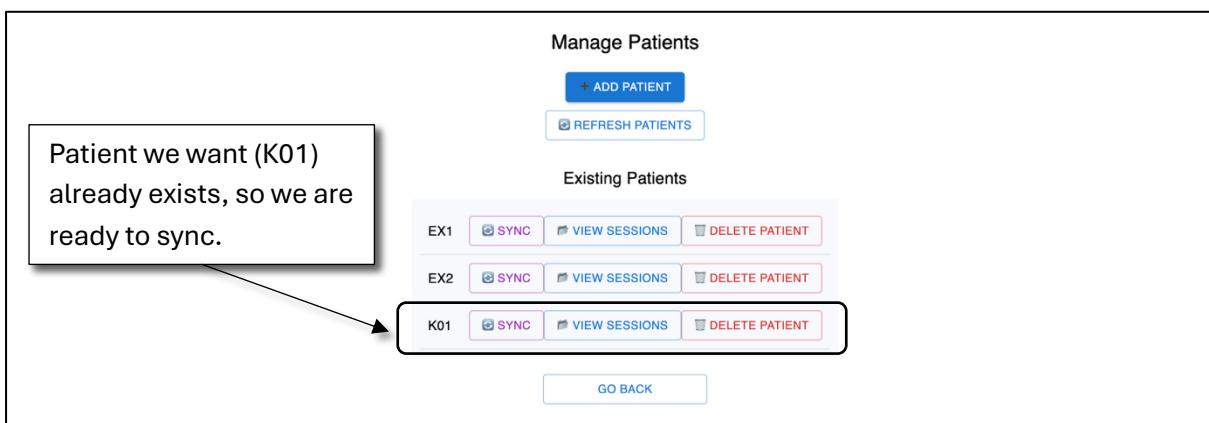
SECTION 4: Downloading a session from the Explorer Mini

4.1. After you have recorded a session with a patient using the instrumented Explorer Mini (detailed instructions can be found in **CHAPTER 2**), it will automatically send the data to the cloud. In this section, you will learn how to download (sync) this data with the app.

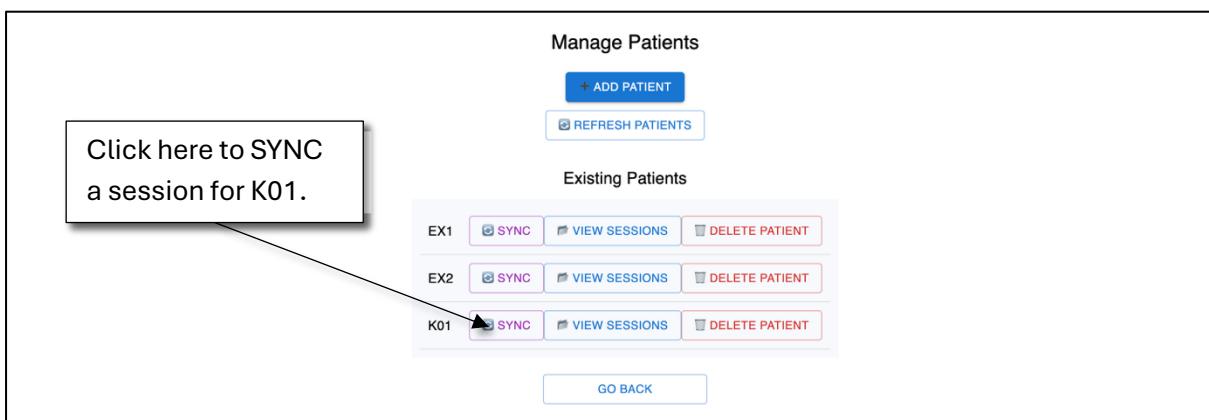
4.2. From the *Home* page, click **MANAGE PATIENTS**.



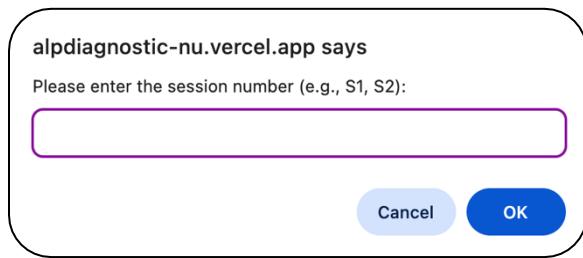
4.3. On the *Manage Patients* page, identify the patient whose session you want to sync (e.g., K01). If this is a patient's first session, make sure you follow the steps in **Section 3** to add a new patient.



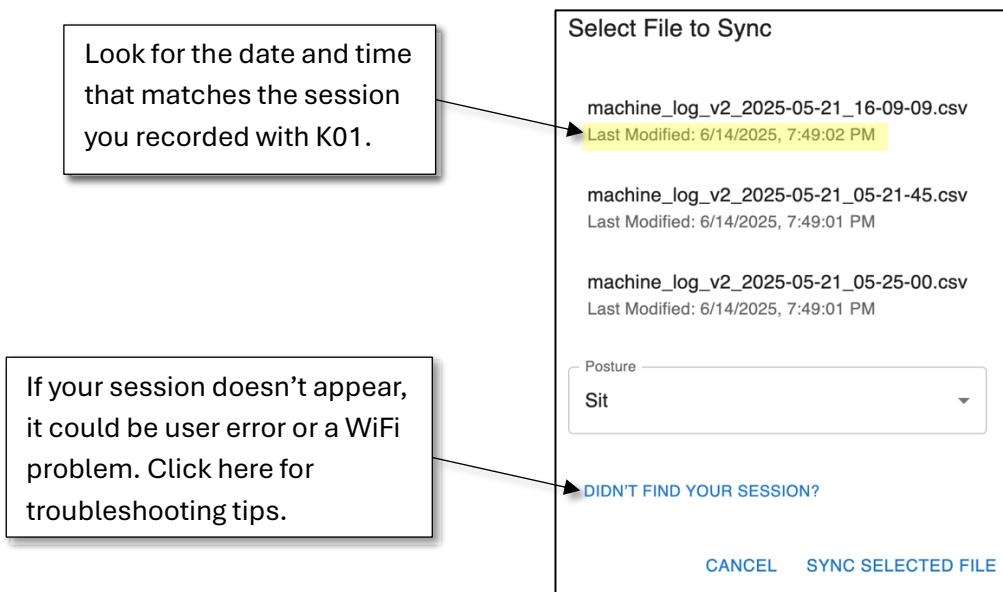
4.4. Click **SYNC** next to the corresponding patient.



4.5. A pop-up window will appear for you to enter the session number. We recommend using the notation S1, S2, S3, etc. Click **OK**.



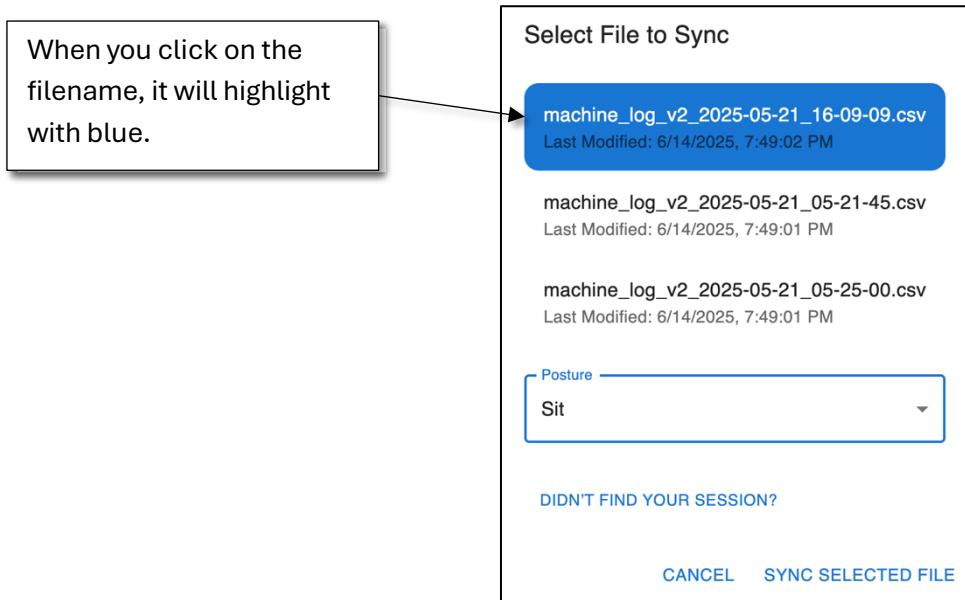
4.6. Another pop-up window will appear, displaying the last 3 files recorded on the device. The filename will be long and nonsensical! You just need to look at the text under the filename – Last Modified: Date, Time



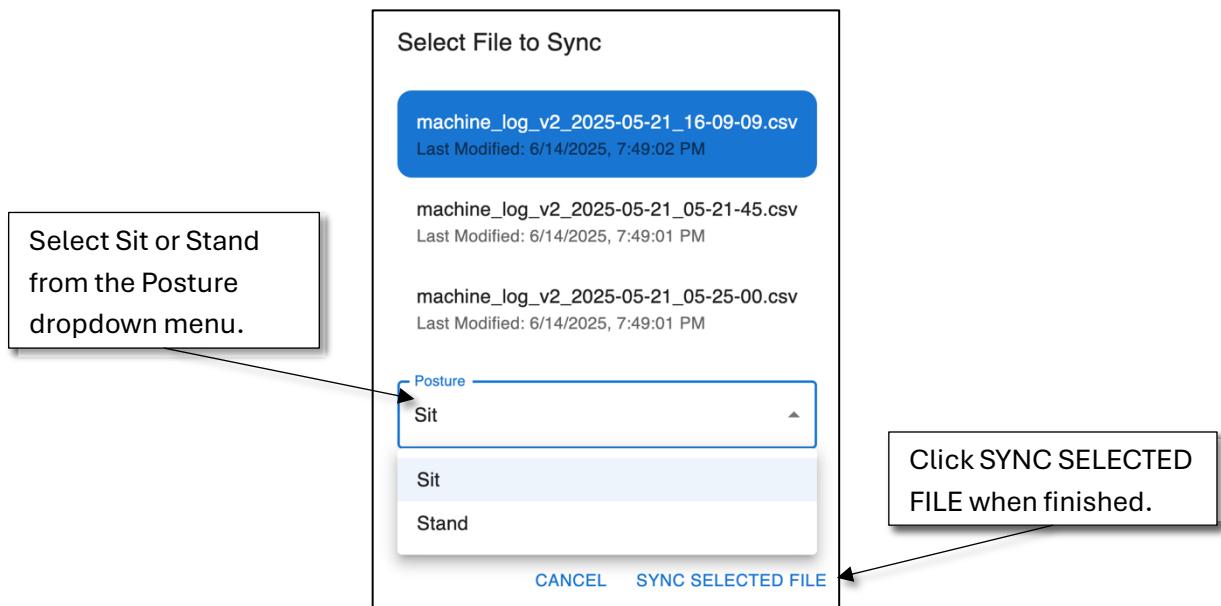
Note: You can only view the last 3 recorded sessions! If you record more than 3 sessions without syncing, you will not be able to access them.

Note: If you don't see a recording that matches your session's date and time, the file did not record and is not recoverable. This could be user error in recording (click **DIDN'T FIND YOUR SESSION?** for some troubleshooting tips). It also could be a WiFi error that caused the file not to sync. In either case, there is no way to restore the recording.

4.7. Click on the filename that corresponds to your desired session.

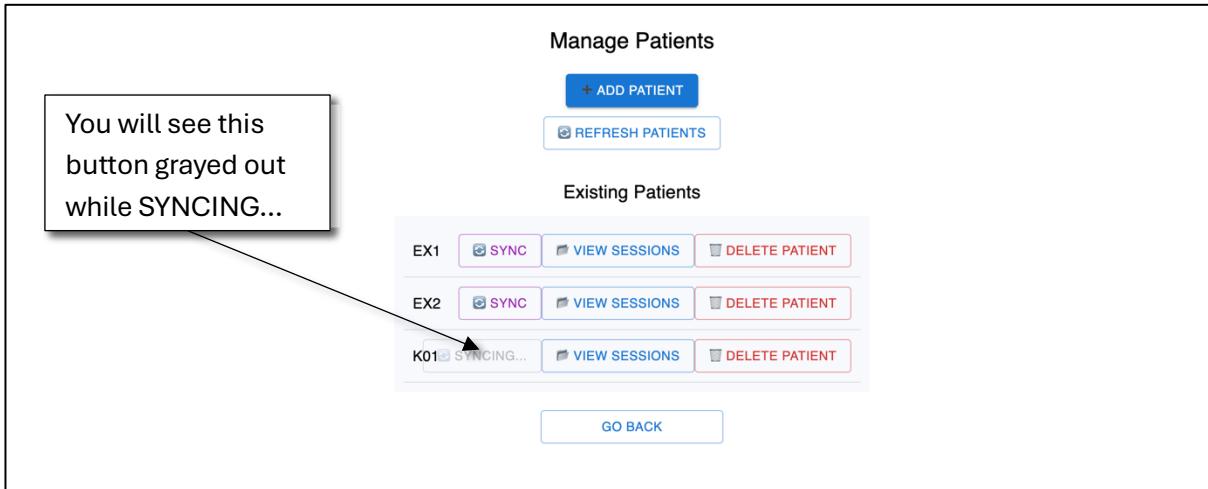


4.8. Select the posture the child was in during the recorded session. If you used both postures, choose the one you feel reflects most of the session time.

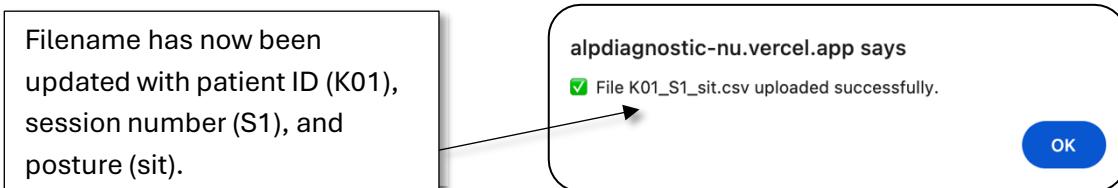


4.9. Click **SYNC SELECTED FILE** in the bottom right corner of the window.

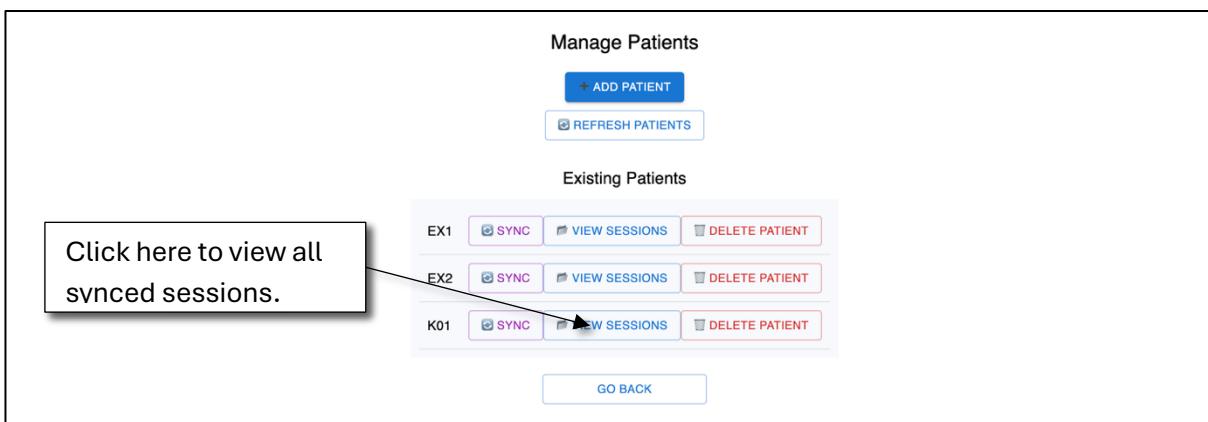
- 4.10. Wait for the data to download from the cloud. This can take up to a minute, depending on the length of the session.



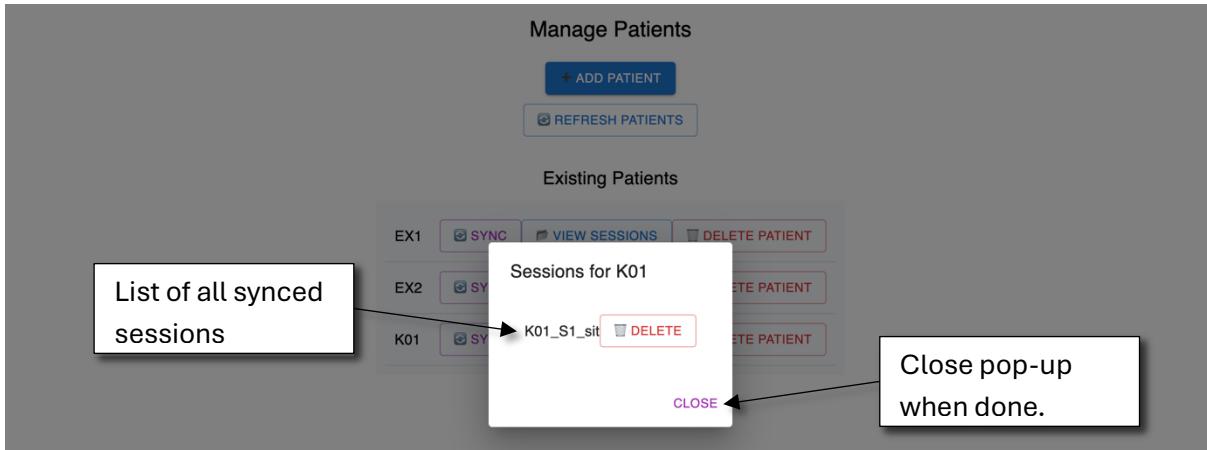
- 4.11. When the session has finished syncing, a pop-up window will appear.



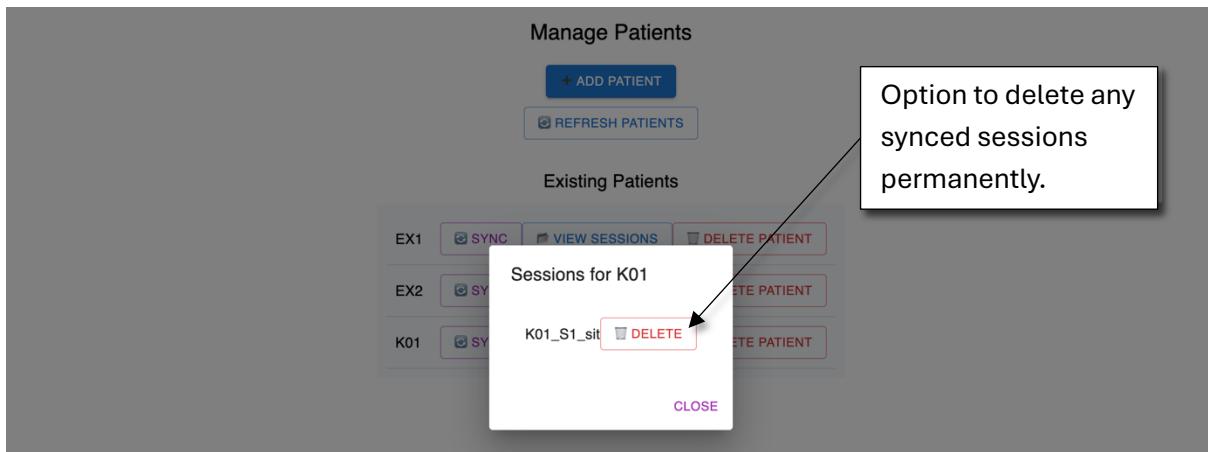
- 4.12. If you wish to view a list of the synced sessions for your patient, click the **VIEW SESSIONS** button next to their name.



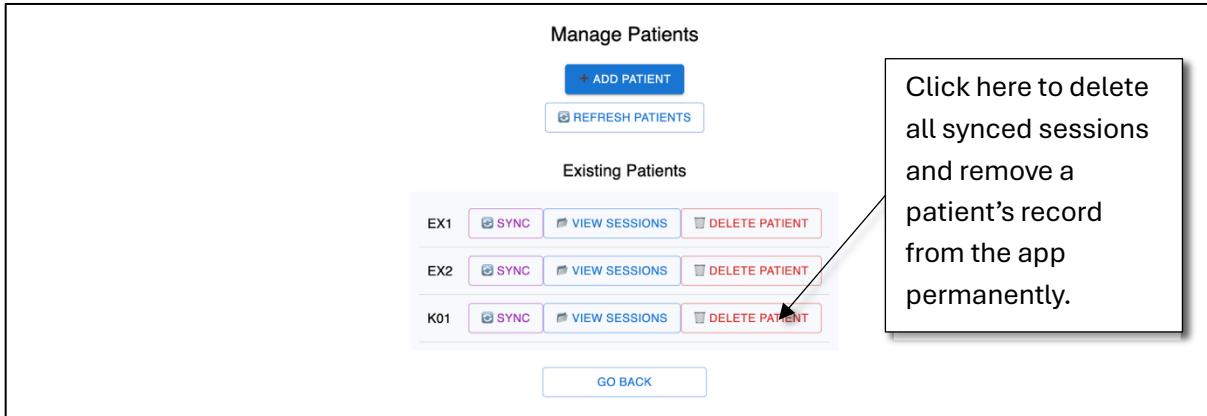
4.13. A small pop-up will appear that lists all saved sessions.



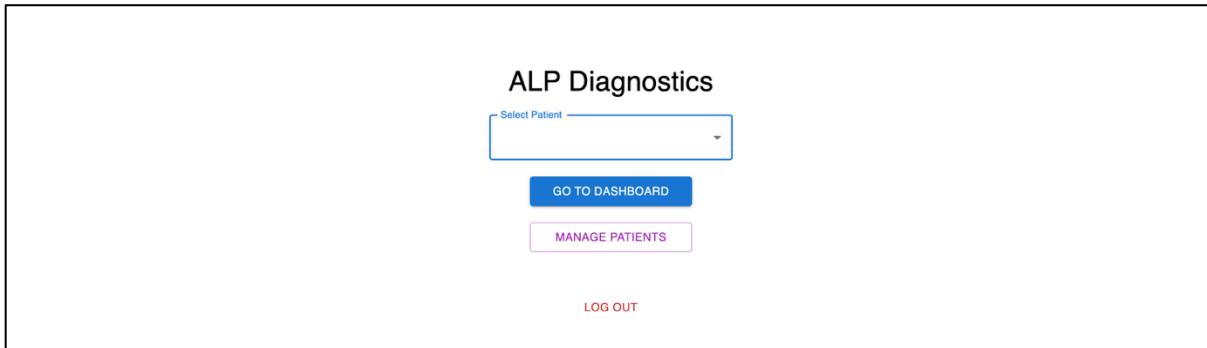
4.14. The **DELETE** button next to a filename will delete that synced session for that participant. This action is permanent! A pop-up window will ask you to confirm this choice.



- 4.15. If you wish to delete all of a patient's data from the app, click the **DELETE PATIENT** button next to their name on the *Manage Patients* page. This will delete all synced sessions. This action is permanent! A pop-up window will ask you to confirm this choice.

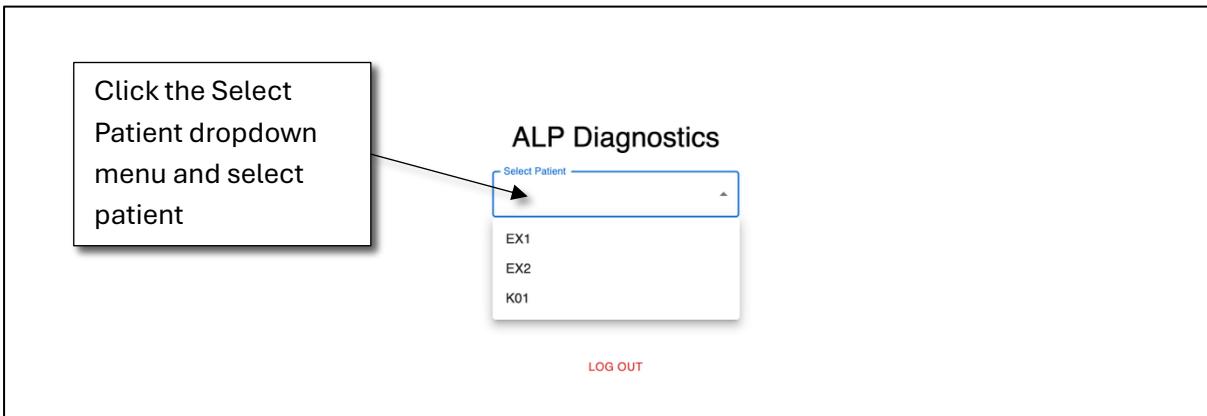


- 4.16. Click **GO BACK** at the bottom of the screen to return to *Home* page:

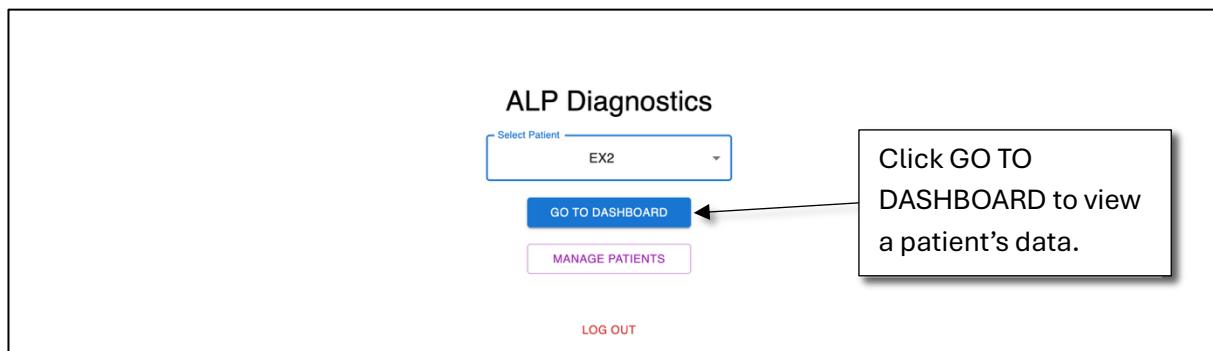


SECTION 5: Viewing and interacting with a patient's data

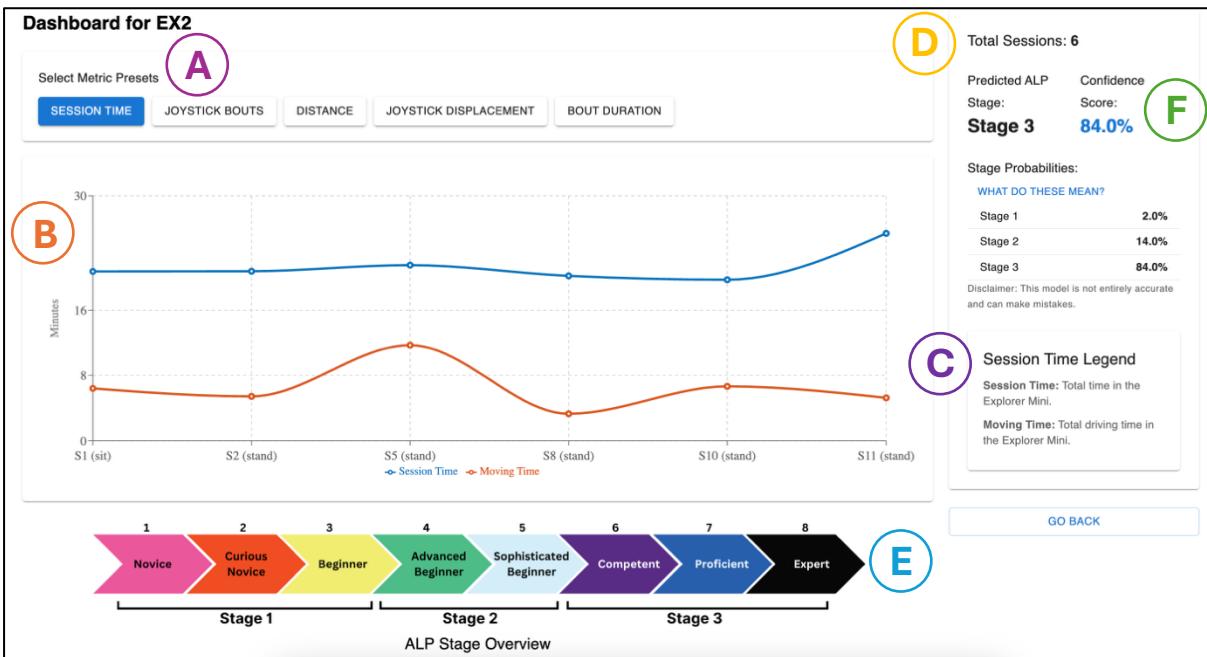
- 5.1. On the *Home* page, click the Select Patient dropdown menu to see a list of all saved patients. Click on the patient you want to view. We have included two example patients (EX1 and EX2) for tutorial.



- 5.2. When a patient is selected, it will populate in the text box. Click **GO TO DASHBOARD** to view the selected patient's data.



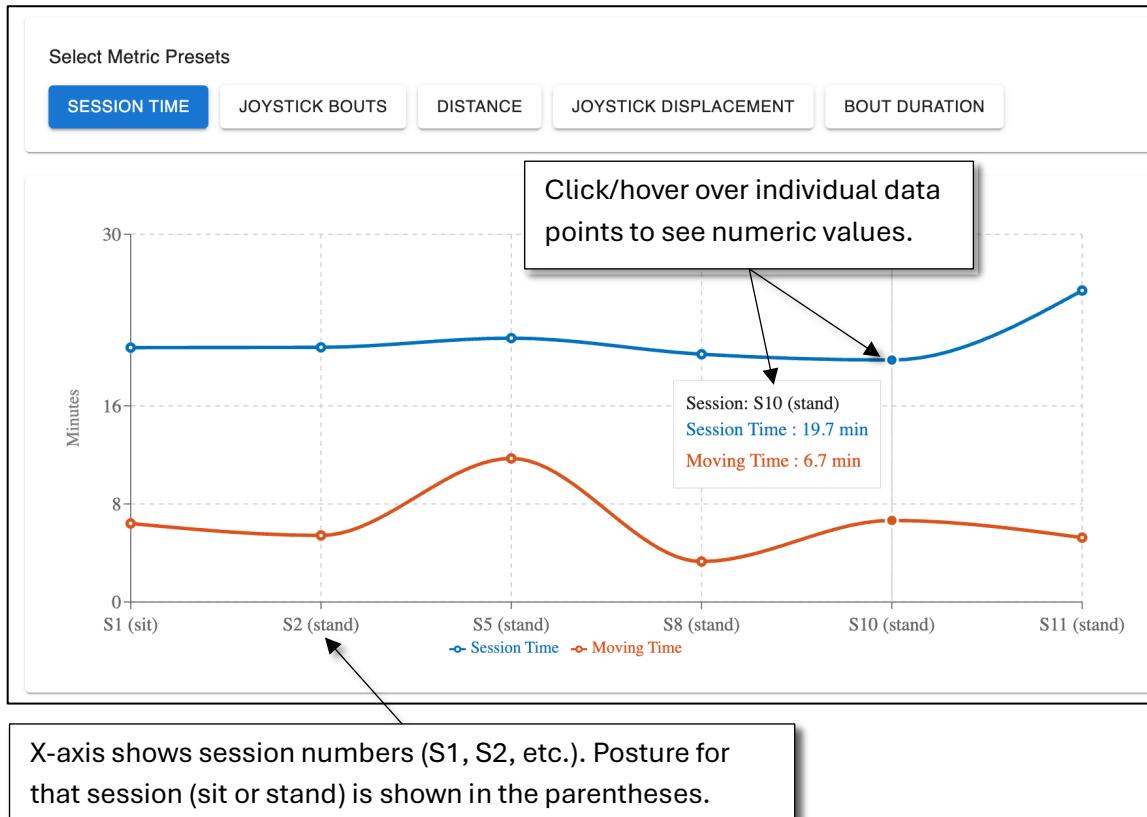
5.3. Example *Dashboard* page for patient EX2:



LEGEND

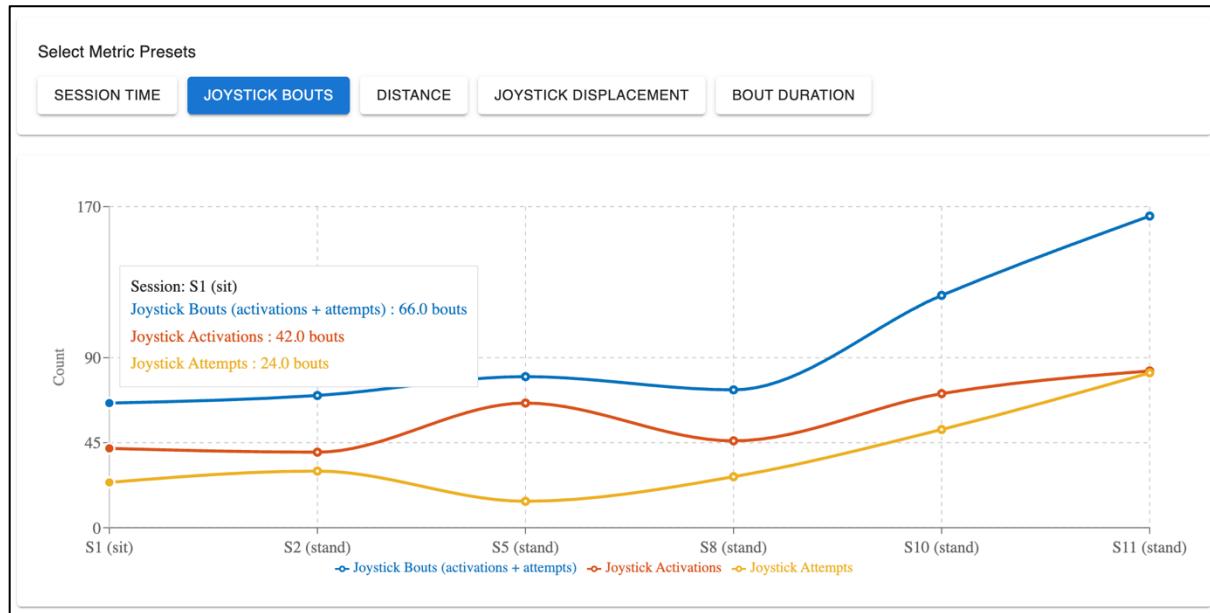
- 5.4. Click on each of the buttons at the top of the screen to display different groups of quantitative metrics. When you click on a button, a legend will appear that describes each of the metrics in more detail. The following steps will describe each metric.

5.5. Button #1: Session Time



- **Session Time:** Total time in the Explorer Mini (minutes). This is the total duration of time from when the Record button on the Explorer Mini is toggled ON to when it is toggled OFF.
- **Moving Time:** Total driving time in the Explorer Mini (minutes). This is the amount of time the device is in motion.

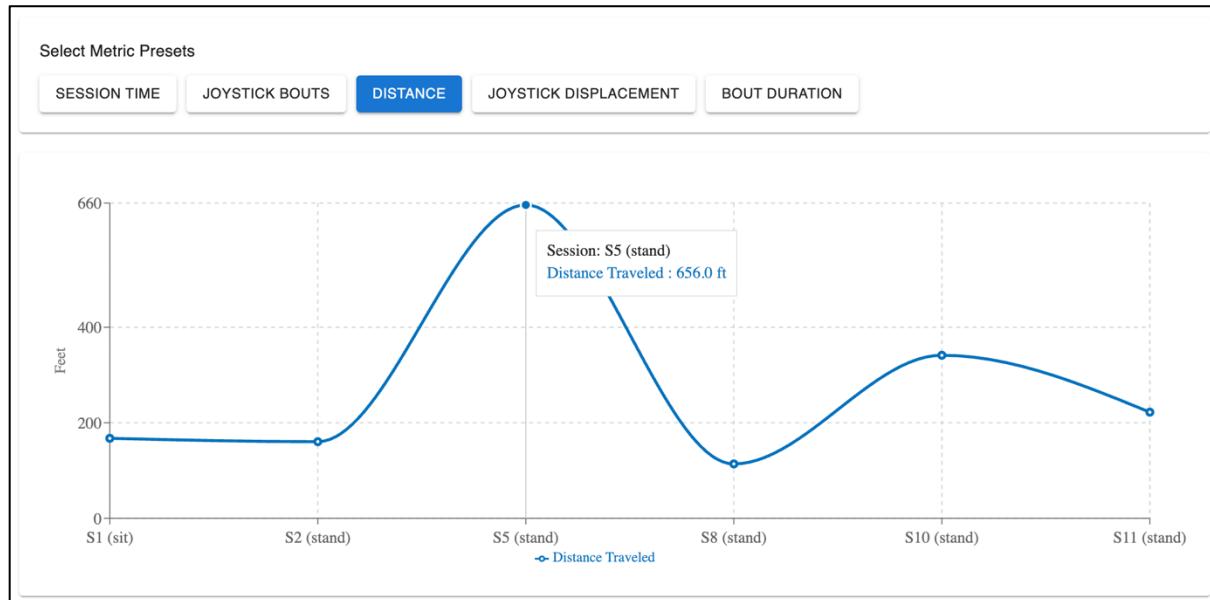
5.6. Button #2: Joystick Bouts



What is a joystick bout? A joystick bout is the period of time during which the joystick is moved away from a neutral position and then returned to a neutral position.

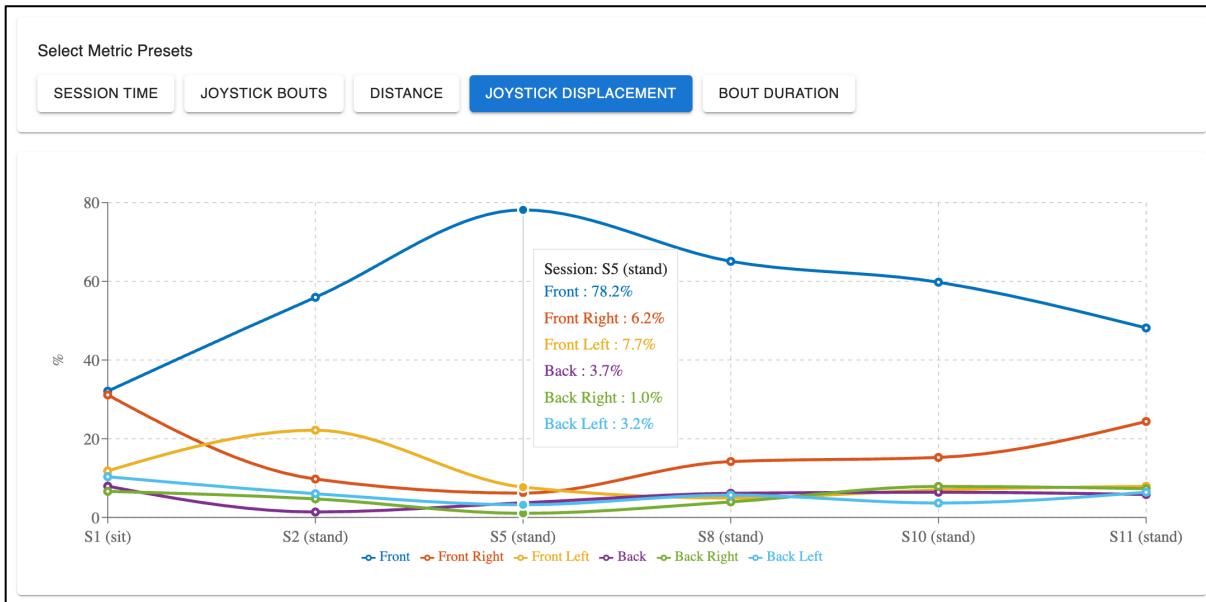
- **Joystick Bouts:** The total number of joystick activations and attempts. This is the total number of times the child interacted with the joystick.
- **Joystick Activations:** The number of joystick bouts that resulted in device movement.
- **Joystick Attempts:** The number of joystick bouts that did not result in device movement.

5.7. Button #3: Distance

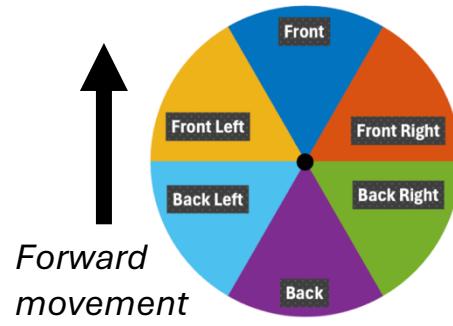


- **Distance:** Total distance traveled by the Explorer Mini during the session (feet). Forward, backward, and turning movements all count towards distance traveled.

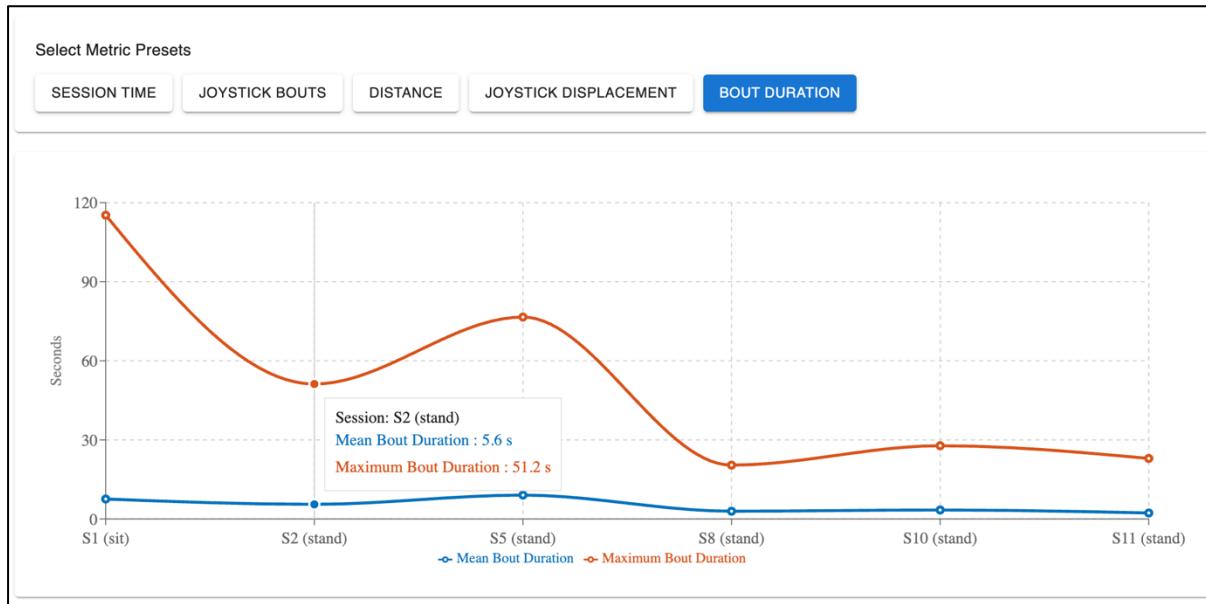
5.8. Button #4: Joystick Displacement



- The joystick has been broken up into 6 pie slices corresponding to different directions (front, front left, front right, back, back left, and back right).
- Each line on the graph corresponds to the percent of time the joystick was used in each of these directions (%).



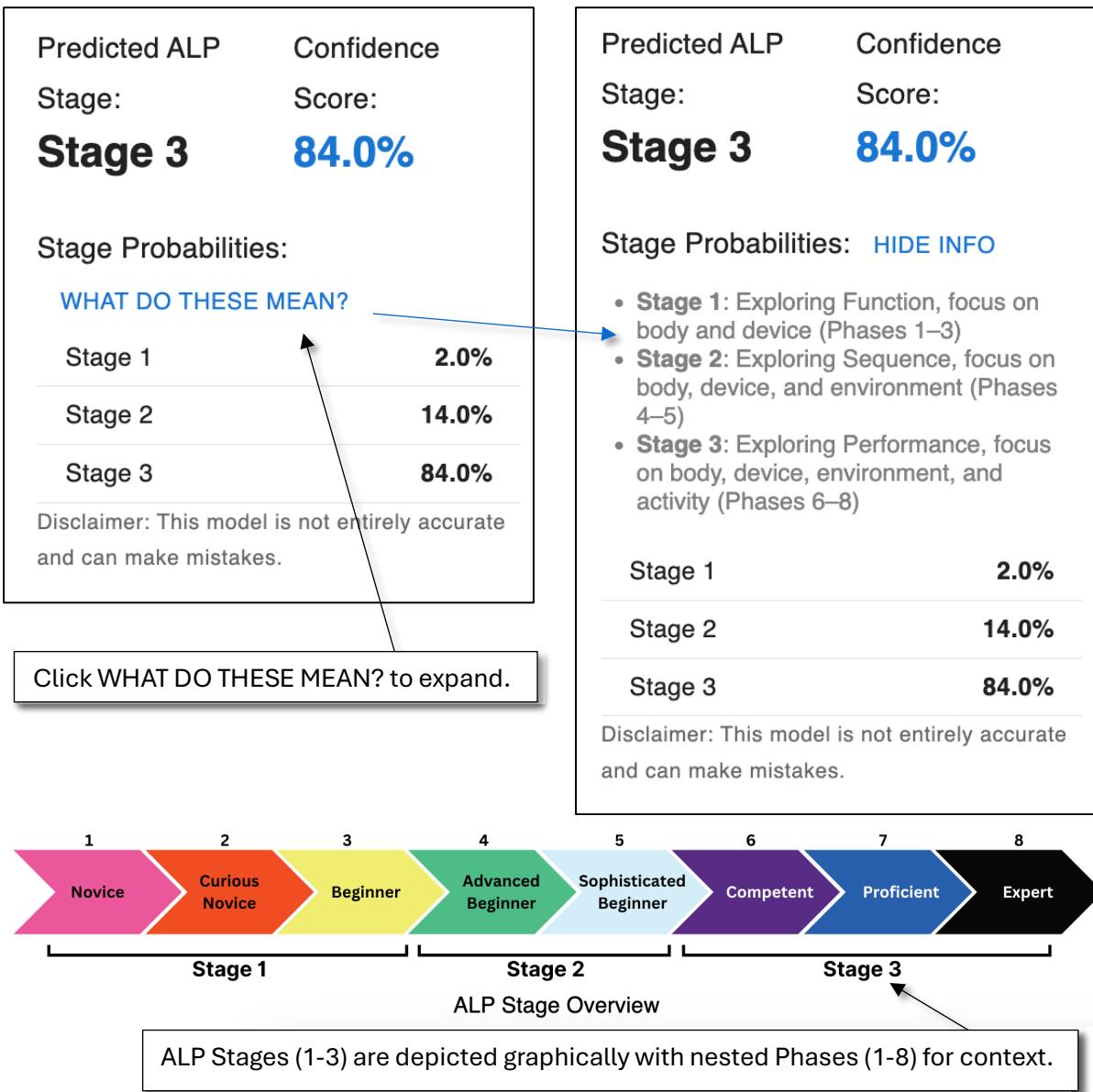
5.9. Button #5: Bout Duration



What is a joystick bout? A joystick bout is the period of time during which the joystick is moved away from a neutral position and then returned to a neutral position.

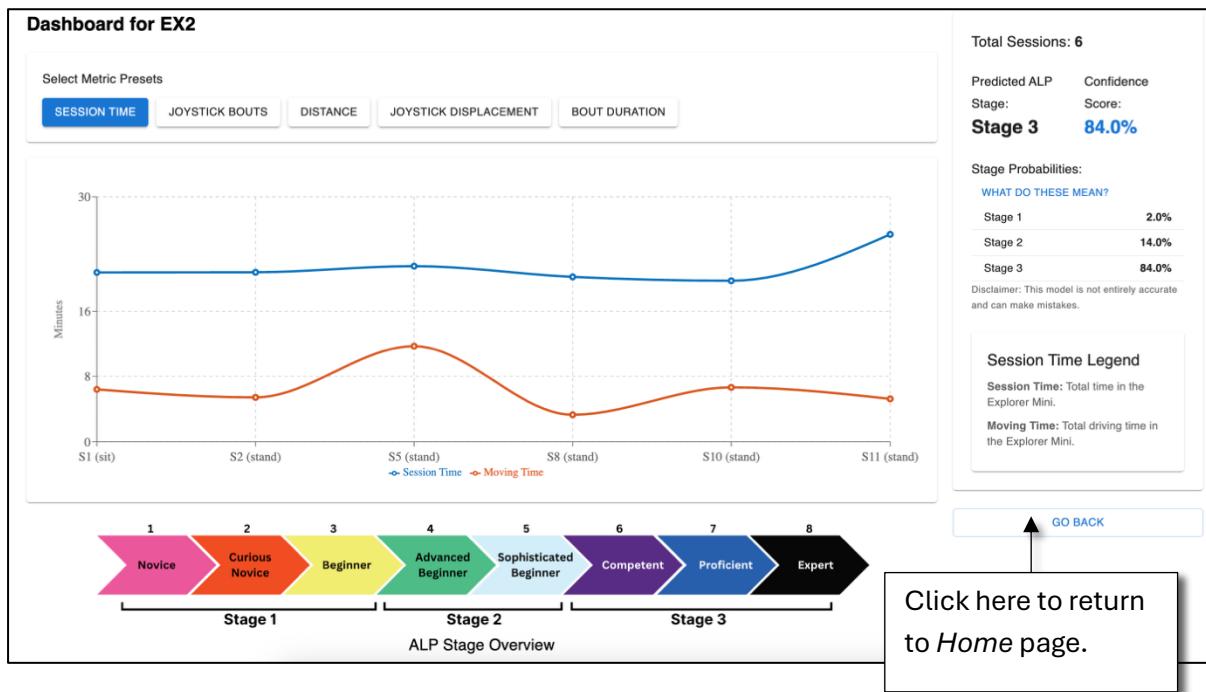
- **Mean Bout Duration:** Average length of all joystick bouts in the recorded session (seconds).
- **Maximum Bout Duration:** Longest joystick bout in the recorded session (seconds).

5.10. ALP Stage Prediction



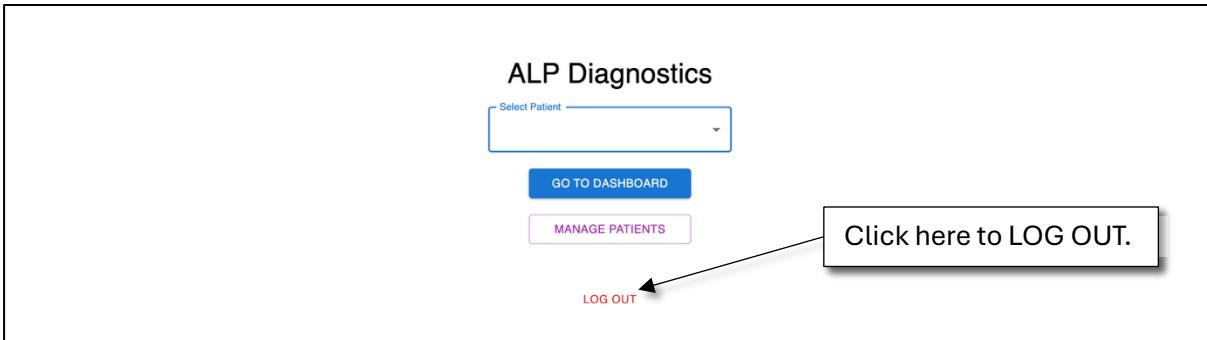
- The Assessment of Learning Powered Mobility (ALP) tool (described in detail in Appendix I) can help guide appropriate facilitating strategies for children based on their learning stage.
- The app generates a personalized prediction of a child's current ALP learning stage using all the quantitative data recorded for that child to date.
- The confidence score can help you understand when a child is between learning phases.

5.11. Click **GO BACK** on the *Dashboard* page to return to *Home* page.

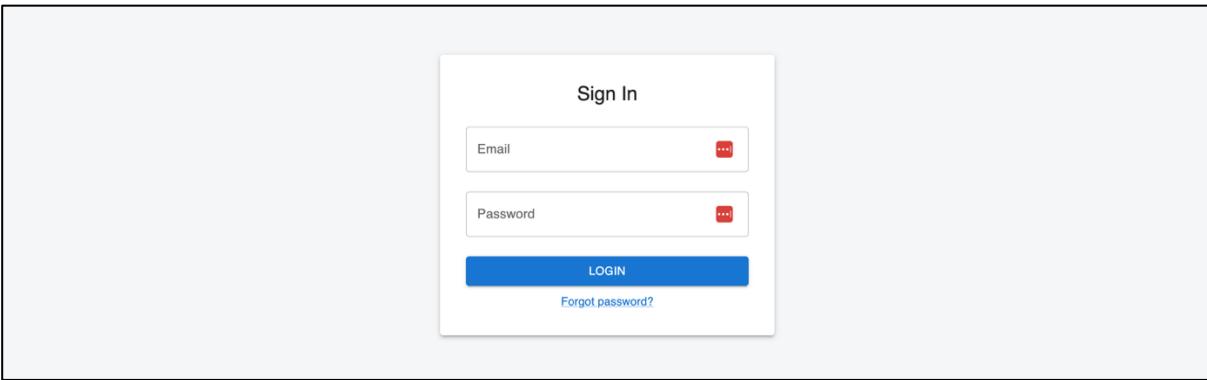


SECTION 6: Logging out of the app

- 6.1. If you wish to log out of the app (optional), click **LOG OUT** from the *Home* screen.



- 6.2. You will be returned to the *Login* page.



APPENDIX I: The ALP Tool

ALP Overview

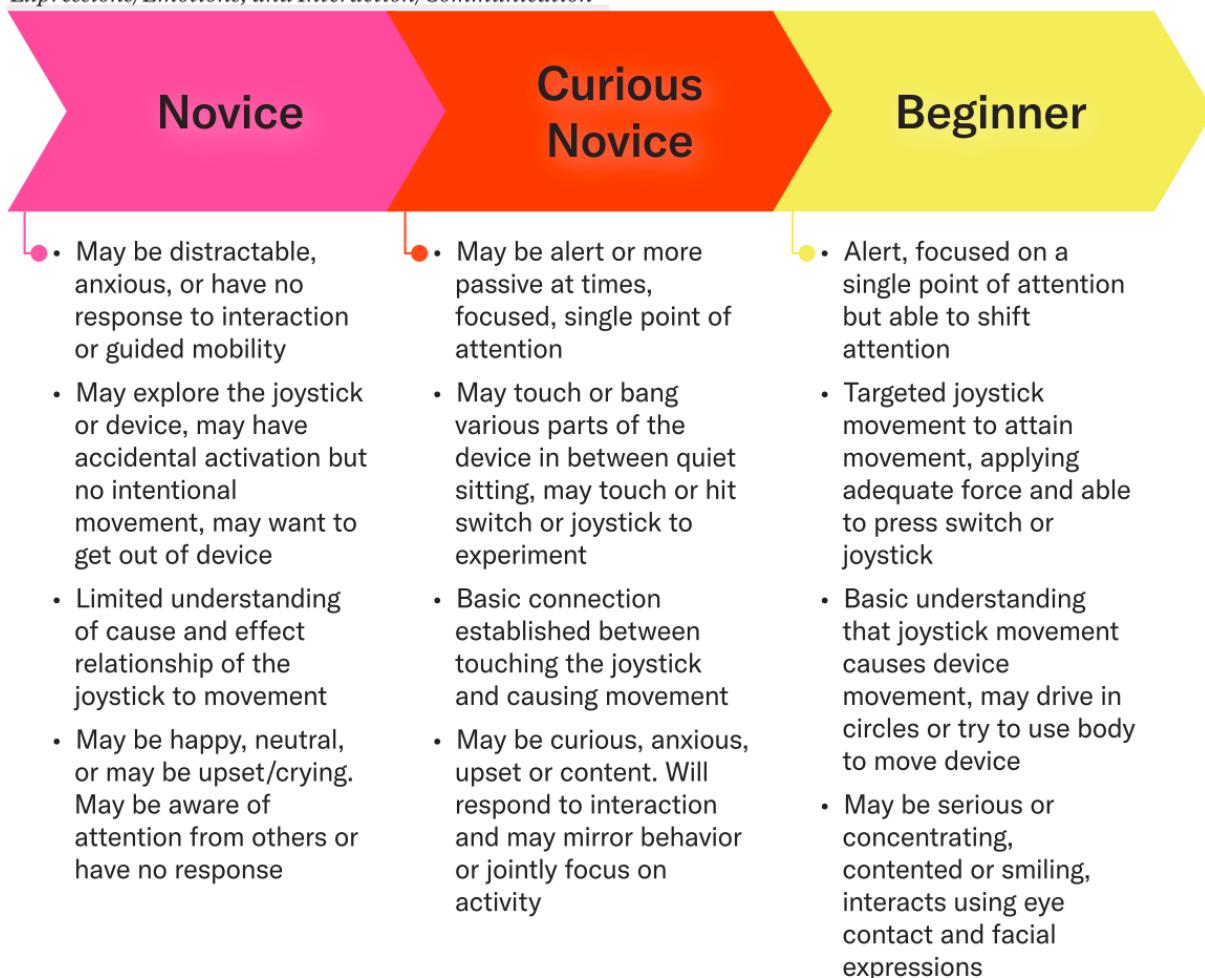
The following information is taken from “A Guideline for Introducing Powered Mobility to Infants and Toddlers” by Feldner, Plummer, and Hendry (2022). It is provided to give you more context for each of the Assessment of Learning Powered Mobility (ALP) Phases (1-9) and Stages (1-3).

Stage 1 (Phases 1-3): Exploring Function

Stages

Exploring Function, focus on body and device

Phases of Attention, Activity, Understanding of Tool Use, Expressions/Emotions, and Interaction/Communication

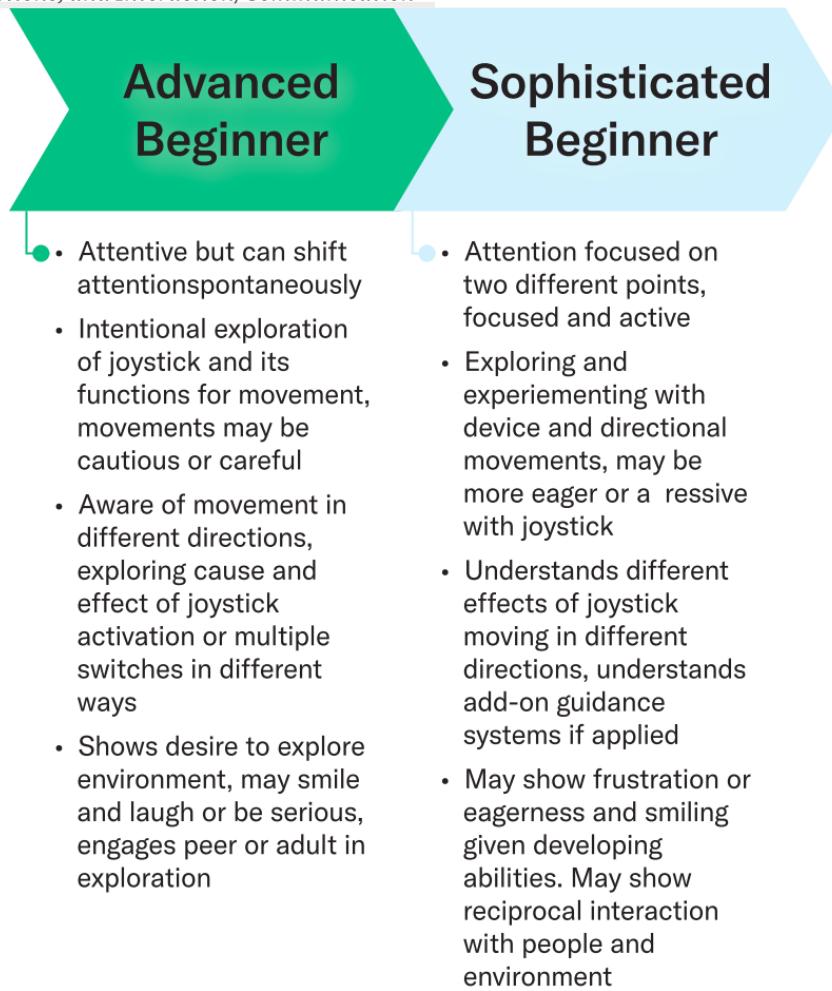


Stage 2 (Phases 4-5): Exploring Sequence

Stages

Exploring Sequence, focus on body, device, and environment

Phases of Attention, Activity, Understanding of Tool Use, Expressions/Emotions, and Interaction/Communication



Stage 3 (Phases 6-9): Exploring Performance

Stages

Exploring Performance, focus on body, device, environment, and activity

Phases of Attention, Activity, Understanding of Tool Use, Expressions/Emotions, and Interaction/Communication



Official ALP Instrument

Nilsson & Durkin's official ALP instrument by and corresponding facilitating strategies may be found at:

https://www.lisbethnilsson.se/wp-content/uploads/2015/08/ALP_tool.pdf