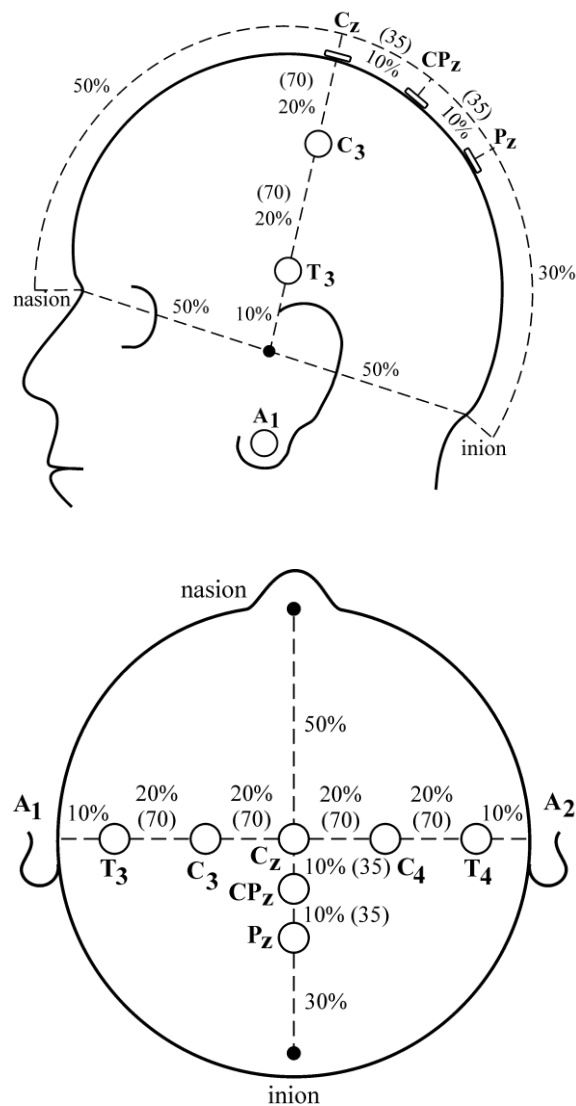


Application of EEG electrodes for typical neurofeedback protocols

Depending on the training type, different locations are used for electrode application on the head. Figures to the right show typical locations used in peak performance training. These are the subset of so-called 10-20 International Electrode System. It determines percentage distances between measuring points. For ease of use, typical distances in millimeters from the head's vertex are given in parentheses.



Many methods of EEG electrode application on the head are used. An application using adhesive-conductive paste Ten20, with single reference electrode on right earlobe (site A2) is described below.

Correct and efficient application of electrodes requires some practice. Allocate more time for the first few trials.

1. Open the packet containing the alcohol swab, tearing off its edge along the dashed line. Wipe ear lobes with the wet swab. (The skin should dry before application of electrodes.)
2. Part hair with two fingers of one hand near the place selected for the scalp electrode. (It is most often the region near the top of the head.) Wipe this place with the alcohol swab several times. (This place should dry a little before electrode application.)

The swab, returned to its packet for protection from drying, may be used for cleaning after the training.



3. Attach the clamp of the cable to a shirt or a blouse near neck (e.g. on a collar).



4. Open the clip of the ear electrode connected to the VG socket of Neurobit Optima device. Take a small amount of the Ten20 conductive paste from the tube with the glass spatula. Fill the inside of the electrode with the paste in such a way that the paste is sticking out about 3mm (1/8 inch) over the edge.

If required, pull some of the white wire out from the holding tube to avoid wire tension after application of the electrode to an ear lobe (but do not pull the electrode).

5. Place the electrode against the front surface of the left ear lobe, turned with the paste to the skin, and with the wire going down. Applying slight pressure, pull the electrode a few millimeters aside and back (in order to improve contact of the paste with the skin). Lock the clip. If necessary, gather with a finger any excess paste that may have escaped through the hole in the electrode, then wipe it on the paper tissue.

REMARK: the hinged metal fastener of the clip shouldn't touch the skin (so do not insert the clip on the ear to the maximum).

6. Proceeding similarly as in steps 4-5, mount on the right ear lobe the electrode connected to '–' input of selected measurement channel.



7. Cover the electrode connected to '+' input of the measurement channel with the paste, similarly as in step 4. If necessary, pull the red wire out of the clip holding tube so that the wire is not taut after putting the electrode on the head.
8. Take a small amount of the paste (layer of about 1-2 mm (0.04-0.08 inch) on the spatula). Part and hold hair with two fingers of one hand near the site for the scalp electrode. With the other hand, rub the paste into this place with the spatula, using a few short strokes (downwards and then crosswise). Diameter of the coverage field should not exceed about 10 mm (0.4 inch).
9. Part and hold the hair with two fingers of one hand near the scalp electrode site. With the other hand, apply the electrode connected to '+' input of the measurement channel so that the wire points toward the nape of the neck. Lightly pressing the electrode to the skin, move it about 2-3mm (1/8 inch) lengthways and back (in order to spread the paste). Do not stop the hole in the electrode. Lightly press the electrode against the scalp after positioning.



Gather excess paste escaping through the hole in the electrode with a finger, and wipe it on the paper tissue.

REMARK: the electrode wire should not be taut.



10. If you use multichannel training, do steps 7-9 for head electrode connected to '+' input of next measurement channel. For typical measurement with common reference site (monopolar) '-' inputs of all used channels are connected to the same ear electrode with a splitter.
11. Cap the tube of paste and wipe the spatula with the tissue. If necessary, you can use the alcohol swab.