



hCTSIB

Module tutorial



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1. GENERAL

1.1. Description

hCTSIB (headset - Clinical Test of Sensory Interaction on Balance) software isolates and quantifies the efficiency of the visual, vestibular and somatosensory systems in their contribution to maintaining the subject's balance. Results include individualized scores for each system, a composite score, statokinesigrams and a visual dependency score.

Virtual reality adaptation of the CTSIB assessment, during which the computing system considers oscillations perceived by the headset, rather than variations in the center of pressure (COP).

During the assessment, the system interprets the balance adaptation according to information perceived by the eyes, and the somesthetic and vestibular systems.

A memory foam pad (such as the Airex Balance Pad Elite) is required for conditions 4, 5 and 6.

1.2. Required accessories

Headset **and** Airex Balance Pad Elite type foam block.

1.3. Assessment details

1.3.1. General remarks

The assessment consists of 6 conditions of various sensory disturbances. The first 3 are performed on a stable surface, followed by 3 on an unstable surface.

Characteristics of the sensory stimuli during the 6 conditions:

- Condition 1: Stable Ground / Eyes Open
- Condition 2: Stable Ground / Eyes Closed
- Condition 3: Stable Ground / Sway-referenced Vision
- Condition 4: Unstable ground / Eyes open
- Condition 5: Unstable ground / Eyes closed
- Condition 6: Unstable ground / Sway-referenced Vision

It is recommended that all trials be performed in socks to get a standardized input of somatosensory system signals and to compare with the standard data set.

1.3.2. Before beginning the assessment

1. Have patient place their feet shoulder width apart and arms at their side
2. Fit the VR headset to the patient

Continue with conditions 1 – 3.

After condition 3:

1. Remove the VR headset from the patient
2. Place the Airex cushion on the floor
3. Help the patient step onto the Airex cushion, facing forward
4. Center the patient's feet on the Airex cushion. The medial malleolus of each foot should be centered with the center horizontal line on the Airex cushion
5. Fit the VR headset to the patient
6. Have patient place their arms at their side

Continue with conditions 4 – 6.

1.3.3. Patient Setup



Use the Airex-type foam block for the last 3 sequences.

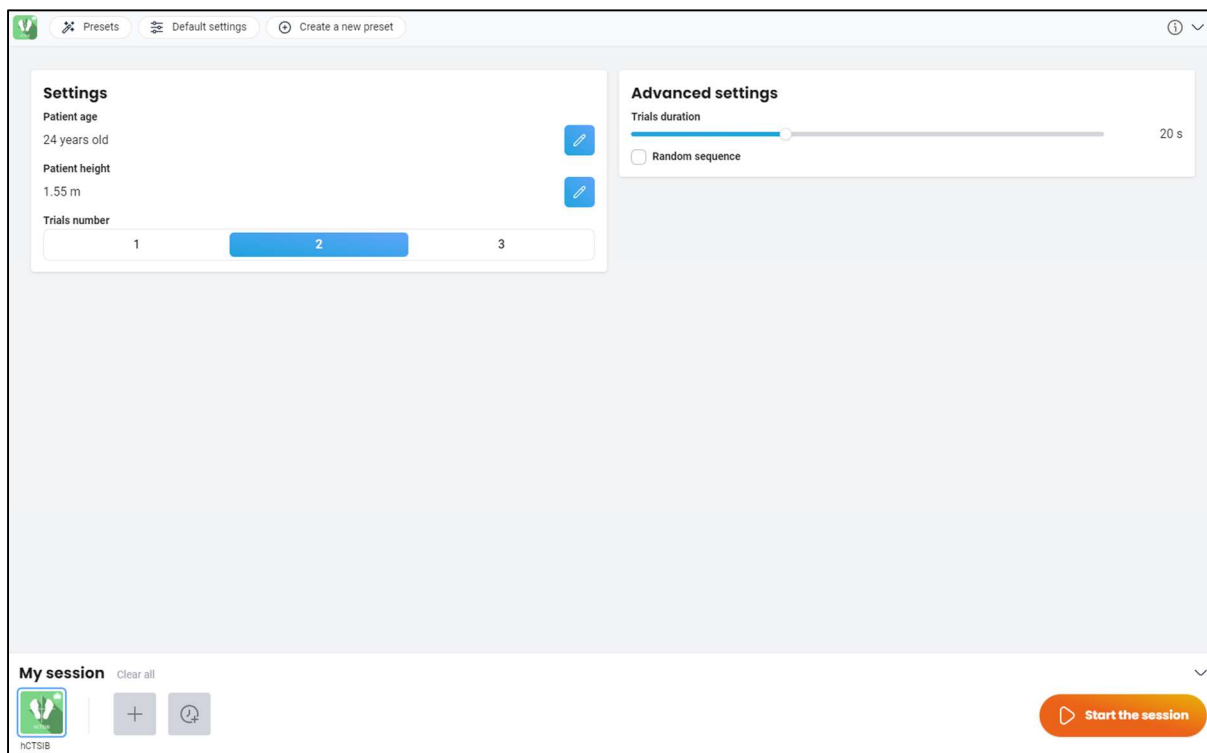


Feet on cushion



2. Settings

2.1. Session settings



The software's variable settings are as follows:

2.1.1. Settings



Patient age:

This information must be filled in for each patient. This value is used to compare the test results with a base of patients of the same age group. **If a value is not entered, the test results will be compared with a base of patients of a broader age group.**

Click on the pencil icon and fill in the patient's date of birth. The patient file is automatically updated.

A screenshot of a web form titled 'Patient age'. It contains a text input field with the value '21/03/2000' and a 'Save' button.**Patient height:**

This information must be filled in for each patient and is required to analyze the results. Click on the pencil icon and fill in the patient's height. The patient's file is automatically updated.

**WARNING**

Without this information, the software cannot be launched, and an error message appears.

Trial number:

This is used to program the number of trials for each sequence by selecting the required number. The trial number is 2 by default, but it can be set from 1 to 3.

For a number of tests of 2 and 3, the results are calculated based on the tests' average.

2.1.2. Advanced settings

A screenshot of the 'Advanced settings' form. It includes a slider for 'Trials duration' set to 20 s and a checked checkbox for 'Random sequence'.**Trial duration**

Trial duration can be set to a fixed time by entering the required value. The default value is 20 seconds per trial.

Value: 1 to 60 seconds.

Random sequence

This setting, which can be activated by checking the appropriate box, is used to make sequences follow one another randomly. A sequence coincides with an analysis phase during which the patient will be asked to stand still with the same sensory stimulation conditions.

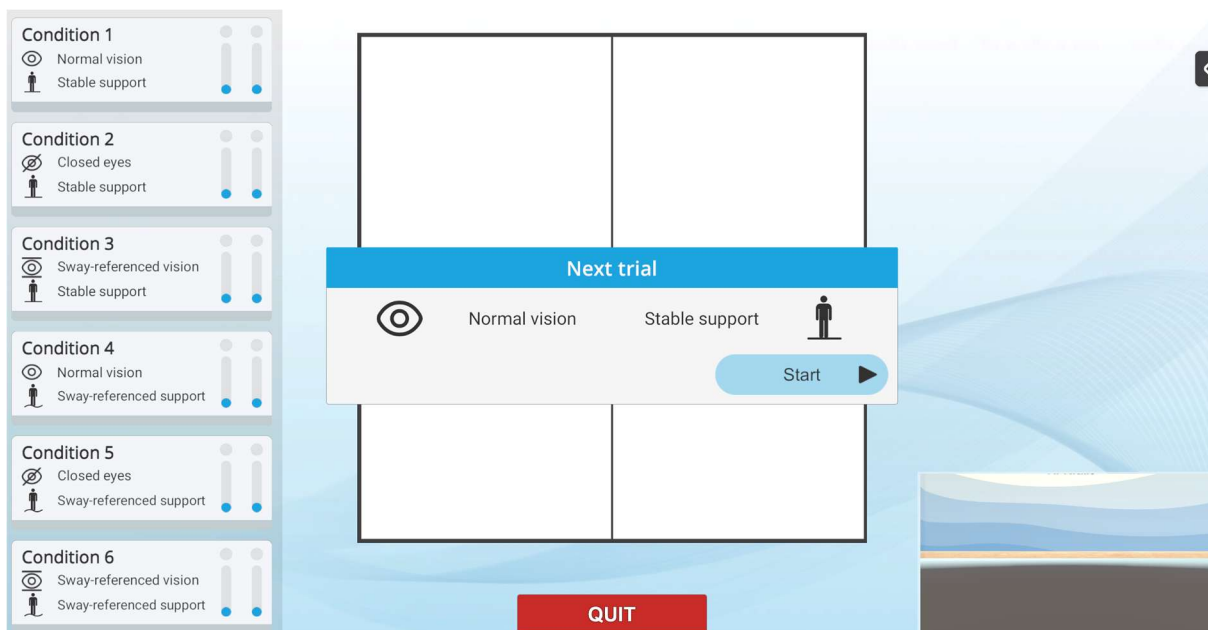
Note: the first two sequences in random order will be *Sequence 1* followed by *Sequence 2*.




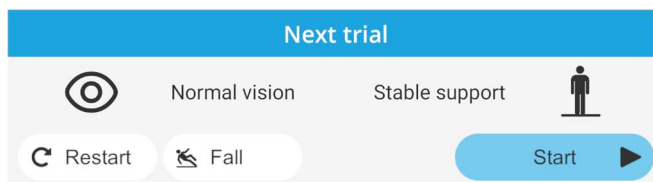
3. Module

3.1. Session

Once the presets are set, click on "Start Session" at the bottom right of the screen.



- During the recording of each test, an orange light will illuminate and flash; it turns blue when the recording is complete. The trial can be interrupted if the patient has fallen with the button at the bottom of the screen  **Fall**.
- At the end of each test, a window of this type opens (here for condition 1) to give the user the opportunity to note a possible fall or to redo the test before moving on to the next test:

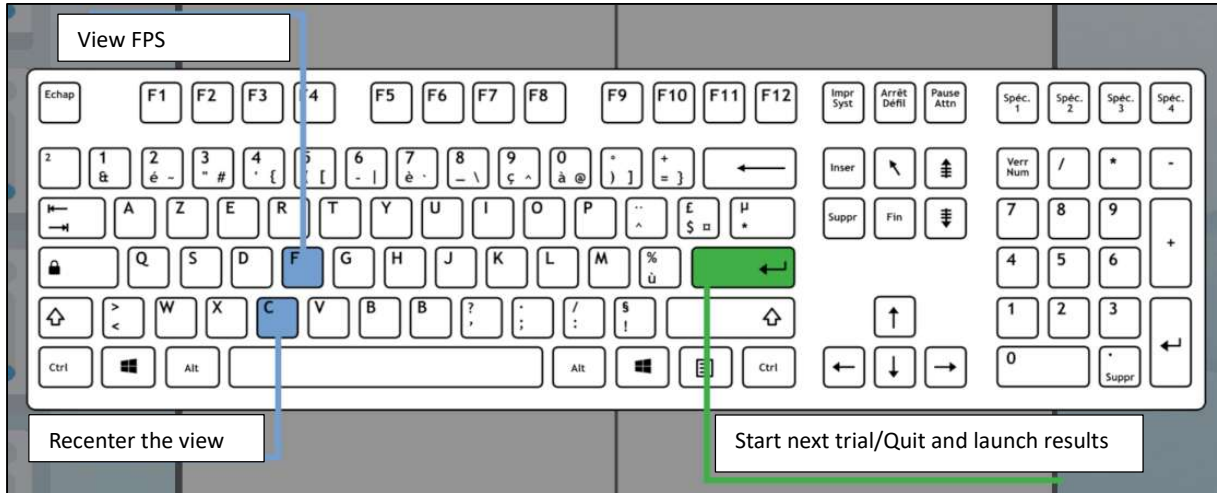


- Once the tests are complete, the software closes and the results of the assessment are accessible. These are only available if all trials have been completed.



3.2. Shortcuts

During the session, the shortcut list can be accessed from the Xbox controller icon at the top right of the screen.





3.3. Results

Once the session is over, you can view the results.

3.3.1. Summarized results

By default, the results are as follows:

- Equilibrium scores
- Equilibrium scores norms
- Composite
- Composite norm
- Velocities
- Results
- Results norms

3.3.2. Report and charts

Click on the histogram icon to access detailed results and the session report.

The screenshot shows the hCTSIB interface. At the top, there is a green header with 'hCTSIB' in the center. On the left, 'Session details' are shown: '30/04/2025 11:47'. A red circle highlights a histogram icon in the top left. Below the header, there are three tabs: 'Parameters' (highlighted in blue), 'Results', and 'Notes'. The main content area is a table with three columns: 'Name', 'Initial value', and 'Final value'. The table contains three rows: 'Trials number' (2), 'Trials duration' (20.00 s), and 'Random sequence' (marked with a red X). Below the table, there are two buttons: 'Start session with initial values' and 'Start session with final values'.

Name	Initial value	Final value
Trials number	2	2
Trials duration	20.00 s	20.00 s
Random sequence	×	×