



## QEEG Clinical Report

BrainLens V0.4

### Report Description



### Personal & Clinical Data

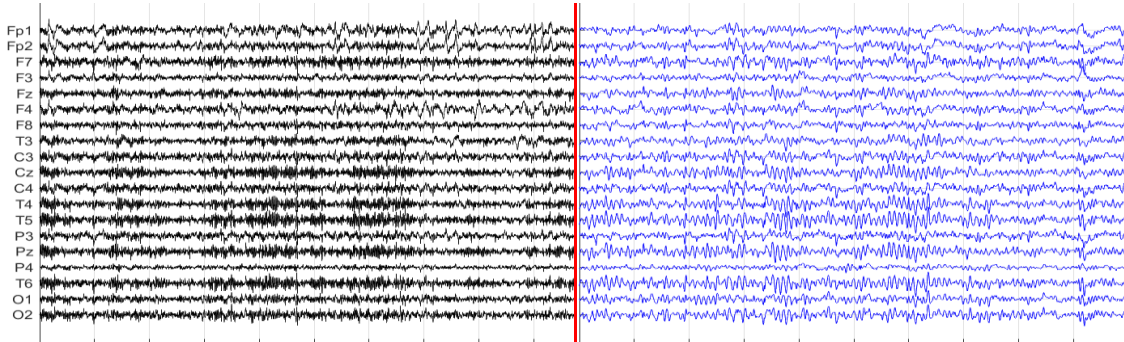
|                     |                                              |                    |             |
|---------------------|----------------------------------------------|--------------------|-------------|
| Name                | Javad Vahed                                  | Date of Recording  | 14-Sep-2024 |
| Date of Birth - Age | 13-Aug-1996 - 28.09                          | Gender             | Male        |
| Handedness(R/L)     | Right                                        | Source of Referral | Dr Haghi    |
| Initial Diagnosis   | ADHD-ADD-Deficit attention and concentration |                    |             |
| Current Medication  | Medication Free                              |                    |             |

Dr Haghi

## Denoising Information (EC)

### Raw EEG

### Denoised EEG



### Flat Channels

### Rejected Channels

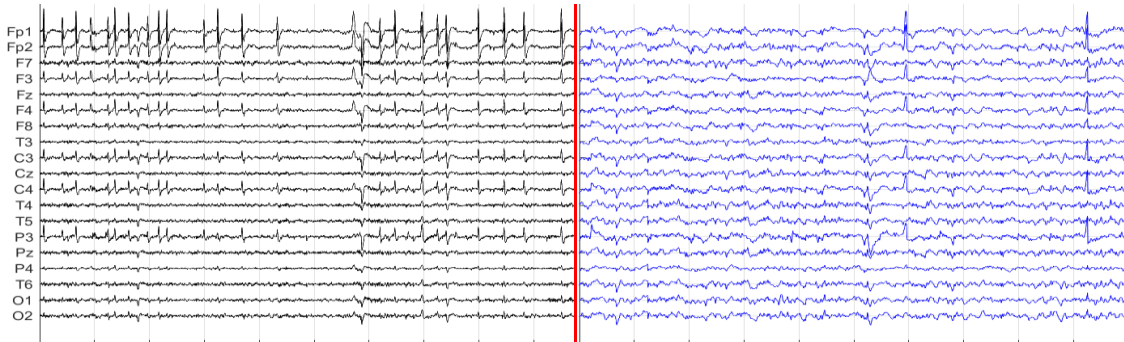


| Number of Eye and Muscle Elements |   |        |   | Low Artifact Percentage        |  |
|-----------------------------------|---|--------|---|--------------------------------|--|
| Eye                               | 0 | Muscle | 0 |                                |  |
| Total Artifact Percentage         |   |        |   | High Artifact Percentage       |  |
|                                   |   |        |   |                                |  |
| EEG Quality                       |   | bad    |   | Total Recording Time Remaining |  |
|                                   |   |        |   | 326.73 sec                     |  |

## Denoising Information (EO)

### Raw EEG

### Denoised EEG



### Flat Channels

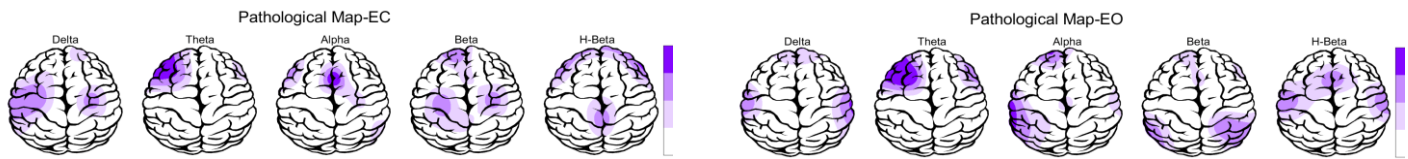
### Rejected Channels



| Number of Eye and Muscle Elements |   |        |   | Low Artifact Percentage        |  |
|-----------------------------------|---|--------|---|--------------------------------|--|
| Eye                               | 0 | Muscle | 0 |                                |  |
| Total Artifact Percentage         |   |        |   | High Artifact Percentage       |  |
|                                   |   |        |   |                                |  |
| EEG Quality                       |   | bad    |   | Total Recording Time Remaining |  |
|                                   |   |        |   | 387.60 sec                     |  |

# Pathological assessment for mood disorders

## Compare to Mood Disorders Database



## EEG Compatibility with Depression Diagnosis

| Depression Table           | EC        |                     | EO        |           |
|----------------------------|-----------|---------------------|-----------|-----------|
| Feature Name               | Threshold | Region              | Threshold | Region    |
| Increased Global rAlpha    | 0.00      | NAN                 | 0.00      | NAN       |
| Increased global rTheta    | 0.00      | NAN                 | 0.50      | global    |
| Decreased rDelta           | -0.50     | C-P-O-              | 0.00      | NAN       |
| Increased rBeta            | 1.00      | RF-MF-C-            | 0.00      | NAN       |
| Left FAA                   | -0.34     | Left FAA            | -0.19     | Left FAA  |
| Right OAA                  | 0.00      | NAN                 | 0.03      | Right OAA |
| Decreased Coherence (D, T) | -0.50     | Decreased Coherence | 0.00      | NAN       |
| Increased Coherence (A, B) | 1.00      | Increased Coherence | 0.00      | NAN       |

depression

0 10 20 30 40 50 60 70 80 90 100

Depression Probability

## EEG Compatibility with Anxiety Diagnosis

| Anxiety Table        | EC        |               | EO        |                       |
|----------------------|-----------|---------------|-----------|-----------------------|
| Feature Name         | Threshold | Region        | Threshold | Region                |
| Decreased rAlpha     | 0.00      | NAN           | -0.50     | LF-RF-MF-LT-RT-C-P-O- |
| Increased rBeta      | 1.00      | RF-MF-C-      | 0.00      | NAN                   |
| Right FAA            | 0.00      | NAN           | 0.00      | NAN                   |
| Left OAA             | -0.19     | Left OAA      | 0.00      | NAN                   |
| Increased IAF > 10.6 | 0.38      | Increased IAF | 0.00      | NAN                   |

Anxiety

0 10 20 30 40 50 60 70 80 90 100

Anxiety Probability

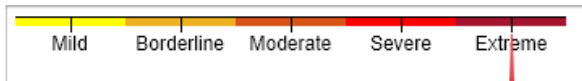
## EEG Compatibility with Mood Swings Diagnosis \*

| Mood Swings Table         | EC        |          | EO        |                       |
|---------------------------|-----------|----------|-----------|-----------------------|
| Feature Name              | Threshold | Region   | Threshold | Region                |
| Decreased rAlpha          | 0.00      | NAN      | -0.50     | LF-RF-MF-LT-RT-C-P-O- |
| Increased (rDelta+rTheta) | 0.00      | NAN      | 1.00      | LF-RF-MF-LT-RT-C-P-O- |
| Increased rBeta           | 1.00      | RF-MF-C- | 0.00      | NAN                   |
| Decreased Alpha Coherence | 0.00      | NAN      | -0.50     | Decreased Alpha       |
| Right FAA                 | 0.00      | NAN      | 0.00      | NAN                   |

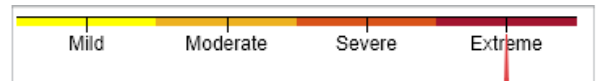
Mood Swings Probability

\* This index can only be investigated if there are symptoms of mood swings (R/O BMD or R/O mood swings).

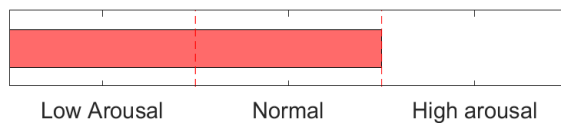
### Depression Severity



### Anxiety Severity

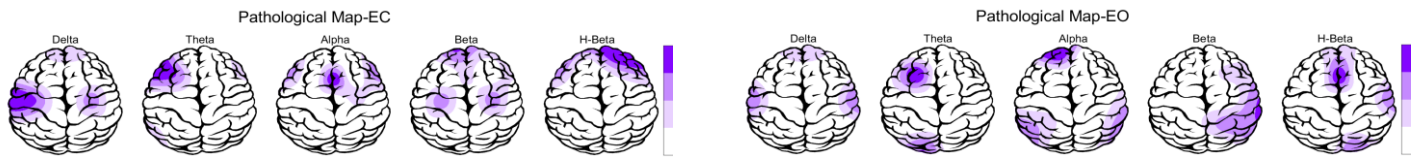


### Arousal Level Detection

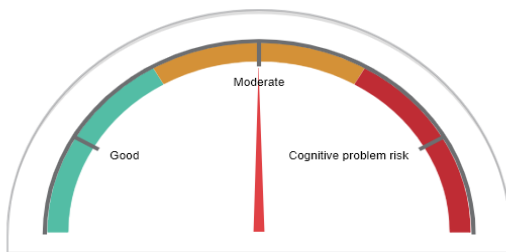


## Pathological assessment for adult ADHD

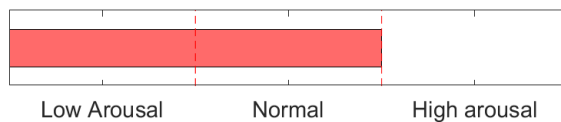
### Compare to Adult ADHD Database



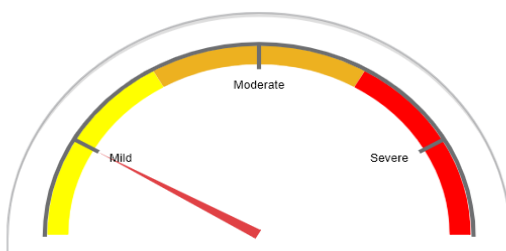
### Cognitive Functions



### Arousal Level Detection



### Adult ADHD Severity

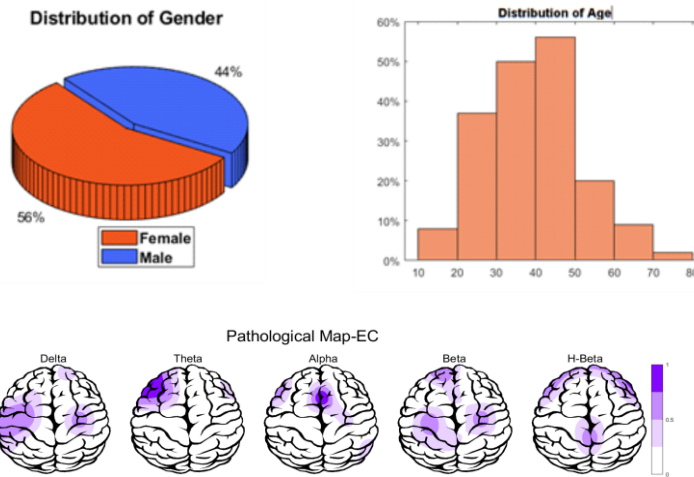


## rTMS Response Prediction

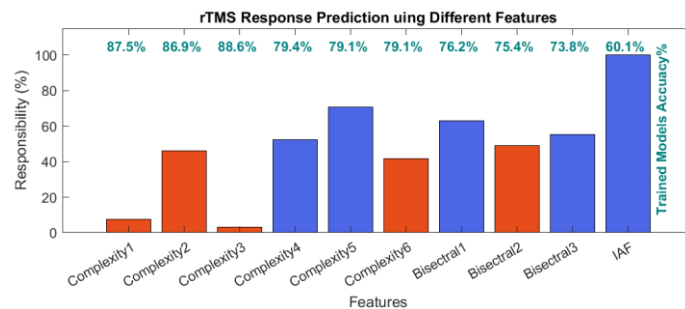
### Network Performance

**Accuracy: 92.1%**  
**Sensitivity: 89.13%**  
**Specificity: 97.47%**

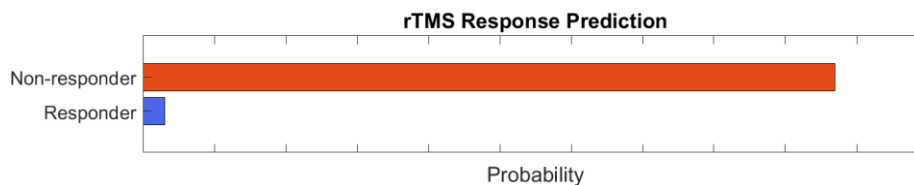
### Participants Information



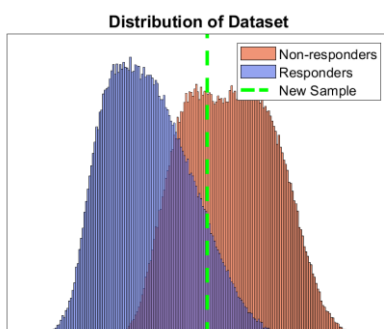
### Features Information



### Responsibility



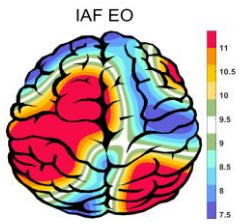
### Data Distribution



### About Predicting rTMS Response

This index was obtained based on machine learning approaches and by examining the QEEG biomarkers of more than 470 cases treated with rTMS. The cases were diagnosed with depression (with and without comorbidity) and all were medication free. By examining more than 40 biomarkers capable of predicting response to rTMS treatment in previous studies and with data analysis, finally 10 biomarkers including bispectral and nonlinear features entered the machine learning process. The final chart can distinguish between rTMS responsive and resistant cases with 92.1% accuracy. This difference rate is much higher than the average response to treatment of 44%, in the selection of patients with clinical criteria, and is an important finding in the direction of personalized treatment for rTMS.

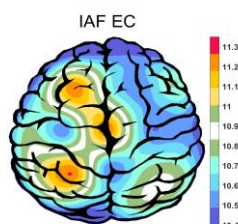
## APF(EO)



Frontal APF= 08.92

Posterior APF= 09.62

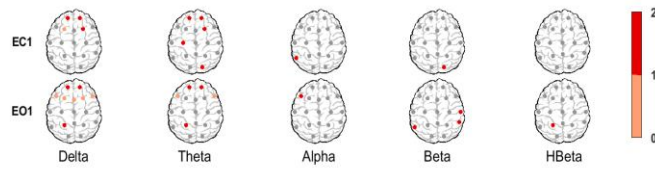
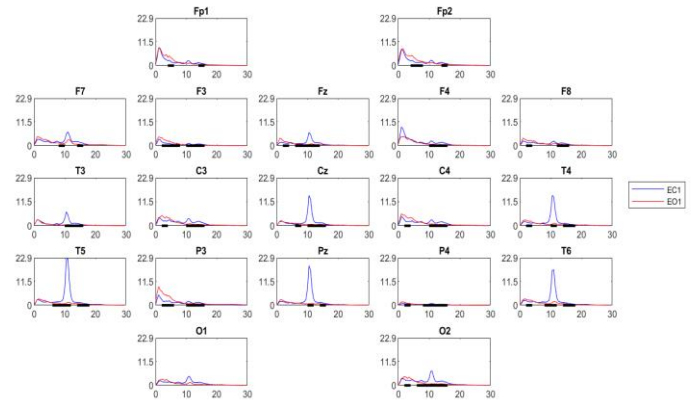
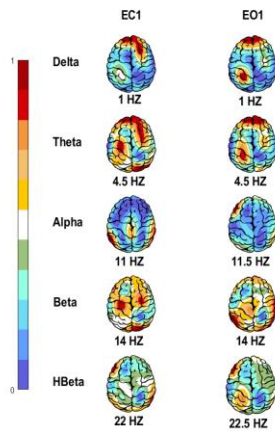
## APF(EC)



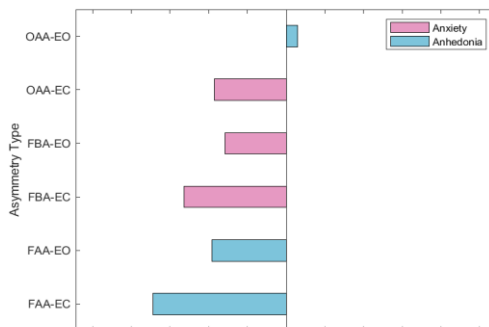
Frontal APF= 10.50

Posterior APF= 10.88

## EEG Spectra



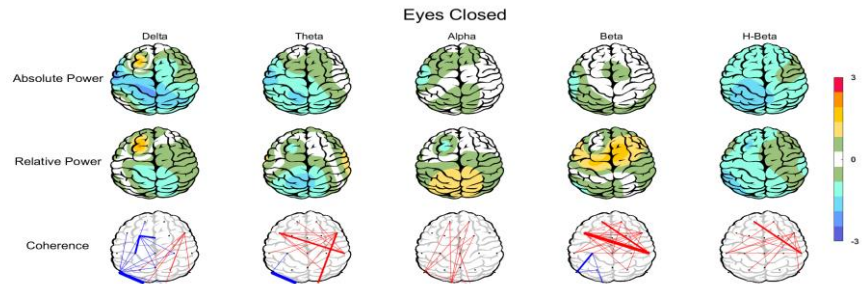
## Alpha Asymmetry(AA)



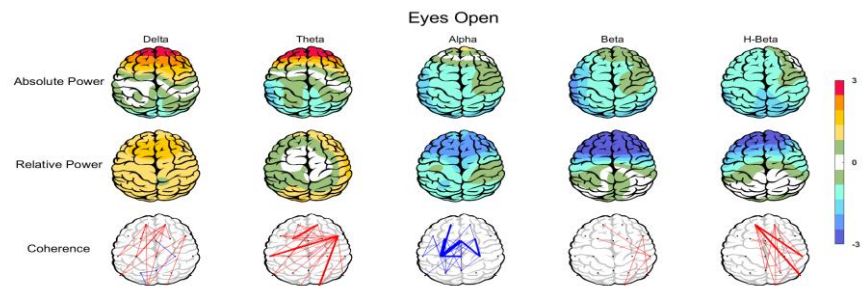
## Alpha Blocking



## Z Score Summary Information (EC)



## Z Score Summary Information (EO)



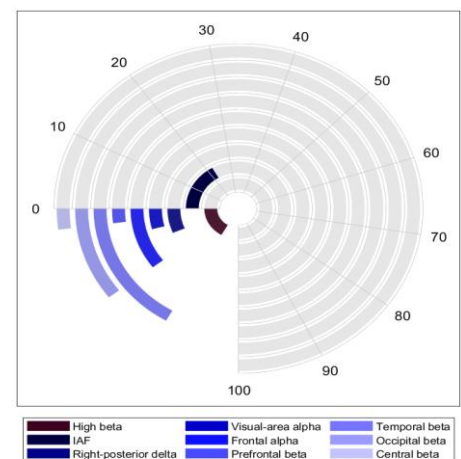
## E.C.T/B Ratio ( Raw- Z Score)



## E.O.T/B Ratio ( Raw- Z Score)

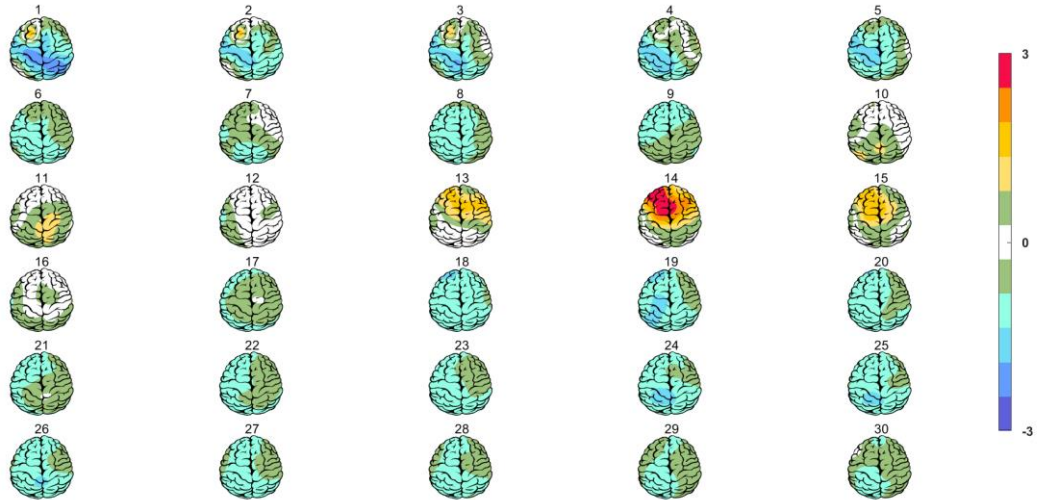


## Arousal Level



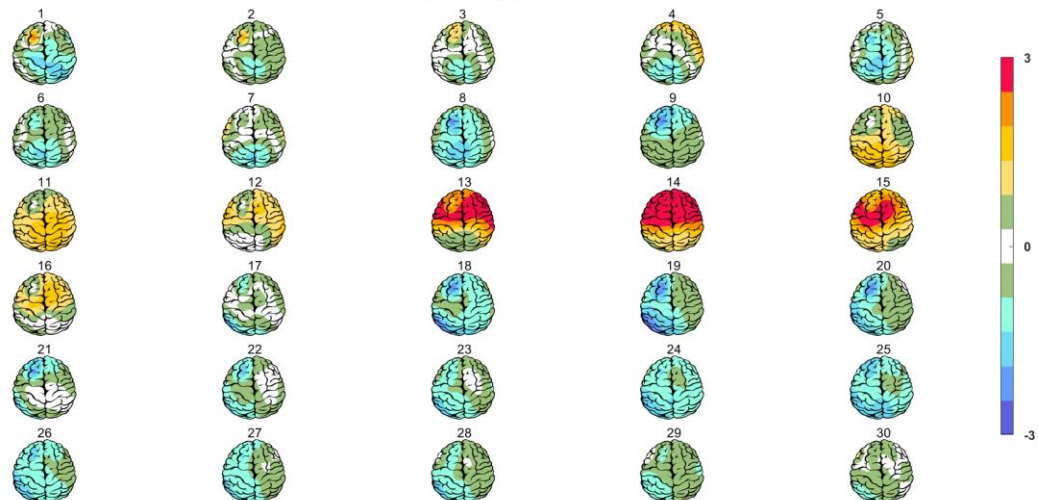
## Absolute Power-Eye Closed (EC)

Absolute power - Eyes Closed

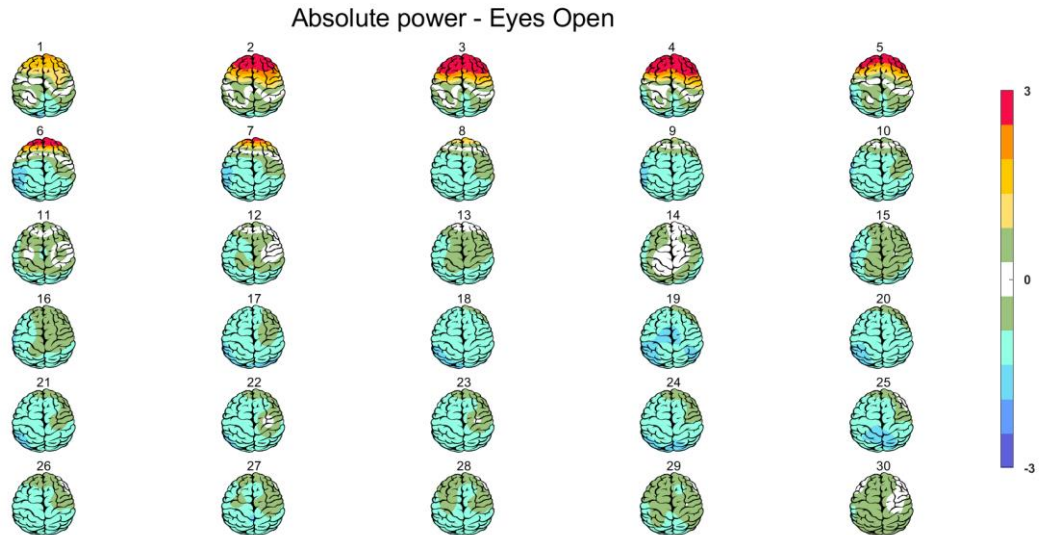


## Relative Power-Eye Closed (EC)

Relative Power - Eyes Closed



## Absolute Power-Eye Open (EO)



## Relative Power-Eye Open (EO)

