Daniel Hertz C Wave

Neurophysiological Test Report

05.05.2025

Dr. Dan Melby, MD

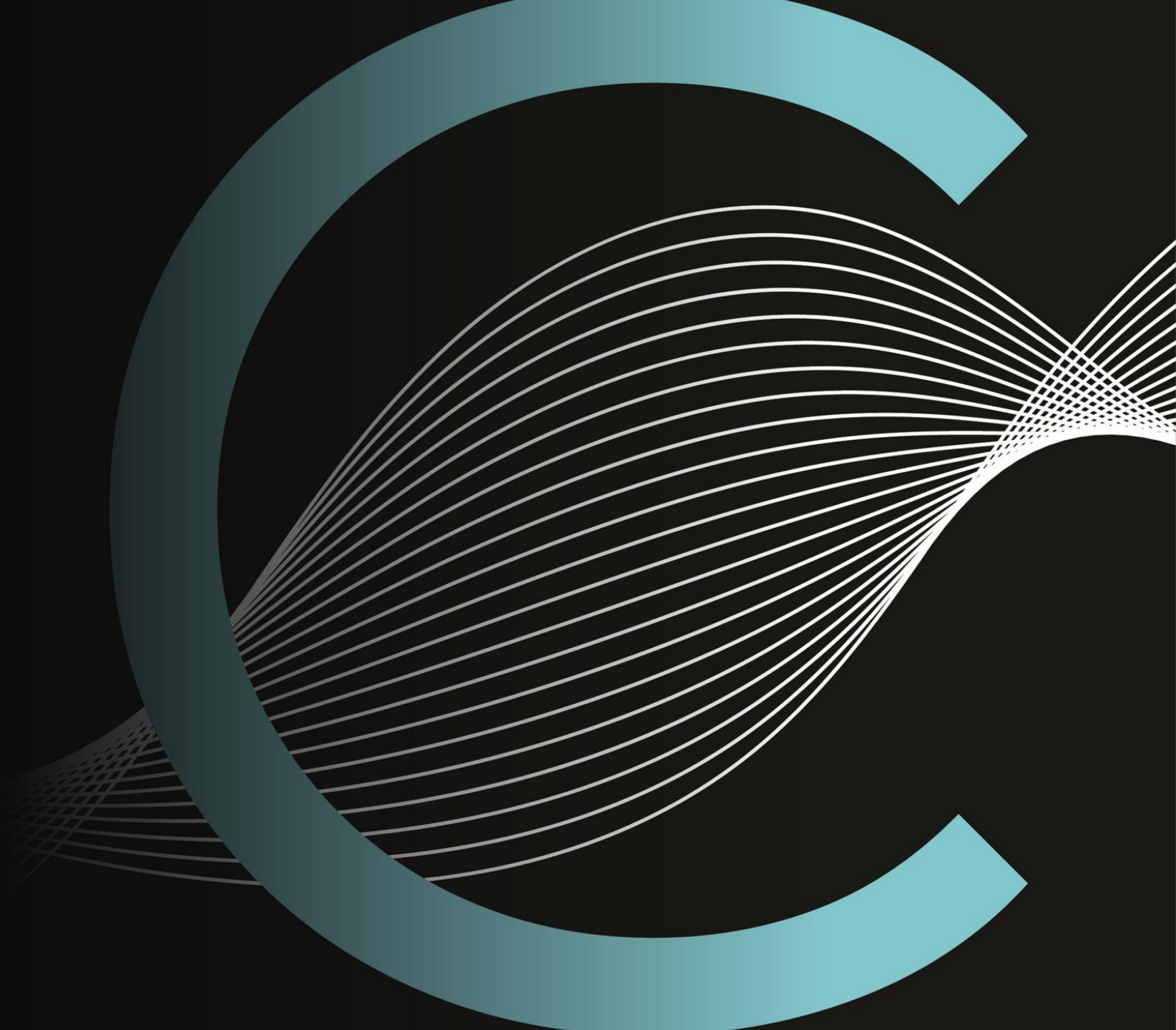
Dr. Manh Nguyen, MD

Dr. Paolo Cioni, MD

Dr. Giuseppe Vitale, MD

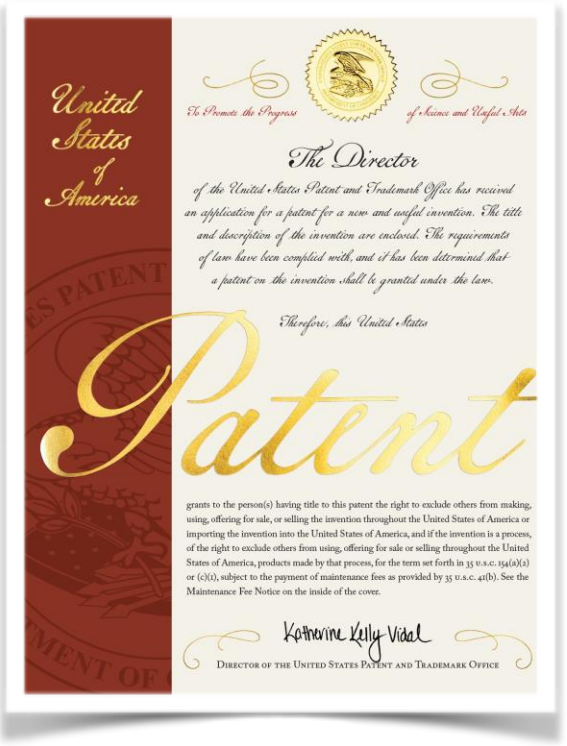
Franco Grossi

Mark Levinson



Introduction

In January 2024, the United States Patent and Trademark Office granted a patent for the technology C Wave to Mark Levinson, assigned to Daniel Hertz SA. This patent describes technology intended to improve digital audio reproduction with implications for human physiological and neurological health. The patent includes preliminary data from a pilot study conducted on a small sample size which demonstrated uniformly consistent results. The purpose of this report is to further investigate the negative effects of digital audio on listeners physiology and to evaluate the effectiveness of C Wave technology in alleviating these effects.



1. Summary by Dr. Daniel Melby, MD

I am writing on behalf of the multisite clinical group that recently completed the C Wave Human Physiology Study, a 21-subject investigation led by four physicians across the United States and Europe. Using quantitative electroencephalography (qEEG), heart-rate-variability (HRV) analysis, and Electro-Acupuncture-according-to-Voll (EAV) testing, we compared standard PCM digital audio with identical tracks processed by C Wave technology. Across all three modalities, conventional digital playback provoked measurable autonomic stress—elevated high-beta cortical activity, reduced HRV, and sub-optimal EAV organ scores—whereas C Wave consistently reversed or surpassed baseline readings, restoring listeners to physiologic "rest-and-digest" ranges and, in many cases, conferring additional benefit beyond silence.

Why should this matter? Decades of peer-reviewed research show that the same stress markers improved by C Wave are powerful predictors of health outcomes. In the seminal Framingham data set, a one-standard-deviation drop in HRV increased all-cause mortality by 47 % over four years (Tsuji, Circulation. 1994 Aug;90(2):878-83), while the ARIC cohort confirmed that low HRV doubles coronary-heart-disease risk in middle-aged adults (Dekker, Circulation. 2000 Sep 12;102(11):1239-44). Meta-analytic work further links diminished HRV to dysregulated limbic–prefrontal circuits and chronic sympathetic activation, offering a mechanistic bridge between everyday stress and cardiovascular, metabolic, and mental-health disorders (Thayer, Neuroscience and Biobehavioral Reviews 2012 36:747-756).

Put simply, audio that passively raises HRV and lowers cortical hyper-arousal would represent a non-pharmacologic wellness intervention aligned with Apple's expanding health-technology strategy.

Although EAV remains an emerging tool, its clinical relevance is building. In our study, C Wave shifted every subject's meridian readings from "minor imbalance" with digital audio to physiologic norm with C wave in all subjects tested—suggesting reduced organ-level stress that is directionally consistent with its HRV and qEEG benefits. While these EAV data are exploratory, they strengthen the narrative that C Wave modulates a common autonomic-stress network already tied to adverse outcomes in top-tier medical journals.

C Wave offers a rare convergence of engineering innovation and potential clinically relevant benefit that aligns with companies with a mission to enrich lives through technology and wanting to be at the forefront of acoustically mediated digital wellness.

Daniel P. Melby, MD
Medical Director, Electrophysiology Laboratory
Minneapolis Heart Institute – Abbott Northwestern Hospital

2. Background

Since digital audio was introduced in the 1970s, many individuals, including musicians and audio professionals, have raised concerns about its perceptual and physiological effects. Although advancements in resolution and encoding formats have improved digital fidelity, these technologies are often perceived as lacking the warmth and fatigue-free characteristics of pure analog sound. Research by Mark Levinson suggests that the non-continuous waveform inherent in PCM digital audio may be responsible for these effects by triggering a physiological stress response. To address this, C Wave was developed. It employs a specialized reverb algorithm that emulates the continuous waveform of pure analog audio, aiming to reduce the perceptual discomfort and physiological stress associated with standard digital playback.

3. Methods

A total of 27 subjects were evaluated using three independent physiological testing methodologies, each designed to assess the effects of auditory exposure under controlled conditions. Each subject was assessed under three listening conditions: (1) no auditory stimulus (baseline), (2) standard digital audio playback (PCM format), and (3) C Wave–processed audio.

Quantitative Electroencephalography (qEEG):

This method evaluated cortical electrical activity by recording and analyzing brainwave patterns. Changes in absolute and relative power, coherence, and asymmetry were documented in response to the auditory conditions.

Heart Rate Variability (HRV) Analysis:

HRV metrics were recorded to assess autonomic nervous system function, focusing on sympathetic and parasympathetic balance indicators. Measurements were taken during each auditory exposure to evaluate stress responses.

Electroacupuncture According to Voll (EAV):

EAV was used to detect physiological changes in organ system function by measuring electrical conductance at acupoints associated with the central nervous system, kidneys, liver, and heart. This method enables rapid assessment of stress-related changes in organ function.

4. Results

The tests showed consistent outcomes: digital audio induced stress responses, while C Wave processing mitigated or reversed these effects. With C Wave processed audio exposure, qEEG indicated reduced hyperarousal; HRV showed increased resilience and recovery; EAV measurements returned to optimal ranges with C Wave processing. C Wave was also associated with improvements relative to silence, suggesting a therapeutic benefit.

5. Conclusion

C Wave technology enhances digital audio's compatibility with human physiology. The results across all three testing modalities support its beneficial effects on health.

6. Study Objectives and Hypothesis

To assess physiological responses in human subjects under three distinct auditory conditions: no audio, standard digital audio playback, and C Wave-processed audio. The study aims to determine whether exposure to C Wave technology elicits favorable changes in physiological health markers. Hypothesis: Exposure to C Wave-processed audio will produce statistically significant improvements in physiological parameters relative to both standard digital audio and silence (no audio exposure). If measurements are made with three different testing protocols based on different methodologies, by different doctors in different locations, and achieve consistent, repeatable and documented results, C Wave will be reasonably proven to have beneficial effects on human physiology.

7. Evaluation of Human Physiological Responses to Digital Audio and C Wave Technology

The testing evaluated human responses under three distinct listening conditions:

Baseline: No music playback.

Digital Audio: Standard PCM digital audio track playback.

C Wave Audio: Playback of the same track processed with C Wave technology.

Three separate testing protocols were conducted by four medical doctors across three different locations. Results were consistent: compared to baseline measurements, listening to typical digital audio resulted in negative physiological responses, whereas the C Wave audio consistently demonstrated positive physiological outcomes. The uniformity of these results suggests a broad physiological benefit associated with C Wave, likely attributable to direct effects on the autonomic nervous system rather than subjective bias.

Quantitative Electroencephalogram (QEEG) testing revealed measurable brain changes induced by digital audio signals. Heart Rate Variability (HRV) analysis indicated that digital audio playback generated measurable physiological stress, reflected by altered autonomic signaling between the brain and heart. Notably, playback using C Wave technology mitigated this stress response. Furthermore, Electroacupuncture According to Voll (EAV) assessments identified detrimental impacts of digital audio on the central nervous system, kidneys, liver, and heart, effects that were likewise alleviated by C Wave processing.

Additional findings demonstrated that listening to C Wave-enhanced audio provided physiological improvements compared to the absence of audio, suggesting a potential therapeutic benefit of the C Wave technology.

8. Study Protocols

8.1 Quantitative Electroencephalography (QEEG)

Quantitative Electroencephalography (QEEG), often referred to as "brain mapping," is a non-invasive neurophysiological technique that analyzes the brain's electrical activity through mathematical processing of EEG data. By employing methods such as Fourier or wavelet analysis, QEEG provides detailed insights into brain wave patterns, enabling assessment of neural function and connectivity. QEEG has demonstrated high test–retest reliability, with correlation coefficients exceeding 0.9 for recordings as brief as 40 seconds. This stability persists over extended periods, underscoring its robustness as a diagnostic tool. Furthermore, QEEG exhibits significant predictive validity, correlating with clinical measures and outcomes on neuropsychological assessments. Its content validity is supported by associations with independent modalities, including MRI, PET, and SPECT imaging (May 2010, Journal of Neurotherapy 14(2):122-152).

Quantitative metrics obtained from QEEG, particularly through power spectral analyses, are directly related to behavioral and cognitive brain functions. Comparing an individual's QEEG data to a normative database representing the general population (known as the QEEG normative database) enhances its diagnostic value in clinical practice. This comparison facilitates the identification and monitoring of neurological and psychiatric conditions such as ADHD, schizophrenia, major depression, obsessive-compulsive disorder, dementia, and bipolar disorders. Studies have reported diagnostic sensitivities ranging from 72% to 93% and specificities between 75% and 88% for these clinical applications (J Med Life. 2020 Jan-Mar;13(1):8-15).

In research contexts, QEEG significantly contributes to exploring the human brain connectome by mapping functional and anatomical neural networks. This integrative approach, combining neurophysiological data with imaging techniques, enhances the understanding of brain organization and its alterations in various disorders. Additionally, QEEG is utilized in biomedical research to assess the effects of clinical treatments before and after their application.

8.2 Heart Rate Variability (HRV)

Heart rate variability (HRV) is the difference in time between each heartbeat. For example, even if your heart is beating 60 times a minute, it is not ticking regularly like a quartz watch's second hand. The gap between your heart beats might be 1.01 seconds, then 0.98 seconds, and so on. This variability is a sign of a healthy, adaptable autonomic nervous system. Generally, the higher the heart rate (for example, from stress), the lower the variation between successive beats (lower HRV). This is due to less time between beats, less room for variability. HRV reflects how well your body shifts between the *sympathetic* ("fight or flight") and *parasympathetic* ("rest and digest") nervous system — how resilient you are.

A higher heart rate variability (HRV) usually means your body is better at adapting, relaxing, and handling stress. It is associated with a stronger parasympathetic (vagal) tone. This allows you to come down from sympathetic activation (stress) efficiently — both mentally and physically. This rapid recovery is key in long term health. A high HRV is also associated with lower inflammation and cardiovascular risks, lower anxiety and depression (*Thayer et al., 2010. Neuroscience & Biobehavioral Reviews, 33(8), 1326–1335. 2010*) and lower mortality (*Tsuji et al., 1994; Circulation; Dekker et al., 2000; NEJM*)

A lower HRV means your body stays in stress mode longer—more wear and tear, more cortisol, more chronic inflammation, stress, heart disease, anxiety, and depression.

Baseline HRV is dependent on an individual's characteristics such as age, sex, fitness level. It is also affected by the time of day, breathing pattern, medication, caffeine, alcohol, food, sleep quality, and body position (*Shaffer & Ginsberg, 2017, Frontiers in Public Health, 5, 258*)

8.3 Electroacupuncture According to Voll (EAV)

Electroacupuncture According to Voll (EAV), also known as Electro-Dermal Screening (EDS), is a diagnostic technique utilized primarily within complementary medicine to detect physiological imbalances. EAV evaluates the body's energetic condition through non-invasive measurement of electrical conductance at specific acupuncture points ("acupoints") situated along meridians—pathways theorized to connect with various organs and physiological systems.

For C Wave testing specifically, the value of EAV lies in its capacity to rapidly detect physiological changes. During EAV testing, the patient holds a negative electrode while the practitioner applies a stylus to designated acupoints, introducing a mild electrical current to measure electrical conductivity. Increased or decreased conductance at these points indicates whether associated organs are balanced, stressed, or weakened.

Modern EAV systems include specialized software, generating detailed reports and potential supportive protocols. Recent research supports the clinical utility of EAV. For example, a randomized controlled trial demonstrated correlations between electrodermal activity at specific acupuncture points and individualized ribavirin dosing for long COVID patients, suggesting a potential role for personalized treatment planning (Djumaeva, N., et al., 2024, Future Integrative Medicine).

Additional research has shown that acupuncture points exhibit unique electrical properties compared to surrounding tissue, further supporting the scientific basis for electrodermal assessments (OBM Integrative and Complementary Medicine, 2019, Vol. 4, Issue 1.).

Historical Background

Dr. Reinhard Voll, a German physician and engineer, developed EAV in the late 1940s. Following extensive clinical research in Germany, EAV has gained acceptance among approximately 25,000 healthcare providers across Europe. Its use is also expanding in the United States, particularly within integrative medical practices.

9. Contributors

This study utilized three distinct testing protocols conducted by four physicians across three international locations:

Project Supervisor:

Dr. Daniel Melby, MD Cardiac Electrophysiology - Medical Director, Electrophysiology Lab Minneapolis Heart Institute.

Quantitative Electroencephalography (QEEG) Brain Mapping

Conducted by: Dr. Paolo Cioni, Florence, Italy

Heart Rate Variability (HRV) Analysis

Conducted by: Dr. Manh Nguyen, Seattle, Washington, USA

Electroacupuncture According to Voll (EAV)

Conducted by: Dr. Giuseppe Vitale and Franco Grossi (Osteopath), Venice, Italy

9.1 Dr. Daniel Melby, MD - project supervisor

Dr. Daniel Melby is Medical Director of the Electrophysiology Lab, with a special interest in and experience performing over 4000 complex catheter ablations for the treatment of fast heart rhythms, particularly atrial fibrillation. He is a recognized expert, speaking nationally on the latest ablation techniques and technology, and has participated in many national research studies of new ablation technology.

"I very much enjoy caring for people, and helping them on a road to good health. Freedom from the burden of atrial fibrillation and other heart rhythm problems is my goal."

Allina Health Minneapolis Heart Institute – Minneapolis is recognized nationally as one of the world leading providers in cardiovascular care. Our Heart Rhythm Management team offers a full range of services including diagnostics and evaluation of atrial fibrillation, atrial flutter, and other abnormal heart rhythms, as well as pacemakers and other heart rhythm devices. Our Heart Rhythm Management team is a one of the largest in Minnesota performing seeing more than 15,000 patients per year, and performing more than 2,000 hearth rhythm procedures per year. Our goal is to offer patients the highest quality, individualized care while advancing research nationally.

Dr. Daniel Melby
Minneapolis, MN
Cardiac Electrophysiology
Project Supervisor

Credentials

- MD

Specialties

- Cardiovascular disease
- Clinical cardiac electrophysiology

Professional interests

- Electrophysiology
- Arrhythmias, cardiac
- Atrial Fibrillation
- Atrial Flutter
- Ventricular tachycardia
- Catheter Ablation
- Syncope
- Pacemaker
- Cardiac Resynchronization Therapy
- Implantable cardioverter defibrillator (ICD)

Board-certified specialties

- Cardiovascular disease
- Clinical cardiac electrophysiology

Awards and recognitions

- 2009 - 2017, 2019, 2020, 2023, 2024 Mpls St. Paul Magazine Top Doctors

Educational institutions

- University of Minnesota Medical School

Internships

- Dartmouth-Hitchcock Medical Center

Residencies

- Dartmouth-Hitchcock Medical Center

Fellowships

- University of Minnesota
- Fellow American College of Cardiology
- Fellow Heart Rhythm Society

Hospital affiliations

- Abbott Northwestern Hospital

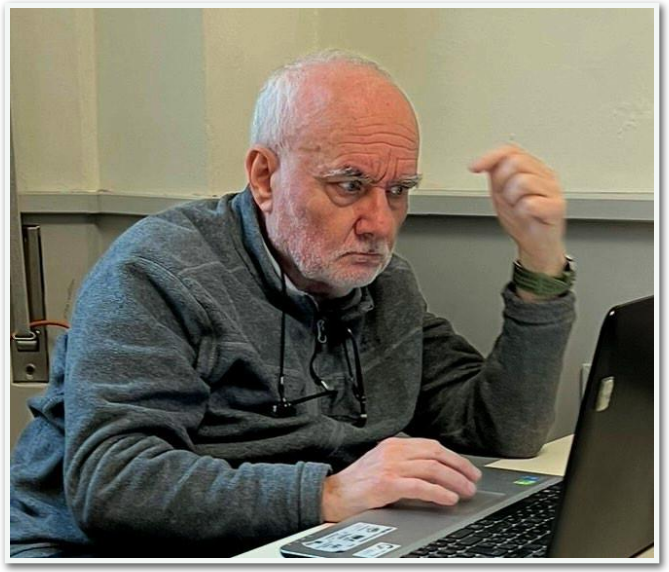
Refer to Appendix A for more details

9.2 Dr. Paolo Cioni is an expert in Psychiatry in Florence, Italy.

He graduated in Medicine and Surgery at the University of Florence in 1976, obtaining a specialization in Psychiatry in 1980.

Former Head of the Mental Health Service at the ASL Florence and Psychiatrist at the Diagnostic and Care Psychiatric Service for the Tuscany Region, today he practices as a freelancer at the Dr. Cioni Private Practice in Florence.

He is the author or co-author of multiple volumes and essays, including "Ideology of Enjoyment" (2015), "Paranoia between Leadership and Failure" (2014) and "Neuroslaves" (2009). Dr. Cioni mainly deals with the treatment of disorders such as anxiety, depression, psychosis, attention deficit disorder (ADHD) and emotional disorders.



Dr. Paolo Cioni, Florence, Italy
Quantitative Electroencephalography (QEEG) Brain Mapping

Read more

It is also one of the few in its field to perform QEEG (Quantitative Electroencephalogram) and ERT (Event Potential) assessments, as well as employing non-pharmacological therapies such as biofeedback and neurofeedback.

Expert in

- Forensic Expert Report
- Forensic Psychiatry
- Bipolar Disorder
- Depression
- Obsessive-compulsive Disorder
- Anxiety

Refer to Appendix B for more details

9.3 Manh Nguyen, MD

Dr. Manh Nguyen is a board-certified anesthesiologist and pain medicine specialist, serving the greater Seattle metropolitan area.

In addition to decades of clinical expertise, he has a foundation in designing reproducible, protocol-driven bench and clinical research—spanning molecular biology, neuromodulation, and pain medicine.

Beyond his medical practice, Dr. Nguyen has dedicated nearly a decade to advancing professional resilience and clinician health at Valley Medical Center, including serving as Co-Chair of the Clinician Well-Being Committee. A lifelong violinist, he continues to play today for personal relaxation and balance.

Building on his dual passion for well-being and music, Dr. Nguyen is committed to demonstrating, through science, that music can serve as medicine.

Manh Nguyen, MD

PROFESSIONAL

- Anesthesia & Interventional Pain Medicine, 2000 - present - Valley Anesthesia Associates, Valley Medical Center, Renton, WA

EDUCATION

- Pain Medicine Fellowship - University of Washington Medical Center, Seattle, WA 1999 - 2000
- Anesthesiology Residency - University of Washington Medical Center Seattle, WA 1996 - 1999
- General Surgery Internship - University of Iowa Hospitals and Clinics Iowa City, IA 1995 - 1996
- Doctor of Medicine - University of Iowa, College of Medicine Iowa City, IA 1991 - 1995
- Bachelor of Arts - Biology - University of Iowa City, IA 1987 - 1991

CERTIFICATION

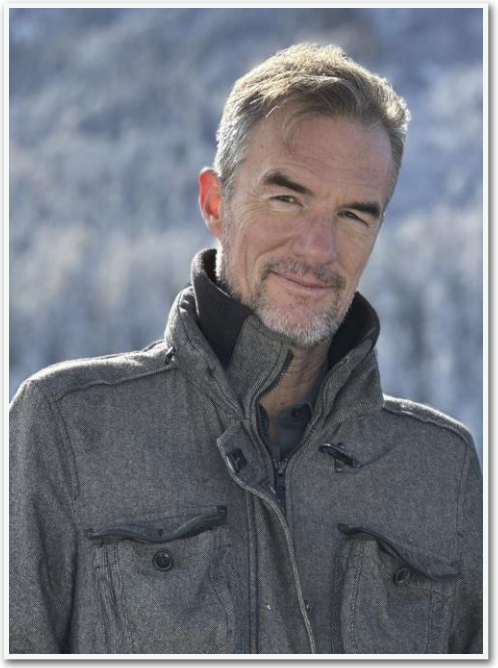
- Board Certified Anesthesiology
- American Board of Anesthesiology - 2000 - present
- Subspeciality Certificate in Pain Medicine
- American Board of Anesthesiology - 2001 - present

RESEARCH

- Gender Differences in Morphine Analgesia - Abstract. Western Anesthesia Research Conference - University of Washington, Department of Anesthesia, 1999
- Effect of Intrathecal Adrenergic, Serotonergic; and Opioid Antagonists on Inhibition of the Tail Flick Reflex by Spinal Cord Stimulation in Rats - Abstract. AANS and World Congress on Pain - University of Iowa, Department of Neurological Surgery, 1995
- Protocol far Isolating Yeast Artificial Chromosome DNA with Radio-Labeled DNA Probe - University of Iowa, Department of Biology, 1991

9.4 Franco Grossi

Born in Venice, Italy on 11/06/1969
1994 -2002 - studied SHO HO TSU with Prof. Maurizio Boato
Studied with Prof. Walter Kunnen, a Belgian scientist expert in electromagnetism and founder of Archibo Biologica, from whom he learned the use of the Lecher antenna and the techniques of the biosphere manipulation.
1999 - passed the exam for the professional register of the Italian Shiatsu Federation.
1999 and 2002 - studied Visceral Osteopathy techniques with Dr. A.J. de Koning of the Upledger Institute. Became a Colon Hydro operator at the I-ACT. Studied Chinese massage techniques from Master Chen Liansheng.
1996 - 2 000 - Studied with Saul Goodman in Philadelphia USA at the ISS international School of Shiatsu and completed the Teachers Training.
2002 - professionally qualified by the Italian Veneto Region as an Operator of Oriental Massage Techniques-
Opened the School of Shiatsu and oriental techniques of Tian Di rebalancing in Padua.
2010 - teaching Functional Rebalancing, a method to rebalance the psycho-physical state.
2010 – present - research in various fields of wellness and therapeutic techniques.



Franco Grossi

9.5 Dr. Giuseppe Vitale, MD

Dr. Vitale, MD is highly trained in Chinese acupuncture and natural medicine, practicing in the Veneto region of Italy. He is one of the few that are highly competent in both Western medicine and Chinese natural medicine. His deep understanding of acupuncture enables him to use the Avatar EAV test system with a high level of accuracy and precision.

Full CV and Pic coming

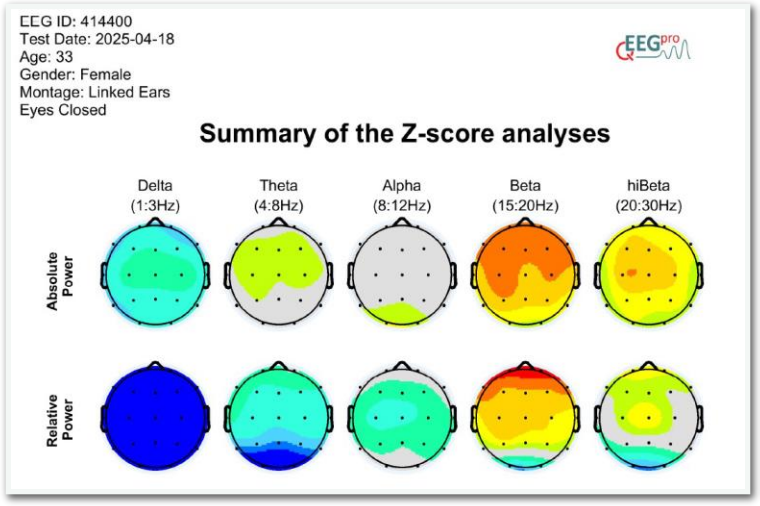
10. Observation and Results

10.1 QEEG testing of C Wave - General Observation

The report compares QEEG data from Tab 1 (baseline), Tab 2 (standard digital audio), and Tab 3 (C wave audio), focusing on changes in amplitude (absolute and relative power), asymmetry, and coherence.

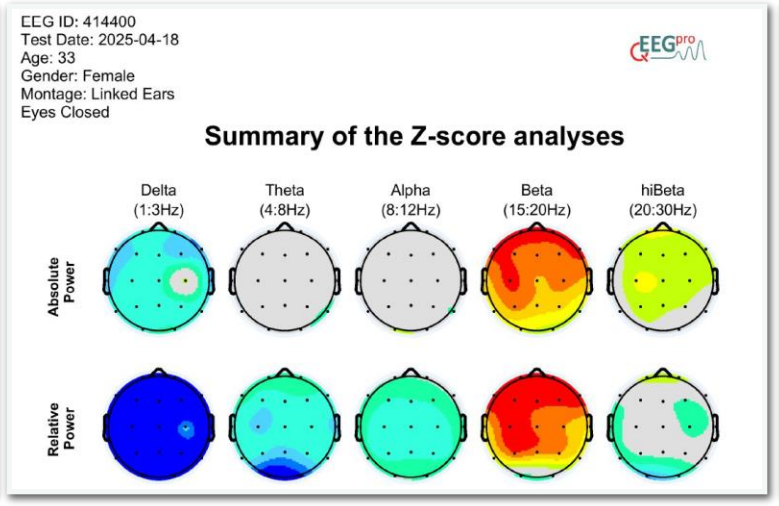
Changes are described in terms of increases or decreases in power (uV^2) and relative power (%), as well as shifts in asymmetry and coherence patterns. Preliminary results on amplitude (absolute and relative power)

Tab. 1



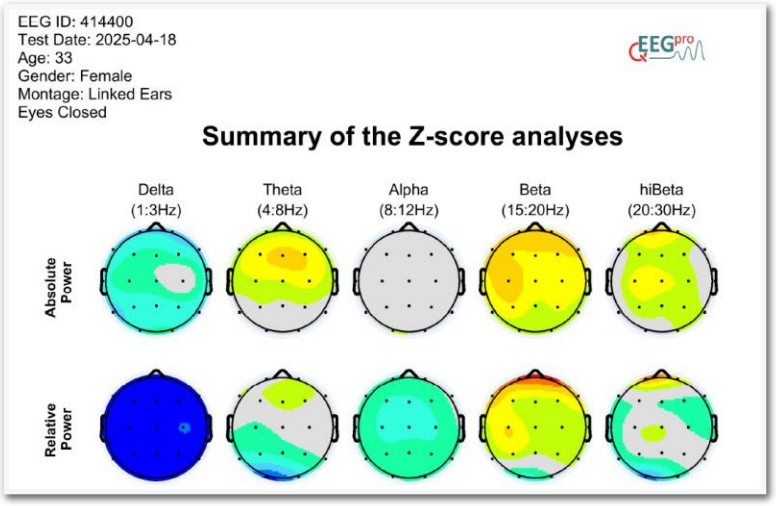
Neutral: Baseline (no music)

Tab. 2



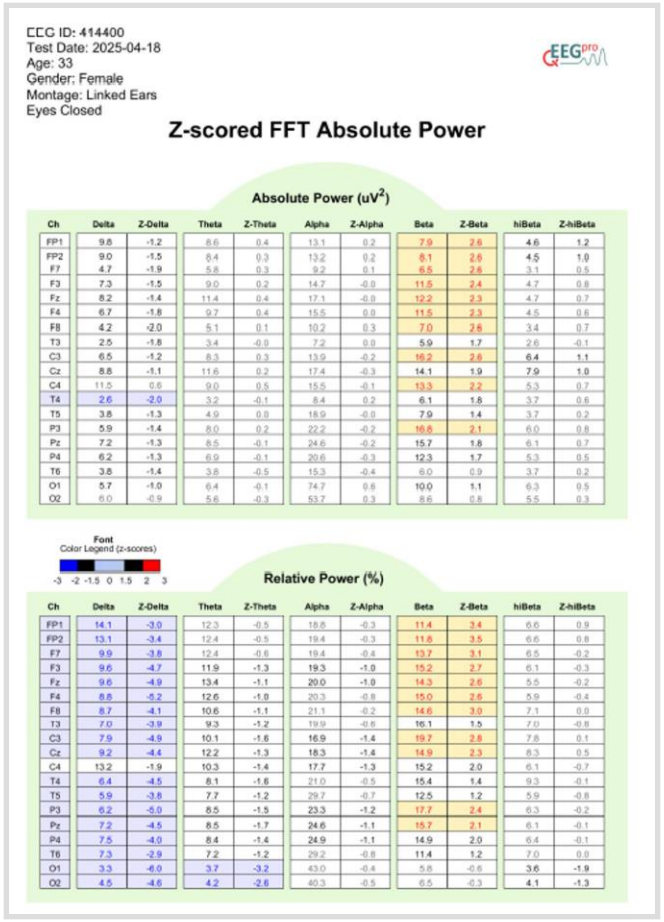
Listening to a PCM digital recording of music with no C Wave processing.

Tab. 3



Listening to the same PCM digital recording of music with C Wave processing

There are high values in the beta band in 1 [Tab. 4] and 2 [Tab. 5] (red numbers = over 2 standard deviations higher than expected). Beta and high beta are related to hyper-arousal, anxiety. There is a trend to normalization in 3 [Tab. 6](strong decrease in arousal, anxiety). This is clear in brainmaps.


EEG ID: 414400
Test Date: 2025-04-18
Age: 33
Gender: Female
Montage: Linked Ears
Eyes Closed

Z-scored FFT Absolute Power

Absolute Power (uV^2)

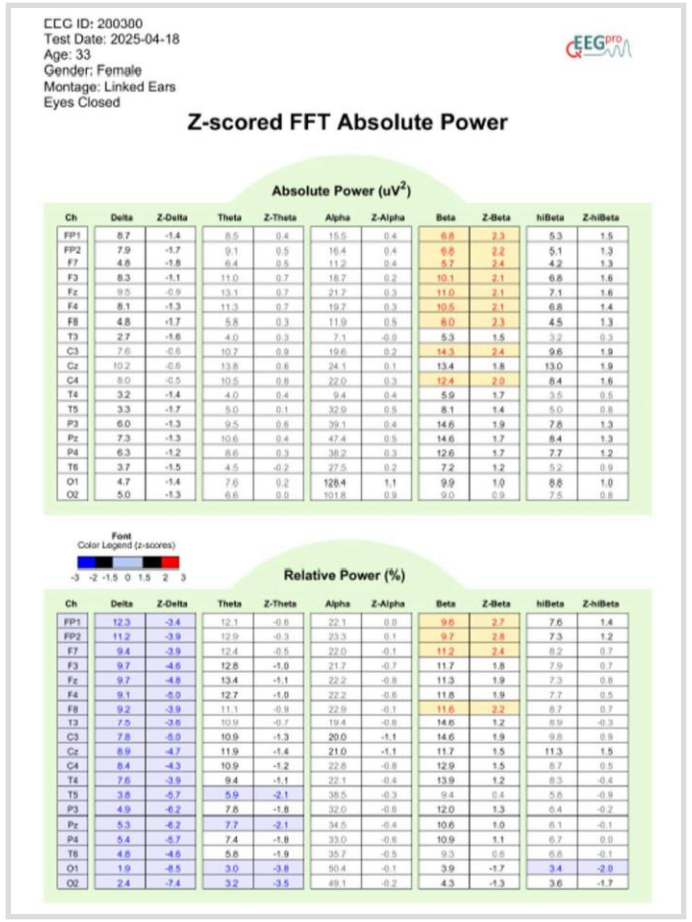
Ch	Delta	Z-Delta	Theta	Z-Theta	Alpha	Z-Alpha	Beta	Z-Beta	hiBeta	Z-hiBeta
FP1	9.8	-1.2	8.6	0.4	13.1	0.2	7.9	2.6	4.6	1.2
FP2	9.0	-1.5	8.4	0.3	13.2	0.2	8.1	2.6	4.5	1.0
F7	4.7	-1.9	5.8	0.3	9.2	0.1	6.5	2.6	3.1	0.5
F3	7.3	-1.5	9.0	0.2	14.7	-0.0	11.5	2.4	4.7	0.8
Fz	8.2	-1.4	11.4	0.4	17.1	-0.0	12.2	2.3	4.7	0.7
F4	6.7	-1.8	9.7	0.4	15.5	0.0	11.5	2.3	4.5	0.6
F8	4.2	-2.0	5.1	0.1	10.2	0.3	7.0	2.6	3.4	0.7
T3	2.5	-1.8	3.4	-0.0	7.2	0.0	5.9	1.7	2.6	-0.1
C3	6.5	-1.2	8.3	0.3	13.9	-0.2	16.2	2.6	6.4	1.1
Cz	8.8	-1.1	11.6	0.2	17.4	-0.3	14.1	1.9	7.9	1.0
C4	11.5	0.6	9.0	0.5	15.5	-0.1	13.3	2.2	5.3	0.7
T4	2.6	-2.0	3.2	-0.1	8.4	0.2	6.1	1.8	3.7	0.6
T5	3.8	-1.3	4.9	0.8	18.9	-0.0	7.9	1.4	3.7	0.2
P3	5.9	-1.4	8.0	0.2	22.2	-0.2	16.8	2.1	6.0	0.8
Pz	7.2	-1.3	8.5	-0.1	24.6	-0.2	15.7	1.8	6.1	0.7
P4	6.2	-1.3	6.9	-0.1	20.6	-0.3	12.3	1.7	5.3	0.5
T6	3.8	-1.4	3.8	-0.5	15.3	-0.4	6.0	0.9	3.7	0.2
O1	5.7	-1.0	6.4	-0.1	74.7	0.6	10.0	1.1	6.3	0.5
O2	6.0	-0.9	5.6	-0.3	53.7	0.3	8.6	0.8	5.5	0.3

Font Color Legend (z-scores)
-3 -2 -1.5 0 1.5 2 3

Relative Power (%)

Ch	Delta	Z-Delta	Theta	Z-Theta	Alpha	Z-Alpha	Beta	Z-Beta	hiBeta	Z-hiBeta
FP1	14.1	-3.0	12.3	-0.5	18.8	-0.3	11.4	3.4	6.6	0.9
FP2	13.1	-3.4	12.4	-0.5	19.4	-0.3	11.6	3.5	6.6	0.8
F7	9.9	-3.8	12.4	-0.8	19.4	-0.4	13.7	3.1	6.5	-0.2
F3	9.6	-4.7	11.9	-1.3	19.3	-1.0	15.2	2.7	6.1	-0.3
Fz	9.6	-4.9	13.4	-1.1	20.0	-1.0	14.3	2.6	5.5	-0.2
F4	8.8	-5.2	12.6	-1.0	20.3	-0.8	15.0	2.6	5.9	-0.4
F8	8.7	-4.1	10.6	-1.1	21.1	-0.2	14.6	3.0	7.1	0.0
T3	7.0	-3.9	9.3	-1.2	19.9	-0.6	16.1	1.5	7.0	-0.8
C3	7.9	-4.9	10.1	-1.6	16.9	-1.4	19.7	2.8	7.8	0.1
Cz	9.2	-4.4	12.2	-1.3	18.3	-1.4	14.9	2.3	6.3	0.5
C4	13.2	-1.9	10.3	-1.4	17.7	-1.3	15.2	2.0	6.1	-0.7
T4	6.4	-4.5	8.1	-1.6	21.0	-0.5	15.4	1.4	9.3	-0.1
T5	5.9	-3.8	7.7	-1.2	29.7	-0.7	12.5	1.2	5.9	-0.8
P3	6.2	-5.0	8.5	-1.5	23.3	-1.2	17.7	2.4	6.3	-0.2
Pz	7.2	-4.5	8.5	-1.7	24.6	-1.1	15.7	2.1	6.1	-0.1
P4	7.5	-4.0	8.4	-1.4	24.9	-1.1	14.9	2.0	6.4	-0.1
T6	7.3	-2.9	7.2	-1.2	29.2	-0.8	11.4	1.2	7.0	0.0
O1	3.3	-6.0	3.7	-3.2	43.0	-0.4	5.8	-0.6	3.6	-1.9
O2	4.5	-4.6	4.2	-2.6	40.3	-0.5	6.5	-0.3	4.1	-1.3

1. Neutral [Tab. 4]


EEG ID: 200300
Test Date: 2025-04-18
Age: 33
Gender: Female
Montage: Linked Ears
Eyes Closed

Z-scored FFT Absolute Power

Absolute Power (uV^2)

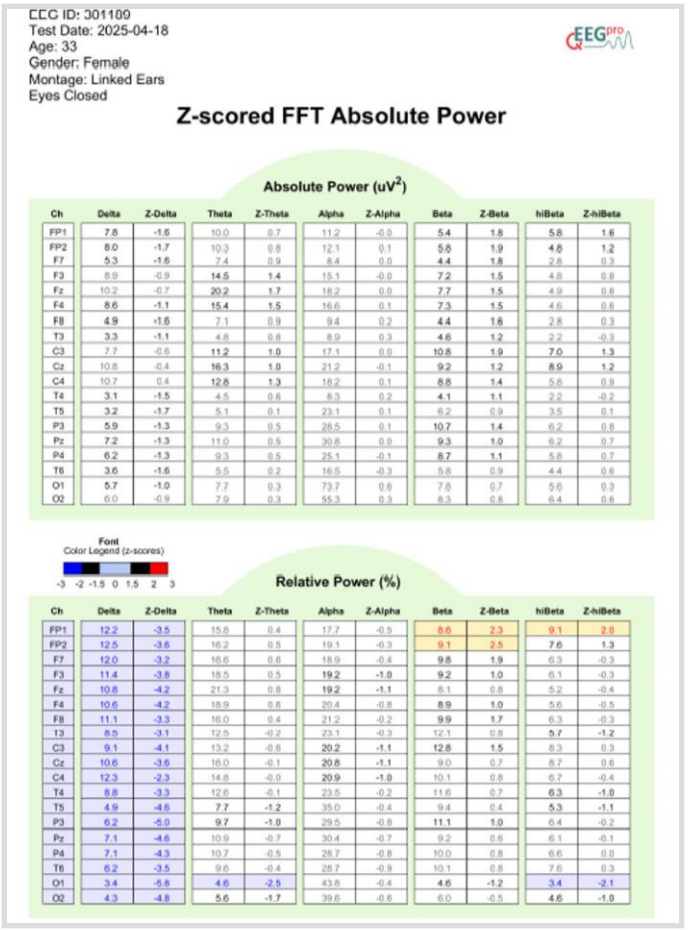
Ch	Delta	Z-Delta	Theta	Z-Theta	Alpha	Z-Alpha	Beta	Z-Beta	hiBeta	Z-hiBeta
FP1	8.7	-1.4	8.5	0.4	15.5	0.4	6.8	2.3	5.3	1.5
FP2	7.9	-1.7	9.1	0.5	16.4	0.4	6.8	2.2	5.1	1.3
F7	4.8	-1.8	6.4	0.5	11.2	0.4	5.7	2.4	4.2	1.3
F3	8.3	-1.1	11.0	0.7	18.7	0.2	10.1	2.1	6.8	1.6
Fz	9.5	-0.9	13.1	0.7	21.7	0.3	11.0	2.1	7.1	1.6
F4	8.1	-1.3	11.3	0.7	19.7	0.3	10.5	2.1	6.8	1.4
F8	4.8	-1.7	5.8	0.3	11.9	0.5	6.0	2.3	4.5	1.3
T3	2.7	-1.6	4.0	0.3	7.1	-0.0	5.3	1.5	3.2	0.3
C3	7.6	-0.6	10.7	0.9	19.6	0.2	14.3	2.4	9.6	1.9
Cz	10.2	-0.6	13.8	0.6	24.1	0.1	13.4	1.8	13.0	1.9
C4	8.0	-0.5	10.5	0.8	22.0	0.3	12.4	2.0	8.4	1.6
T4	3.2	-1.4	4.0	0.4	9.4	0.4	5.9	1.7	3.5	0.5
T5	3.3	-1.7	5.0	0.1	32.9	0.5	8.1	1.4	5.0	0.8
P3	6.0	-1.3	9.5	0.6	39.1	0.4	14.6	1.9	7.6	1.3
Pz	7.3	-1.3	10.6	0.4	47.4	0.5	14.6	1.7	8.4	1.3
P4	6.3	-1.2	8.6	0.3	38.2	0.3	12.6	1.7	7.7	1.2
T6	3.7	-1.5	4.5	-0.2	27.5	0.2	7.2	1.2	5.2	0.9
O1	4.7	-1.4	7.6	0.2	128.4	1.1	9.9	1.0	6.6	1.0
O2	5.0	-1.3	6.6	0.0	101.8	0.9	9.0	0.9	7.6	0.8

Font Color Legend (z-scores)
-3 -2 -1.5 0 1.5 2 3

Relative Power (%)

Ch	Delta	Z-Delta	Theta	Z-Theta	Alpha	Z-Alpha	Beta	Z-Beta	hiBeta	Z-hiBeta
FP1	12.3	-3.4	12.1	-0.6	22.1	0.0	9.6	2.7	7.6	1.4
FP2	11.2	-3.9	12.9	-0.3	23.3	0.1	9.7	2.8	7.3	1.2
F7	9.4	-3.9	12.4	-0.5	22.0	-0.1	11.2	2.4	8.2	0.7
F3	9.7	-4.6	12.8	-1.0	21.7	-0.7	11.7	1.8	7.9	0.7
Fz	9.7	-4.8	13.4	-1.1	22.2	-0.8	11.3	1.9	7.3	0.8
F4	9.1	-5.0	12.7	-1.0	22.2	-0.6	11.8	1.9	7.7	0.5
F8	9.2	-3.9	11.1	-0.9	22.9	-0.1	11.6	2.2	8.7	0.7
T3	7.5	-3.6	10.9	-0.7	19.4	-0.6	14.6	1.2	8.9	-0.3
C3	7.8	-5.0	10.9	-1.3	20.0	-1.1	14.6	1.9	9.8	0.9
Cz	8.9	-4.7	11.9	-1.4	21.0	-1.1	11.7	1.5	11.3	1.5
C4	8.4	-4.3	10.9	-1.2	22.8	-0.8	12.9	1.5	8.7	0.5
T4	7.6	-3.9	9.4	-1.1	22.1	-0.4	13.9	1.2	8.3	-0.4
T5	3.8	-5.7	5.9	-2.1	38.5	-0.3	9.4	0.4	5.6	-0.9
P3	4.9	-6.2	7.6	-1.8	32.0	-0.6	12.0	1.3	6.4	-0.2
Pz	5.3	-6.2	7.7	-2.1	34.5	-0.4	10.6	1.0	6.1	-0.1
P4	5.4	-5.7	7.4	-1.8	33.0	-0.6	10.9	1.1	6.7	0.0
T6	4.8	-4.6	5.8	-1.9	35.7	-0.5	9.3	0.6	6.8	-0.1
O1	1.9	-8.5	3.0	-3.8	50.4	-0.1	3.9	-1.7	3.4	-2.0
O2	2.4	-7.4	3.2	-3.5	49.1	-0.2	4.3	-1.3	3.6	-1.7

2. Standard digital [Tab. 5]


EEG ID: 301100
Test Date: 2025-04-18
Age: 33
Gender: Female
Montage: Linked Ears
Eyes Closed

Z-scored FFT Absolute Power

Absolute Power (uV^2)

Ch	Delta	Z-Delta	Theta	Z-Theta	Alpha	Z-Alpha	Beta	Z-Beta	hiBeta	Z-hiBeta
FP1	7.8	-1.6	10.0	0.7	11.2	-0.0	5.4	1.8	5.8	1.6
FP2	8.0	-1.7	10.3	0.8	12.1	0.1	5.8	1.9	4.8	1.2
F7	5.3	-1.6	7.4	0.9	8.4	0.0	4.4	1.8	2.8	0.3
F3	8.9	-0.9	14.5	1.4	15.1	-0.0	7.2	1.5	4.8	0.8
Fz	10.2	-0.7	20.2	1.7	18.2	0.0	7.7	1.5	4.9	0.8
F4	8.6	-1.1	15.4	1.5	16.6	0.1	7.3	1.5	4.6	0.6
F8	4.9	-1.6	7.1	0.9	9.4	0.2	4.4	1.6	2.8	0.3
T3	3.3	-1.1	4.8	0.8	8.9	0.3	4.6	1.2	2.2	-0.3
C3	7.7	-0.6	11.2	1.0	17.1	0.0	10.8	1.9	7.0	1.3
Cz	10.8	-0.4	16.3	1.0	21.2	-0.1	9.2	1.2	8.9	1.2
C4	10.7	0.4	12.8	1.3	18.2	0.1	8.8	1.4	5.8	0.9
T4	3.1	-1.5	4.5	0.6	8.3	0.2	4.1	1.1	2.2	-0.2
T5	3.2	-1.7	5.1	0.1	23.1	0.1	6.2	0.9	3.5	0.1
P3	5.9	-1.3	9.3	0.5	28.5	0.1	10.7	1.4	6.2	0.8
Pz	7.2	-1.3	11.0	0.5	30.8	0.0	9.3	1.0	6.2	0.7
P4	6.2	-1.3	9.3	0.5	25.1	-0.1	8.7	1.1	5.8	0.7
T6	3.6	-1.6	5.5	0.2	16.5	-0.3	5.8	0.9	4.4	0.6
O1	5.7	-1.0	7.7	0.3	73.7	0.6	7.8	0.7	5.6	0.3
O2	6.0	-0.9	7.9	0.3	55.3	0.3	8.3	0.8	6.4	0.6

Font Color Legend (z-scores)
-3 -2 -1.5 0 1.5 2 3

Relative Power (%)

Ch	Delta	Z-Delta	Theta	Z-Theta	Alpha	Z-Alpha	Beta	Z-Beta	hiBeta	Z-hiBeta
FP1	12.2	-3.5	15.8	0.4	17.7	-0.5	8.6	2.3	9.1	2.0
FP2	12.5	-3.6	16.2	0.5	19.1	-0.3	9.1	2.5	7.6	1.3
F7	12.0	-3.2	16.6	0.6	18.9	-0.4	9.8	1.9	6.3	-0.3
F3	11.4	-3.8	18.5	0.5	19.2	-1.0	9.2	1.0	6.1	-0.3
Fz	10.8	-4.2	21.3	0.8	19.2	-1.1	8.1	0.8	5.2	-0.4
F4	10.6	-4.2	18.9	0.6	20.4	-0.8	8.9	1.0	5.6	-0.5
F8	11.1	-3.3	16.0	0.4	21.2	-0.2	9.9	1.7	6.3	-0.3
T3	8.5	-3.1	12.5	-0.2	23.1	-0.3	12.1	0.8	5.7	-1.2
C3	9.1	-4.1	13.2	-0.6	20.2	-1.1	12.8	1.5	8.3	0.3
Cz	10.6	-3.6	16.0	-0.1	20.8	-1.1	9.0	0.7	8.7	0.6
C4	12.3	-2.3	14.8	-0.0	20.9	-1.0	10.1	0.8	6.7	-0.4
T4	8.8	-3.3	12.6	-0.1	23.5	-0.2	11.6	0.7	6.3	-1.0
T5	4.9	-4.6	7.7	-1.2	35.0	-0.4	9.4	0.4	5.3	-1.1
P3	6.2	-5.0	9.7	-1.0	29.5	-0.8	11.1	1.0	6.4	-0.2
Pz	7.1	-4.6	10.9	-0.7	30.4	-0.7	9.2	0.6	6.1	-0.1
P4	7.1	-4.3	10.7	-0.5	28.7	-0.8	10.0	0.8	6.6	0.0
T6	6.2	-3.5	9.6	-0.4	28.7	-0.9	10.1	0.8	7.6	0.3
O1	3.4	-5.8	4.6	-2.5	43.6	-0.4	4.6	-1.2	3.4	-2.1
O2	4.3	-4.8	5.6	-1.7	39.6	-0.6	6.0	-0.5	4.6	-1.0

3. C Wave [Tab. 6]

10.2.1 Heart Rate Variability (HRV)

Heart Rate Variability (HRV) is a sensitive biomarker reflecting the dynamic balance of the autonomic nervous system (sympathetic and parasympathetic), enabling the assessment of physiological responses to various stimuli, including auditory inputs like music. This pilot study hypothesizes that, compared to baseline, subjects listening to Digital Music show different HRV responses than when exposed to C Wave Music.

10.2.2 Pilot Study Observations

Subject 1 (Consumed food and wine prior to experiment 1)

Experiment 1 (2-minute track):

- Digital Music: HRV dips seen below baseline before returning to baseline.
- C Wave Music: HRV peaks seen above baseline before returning to baseline.

Experiment 2 (2-minute track, subject **blinded** to music type, C Wave Music played twice):

- Baseline: Stable HRV with minor undulations.
- C Wave Music: HRV peaks seen above baseline, notably at 30 seconds.
- C Wave Music played again (subject a expecting Digital Music). HRV peaks seen above baseline, notably at at 1 minute 10 seconds. Subject's response is consistent with C wave patterns.

Subject 2 (2-minute track)

- Baseline: HRV undulated around a stable baseline.
- Digital Music: Initial 30 seconds showed HRV undulations, followed by a downward trend over the remaining duration.
- C Wave Music: HRV increased in the first 30 seconds and continued an upward trend over the remaining duration.

Subject 3 (On Adderall and Lamotrigine; 30-second track)

- Digital Music: HRV dips seen below baseline before returning to baseline.
- C Wave Music: HRV peaks seen above baseline.

Subject 4 (30-second track; order of tracks reversed)

- C Wave Music (played first): After music onset, HRV rose above baseline and trended upward.
- Digital Music (played second): HRV undulations around baseline were seen, but were less regular compared to baseline, suggesting residual stabilizing effects of HRV from prior C wave exposure.

Subject 5 (30-second track)

- Baseline: Stable HRV.
- Digital Music: HRV dips seen below baseline.
- C Wave Music: HRV peaks seen above baseline, and trended higher.

Subject 6 (On Losartan; 30-second track)

- Baseline: HRV undulating around a stable baseline.
- Digital Music: HRV undulating pattern seen with notable peak and dip at 20 seconds.
- C Wave Music: HRV undulating pattern seen with equivalent peak and dip at approximately 22 seconds, and a significant peak at 54 seconds.

Losartan, an angiotensin II receptor blocker (ARB), has been shown to enhance HRV by improving both sympathetic and parasympathetic balance. Despite that improved balance, this when this subject did respond, the response was marked.

10.2.3 Pilot Study Observation

The observations suggest that C wave music increases HRV, and Digital music lowers HRV, showing C wave enhanced parasympathetic activation and stress reduction.

10.2.4 HRV Data Sheet Excerpts

Test Subject 1

Age/sex: 55 y. o. male

Height/weight/fitness: 6', 78kg, high

Date: 14 April 2025, 7:30 p.m.

Method: first 5 seconds of no sounds considered neutral. Music plays for ~ 90s, with HRM snapshots taken ever 30s.

Song chosen: J. S. Bach - Cello suite no. 1 in G Major, BWV 1007 - I Prelude, Andrzej Bauer – Cello

Food/caffeine/alcohol: Dinner, wine

Medication: none

Position: sit

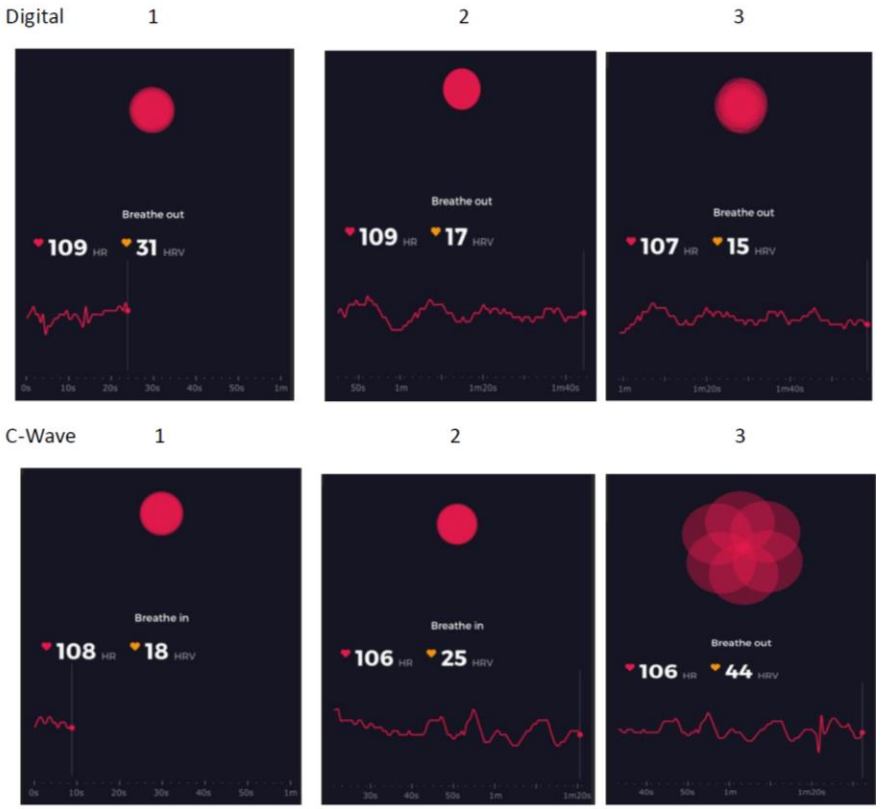
Sleep quality: 8 h/night, quality 8/10

Subjective impression: "Enjoyed C-wave more"

Investigator's note: This is more reflective of "real life" (*in vivo*), rather then "controlled" in a laboratory *(in vitro*). People socialize, enjoy wine, are disinhibited - and their autonomic nervous system is more primed to respond emotionally, up or down, to music.

Note: C Wave produced a higher reading than baseline, showing that C Wave is therapeutic

From left to right



Neutral is the first 5 seconds of silence before track starts

With digital, large lowering dips below baseline

With C Wave, there are peaks of enjoyment, returning to baseline

Test Subject 2

Age/sex: 56 y.o., female

Height/weight/fitness: 5'9", 57kg, high

Date: 15 April 2025, 8:26 p.m.

Method: 15 seconds of silence, music plays for ~ 120, every 30 seconds HRV snapshots capture

Music chosen: Andrzej Bauer - Cello Suite No. 1 in G Major, BWV 1007 - I. Prelude

Food/caffeine/alcohol: none

Medication: none

Position: sit

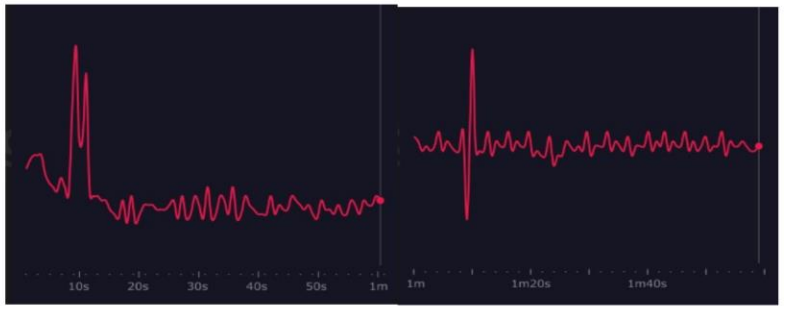
Sleep quality: 9 hours/night, quality 8/10

Subjective impression: none recorded at the time (protocol being developed).

Investigator's note: Observed window of most HRV change to be first 30 seconds after music starts. After, habituation occurs, although overall trend of HRV response can be seen throughout the track — down with Digital, up with C Wave

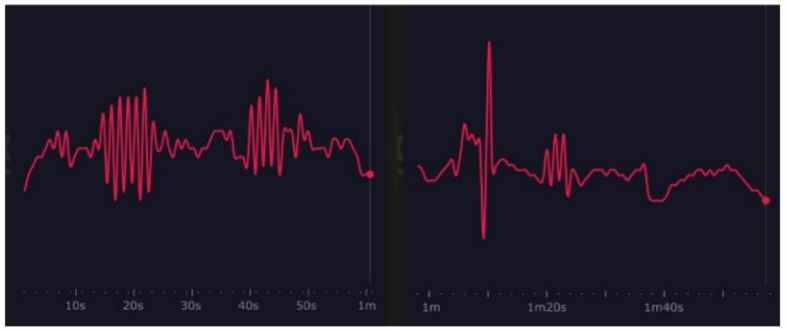
From left to right

Neutral 1 2



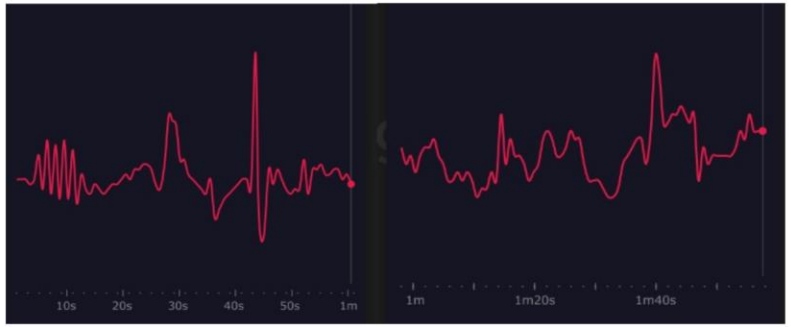
With neutral, HRV undulates around baseline *(note: baseline not aligned on graphs due to image resizing).*

Digital 1 2



With digital, first 30 seconds of music (between 15-45 seconds), HRV up **and** down. Overall trend down.

C Wave 1 2



With C Wave, first 30 seconds of music (between 15-45 seconds), HRV up. Overall trend up.

Test Subject 5

Age, sex: 55 y.o., female

Heigh/weight/fitness: 5’6”, 77kg, medium

Breathing: regular, relaxed

Time: Date: 21 April 2025, 4:13 p.m.

Method: 10 seconds of silence before song plays for 60 seconds, every 10 seconds HRV value snapshot capture

Song chosen: Northern Attitude by Noah Kahan

Caffeine/alcohol/food: n/a

Medication: none

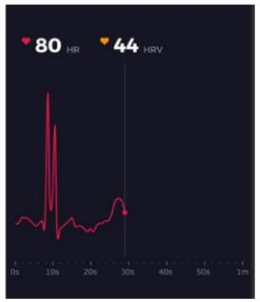
Position: sit

Sleep quality: 7 hours/night, quality 7/10

Subjective impression: C wave sounded “better.”

From left to right

Neutral

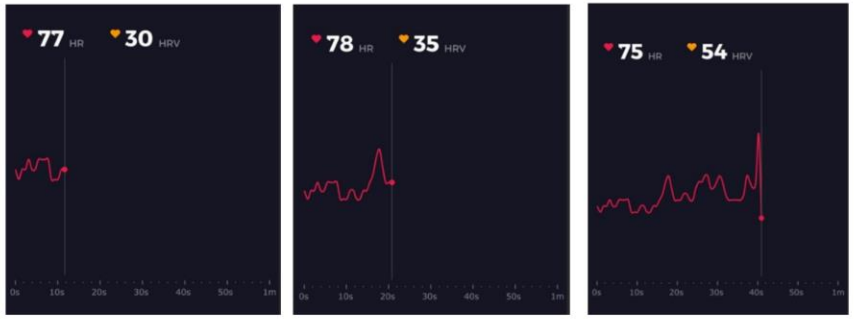


With neutral, graph trends stable

Digital 1 2 3

With digital, large lowering dips observed

C-Wave 1 2 3



With C Wave, graph trends higher, no large lowering dips

10.3.1 EAV – Description of Analyses

EAV tests are made under three conditions:

1. Neutral: Baseline (no music)

2. D: listening to a PCM digital recording of music with no C Wave processing.

3. C Wave: listening to the same PCM digital recording of music with C Wave processing.

Measurements are made on four physiological functions: central nervous system, kidney, liver and heart.

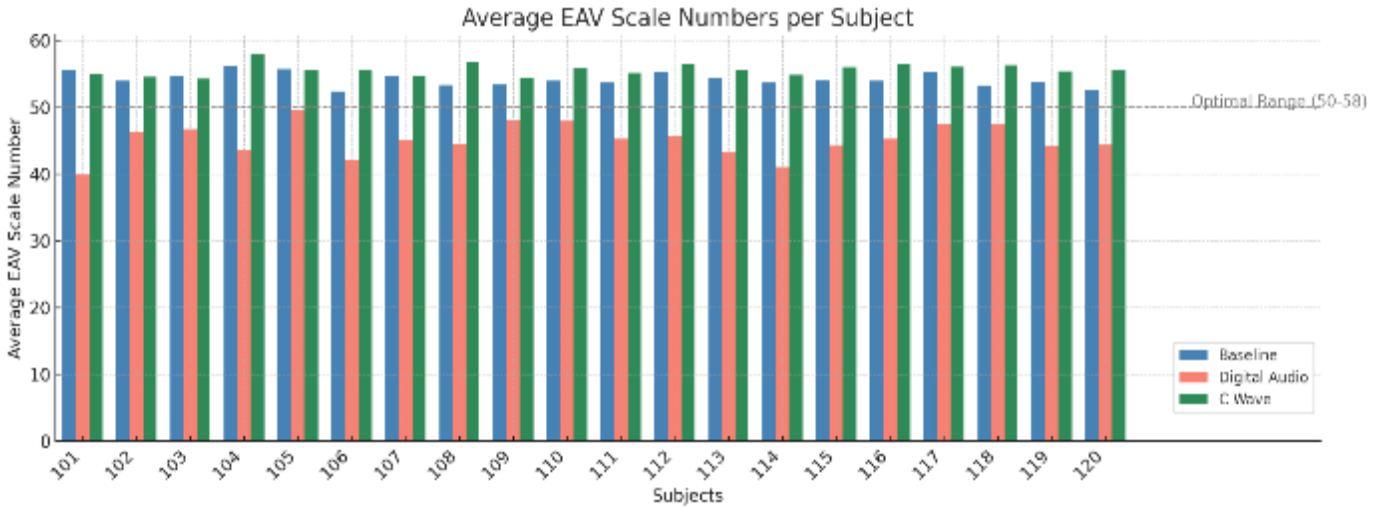
Typical measurements show that people measure worse than baseline with digital music, and better than baseline with C Wave.

The ideal measurement range is 50 to 58. C Wave usually produces measurements in the range of 50 – 58.

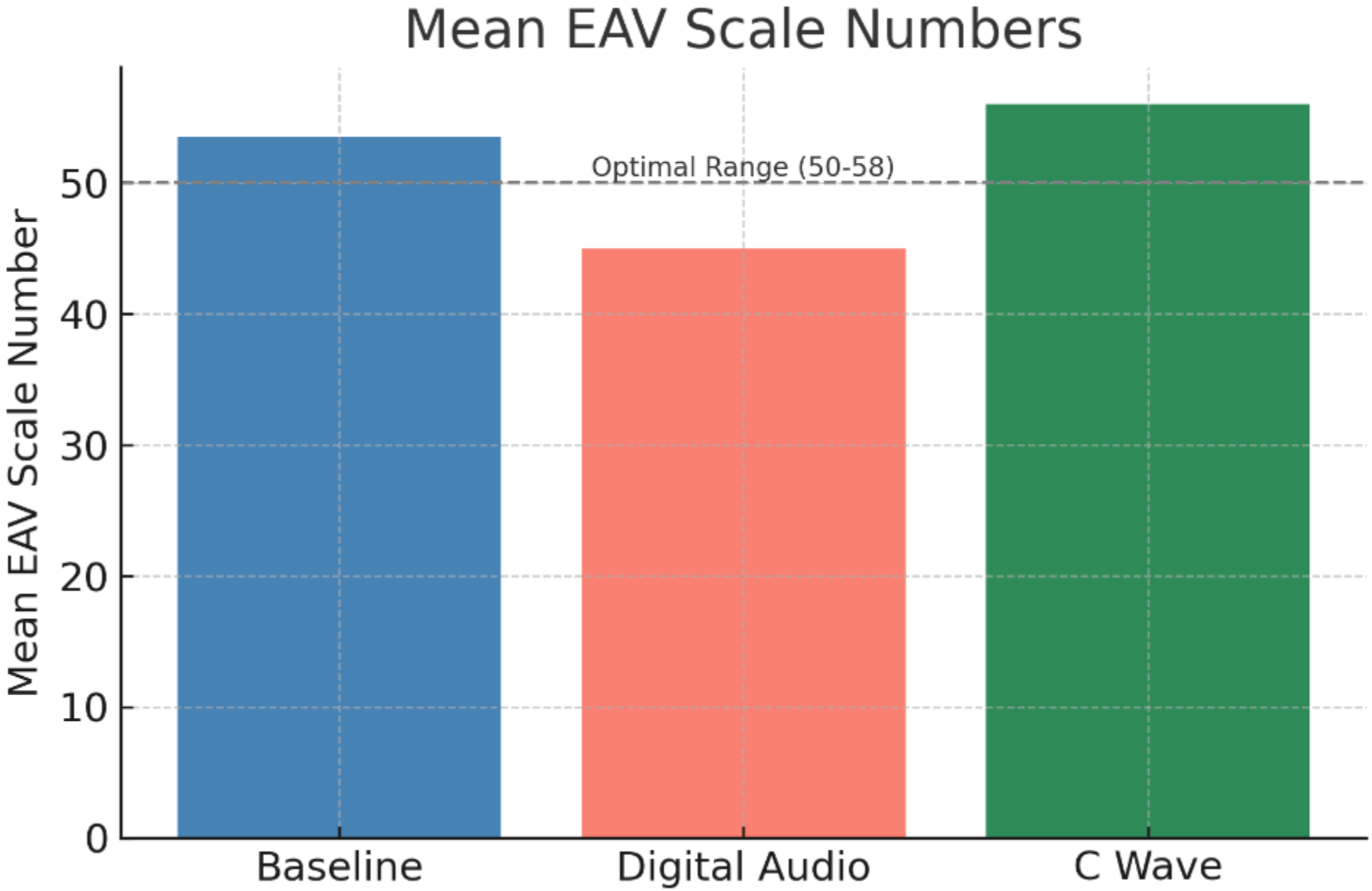
The measurements are consistent. Compared to Neutral (baseline), D is consistently worse, and C Wave is consistently better.

10.3.2 EAV Testing Results

Subject	Baseline (Neutral)	Digital Audio (PCM)	C Wave Audio
Subject 101	Baseline	Worse /Minor Imbalance	Optimal
Subject 102	Baseline	Worse /Minor Imbalance	Optimal
Subject 103	Baseline	Worse /Minor Imbalance	Optimal
Subject 104	Baseline	Worse /Minor Imbalance	Optimal
Subject 105	Baseline	Worse /Minor Imbalance	Optimal
Subject 106	Baseline	Worse /Minor Imbalance	Optimal
Subject 107	Baseline	Worse /Minor Imbalance	Optimal
Subject 108	Baseline	Worse /Minor Imbalance	Optimal
Subject 109	Baseline	Worse /Minor Imbalance	Optimal
Subject 110	Baseline	Worse /Minor Imbalance	Optimal
Subject 111	Baseline	Worse /Minor Imbalance	Optimal
Subject 112	Baseline	Worse /Minor Imbalance	Optimal
Subject 113	Baseline	Worse /Minor Imbalance	Optimal
Subject 114	Baseline	Worse /Minor Imbalance	Optimal
Subject 115	Baseline	Worse /Minor Imbalance	Optimal
Subject 116	Baseline	Worse /Minor Imbalance	Optimal
Subject 117	Baseline	Worse /Minor Imbalance	Optimal
Subject 118	Baseline	Worse /Minor Imbalance	Optimal
Subject 119	Baseline	Worse/Minor Imbalance	Optimal
Subject 120	Baseline	Worse/Minor Imbalance	Optimal



EAV Measurement	Interpretation
50–58	Optimal (Balanced)
45–49	Slightly Below Optimal (Minor Imbalance)
59–65	Slightly Above Optimal (Minor Imbalance)
<45	Low (Hypoactive/Pathological)
>65	High (Hyperactive/Inflammatory/Pathological)


Mean EAV Scale Numbers
Mean EAV Scale Number
Optimal Range (50-58)
0
10
20
30
40
50
Baseline
Digital Audio
C Wave

10.3.3 EAV Data Sheet Excerpts

Test subject 101 AV

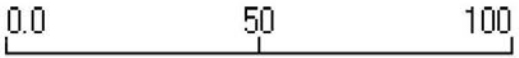
Point	Item	Peak	Drop	0.0 — 50 — 100
R Lymphatic System CMP	NEUTRAL	49,8	0,5	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	44,2	0,1	D worse
R Lymphatic System CMP	C WAVE AUDIO	52,4	1,1	C Wave better
R Central Nervous System CMP	NEUTRAL	50,6	0,7	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	45,2	1,0	D worse
R Central Nervous System CMP	C WAVE AUDIO	52,4	1,2	C Wave better
R Endocrine CMP	NEUTRAL	52,8	1,6	Baseline
R Endocrine CMP	DIGITAL AUDIO	58,2	0,3	D worse
R Endocrine CMP	C WAVE AUDIO	51,5	0,2	C Wave better
R Heart CMP	NEUTRAL	53,7	1,3	Baseline
R Heart CMP	DIGITAL AUDIO	41,8	0,6	D worse
R Heart CMP	C WAVE AUDIO	54,0	0,5	C Wave better
R Liver CMP	NEUTRAL	61,3	0,6	Baseline
R Liver CMP	DIGITAL AUDIO	66,2	0,5	D worse
R Liver CMP	C WAVE AUDIO	58,1	0,4	C Wave better
R Renal Cortex	NEUTRAL	47,6	0,4	Baseline
R Renal Cortex	DIGITAL AUDIO	45,7	0,8	D worse
R Renal Cortex	C WAVE AUDIO	50,2	0,5	C Wave better

Test subject
102 A D F

Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	52,7	1,3	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	52,7	3,5	D worse
R Lymphatic System CMP	C WAVE AUDIO	51,9	1,7	C Wave better
R Central Nervous System CMP	NEUTRAL	59,0	1,4	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	63,4	1,3	D worse
R Central Nervous System CMP	C WAVE AUDIO	60,1	1,3	C Wave better
R Endocrine CMP	NEUTRAL	48,2	1,0	Baseline
R Endocrine CMP	DIGITAL AUDIO	53,5	1,5	D worse
R Endocrine CMP	C WAVE AUDIO	53,3	0,8	C Wave better
R Heart CMP	NEUTRAL	55,0	1,4	Baseline
R Heart CMP	DIGITAL AUDIO	39,6	1,5	D worse
R Heart CMP	C WAVE AUDIO	48,7	1,1	C Wave better
R Liver CMP	NEUTRAL	48,6	2,4	Baseline
R Liver CMP	DIGITAL AUDIO	35,1	1,4	D worse
R Liver CMP	C WAVE AUDIO	49,1	2,5	C Wave better
R Renal Cortex	NEUTRAL	40,0	1,1	Baseline
R Renal Cortex	DIGITAL AUDIO	32,4	1,3	D worse
R Renal Cortex	C WAVE AUDIO	47,4	1,1	C Wave better

Test subject
103 A D C

Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	54,8	1,9	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	53,9	2,1	D worse
R Lymphatic System CMP	C WAVE AUDIO	61,0	1,6	C Wave better
R Central Nervous System CMP	NEUTRAL	52,8	2,5	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	57,5	2,4	D worse
R Central Nervous System CMP	C WAVE AUDIO	59,3	0,4	C Wave better
R Endocrine CMP	NEUTRAL	52,3	0,5	Baseline
R Endocrine CMP	DIGITAL AUDIO	53,5	0,7	D worse
R Endocrine CMP	C WAVE AUDIO	62,3	2,1	C Wave better
R Heart CMP	NEUTRAL	54,4	0,8	Baseline
R Heart CMP	DIGITAL AUDIO	53,0	1,0	D worse
R Heart CMP	C WAVE AUDIO	60,5	1,5	C Wave better
R Liver CMP	NEUTRAL	47,6	0,4	Baseline
R Liver CMP	DIGITAL AUDIO	43,2	1,7	D worse
R Liver CMP	C WAVE AUDIO	57,1	1,1	C Wave better
R Renal Cortex	NEUTRAL	48,2	0,5	Baseline
R Renal Cortex	DIGITAL AUDIO	38,6	0,3	D worse
R Renal Cortex	C WAVE AUDIO	51,5	1,4	C Wave better

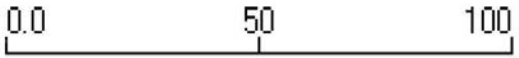


Test subject
104 A S

Point	Item	Peak	Drop	0.0 50 100
R Lymphatic System CMP	NEUTRAL	49,7	2,3	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	38,7	2,0	D worse
R Lymphatic System CMP	C WAVE AUDIO	53,0	1,1	C Wave better
R Central Nervous System CMP	NEUTRAL	54,4	2,0	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	55,4	1,0	D worse
R Central Nervous System CMP	C WAVE AUDIO	52,4	2,5	C Wave better
R Endocrine CMP	NEUTRAL	54,4	2,1	Baseline
R Endocrine CMP	DIGITAL AUDIO	42,2	0,2	D worse
R Endocrine CMP	C WAVE AUDIO	54,6	2,2	C Wave better
R Heart CMP	NEUTRAL	51,3	2,1	Baseline
R Heart CMP	DIGITAL AUDIO	44,7	1,1	D worse
R Heart CMP	C WAVE AUDIO	49,0	0,8	C Wave better
R Liver CMP	NEUTRAL	46,7	2,0	Baseline
R Liver CMP	DIGITAL AUDIO	39,3	2,1	D worse
R Liver CMP	C WAVE AUDIO	52,3	2,3	C Wave better
R Renal Cortex	NEUTRAL	49,9	0,4	Baseline
R Renal Cortex	DIGITAL AUDIO	45,8	0,7	D worse
R Renal Cortex	C WAVE AUDIO	48,2	1,4	C Wave better

Test subject
105 D G

Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	61,8	0,4	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	65,0	0,3	D worse
R Lymphatic System CMP	C WAVE AUDIO	71,1	0,2	C Wave better
R Central Nervous System CMP	NEUTRAL	47,0	0,6	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	40,1	0,5	D worse
R Central Nervous System CMP	C WAVE AUDIO	44,9	0,7	C Wave better
R Endocrine CMP	NEUTRAL	53,7	1,0	Baseline
R Endocrine CMP	DIGITAL AUDIO	51,9	0,9	D worse
R Endocrine CMP	C WAVE AUDIO	60,2	0,2	C Wave better
R Heart CMP	NEUTRAL	48,4	0,3	Baseline
R Heart CMP	DIGITAL AUDIO	51,6	0,9	D worse
R Heart CMP	C WAVE AUDIO	53,4	0,4	C Wave better
R Liver CMP	NEUTRAL	55,0	0,5	Baseline
R Liver CMP	DIGITAL AUDIO	53,9	0,2	D worse
R Liver CMP	C WAVE AUDIO	68,0	0,3	C Wave better
R Renal Cortex	NEUTRAL	51,5	0,3	Baseline
R Renal Cortex	DIGITAL AUDIO	44,3	0,2	D worse
R Renal Cortex	C WAVE AUDIO	47,4	0,2	C Wave better

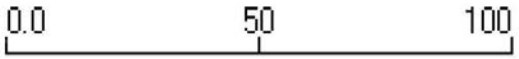


Test subject
106 D M V

Point	Item	Peak	Drop	0.0 50 100
R Lymphatic System CMP	NEUTRAL	56,7	0,0	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	66,1	0,5	D worse
R Lymphatic System CMP	C WAVE AUDIO	49,2	0,7	C Wave better
R Central Nervous System CMP	NEUTRAL	50,7	0,5	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	60,5	0,4	D worse
R Central Nervous System CMP	C WAVE AUDIO	51,8	1,5	C Wave better
R Endocrine CMP	NEUTRAL	65,6	1,0	Baseline
R Endocrine CMP	DIGITAL AUDIO	69,0	1,0	D worse
R Endocrine CMP	C WAVE AUDIO	57,6	0,6	C Wave better
R Heart CMP	NEUTRAL	54,8	0,2	Baseline
R Heart CMP	DIGITAL AUDIO	62,6	1,1	D worse
R Heart CMP	C WAVE AUDIO	50,8	0,0	C Wave better
R Liver CMP	NEUTRAL	53,4	1,0	Baseline
R Liver CMP	DIGITAL AUDIO	35,9	1,1	D worse
R Liver CMP	C WAVE AUDIO	47,4	0,7	C Wave better
R Renal Cortex	NEUTRAL	47,7	0,8	Baseline
R Renal Cortex	DIGITAL AUDIO	56,7	0,8	D worse
R Renal Cortex	C WAVE AUDIO	50,6	0,3	C Wave better

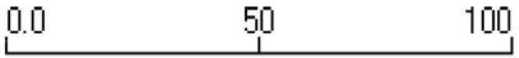
Test subject
107 E W B

Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	70,3	0,0	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	59,6	0,8	D worse
R Lymphatic System CMP	C WAVE AUDIO	55,7	0,5	C Wave better
R Central Nervous System CMP	NEUTRAL	50,7	0,5	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	44,9	0,6	D worse
R Central Nervous System CMP	C WAVE AUDIO	52,2	0,0	C Wave better
R Endocrine CMP	NEUTRAL	70,9	0,0	Baseline
R Endocrine CMP	DIGITAL AUDIO	79,6	0,7	D worse
R Endocrine CMP	C WAVE AUDIO	62,7	0,6	C Wave better
R Heart CMP	NEUTRAL	53,4	0,6	Baseline
R Heart CMP	DIGITAL AUDIO	64,8	1,5	D worse
R Heart CMP	C WAVE AUDIO	50,9	1,0	C Wave better
R Liver CMP	NEUTRAL	41,8	0,0	Baseline
R Liver CMP	DIGITAL AUDIO	59,2	1,6	D worse
R Liver CMP	C WAVE AUDIO	55,1	1,1	C Wave better
R Renal Cortex	NEUTRAL	44,7	0,4	Baseline
R Renal Cortex	DIGITAL AUDIO	36,4	0,3	D worse
R Renal Cortex	C WAVE AUDIO	45,1	0,8	C Wave better



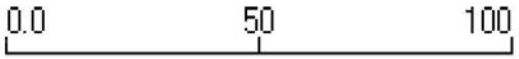
Test subject
108 F F

Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	55,3	1,1	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	42,4	1,4	D worse
R Lymphatic System CMP	C WAVE AUDIO	58,1	0,9	C Wave better
R Central Nervous System CMP	NEUTRAL	56,2	1,4	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	54,4	0,5	D worse
R Central Nervous System CMP	C WAVE AUDIO	48,9	1,0	C Wave better
R Endocrine CMP	NEUTRAL	68,2	2,0	Baseline
R Endocrine CMP	DIGITAL AUDIO	70,6	1,3	D worse
R Endocrine CMP	C WAVE AUDIO	57,5	0,9	C Wave better
R Heart CMP	NEUTRAL	49,6	0,6	Baseline
R Heart CMP	DIGITAL AUDIO	46,7	0,9	D worse
R Heart CMP	C WAVE AUDIO	53,4	1,7	C Wave better
R Liver CMP	NEUTRAL	63,9	0,5	Baseline
R Liver CMP	DIGITAL AUDIO	66,2	0,0	D worse
R Liver CMP	C WAVE AUDIO	61,7	0,6	C Wave better
R Renal Cortex	NEUTRAL	47,5	1,5	Baseline
R Renal Cortex	DIGITAL AUDIO	37,8	1,0	D worse
R Renal Cortex	C WAVE AUDIO	48,2	0,4	C Wave better



Test subject
109 G C

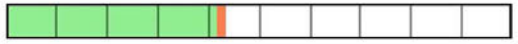
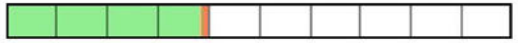
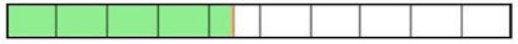
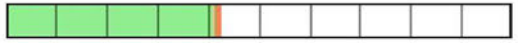
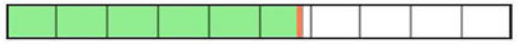
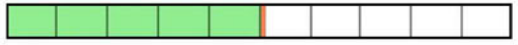
Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	45,4	1,2	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	38,2	0,7	D worse
R Lymphatic System CMP	C WAVE AUDIO	54,0	0,5	C Wave better
R Central Nervous System CMP	NEUTRAL	49,2	0,6	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	43,8	0,1	D worse
R Central Nervous System CMP	C WAVE AUDIO	52,6	0,4	C Wave better
R Endocrine CMP	NEUTRAL	51,0	1,4	Baseline
R Endocrine CMP	DIGITAL AUDIO	47,8	3,1	D worse
R Endocrine CMP	C WAVE AUDIO	54,3	3,1	C Wave better
R Heart CMP	NEUTRAL	44,3	4,2	Baseline
R Heart CMP	DIGITAL AUDIO	37,1	1,0	D worse
	C WAVE AUDIO	45,6	0,1	C Wave better
R Liver CMP	NEUTRAL	49,0	0,9	Baseline
R Liver CMP	DIGITAL AUDIO	43,0	0,4	D worse
R Liver CMP	C WAVE AUDIO	53,4	1,3	C Wave better
R Renal Cortex	NEUTRAL	55,8	0,5	Baseline
R Renal Cortex	DIGITAL AUDIO	47,3	0,6	D worse
R Renal Cortex	C WAVE AUDIO	48,2	0,5	C Wave better



Test subject
110 I T

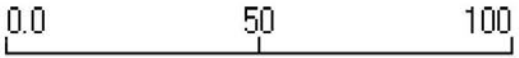
Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	51,5	2,0	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	44,5	0,9	D worse
R Lymphatic System CMP	C WAVE AUDIO	61,4	1,3	C Wave better
R Central Nervous System CMP	NEUTRAL	53,9	1,4	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	58,5	2,7	D worse
R Central Nervous System CMP	C WAVE AUDIO	54,1	1,1	C Wave better
R Endocrine CMP	NEUTRAL	59,5	1,5	Baseline
R Endocrine CMP	DIGITAL AUDIO	58,0	0,1	D worse
R Endocrine CMP	C WAVE AUDIO	54,6	1,3	C Wave better
R Heart CMP	NEUTRAL	49,0	1,2	Baseline
R Heart CMP	DIGITAL AUDIO	38,9	0,6	D worse
R Heart CMP	C WAVE AUDIO	52,0	1,4	C Wave better
R Liver CMP	NEUTRAL	53,5	2,2	Baseline
R Liver CMP	DIGITAL AUDIO	40,2	1,5	D worse
R Liver CMP	C WAVE AUDIO	50,0	0,9	C Wave better
R Renal Cortex	NEUTRAL	48,1	0,9	Baseline
R Renal Cortex	DIGITAL AUDIO	35,6	0,3	D worse
R Renal Cortex	C WAVE AUDIO	48,5	0,9	C Wave better

Test subject
111 L A

Point	Item	Peak	Drop	0.0 50 100	
R Lymphatic System CMP	NEUTRAL	50,9	0,4		Baseline
R Lymphatic System CMP	DIGITAL AUDIO	51,6	1,1		D worse
R Lymphatic System CMP	C WAVE AUDIO	54,3	0,3		C Wave better
R Central Nervous System CMP	NEUTRAL	49,6	1,1		Baseline
R Central Nervous System CMP	DIGITAL AUDIO	40,1	1,1		D worse
R Central Nervous System CMP	C WAVE AUDIO	52,9	2,5		C Wave better
R Endocrine CMP	NEUTRAL	42,5	1,5		Baseline
R Endocrine CMP	DIGITAL AUDIO	39,3	1,3		D worse
R Endocrine CMP	C WAVE AUDIO	44,7	0,8		C Wave better
R Heart CMP	NEUTRAL	50,3	2,0		Baseline
R Heart CMP	DIGITAL AUDIO	42,0	1,3		D worse
R Heart CMP	C WAVE AUDIO	49,3	2,7		C Wave better
R Liver CMP	NEUTRAL	58,1	1,3		Baseline
R Liver CMP	DIGITAL AUDIO	58,5	1,4		D worse
R Liver CMP	C WAVE AUDIO	54,0	0,3		C Wave better
R Renal Cortex	NEUTRAL	52,3	1,0		Baseline
R Renal Cortex	DIGITAL AUDIO	53,4	1,6		D worse
R Renal Cortex	C WAVE AUDIO	50,7	1,1		C Wave better

Test subject
112 L V

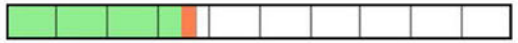
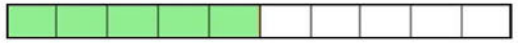
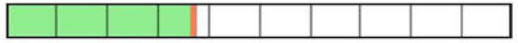
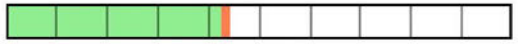
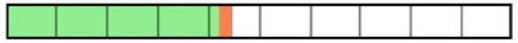
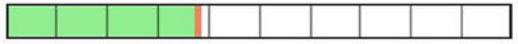
Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	47,8	1,0	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	38,4	0,7	D worse
R Lymphatic System CMP	C WAVE AUDIO	50,1	2,9	C Wave better
R Central Nervous System CMP	NEUTRAL	49,6	2,1	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	55,7	2,6	D worse
R Central Nervous System CMP	C WAVE AUDIO	58,6	0,7	C Wave better
R Endocrine CMP	NEUTRAL	50,9	0,6	Baseline
R Endocrine CMP	DIGITAL AUDIO	36,1	1,3	D worse
R Endocrine CMP	C WAVE AUDIO	53,8	3,2	C Wave better
R Heart CMP	NEUTRAL	43,5	0,4	Baseline
R Heart CMP	DIGITAL AUDIO	39,9	2,3	D worse
R Heart CMP	C WAVE AUDIO	51,4	1,6	C Wave better
R Liver CMP	NEUTRAL	54,1	0,7	Baseline
R Liver CMP	DIGITAL AUDIO	56,6	0,5	D worse
R Liver CMP	C WAVE AUDIO	71,7	3,6	C Wave better
R Renal Cortex	NEUTRAL	49,3	1,6	Baseline
R Renal Cortex	DIGITAL AUDIO	45,1	1,2	D worse
R Renal Cortex	C WAVE AUDIO	48,5	0,5	C Wave better



Test subject
113 M S

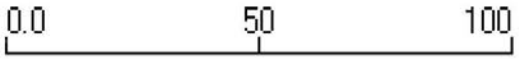
Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	48,2	1,4	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	45,7	0,6	D worse
R Lymphatic System CMP	C WAVE AUDIO	53,2	1,5	C Wave better
R Central Nervous System CMP	NEUTRAL	48,9	2,5	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	43,2	1,1	D worse
R Central Nervous System CMP	C WAVE AUDIO	50,5	1,4	C Wave better
R Endocrine CMP	NEUTRAL	60,4	3,2	Baseline
R Endocrine CMP	DIGITAL AUDIO	63,4	1,1	D worse
R Endocrine CMP	C WAVE AUDIO	56,0	2,5	C Wave better
R Heart CMP	NEUTRAL	48,3	1,7	Baseline
R Heart CMP	DIGITAL AUDIO	42,7	0,8	D worse
R Heart CMP	C WAVE AUDIO	46,6	1,3	C Wave better
R Liver CMP	NEUTRAL	47,2	1,6	Baseline
R Liver CMP	DIGITAL AUDIO	37,6	0,7	D worse
R Liver CMP	C WAVE AUDIO	48,3	1,9	C Wave better
R Renal Cortex	NEUTRAL	49,6	1,3	Baseline
R Renal Cortex	DIGITAL AUDIO	39,0	0,7	D worse
R Renal Cortex	C WAVE AUDIO	47,7	2,2	C Wave better

Test subject
114 M K

Point	Item	Peak	Drop	0.0 50 100	
R Lymphatic System CMP	NEUTRAL	46,4	1,2		Baseline
R Lymphatic System CMP	DIGITAL AUDIO	37,0	2,8		D worse
R Lymphatic System CMP	C WAVE AUDIO	46,7	0,9		C Wave better
R Central Nervous System CMP	NEUTRAL	44,4	1,6		Baseline
R Central Nervous System CMP	DIGITAL AUDIO	38,6	1,2		D worse
R Central Nervous System CMP	C WAVE AUDIO	45,5	0,3		C Wave better
R Endocrine CMP	NEUTRAL	49,9	0,6		Baseline
R Endocrine CMP	DIGITAL AUDIO	45,3	2,4		D worse
R Endocrine CMP	C WAVE AUDIO	52,7	2,2		C Wave better
R Heart CMP	NEUTRAL	46,6	0,6		Baseline
R Heart CMP	DIGITAL AUDIO	37,2	1,6		D worse
R Heart CMP	C WAVE AUDIO	46,3	1,4		C Wave better
R Liver CMP	NEUTRAL	47,4	0,8		Baseline
R Liver CMP	DIGITAL AUDIO	43,7	1,7		D worse
R Liver CMP	C WAVE AUDIO	55,3	3,8		C Wave better
R Renal Cortex	NEUTRAL	43,9	2,3		Baseline
R Renal Cortex	DIGITAL AUDIO	37,7	1,3		D worse
R Renal Cortex	C WAVE AUDIO	49,1	1,7		C Wave better

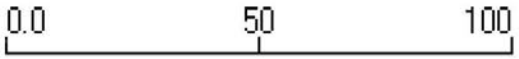
Test subject
115 M G

Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	49,2	1,1	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	47,5	0,5	D worse
R Lymphatic System CMP	C WAVE AUDIO	57,2	1,7	C Wave better
R Central Nervous System CMP	NEUTRAL	48,2	0,7	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	39,9	0,2	D worse
R Central Nervous System CMP	C WAVE AUDIO	46,6	0,8	C Wave better
R Endocrine CMP	NEUTRAL	46,8	0,5	Baseline
R Endocrine CMP	DIGITAL AUDIO	43,7	1,3	D worse
R Endocrine CMP	C WAVE AUDIO	46,5	0,7	C Wave better
R Heart CMP	NEUTRAL	47,1	0,3	Baseline
R Heart CMP	DIGITAL AUDIO	30,3	0,8	D worse
R Heart CMP	C WAVE AUDIO	36,5	1,2	C Wave better
R Liver CMP	NEUTRAL	55,5	3,1	Baseline
R Liver CMP	DIGITAL AUDIO	39,9	0,8	D worse
R Liver CMP	C WAVE AUDIO	46,1	2,3	C Wave better
R Renal Cortex	NEUTRAL	44,6	0,3	Baseline
R Renal Cortex	DIGITAL AUDIO	39,7	0,3	D worse
R Renal Cortex	C WAVE AUDIO	51,1	0,8	C Wave better



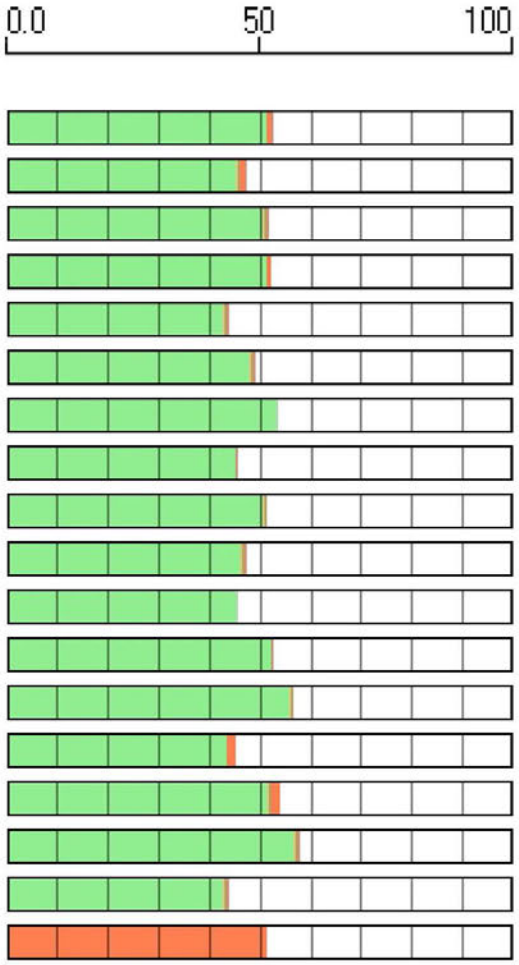
Test subject
116 M L

Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	54,3	2,4	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	38,4	2,3	D worse
R Lymphatic System CMP	C WAVE AUDIO	48,4	2,3	C Wave better
R Central Nervous System CMP	NEUTRAL	52,7	4,0	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	43,4	1,6	D worse
R Central Nervous System CMP	C WAVE AUDIO	49,7	1,3	C Wave better
R Endocrine CMP	NEUTRAL	51,8	2,3	Baseline
R Endocrine CMP	DIGITAL AUDIO	38,4	0,7	D worse
R Endocrine CMP	C WAVE AUDIO	61,5	5,0	C Wave better
R Heart CMP	NEUTRAL	47,4	1,8	Baseline
R Heart CMP	DIGITAL AUDIO	35,4	1,4	D worse
R Heart CMP	C WAVE AUDIO	52,2	3,9	C Wave better
R Liver CMP	NEUTRAL	61,8	0,8	Baseline
R Liver CMP	DIGITAL AUDIO	69,5	1,8	D worse
R Liver CMP	C WAVE AUDIO	51,4	0,3	C Wave better
R Renal Cortex	NEUTRAL	51,2	0,4	Baseline
R Renal Cortex	DIGITAL AUDIO	44,5	0,0	D worse
R Renal Cortex	C WAVE AUDIO	53,0	0,5	C Wave better

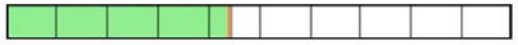
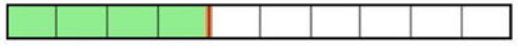
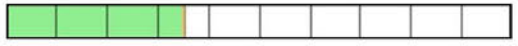
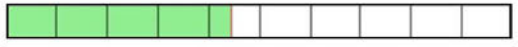
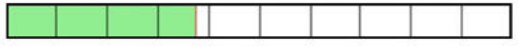
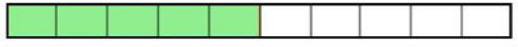
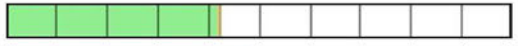
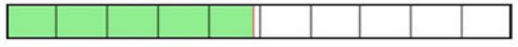
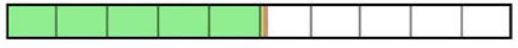
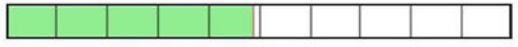
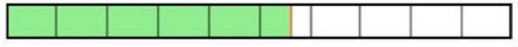


Test subject
117 M T

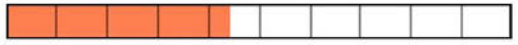
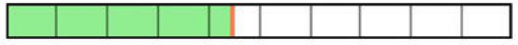
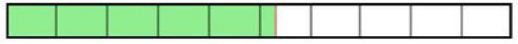
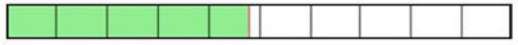
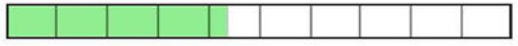
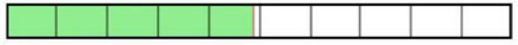
Point	Item	Peak	Drop	
R Lymphatic System CMP	NEUTRAL	52,0	1,2	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	46,6	1,6	D worse
R Lymphatic System CMP	C WAVE AUDIO	51,0	0,6	C Wave better
R Central Nervous System CMP	NEUTRAL	51,3	0,8	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	43,3	1,2	D worse
R Central Nervous System CMP	C WAVE AUDIO	48,6	1,1	C Wave better
R Endocrine CMP	NEUTRAL	53,0	0,1	Baseline
R Endocrine CMP	DIGITAL AUDIO	45,1	0,5	D worse
R Endocrine CMP	C WAVE AUDIO	50,7	0,1	C Wave better
R Heart CMP	NEUTRAL	46,5	0,8	Baseline
R Heart CMP	DIGITAL AUDIO	45,0	0,2	D worse
R Heart CMP	C WAVE AUDIO	51,8	0,5	C Wave better
R Liver CMP	NEUTRAL	55,8	0,4	Baseline
R Liver CMP	DIGITAL AUDIO	44,4	1,5	D worse
R Liver CMP	C WAVE AUDIO	53,2	1,9	C Wave better
R Renal Cortex	NEUTRAL	57,1	0,8	Baseline
R Renal Cortex	DIGITAL AUDIO	43,3	0,8	D worse
R Renal Cortex	C WAVE AUDIO	50,8	0,0	C Wave better



Test subject
118 O V

Point	Item	Peak	Drop	0.0 50 100	
R Lymphatic System CMP	NEUTRAL	43,9	0,8		Baseline
R Lymphatic System CMP	DIGITAL AUDIO	40,0	1,4		D worse
R Lymphatic System CMP	C WAVE AUDIO	45,4	0,9		C Wave better
R Central Nervous System CMP	NEUTRAL	46,9	1,5		Baseline
R Central Nervous System CMP	DIGITAL AUDIO	34,9	0,1		D worse
R Central Nervous System CMP	C WAVE AUDIO	48,4	3,1		C Wave better
R Endocrine CMP	NEUTRAL	44,3	0,6		Baseline
R Endocrine CMP	DIGITAL AUDIO	37,1	0,5		D worse
R Endocrine CMP	C WAVE AUDIO	48,2	0,6		C Wave better
R Heart CMP	NEUTRAL	49,9	0,4		Baseline
R Heart CMP	DIGITAL AUDIO	42,0	0,6		D worse
R Heart CMP	C WAVE AUDIO	46,8	0,6		C Wave better
R Liver CMP	NEUTRAL	51,5	0,8		Baseline
R Liver CMP	DIGITAL AUDIO	47,8	0,8		D worse
R Liver CMP	C WAVE AUDIO	48,4	0,2		C Wave better
R Renal Cortex	NEUTRAL	51,0	0,6		Baseline
R Renal Cortex	DIGITAL AUDIO	48,4	0,6		D worse
R Renal Cortex	C WAVE AUDIO	55,7	0,2		C Wave better

Test subject
119 P D C

Point	Item	Peak	Drop	0.0 50 100	
R Lymphatic System CMP	NEUTRAL	51,4	1,3		Baseline
R Lymphatic System CMP	DIGITAL AUDIO	45,2	1,5		D worse
R Lymphatic System CMP	C WAVE AUDIO	53,8	0,3		C Wave better
R Central Nervous System CMP	NEUTRAL	54,7	3,1		Baseline
R Central Nervous System CMP	DIGITAL AUDIO	43,7	0,0		D worse
R Central Nervous System CMP	C WAVE AUDIO	48,2	0,3		C Wave better
R Endocrine CMP	NEUTRAL	48,4	1,0		Baseline
R Endocrine CMP	DIGITAL AUDIO	44,3	0,6		D worse
R Endocrine CMP	C WAVE AUDIO	55,9	0,4		C Wave better
R Heart CMP	NEUTRAL	52,8	0,3		Baseline
R Heart CMP	DIGITAL AUDIO	46,4	0,2		D worse
R Heart CMP	C WAVE AUDIO	51,9	0,5		C Wave better
R Liver CMP	NEUTRAL	54,2	0,4		Baseline
R Liver CMP	DIGITAL AUDIO	45,5	2,1		D worse
R Liver CMP	C WAVE AUDIO	47,7	0,5		C Wave better
R Renal Cortex	NEUTRAL	47,7	0,5		Baseline
R Renal Cortex	DIGITAL AUDIO	43,2	0,2		D worse
R Renal Cortex	C WAVE AUDIO	48,5	0,4		C Wave better

Test subject
120 Q A N

Point	Item	Peak	Drop	0.0 50 100
R Lymphatic System CMP	NEUTRAL	51,5	2,2	Baseline
R Lymphatic System CMP	DIGITAL AUDIO	41,0	2,0	D worse
R Lymphatic System CMP	C WAVE AUDIO	49,4	1,0	C Wave better
R Central Nervous System CMP	NEUTRAL	50,0	1,3	Baseline
R Central Nervous System CMP	DIGITAL AUDIO	46,5	0,5	D worse
R Central Nervous System CMP	C WAVE AUDIO	48,1	0,6	C Wave better
R Endocrine CMP	NEUTRAL	49,9	0,6	Baseline
R Endocrine CMP	DIGITAL AUDIO	47,9	0,0	D worse
R Endocrine CMP	C WAVE AUDIO	51,0	0,0	C Wave better
R Heart CMP	NEUTRAL	52,4	0,4	Baseline
R Heart CMP	DIGITAL AUDIO	39,1	0,6	D worse
R Heart CMP	C WAVE AUDIO	47,1	0,7	C Wave better
R Liver CMP	NEUTRAL	54,2	0,9	Baseline
R Liver CMP	DIGITAL AUDIO	57,2	1,8	D worse
R Liver CMP	C WAVE AUDIO	50,1	0,2	C Wave better
R Renal Cortex	NEUTRAL	50,6	0,3	Baseline
R Renal Cortex	DIGITAL AUDIO	39,6	0,7	D worse
R Renal Cortex	C WAVE AUDIO	44,6	0,8	C Wave better

11.1 Appendix A

DANIEL P. MELBY, M.D.

- Senior Consulting Cardiologist
- Cardiac Electrophysiologist
- Medical Director, Electrophysiology Laboratory
- Minneapolis Heart Institute at Abbott-Northwestern Hospital
- 920 East Delaware St. Minneapolis, MN, 55407
- (612) 863-3900
- Email: daniel.melby@allina.com; melb0028@yahoo.com

Education:

- 1990-1994 B.A., Hamline University, St. Paul, MN (Chemistry & Philosophy)
- 1994-1998 M.D., University of Minnesota, Minneapolis

Postdoctoral Training:

- 7/98 - 6/01 Internship & Residency, Internal Medicine Dartmouth-Hitchcock Medical Center, Lebanon, NH
- 7/01 - 6/04 Fellowship, Cardiovascular Medicine University of Minnesota, Minneapolis
- 7/04 - 6/05 Fellowship, Clinical Cardiac Electrophysiology University of Minnesota, Minneapolis
- University of Minnesota Cardiology Fellowship
- 2003-2004 Chief Cardiology Fellow

Board Certification:

- Cardiovascular Disease 2004 through 2024
- Electrophysiology 2005 through 2025

State Licensure:

- Minnesota September 2002 - Present

Clinical/Hospital Appointments:

- 8/05- Senior Consulting Cardiologist, Cardiac Electrophysiologist, Director of Electrophysiology Lab Minneapolis Heart Institute at Abbott Northwestern Hospital
- 5/07-5/10 Adjunct Assistant Professor, University of Minnesota, Department of Medicine, Section of Cardiology
- 4/2003-2005 Internist, United Hospital/St. Paul Heart Clinic
- 11/2003-2005 Internist, Abbott Northwestern Hospital

Other Recognitions:

- 2014-Present. Biosense-Webster TEC Site Physician - Designated Ablation Expert. Designated EP Physician Trainer. Over 50 National and International EP Physicians Trained to date

Participation in Landmark Catheter Ablation Trials:

- SMART AF Trial 2013-14
- SMART SF Trial 2014-15
- ReMARQable Trial 2014-2016
- PRECEPT Trial 2017-2018
- SURPOINT Trial 2018-2021
- QFFICIENCY Trial 2019-2021
- ADMIRE Trial 2022-2023
- OMNY-AF Trial 2025-

Presentations:

- Insights Into Persistent AFib Using Ripple Frequency Mapping. 6th Shanghai International Atrial Fibrillation Rotor Ablation Forum, July 2023
- Update on Novel AF Ablation Technology. Minneapolis Heart Institute Grand Rounds, April 2023
- Ripple Frequency Update. 17th Shanghai International AFib Forum, December 2022
- Ripple Frequency, A Novel Method for AF rotor mapping. 5th Shanghai International Forum, July 2022
- Ripple Frequency, A Novel Method for AF mapping. 16th Shanghai International Forum, December 2021
- How to Improve Outcomes and Efficiency in Afib ablation, Fellows talk, December 2019
- Current Concepts in Atrial Fibrillation. Ruttgers CV Symposium, October 2019
- Current Concepts in Atrial Fibrillation. University of Illinois EP Symposium, May 2019
- Webinar to Beijing Fuwai Hospital, June 2019
- Ripple mapping, University of Minnesota Annual EP Symposium, May 2019
- Coherent Map in Complex Arrhythmias. HRS 2019

- Ripples and Rotors. 12th Annual Chinese AF Forum, December 2018
- How to Improve Outcomes in Afib ablation, Fellows talk, December 2018
- Ripple Map in Complex Arrhythmias. HRS 2017
- Optimal Ablation Techniques. HRS 2017
- Ablation of Atrial Fibrillation Drivers. Biosense-Webster AF Advisory Board 2017
- Use of MEM in Mapping Complex Arrhythmias. HRS 2016
- AF Ablation Using Contact Force Technology. Biosense 2013
- AF Ablation Outcomes Using Competing Systems. Biosense 2011
- AF Ablation. Design of Medical Devices Conference, 2011
- Imaging Heart for Ablation: CME Course 2011
- AF Ablation. Hutchinson Medical Center, 2010
- Atrial Ablation: Sync in AFib. Nursing Conference, 2009
- EP Update. Landmarks in Cardiology 2007
- AF Update. Ridgeview Medical Center, 2006
- AF Update. Landmarks in Cardiology, 2006
- AF Update. Cardiac Arrhythmias CME, 2006
- AF Ablation: Current Concepts. Cardiac Arrhythmias CME, 2005
- Arrhythmias: Case Discussion. Lillehei Symposium, 2005
- Orthostatic Hypotension Mechanisms. Cardiac Arrhythmias, 2004
- Sudden Cardiac Death. Cardiology Core Conference, 2004
- Supraventricular Tachycardia. Cardiology Core Conference, 2002
- Endocarditis. Cardiology Core Conference, 2002 & 2003
- Ciguatera Toxin Fish Poisoning. ACP Contest 1999
- Hemoptysis: Review. VA Medical Center, 1999

Poster Presentations:

- Sigma Bond Rotation in Ascaridole. Honors Thesis, Hamline University 1994
- Influence of Benzene on Rotamer Populations. Chemistry Day, 1994
- Eighth National Conference on Undergraduate Research, 1994

Accepted Abstracts:

- Ripple Frequency Mapping in Persistent AF. Boston AF symposium, 2024
- Harnessing Big Data in Electrophysiology. Heart Rhythm Sessions, 2022
- Atrial Regions Ripple Frequency Termination. Heart Rhythm Sessions, 2021
- SURPOINT Study. Heart Rhythm Sessions, 2021
- Force Time Integral in Persistent AF. Heart Rhythm Sessions, 2017
- Pentaray Mapping of AF Drivers. Heart Rhythm Sessions, 2017
- Magnetic Navigation for AF Ablation. Heart Rhythm Sessions, 2008
- Inspiratory Impedance Device for Orthostatic Intolerance. NASPE Sessions, 2005
- and many others...

Bibliography:

- Key publications in Heart Rhythm, JACC EP, Europace, Heart Rhythm O2, including on Ripple Frequency, Smart SF trial, PRECEPT trial, economic evaluations, AF catheter ablation outcomes.

11.2 Appendix B

Dr. Paolo Cioni. Curriculum vitae

Qualifications:

• Specialization with honors in Psychiatry from the University of Florence (July 1980)

• Adjunct professor at the Universities of Pisa and Florence (until 2012)

• Certification in Clinical Neurophysiology (March 2015)

Curriculum and activities:

• Degree in Medicine and Surgery from the University of Florence (October 1976)

• 1980–2010: Psychiatrist in the public health service (outpatient clinic and hospital) in Tuscany

• 2002–2010: Head of a mental health service for the Florence Local Health Authority

• Since 2011: Freelancer at his own practice in Florence (clinical, psychophysiological, and forensic psychiatric activities)

• Registered as court-appointed expert with the Court of Florence

• Honored member of Bristol Who's Who 2015, New York

• Author of numerous publications with prestigious publishers in Italy (Trattato Italiano di Psichiatria, Masson Elsevier; Manuale di Psichiatria, UTET)

• Author of the bestseller "Neuroschiavi" (2011) (French edition: "Neuro-Esclaves") with M. Della Luna

• Author of "Paranoia: Between Leadership and Failure" (2015) and "L'ideologia del godimento" (2015) with F. Fratus

• In 2020, author of "Tracce cerebrali" (Brain Traces. Quantitative electroencephalography in support of psychological and psychiatric assessments", ETS Editions, Pisa)

Diagnostic and therapeutic methodologies:

• Anxiety, depression, obsessive-compulsive disorder, psychosis, ADHD, attention and concentration disorders, cognitive and emotional disorders

Psychophysiological equipment for non-pharmacological therapies:

• EEG biofeedback

• Neurofeedback

• Quantitative EEG (QEEG)

• Emotional profile assessment through GSR, ECG, EMG, ECG

Degree and qualification:

• Degree: 19/10/1976 - University of Florence

• Qualification: First session 1977 - University of Florence

• Registered with the Order of Physicians, Surgeons, and Dentists (FNOMCeO) of the Province of Florence

• Registration number: 5275