

Penijean A. Gracefire

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www.penijean.com

- Neurotechnology Designer and Consultant
- Program Developer for Professional Certification
- Builder of Community Outreach Initiatives Using Neuroscience in Art and Media
- Clinical Educator and Sci-Comm Public Speaker

Penijean is a neural frequency analyst and published author who rides motorcycles, drinks tea, and designs therapeutic applications for emerging neurotechnology. A licensed mental health clinician, she constructs closed loop EEG-based feedback paradigms which alter neural dynamics in real time, helping people to recover from injury and trauma or improve cognitive flexibility and adaptive cascades. Penijean's ground-breaking work has led to industry-wide changes in neuromodulation and is the basis for current standards in international certification. Her passions include spectral analysis, creative delivery mechanisms for caffeine, and taking things apart to see how they work.

Selected Education and Service

- 2022 Recipient of the American Mental Health Counseling Association Leadership Award
- 2022 Co-Chair of the AMHCA Neuroscience Task Force
- 2019 Member of the AMHCA Neuroscience Task Force
- 2019 Recipient of the American Mental Health Counseling Association President's Award
- 2018 Qualified Supervisor for Mental Health Interns in the State of Florida
- 2018 Diplomate in Quantitative EEG Analysis
- 2010 Licensed Mental Health Counselor in the State of Florida
- 2009 BCIA Certified in EEG Neurofeedback
- 2007 M.A. in Mental Health and Rehabilitation, University of South Florida

Experience

- 2018 – Present **Founder and CEO** of BrainStar Innovations
- 2011 – 2017 **Manager of Clinical Applications Research and Design and Educational Program Development**, StressTherapy Solutions, Inc.
- 2006- 2011 **Clinical Services Director**, CNS Wellness of Tampa Bay, Tampa, FL
Specialized in - *autism, TBI, anxiety, cognitive decline, OCD, complex trauma*
- 2005-2006 **Neurotherapist**, Cognitive Neuro Sciences, Inc., Tampa, FL
Specialized in - *addictions, disorders of attention, depression, post-traumatic stress*
- 2005-2007 **Cognitive Behavioral Therapist**, Center for Rational Living, Tampa, FL
Specialized in - *substance abuse, anger management, adults at elevated risk for violence and suicide, verbal de-escalation, strategies for conflict management*
- 2006-2007 **Graduate Assistant**, Marriage and Family Therapy Dept, USF
- 2004-2007 **Manager/ Senior Pharmacy Technician**, CVS Pharmacy, Tampa, FL

Original Work

PeniJean has been creating innovative EEG feedback designs since 2004.

She is the originator of over a hundred unique feedback paradigms, including:

- the first clinical z-score database EEG biofeedback designs with a triple threshold monitoring real-time percentage of metrics within a standard deviation range
- the first integrated auditory and visual feedback based on aggregate movement percentages of selected z-scored EEG metrics
- the first multi-modal clinical model using z-scored EEG biofeedback and neural stim
- the first EEG biofeedback designs integrating simultaneous sLORETA and surface z-scored database references in real time with percentage based auditory feedback
- the first EEG-modulated pulsed electromagnetic field closed-loop feedback designs
- the first EEG-modulated pulsed near-infrared light closed-loop feedback designs
- the first combined EEG, pEMF, pNIR, auditory and visual closed-loop feedback design

Current Research Interests

- Reducing the impact of injury, illness, inflammation and stress on the aging brain
- Constructing layered, closed-loop feedback paradigms that increase targeted synaptogenesis to improve the efficiency and flexibility of neural networks
- Developing affordable and accessible neurotechnology that supports day to day mental health and cognitive function, as well as helps to address the emerging crises of widespread and ongoing neurological challenges which are being observed in survivors of COVID-19.

Selected Presentations, Publications and Projects

2022 “Artificial Intelligence the answer to more accessible neurotherapy? Automating individualized care to meet the current mental health crisis”, **ISNR** conference

2022 “Integrated Neuromodulation and the Injured Brain: Clinical Considerations for Combining Neurofeedback, Biofeedback, Photobiomodulation, Hyperbaric Oxygen Therapy, and Psychedelic Psychiatry”, **ISNR** conference

2022 “What Quantitative EEG Can Teach us About Hyperbaric Oxygen and Low Level Laser Therapies in a Clinical Setting”, **ISNR** conference

2021 “The Importance of the Immune System to Mental Health”, **AMHCA** conference

2021 “Current Advances in Closed-Loop EEG-Modulated pNIR Stim”, **ISNR** conference

2021 “Clinical Applications of 10 Channel qEEG Analysis: The Goldilocks Array”, **ISNR** conference

2021 “How Immunity, Epigenetics and Inflammation Impact Neuromodulation: What Clinicians Need to Know”, **ISNR** conference

2020 “Clinical Photobiomodulation Protocol Design Using Database Guided EEG”,
Brain + tPBMT Virtual Summit

2020 “Integrating Neurofeedback and Sensory Grounding Techniques to Treat Complex Trauma”,
ISNR conference

2020 “Invisible Injuries: The Epidemic of Undiagnosed and Untreated Brain Trauma in Women Who Survive Intimate Partner Violence”, presented at the **AMHCA** and the **ISNR** conference

2020 “Towards a Training Model for Neuroscience Integration”, **AMHCA** conference

2019 “The Electrophysiology of Stress: Strategies to Improve Clinical Efficacy and Compassion”, **SBCNA** Conference, Greenville, SC

- 2019 "Lightspeed Neurofeedback: EEG-Modulated Pulsed Near Infrared",
SBCNA Conference, Greenville, SC
- 2019 "The Allostatic Dynamics of sLORETA Z-scored Connectivity", **ISNR** Conference, Denver
- 2019 "Clinical Considerations of EEG-Guided Near Infrared Light as Feedback",
ISNR Conference, Denver
- 2019 "The Critical Connections Made by Mental Health Counselors", **Ignite Talk**,
AMHCA Conference, Washington D.C.
- 2019 "Counseling in Context: How the Brain and Body Provide Critical Insight into the Mind",
AMHCA Conference, Washington D.C.
- 2019 "It Takes a Digital Village: Adolescent Well-Being in the Age of Social Media", **Keynote** Address,
SDCA Conference, Sioux Falls
- 2019 "'When I Was a Kid We Played With Sticks': How Mobile Technology Has Changed Childhood",
SDCA Conference, Sioux Falls
- 2019 "Advanced Clinical Analysis of qEEG", **Offenburg**, Germany
- 2019 "PhotoBiomodulation and EEG Biofeedback: Integrating Light Therapy to Improve Brain Function",
BFE Conference, Cardiff, Wales
- 2019 "Healing Heartbreak: Can Neurofeedback Increase Romantic Resiliency?" **AAPB** Conference, Denver
- 2019 "The NeuroElectrical Dynamics of Wellness", 8 Hearts Health & Wellness, **Portland**
- 2018 "Lightspeed Neurofeedback: Live Z-score Modulated Pulsed NIR and Neural Connectivity",
ISNR Conference, Phoenix
- 2018 "Principles of sLORETA and Z-score Neurofeedback", IFEN, **Munich**, Germany
- 2018 "Clinical Considerations of qEEG", **Offenburg**, Germany
- 2018 "The Impact of Mobile Technology and Social Media on the Adolescent Brain", **AMHCA**, Orlando
- 2017 "Self-Soothing: How to Generate the Resources the Brain and Body Need to Handle
Stress and Accomplish Tasks", *The Advocate Magazine*, November 2017, p. 13-15
- 2017 "Healing Heartbreak: Can Neurofeedback Increase Romantic Resiliency?",
ISNR Conference, Foxwoods, CT
- 2017 "The Electrophysiology of Self-Soothing", **AMHCA** Conference, Washington D.C.
- 2017 "From the Bottom of My Brain", guest on the **WNYC Heartbreakers Series**, hosted by artist **Dessa**,
at The Greene Space in New York City
- 2017 "Integrating Neurofeedback and Sensory Grounding Techniques to Treat Complex Trauma",
AAPB Conference, Chicago
- 2016 "Practical Applications of qEEG: Introductory Principles of Clinical Analysis",
SBCNA Conference, Atlanta
- 2016 "Neurofeedback and the Digital Adolescent: Addressing Mental Health Issues in the Age of Mobile
Technology", **ISNR** Conference, Orlando
- 2016 "Current Clinical Applications of EEG-based Assessment and Treatments: sLORETA, Network and Hub
Activation, Pulsed Electromagnetic (pEMF) and Integrated Methods", **ISNR** Conference, Orlando
- 2016 "Introduction to the Concepts and Clinical Applications of Multivariate Live Z-score
Training, PZOK and sLORETA Feedback", **Handbook of Clinical qEEG and Neurotherapy**. New
York: Routledge/Taylor & Francis
- 2016 "Intervention Strategies for Anxiety Disorders Using Individualized sLORETA Z-Score Networks",
AAPB Conference, Seattle
- 2016 "Clinical Application of qEEG-based Interventions: Live Z-scores, sLORETA, ISF, and PEMF",
AAPB Conference, Seattle
- 2015 "The Role of EEG Biofeedback in Reducing Allostatic Load on the Central Nervous System",
SBCNA Conference, Charlotte
- 2015 "The Role of sLORETA Assessment and Neurofeedback in Recovery from Relational Violence
and Abuse", **ISNR** Conference, Denver
- 2015 "Train Your Brain, Change Your Mind: Working with Treatment Resistant OCD",
AHMCA Conference, Philadelphia

- 2015 "sLORETA Brain Imaging: PTSD Assessment and Intervention in Real Time",
USF Counselor Ed. Military Institute, Tampa
- 2015 "PEMF and sLORETA: EEG Driven Magnetic Field Therapy", **AAPB** Conference, Austin
- 2015 "Clinical Application of QEEG-based Interventions: Live Z-Scores, sLORETA, Infra-Slow Fluctuations and Micropower Transcranial Pulsed Electromagnetic Field Stimulation (pEMF)",
AAPB Conference, Austin
- 2014 "Early Cognitive Decline and Alzheimer's Disease: Detection and Intervention Using sLORETA Z-scored Imaging", **ISNR** Conference, San Diego
- 2014 "Reintegrating the Brain: How Neurofeedback Can Assist Veterans with Traumatic Brain Injury", **USF Counselor Ed. Military Institute**, Tampa
- 2014 "Turn Up the Frequency: Captivating the Inattentive Brain", **AMHCA** Conference, Seattle
- 2014 "Wired for Two Wheels: Inside the Brain of a Motorcyclist", **IJMS** Conference, Colorado Springs
- 2014 "How Everyday Clinicians Can Use 3D Brain Imaging Technology to Increase Efficacy of Conventional Cognitive Therapy Strategies", **SBCNA** Conference, Charlotte
- 2014 "Clinical Integration of Low-Resolution EEG Imaging with QEEG and Neurofeedback",
AAPB Conference, Savannah
- 2013 "Integrating pIR HEG and EEG Biofeedback to Reduce Allostatic Load", **ISNR** Conference, Dallas
- 2013 "Clinical Implications of Neurofeedback Paradigms Using sLORETA Regions of Interest",
ISNR Conference, Dallas
- 2013 "BrainAvatar for Beginners: sLORETA Training Using BrainDx Z-scores with 3D Live Projection", **AAPB** Conference, Portland
- 2012 "Emerging Technology in Functional Brain Imaging and Cognitive Decline in Aging",
A4M Conference, Las Vegas
- 2012 "Combining sLORETA and 19 Channel Live Z-score Training: Targeting Hi Beta in Brodmann Areas to Reduce Symptoms of Anxiety", **NeuroConnections**, Winter 2012, 30-33
- 2012 "Mental Health from the Inside Out: Rewiring the Brain Can Heal Your Mind",
AMHCA Conference, Orlando
- 2012 "Data Driven Clinical Applications for Z-score Training", **Z-score Training Conference**, Cancun
- 2012 "Five Case Studies Using Live Z-score Training PercentZOK on Individuals Diagnosed with PTSD",
Neuroconnections, Spring 2012, 28-30;
- 2011 "Potential Clinical Applications for Symptom Reduction of Anxiety, Depression, or Mixed Anxiety/Depression using 19 Channel Live Z-Score Training Using Percent ZOK and ZPlus Protocols",
ISNR conference, Phoenix
- 2010 "Evaluating the Clinical Efficacy of a Multi-Modal Treatment Paradigm: LENS, NeuroField and Z-score Training", **ISNR** conference, Denver
- 2010 "Watching the Brain Change Itself During the Process of Healing and Integration",
ISSSEEM Conference, Denver
- 2010 "Z-score training with autistic spectrum disorder: The critical role of connectivity",
Biofeedback Society of Florida, Orlando
- 2009 "Z-score training and Autism: A case study",
NeuroConnections, Fall 2009, 32-24;
- 2009 "Reconnecting our children to the world: Z-score training and Autism",
AAPB conference, Albuquerque