

2 channel Assessment Gathering with *Brain-Trainer for BioEra*, GP-8e and TC26/Electrodes

CONFIGURE SETTINGS

Once the device configuration is done, it does not need to be repeated at subsequent sessions. However, channel settings will need to be set for TQ7 Assess for each assessment.

Connect your device

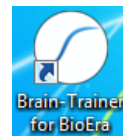
Plug the USB cable from the PhysioAmp to your computer's USB port.

Open Software

Open *Brain-Trainer for BioEra*. There should be a shortcut on your desktop.

Select your device

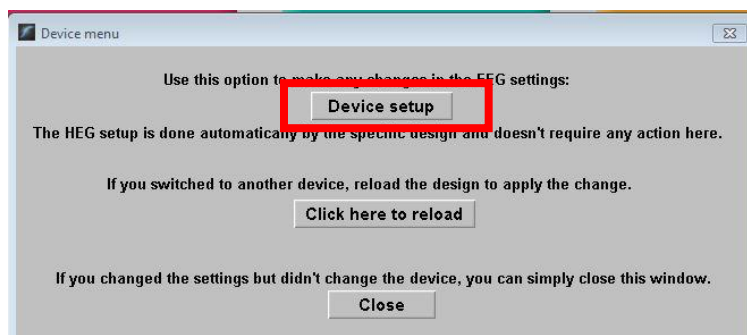
Once the device selection is done, it does not need to be repeated at subsequent sessions. If you have already done this, you may skip to [Open design](#).



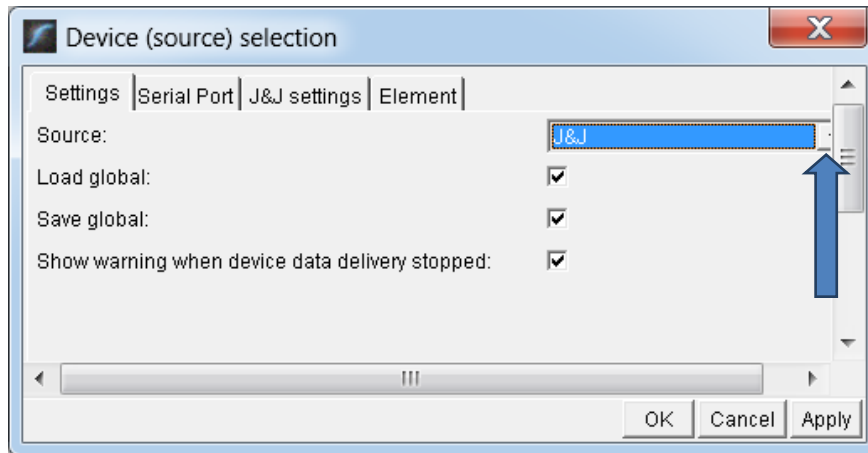
1. Click the gear icon in the lower center of the Main Menu. The "Device menu" window will open.



2. Select Device setup. The "Device selection" window will open.

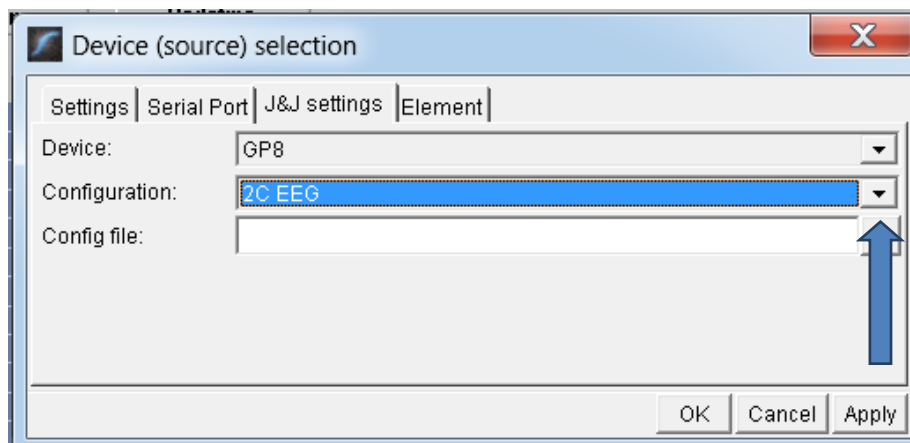


4. Click the down arrow, and select the source J&J if you have not done so. Then click Apply. *TIP: Type the letter J.*



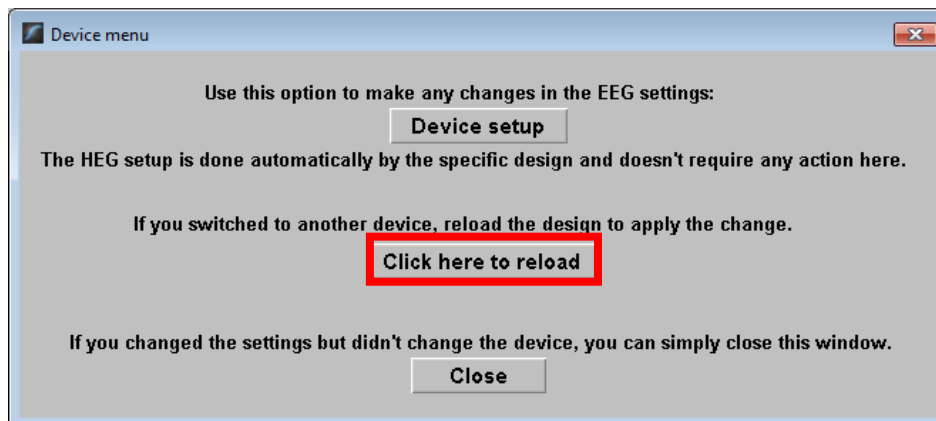
There is no need for a serial port, so leave that tab unchanged.

5. Select the "J&J settings" tab and select your device name, GP8. Configuration should default to 2C EEG. If not, select it from the drop down menu. Then click "Apply." Now your selection should be saved.



6. Now click "OK" to close the settings window.

7. Click the button "Click here to reload." The program will close and reopen.

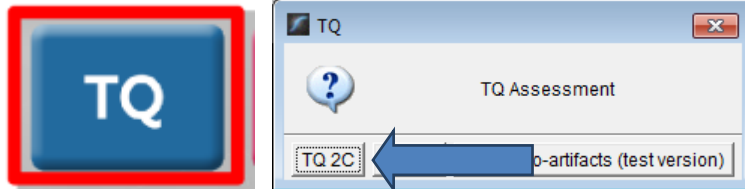


You will probably get a green light if your amplifier is on. That means your device is correctly set.



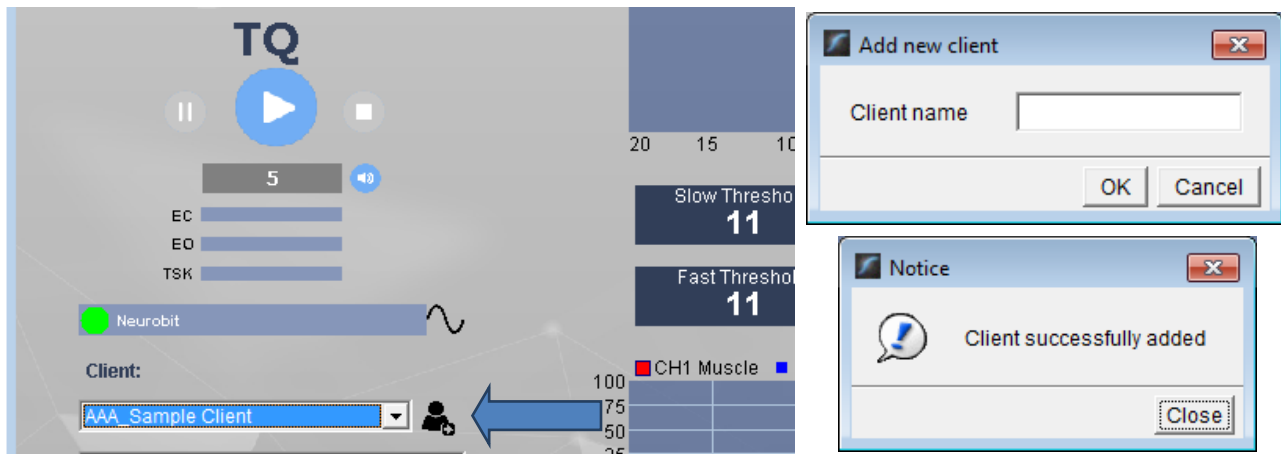
Open the TQ design

Click the TQ button and select the TQ 2C design.



Create Client folder

Click the "Add Client" icon at the left of the design screen and enter client's name. You can make this cryptic if you like (e.g. JODO). Click "OK", then "Close."



Select the client from the client list. *TIP: If you do not see the client name in the client list, click the Panic button at the bottom right.* ⚠️

APPLY ELECTRODES

Place cap and insert saline-saturated electrodes for threshold setting. Or place electrodes as normal if not using a cap.



PhysioAmp GP-8e: AFz to Ground; **A1** to A -; **A2** to B -; **T3** to A +; **T4** to B +

Placing Ground and Reference Electrodes

- The ground/neutral on the TC26 Trainer's Cap is at **AFz** and must ALWAYS be used with conductant (saline solution, paste, etc).
- Connect the jumper to CH A - and CH B - on the PhysioAmp. Then connect the electrode wires.
- **A1** and **A2** are used as references for all steps, placed behind the ears and connected to the jumpers at A- and B-.



Placing Active Electrodes

When gathering from homologous sites (e.g. T3 and T4), electrodes from left hemisphere should always go in CH A, right hemisphere in CH B. When gathering on the midline (z sites), the electrode furthest toward the front should go in CH A.

EXPLAIN PROCESS TO THE CLIENT

- First minute of recording will be relaxed, still, with eyes closed
- Second minute of recording will be relaxed, eyes open and still
- Third minute of recording will be relaxed performance of a task with eyes open. Explain that this is not a test of the client's performance but a way of seeing how the brain responds to the challenge.

Before recording each area, explain the task and verify the client understands what to do.

Verify that the client is relaxed, sitting straight with both feet on the floor with eyes closed or open as appropriate.

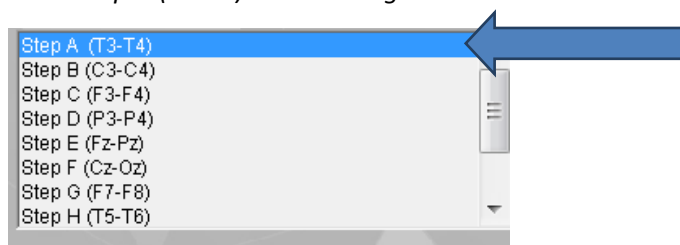
2-Channel Tasks

- **T3/T4 Temporals—Listening for details.** Read or tell a story or article with detailed information in it while the client listens. Tell the client you may ask questions after the recording. Ask open-ended questions first (e.g. “what was the paragraph about?”) and move to greater detail if necessary.
- **C3/C4 Centrals—Reading silently for details.** Provide appropriate reading material with factual information in it (magazine or newspaper articles can be good sources). Tell the client you may ask questions after the recording. When preparing for the next site, ask open-ended questions first (e.g. “what was the paragraph about?”) and move to greater detail if the client doesn't provide it.
- **F3/F4 Frontal—Digit-span working memory.** For the first 30-40 seconds read a series of digits (0-9) one second apart (start with 5 digits) and ask the client to repeat them. If client can do 5, try 6, then 7. You may choose to pause after 30-40 seconds to do Reverse Digit Span: Explain the task (listen to the numbers and repeat them in reverse order)
- **P3/P4 Parietals—Serial calculation.** Start with simple problems (e.g. $2+3 \times 4/5$), with a brief pause between each step. The client should perform each calculation silently and give the result at the end. If the client does well, increase the challenge. Alternative—Ask the client to count aloud by 2 or 3 or count backward.
- **Fz/Pz Default Network—Eyes semi-closed.** Client **imagines a desired future change** in himself.
- **Cz/Oz Midline—Pattern recognition.** Tell the client to search 1-2 paragraphs of printed material and count the number of times the letters t, h, and e appear in sequence. This can be a word “the”, beginning a word (“these”), the middle of a word (“other”), the end of a word (“lithe”) or across 2 words (“what he”). A game like Where's Waldo or finding hidden images can also be used.
- **F7 & F8 (Optional)—Impulse control and language output.** Tell the client to read aloud from printed material, keeping facial and other movements to a minimum and minimizing eye movements.
- **T5 & T6 (Optional)—Sensory integration.** Provide appropriate reading material with factual information in it (magazine or newspaper articles can be good sources).
- **Fp1/Fp2 (Optional)—Pattern recognition.** Tell the client to search 1-2 paragraphs of printed material and count the number of times the letters t, h, and e appear in sequence. This can be a word “the”, beginning a word (“these”), the middle of a word (“other”), the end of a word (“lithe”) or across 2 words (“what he”). A game like Where's Waldo or finding hidden images can also be used. *Same as Midline Cz/Oz site pair.*
- **O1 & O2 (Optional)—Pattern recognition,** counting the number of occurrences of the letter sequence “t, h and e”, whether in a word (e.g. their, another, what he) or as a word itself.

GATHER DATA

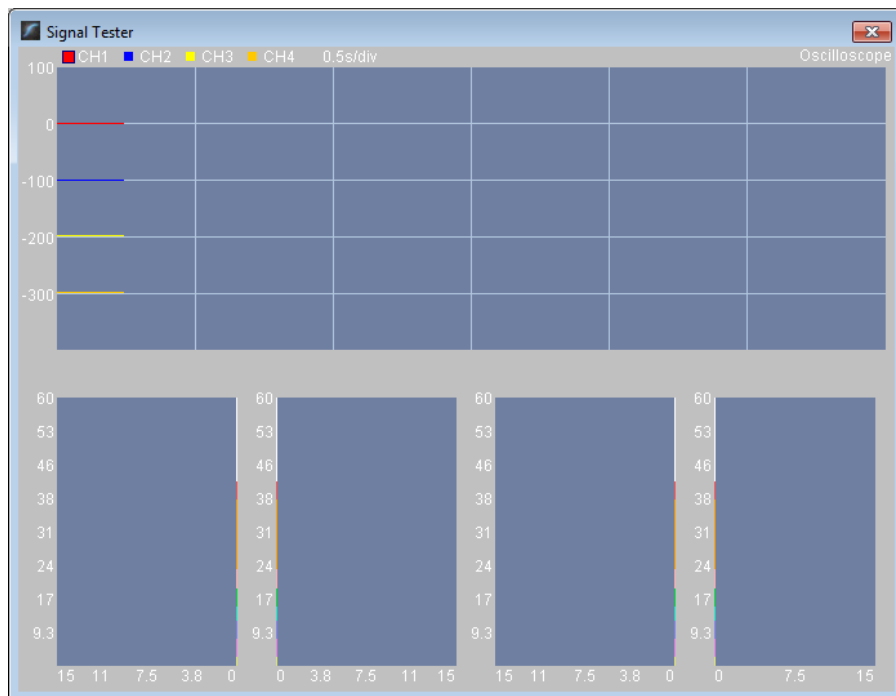
Select EEG sites

Click "Step A (T3-T4)" in the design. This will create the name for the recording file and is a required step.



Check signal quality

Open the Signal Tester window by clicking the brain wave icon.



- In the Oscilloscope at the top, very regular, mechanical and fast waves suggest artifact. Very large waves or rolling/wandering baseline for a channel also suggest problems. Channels should show about the same amount of activity. A very attenuated signal in one or more channels indicates a poor connection.
- In the Power Spectrum windows below, look for spikes at 50 Hz or 60 Hz depending on your electrical system. If these are dominating the spectrum, there may be electromagnetic interference or you may have a poor connection between the skin and electrode
- If all channels show spikes and you are using a laptop, try unplugging the power transformer from the wall and the computer to run on battery. See if the spikes drop or disappear.
- If there are signal problems, re-prep electrodes and verify that the signal has improved.

When signal is good, close the Signal Tester.

Begin data collection

1. Click Play. As soon as you click Play, the timer will count down 5 seconds, after which the assessment data gathering will start recording the first minute.

Step A - Eyes Closed

2. After 1 minute, the display will pause. Instruct the client to open eyes and look straight ahead. Click "Play" (white triangle) again to continue recording.

Step A - Eyes Open

3. After 2 minutes, the display will pause again. Remind the client of the task. Click "Play" again and begin performing the task.

Step A - Task

Listening

4. After 3 minutes the display will pause again. Now you have completed this recording. Click "Stop" (white square) to save it.

Step A - Complete

Click the Restart button to prepare for the next sites.



Move active electrodes to next sites and repeat for each channel set. Record a minimum of the 6 basic site pairs (or 7 with T5 & T6. If possible, record the full 10 site-pairs.

- Select next step in design.
- Move electrodes to new sites.
- Open Signal Tester and verify good signal and client sitting still.
- Close Signal Tester.
- Press Play to begin recording data.

Step B (C3-C4)

2CH Sites	CHA	CHB	Task
Step A	T3	T4	Listening
Step B	C3	C4	Silent reading
Step C	F3	F4	Digit Span
Step D	P3	P4	Serial calculation
Step E	Fz	Pz	Visualization
Step F	Cz	Oz	Visualization
Optional	F7	F8	Reading aloud
Optional	T5	T6	Silent Reading
Optional	Fp1	Fp2	Pattern recognition
Optional	O1	O2	Pattern recognition

Trainer Tools

- There are three graphs: Muscle Artifact, Eye Artifact and Signal Symmetry.
- The artifact graphs should be fairly stable with the lines close together. The Symmetry graphs show the difference between one hemisphere and the other. The values generally will be above the zero line.

- If either of the artifact graphs shows a consistent problem, stop the recording and resolve the problem.
- If there are strong asymmetries, verify that these aren't due to poor connections, eye or muscle artifact.
- Recording the cleanest, most accurate possible data is the trainer's primary task here. Excessive or constant artifact in a file can't be fixed after the fact.

Special Notes

- When recording in F3/F4, Fz or F7/F8 sites, eyes-open and task segments should be done with the client's eyes "half-open"—peeking through the eyelashes—if this can be done without squinting. This will minimize eye blink artifact.
- Reading tasks should be held at eye-level (use a book stand) to minimize artifact.

Using the TQ7 Client Report

Professionals

The Client Report is considered when determining the final selections for the Whole-Brain Training Plan. This should be completed by the trainer through an interview with the trainee and additional members of the support system and saved in the client folder. A saved file is ready for import.

Open the Client Report

The trainer should create a profile/login at provider.brain-trainer.com and initiate a report, sending an invitation to the trainee's email. The trainee will then be associated with the provider's account. This can be changed later if needed in the client's report | Edit.

Complete the Report

Interview the client and family and complete the questionnaire, taking the opportunity to get an understanding of issues present, or the client can complete the report on his/her own.

Save File

Click the **Save Client Report** button to save the Client Report file. A name is automatically assigned to the file with "CRep" in the name. The file is available immediately for download. A copy will be sent to the trainer if a trainer has been specified.

Home Trainers

The Client Report is considered when determining the final selections for the Whole-Brain Training Plan. This should be completed and saved in the client folder. A saved file is ready for import.

Complete the Report

Complete the questionnaire, taking the opportunity to get an understanding of issues present. If you have purchased the Whole-Brain Training Plan, for "trainer", enter "Whole-Brain Training Plan."

Save File

If saving the file to your own computer, click the **Save Client Report** button to save the file. Save to the client folder (C:\Brain-Trainer for BioEra\session\[client folder]). A name is automatically assigned to the file with "CRep" in the name. The file is available immediately for download. A copy will be sent to the trainer *if a trainer has been specified*. If "Whole-Brain Training Plan" is selected, Brain-Trainer will receive a copy to use in creating your customized plan.

Appendix: TC26 Trainer's Cap Sites

