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**NuerOptimal Neurofeedback**

**Getting Started Manual**

**Connecting your Equipment**

1. Open the computer with the password: **Brighten**
2. To connect up your equipment, find your zAmp and USB Cable
3. Plug one end of the USB Cable into zAmp and plug the other end into your laptop
4. Locate the colored wire sensors. Firmly connect the colored sensors to the zAmp by plugging them in the color-coded inputs. Blue wire in Blue hole, Black wire in black hole, etc.
5. Place the zAmp where you will be working (*often clipped on the back of a chair),(away from any electrical wires*)
6. Plug your headphones into the laptop “Headphone Out” port. Insert earbuds (headhhones)

**Doing a Hookup**

1. Before you begin, have the paste, tissues & babywipes ready
2. Separate left sensors from right and drape them on either side of yourself (*or the person you are hooking up*). You should have 2 for the left and 2 for the right.
3. First hook up the Right Side:
4. Squeeze open the right blue bar clip. Scoop or squeeze paste onto both of the sensors (*without touching the paste with your fingers*)
5. Squeeze the clip onto the top of the right ear (*some paste should squeeze out forming a ring of paste around the sensors on both sides of the ear*)
6. Apply paste in the same way to the black sensors then gently squeeze them in the same way to the bottom of the right ear (*where the lobe joins the ear*).
7. Pick up the yellow sensor and fill with a generous scoopful of paste.
8. Halfway between the top of the ears and the crown (*middle top of the head*)

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| you’ll find a bump on the head with a dip just above it.  *The dip is the spot you want. (C3 on this picture shows the dip/correct spot on the left side of the head)*   1. Part the hair exposing the dip/spot   (*you can hold the hair back with clips*) |  |

1. Place the sensor on the cleared area paste side down. Gently push down on the sensor until a ring of paste has formed around the sensor.
2. Hook up the two left side sensors similarly.
3. Apply past to the left side blue ear clip and place it at the top of the left ear.
4. Find the mid-point between the top left ear and the crown (*bump with dip just above it*)
5. Apply paste to the yellow single sensor and place it on the left side of the head.

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**Running a Session:**

* Make sure your system is connected to the internet
* Launch NeurOptimal by clicking on the icon
* To add a new client, double click on the word “Client” found in the header (right clicking and  selecting “Add a Client” from the context menu will work as well).
  + The first and last name fields are required, while other fields are optional
  + To assign a trainer to your client, select the trainer tab and enter their name
* For pre-existing clients, select the client’s name from the menu to begin
* The appropriate training session for that individual will begin when the music starts.

**Troubleshooting**

* + **If the system freezes, doesn't respond or error messages pops up, do this:** 
    - Reboot the tablet and start up the program again. Make sure the zAmp is connected with the USB cord *before* you start the tablet.
    - Always make sure the power cord is connected. If the light on the power cord is not on, when connected to an outlet, it is *not* charging. Try a different outlet.
    - Make sure to connect to wi-fi every 7 days to allow updates to the software. (This happens automatically at start).
  + **zAmp Problems (the device with the sensors):** Sometimes when starting a session, the following message can appear: "The zAmp can not be verified at this time". The following steps should resolve this problem:

1. Restart the system.
2. Unplug the USB cord and try a different port
3. Start up the system and program again

* **Sound problems:** If there is no sound, try this:
  + Verify that the volume is not muted or set very low on the computer. Click on the **sound icon** in the Windows lower taskbar and adjust volume. (On a tablet, the sound control is also located in the upper left corner, next to the power button).
  + Reboot your system and reopen program o Install all Windows updates and restart the computer. o Click on the sound icon in the Windows taskbar and switch the Sound device to Speakers (Realtek High Definition Audio or similar)

**Unhooking the Receiver**

Remove each sensor from the client, trying to keep the paste clear of the hair as best you can. Be sure to clean the sensors of all paste with a tissue or baby wipe.

1. Clean the client’s ears and hair as best you can with a tissue, then offer them a baby wipe to remove any remaining paste. The paste removes easily with soap and water.
2. To close NeurOptimal® click on the Zengar button at the top right. Your system will close itself down.

**Tips on Preserving the Integrity of your Sensors**

1. Make sure you clean your sensors gently yet thoroughly immediately after you have finished each session. We recommend using baby wipes or placing under running hot water (*be sure to thoroughly dry once clean*).
2. Any lingering paste can cause corrosion and will reduce the lifespan of your sensors.
3. Do not soak in water.
4. When scooping paste put your forefinger on the back of the cup for support, preventing bending and possible sensor damage.
5. Do not kink, braid or wind your sensor wires tightly.
6. Damaged sensors should be replaced. Do not attempt to use questionable sensors.

**Frequently Asked Questions**

**What do I do if the computer is not working? How do I Access Technical Support?**

Technical Support is provided through our Zen Connect service, which enables our technicians to work directly on your system from a distance. There is no charge for this for PASS members. To access Zen Connect simply logon to [**www.zengar.com**](http://www.zengar.com/) and click on the red PASS icon near the top left of the screen. Click on the “Zen Connect” icon once and then again. Fill in the information requested and our technician will take over from there! Services are available on a walk-in basis every week day.

**What is Line Noise?**

Line Noise is the term used to describe electrical interference in the environment that has entered the signal through the sensors. When sensors are recording data, they are measuring electrical activity within the brain. Sometimes sensors can also pick up outside electrical activity, due to a less than perfect sensor hookup or excessive electrical “noise” in the space you are doing your hook up in.

**Do I need to be worried about Line Noise?**

Not during training. Thankfully, NeurOptimal® has a built in a unique adaptive inline de-noising feature that is activated during training so your session is not at all affected by line noise. However, the data NeurOptimal® uses in the analysis features includes all data that has been collected by the sensors during recording, including any effects due to line noise. So, if you wish to use analysis features it is important to achieve the best hookup possible by making sure the amount of line noise is as low as possible.

**How can I reduce Line Noise?**

Most of the time, line noise has to do with the hookup. It will become less of an issue the more you practice. Our first suggestion is to press down on the sensors that are on the scalp. If that doesn’t change anything, remove them, clean them and reapply (*with plenty of paste*), carefully parting the hair and making sure you place them directly on the scalp. Do the same for the ear clips if you still have the same results.

Should the problem persist, try to reduce electrical noise in your environment. Turn off as many electrical appliances (*lamps, additional computers etc.)* as you can. Also make sure your laptop power brick and cord as well as your sound cable are as far away from your zAmp and USB cable as possible. If the problem continues there may be a problem with the electrical wiring in the walls of the room you are working in and you can try a different room.

**What if I have tried everything and can’t get the Line Noise down?**

If you have trouble getting a good clean connection, it’s OK! Skip the baseline and continue with the training

**What if I apply the sensors to the wrong place?** We use C3 and C4 - ie. the midpoints on each side of the head between the top of the ear and the top of the head. If you get them close to those points, then there is no “wrong place”.