Name: Sample2 **Age:** 28
Trainer: **Date:** 11/15/2016

English

Histogram

Overall EEG Shape	F7	F3	Fp1	Fz	Fp2	F4	F8	T3	C3	Cz	C4	T4	T5	P3	Pz	P4	T6	O1	Oz	O2
Slow Percent EC	41%	40%	41%	38%	40%	39%	40%	37%	33%	32%	32%	30%	31%	30%	28%	28%	30%	**24%**	**23%**	**24%**
Slow Percent EO	36%	35%	42%	39%	41%	36%	36%	39%	37%	37%	36%	29%	33%	35%	33%	34%	32%	30%	28%	29%
Mid Percent EC	32%	33%	33%	36%	32%	33%	31%	39%	44%	41%	45%	37%	43%	46%	**50%**	**50%**	46%	**53%**	**54%**	**54%**
Mid Percent EO	32%	38%	32%	37%	32%	37%	33%	35%	38%	39%	39%	32%	41%	37%	**46%**	40%	42%	**47%**	**51%**	**46%**
Fast Percent EC	28%	27%	27%	26%	28%	28%	29%	24%	23%	27%	24%	33%	26%	23%	22%	22%	23%	22%	24%	22%
Fast Percent EO	31%	27%	26%	24%	27%	28%	31%	26%	25%	24%	25%	**39%**	26%	28%	21%	27%	26%	24%	22%	25%
EEG Speed																				
Alpha Peak Freq	**8.9**	**8.8**	**9**	**9.1**	**9**	**8.9**	**9**	**8.8**	**9.2**	**9.3**	9.5	**9**	**9.3**	**9.1**	9.7	**9.3**	9.6	9.6	10	9.6
Beta Peak Freq	20.8	19.1	20.8	19.2	21.4	20.5	21	17.9	17.8	18.3	18	19.8	18.5	17.7	18.2	17.5	18.5	17.9	18.5	17.9
Overall Peak Freq	**6.4**	7.6	7.1	7.9	7	7.5	6.8	7.8	8.7	9	9	8.5	8.9	9	9.7	9.2	9.5	9.5	10	9.6
Alpha Pattern																				
A/T Ratio EC	1	0.9	1	1.1	1	1	0.9	1.2	1.6	1.4	1.7	1.4	1.7	1.8	2.1	2	1.7	2.6	2.8	2.6
A/T Ratio EO	**1**	**1.4**	**0.9**	**1.1**	**1**	**1.3**	**1**	**1.1**	**1.4**	**1.2**	**1.4**	**1.3**	**1.4**	**1.2**	**1.6**	**1.4**	**1.6**	**1.9**	**2.1**	**1.9**
Alpha EC/EO	1.2	1	1.4	1	1.4	1.1	1.2	1.4	1.4	1.2	1.4	1.3	1.3	2.2	1.3	2.2	1.4	1.9	1.3	1.8
Alpha EO/TSK	1.4	1.7	1.2	1.1	1.2	1.6	1.3	1	1	1.1	0.9	1	2	1.1	1	1.1	2	1.9	0.9	1.9

Heads

Temporal Lobe

Disconnect

Disconnect	No
Absolute R/L ratio	1.84
Relative R/L ratio	1.65

Hot Temporals	T3	T4	T3%L	T4%R
Beta Percent	14.1%	16.7%	93%	112%
High Beta Percent	7.2%	**11.9%**	102%	**160%**

Results

very high
in range
very low

Position

Front
Mid
Back

Reversal	EC	EO	EC	EO	EC	EO	EC	EO	EC	EO	EC	EO	EC	EO
Left/Right Beta	F7/F8	F7/F8	F3/F4	F3/F4	C3/C4	C3/C4	T3/T4	T3/T4	T5/T6	T5/T6	P3/P4	P3/P4	O1/O2	O1/O2
irritable anxious angry	**0.97**	1.03	**0.97**	**0.99**	**0.99**	1.00	**0.74**	**0.74**	1.11	**0.99**	1.04	1.08	1.03	**0.99**
Right/Left Alpha	F8/F7	F8/F7	F4/F3	F4/F3	C4/C3	C4/C3	T4/T3	T4/T3	T6/T5	T6/T5	P4/P3	P4/P3	O1/O2	O1/O2
depressed negative	1.00	**0.97**	1.02	1.06	1.12	1.12	1.02	**0.98**	1.12	**0.94**	1.10	1.13	**0.90**	1.07

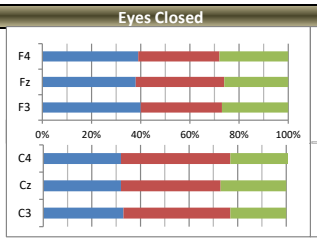
Front/Back Beta	F3/P3	F3/P3	F4/P4	F4/P4	F3/O1	F3/O1	F4/O2	F4/O2	Fz/Pz	Fz/Pz	Cz/Oz	Cz/Oz
perfectionism insomnia	1.16	**0.96**	1.25	1.05	1.20	1.13	**1.27**	1.14	1.17	1.17	1.16	1.16
Back/Front Alpha	P3/F3	P3/F3	P4/F4	P4/F4	O1/F3	O1/F3	O2/F4	O2/F4	Pz/Fz	Pz/Fz	Oz/Cz	Oz/Cz
unmotivated foggy	**1.75**	1.22	**1.88**	1.31	**1.91**	**1.44**	**2.08**	1.28	**2.09**	1.37	**1.86**	1.36

Blocking — Left & Right vs Midline

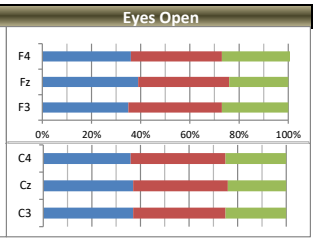
Fz vs F3 or F4	EC	EO	Swingle Ratio
Slow Pct	-3.0%	10.4%	**67%**
Mid Pct	9.5%	-2.6%	
Fast Pct	-3.1%	-5.8%	

Cz vs C3 or C4	EC	EO	Swingle Ratio
Slow Pct	0.9%	0.0%	56%
Mid Pct	-8.6%	0.8%	
Fast Pct	10.9%	0.7%	

Eyes Closed



Eyes Open



Blocking

Comparing Left/Right vs. Midline sites in F and C areas for Slow, Mid and Fast frequencies can indicate issues with the Anterior Cingulate (AC). Red or Blue numbers show differences 15% above or below which indicates a hot or cold AC, depending on the frequency distribution that is also visualized on the charts.
Swingle Ratio (from Paul Swingle) shows Hibeta/Beta ratio at Fz and Cz. Values below 40% suggest low motivation. Values above 60% suggest stubbornness.

Name: Sample2 **Age:** 28

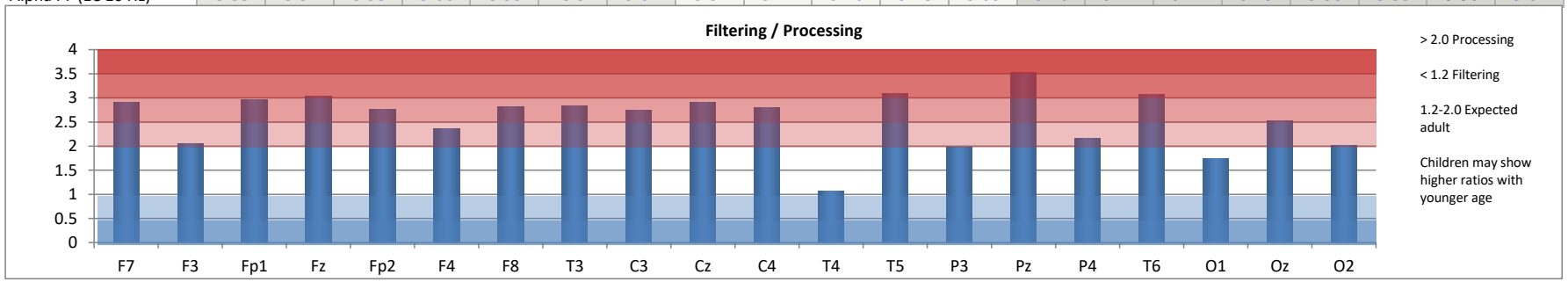
Trainer: **Date:** 11/15/2016

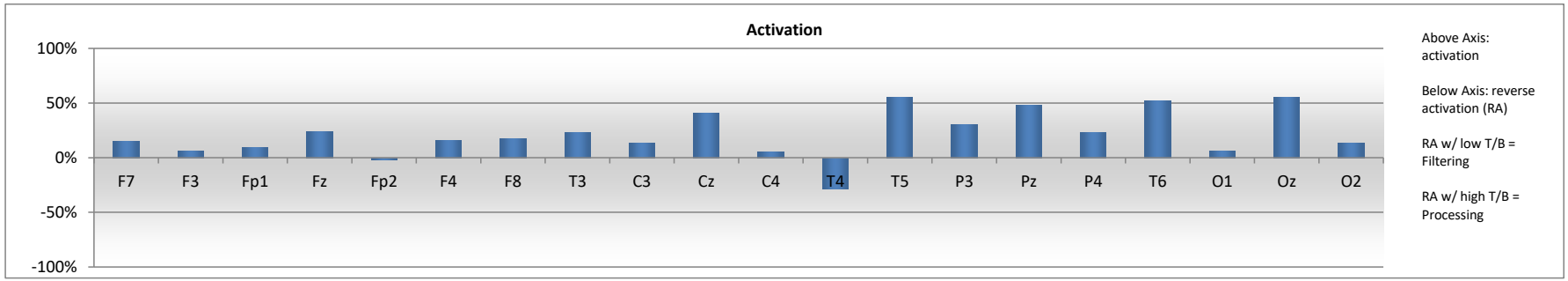
English

Report

Coherence/Phase %	COH	PH%	COH	PH%	COH	PH%	COH	PH%	COH	PH%	COH	PH%	COH	PH%	COH	PH%	COH	PH%	COH	PH%
High Synchrony	Fp1Fp2	Fp1Fp2	F7-F8	F7-F8	F3-F4	F3-F4	C3-C4	C3-C4	T3-T4	T3-T4	T5-T6	T5-T6	P3-P4	P3-P4	O1-O2	O1-O2	Fz-Pz	Fz-Pz	Cz-Oz	Cz-Oz
SMR							62.5	56.4												
Alpha	93.4	90.6	44.3	46.3	84.7	76.5	73.5	67.1	19.5	24.4	34.3	35.1	74.2	66.3	83.8	70.8	34.1	33.8	34.5	33.4
Theta	90.8	84.2	36.1	37.6	85.8	78.5	68.3	62.8	18.5	26.6	20.1	31.2	76.4	70.1	76.5	71.5	48.7	49.3	39	38.9
Gamma	41.5	40.8	15.6	14.3	40.1	34.6	41.4	32.6	10.6	17.2	20.5	29.2	61.9	42.9	64.6	43.2	35.6	32.4	39.9	33.9
Low Synchrony	Fp1Fp2	Fp1Fp2	F7-F8	F7-F8	F3-F4	F3-F4	C3-C4	C3-C4	T3-T4	T3-T4	T5-T6	T5-T6	P3-P4	P3-P4	O1-O2	O1-O2	Fz-Pz	Fz-Pz	Cz-Oz	Cz-Oz
Low Beta	82.1	70.9	18.3	28.9	66.5	58.6			11.9	25.3	20.3	26.7	66.4	59.4	74	62.5	17.6	30.4	24.7	34.2
Beta	71.9	62.5	16.3	26.1	63.6	56.7	58	51.3	12.9	19	21.6	25.6	66	52.3	71.7	54.2	31.4	29.4	27.1	30.4
High Beta	62.8	46.9	17.6	19.1	52.6	46	47	41.5	10.6	18.2	22.7	28.8	58.5	46.6	68.6	50.5	32.9	30.1	30.4	31.4

Filtering/Processing																				
Theta/Beta	F7	F3	Fp1	Fz	Fp2	F4	F8	T3	C3	Cz	C4	T4	T5	P3	Pz	P4	T6	O1	Oz	O2
T/B ratio EC	3.35	3.42	3.62	2.91	3.55	3.36	3.26	2.94	2.28	1.86	2.21	1.54	2.28	2.17	1.97	2.1	2.93	1.35	1.09	1.44
T/B ratio EO	2.9	2.06	2.97	3.04	2.76	2.37	2.82	2.83	2.74	2.9	2.8	1.07	3.09	1.97	3.53	2.16	3.07	1.74	2.52	2.01
T/B ratio TSK	2.48	1.94	2.69	2.3	2.83	1.99	2.35	2.19	2.39	1.7	2.65	1.39	1.4	1.38	1.84	1.65	1.48	1.64	1.13	1.75
T/B ratio Activation	0.15	0.06	0.09	0.24	-0.02	0.16	0.17	0.23	0.13	0.41	0.05	-0.29	0.55	0.3	0.48	0.23	0.52	0.06	0.55	0.13
SMR% EO									6.4%	6.9%	6.6%									
Alpha PF (EC 10 Hz)	8.88	8.84	8.98	9.06	8.95	8.9	9.02	8.84	9.17	9.26	9.48	9.03	9.26	9.11	9.74	9.29	9.56	9.55	9.96	9.64





Name: Sample2 **Age:** 28

Trainer: **Date:** 11/15/2016

English

Position	Site	CND	Delta		Theta		Alpha		Low Beta		Beta		High Beta		Gamma	
			COH	Phase %	COH	Phase %	COH	Phase %	COH	Phase %	COH	Phase %	COH	Phase %	COH	Phase %
Frontal	Fp1-Fp2	EC	94	88.7	91	84.2	93	90.6	82	70.9	72	62.5	63	46.9	42	40.8
		EO	91	85.4	87	84.3	88	85.6	83	69.0	78	60.4	61	45.9	56	39.9
		TSK	93	82.8	88	81.3	88	83.3	84	69.7	67	60.4	56	46.5	65	41.0
Frontal	F3-F4	EC	83	77.4	86	78.5	85	76.5	67	58.6	64	56.7	53	46.0	40	34.6
		EO	77	74.0	80	77.5	87	78.1	69	58.3	60	54.3	52	43.5	53	35.2
		TSK	84	73.7	78	74.4	71	75.1	54	57.7	49	52.2	37	41.4	32	34.5
Frontal	F7-F8	EC	41	39.7	36	37.6	44	46.3	18	28.9	16	26.1	18	19.1	16	14.3
		EO	30	38.3	33	36.7	42	42.3	18	28.2	17	24.3	21	22.5	11	17.0
		TSK	24	36.8	23	34.8	15	38.9	7	26.5	14	22.9	17	23.2	12	18.8
Central	C3-C4	EC	69	67.6	68	62.8	74	67.1	63	56.4	58	51.3	47	41.5	41	32.6
		EO	76	65.1	71	60.7	67	63.9	52	51.5	50	47.5	51	40.8	39	32.9
		TSK	80	66.7	70	62.4	63	62.5	53	50.2	57	47.2	46	40.5	40	33.0
Midline	Fz-Pz	EC	48	50.4	49	49.3	34	33.8	18	30.4	31	29.4	33	30.1	36	32.4
		EO	43	47.4	37	45.1	30	35.2	29	31.3	33	32.6	36	30.8	33	33.7
		TSK	55	48.4	55	45.1	28	34.1	32	32.4	43	34.3	40	31.4	51	35.8
Midline	Cz-Oz	EC	48	49.0	39	38.9	34	33.4	25	34.2	27	30.4	30	31.4	40	33.9
		EO	49	46.4	39	38.1	33	36.4	27	33.9	27	30.7	36	32.1	34	30.9
		TSK	48	46.5	44	40.0	32	35.8	31	33.9	30	30.8	39	33.4	53	30.8
Temporal	T3-T4	EC	22	38.1	19	26.6	19	24.4	12	25.3	13	19.0	11	18.2	11	17.2
		EO	26	30.3	14	25.1	14	26.8	7	19.9	10	17.7	11	17.8	8	19.6
		TSK	38	32.1	22	26.0	16	26.1	8	19.5	11	16.7	8	17.9	7	19.0
Temporal	T5-T6	EC	29	36.5	20	31.2	34	35.1	20	26.7	22	25.6	23	28.8	20	29.2
		EO	23	33.2	21	27.8	30	33.0	20	26.2	20	26.3	22	28.2	20	27.4
		TSK	30	34.3	28	28.8	20	32.6	20	25.9	24	26.6	25	28.5	22	27.3
Parietal	P3-P4	EC	82	77.1	76	70.1	74	66.3	66	59.4	66	52.3	59	46.6	62	42.9
		EO	78	73.5	77	67.7	75	64.6	64	56.5	70	54.8	63	46.3	60	39.7
		TSK	81	72.5	76	67.8	72	65.0	74	57.1	64	55.4	65	46.9	64	40.0
Occipital	O1-O2	EC	87	79.4	77	71.5	84	70.8	74	62.5	72	54.2	69	50.5	65	43.2
		EO	89	80.2	85	71.6	83	71.3	79	63.5	77	56.9	61	48.0	61	41.6
		TSK	90	80.9	88	74.3	82	71.3	81	64.5	77	58.8	70	47.6	67	41.3

Connectivity

This page shows Coherence values (0-100) and the % of Phase Angle values that were between -30 and 30 degrees for the Eyes Closed, Eyes Open and Task conditions for each frequency band.

Low levels of slow wave coherence suggest the brain's inability to rest between tasks. High levels of fast wave coherence suggest difficulty processing or shifting. Low phase values may suggest Synchrony training.

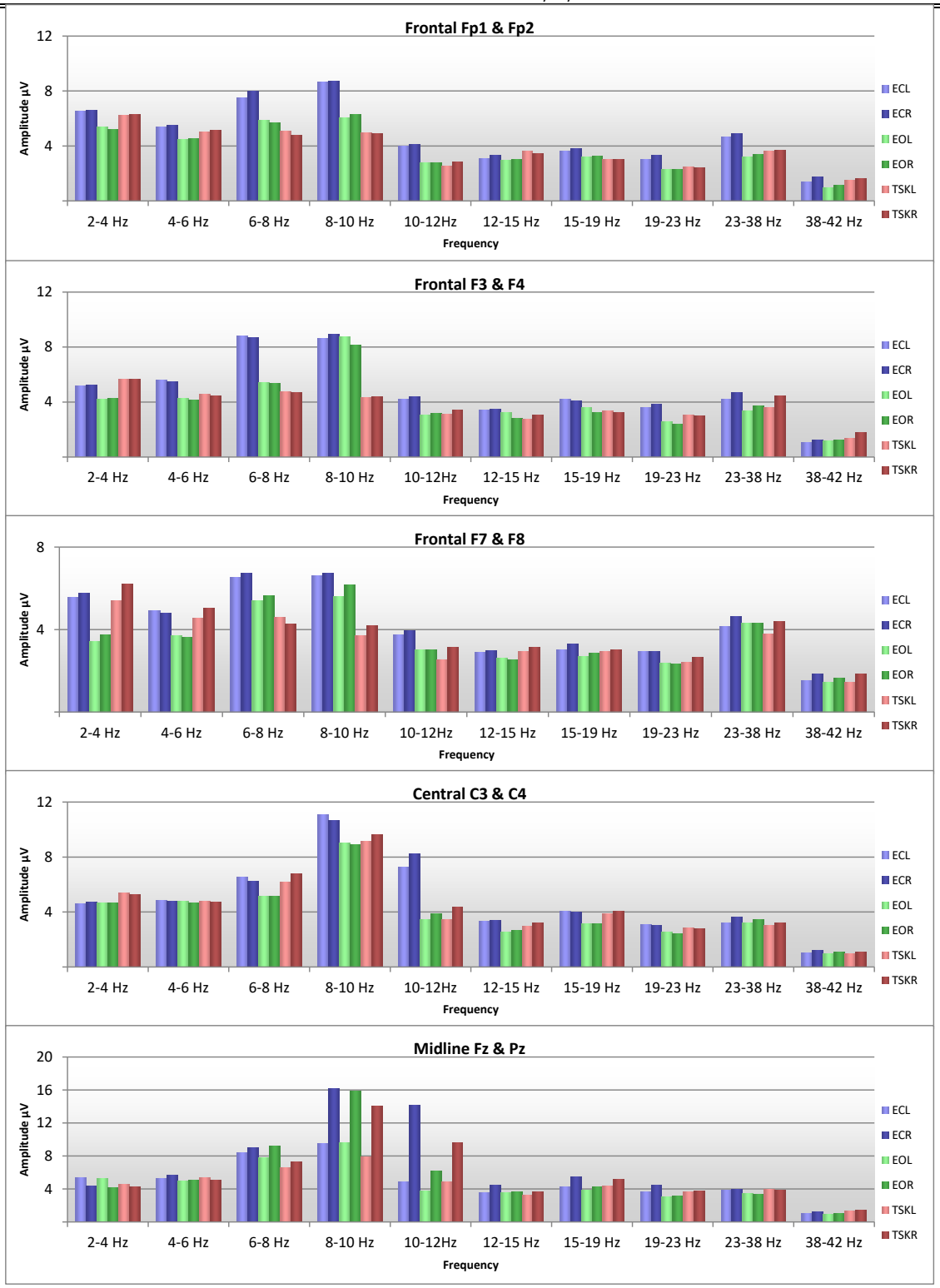
Shaded sites (frontal and temporal) are expected to have low connectivity values due to their degree of separation.

Results

high
in range
low

Frequency

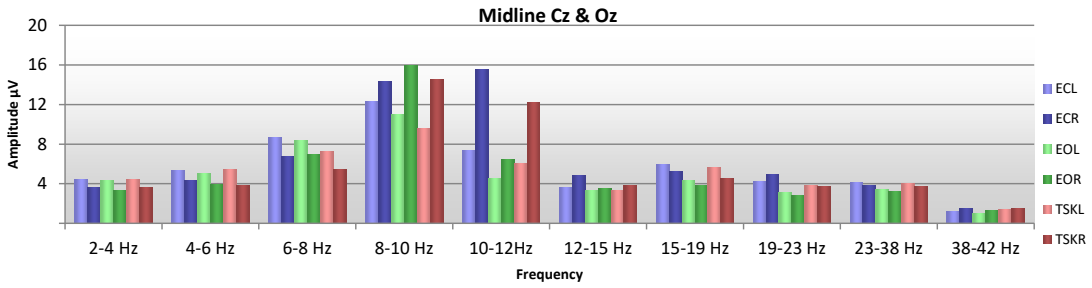
Slow
Fast
Gamma

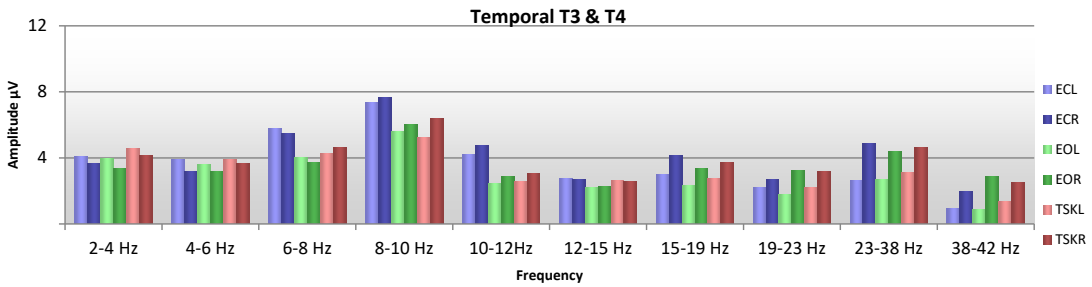


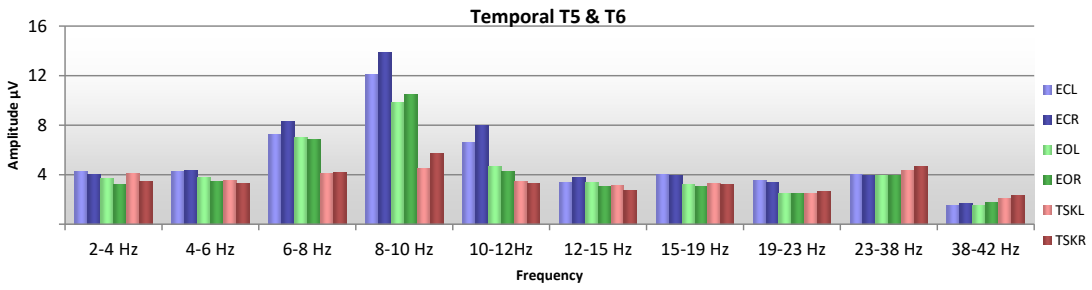
- [x] Eyes Closed Left/Front
- [x] Eyes Closed Right/Back
- [x] Eyes Open Left/Front
- [x] Eyes Open Right/Back
- [x] Task Left/Front
- [x] Task Right/Back

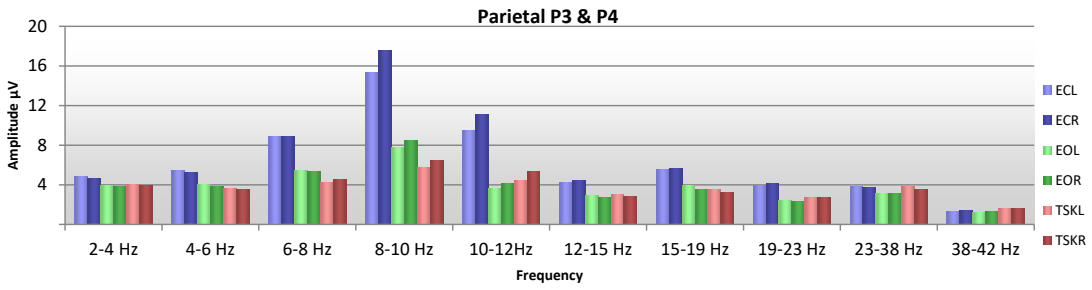
Absolute Distribution

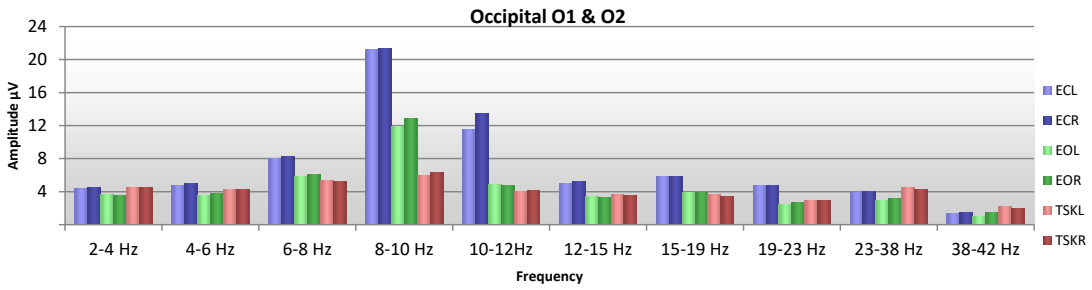
Histograms show absolute amplitude levels in each frequency at each site pair. By unchecking the boxes for Blue (EC), Green (EO) or Orange (Task), you can create specific views of variable activity.







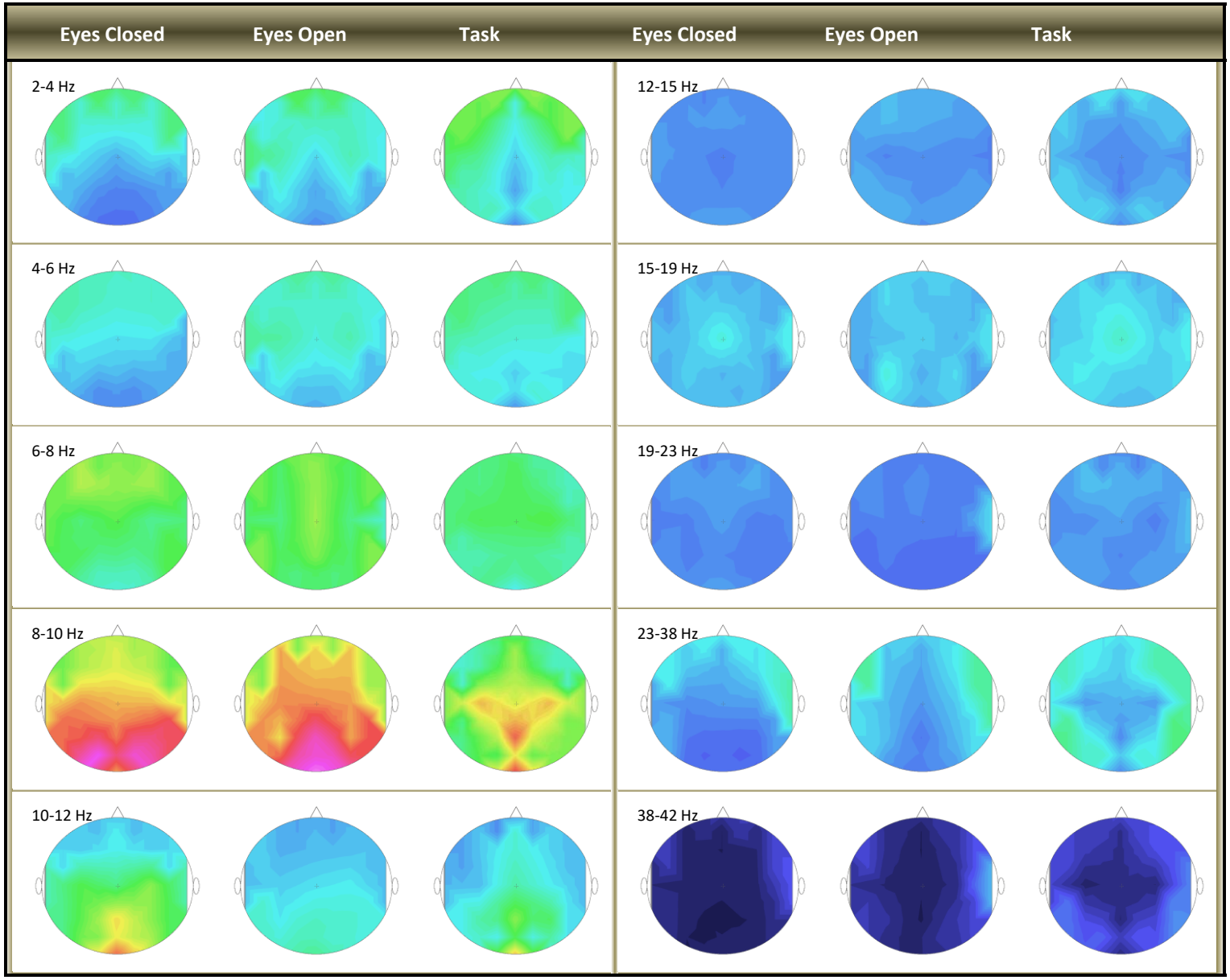




- ☑ Eyes Closed Left/Front
- ☑ Eyes Closed Right/Back
- ☑ Eyes Open Left/Front
- ☑ Eyes Open Right/Back
- ☑ Task Left/Front
- ☑ Task Right/Back

Absolute Distribution

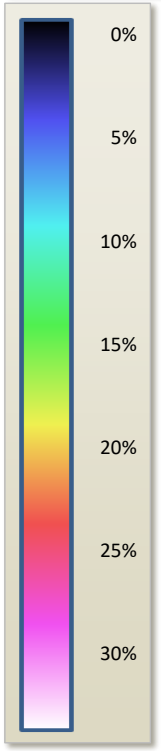
Histograms show absolute amplitude levels in each frequency at each site pair. By unchecking the boxes for Blue (EC), Green (EO) or Orange (Task), you can create specific views of variable activity.

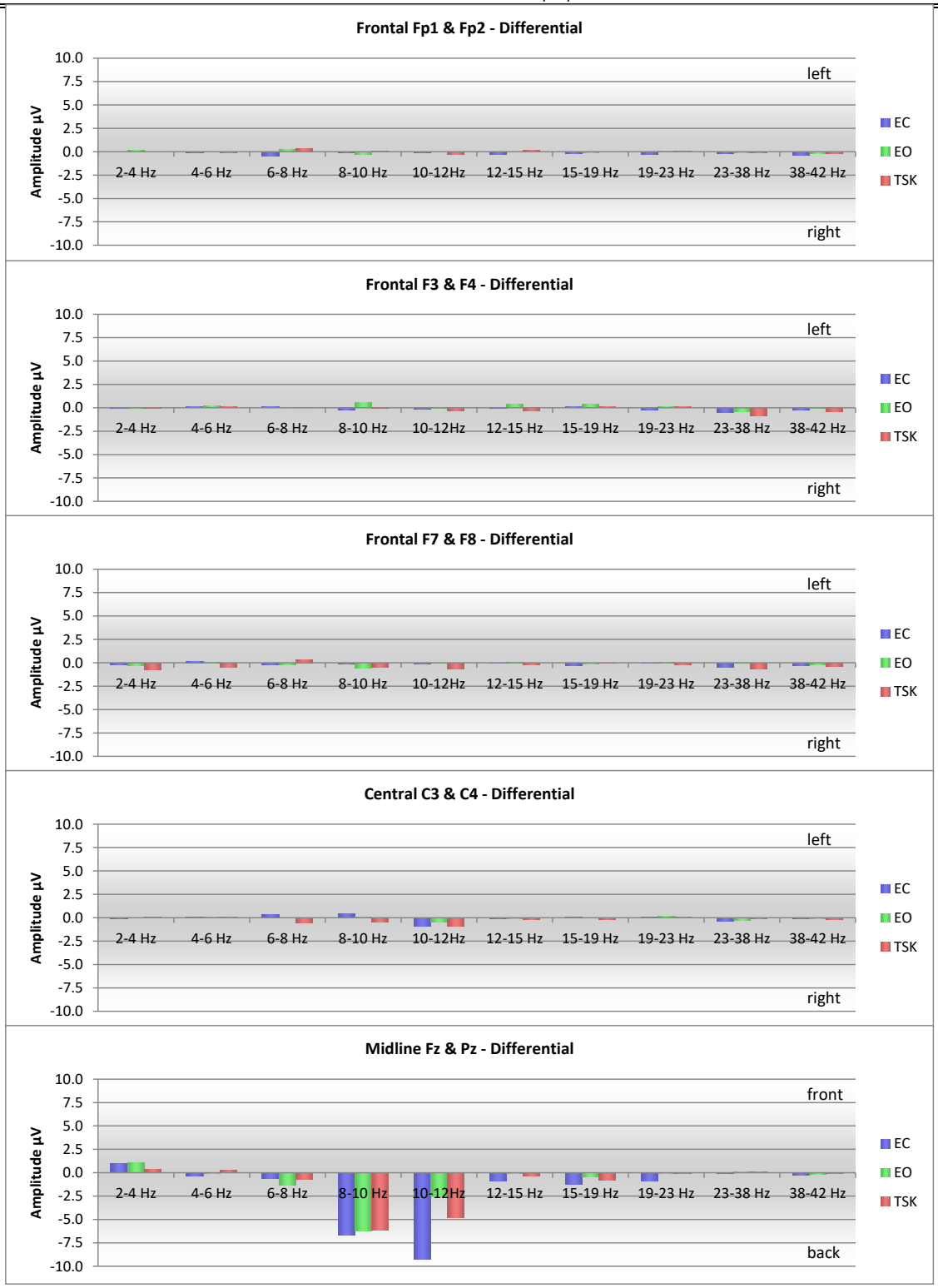


Maps

Images show relative value (percent of total EEG) for each frequency at all sites for eyes closed, open and task conditions. Higher percentages are shown in brighter colors.

Maps can be helpful in showing how activation patterns change from condition to condition or to identify sites which clearly differ from those around them.





Eyes Closed

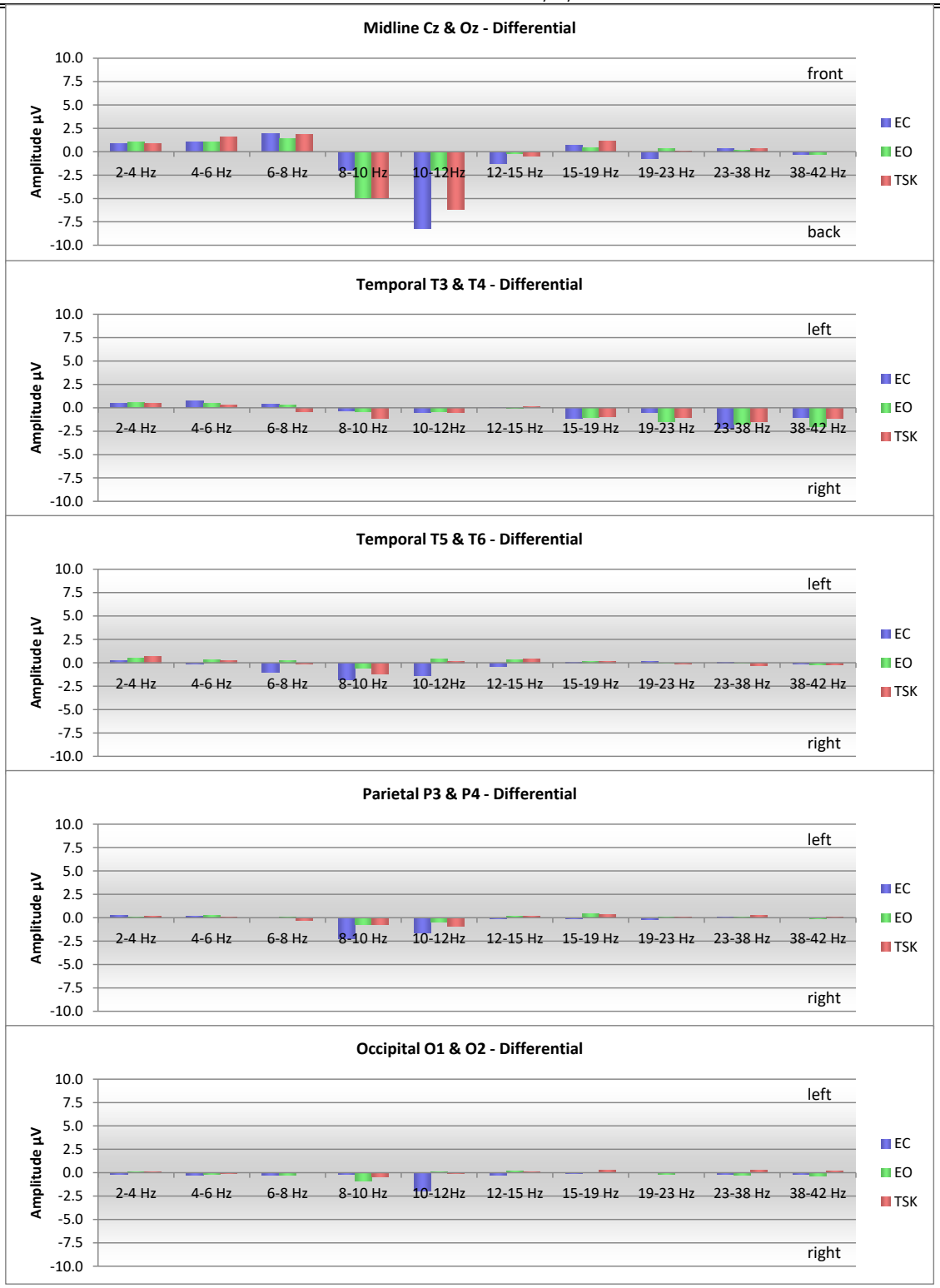
Eyes Open

Task

Symmetry

Histograms show amplitude difference by site and frequency. Small values indicate symmetry between the sites.

Large values suggest CH1 (large positive) or CH2 (large negative) is dominating.



Eyes Closed

Eyes Open

Task

Symmetry

Histograms show amplitude difference by site and frequency. Small values indicate symmetry between the sites.

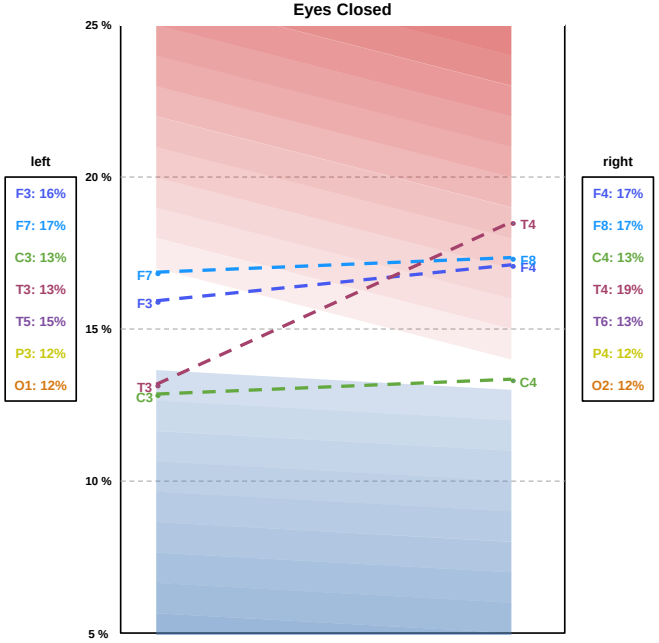
Large values suggest CH1 (large positive) or CH2 (large negative) is dominating.

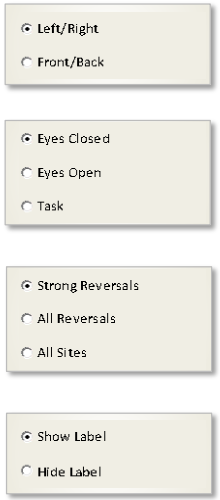
Name: Sample2 **Age:** 28

Trainer: **Date:** 11/15/2016

Beta (15-38 Hz)

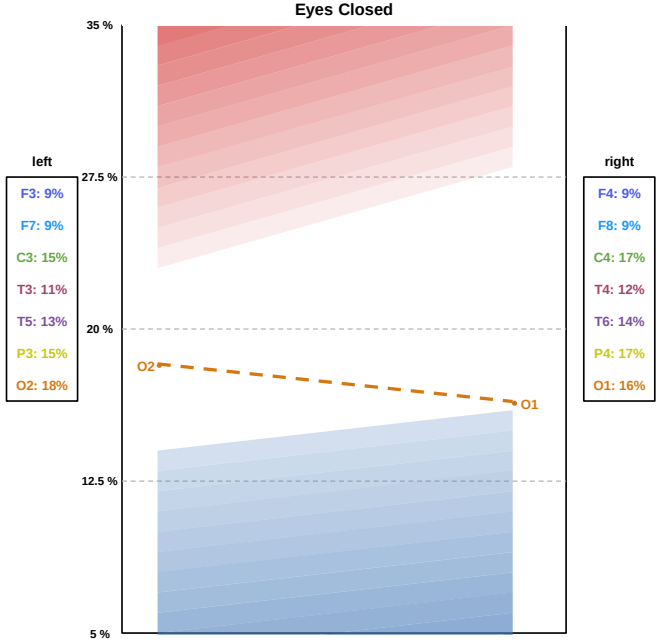
Eyes Closed





Alpha (10-12 Hz)

Eyes Closed



Reversals

This page graphically shows relationships between beta levels over left and right hemispheres and frontal and posterior sites (on the left side of the graph) and alpha levels in the same areas (right side of the graph). Beta is expected to be higher on left and frontal sites; alpha higher on right and posterior sites. Reversals of these relationship can correlate with issues of mood and cognition and are considered a primary training focus.

Each graph shows a shaded area for each measure to suggest whether, in addition to their symmetry, the values are higher or lower than expected. This information can guide training decisions on the most efficient way to resolve the reversals.

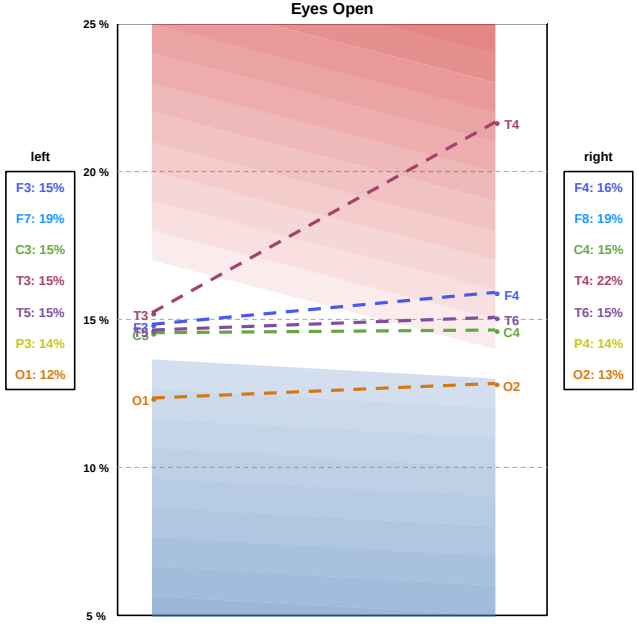
The page allows display of all sites or only those with a reversal, visualization of hemispheric or front/back values.

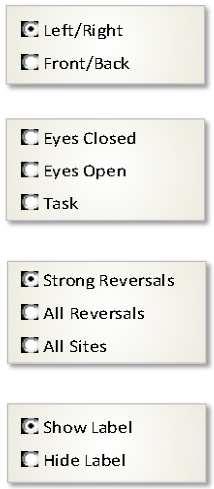
Name: Sample2 **Age:** 28

Trainer: **Date:** 11/15/2016

Beta (15-38 Hz)

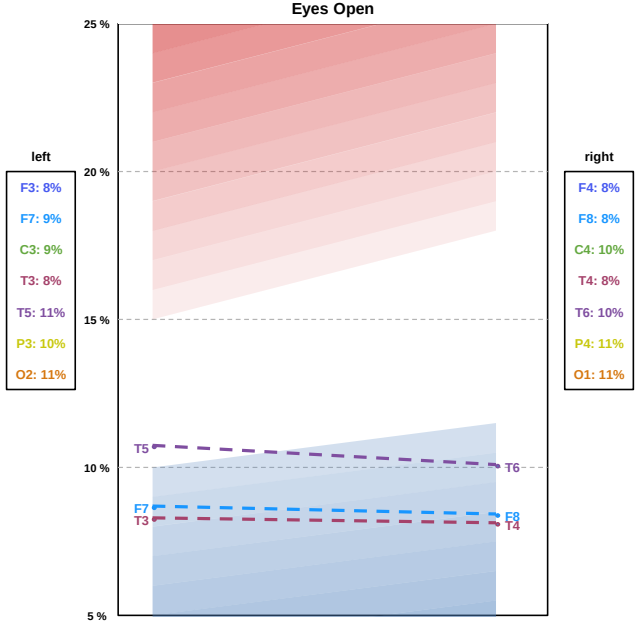
Eyes Open





Alpha (10-12 Hz)

Eyes Open



Reversals

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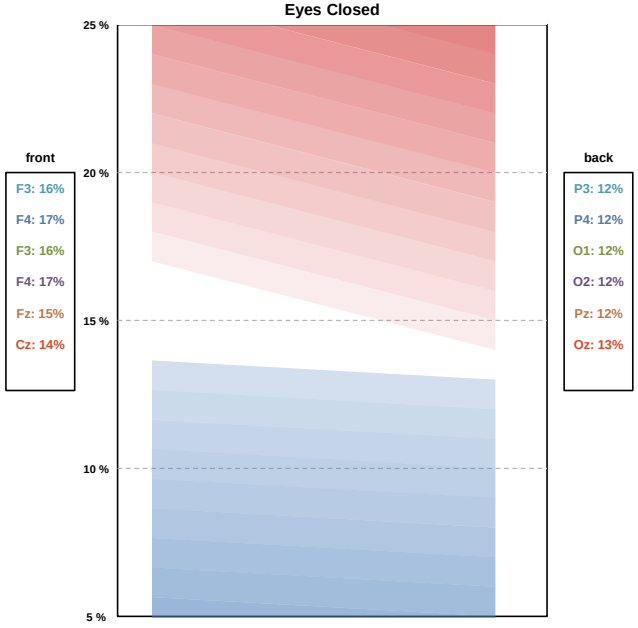
Name: Sample2 **Age:** 28

Trainer: **Date:** 11/15/2016

Beta (15-38 Hz)

Eyes Closed



Left/Right
Front/Back

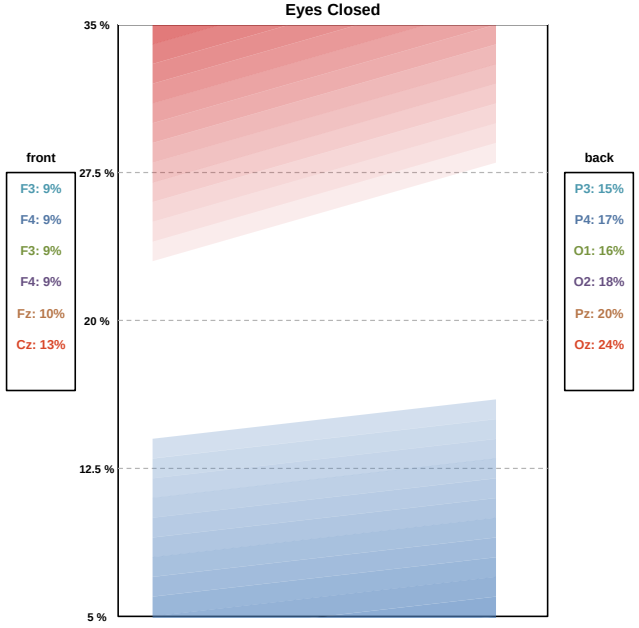
Eyes Closed
Eyes Open
Task

Strong Reversals
All Reversals
All Sites

Show Label
Hide Label

Alpha (10-12 Hz)

Eyes Closed



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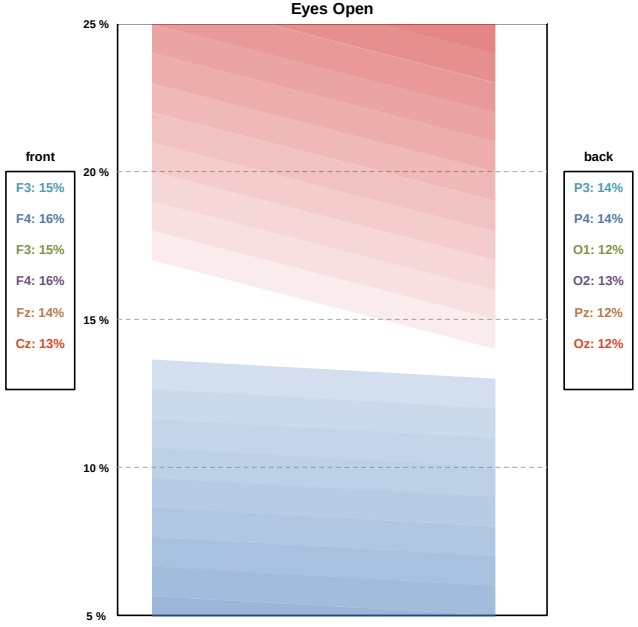
Name: Sample2 **Age:** 28

Trainer: **Date:** 11/15/2016

Beta (15-38 Hz)

Eyes Open



- ☐ Left/Right
- ☐ Front/Back

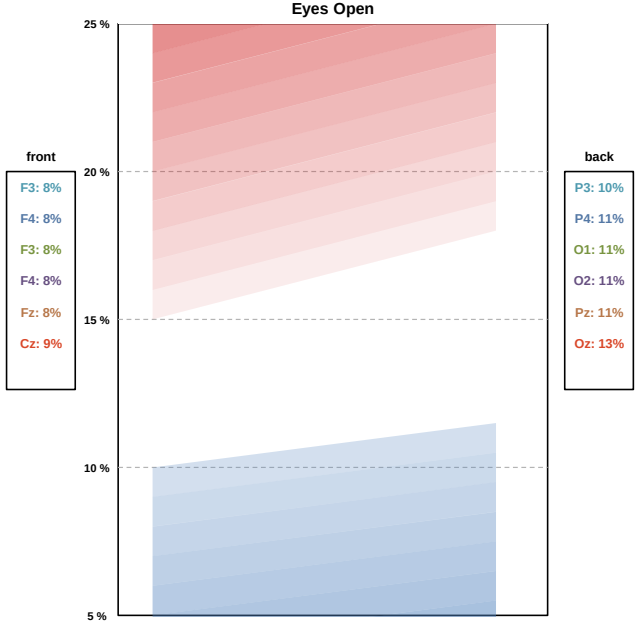
- ☐ Eyes Closed
- ☐ Eyes Open
- ☐ Task

- ◉ Strong Reversals
- ☐ All Reversals
- ☐ All Sites

- ◉ Show Label
- ☐ Hide Label

Alpha (10-12 Hz)

Eyes Open



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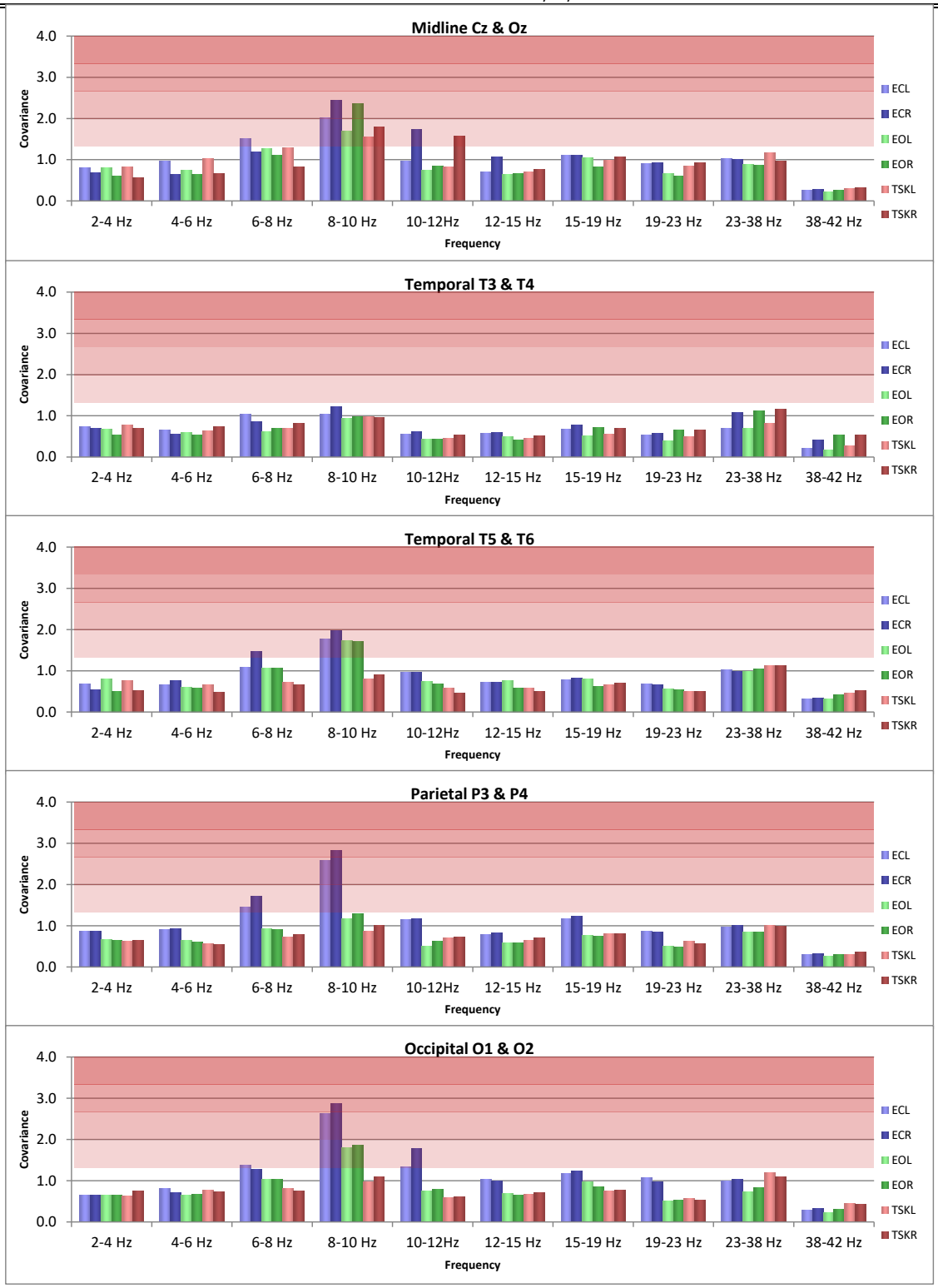
- [x] Eyes Closed Left/Front
- [x] Eyes Closed Right/Back
- [x] Eyes Open Left/Front
- [x] Eyes Open Right/Back
- [x] Task Left/Front
- [x] Task Right/Back

Variability

Histograms show Variance/Mean--a measure of the stability of the EEG signal by site and frequency. Values consistently below 1 may suggest excessive control; the higher values rise above 2 the greater the likelihood of diminished control or increased artifact.



- [x] Eyes Closed Left/Front
- [x] Eyes Closed Right/Back
- [x] Eyes Open Left/Front
- [x] Eyes Open Right/Back
- [x] Task Left/Front
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Variability

Histograms show Variance/Mean--a measure of the stability of the EEG signal by site and frequency. Values consistently below 1 may suggest excessive control; the higher values rise above 2 the greater the likelihood of diminished control or increased artifact.

Name: Sample2 **Age:** 28

Trainer: **Date:** 11/15/2016

English

Frequencies	
Delta (δ)	2-4 Hz
Theta (θ)	4-8 Hz
Alpha (α)	8-12 Hz
Low Beta (Loβ)	12-15 Hz
Beta (β)	15-23 Hz
High Beta (Hiβ)	23-38 Hz
Gamma (γ)	38-42 Hz

Head Amplitudes - Eyes Closed

Fp1	Fp2	F7	F3	Fz	F4	F8	T3	C3	Cz	C4	T4	T5	P3	Pz	P4	T6	O1	Oz	O2
6.5	6.6	5.6	5.2	5.4	5.2	5.8	4.1	4.6	4.5	4.7	3.6	4.3	4.8	4.4	4.6	4.0	4.3	3.6	4.5
12.9	13.5	11.4	14.4	13.7	14.2	11.5	9.7	11.4	14.0	11.0	8.6	11.5	14.3	14.7	14.2	12.6	12.7	11.1	13.3
12.6	12.8	10.4	12.9	14.4	13.3	10.7	11.6	18.4	19.7	18.9	12.4	18.7	24.8	30.3	28.6	21.9	32.8	29.9	34.9
3.1	3.3	2.9	3.4	3.6	3.5	3.0	2.7	3.3	3.6	3.4	2.7	3.4	4.3	4.5	4.4	3.8	4.9	4.9	5.2
6.6	7.1	6.0	7.8	7.9	7.9	6.2	5.2	7.2	10.1	7.0	6.8	7.5	9.4	10.0	9.7	7.4	10.6	10.2	10.6
4.7	4.9	4.1	4.2	3.9	4.7	4.6	2.7	3.2	4.1	3.6	4.9	4.0	3.8	3.9	3.8	4.0	3.8	3.8	4.0
1.4	1.8	1.5	1.0	1.0	1.3	1.9	0.9	1.1	1.2	1.2	2.0	1.5	1.3	1.3	1.4	1.6	1.4	1.5	1.5

Head Percentages - Eyes Closed

Fp1%	Fp2%	F7 %	F3 %	Fz %	F4 %	F8 %	T3 %	C3 %	Cz %	C4 %	T4 %	T5 %	P3 %	Pz %	P4 %	T6 %	O1 %	Oz %	O2 %
13.7	13.2	13.2	10.6	10.8	10.5	13.2	11.1	9.4	7.8	9.5	8.9	8.4	7.7	6.3	6.9	7.3	6.1	5.6	6.0
27.0	27.0	27.3	29.5	27.4	28.3	26.4	26.4	23.2	24.5	22.0	21.0	22.6	22.8	21.3	21.3	22.8	18.0	17.0	18.0
26.4	25.7	24.8	26.3	29.0	26.6	24.4	31.4	37.4	34.4	37.9	30.2	36.8	39.5	43.9	42.9	39.6	46.5	46.1	47.2
6.4	6.7	6.9	7.0	7.2	6.9	6.8	7.4	6.7	6.3	6.8	6.5	6.7	6.8	6.5	6.6	6.9	7.0	7.5	7.0
13.8	14.2	14.2	15.9	15.8	15.8	14.3	14.1	14.6	17.7	14.1	6.8	14.8	15.0	14.5	14.6	13.3	15.0	15.6	14.4
9.8	9.8	9.9	8.6	7.8	9.4	10.6	7.2	6.6	7.2	7.2	4.9	7.8	6.0	5.7	5.6	7.2	5.4	5.8	5.4
2.9	3.5	3.6	2.1	2.0	2.5	4.3	2.5	2.1	2.1	2.4	4.8	2.9	2.1	1.8	2.0	3.0	1.9	2.3	2.0

Name: Sample2 **Age:** 28

Trainer: **Date:** 11/15/2016

English

Frequencies	
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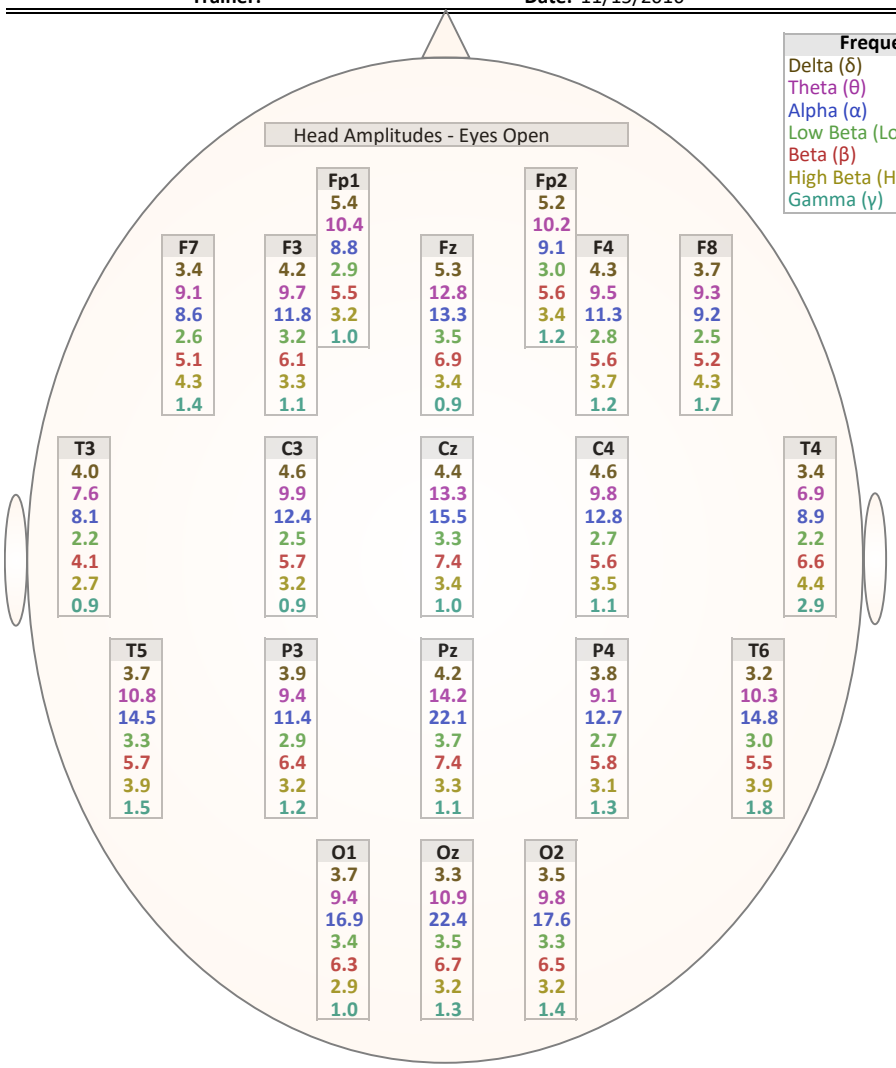

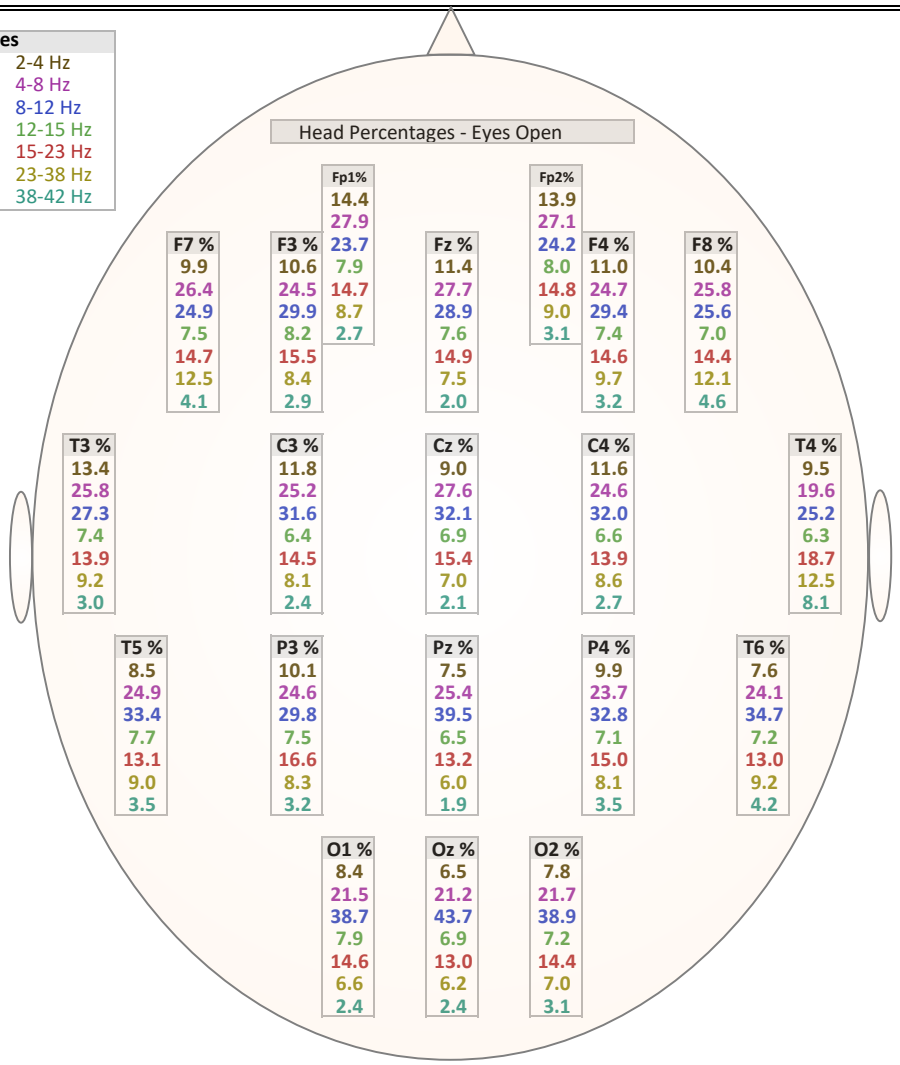

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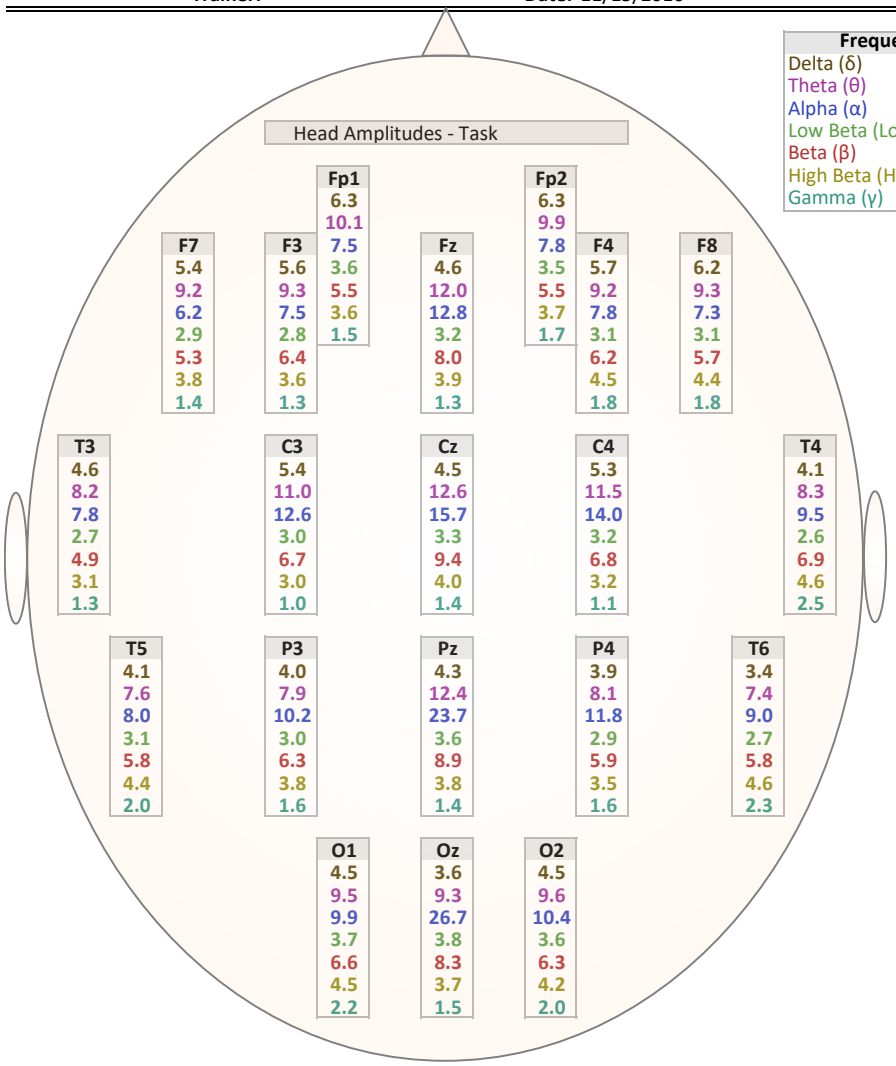

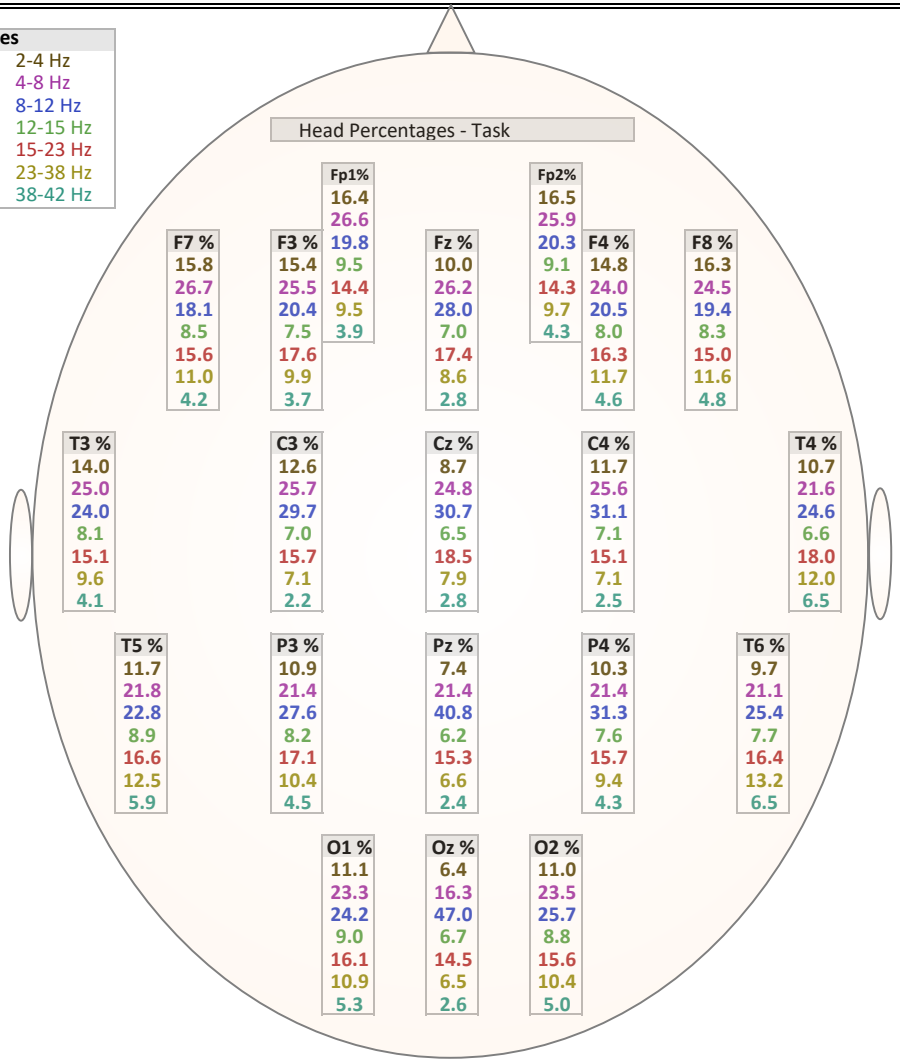

Name: Sample2 **Age:** 28

Trainer: **Date:** 11/15/2016

English

Position	Site	CND	Beta / Theta	SMR / Total	RATIOS: Alpha / Theta	RATIOS: High Alpha / Low Alpha	RATIOS: High Beta / Alpha	RATIOS: Low Beta	Peak Frequency: Alpha	Peak Frequency: Beta	Peak Frequency: 2-38 Hz
Frontal	Fp1	EC	0.28	-	1.03	0.46	0.49	1.52	8.98	20.80	7.11
		EO	0.34	-	0.91	0.46	0.48	1.10	8.84	18.34	6.73
		TSK	0.37	-	0.75	0.51	0.64	1.00	9.17	19.96	5.63
	Fp2	EC	0.28	-	1.01	0.47	0.50	1.47	8.95	21.38	6.97
		EO	0.36	-	0.96	0.44	0.48	1.13	8.87	18.51	7.03
		TSK	0.35	-	0.75	0.58	0.66	1.07	9.22	20.21	5.50
Frontal	F3	EC	0.29	-	0.92	0.49	0.43	1.23	8.84	19.11	7.60
		EO	0.49	-	1.36	0.35	0.36	1.03	8.72	18.13	8.23
		TSK	0.51	-	0.82	0.72	0.67	1.31	9.25	18.87	4.58
	F4	EC	0.30	-	0.96	0.49	0.48	1.37	8.90	20.53	7.52
		EO	0.42	-	1.32	0.39	0.43	1.32	8.73	18.81	8.14
		TSK	0.50	-	0.84	0.77	0.81	1.46	9.50	20.21	5.11
Frontal	F7	EC	0.30	-	0.95	0.57	0.53	1.42	8.88	20.78	6.36
		EO	0.34	-	0.97	0.53	0.68	1.66	8.80	21.92	8.38
		TSK	0.40	-	0.67	0.69	0.86	1.29	9.23	20.43	4.82
	F8	EC	0.31	-	0.94	0.58	0.58	1.56	9.02	21.04	6.83
		EO	0.35	-	1.05	0.49	0.63	1.71	8.90	21.67	7.96
		TSK	0.42	-	0.77	0.75	0.85	1.40	9.32	20.98	4.83
Central	C3	EC	0.44	-	1.64	0.65	0.24	0.97	9.17	17.83	8.70
		EO	0.36	6.4%	1.36	0.38	0.33	1.26	8.79	19.00	7.84
		TSK	0.42	-	1.28	0.38	0.31	1.02	9.03	17.90	7.64
	C4	EC	0.45	-	1.71	0.77	0.27	1.06	9.48	17.97	9.03
		EO	0.36	6.6%	1.38	0.44	0.36	1.30	8.96	19.47	7.66
		TSK	0.38	-	1.27	0.45	0.30	0.99	8.99	17.93	8.03
Midline	Fz	EC	0.34	-	1.09	0.51	0.36	1.07	9.06	19.20	7.91
		EO	0.33	-	1.11	0.39	0.33	0.98	8.65	18.77	7.74
		TSK	0.44	-	1.07	0.61	0.43	1.22	9.10	18.09	8.21
	Pz	EC	0.51	-	2.14	0.87	0.18	0.87	9.74	18.17	9.69
		EO	0.28	-	1.62	0.39	0.20	0.91	9.00	17.70	8.81
		TSK	0.54	-	1.97	0.69	0.22	1.06	9.48	17.60	9.31
Midline	Cz	EC	0.54	-	1.45	0.60	0.28	1.14	9.26	18.26	9.00
		EO	0.35	6.9%	1.23	0.41	0.28	1.01	8.63	18.32	8.36
		TSK	0.59	-	1.26	0.63	0.35	1.20	9.28	18.05	9.28
	Oz	EC	0.92	-	2.79	1.09	0.17	0.78	9.96	18.49	9.96
		EO	0.40	-	2.13	0.41	0.19	0.90	9.31	17.83	9.19
		TSK	0.89	-	2.86	0.84	0.20	0.97	9.78	17.99	9.70
Temporal	T3	EC	0.34	-	1.23	0.57	0.31	0.98	8.84	17.87	7.76
		EO	0.35	-	1.14	0.44	0.44	1.23	8.72	20.14	7.31
		TSK	0.46	-	1.03	0.50	0.53	1.18	9.06	18.68	7.09
	T4	EC	0.65	-	1.44	0.63	0.55	1.83	9.03	19.80	8.54
		EO	0.93	-	1.35	0.48	0.66	1.97	8.91	21.04	8.80
		TSK	0.72	-	1.17	0.48	0.66	1.81	9.16	20.14	8.46
Temporal	T5	EC	0.44	-	1.66	0.54	0.29	1.18	9.26	18.50	8.94
		EO	0.32	-	1.40	0.47	0.36	1.17	8.97	19.36	8.61
		TSK	0.71	-	1.02	0.76	0.81	1.41	9.43	21.23	7.15
	T6	EC	0.34	-	1.74	0.58	0.24	1.04	9.56	18.48	9.47
		EO	0.33	-	1.56	0.41	0.34	1.29	8.99	19.70	8.73
		TSK	0.68	-	1.13	0.58	0.78	1.70	9.26	21.64	7.39
Parietal	P3	EC	0.46	-	1.75	0.62	0.20	0.89	9.11	17.68	8.98
		EO	0.51	-	1.23	0.47	0.38	1.10	8.87	17.49	8.16
		TSK	0.73	-	1.32	0.77	0.51	1.26	9.49	18.57	8.23
	P4	EC	0.48	-	1.96	0.63	0.18	0.85	9.29	17.48	9.24
		EO	0.46	-	1.45	0.49	0.33	1.14	8.85	17.76	8.18
		TSK	0.61	-	1.42	0.82	0.43	1.24	9.52	18.58	8.41
Occipital	O1	EC	0.74	-	2.64	0.55	0.16	0.78	9.55	17.92	9.54
		EO	0.57	-	1.90	0.41	0.22	0.84	9.18	17.25	8.73
		TSK	0.61	-	1.03	0.68	0.65	1.21	9.47	18.54	7.13
	O2	EC	0.70	-	2.64	0.63	0.16	0.77	9.64	17.92	9.64
		EO	0.50	-	1.95	0.37	0.23	0.97	9.18	17.64	8.78
		TSK	0.57	-	1.13	0.65	0.57	1.18	9.74	18.88	7.54

Comparatives

Provides comparative data (ratios and peak frequencies) for all measured sites by condition (eyes closed, open and task). These are not "normative" but "descriptive". Numbers in blue show under-activation; numbers in red show an overactive brain. Black numbers are as expected.

Low peak frequencies suggest under-arousal; high peaks suggest over-arousal.

very high
in range
very low

Whole-Brain Training Plan for Sample2

Block 1 Training

Active	Reference	Protocol	State & Dura	Notes
F7 Fpz F8		nIR HEG (LIFE)	EO	EEG Sites: A1, A2, T3, T4, T6, O2, Pz, Oz, C4, Fp2, P4,
T3 T4	L(A1 A2)	FRE2C IN (19-38) REW (2-9)	EO	EEG Sites in brackets require Quick Insert Electrodes
(T6) (O2) Pz Oz	L(A1 A2)	FRE4C Squish (6-13)	EO	
T3 C4 (Fp2) P4	C(T4)	BAL4C RH Bipolar	EC/EO	

Block 2 Training

Active	Reference	Protocol	State & Dura	Notes
F7 Fpz F8		nIR HEG (LIFE)	EO	EEG Sites: A1, A2, P3, P4, O1, O2, F3, F4,
P3 P4 O1 O2	L(A1 A2)	CON4C MBC Down	EC/EO	
F3 F4 P3 P4	L(A1 A2)	CON4C Gamma Sync	EO	

Block 3 Training

Active	Reference	Protocol	State & Dura	Notes
F7 Fpz F8		nIR HEG (LIFE)	EO	EEG Sites: A1, A2, C3, C4,
C3 C4	L(A1 A2)	CON2C MBC Down	EC/EO	
C3 C4	I(A1 A2)	FRE2C Beta SMR	EO	
C3	C4	SMR%1C	EO	

Block 4 Training

Active	Reference	Protocol	State & Dura	Notes
F7 Fpz F8		nIR HEG (LIFE)	EO	EEG Sites: A1, A2, Fz, Pz, Cz, Oz, P3, P4, AFz,
Fz Pz Cz Oz	L(A1 A2)	CON4C Gamma Sync	EO	EEG Sites in brackets require Quick Insert Electrodes
Fz Cz	L(A1 A2)	FRE2C IN (2-6) REW (12-16)	EC/EO	
P3 P4 Pz (AFz)	L(A1 A2)	DMN4C Sync 3 Band	EC/EO	

Block 5 Training

Active	Reference	Protocol	State & Dura	Notes
P4 O1	L(A1 A2)	FRE2C IN (2-9) REW (9-13)	EC 10:00m	EEG Sites: A1, A2, P4, O1,
P4 or O1	A2 or A1	ALP1C Alpha Theta	EC 23:50m	

On this page you can select or deselect the 6 most highly ranked problem areas reported by the client for tracking.

Track	Rank	Problem Area	Category
	5	Can't quiet the mind	Stress
	5	Decreased sexual desire	Depression
	5	Cold hands/feet	Physical Disturbance
	4	Physically tense	Stress
	4	Frequent tension headaches	Stress
	4	Feels helpless or hopeless	Depression
	4	Trouble swallowing/lump in the throat	Depression
	4	Less interest or pleasure in usual activities	Depression
	4	Finds it harder than usual to do things	Depression
	4	Difficulty making decisions	Depression
	4	Low self esteem	Depression
	4	Self-critical thoughts	Depression
	4	History of feeling anxious	Anxiety
	4	Often worried/anxious	Anxiety
	4	Relatively constant anxiety	Anxiety
	4	Has a hard time reading for detail	Learning
	4	Rushes tasks, makes silly mistakes	Learning
	4	Difficulty sustaining intimate relationships	Social Difficulties
	4	Migraines	Physical Disturbance
	4	Oppositional/defiant	Control

Executive Summary Report for Sample2

1. Client Information

The following report regards Sample2, a 28 year old male (right handed) who presented for an assessment of brain activation patterns. The client grew up with his birth family and was the second of a total number of 4 siblings. He has received a graduate degree (Bachelor of information systems) and reported "Business analyst / IT-analyst" as current occupation. Both alcohol (1-4 times per month) as well as recreational drugs (1-4 times per month) are used by the client. There is a reported history of significant head injuries but no reported history of seizure activity.

1.1. Medications

The use of psycho-active medications changes the playing field for brain training. The addition of chemicals to the brain with the goal of adjusting neurotransmitter levels may change patterns in the assessment. It also may artificially inflate the levels of specific neurotransmitters in the brain. Training often produces such chemical changes as a natural result of how the brain is now operating. The result can be that training may actually appear to produce negative results as levels of a brain chemical that was previously in short supply become excessive due to the combined effect of training and medication.

Working with medicated clients should only be done after gathering information on the symptoms of over-medication with each of the drugs being taken. A page with a list of each medication and its indications of over-dosage, is created and referred to throughout the training. As symptoms appear, the client's physician can be notified and can reduce medication levels as the brain itself takes over.

1.1.1. Medications reported as being taken at the time of the recording are listed below:

Drugs listed: Light opiates (Kratom and Tramadol) once or twice per month

1.2. The client reported the following areas of significant difficulty:

57% Stress
51% Depression
40% Anxiety
40% Fear
38% Learning
37% Social Difficulties
37% Memory
33% Physical Disturbance
30% Thinking
22% Control
20% Creativity
18% Sleep Disturbance
17% Attention
16% Anger

2. Data Quality

No asymmetries were found and there are no excessive coherence values that would suggest muscle artifact.
Data is complete for all minimally required sites.
In summary, required data are present and appear to be relatively free of artifacts.

3. Assessment Findings

3.1. Brain Activation Patterns

The human brain can be considered to be a complex chaotic network, with trillions of signals passing through it at any moment as groups of neurons fire together. In resting states, large areas of the cortex are synchronized with older areas of the brain which produce slower rhythms. In task situations, local groups work independently with faster rhythms produced in the cortex. They also communicate with other groups, at various distances and locations to cooperate on tasks and share information.

The cortex, like most chaotic systems, tends to evolve certain "habits" in how it acts and responds to inputs. These "stable activation patterns" form the basis for much of how we act, feel, learn and perform. They can have an impact on stress responses and how our bodies operate as well. Brain training focuses on identifying—and changing—such habits when they are no longer effective. The goal of training is not necessarily to change brain patterns but to increase the range

of options, flexibility in shifting up and down the scale and capacity to sustain patterns long enough to perform tasks.
Results of training the middle-frequency patterns related to awareness and presence—the resting-ready observer state—can often be measured over the course of training. Peak frequency, blocking alpha at task, etc. may show stable changes from beginning to end of training. But coherence, frequency and balance training are not about removing a pattern but about improving access to additional ones. The client's steady-state may change little, but what he can do and in what situations can change significantly.
The following are the findings of this assessment in the areas of brain energy levels (Frequency Patterns), their distribution within the brain (Symmetry Patterns) and the ability of cortical areas to operate independently and to share information efficiently (Connectivity Patterns).
Where a brain pattern is found, the areas are identified, and possible correlations with mental/physical states are stated. The Whole-Brain Training Plan produced in this assessment is a recommended set of where and what to train to help break up identified "energy habits" and allow the brain to establish a new, more functional set.

3.2. Frequency Patterns

Cortical neurons fire at different speeds (frequencies), which represent different energy levels. Fast-dominant brains continue firing at working speeds, even when there is no work to do, wasting energy; slow-dominant brains are unable to activate to perform cortical tasks for very long. Frequency patterns show us the ability of the brain to idle when appropriate and to activate necessary areas when there is a task.

This brain shows no dominant frequency pattern.

3.3. Additional patterns

While this brain is dominated by no particular frequency range the following patterns were found which are commonly associated with a slow and a fastdominant brain:

3.3.1. Low overall peak frequency

Overall peak frequency is a measure of general brain speed. Low peaks indicate a dominance of slow frequencies. This is consistent with difficulties in maintaining external focus, difficulty with detail and language processing, potentially depressed, low energy affect. This brain shows slow peak frequencies at F7 and F8.

3.3.2. High Theta/Beta ratios

Theta/beta ratio measures the relationship between sub-conscious and conscious processes. High ratios show dominance of Theta (access to the subconscious) and can correlate with internal focus of awareness, image-based processing at the expense of language-based, intuitive thinking rather than logical/sequential and difficulty with details. This brain shows these patterns at all sites except T4, P3 and O1.

3.3.3. High beta peak frequency

Beta operates in several bands, including 12-15Hz, 15-19Hz, 19-23Hz and 23-38Hz. This fastest group is not generally functional; it is more related to hyper-vigilance and trauma-based fear. High beta peak frequencies indicate a greater share of hibeta. Fast beta peaks are shown at F3, F4, F7, F8, C4, Fz, T3, T4, T5 and T6.

3.3.4. Low Theta/Beta ratios

Theta/beta ratio measures the relationship between sub-conscious and conscious processes. Low ratios show dominance of Beta (conscious) and can correlate with stress, anxiety, sensitivity, thinking-over-feeling. This brain shows these patterns at Oz and T4.

3.4. Alpha Patterns

Alpha (8-12 or 9-13 Hz) is perhaps more accurately a dance between two different frequency bands. Slow alpha—8-10 Hz—is produced by one set of rhythm generating nuclei in the thalamus. When it dominates, it is an almost-hynogogic state. Fast alpha—10-12 Hz—is produced by other thalamic nuclei. It is more of an awareness state, presence in the moment, mental stillness.
Alpha is a crucial brain frequency, since it is consistent with the ability to idle, reducing energy demands in a resting-ready observer state. It can also be considered the bridge between conscious and sub-conscious minds, linking the thinking brain with the feeling/remembering brain. It allows the brain to perform routine tasks in auto-pilot mode, and in tasks over which the brain has mastery, synchronous alpha is related to peak performance "flow" or "zone" states.
Alpha is evaluated based on its location, its responsiveness, its peak and its synchrony.

3.4.1. Alpha Location

Alpha is expected be stronger in the rear of the brain than the front and stronger over the right hemisphere than the left. Disturbance of these relationships is identified in a training category called Alpha Asymmetry which is correlated with a number of issues of mood and executive function.

3.4.1.1. Asymmetric Alpha

This brain shows Alpha asymmetry patterns at F3/F4, F7/F8, T3/T4, T5/T6 and O2/O1. For further details see the Symmetry Patterns section below.

3.4.2. Alpha Responsiveness

Alpha is expected to dominate eyes-closed frequencies, especially in the rear of the head. With eyes open or at task,

alpha levels are expected to fall 30-50%. Failure to produce alpha with eyes closed is often consistent with anxiety, inability to "turn off" the mind, eventually with fatigue or low-energy states. Inability to block alpha in eyes open/task conditions often correlates with spacy, un-motivated, foggy mental processes and low energy. It can be seen as an emotional "anesthesia".

3.4.2.1. Poor Alpha Blocking

Poor alpha blocking is found at posterior site(s) Pz, Oz, T5, T6, P3, P4, O1 and O2. This is consistent with sensory processing issues, difficulty with math, may be clumsy.

Alpha blocking in this area is particularly weak at Pz, Oz, T6, O1 and O2, which suggests a gray-matter head injury. Neurons that may have been killed in such an injury are often replaced, but they may not link into activation patterns, leaving the area less functional as it is unable to shift out of idling state.

Poor alpha blocking is found at anterior site(s) F3, F4, C3, C4 and Cz. This is consistent with fogginess, low-energy and reduced motivation, a tendency to float through life and being cut off from emotions.

3.4.3. Alpha Peaks

Alpha peak frequency is a measure of the balance between slow and fast alpha frequencies. It is the alpha frequency at which amplitude is highest—an important central frequency of brain operation. For adults the peak is expected at 10 Hz, which represents a balance between fast and slow alpha. This frequency is correlated with "semantic memory", the ability to recall words, and with working memory.

Children of 8 may have an alpha peak around 8 Hz. The peak tends to speed up to around 10 by mid-teens. It is common to see a slowing of the alpha peak with aging. Peaks down in the 8-9 Hz range are very slow and are consistent with dementia. Alpha peaks in the rear of the brain may be higher than 10, which may correlate with improved working memory and improved performance on IQ tests. Frontal alpha peak frequency above 10 Hz often relate to anxiety and feeling driven.

3.4.3.1. LowAlpha Peak Frequency

Low alpha peaks are found at posterior Pz, T5, T6, P4, O1, O2 and P3. This is consistent with low energy levels, reduced working memory, sleep disturbances. Alpha peaks were especially low at P3. This is consistent with confusion, poor memory, mental and verbal slowness.

Low alpha peaks are found at anterior C3, C4, Cz, F3, F4, F7, F8, Fz and T3 and T4. This is consistent with low motivation, difficulty with word-finding, mental fogginess, reduced working memory. Alpha peaks were especially low at all sites except C3, C4 and Cz. This is consistent with confusion, poor memory, mental and verbal slowness.

3.4.4. Alpha Synchrony

Alpha is not produced in the cortex. Rhythm generating neurons in sub-cortical areas in the center of the brain are the unique sources of slow and fast alpha. They broadcast their signals all the time, and specific pools of neurons not currently activated—or de-synchronized—can resonate to their signals.

A single signal from a single source would be expected to be expressed in different areas consistently. If transmission is not interrupted, the pulse at one site should be synchronous with that at other sites. If it is not, there may be damage in a brain area that disrupts the transmission. Or the brain may be overly excited, with areas bursting randomly into cortical beta speeds when no task is present, disturbing synchrony.

This brain does not display low levels of alpha connectivity.

3.5. Midline

The sagittal line separates right and left hemispheres. Its frequency pattern may differ from them because a structure called the cingulate gyrus runs beneath it from the front to rear of the brain. This line passes over the anterior cingulate, the vertex and the default-mode network.

3.5.1. Default-Mode Network

This system is described as "what the brain does when it's not doing anything." It involves connections between anterior and posterior cingulate. It is activated when tasks are internally oriented—thinking about oneself, daydreaming, etc.—and de-activated when an external task is the focus. It is more found in open-focus awareness states and less in concentrated closed-focus awareness.

This brain shows poor connectivity between default-mode sites in alpha, theta and gamma frequencies. This is consistent with difficulty achieving stillness, limited self-awareness, perhaps fatigue.

3.6. Symmetry Patterns

Different geographical areas of the brain appear to work best with specific frequencies based on whether their work is integrative or processing. The left hemisphere produces a brighter, more positive view of experience—it approaches life. It handles routine operations and produces a more focused, detailed picture. The right hemisphere sees things more negatively, in terms of risks—tends toward avoidance. It is involved in responding to novel situations and produces more of a focus on context.

The rear of the brain receives and integrates sensory information from senses into a unified, constantly changing picture of experience which is sent to the prefrontal cortex. The front of the brain processes this material and organizes actions.

Asymmetries between front vs. rear and left vs. right sites for levels of integrative (alpha) and processing (beta) frequencies can correlate with a variety of mood and performance issues.

3.6.1. Left slower than right hemisphere

The left hemisphere is expected to be more activated than the right, but in this brain it is less activated. This may result in difficulty setting up and maintaining routines, lack of attention to outside experience. Language processing may be weak. Tendency toward low energy and depressive feelings. The following sites show this pattern: **F3/F4, F7/F8, C3/C4, T3/T4, T5/T6, P3/P4** *and* **O1/O2**.

3.6.2. Left hemisphere alpha dominance

This brain shows alpha greater on the left. This correlates with depressed mood, negative view of experience, perhaps difficulty with language processing. The following sites show this pattern: **F3/F4, F7/F8, T3/T4, T5/T6** *and* **O2/O1**.

3.7. Connectivity Patterns

Brain functions generally involve activation of specific areas, which operate independently and share information efficiently. Between functions brain areas should ideally shift into lower activation states so as not to waste energy. The ability to rest between (and during) tasks, to activate and function independently and to cooperate efficiently are determined by measures of connectivity: Coherence (the stability of a linkage) and phase (the timing of the linkage) in various frequencies. The combination of coherence and phase is known as Synchrony. Depending on the state and frequency, these values should be higher or lower.

3.7.1. Excessive synchrony

In working states, cortical areas produce faster beta frequencies which are expected to appear locally in the area performing a task. Unless two sites being measured are working together on a task, synchrony in fast frequencies should be low. When it is found to be high, it is first important to verify that there was not significant muscular tension present during the recording, which can create artifactual high fast-wave synchrony.

This brain shows high fast-wave synchrony at the following site pairs:

F3 *and* **F4** *which can be related to mental rigidity or obsessiveness, perhaps to anxiety.*

C3 *and* **C4** *which can be related to excessive physical awareness or rigidity, perhaps difficulties with fine-motor coordination. It is not uncommon to see physical anxiety (panic attacks, migraines, irritable bowel).*

P3 *and* **P4** *which can be related to either difficulty in processing or extreme sensitivity to touch, difficulty with math processing, problems with awareness of self in physical space.*

O1 *and* **O2** *which can be related to either difficulty in processing—or extreme sensitivity to—light and visual stimuli, sleep disturbances, headaches.*

3.7.2. Low synchrony

In resting states, cortical neurons can resonate with slow frequencies produced by rhythm generators in the sub-cortical areas.. Since these frequencies come from a single source, their appearance at various sites in the cortex is expected to be highly synchronized. Delta and theta frequencies are considered to be global, generally appearing all over the brain when they are dominant. Alpha frequencies are regional—appearing most clearly in the rear of the brain. Low synchrony levels can be related to injuries or physical disturbances in transmission, but they are often the result of overly excitable brains which burst into beta when there is no task to be done, thus blocking the resonance.

Low synchrony levels can relate to a brain which wastes energy, thus perhaps resulting in fatigue and sometimes a generalized slowing. They can also indicate inefficiencies in linkage between various sites in the brain, which can affect communication. This brain shows low slow-wave synchrony at **Cz/Oz**.

3.8. Sensory-Motor Rhythm Patterns

The frequency band above alpha (12-15 or 12-16Hz—often centered on 14 Hz) is considered to be the lowest cortically-generated frequency—low beta or beta1. However, when it is found in the sensory-motor cortex (the central strip running across the brain's front-back midpoint from side to side), it is called Sensory-Motor Rhythm (SMR).
The sensory-motor cortex bridges the separating line between the front (motor) and the rear of the brain (sensory), In this area, sensory and motor information can be linked. It may also be a major site of mirror neurons, which appear to be related to empathy. It is heavily connected to both sensory screening (thalamus) and motor screening (basal ganglia) brain systems.

This client's SMR is below the 10-12% target at **C3**, **C4** *and* **Cz** *with eyes open. The lower the levels at the sensory-motor sites, the more likely one or more of the following problems will be present;*

3.8.1. Sleep-onset insomnia

Bursts of SMR during sleep onset are called "sleep spindles". Low SMR levels are often related to sleep-onset insomnia, bruxism and restless sleep.

3.8.2. Physical hyperactivity

SMR has been shown to relate to physical relaxation and control. Poor handwriting, fidgetiness, impulsivity, distractibility and motor coordination issues are common symptoms.

Circadian rhythms and hormonal/endocrine functions have responded to training to increase SMR levels.

3.9. Sleep Issues

Although some long-standing sleep problems—especially when complicated by the use of medications to assist in sleep—can take longer to resolve, improved sleep is often an early response to training. Where possible, improving sleep should be a high priority for all training, since it can often help to resolve a high percentage of other issues as well.
Exploring sleep should be an important part of the initial interview with the client. If this was done carefully, this report will include paragraphs on each identified issue and it will tell whether or not the expected brain pattern is present.

The client has reported the following sleep-related pattern(s):

3.9.1. Non-Restorative Sleep

May result from the Frequent Awakening pattern. Most often correlates with either of the 2 following patterns. Slow-dominant brains may be so limited metabolically that they cannot sustain beta, so they are unable to rise into REM sleep, and psychological restoration doesn't happen. May sleep very deeply, awaken slowly and never feel rested. May wet the bed as a child.

Strong slow-alpha patterns which do not block with eyes open can also relate to Alpha-Delta sleep, where the brain is unable to achieve a Delta sleep state during which physical restoration happens. This may correlate with chronic pain or fatigue.

This brain is not dominated by the slow frequency spectrum. However, signs of strong slowing in alpha patterns were found.