BRAIN TRAINING INTERNATIONAL Pty Ltd

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Quantitative Electroencephalograph and standardized Low Resolution Electromagnetic Tomography Evaluation with Neurofeedback Recommendations

Patient: Romen Savesk,
Birth date: 06/01/1987, Sex: m.
Patient ID: 271.
Presenting Diagnosis: Vaccine Injury.
Investigation: EEG observation.
Date: 02/08/2023, Time: 09:39:20.

Reason for referral: Client seeks evaluation for guiding neurofeedback intervention.

Complaints/Symptoms: Tinnitus, Chronic Fatigue, Mental Fog, Headaches, Sleep Disorder, Memory Dysfunction, Anxiety, Concentration, Tremor, Speech Disorder, Chronic Pain.

Summary of Findings: Alpha peak frequency is 12.94Hz. Alpha is hypercoherent at 0.5. The theta/beta ratio is .70:1. Beta spindles are maximal at the vertex. In the eyes opened condition transients present left temporal region (F7 and Pz). Phase reversal indicates a insula source. Eyes closed paroxysmal events also present in the left temporal region.

Alpha excesses are maximal in the right posterior/temporal region. Loreta analysis indicates an anterior cingulate disturbance.

Interpretation of Findings: The alpha peak is exceptionally fast fostering both a bright mindedness and a variance towards severe over arousal. Hypercoherence in alpha frontally indicates mood dysregulation.

Beta spindling and fast resting state alpha fosters sleep initiation difficulties. The lack of restorative sleep promotes beta excesses and weariness resulting in brain fog. This is also a common factor in tinnitus.

Left posterior/temporal alpha excesses reduce working memory capacity and social/emotional dysfunction.

The anterior cingulate disturbance fosters stuck type cognitive/emotional behaviours. The pattern in conjunction with the posterior/temporal deficits is a common signature of those that have suffered emotional trauma.

The slowed alpha fronto-temporally is indicative of an ischemic issue.

Neurofeedback Recommendations:

1. T6-Cz 12-15Hz suppressing 8-12Hz and 18-28Hz.

2. T3-Fz 12-15Hz suppressing 8-12Hz and 18-28Hz.

3. FPz suppressing 8-12Hz and 18-28Hz.

Summary of findings along with interpretation and neurofeedback recommendations have been provided by Jon Hegg MA Psych, BCN, QEEG-D

Signed: **Dated: 20 August 2023**

Recording and Analysis Procedures

The electroencephalograph (EEG) was digitally recorded utilizing 19 electrodes with the International 10/20 System of electrode placement on a Mitsar amplifier. Electrode impedances were reduced to below 5Kohms. The EEG was recorded continuously in the awake state with eyes closed and eyes open. Also, this study may include additional tasks and Event Related Potential (ERP) analyses. The EEG has been visually inspected prior to artifact rejection using Independent Component Analysis.

Standardized Low Resolution Electromagnetic Tomography has been computed and relevant images included. This analysis and report is generated using WinEEG and LORETA-Key software. The recordings were visually artifacted with noted movement and EMG artifacts removed. Comparisons to the HBI database norms may be presented where considered useful in prognosis.

A fragment of EEG recorded in Eyes Opened (EO) condition is presented below.
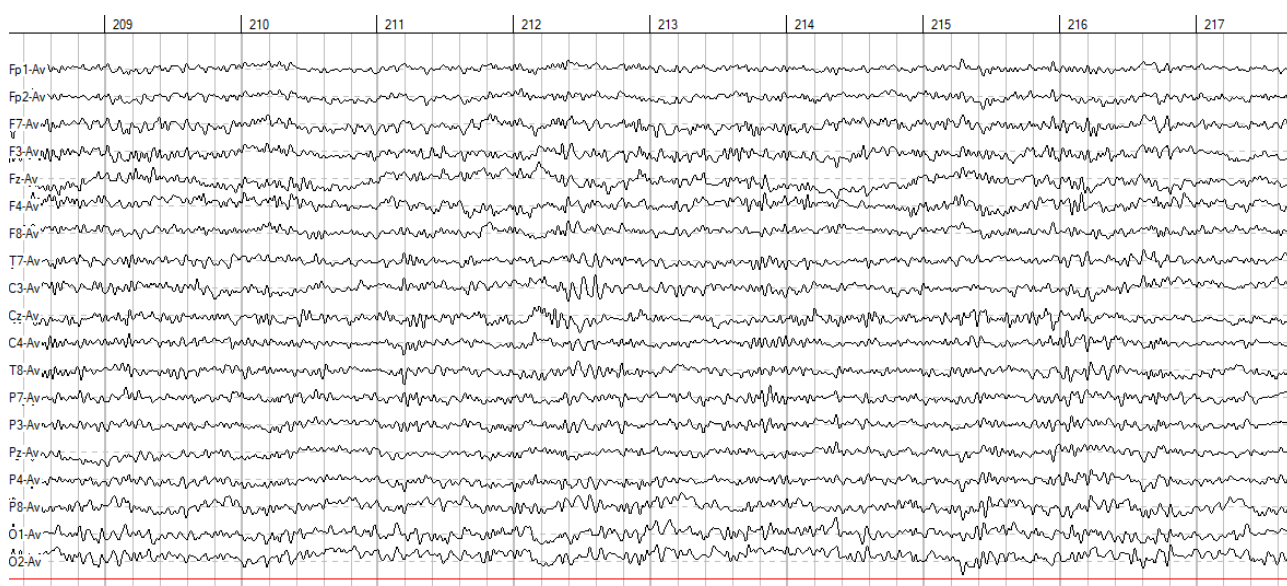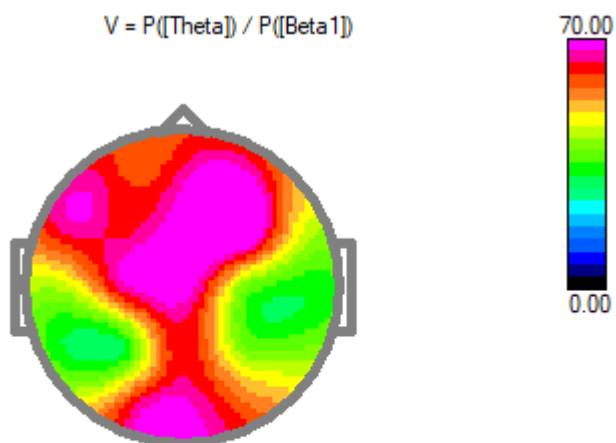
Graphs of EEG power spectra

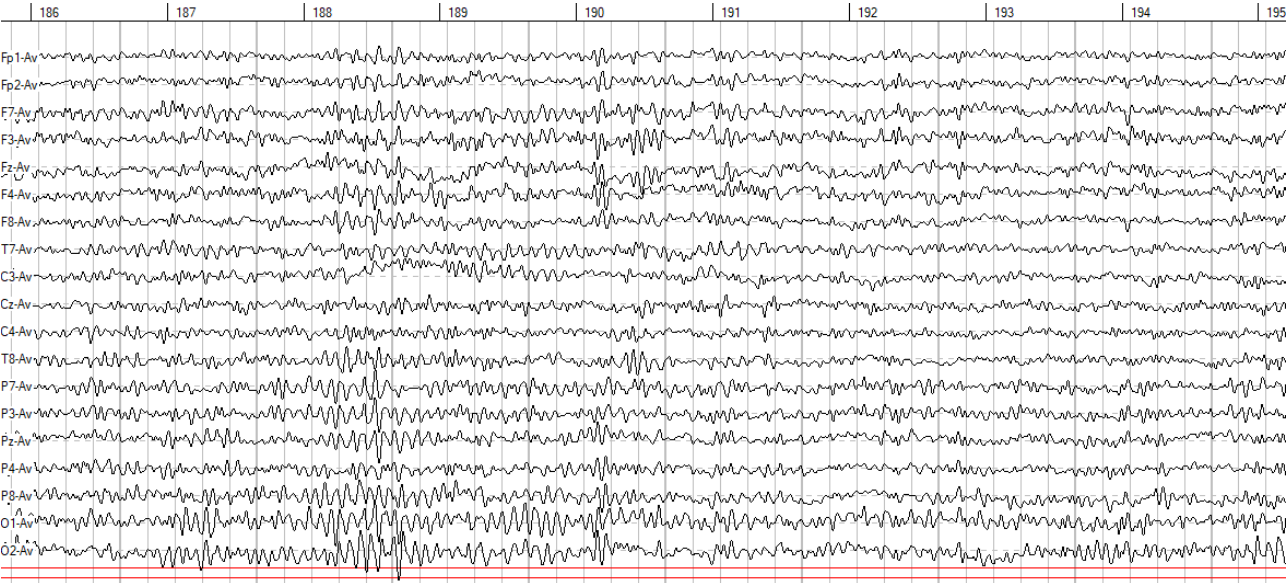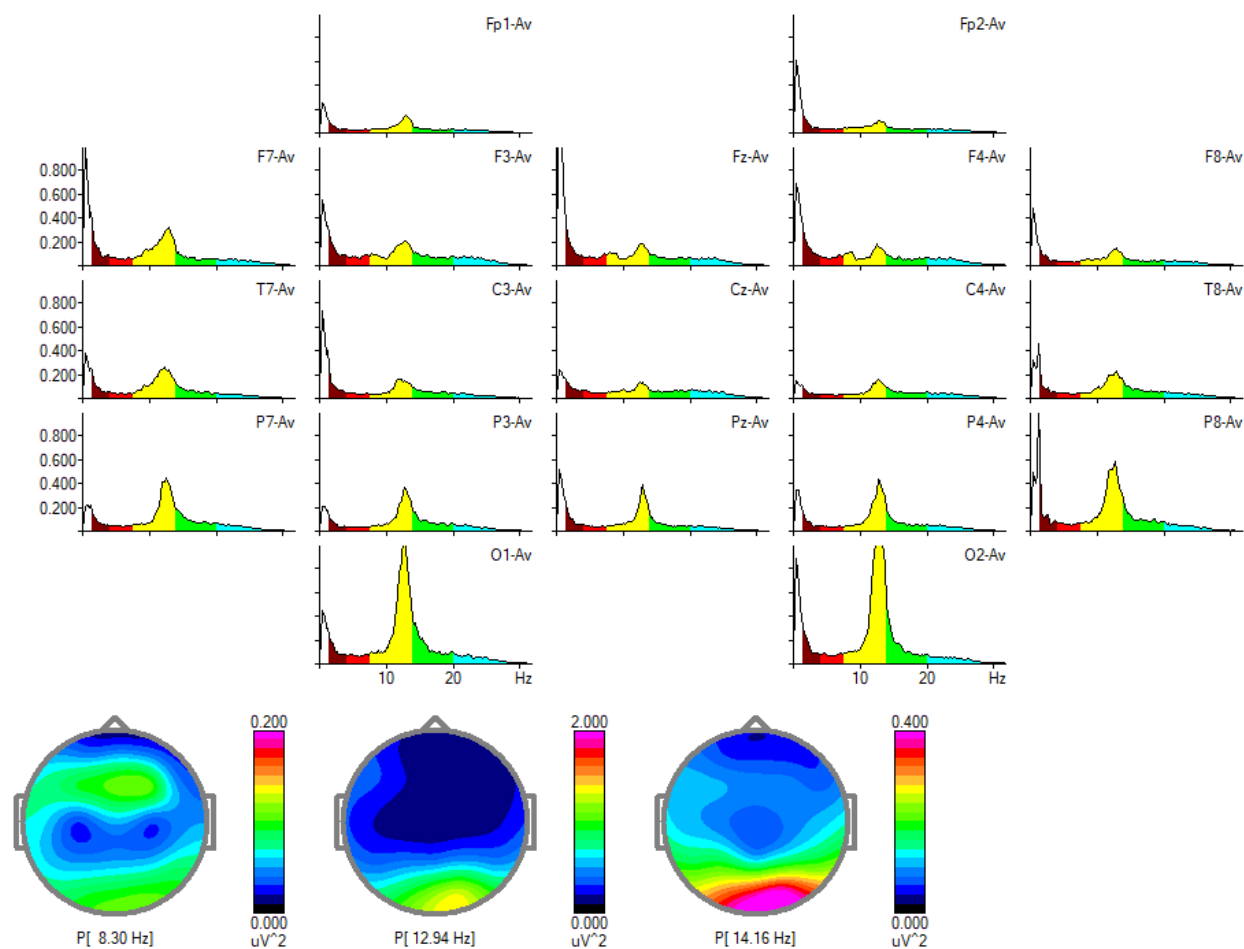**Fragment: Eyes opened 09:49:29, Offset: 0.00 s, Length: 301.35 s, Number of epochs 129.**
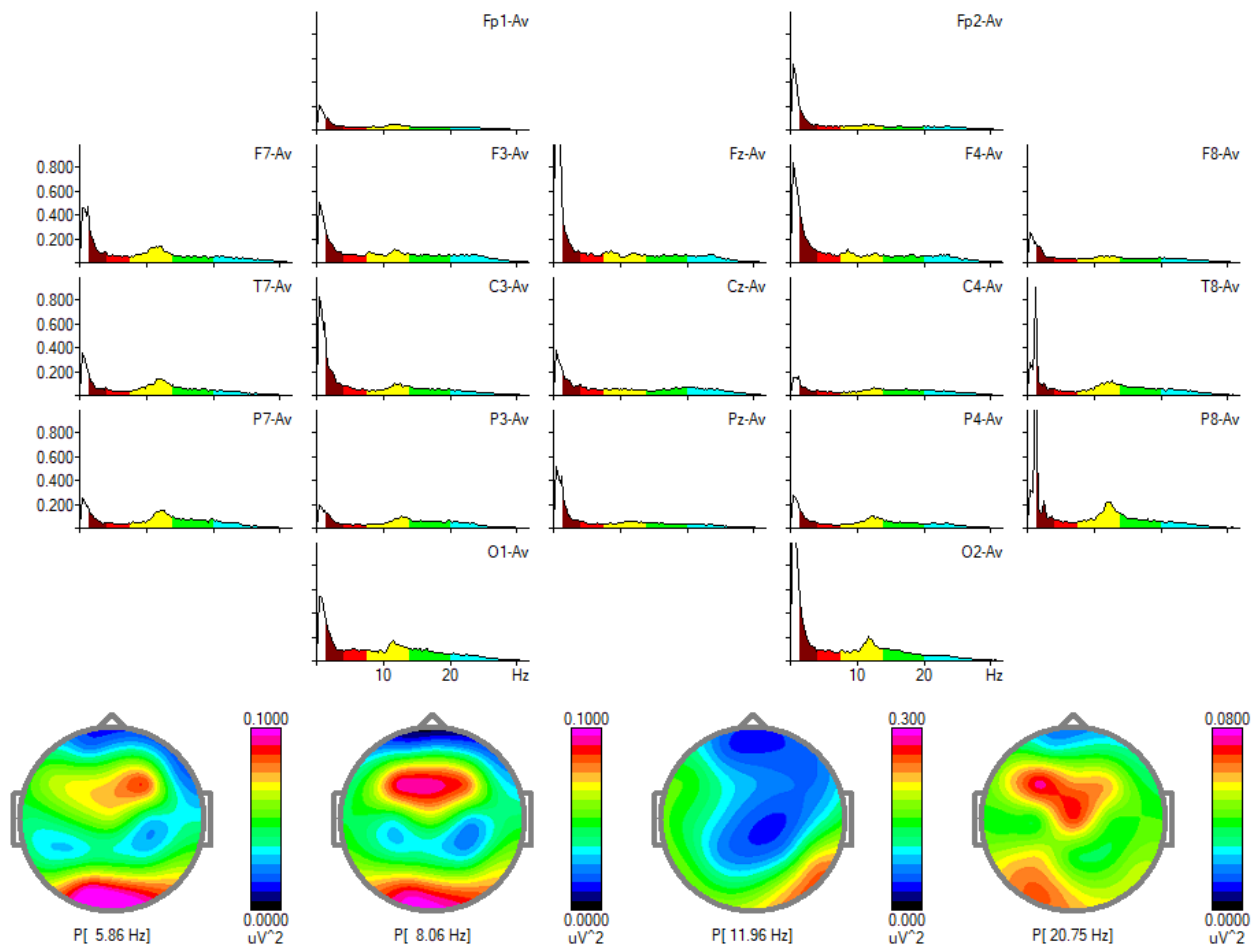
Maps of relation of EEG power spectra

Fragment: Eyes opened 09:49:29, Offset: 0.00 s, Length: 301.35 s, Number of epochs 129.

V = P([Theta]) / P([Beta1])

V = P([Theta]) / P([Beta1])

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A fragment of EEG recorded in Eyes Closed (EC) condition is presented below.
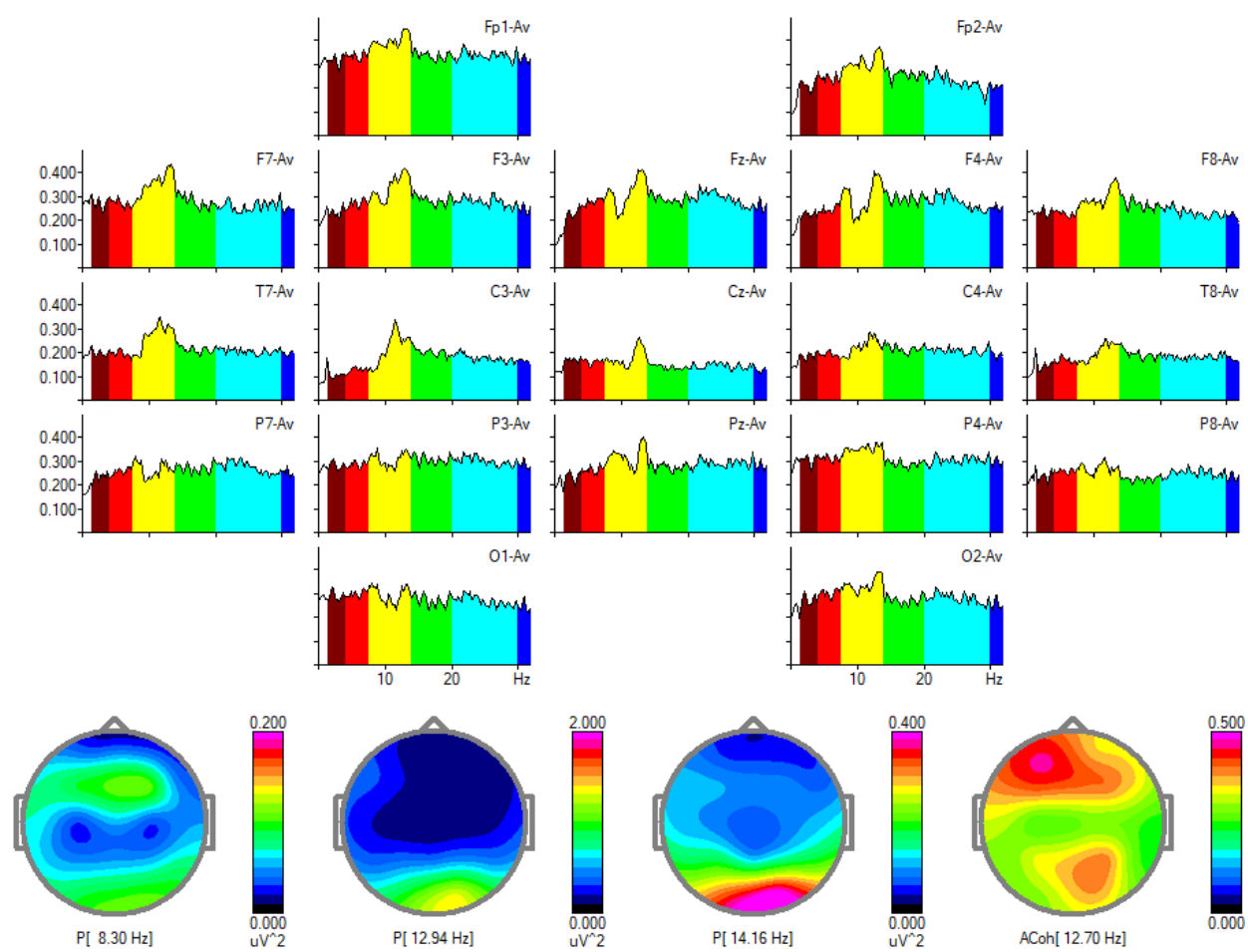
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Graphs of EEG power spectra

Fragment: Eyes closed 09:54:39, Offset: 0.00 s, Length: 304.68 s, Number of epochs 144.

Average coherence of EEG.

Fragment: Eyes closed 09:54:39, Offset: 0.00 s, Length: 304.68 s, Number of epochs 144.
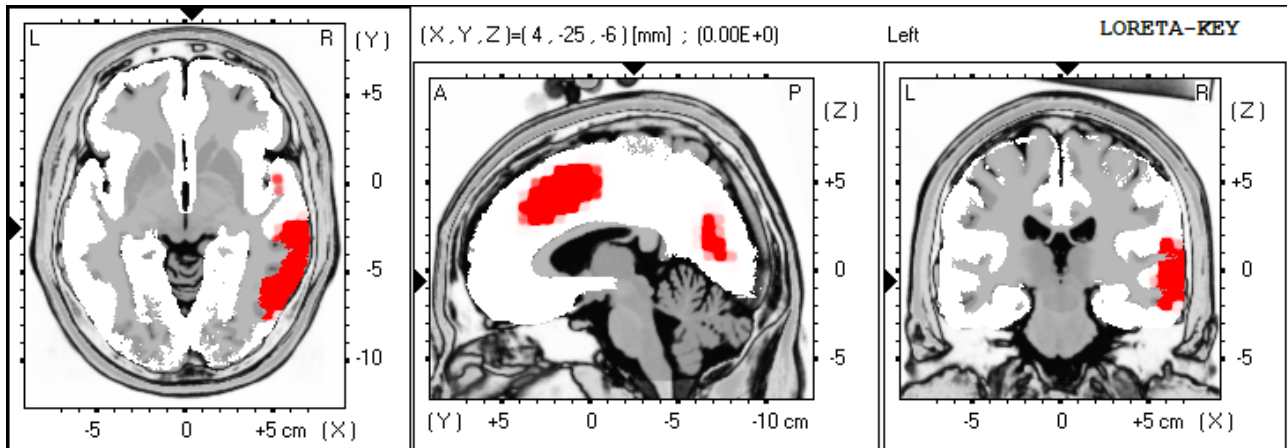
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Images of neuronal electric activity computed with LORETA.

The images display the neuronal generators of the EEG during condition. Activity is red scaled when not a database comparison. When a database comparison is presented the red indicates significant increases above the normative data and blue indicates significant decreases below the normative data. Three orthogonal brain views in Talairach space are shown, sliced through the region of the maximum activity. Structural anatomy is shown in black outline. Left slice: axial, seen from above, nose up; center slice: sagittal, seen from the left; right slice: coronal, seen from the rear. Talairach coordinates: X from left (L) to right (R); Y from posterior (P) to anterior (A); Z from inferior to superior. The location of maximum activity is given as (X,Y,Z) coordinates in Talairach space, and is graphically indicated by black triangles on the coordinate axes. For further explanation regarding LORETA you may consult (1.) Pascual-Marqui RD, Michel CM, Lehmann D. Low resolution electromagnetic tomography: a new method for localizing electrical activity in the brain. International Journal of Psychophysiology 1994, 18:49-65. (2.) Pascual-Marqui RD. Review of Methods for Solving the EEG Inverse Problem. International Journal of Bioelectromagnetism 1999, 1:75-86.

Source Distribution Loreta Alpha

Component 1 Alpha