Longitudinal qEEG and ERP Report (Cleaned) WAVi Wellness Basic, 3 sessions (May to July 2024)

Scope: single consolidated report of every machine-reported metric in the WAVi PDF, with careful language and empirical framing. No diagnosis. No treatment advice. No causal attribution.

Dataset and sessions

Source: WAVi Wellness Basic Report (WAVi Desktop 1.0.0.2), generated 7/8/2024 10:59 AM. Patient identifiers are not included in the source. Reported age: 35 years.

- Session 1: 5/13/2024 2:36 PM (baseline)
- Session 2: 6/5/2024 10:07 AM
- Session 3: 7/8/2024 10:15 AM

Self-report fields (HAM-A, PHQ-9) are blank across sessions. Subjective labels such as overstimulated, hyperaroused, anxious, or depressed are not supported by this dataset alone.

Key empirical findings

- **P300 delay metric shows a large change**: 344 ms → 316 ms → 264 ms. Because the device defines delay as the earliest qualifying central-parietal latency, this reflects a winner-based metric, not an average across sites.
- **P300 topography reorganizes**: the Session 3 earliest central-parietal latency is driven by right C4 (344 ms → 264 ms), while left C3 changes less (352 ms → 316 ms). At the same time, P300 amplitude shifts leftward by Session 3 (C3 and P3 amplitudes rise strongly) while C4 amplitude is lower than Session 1.
- **N100 latency drifts later** (92 ms → 96 ms → 100 ms) while P300 delay drifts earlier. This stage opposition is notable, but the N100 change is small in absolute size and needs replication to determine stability.
- **Behavioral timing is variable**: reaction time increases (246 ms → 293 ms), TMT-A varies (41 s → 33 s → 47 s), and TMT-B shows a large swing (44 s → 70 s → 38 s) with a Session 3 anomaly where TMT-B is faster than TMT-A.
- **Connectivity is frequency-specific**: eyes-closed alpha coherence increases strongly at Session 2 (149 of 171 pairs increase vs Session 1), with partial persistence at Session 3. Interhemispheric beta coherence decreases by Session 3 in both eyes-closed and task contexts.
- **Task alpha anatomy matters**: during the Flanker task, long-range frontal-to-posterior alpha connections decrease while temporal-involving alpha connections increase, even when the global alpha mean appears near-flat.

Reference figure: WAVi summary page (raw)

WAVi Wellness Basic Report

[redacted] — ID: N/A — Generated: 7/8/2024 10:59 AM

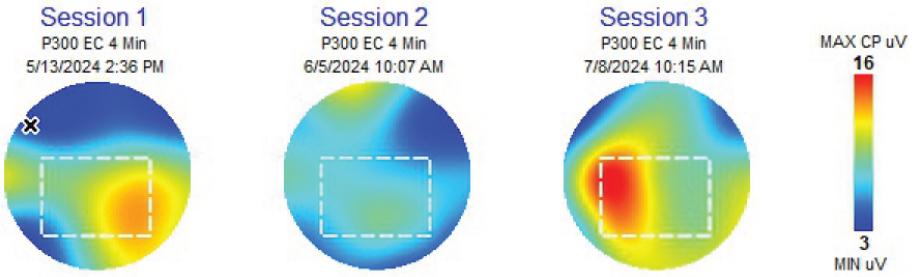
Session Number	Reason for Visit	Presenting Concerns	Change	Sleep	Since Meal	Age
Session 1 (5/13/2024)	Baseline	N/A	N/A	N/A	N/A	35 yrs
Session 2 (6/5/2024)	Followup 06.05.24	N/A	N/A	N/A	N/A	35 yrs
Session 3 (7/8/2024)	Followup 7.8.24	N/A	N/A	N/A	N/A	35 yrs

See Appendix for explanations of metrics shown on this page.

Assessment Scores	Session 1 (5/13/2024)	Session 2 (6/5/2024)	Session 3 (7/8/2024)	Target Range
Hamilton Anxiety Rating Scale (HAM-A)	N/A	N/A	N/A	≤ 17
Patient Health Questionnaire-9 (PHQ-9)	N/A	N/A	N/A	< 5
Performance Assessments				
Physical Reaction Time	246 (±37) ms	280 (±43) ms	293 (±40) ms	253–364 ms
Trail Making Test A	41 sec	33 sec	47 sec	38–64 sec
Trail Making Test B	44 sec	70 sec	38 sec	43–84 sec
Evoked Potentials				
Audio P300 Delay	344 ms	316 ms	264 ms	249–323 ms
Test/Retest Change	-	-28 ms	-80 ms	±11 ms
Audio P300 Voltage	13.8 µV	9.1 µV	15.8 µV	8–21 µV
Test/Retest Change	-	-5 µV	2 µV	±2 µV
State				
CZ Eyes Closed Theta/Beta (Power)	0.4	0.4	0.3	0.9–2.2
F3/F4 Eyes Closed Alpha (Power)	1.0	1.4	1.1	0.9–1.1
Peak Frequency (7.0–13.0 Hz)				
Frontal	8.5 Hz	8.5 Hz	9.0 Hz	9.0–11.0 Hz
Test/Retest Change	-	0.0 Hz	0.5 Hz	±0.2 Hz
Central-Parietal	10.5 Hz	9.2 Hz	9.0 Hz	9.0–11.0 Hz
Test/Retest Change	-	-1.2 Hz	-1.5 Hz	±0.2 Hz
Occipital	11.0 Hz	11.5 Hz	11.5 Hz	9.0–11.0 Hz
Test/Retest Change	-	0.5 Hz	0.5 Hz	±0.2 Hz

Maximum P300 Test Depth (µV) — Range: 240–500 ms — Topo scale referenced to Session 3
Dashed rectangle indicates Central-Parietal region used for evoked potential metrics

BLACK Xs INDICATE LOCATIONS WITH LESS THAN 20 CLEAN P300 RARE RESPONSES. TOPO COLORS AROUND Xs MAY BE AFFECTED.



Performance assessments

Physical reaction time (ms): 246 (±37) → 280 (±43) → 293 (±40). Target range: 253–364 ms.

Real-world framing: the mean increases by 47 ms from Session 1 to Session 3 (about five hundredths of a second). This is small in daily life but large enough to reflect a meaningful shift on computerized reaction-time tasks.

Trail Making Test A (seconds): 41 → 33 → 47. Target range: 38–64.

Trail Making Test B (seconds): 44 → 70 → 38. Target range: 43–84.

Interpretation constraints: the Session 3 pattern (TMT-B faster than TMT-A) is unusual and should be treated as a validity concern rather than a definitive executive improvement claim. A short interruption or task-specific issue can shift a sub-minute test, and replication under standardized conditions is required.

Auditory ERP: P300 and N100

Device definitions matter. P300 delay is the earliest qualifying central-parietal latency in the 240–499 ms window, subject to yield and amplitude thresholds. This means the delay metric can change because a different site becomes the earliest qualifying site.

Audio P300 delay (ms): 344 → 316 → 264. Target range: 249–323.

Audio P300 voltage (µV): 13.8 → 9.1 → 15.8. Target range: 8–21.

Central-parietal per-site P300 values shown in the report

Site	Session 1 (µV / ms)	Session 2 (µV / ms)	Session 3 (µV / ms)
C3	9.6 / 352	9.1 / 320	15.8 / 316
CZ	10.9 / 344	7.5 / 316	12.3 / 272
C4	11.9 / 344	7.0 / 316	7.1 / 264
P3	7.2 / 352	7.5 / 324	15.6 / 304
PZ	11.5 / 348	9.1 / 324	8.1 / 280
P4	13.8 / 352	9.0 / 324	13.6 / 284
Central-parietal average	10.7 / 348	8.2 / 320	11.6 / 288

Lateralization emphasis: the earliest latency at Session 3 comes from **C4** (264 ms), while the largest amplitude gains by Session 3 are **C3** and **P3** (both 15+ µV). This is a specific topographic redistribution rather than a uniform shift across all sites.

Reference figure: P300 Rare Comparison (raw)

P300 Rare Comparison

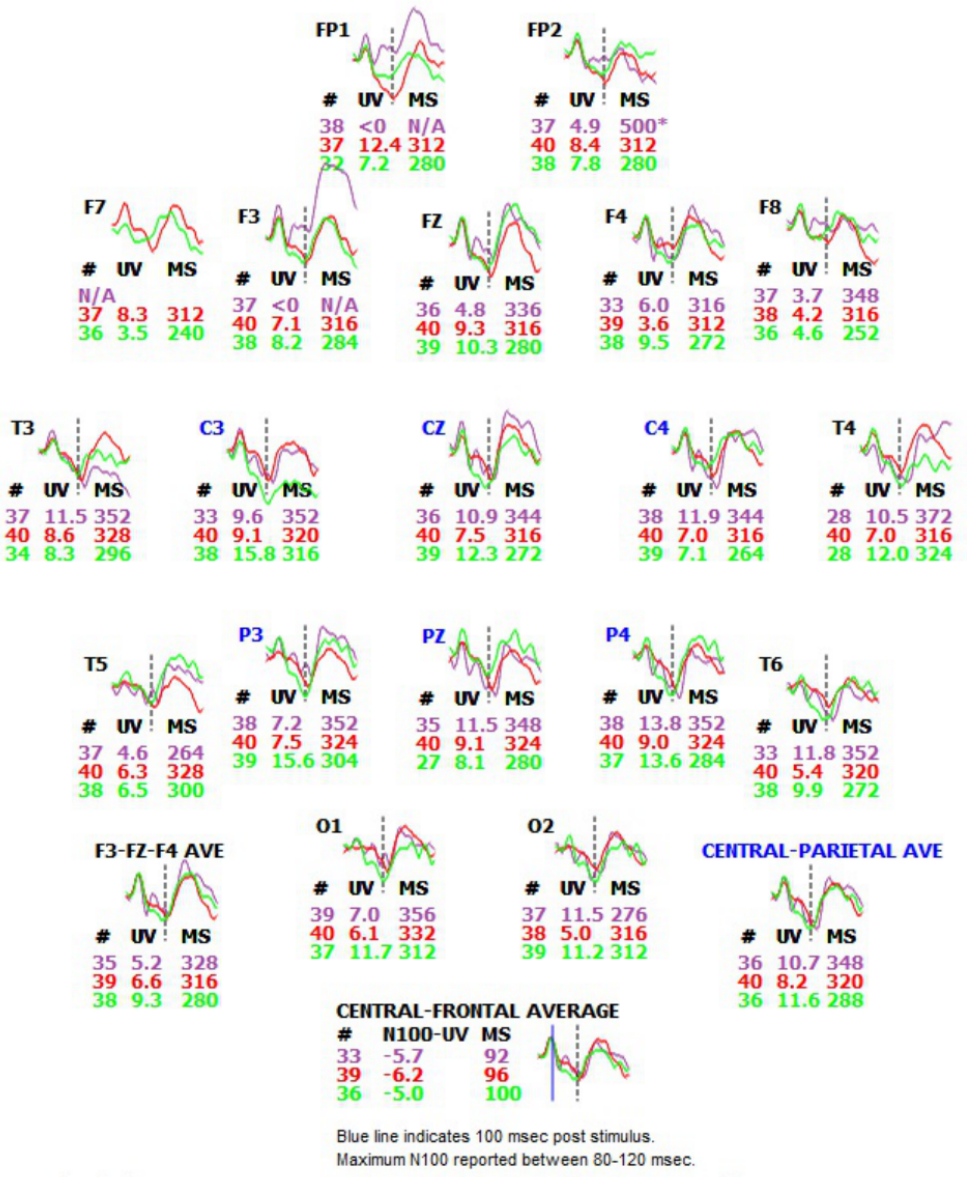
Rare responses are compared across sessions.

Yield Display Threshold: 20

Color Key

Session 1 (5/13/2024) Session 2 (6/5/2024) Session 3 (7/8/2024)

P300s typically occur between 240 and 450 msec.
Probable depth and latency of true P300 is indicated on 1st page of report.
 # Indicates yield. *Indicates possible artifact during late P300.



Blue line indicates 100 msec post stimulus.
Maximum N100 reported between 80-120 msec.

Largest depths between 240-500 msec are reported, except for N100. Dotted lines at 300 msec post stimulus.

N100 (central-frontal average): amplitude –5.7 → –6.2 → –5.0 µV; latency 92 → 96 → 100 ms.

Interpretation: the N100 latency change is small (8 ms across the series) and could reflect state or signal-to-noise variability. Its monotonic direction is still worth tracking because it moves opposite to the P300 delay metric.

Background EEG metrics

CZ theta/beta ratio (eyes closed): 0.4 → 0.4 → 0.3. Device reference: 0.9–2.2.

F3/F4 alpha ratio (eyes closed): 1.0 → 1.4 → 1.1. Target: 0.9–1.1.

Peak alpha frequency (7–13 Hz):

- Frontal: 8.5 Hz → 8.5 Hz → 9.0 Hz (target 9.0–11.0)
- Central-parietal: 10.5 Hz → 9.2 Hz → 9.0 Hz (target 9.0–11.0)
- Occipital: 11.0 Hz → 11.5 Hz → 11.5 Hz (target 9.0–11.0)

Band magnitudes (peak-to-peak μV)

Across both eyes-closed (P300 baseline) and Flanker contexts, theta, alpha, and beta magnitudes decrease from Session 1 to Session 2, then stabilize or decrease slightly again at Session 3. Lower magnitude does not directly imply lower functional engagement because amplitude is sensitive to artifact, contact quality, and state.

Coherence summary (171 channel pairs)

Eyes-closed P300 context: alpha coherence increases strongly at Session 2, with partial persistence at Session 3. Beta coherence trends downward by Session 3. Flanker context: theta coherence increases (with baseline missing values in some pairs), while beta coherence again trends downward by Session 3.

Anatomical decomposition worth carrying forward

Flanker alpha coherence shows two concurrent patterns: long-range frontal-to-posterior connections decrease while temporal-involving connections increase. This can reflect adaptive task gating or a compensatory reweighting, and it should not be collapsed into a single global average.

Measurement recommendations to reduce ambiguity

- Standardize acquisition conditions (time of day, sleep, caffeine, medication timing, electrode prep, and environment).
- Complete the embedded self-report fields each session so state effects can be evaluated rather than guessed.
- Record brief test notes for Trail Making (interruptions, distractions, motor issues) and consider alternate forms.
- Add 2–3 additional sessions to estimate within-person variability before treating any swing as durable.
- If intervention effects are a goal of monitoring, record timing from intervention to qEEG collection.