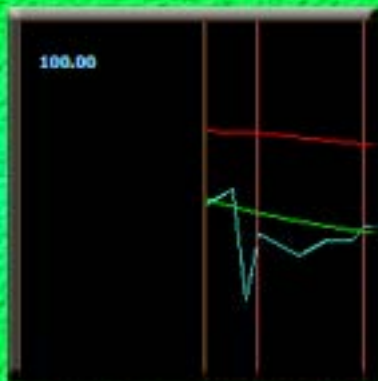


Power Point Manual

Get On The
BUS



BrainMaster
Universe
Simplified



"4ch PZOK
Atlantis
BDX"
Level 3

4chPZOK+PZMO+PZME

Level 3

- How can I modify the 4chPZOK + PZMO Settings to include PZME?
- *Zplus including PZMO and PZME is a very valuable compliment to PZOK...contact Brainmaster Sales to acquire.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK+PZMO+PZME

Level 3

- PREREQUISITES
- In order to accomplish this study module you should have completed all PZOK Level 1 and Level 2 training modules as well as the Level 3 including the Upper and Lower Limits to PZOK modules.

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4chPZOK+PZMO+PZME

Level 3

- At level 1 the “4chPZOK” Setting provides ZScore training for 4 channel locations on the surface (not LORETA).
- By providing ZScore training, the surface of the brain tends towards normalization. The setting rewards the brain when moving outliers towards a normal window determined by the practitioner while those ZScores in the normal range remain within.

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4chPZOK+PZMO+PZME

Level 3

- The Z-Plus package addresses outliers in updated ways, which increase the power and flexibility of PZOK training.
- PZMO (PZ Motive) accounts for the momentum (movement of all ZScores that are outside of the specified window (Outliers) towards or away from the PZOK window.
- PZMO can be positive or negative. When it is positive the net movement of all Zscores outside the window is inwards towards normal.

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4chPZOK+PZMO+PZME

Level 3

- When it is negative the net movement of all Zscores outside the window is away from normal.
- The PZMO Threshold is a number representing the % of Z-Scores outside of the window that has moved within the window at any given moment of time.
- When the threshold conditions are met a wav sound is produced which is like giving the client a “Gold Star” for additional achievement.

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4chPZOK+PZMO +PZME

Level 3

- PZME or “PZ Mean” or PZ Measure” provides the mean size of all z-scores that are outside the target range.
- For every z-score that meets this condition its distance from 0 is measured in Standard Deviations and an average or a mean is taken.
- This then becomes a simple assessment of how abnormal all z-scores are as a group. As this metric approaches 0 it is a measure of how outliers are normalizing.

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4chPZOK+PZMO +PZME

Level 3

- Therefore, this becomes a single number which describes the clients improvement.
- It may be used as an indicator for the completion of a session. For example, when clients tire, z-scores sometimes are seen to lose their tendency to be improving. If PZME shows an increase for more than 3 or 5 minutes, for example, then the client is moving in the wrong direction, and training should be re-evaluated.

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4chPZOK+PZMO +PZME

Level 3

- PZME also has the potential to be used to create target limits for LZT training. By providing an instantaneous measure of the average length of all z-scores across the board, PZME provides a basis for adjusting target limits for training. While the use of autothresholding is controversial and may or may not be desired in a particular case, PZME provides an objective, sound approach to creating target thresholds that are based on the instantaneous state of the desired z-scores.

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4chPZOK+PZMO +PZME

Level 3

- This module will direct you how to add the PZME algorithm to the PZOK + PZMO protocol.
- However, if you are not interested in learning how to PZME and simply want to use the metric you may find the setting file of 4chPZOK+PZMO+PZME included in this folder.

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FIRST: It is so very simple to make changes and experiment with BrainAvatar Settings Files without concern because if something just doesn't seem to work as planned, you always can reload the original Settings File you downloaded to your system.



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Consider manipulating the settings in your working folder as a sandbox. You can always replace it with the original setting file.



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4chPZOK+PZMO +PZME

Level 3

Lets Begin

- Make Sure the Atlantis Amplifier is plugged in.



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4chPZOK+PZMO +PZME

Level 3

- Open 4.0 BrainAvatar by double-clicking the BrainAvatar Icon.

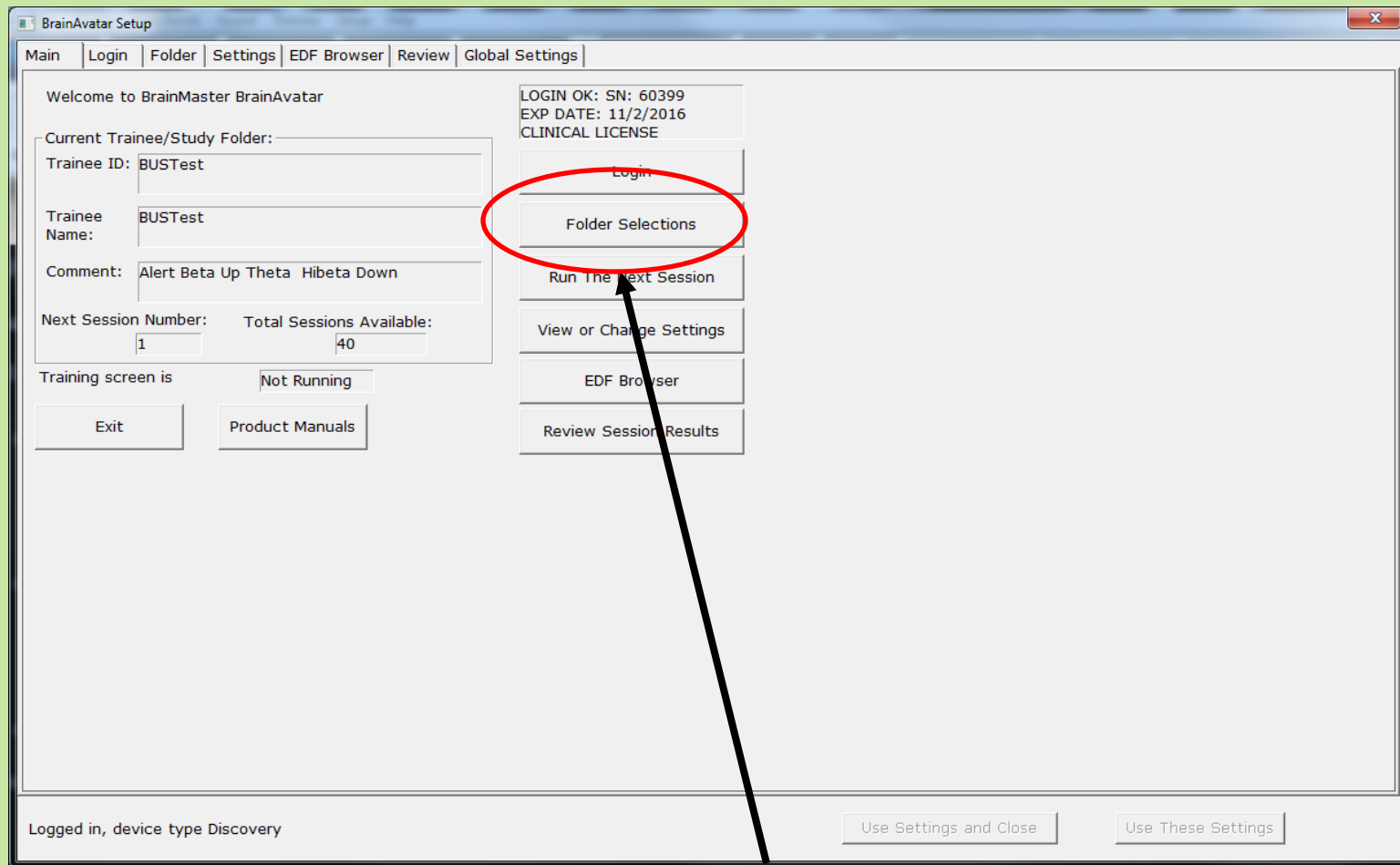


All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

- The Select Folder Screen will appear.
- By now you should know how to either create a new client folder or recall an existing client folder.
- For the purposes of this exercise let's open and utilize the "BUSTest" Folder which may already be resident on your system. If not, then create one.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

- The BrainAvatar Setup Window will Appear



- Click “Folder Selections”

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

- The Select Folder Screen will appear.

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Select Folder | Create Folder | Folder Notes | Session Librarian | Edit Folder Info.

Select Folder: (you may double-click to select)

Study Name	Birth Date	Sess	Max	Comment	Technician	Physician	Trainee Name	Created	Modified
..									
BUSTest	2000-7-4	40		Alert Beta Up T...	EEG tech		BUSTest	2016-8-3	2016-8-3

Study Name (Trainee ID): BroJad4chPZOKP3P4O1O2

Trainee Name: BroJad4chPZOKP3P4O1O2

Comment: comment

Sessions Used: 4

Max Sessions: 40

Session Librarian

Administer Session Genie | Push Current Study to Server and Delete | Archive Current Study | Archive Current Study and Delete

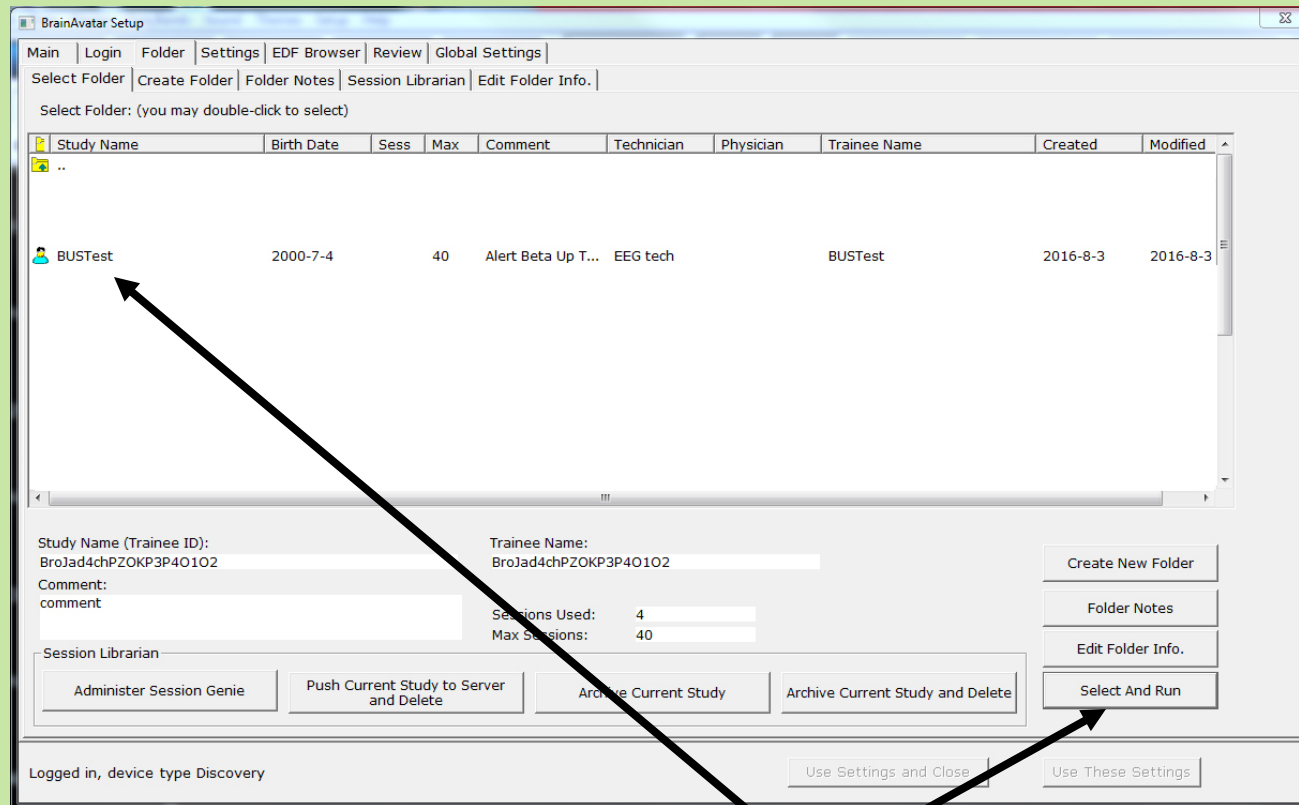
Create New Folder | Folder Notes | Edit Folder Info. | Select And Run

Logged in, device type Discovery

Use Settings and Close | Use These Settings

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

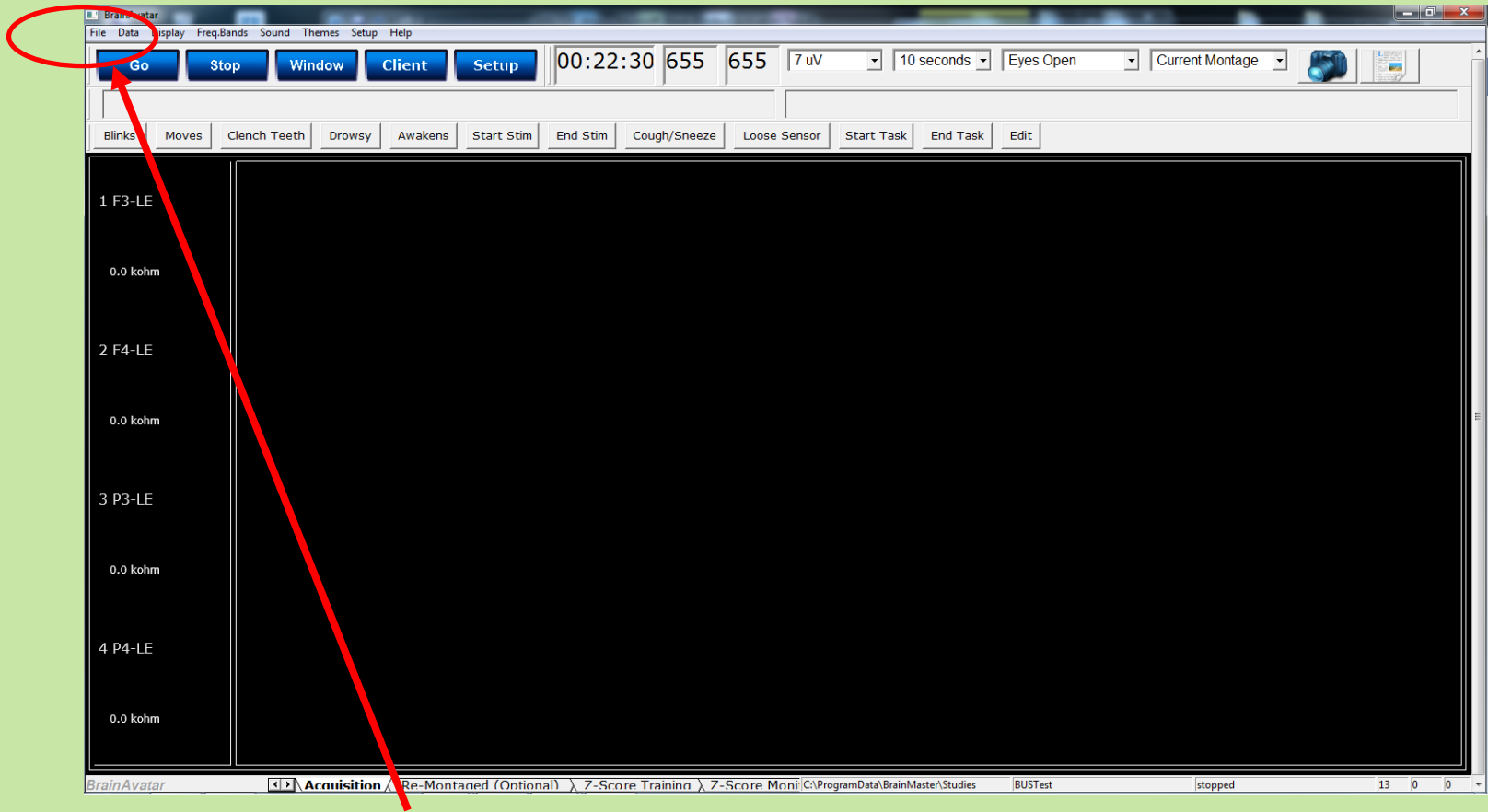
- The Select Folder Screen will appear.



- Click the Study (Folder) you would like to open (in this case BUSTest) and then click “Select and Run”.

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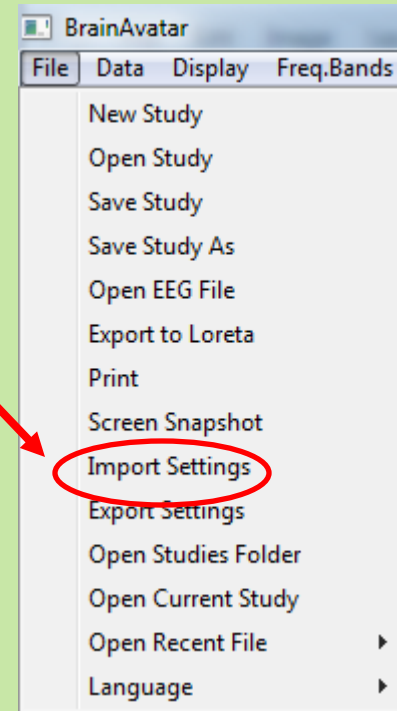
- The BrainAvatar acquisition Screen is illuminated. Let's load the Level 3 2103013PZMO.bdb2 to learn how to add PZME to this protocol.



- Click “File” from the Main Menu at the top.

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- Next click “Import Settings”.



- Scroll to find the PZMO Level 3 File from the last lesson and double click it.

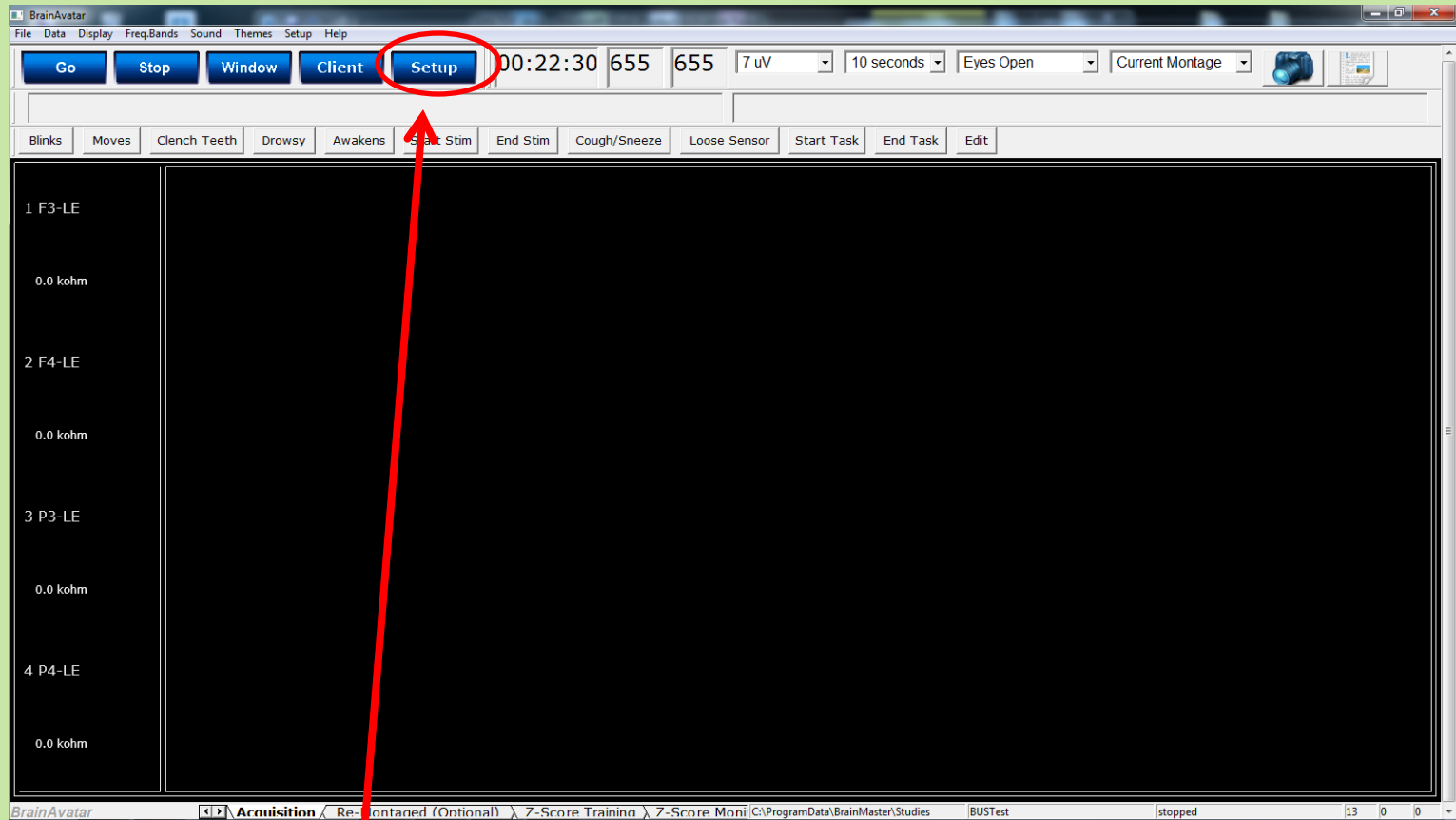
Name	Date modified	Type	Size
2103013_4ChPZOKATL PZMO.bdb2	8/27/2016 10:31 PM	BDB2 File	173 KB

- The PZOKUL Level 3 setting is imported into the Client’s Study and is now ready for modification.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

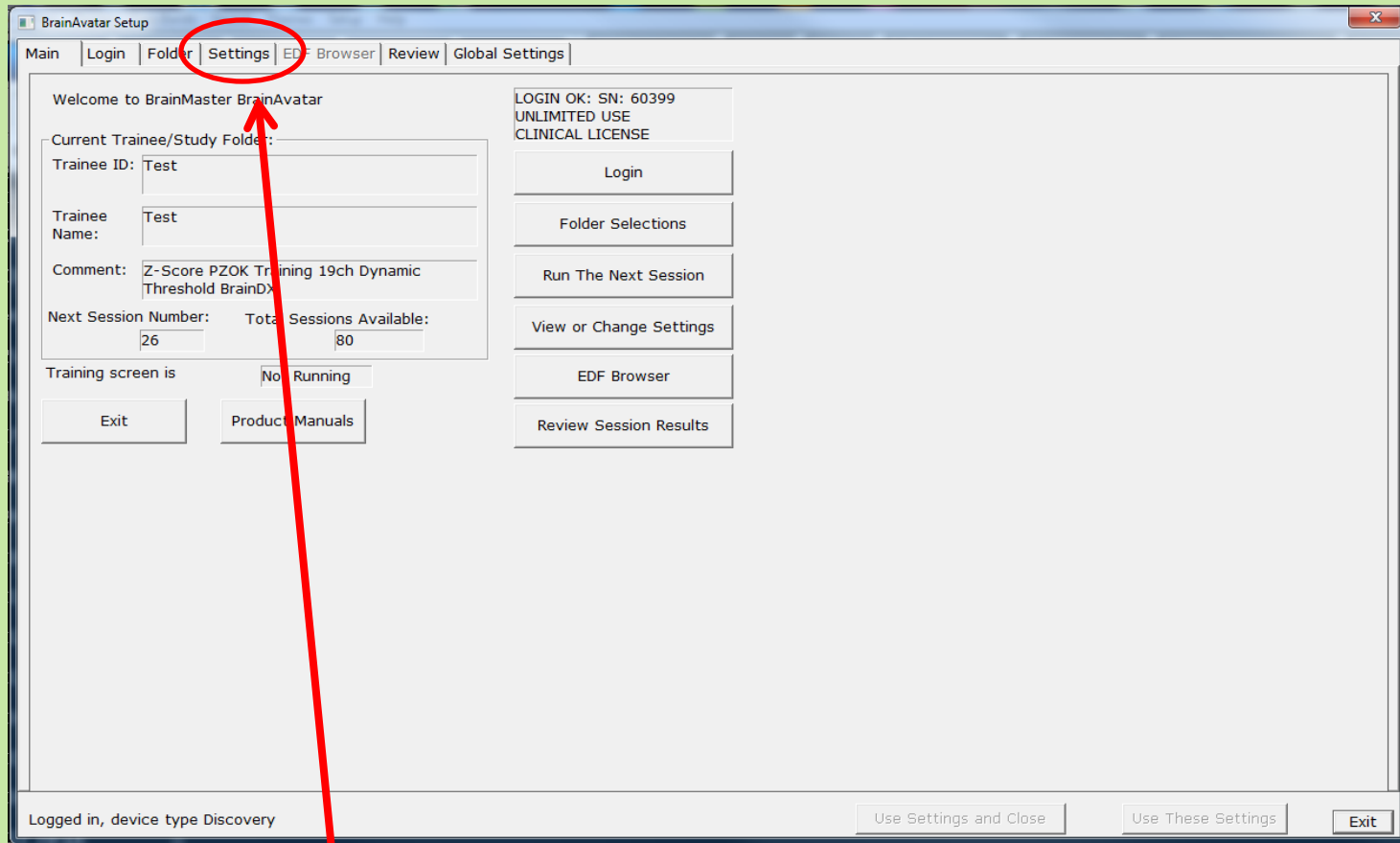


- Click “Setup”.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

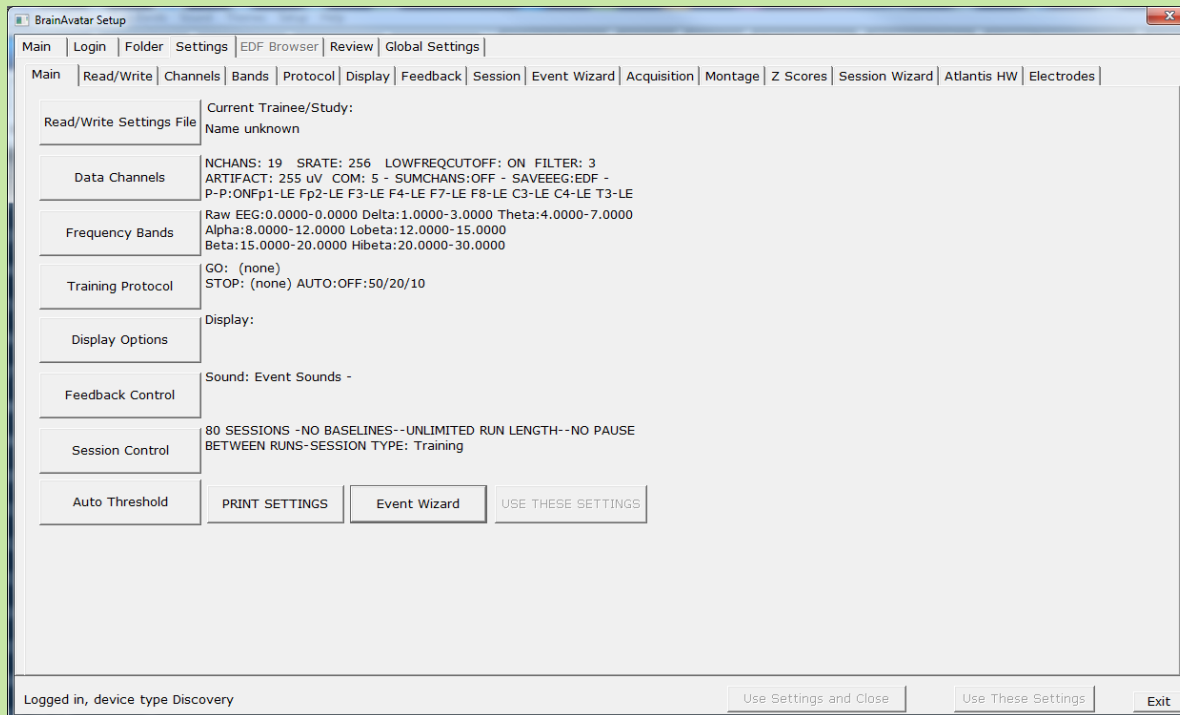


- Click “Settings”.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

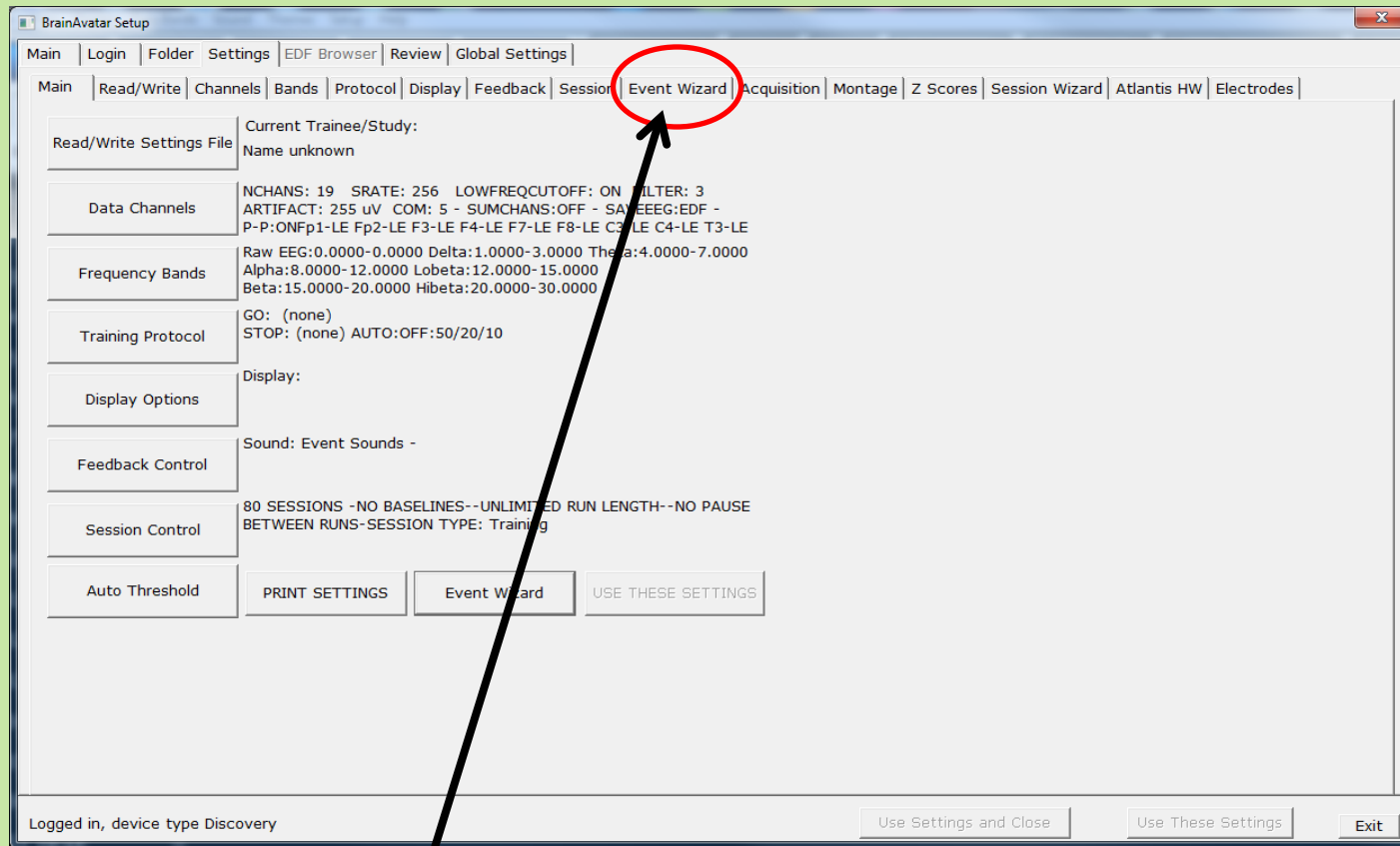


YOU ARE NOW ABOUT TO ENTER THE “BRAIN CENTER” OF THE BRAINAVATAR PROGRAM. ANY HAPHAZARD MODIFICATIONS HERE WITHOUT KNOWLEDGE MAY CAUSE UNPREDICTABLE RESULTS. THIS INSTRUCTION MANUAL WILL GIVE YOU THE PROPER KNOWLEDGE TO ALTER THESE CONTROL SCREENS WITHOUT CONCERN. AGAIN, YOU CAN ALWAYS INSTALL THE ORIGINAL SETTING FILE IF NECESSARY.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

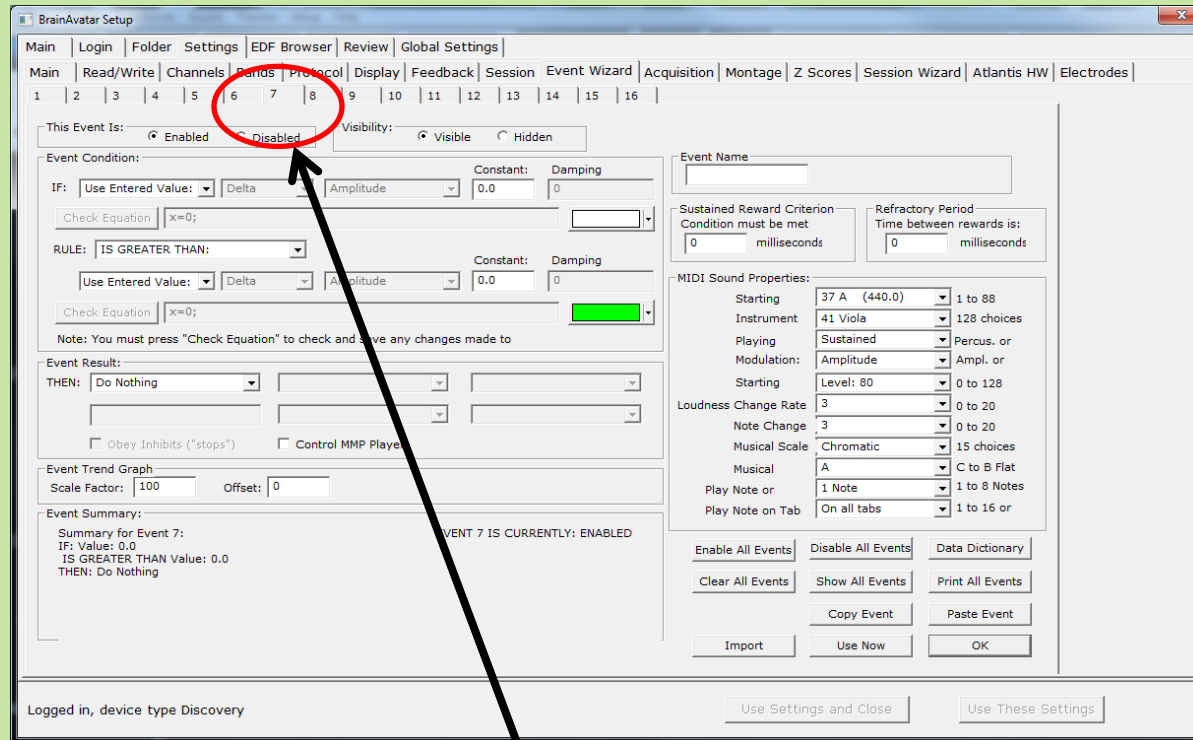


Click “Event Wizard”.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

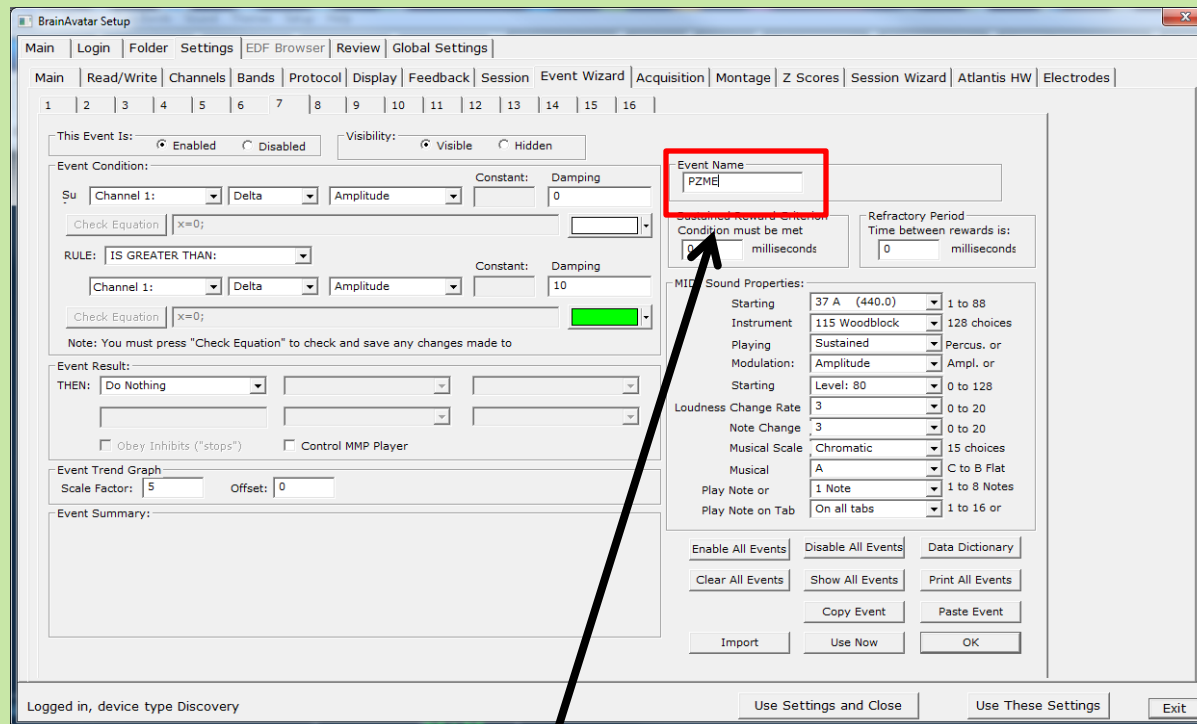


This is the Event Wizard which contains all of the conditions which make the Protocol run. The setting we will be initiating is “Event 7”. Click “Event 7”.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

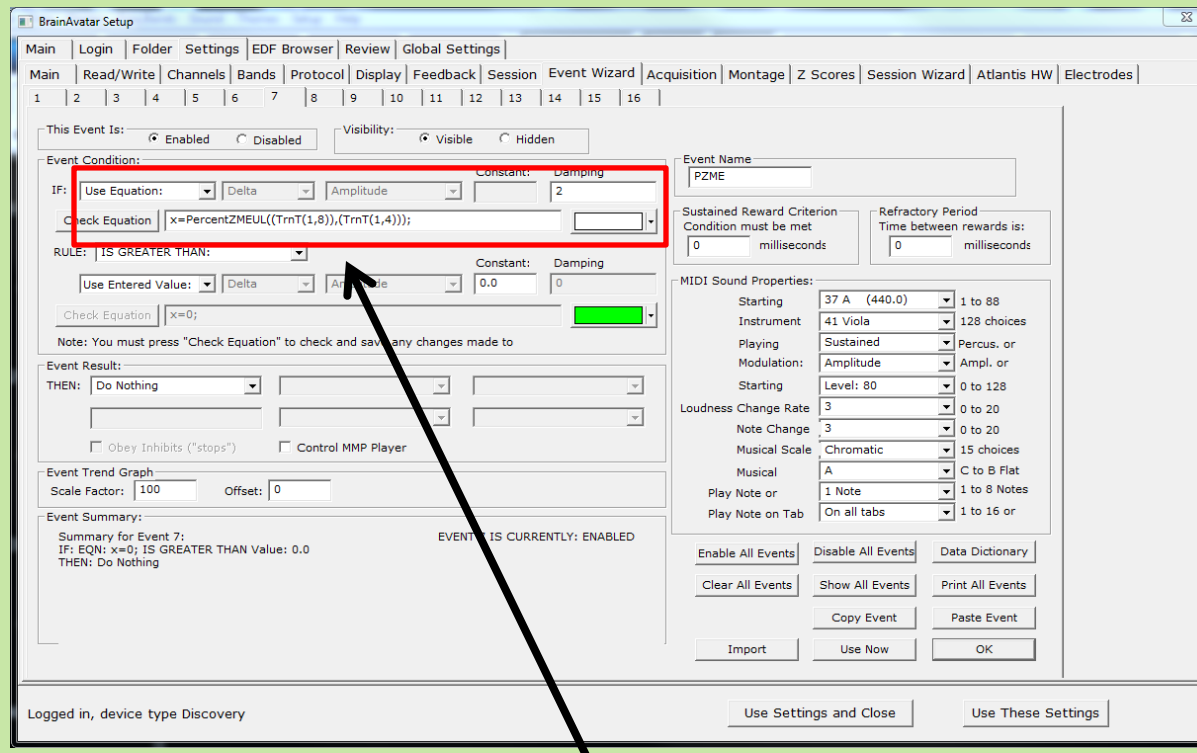


As you may notice, since Event 7 has not been used it comes up with all settings in default. In the Event Name box type “PZME” to get things started.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification



Next, we will be entering the PZME equation. Change the “IF:” condition to “Use Equation” in the Event Condition Box. Enter the following in the Equation window: $x = \text{PercentZMEUL}((\text{TrnT}(1,8)), (\text{TrnT}(1,4)))$; Make sure to copy it exactly including the semicolon at the end. This equation shall display the average of all Z-Scores above and below the PZOK window.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Main | Read/Write | Channels | Bands | Protocol | Display | Feedback | Session | Event Wizard | Acquisition | Montage | Z Scores | Session Wizard | Atlantis HW | Electrodes

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

This Event Is: ☒ Enabled ☐ Disabled Visibility: ☒ Visible ☐ Hidden

Event Condition:

IF: Use Equation: Delta Amplitude Constant: 2

Check Equation: $x = \text{PercentZMEUL}(\text{TrnT}(1,8), \text{TrnT}(1,4));$

RULE: IS GREATER THAN: Constant: 0.0 Damping: 0

Check Equation: $x=0;$

Note: You must press "Check Equation" to check and save any changes made to

Event Result:

THEN: Do Nothing

☐ Obey Inhibits ("stops") ☐ Control MMP Player

Event Trend Graph

Scale Factor: 100 Offset: 0

Event Summary:

Summary for Event 7:
IF: EQN: $x=0;$ IS GREATER THAN Value: 0.0
THEN: Do Nothing

EVENT 7 IS CURRENTLY: ENABLED

MIDI Sound Properties:

Starting: 37 A (440.0) 1 to 88
Instrument: 41 Viola 128 choices
Playing: Sustained Percus. or
Modulation: Amplitude Ampl. or
Starting: Level: 80 0 to 128
Loudness Change Rate: 3 0 to 20
Note Change: 3 0 to 20
Musical Scale: Chromatic 15 choices
Musical: A C to B Flat
Play Note or: 1 Note 1 to 8 Notes
Play Note on Tab: On all tabs 1 to 16 or

Enable All Events Disable All Events Data Dictionary
Clear All Events Show All Events Print All Events
Copy Event Paste Event
Import Use Now OK

Logged in, device type Discovery

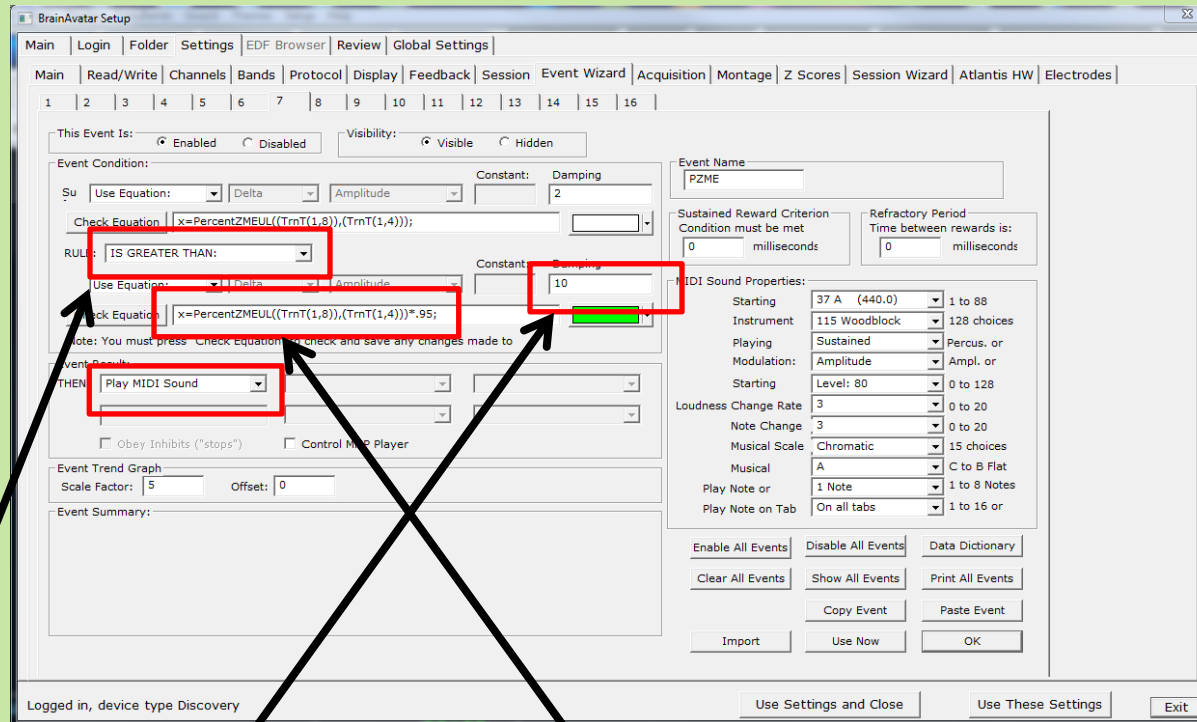
Use Settings and Close Use These Settings

Enter a damping value of 2 so movement in the tables and meters are slowed somewhat for ease of viewing without effecting the speed of feedback.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

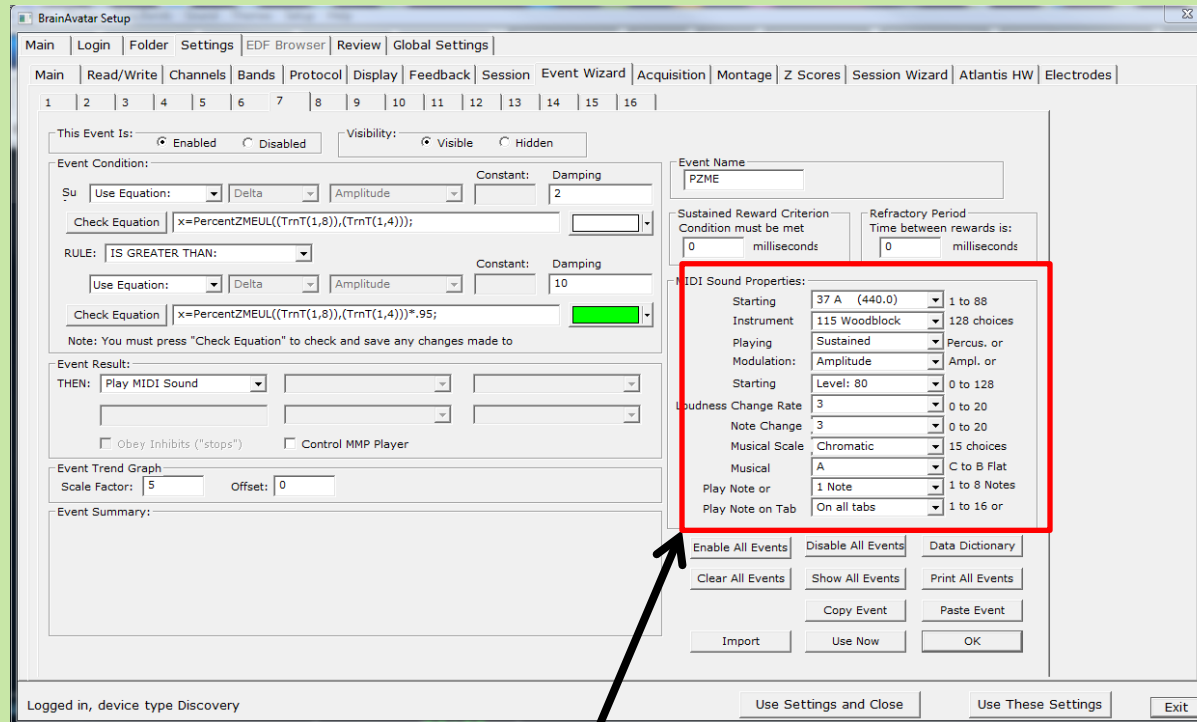


The Rule should be “Greater Than” and the “Use Equation” shall be set as a dynamic threshold. The equation is the same as the Event condition equation above with a damping factor of 10 and reduced by 5% so that it trails behind the graphing of the PZME. $x = \text{PercentZMEUL}((\text{TrnT}(1,8)), (\text{TrnT}(1,4))) * .95$; Crossing the threshold will produce a woodblock sounding reward.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

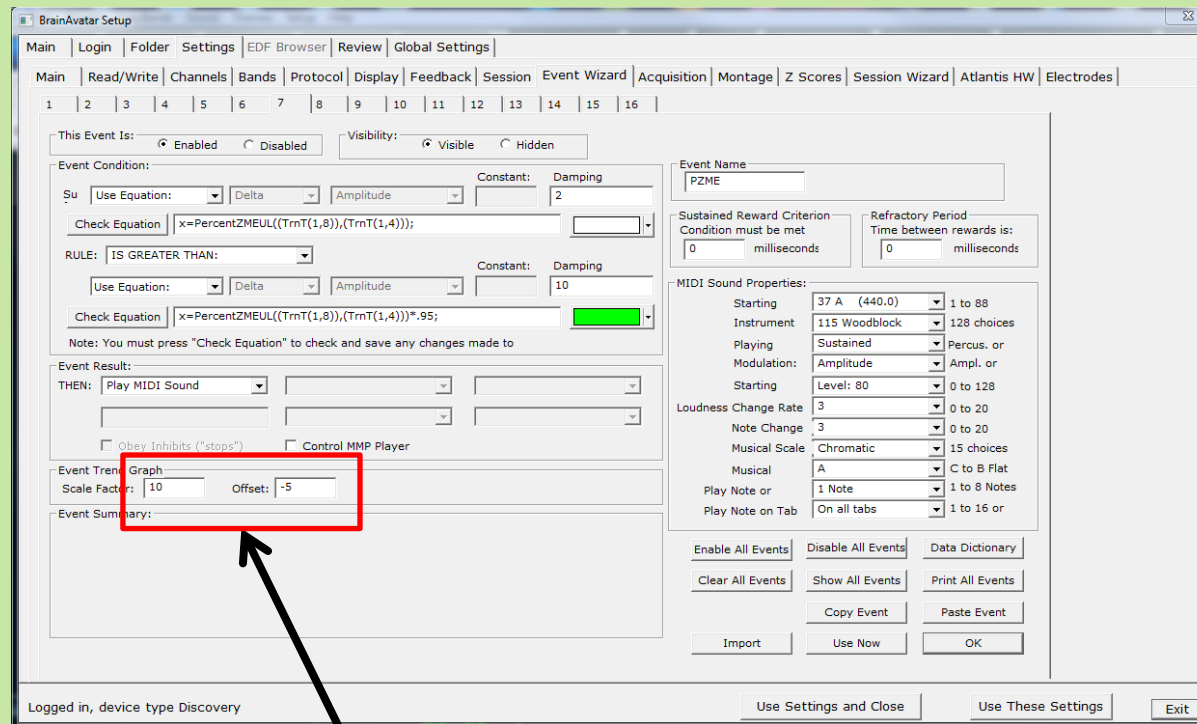


Adjust the “MIDI Sound Properties:” as follows so crossing the threshold will produce a “Woodblock” sound.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

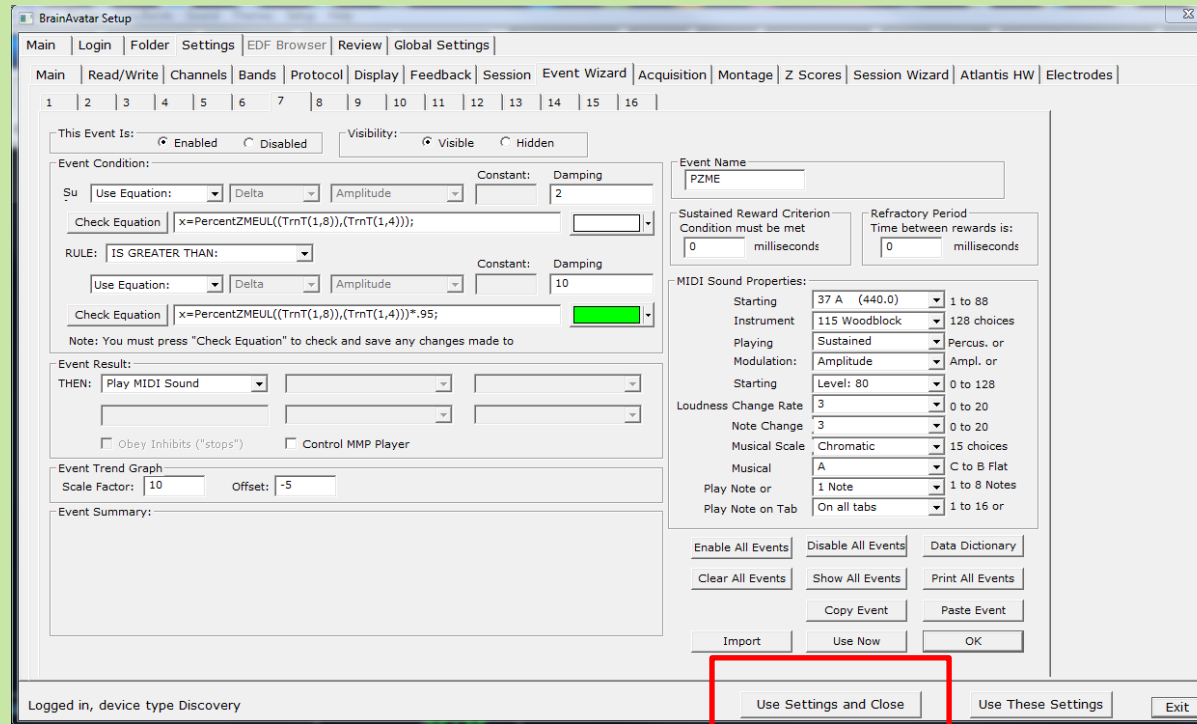


In the Event Trend Graph Window enter a Scale Factor of 10 with an offset of -5 so the graph of this event ranges from -5 SD's to 5 SD's.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

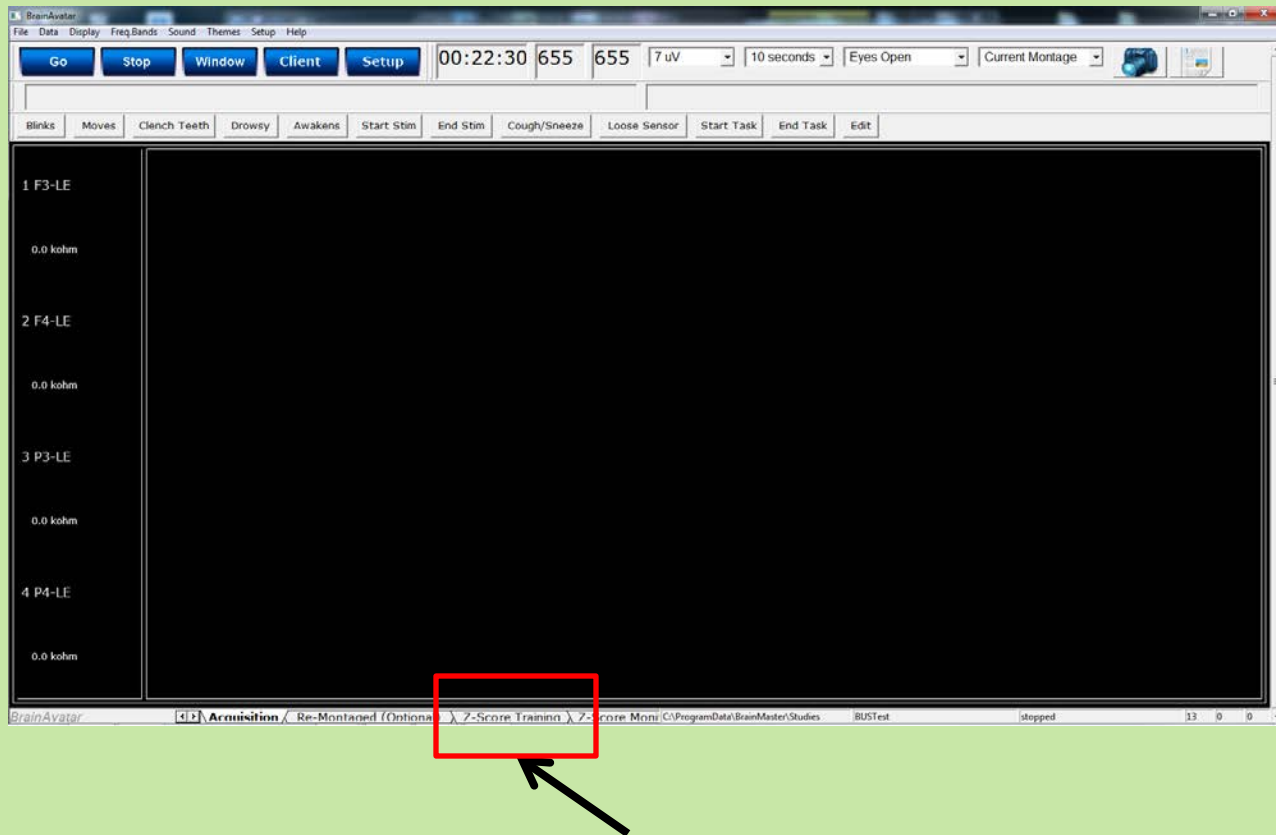


Click "Use Settings and Close" to save and activate these additions.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

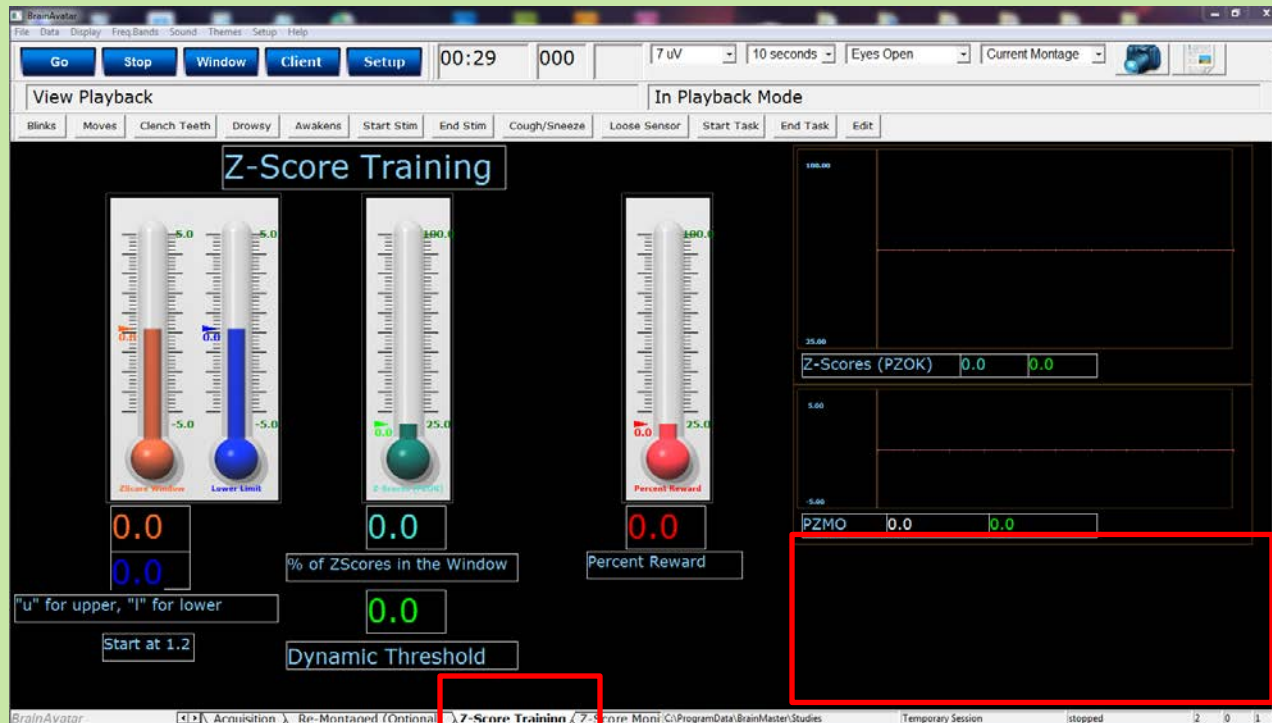


Our next task is to visually represent PZME on our PZOK Training Screen. Click the “Z-Score Training” Tab on the BrainAvatar Tab Row

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

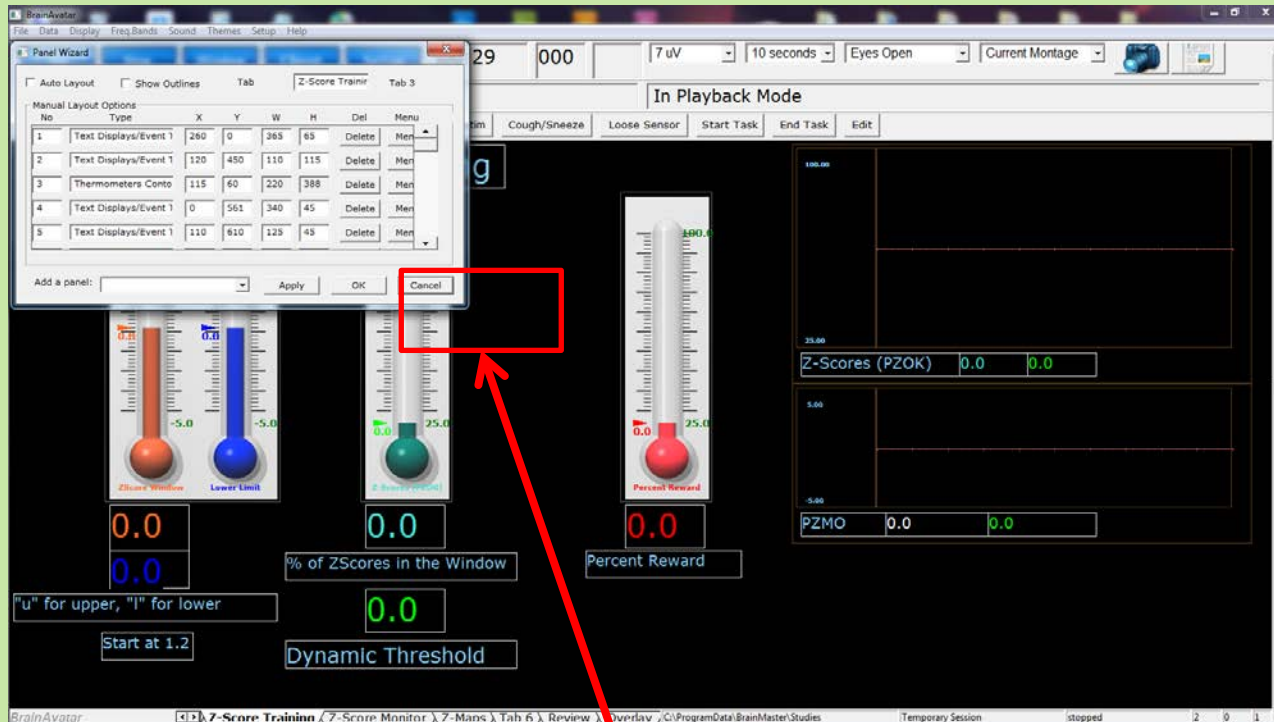


We created room for the PZME Wide Trend Event Graph on the right underneath the PZMO Wide Trend Event Graph in our PZMO Lesson. We shall place the PZME Wide Trend Event Graph in the location depicted by the red rectangle. Right-Click the “Z-Score Training” Tab to call up the Panel Wizard.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

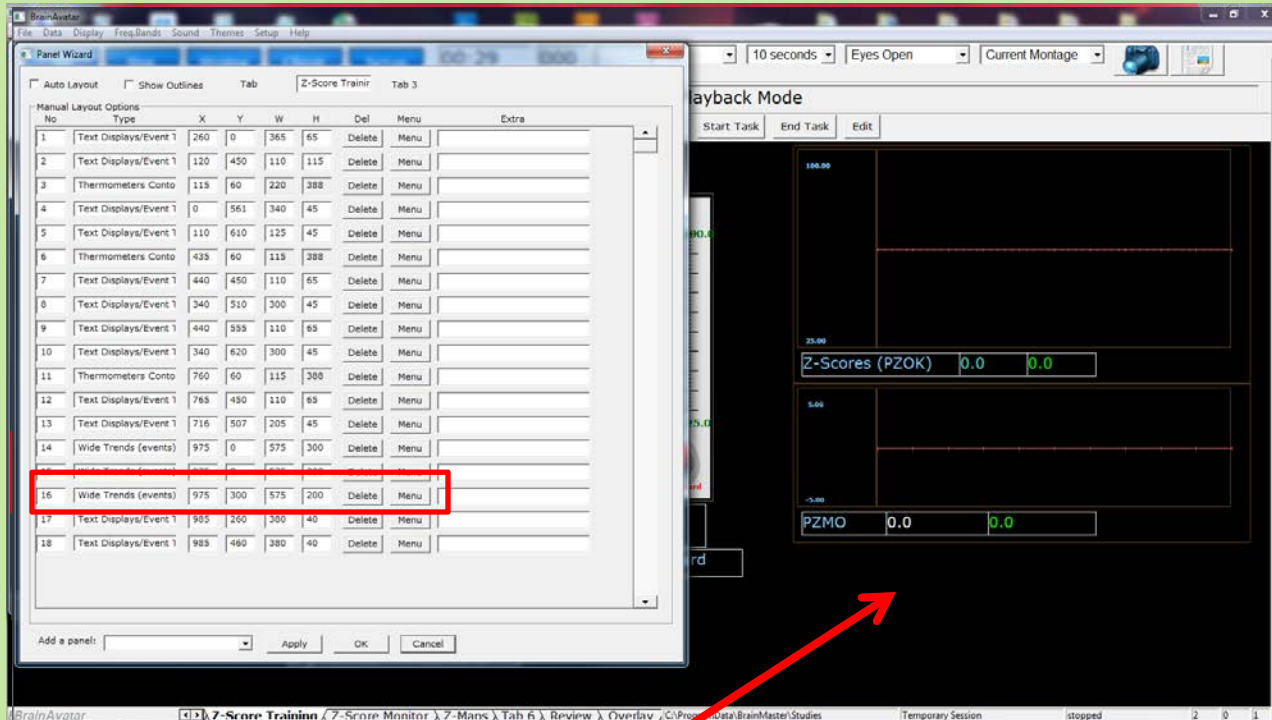


You may increase the size of the Panel Wizard so it becomes more visible and workable by holding the left mouse button down and dragging the lower right corner of the panel wizard window down and to the right.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

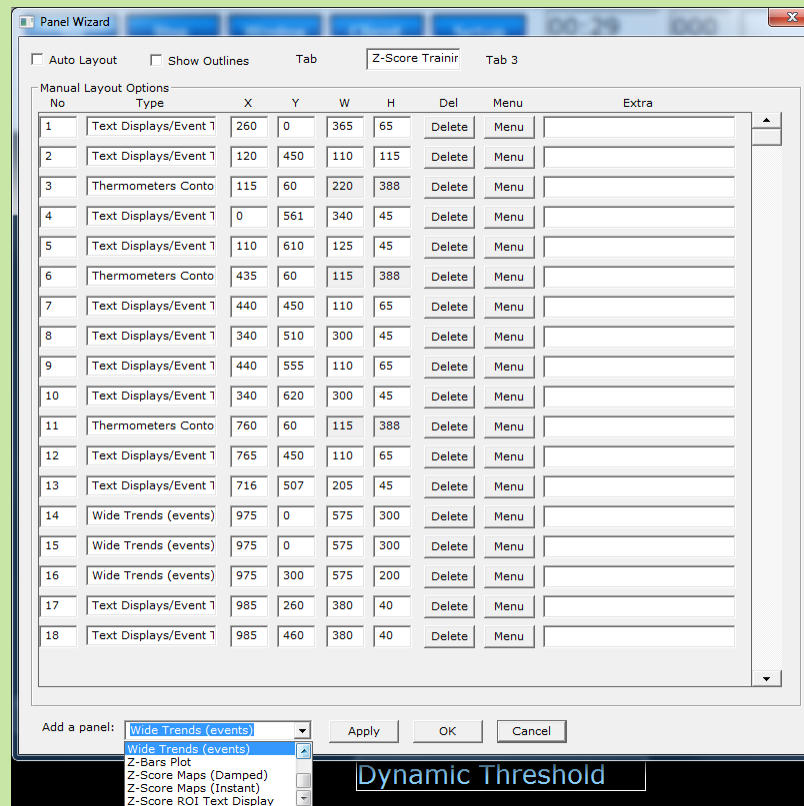


Manual Layout Option # 16 is the PZMO Wide Trend Event Graph we created in the last lesson. We shall place the PZME Wide Trend Event Graph directly underneath this one.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

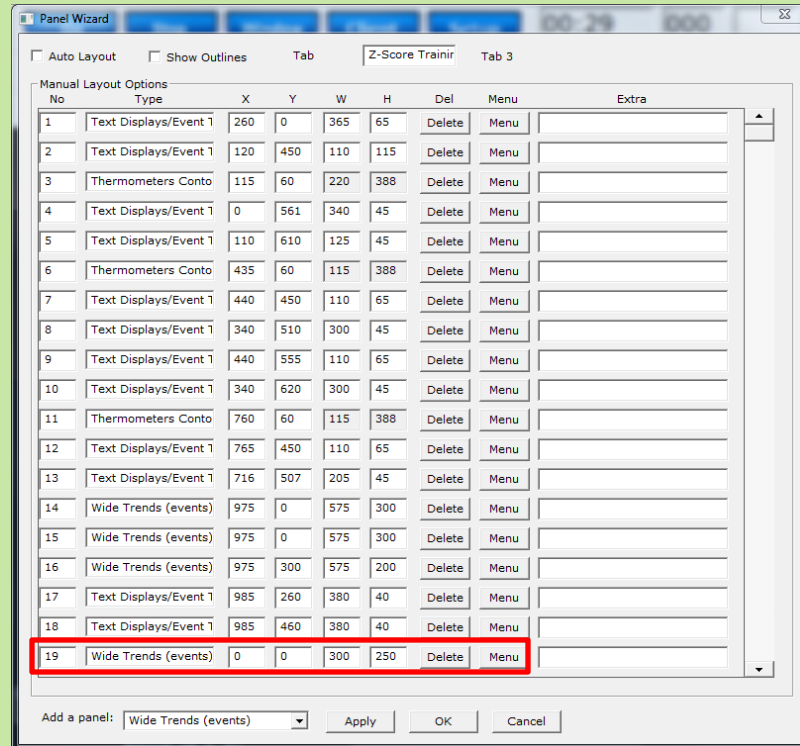


First, let's create a new Wide Trend Event Graph by selecting it in the "Add a panel:" section of the Panel Wizard.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

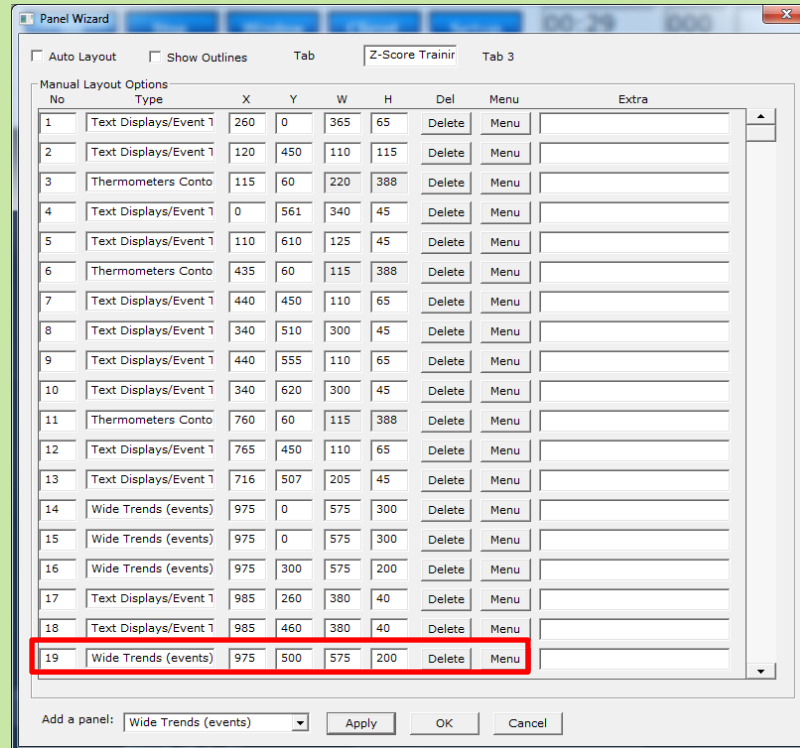


Notice this has populated Manual Layout Option #19. Using the PZMO Wide Trend Event Graph (#16) as a reference enter 975 as the X coordinate (The same as Manual Layout Option #16).

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

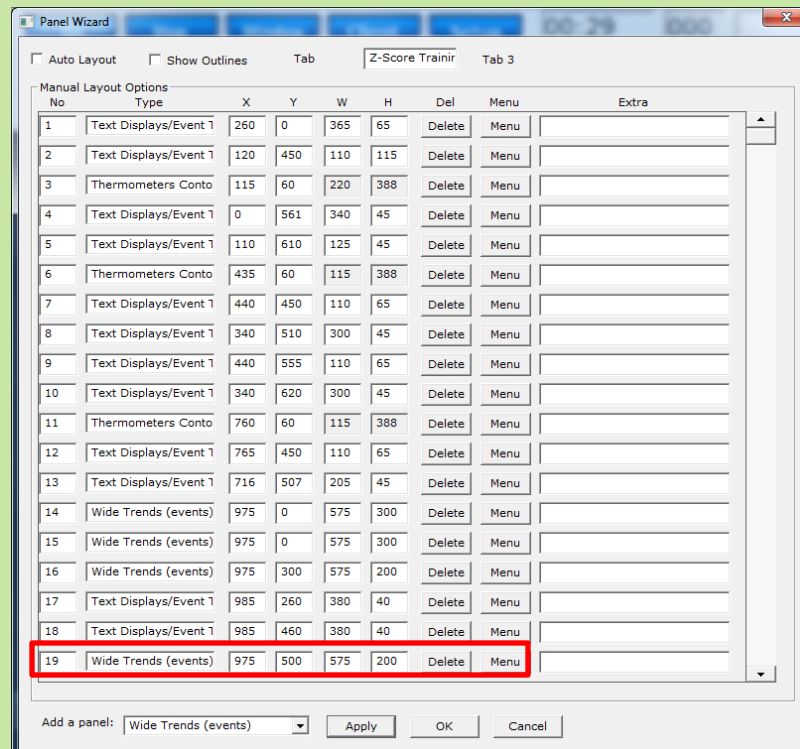


Enter 500 as the Y coordinate. This is because the PZOK Wide Trend Event Graph had a height of 300 pixels and the PZMO Wide Trend Event Graph had a height of 200 pixels.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

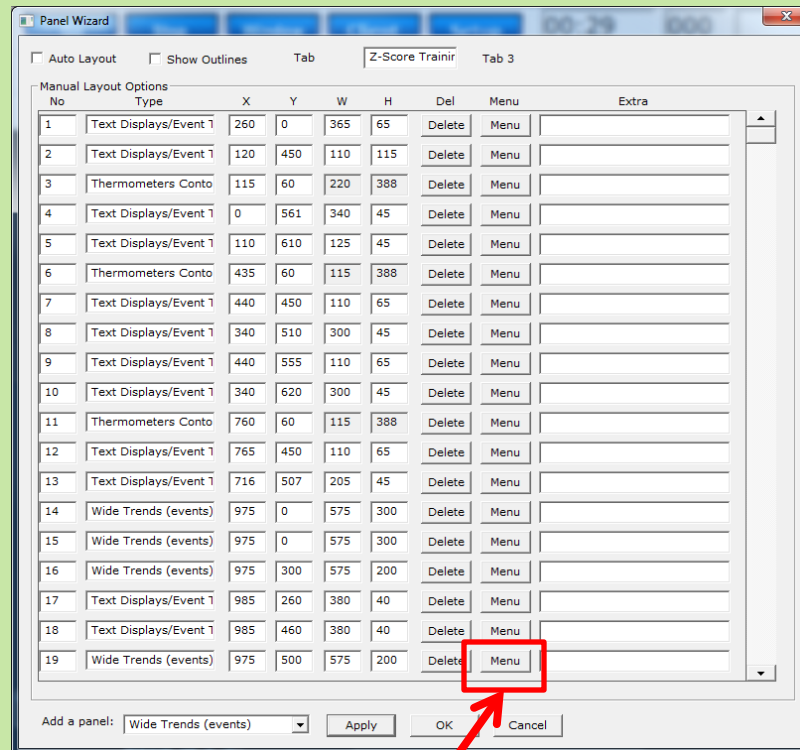


Enter a width for this graph of 575 pixels so that it is the same width as the other two graphs. Also, enter a height of 200 pixels so that it has the same height as the PZMO Wide Trend Event Graph.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

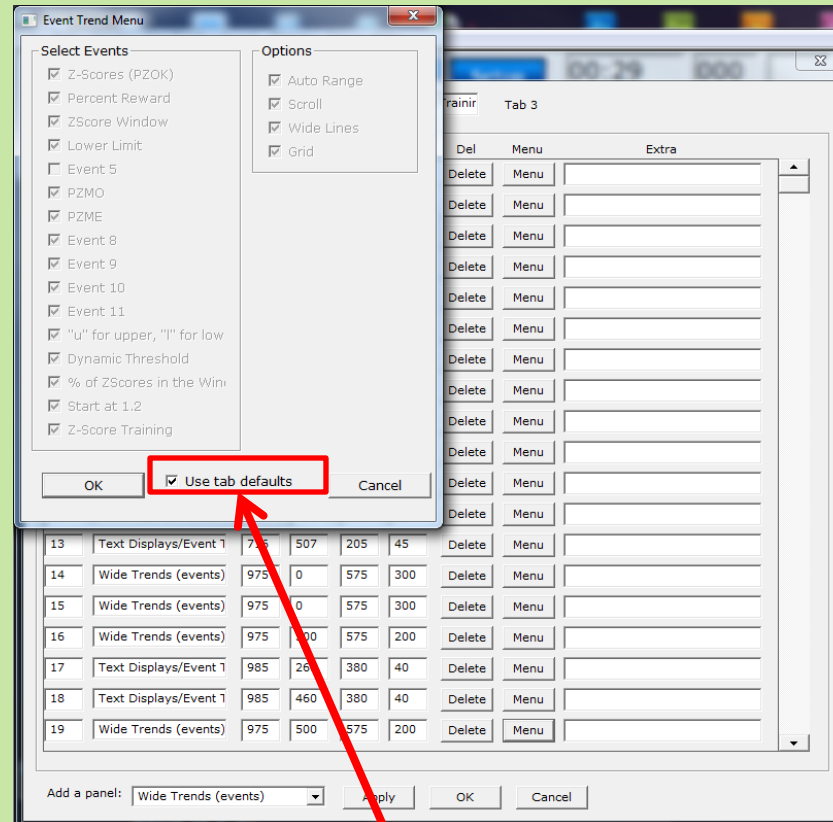


Next click “Menu” so that we choose what we want displayed in this Wide Trend Event Graph.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

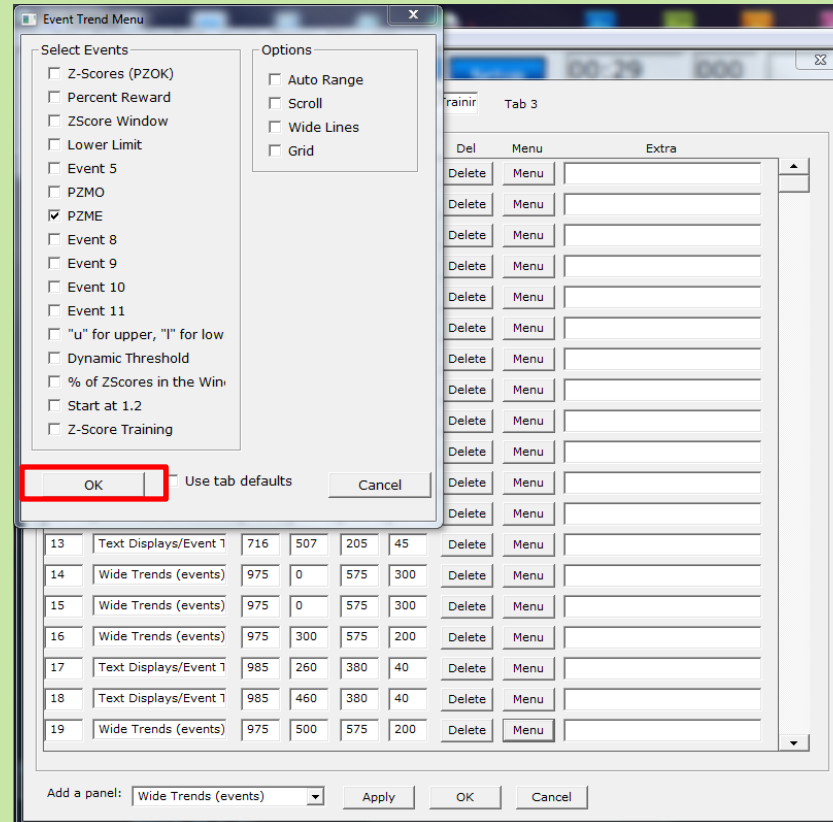


We shall click off the “Use tab defaults” check box to enable custom options.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

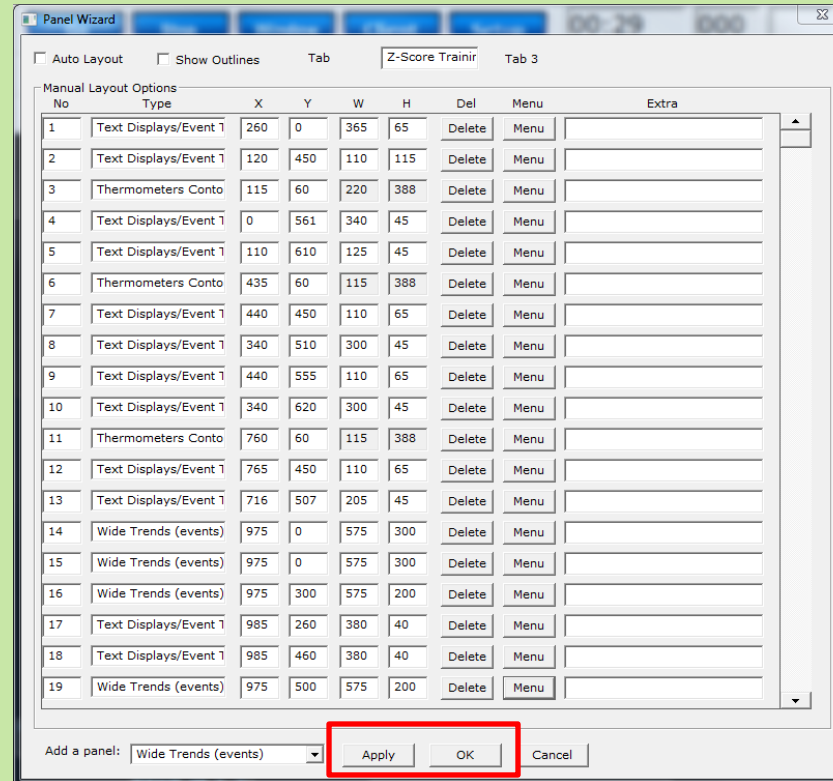


Click off all of the options except PZME along the left side for this is the only event we would like displayed. Click “OK” to save and initiate the selections.

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4chPZOK+PZMO +PZME

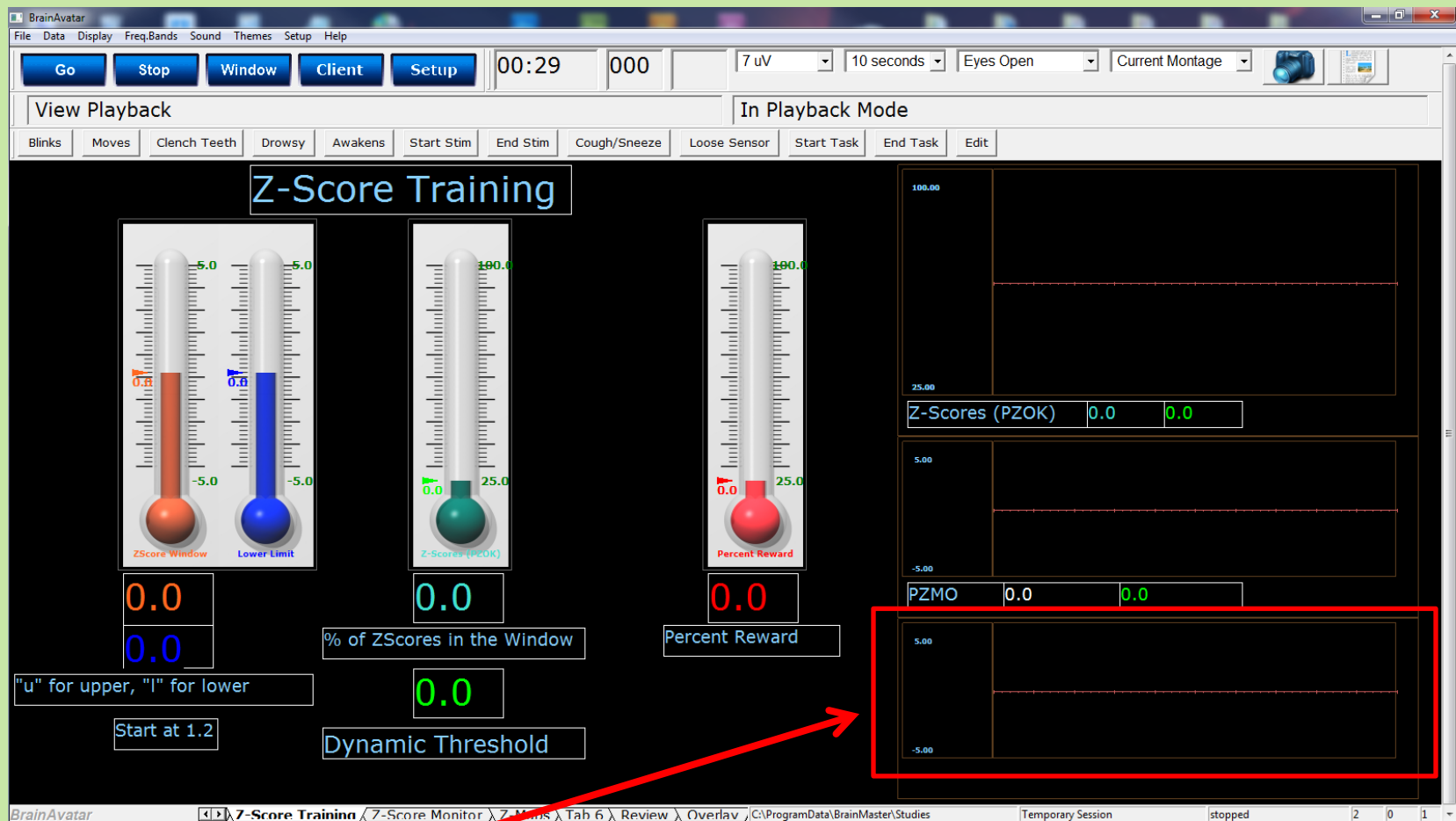
The Protocol is now ready for Modification



Finally click “Apply” and “OK” on the Panel Wizard to activate our selections.

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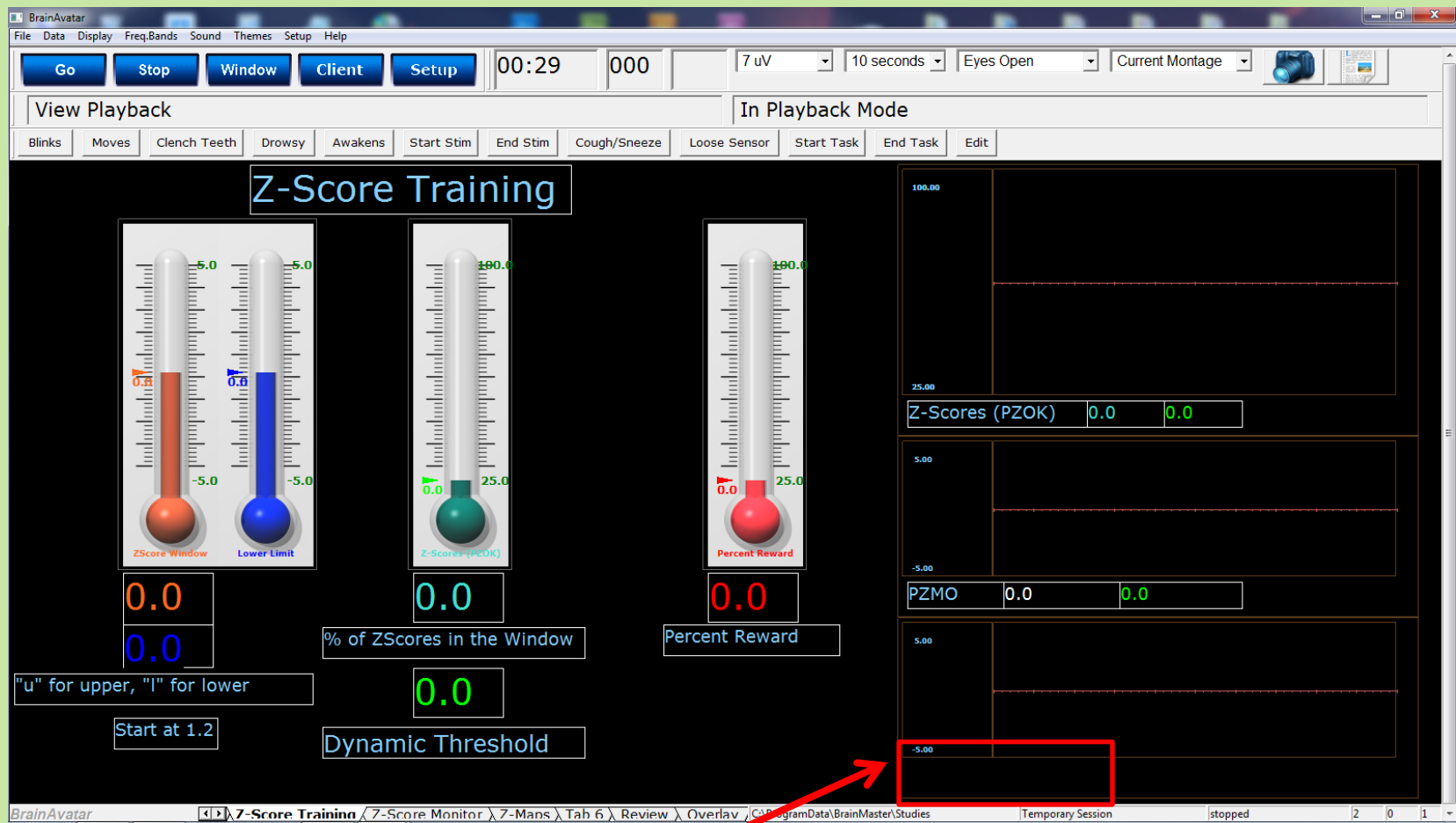
4chPZOK+PZMO +PZME



As you can see, our PZME graph is properly placed and formatted. Now lets create some labels and meters so that we can see the actual numbers involved.

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4chPZOK+PZMO +PZME



Let's place a label naming PZME along with the PZME value and threshold in the depicted location.

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4chPZOK+PZMO +PZME

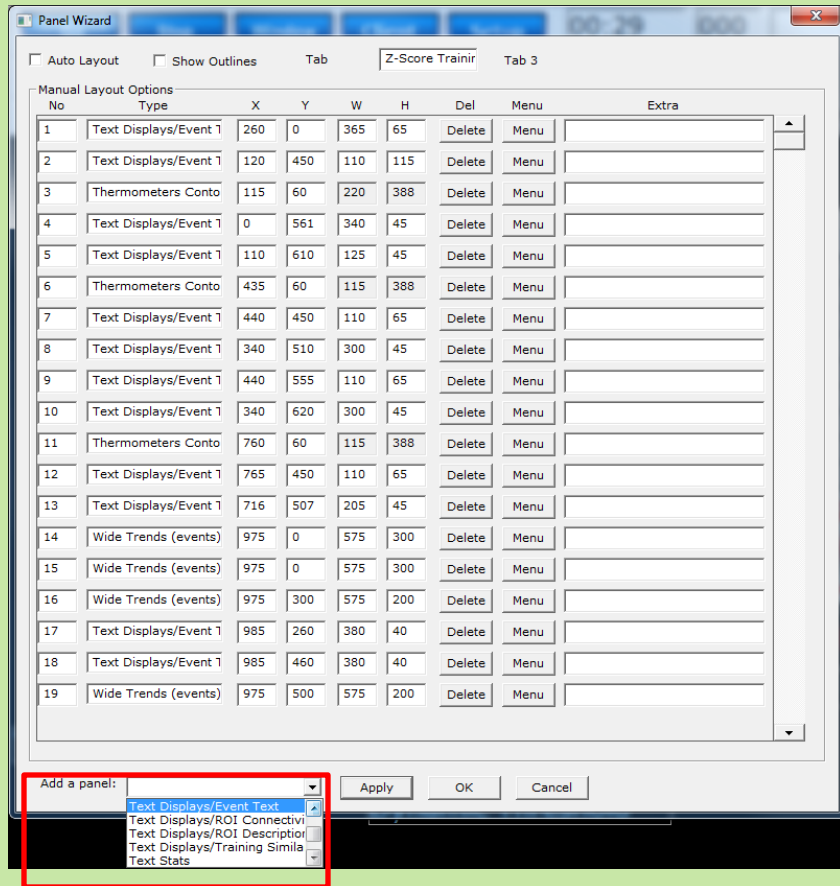


To do this let's call up the Panel Wizard by Right-Clicking the Z-Score Training Tab.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification



- Enlarge the Panel Wizard by holding the left mouse button down while dragging the lower right corner down and to the right.
- In the Add a panel control select “Text Display Event Text”. This will be added to position 20.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

Panel Wizard

☐ Auto Layout ☐ Show Outlines Tab Z-Score Trainer Tab 3

Manual Layout Options

No	Type	X	Y	W	H	Del	Menu	Extra
1	Text Displays/Event 1	260	0	365	65	Delete	Menu	
2	Text Displays/Event 1	120	450	110	115	Delete	Menu	
3	Thermometers Conto	115	60	220	388	Delete	Menu	
4	Text Displays/Event 1	0	561	340	45	Delete	Menu	
5	Text Displays/Event 1	110	610	125	45	Delete	Menu	
6	Thermometers Conto	435	60	115	388	Delete	Menu	
7	Text Displays/Event 1	440	450	110	65	Delete	Menu	
8	Text Displays/Event 1	340	510	300	45	Delete	Menu	
9	Text Displays/Event 1	440	555	110	65	Delete	Menu	
10	Text Displays/Event 1	340	620	300	45	Delete	Menu	
11	Thermometers Conto	760	60	115	388	Delete	Menu	
12	Text Displays/Event 1	765	450	110	65	Delete	Menu	
13	Text Displays/Event 1	716	507	205	45	Delete	Menu	
14	Wide Trends (events)	975	0	575	300	Delete	Menu	
15	Wide Trends (events)	975	0	575	300	Delete	Menu	
16	Wide Trends (events)	975	300	575	200	Delete	Menu	
17	Text Displays/Event 1	985	260	380	40	Delete	Menu	
18	Text Displays/Event 1	985	460	380	40	Delete	Menu	
19	Wide Trends (events)	975	500	575	200	Delete	Menu	
20	Text Displays/Event 1	985	660	380	40	Delete	Menu	

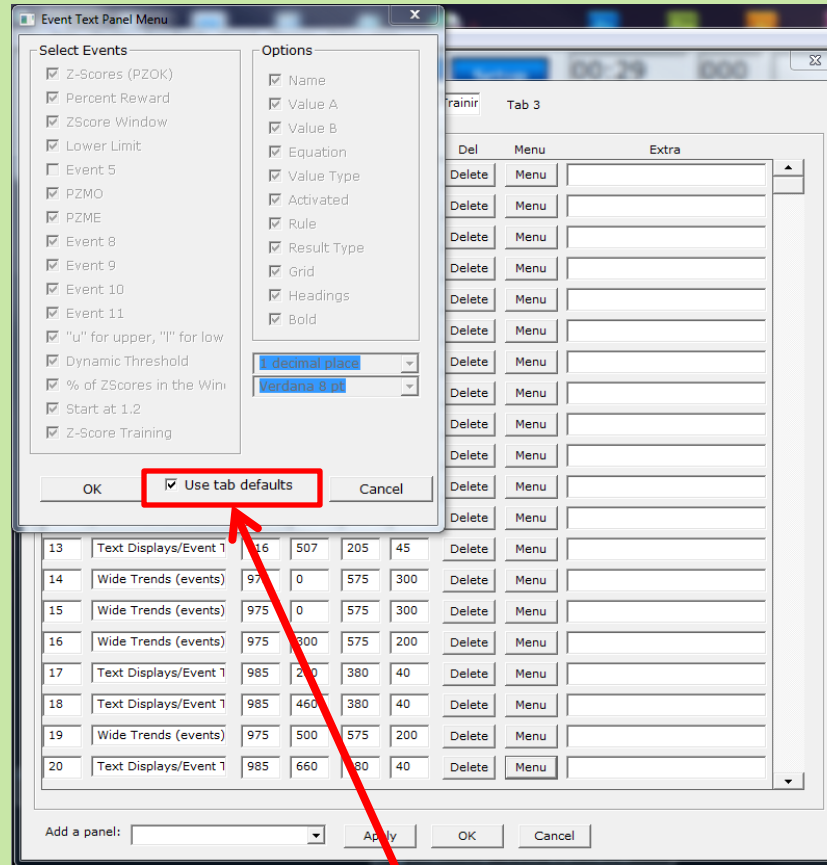
Add a panel: Text Displays/Event Text Apply OK Cancel

- Using Manual Layout Option # 18 as a guide, enter 985 as the x axis coordinate as in the example above. This provides for a 10 pixel indent.
- Enter 660 as the Y axis coordinate. This is derived from the height of the first label (#17) plus the height of the second label (#18) and places the top of the label 40 pixels above the bottom of the graph.
- Enter 380 pixels as the Width of the label mimicking #17 and #18.
- Enter 40 pixels as the Height of the label mimicking #17 and #18 as well.
- Next select menu in the same row so that we may tell BrainAvatar what we would like depicted on the label.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

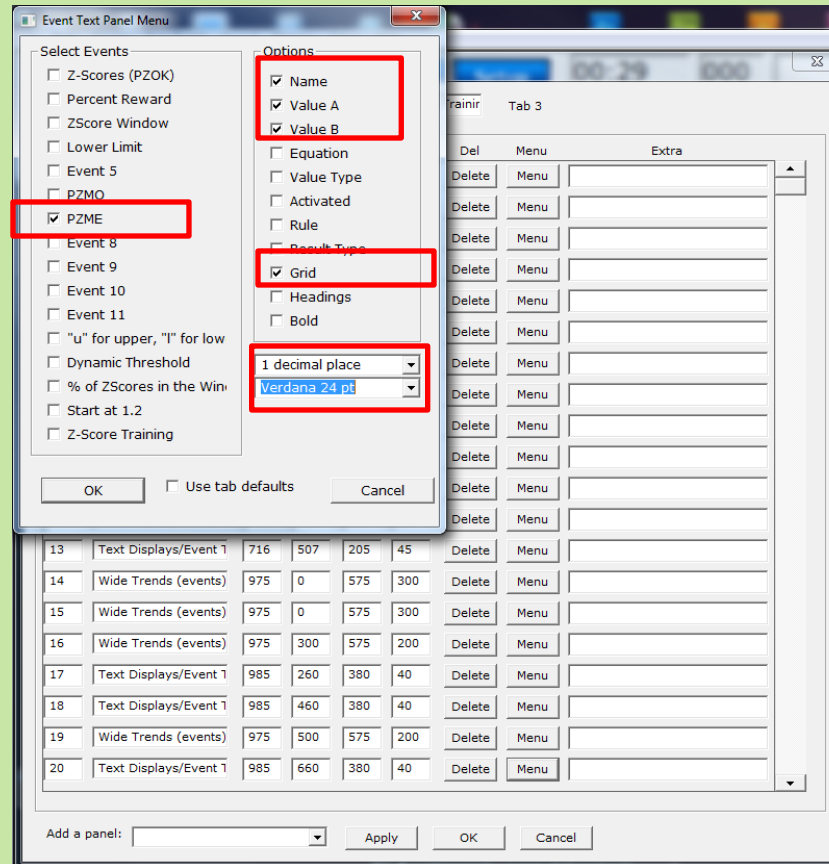


We shall click off the “Use tab defaults” check box to enable custom options.

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4chPZOK+PZMO +PZME

The Protocol is now ready for Modification

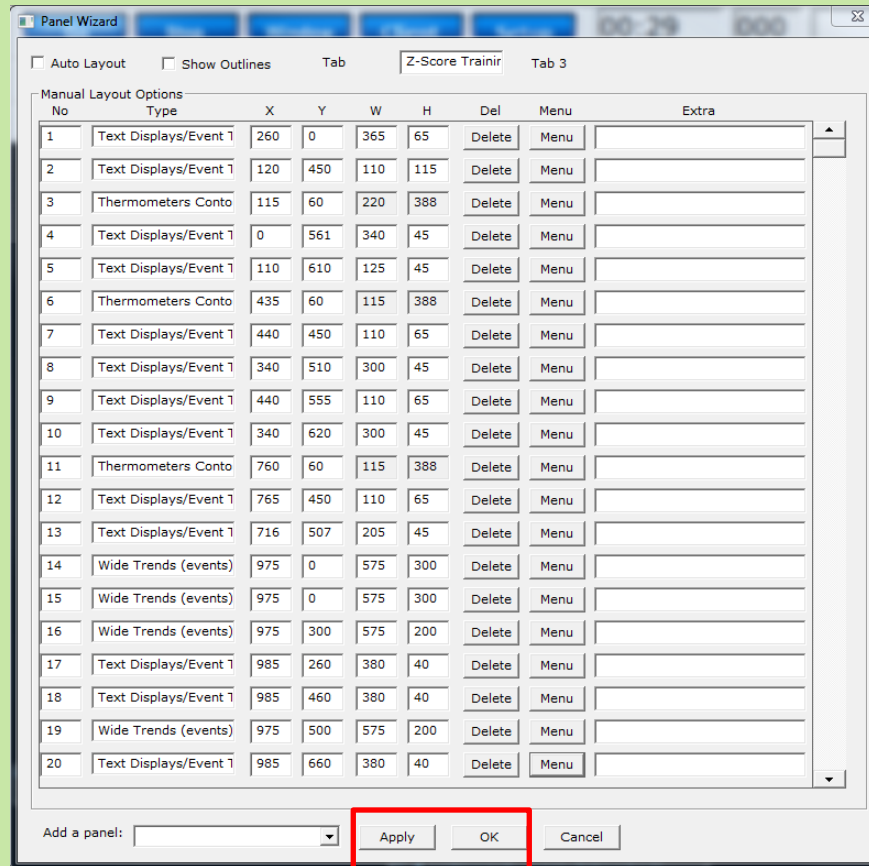


Click the choices shown above. Then click off the “Name” checkbox and then click it back on. Click “OK” to save and activate the selections.

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4chPZOK+PZMO +PZME

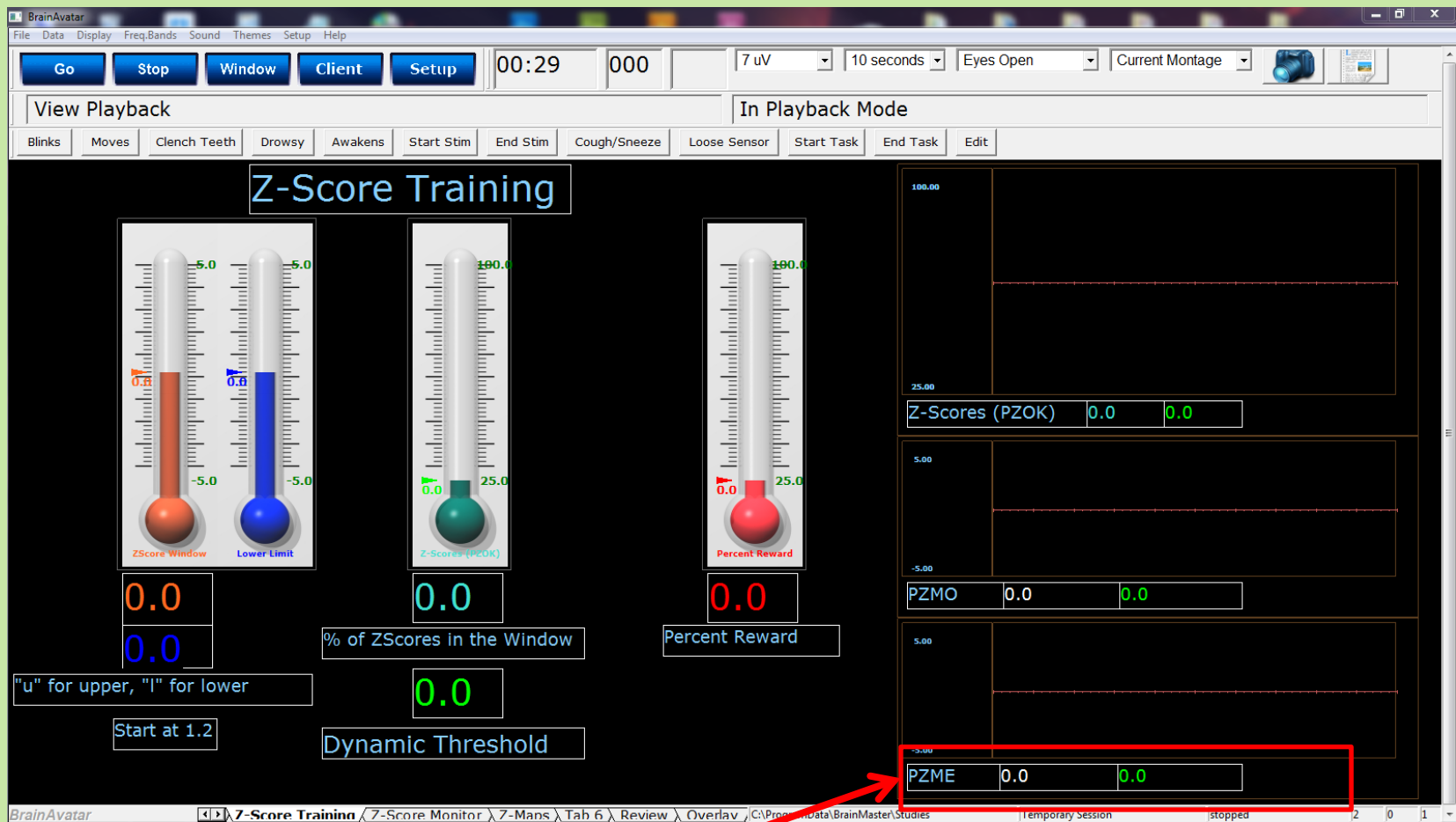
The Protocol is now ready for Modification



Next click “Apply” and “OK” to activate the selections made in the Panel Wizard.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

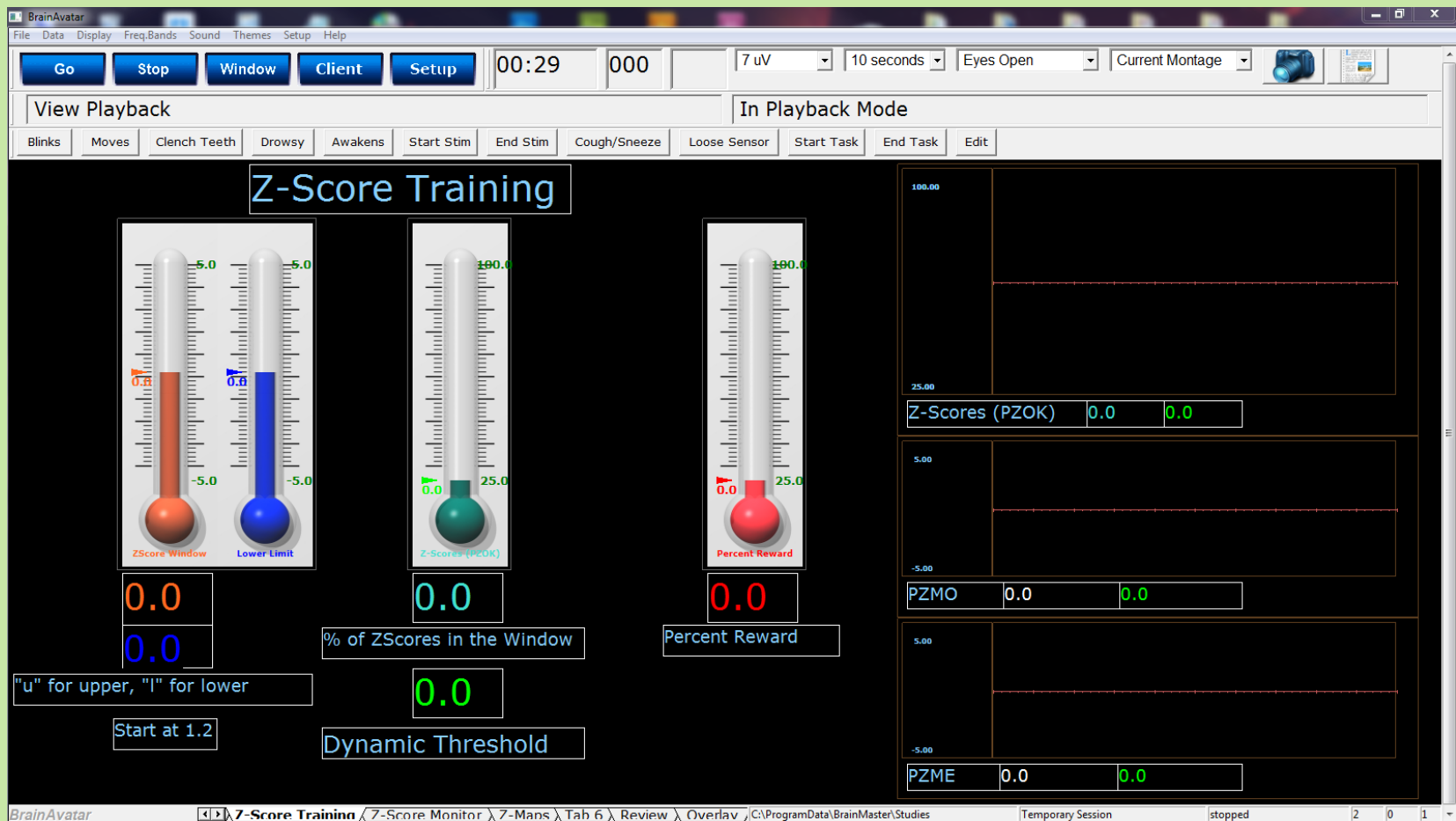
4chPZOK+PZMO +PZME



Viola! Our label appears just as we planned. Next let us run the Protocol with real data so we may see how to really run this properly.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

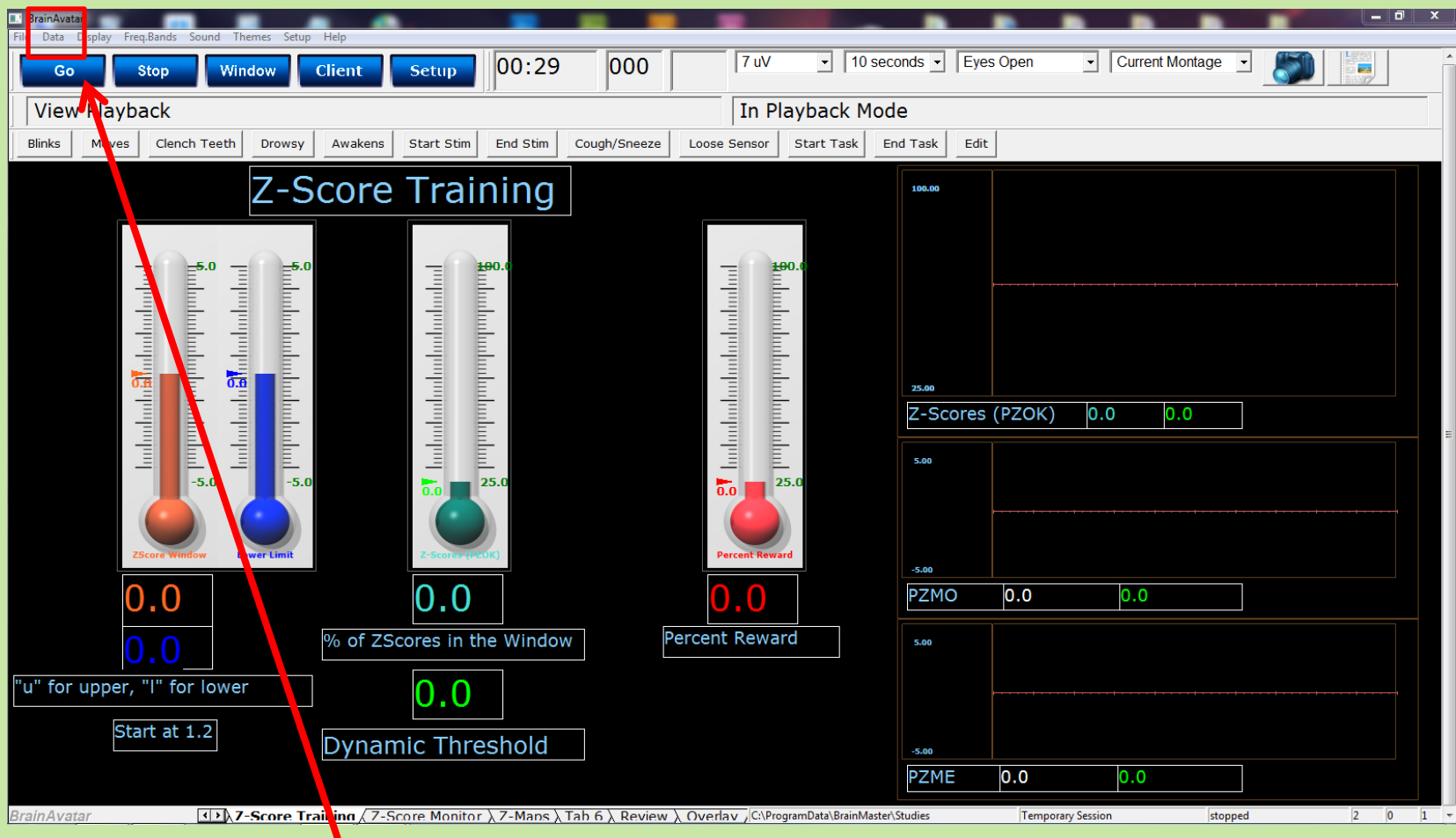
4chPZOK+PZMO +PZME



In the BUS Folder where you have been working “BUS/BrainAvatarAtlantisSettings/4ChPZOKBDXLevel003/2101014PZME” you will find the data file JohnSmith9606104chPZOK.edf

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

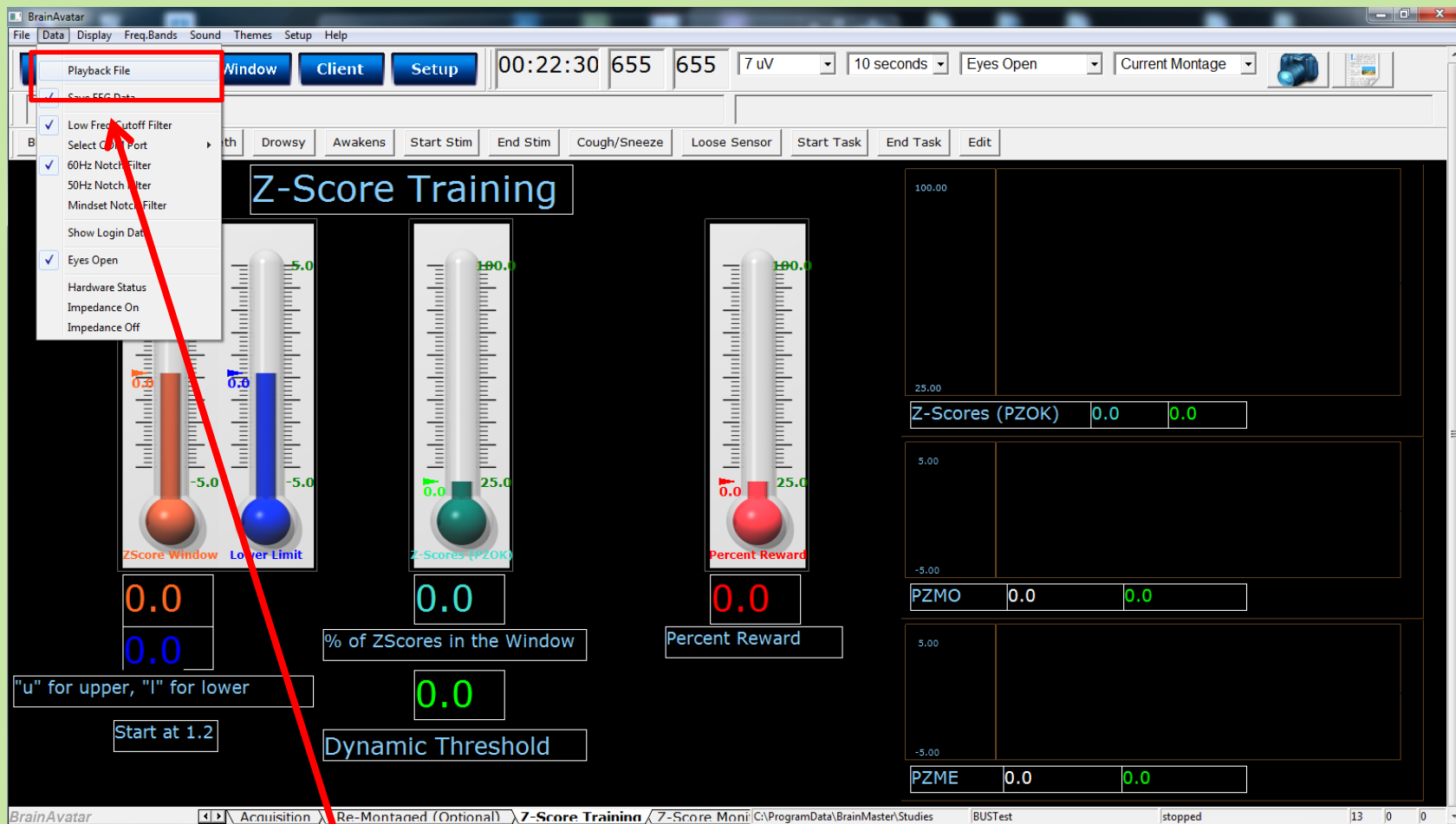
4chPZOK+PZMO +PZME



You may run this file by clicking “Data”.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

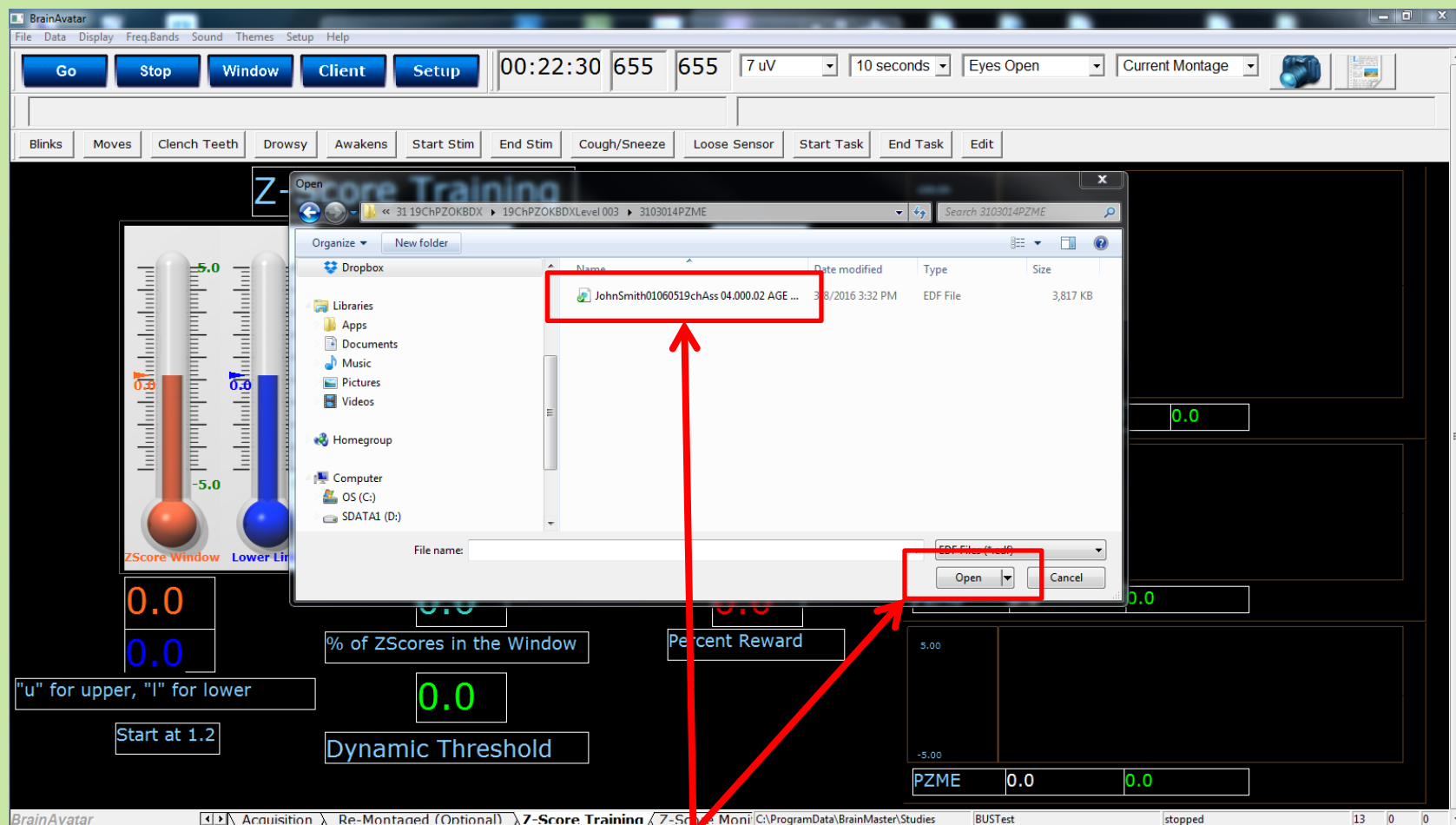
4chPZOK+PZMO +PZME



Next, click “Playback File”.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

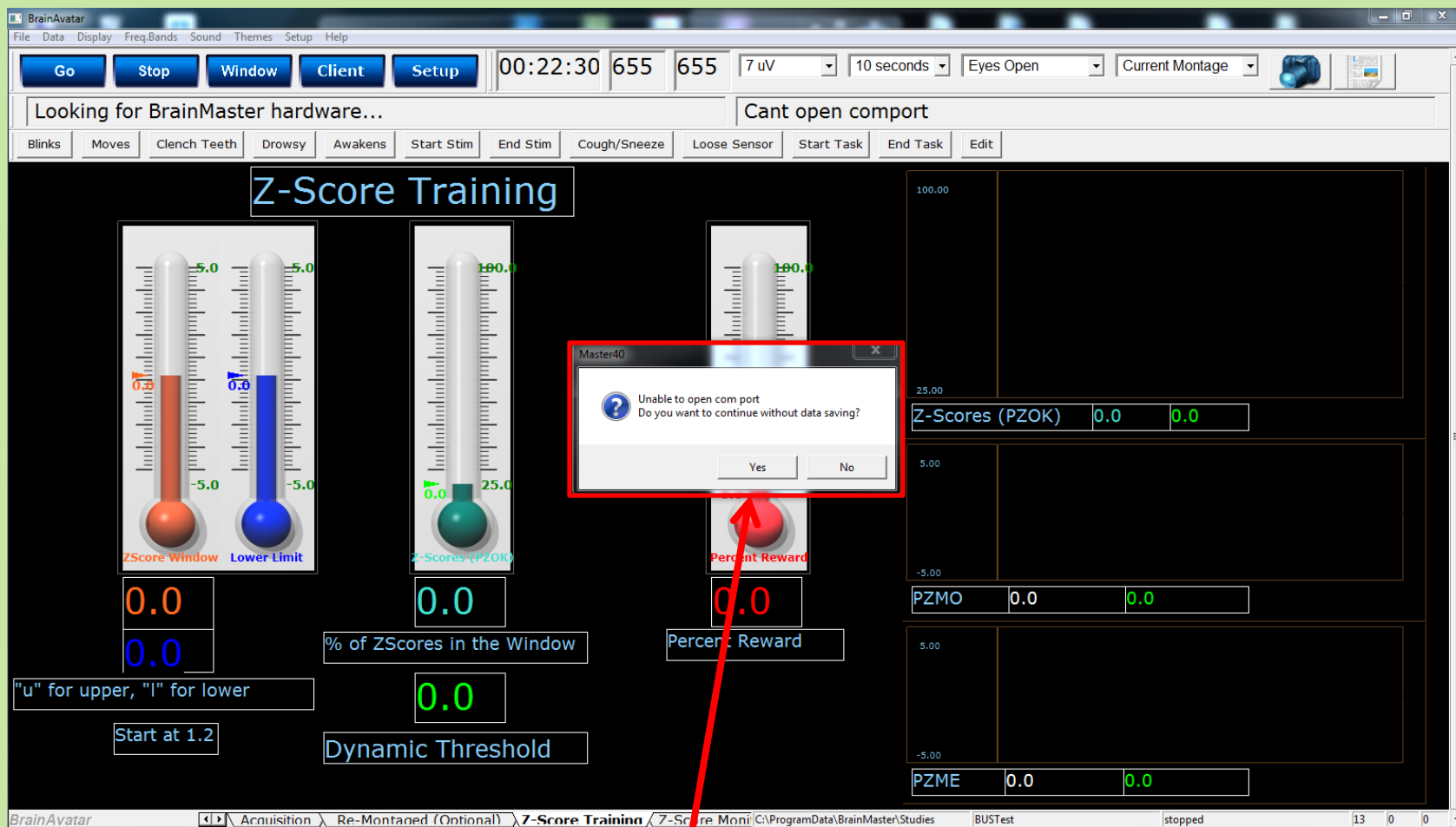
4chPZOK+PZMO +PZME



Next, navigate to the John Smith data as directed a few slides earlier and either double-click it or click it once and select “Open”. The data will immediately start playing back in the protocol if your Atlantis Amplifier is connected.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

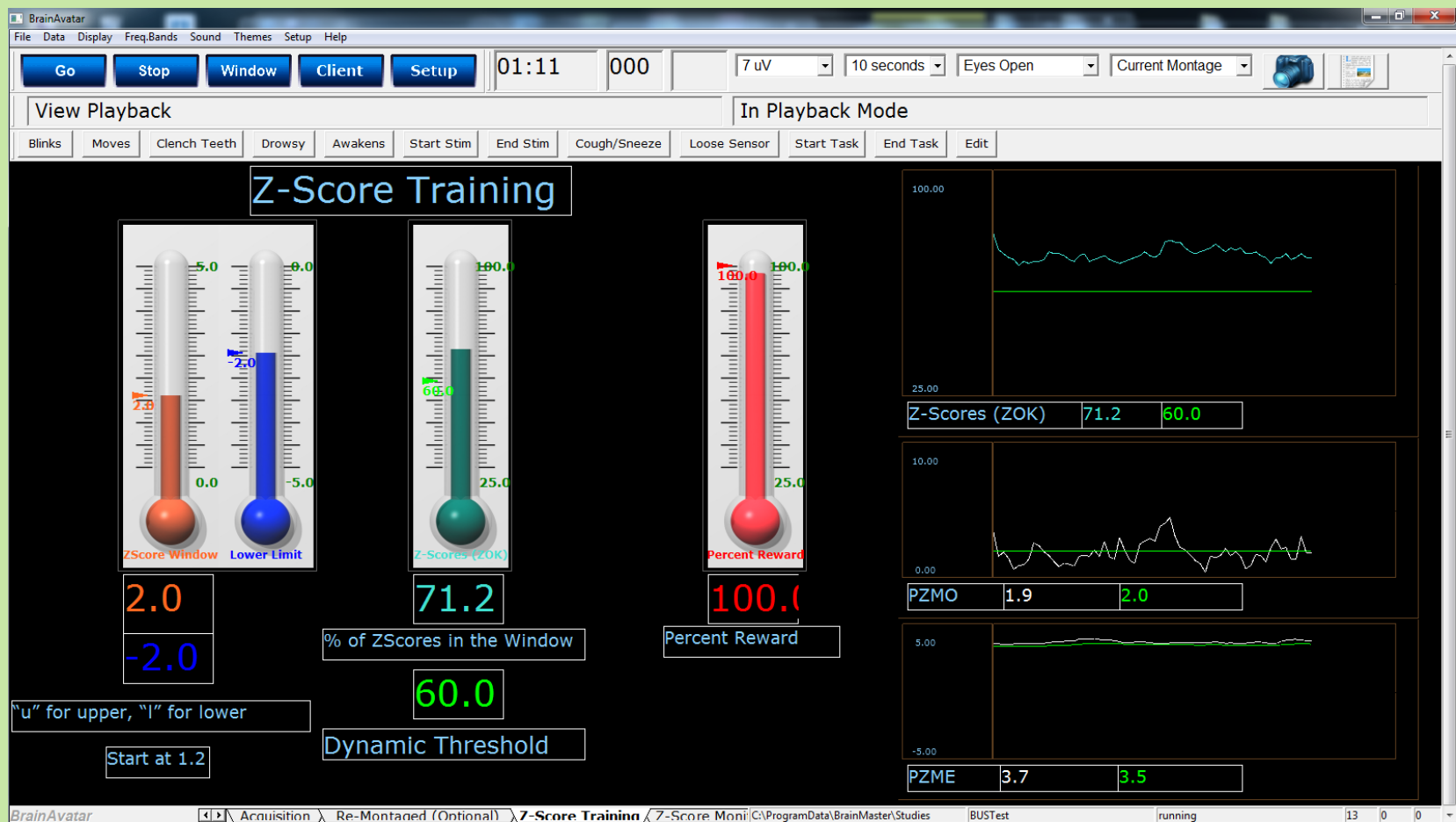
4chPZOK+PZMO +PZME



If your Atlantis Amplifier was not connected then simply click “Yes” when the pop-up appears and the data will start playing back.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

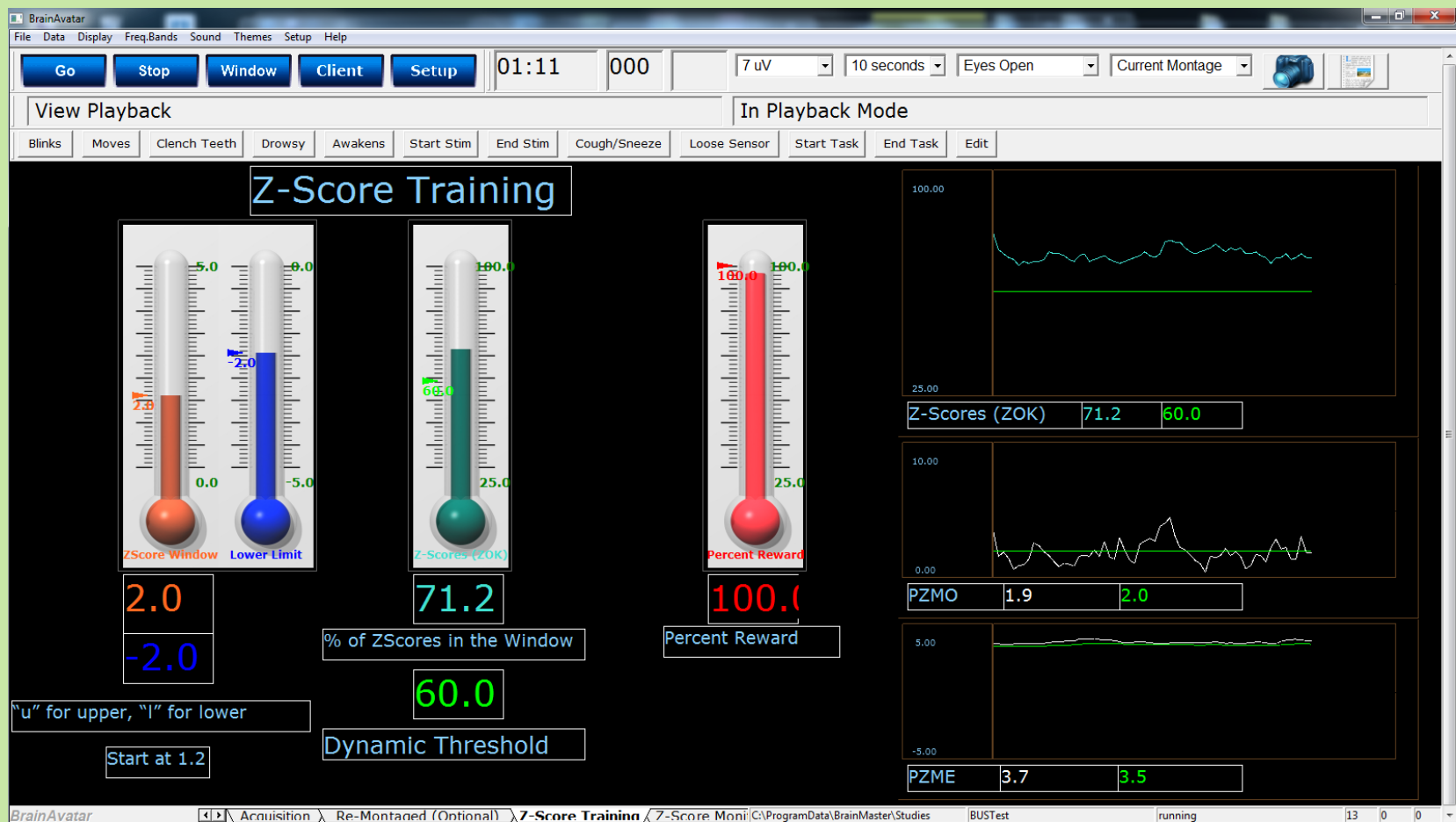
4chPZOK+PZMO +PZME



Our protocol is now running with playback data from a real client. First, notice the PZOK window has been set at ± 2.0 . This produces 71.2 percent of all z-scores within the window. With the PZOK Threshold at 60.0 the client is producing 100% reward.

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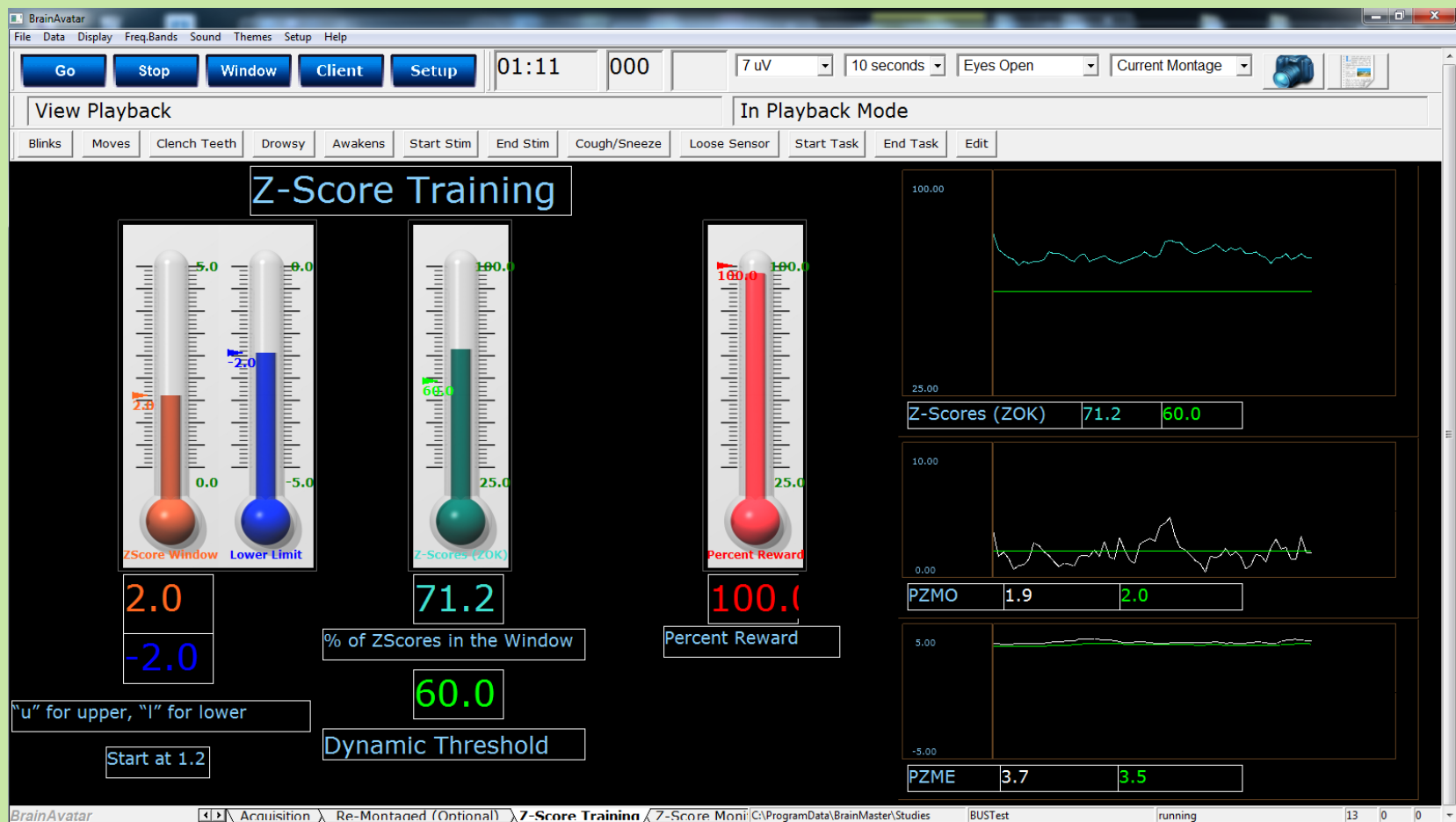
4chPZOK+PZMO +PZME



Since our target for PZOK (Percent of ZScores that are OK) is between 40% to 80% and our target for the Percent Reward is 50% to 80% it's obvious the PZOK window is set too wide.

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4chPZOK+PZMO +PZME



Adjust the upper limit of PZOK to 1.3 by clicking “shift-u” seven times and adjust the lower limit of PZOK to -1.3 by clicking “l” seven times.

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4chPZOK+PZMO +PZME



After thirty seconds or so you will see the PZOK settle to around 59.0 (within our desired percent limits). Also, the % Reward settles near 71.3% again within our tolerances.

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4chPZOK+PZMO +PZME



Now, consider the PZMO. The threshold has been previously set at 2.0% meaning that only 2% of the outliers need to be moving towards the PZOK window to receive the additional reward signal (beep). That may be too many beeps to receive a meaningful reward.

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4chPZOK+PZMO +PZME



Let's adjust PZMO to 5% so that a greater number of ZScores are required to move towards normal to receive a meaningful reward sound.

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4chPZOK+PZMO +PZME

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Main | Read/Write | Channels | Bands | Protocol | Display | Feedback | Session | Event Wizard | Acquisition | Montage | Z Scores | Session Wizard | Atlantis HW | Electrodes

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

This Event Is: ☒ Enabled ☐ Disabled Visibility: ☒ Visible ☐ Hidden

Event Condition:

Su Use Equation: Delta Amplitude Constant: 0 Damping

Check Equation `x=PercentZMOUL((TrnT(1,8)),(TrnT(1,4)))`

RULE: IS GREATER THAN: Use Entered Value: Delta Constant: 2.0 Damping

Check Equation `x=0;`

Note: You must press "Check Equation" to check and save any changes made to

Event Result:

THEN: Play WAV Sound

☐ Obey Inhibits ("stops") ☐ Control MMP Player

Event Trend Graph

Scale Factor: 10 Offset: -5

Event Summary:

Event Name: PZMO

Sustained Reward Criterion Condition must be met 0 milliseconds

Refractory Period Time between rewards is: 0 milliseconds

MIDI Sound Properties:

Starting 37 A (440.0) 1 to 88

Instrument 41 Viola 128 choices

Playing Sustained Percus. or

Modulation: Amplitude Ampl. or

Starting Level: 80 0 to 128

Loudness Change Rate 3 0 to 20

Note Change 3 0 to 20

Musical Scale Chromatic 15 choices

Musical A C to B Flat

Play Note or 1 Note 1 to 8 Notes

Play Note on Tab On all tabs 1 to 16 or

Enable All Events Disable All Events Data Dictionary

Clear All Events Show All Events Print All Events

Copy Event Paste Event

Import Use Now OK

Use Settings and Close Use These Settings Exit

Logged in, device type Discovery

Open the event wizard by clicking "ctrl-e" and consider event 6 which controls PZMO. Let's change the threshold from 2% to 5%.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK+PZMO +PZME

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Main | Read/Write | Channels | Bands | Protocol | Display | Feedback | Session | Event Wizard | Acquisition | Montage | Z Scores | Session Wizard | Atlantis HW | Electrodes

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

This Event Is: ☒ Enabled ☐ Disabled Visibility: ☒ Visible ☐ Hidden

Event Condition:

IF: Use Equation: Delta Amplitude Constant: Damping

Check Equation x=PercentZMOUL((TrnT(1,8)),(TrnT(1,4)));

RULE: IS GREATER THAN: Constant: Damping

Use Entered Value: Delta 5.0 0

Check Equation x=0;

Note: You must press "Check Equation" to check and save any changes made to

Event Result:

THEN: Play WAV Sound

☐ Obey Inhibits ("stops") ☐ Control MMP Player

Event Trend Graph:

Scale Factor: 20 Offset: -10

Event Summary:

Summary for Event 6:
IF: EQN: x=PercentZMOUL((TrnT(1,8)),(TrnT(1,4))); IS GREATER THAN Value: 5.0
THEN: Play WAV Sound

EVENT 6 IS CURRENTLY ENABLED

Event Name: PZMO

Sustained Reward Criterion: Condition must be met 0 milliseconds

Refractory Period: Time between rewards is: 0 milliseconds

MIDI Sound Properties:

Starting: 37 A (440.0) 1 to 88

Instrument: 41 Viola 128 choices

Playing: Sustained Percus. or

Modulation: Amplitude Ampl. or

Starting: Level: 80 0 to 128

Loudness Change Rate: 3 0 to 20

Note Change: 3 0 to 20

Musical Scale: Chromatic 15 choices

Musical: A C to B Flat

Play Note or: 1 Note 1 to 8 Notes

Play Note on Tab: On all tabs 1 to 16 or

Enable All Events Disable All Events Data Dictionary

Clear All Events Show All Events Print All Events

Copy Event Paste Event

Import Use Now OK

Logged in, device type Discovery

Use Settings and Close Use These Settings

Let's also change the scale of our graph by making the offset -10 and making the scale factor 20 to focus our trendline.

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4chPZOK+PZMO +PZME

The screenshot shows the 'BrainAvatar Setup' window with the 'Event Wizard' tab selected. The window has a menu bar at the top with options: Main, Login, Folder, Settings, EDF Browser, Review, Global Settings. Below the menu bar is a toolbar with buttons: Main, Read/Write, Channels, Bands, Protocol, Display, Feedback, Session, Event Wizard, Acquisition, Montage, Z Scores, Session Wizard, Atlantis HW, Electrodes. A row of numbered buttons (1-16) is also present.

The 'Event Wizard' tab is active, showing configuration for 'Event 6'. The 'This Event Is' section has 'Enabled' selected. The 'Visibility' section has 'Visible' selected.

The 'Event Condition' section is divided into two parts. The first part has 'IF:' with 'Use Equation' selected, 'Delta' selected, 'Amplitude' selected, 'Constant' set to 0, and 'Damping' set to 0. The 'Check Equation' button is highlighted. The equation entered is $x = \text{PercentZMOUL}((\text{TrnT}(1,8)), (\text{TrnT}(1,4)))$. The second part has 'RULE:' with 'IS GREATER THAN' selected, 'Use Entered Value' selected, 'Delta' selected, 'Constant' set to 5.0, and 'Damping' set to 0. The 'Check Equation' button is highlighted. A note states: 'Note: You must press "Check Equation" to check and save any changes made to'.

The 'Event Result' section has 'THEN:' with 'Play WAV Sound' selected. There are three empty input fields for sound parameters. Below these are checkboxes for 'Obey Inhibits ("stops")' and 'Control MMP Player'.

The 'Event Trend Graph' section has 'Scale Factor' set to 20 and 'Offset' set to -10.

The 'Event Summary' section shows: 'Summary for Event 6: EVENT 6 IS CURRENTLY: ENABLED', 'IF: EQN: $x = \text{PercentZMOUL}((\text{TrnT}(1,8)), (\text{TrnT}(1,4)))$; IS GREATER THAN Value: 5.0', and 'THEN: Play WAV Sound'.

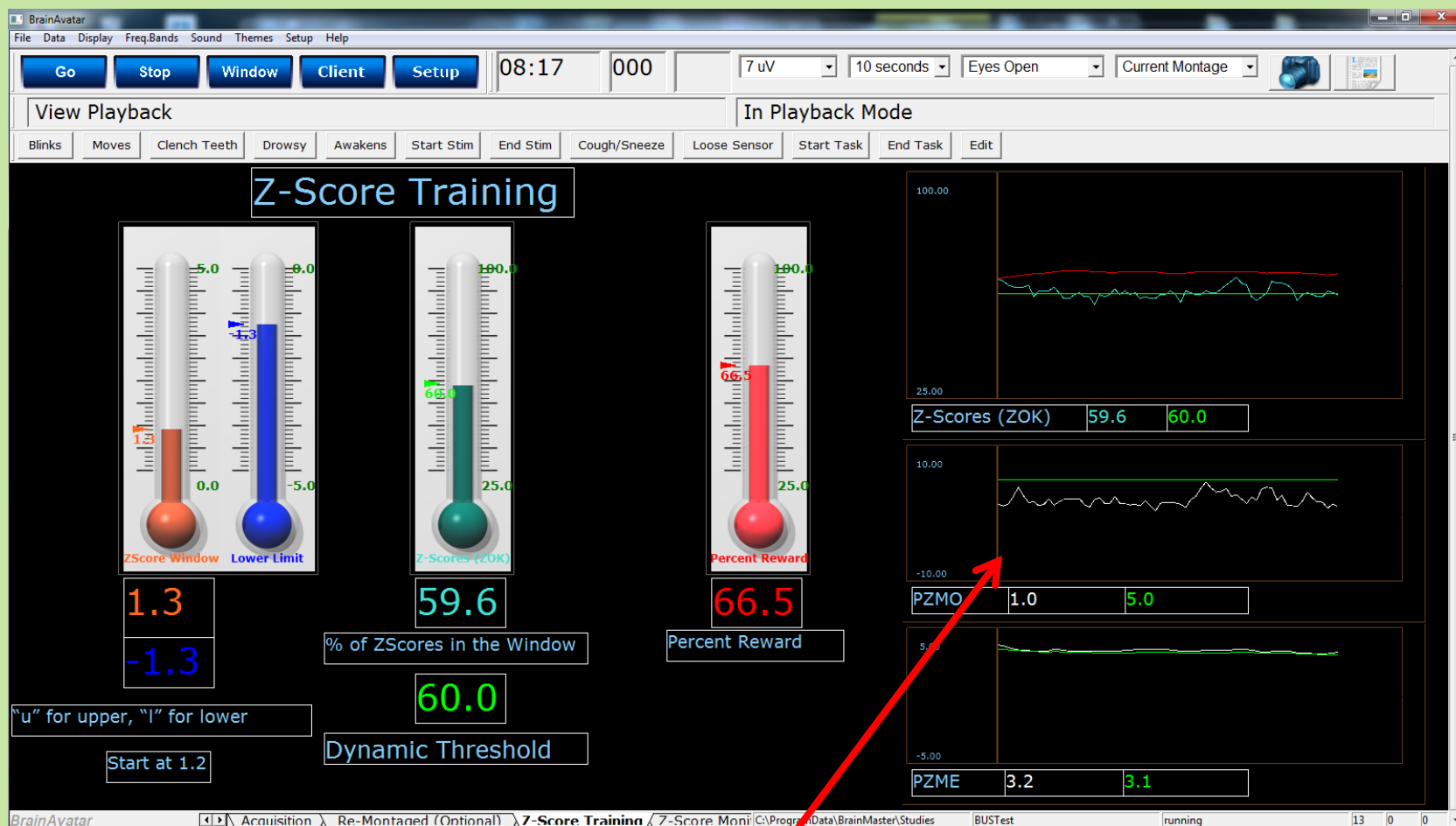
The 'MIDI Sound Properties' section has several dropdown menus and input fields: 'Starting' (37 A (440.0)), 'Instrument' (41 Viola), 'Playing' (Sustained), 'Modulation' (Amplitude), 'Starting' (Level: 80), 'Loudness Change Rate' (3), 'Note Change' (3), 'Musical Scale' (Chromatic), 'Musical' (A), 'Play Note or' (1 Note), and 'Play Note on Tab' (On all tabs). There are also ranges for some values: 1 to 88, 128 choices, Percus. or, Ampl. or, 0 to 128, 0 to 20, 0 to 20, 15 choices, C to B Flat, 1 to 8 Notes, and 1 to 16 or.

At the bottom of the window, there are buttons: 'Enable All Events', 'Disable All Events', 'Data Dictionary', 'Clear All Events', 'Show All Events', 'Print All Events', 'Copy Event', 'Paste Event', 'Import', 'Use Now', 'OK', 'Use Settings and Close' (highlighted with a red box), and 'Use These Settings'.

When finished making changes click “Use Settings and Close” to save and initiate the setting.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

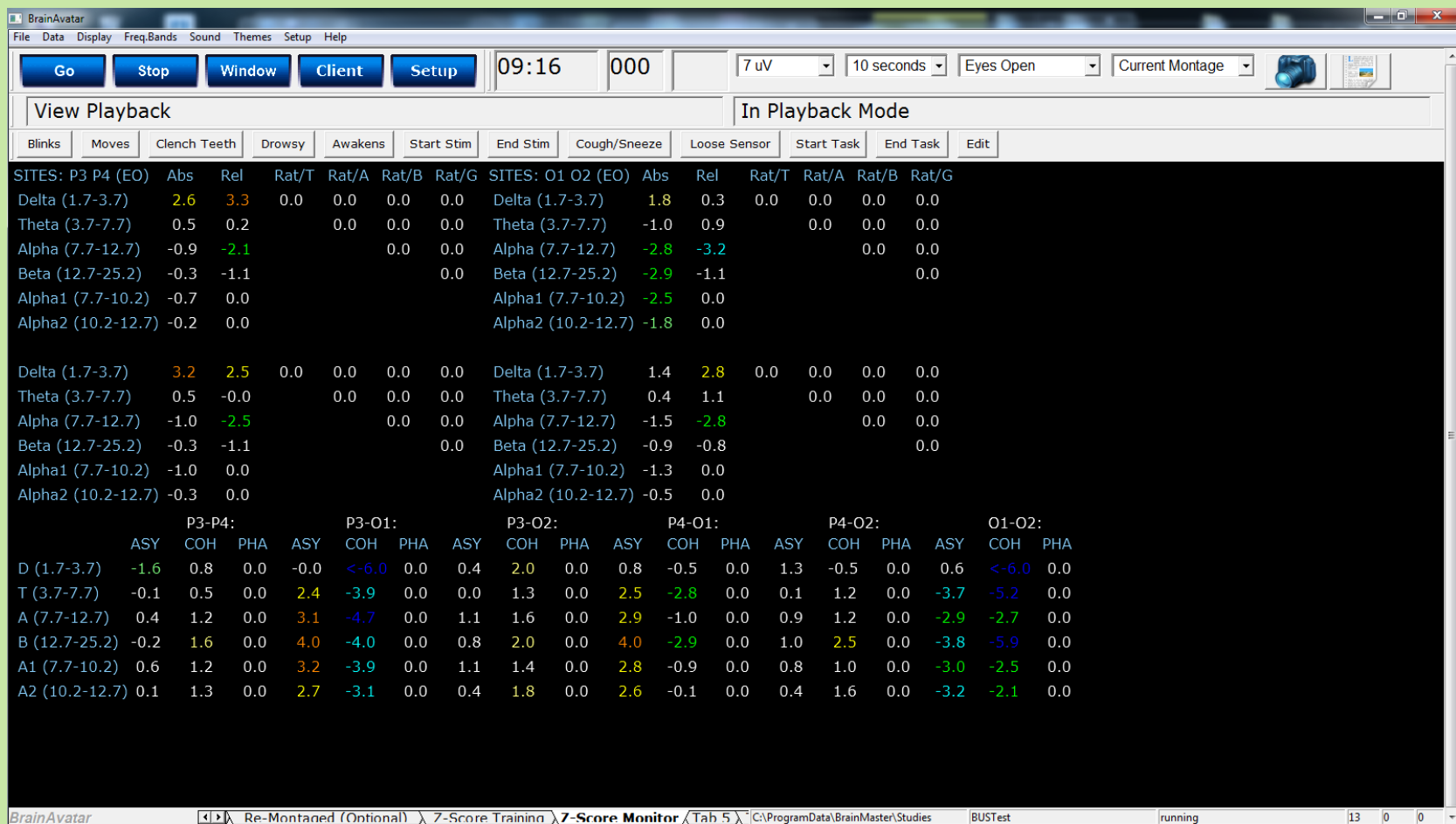
4chPZOK+PZMO +PZME



Now, our PZMO yields a reward beep every time 5% of the Z-Scores ventures towards normalization and we can better see this on our Wide Event Trends Graph.

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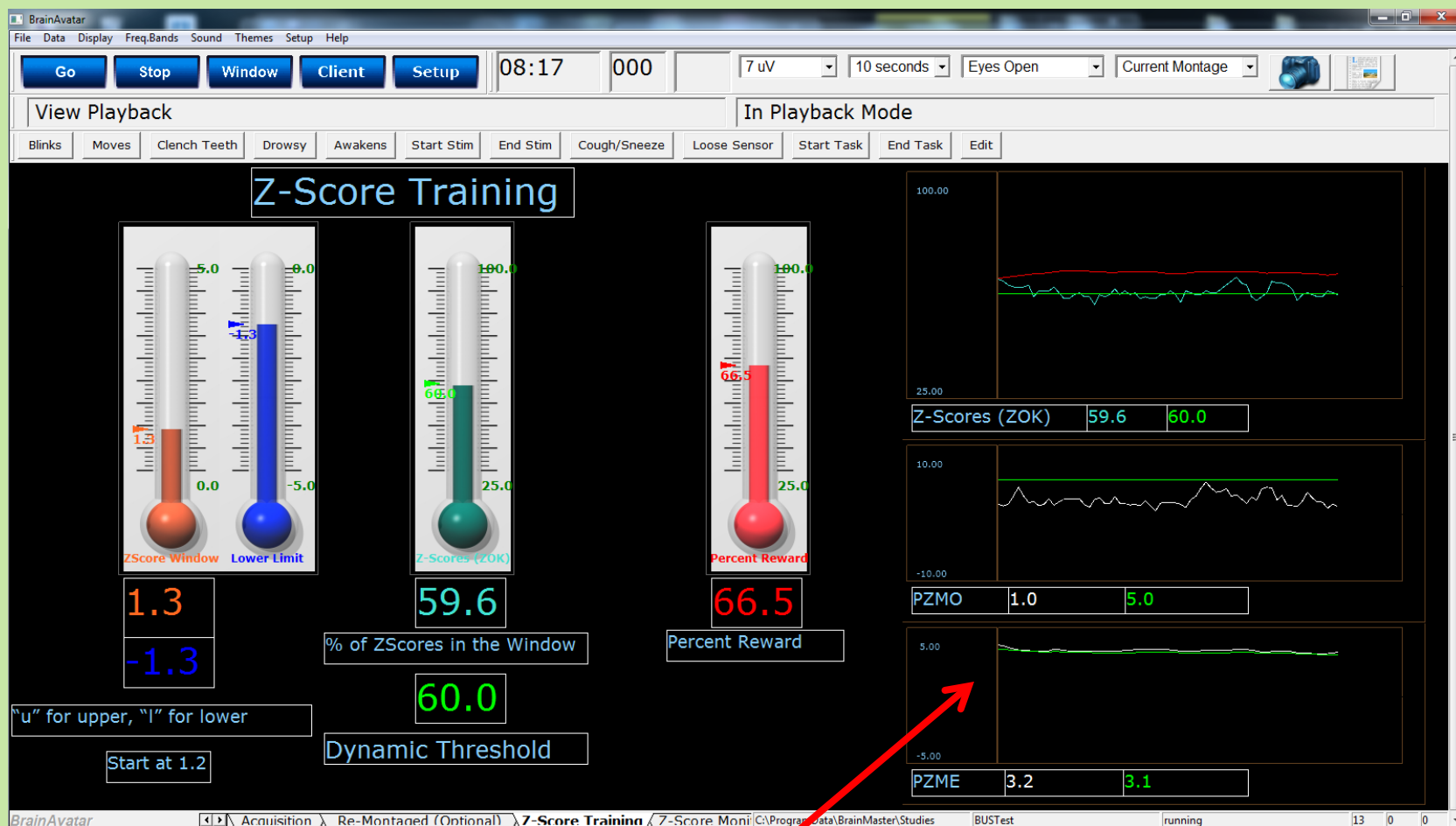
4chPZOK+PZMO +PZME



We visualize the actual ZScores on the ZScore Monitor.

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4chPZOK+PZMO +PZME



With regards to PZME we see that the mean of the outliers is 3.2 with a threshold at 3.1. The settings are good but perhaps we might see the visual representation better on the graph if we change the scale. Click "ctrl-e" to open the event wizard.

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4chPZOK+PZMO +PZME

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Main | Read/Write | Channels | Bands | Protocol | Display | Feedback | Session | Event Wizard | Acquisition | Montage | Z Scores | Session Wizard | Atlantis HW | Electrodes

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

This Event Is: ☒ Enabled ☐ Disabled Visibility: ☒ Visible ☐ Hidden

Event Condition:

Use Equation: Delta Amplitude Constant: Damping

Check Equation $x = \text{PercentZMEUL}((\text{TrnT}(1,8)), (\text{TrnT}(1,4)))$

RULE: IS GREATER THAN: Constant: Damping

Use Equation: Delta Amplitude Constant: Damping

Check Equation $x = \text{PercentZMEUL}((\text{TrnT}(1,8)), (\text{TrnT}(1,4))) * .95$

Note: You must press "Check Equation" to check and save any changes made to

Event Result:

THEN:

☐ Obey Inhibits ("stops") ☐ Control MMP Player

Event Trend Graph

Scale Factor: 10 Offset: -5

Event Summary:

Event Name PZME

Sustained Reward Criterion Condition must be met 0 milliseconds

Refractory Period Time between rewards is: 0 milliseconds

MIDI Sound Properties:

Starting 37 A (440.0) 1 to 88

Instrument 115 Woodblock 128 choices

Playing Sustained Percus. or

Modulation: Amplitude Ampl. or

Starting Level: 80 0 to 128

Loudness Change Rate 3 0 to 20

Note Change 3 0 to 20

Musical Scale Chromatic 15 choices

Musical A C to B Flat

Play Note or 1 Note 1 to 8 Notes

Play Note on Tab On all tabs 1 to 16 or

Enable All Events Disable All Events Data Dictionary

Clear All Events Show All Events Print All Events

Copy Event Paste Event

Import Use Now OK

Logged in, device type Discovery

Use Settings and Close Use These Settings Exit

PZME is controlled by Event 7. All formulas are correct but perhaps we would like to change the graph scale to start at 0 (Offset 0) and have a maximum value of 5 (Scale Factor 5).

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4chPZOK+PZMO +PZME

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings |

Main | Read/Write | Channels | Bands | Protocol | Display | Feedback | Session | Event Wizard | Acquisition | Montage | Z Scores | Session Wizard | Atlantis HW | Electrodes |

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

This Event Is: ☒ Enabled ☐ Disabled Visibility: ☒ Visible ☐ Hidden

Event Condition:

IF: Use Equation: Delta Amplitude Constant: Damping

Check Equation x=PercentZMEUL((TrnT(1,8)),(TrnT(1,4)));

RULE: IS GREATER THAN: Constant: Damping

Use Equation: Delta Amplitude Constant: Damping

Check Equation x=PercentZMEUL((TrnT(1,8)),(TrnT(1,4)))*.95;

Note: You must press "Check Equation" to check and save any changes made to

Event Result:

THEN:

☐ Obey Inhibits ("stops") ☐ Control MMP Player

Event Trend Graph

Scale Factor: 5 Offset: 0

Event Summary:

Summary for Event 7:
IF: EQN: x=PercentZMEUL((TrnT(1,8)),(TrnT(1,4))); IS GREATER THAN EQN:
x=PercentZMEUL((TrnT(1,8)),(TrnT(1,4)))*.95;
THEN: Do Nothing

EVENT 7 IS CURRENTLY: ENABLED

Event Name PZME

Sustained Reward Criterion
Condition must be met
 0 milliseconds

Refractory Period
Time between rewards is:
 0 milliseconds

MIDI Sound Properties:

Starting 37 A (440.0) 1 to 88

Instrument 41 Viola 128 choices

Playing Sustained Percus. or

Modulation: Amplitude Ampl. or

Starting Level: 80 0 to 128

Loudness Change Rate 3 0 to 20

Note Change 3 0 to 20

Musical Scale Chromatic 15 choices

Musical A C to B Flat

Play Note or 1 Note 1 to 8 Notes

Play Note on Tab On all tabs 1 to 16 or

Enable All Events Disable All Events Data Dictionary

Clear All Events Show All Events Print All Events

Copy Event Paste Event

Import Use Now OK

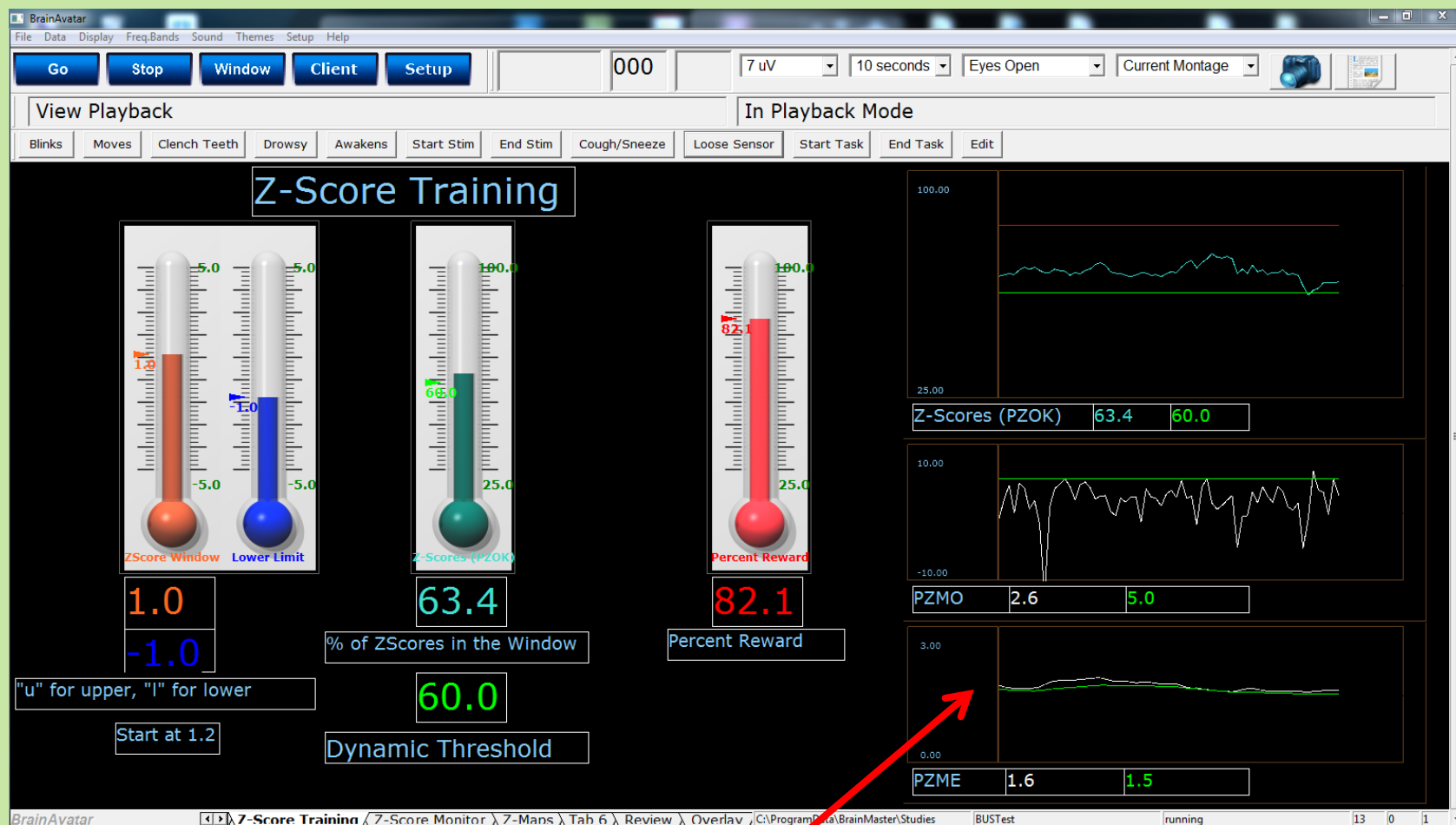
Use Settings and Close Use These Settings

Logged in, device type Discovery

We make the corrections as shown and then click "Use Settings and Close" to save our changes.

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4chPZOK+PZMO +PZME

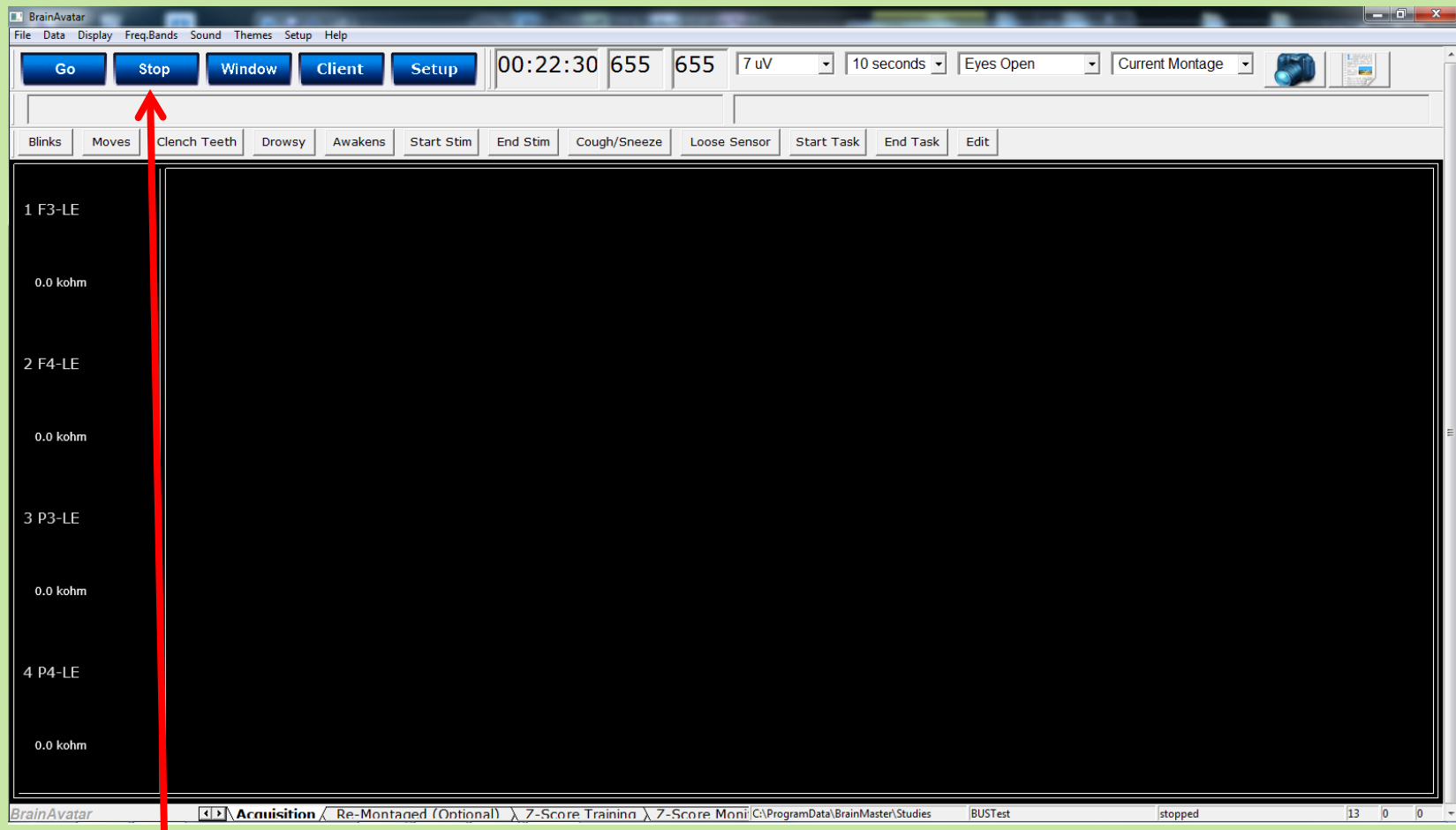


We can now better see the PZME line dance with its threshold. If we see a lowering of the PZME over consecutive sessions it indicates the clients ZScores are moving closer to a more regulated state.

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4chPZOK+PZMO +PZME

Next we may save these changes

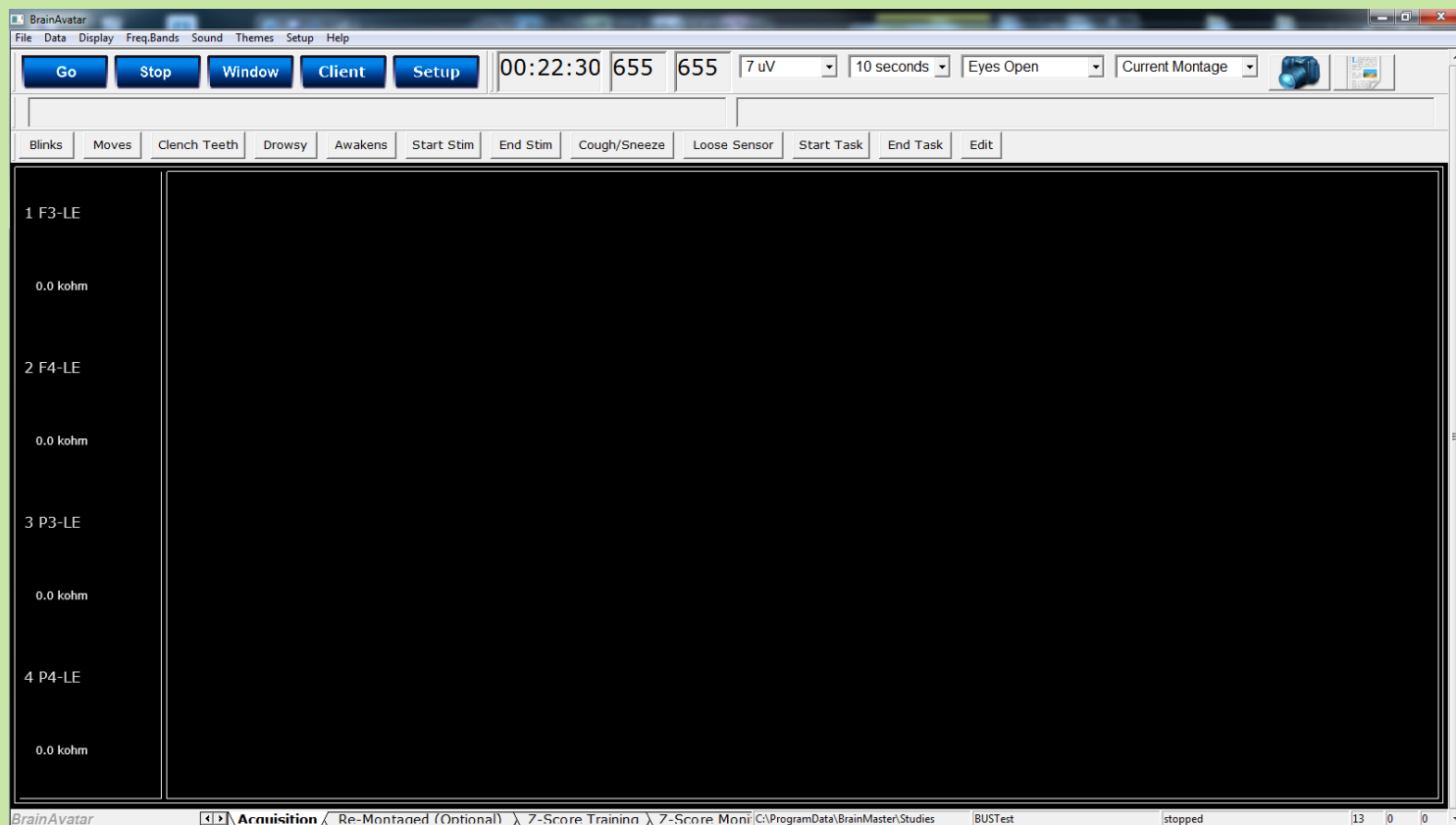


First Stop the protocol by clicking the “Stop” key.

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4chPZOK+PZMO +PZME

Next we may save these changes



Since we have played back a client file we must reset the setting to “Training” prior to saving it so that it is ready for an actual training session. Click “ctrl-e” to open the Event Wizard.

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4chPZOK+PZMO +PZME

Next we may save these changes

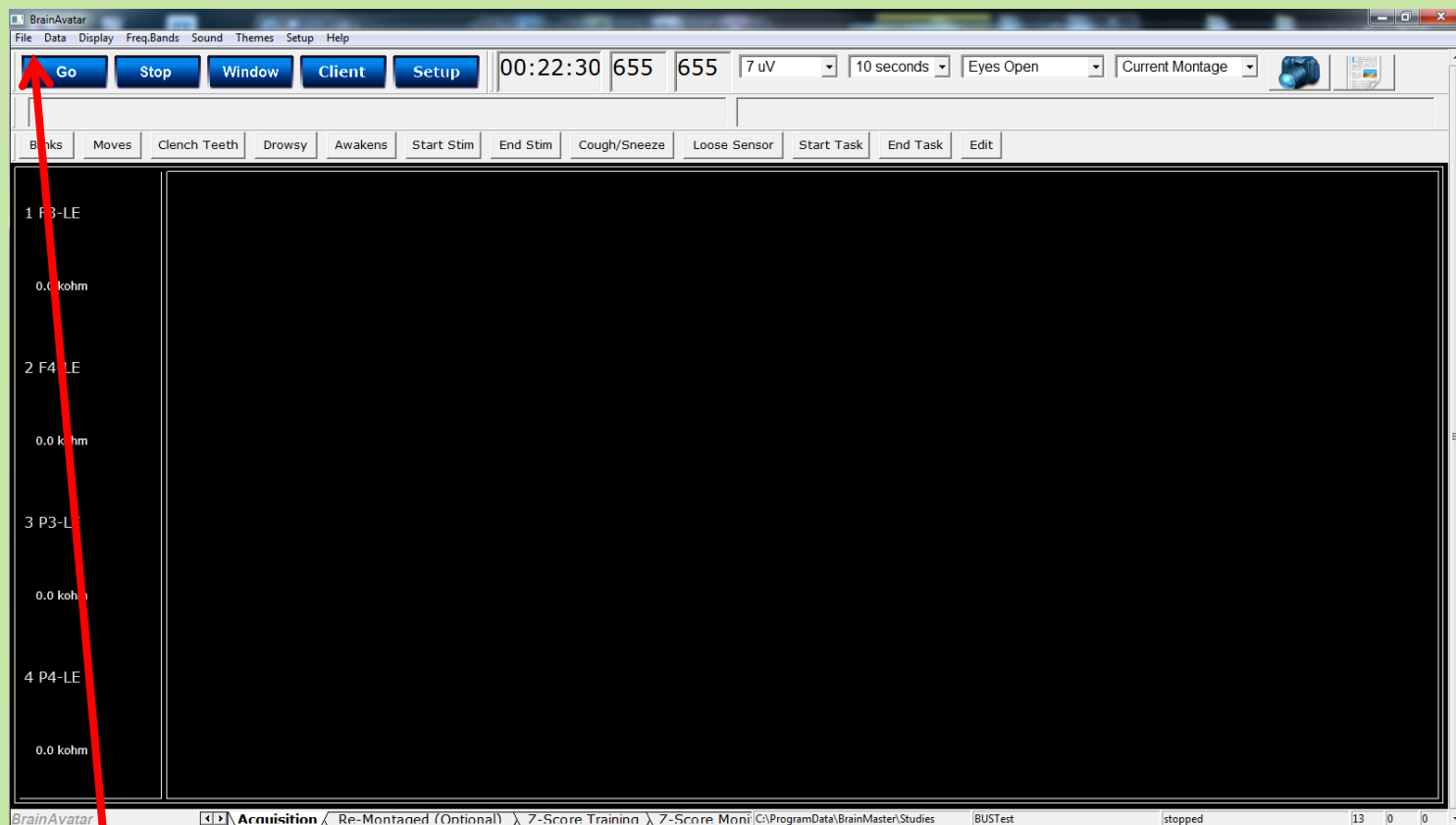
The screenshot shows the 'BrainAvatar Setup' window with the 'Session Wizard' tab selected. A red box highlights the 'Session Type' section, which contains four radio button options: 'Assessment', 'Training', 'Simulation', and 'Playback'. The 'Playback' option is currently selected. A red arrow points from the 'Training' option to the 'Use Settings and Close' button at the bottom right of the window. Other visible settings include 'Baseline Length' (0 seconds), 'Run Length' (0 seconds), 'Number of Sessions' (80), and 'Number of Runs' (1). The 'Pause Between Runs?' checkbox is unchecked, and the 'Use Session Wizard to control session' checkbox is also unchecked.

Notice the “Session Type” had been modified to “Playback” when the client file was loaded. Click “Training” and then “Use Settings and Close” to save the change.

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4chPZOK+PZMO +PZME

Next we may save these changes



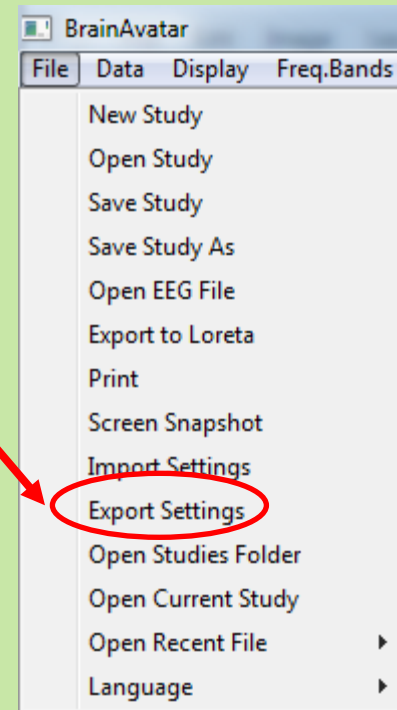
Next click “File”.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK+PZMO +PZME

Level 3

Next click “Export Settings”.

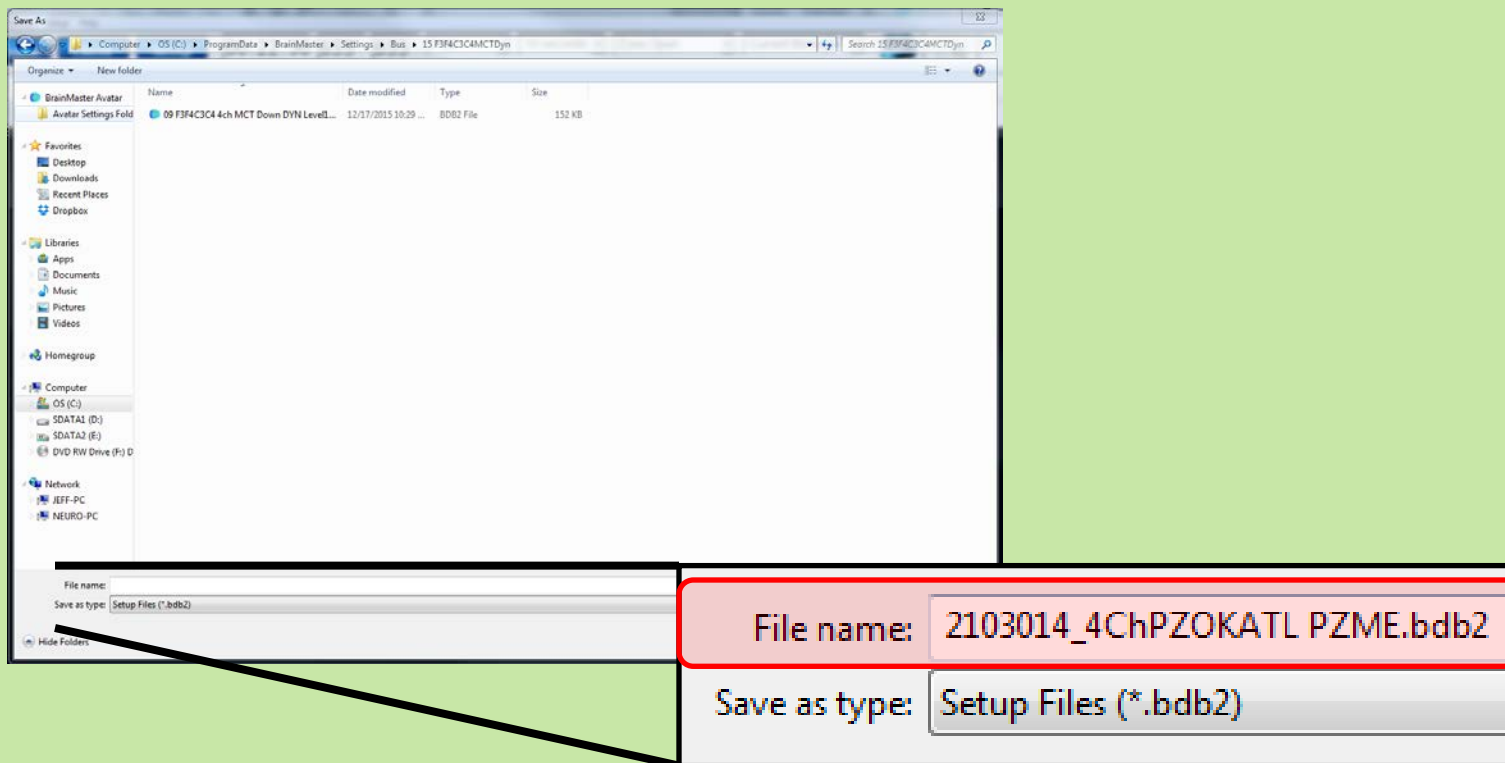


All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK+PZMO +PZME

Level 3

Find the folder where you keep these settings and name the file appropriately in the “File Name:” window.

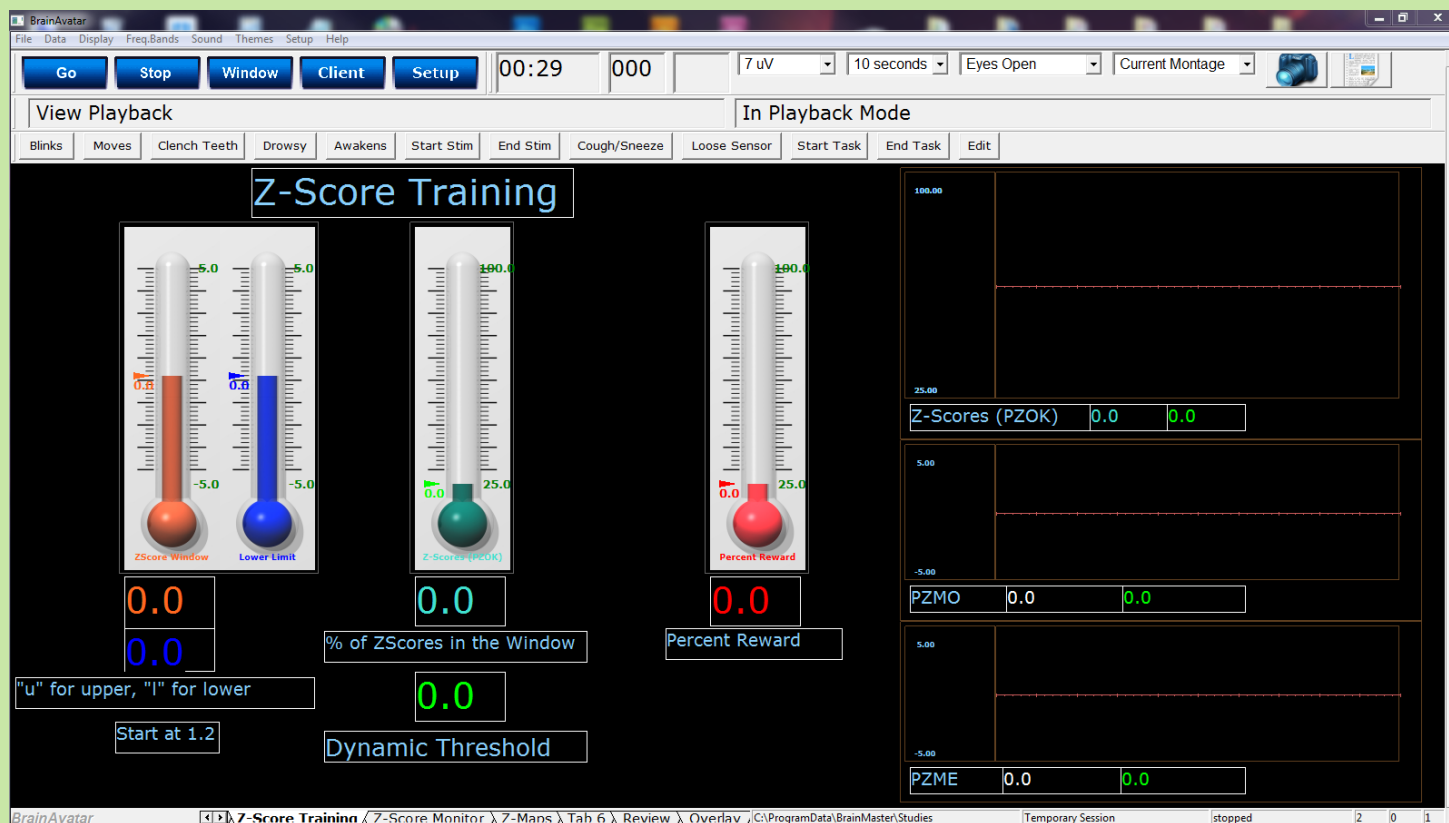


All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK+PZMO +PZME

Level 3

The Protocol Is now ready to run with PZMO and PZME included.



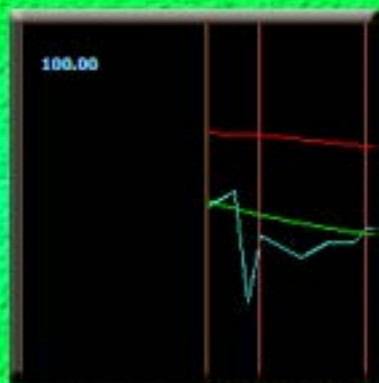
All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

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