

Electrode Placement Quick Reference

Peak Brain Institute - 10-20 System Guide

Anatomical Landmarks

Nasion

Location: Bridge of nose where it meets forehead

Landmark for: Front reference point (0%)

Inion

Location: Bump at base of skull (back of head)

Landmark for: Back reference point (100%)

Preauricular Notch

Location: Small indentation just in front of ear canal

Landmark for: Side reference points (left/right 0%)

Rope Method - Front to Back

Nasion → Inion measurement

1. Place rope from nasion to inion over top of head
2. Mark 5 positions:
 - 0% = Nasion (start)
 - 10% = Fpz
 - 20% = AFz
 - 30% = Fz ← **Most common training site**
 - 40% = FCz
 - 50% = Cz ← **Most common training site**
 - 60% = CPz
 - 70% = Pz ← **Common training site**
 - 80% = POz ← **Common training site**
 - 90% = Oz
 - 100% = Inion (end)

Rope Method - Ear to Ear

Left preauricular notch → Right preauricular notch

1. Place rope from left to right ear over top of head
2. Cz is at 50% (vertex, top of head)

3. Mark positions:

- **Left 50% = T3/T7**
- **Left 40% = C5**
- **Left 30% = C3 ← Most common training site**
- **Left 20% = FC3**
- **Left 10% = FC1**
- **Center (50%) = Cz ← Most common training site**
- **Right 10% = FC2**
- **Right 20% = FC4**
- **Right 30% = C4 ← Most common training site**
- **Right 40% = C6**
- **Right 50% = T4/T8**

Most Common Training Sites

C4 (Right Motor Cortex)

Location: 30% from right ear on ear-to-ear line

Common protocols: SMR (12-15 Hz), sensorimotor rhythm

Used for: Focus, motor control, calm alertness

C3 (Left Motor Cortex)

Location: 30% from left ear on ear-to-ear line

Common protocols: SMR (12-15 Hz), sensorimotor rhythm

Used for: Focus, motor control, calm alertness

Cz (Central/Vertex)

Location: Top of head, 50% on both ropes

Common protocols: SMR, alpha-theta

Used for: Grounding, sensorimotor regulation

Fz (Frontal Midline)

Location: 30% from nasion on front-to-back line

Common protocols: Executive function, theta/beta ratio

Used for: ADHD protocols, executive function

Pz (Parietal Midline)

Location: 70% from nasion on front-to-back line

Common protocols: Alpha training, quiet mind

Used for: Relaxation, creativity, meditation

POz (Parietal-Occipital)

Location: 80% from nasion on front-to-back line

Common protocols: Alpha training, visual processing

Used for: Relaxation, visual calm

Electrode Application

Preparation

1. **Part hair** at electrode site
2. **Optional:** Clean skin with NuPrep (light scrub)
3. **Wipe clean** with tissue

Application

1. **Apply Ten20 paste** to electrode
 - Pea-sized amount
 - Avoid air bubbles
2. **Press to scalp** firmly but gently
3. **Circular motion** to work gel through hair to skin
 - Should feel slight scratching sensation
 - This is normal and helps contact
4. **Check signal** before starting

Good Contact Indicators

Signal looks thin and jagged
Impedance reading in green
Can see clear waveforms
Feedback responds to mental state

Poor Contact Indicators

Signal looks thick and fuzzy
Impedance reading in yellow/red
Excessive noise (60 Hz hum)
Feedback not responding

Reference Electrodes (Ear Clips)

Placement

1. **Wipe earlobes** with tissue (remove oils)
2. **Clip to bottom of earlobe**
 - Both ears for linked-ears reference
 - One ear for single reference
3. **Ensure good contact** (shouldn't be loose)

Troubleshooting

High impedance on ear clips: - Wipe earlobes again (remove oils/dead skin) - Add tiny bit of gel to ear clip pad - Reposition clip

Common Mistakes to Avoid

Too much gel → Electrodes can bridge, causing crosstalk
Too little gel → Poor signal, high impedance
Gel in hair not on scalp → No contact with skin
Not parting hair well → Gel can't reach scalp
Dirty electrodes → Poor contact, inconsistent signal
Loose ear clips → Intermittent reference, signal drops

Quick Troubleshooting

Signal is Fuzzy/Thick

→ More gel, better contact, clean electrodes

Signal Keeps Dropping

→ Check cable connections, reseat electrode

Can't Get Good Signal

→ Part hair better, add more gel, clean skin

Headache During/After

→ Reduce gel amount (pressure), check electrode not too tight

Measurement Tips

For Accurate Placement

- **Use a measuring tape** (flexible fabric tape works best)
- **Measure total distance first** before marking percentages
- **Mark with water-soluble pen** (washes off easily)
- **Double-check measurements** before applying electrodes
- **Photo your setup** for consistency across sessions

Alternative to Rope Method

- **Use your fingers** (approximate, less precise)
- **Pre-marked caps** (for QEEG, not typically for training)
- **EEG cap** (standardized positions)

Cleanup After Session

1. Remove electrodes gently
2. Wipe gel from hair with tissue or damp cloth
3. Clean electrodes immediately
 - Wipe paste off with tissue
 - Use damp cloth if needed
 - Let air dry
4. Store in clean, dry place

Key Reminders

Consistency matters - Use same sites each time unless protocol changes

Check your protocol - Verify placement before each session

Ask questions - When in doubt, check with your coach

Photo your placement - Helps with consistency

Questions?

Remote clients: Post in your Slack channel

In-office clients: Ask your coach at your location

Full guide: See comprehensive electrode placement documentation online

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