NEUROPTIMAL®
ADVANCED BRAIN TRAINING SYSTEMS
TRANSFORMING LIVES SINCE 2000

BASIC
Certification Guide

by Zengar

Zengar Institute Inc. | (866) 990 • OPTIMAL | info@zengar.com

NEUROPTIMAL®
ADVANCED BRAIN TRAINING SYSTEMS
TRANSFORMING LIVES SINCE 2000

NeurOptimal® NO3 Basic Recertification Course

ZENGAR INSTITUTE®

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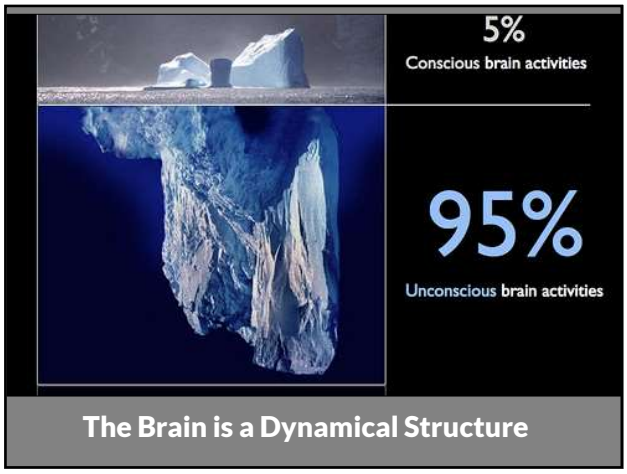

The Brain is a Dynamical Structure

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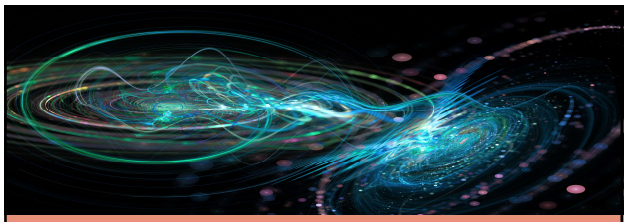

As a Dynamical Structure

- The **Brain** is **ever-changing**
- The **CNS (Central Nervous System) communicates** with itself through the detection of change
- Through research we have learned of **Neuroplasticity** as the **Brain's** way to **constantly change and evolve** (Ever-Changing)

3

THE BRAIN COMMUNICATES BY DETECTION OF CHANGE

The **Language our body** speaks is **Dynamical,** when we get an infection the CNS immediately **'detects the change'** this tells our body to do something about the change it noticed.

The brain's ability to create pathways and **adapt to a new set of change is essential for learning and 'surviving'** …this is what makes it a '**Self-Organizing Dynamical System**'

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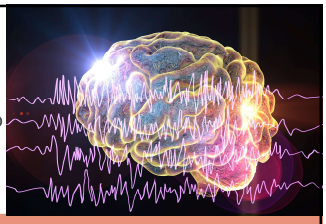
THE BRAIN AND CENTRAL NERVOUS SYSTEM (CNS)

THE BRAIN IS INFINITELY CYCLING AND SELF-REGULATING



Detects Changes by using the DIFS

- Duration
- Intensity
- Frequency
- Shift

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THE BRAIN IS GEARED TOWARDS THE GENERAL

- The brain is **inherently geared towards general (but not absolute**) self-regulation based on information
- Ex. No need to teach a child the 'Best' way to walk – through experimentation the brain discovers and develops internal balance and a natural gait unique to that individual…
- **Brain** processes and assesses feedback from its own muscles & muscular-skeletal system about its position and stability in space

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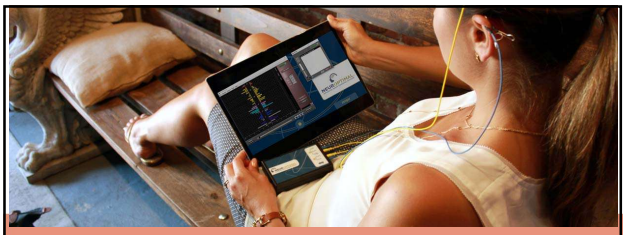

PROCESS VARIABILITY

- **Infinitely cycling & self regulating**
- **No ABSOLUTE values** that are inherently 'best' or the specific "amount" of activity required for specific functions.
- It always varies from **Brain to Brain** and it always varies with time for that same **Brain**

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NEUROFEEDBACK IS...

Neurofeedback is sometimes referred to as EEG **(Electroencephalogram**) Biofeedback or Neurotherapy.

It is the process of **training the brain/CNS** (central nervous system) to learn to modify and control electrical activity through auditory and visual feedback.

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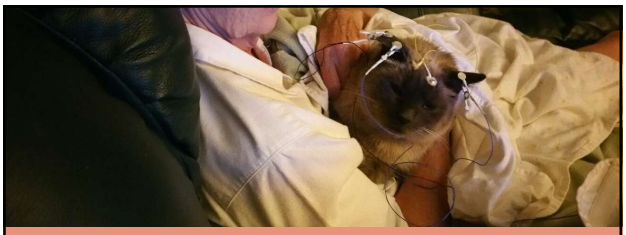

NEUROPTIMAL® DYNAMICAL NEUROFEEDBACK®

- It is safe
- No need for a diagnosis
- It is training not treatment
- It is a set of proprietary Mathematical Transforms
- JTFA and NDS (Nonlinear Dynamical Systems®)
- Unique Time-Frequency Envelopes (TFE) or Targets

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NEUROPTIMAL
FEEDBACK LOOP
NEUROPTIMAL

10

Neurofeedback – 2 Basic Paradigms
Linear Non-Dynamical NF- process uses a software program that measures electrical activity in 2-ways
• Amplitude
• Frequency
• Nonlinear Dynamical NF- Uses a software program that utilizes 4 ways to detect the changes in electrical activity-
• Duration-
• Intensity-
• Frequency
• Shifts

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LINEAR MODELS
• The linear model believes: they need to affect the strength (amplitude) of the signal (by augmenting and inhibiting a specific frequency).
• The frequency was *chosen by looking at pre-recorded activity under different conditions (eyes open, closed, reading, counting by 7's starting at 783) this is called a QEEG, (Quantitative Electroencephalogram).
• This Linear approach uses thresholds that are static bars that 'stop' the sound, thereby initiating the feedback process

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DIAGNOSTICALLY AGNOSTIC

- **'Regular Training' Session-** never changing for any reason
- It never matters what the diagnosis is the **NeurOptimal®** system will adapt to any 'brain' no matter if they medicated, addicted to a substance, or brain damaged in any way.

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THE NEUROPTIMAL® SYSTEM IS A MATHEMATICAL DANCE BETWEEN THE CLIENT AND THE NO SYSTEM

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THE NEUROPTIMAL® SOFTWARE IS…

Constantly **Adapting** to the individual's electrical activity **256 times per sec**

Is specific to the **Individual on the NO System** at that moment in time **Changing** as the **Individual Changes (Dancing)**

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Just as a Surfer moves to Dance with a Wave, so Does the NO System move with the CNS

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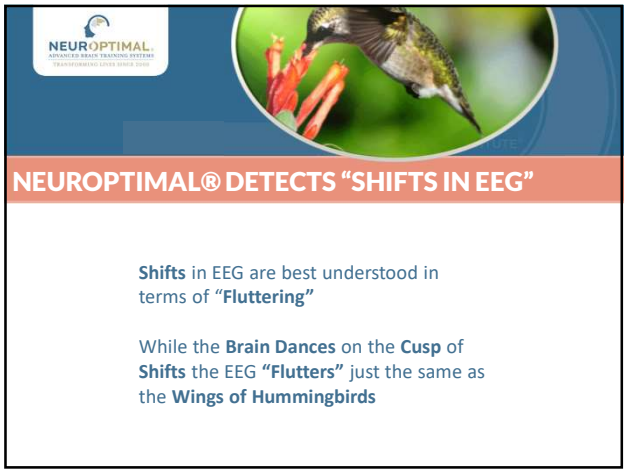
NEUROPTIMAL®
NEUROPTIMAL® DETECTS "SHIFTS IN EEG"
Shifts in EEG are best understood in terms of "Fluttering"
While the Brain Dances on the Cusp of Shifts the EEG "Flutters" just the same as the Wings of Hummingbirds

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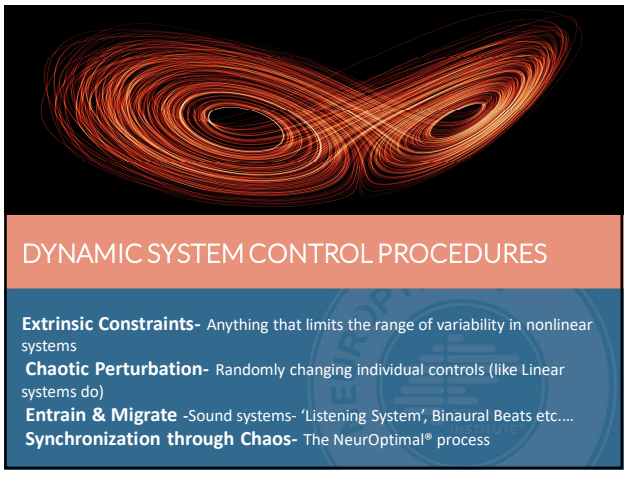
DYNAMIC SYSTEM CONTROL PROCEDURES
Extrinsic Constraints- Anything that limits the range of variability in nonlinear systems
Chaotic Perturbation- Randomly changing individual controls (like Linear systems do)
Entrain & Migrate -Sound systems- 'Listening System', Binaural Beats etc....
Synchronization through Chaos- The NeurOptimal® process

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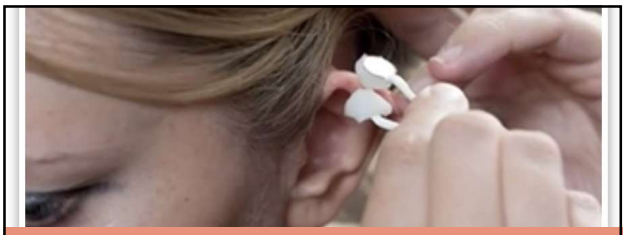

NEUROFEEDBACK MEASURES A SUMMATION OF ELECTRICAL CORTICAL ACTIVITY

NeurOptimal® uses the 10/20 System and at C3 and C4 sites (Central Zone)

Black clip = Ground
Blue clip = Reference
Yellow flat Sensor = Active

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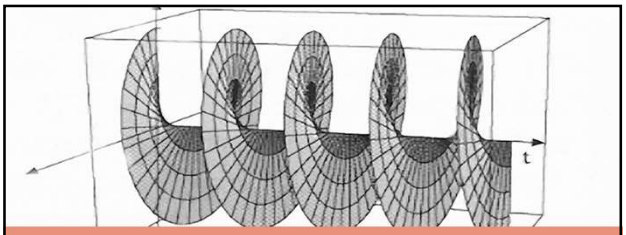

NEUROFEEDBACK MEASURES - WAVEFORMS

We are NOT measuring EEG electrical activity PER frequency level, we are measuring a phasor of the constantly changing voltage of the EEG: the brain does not contain "waves" when measure on the scalp.

* **Frequency**: "Windings" Per Unit Time
* **Amplitude:** Radial Length Per Unit Time
* **Phase**: Radial Rotation Per Unit Time

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CARE MODEL

Comprehensive
Adaptive
Re-normalization
of the EEG

BY ZENGAR

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THE ROLE OF THE TRAINER…

- To be a **Detective**
- **To Empower** people to look within
- To help **Identify any 'Shifts'** or changes that have occurred
- To **provide information**
- To **Educate people** to the process and the **PASS** and **Community Resources** available to them

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TRAINERS

- **Releasing Expectations** (not introducing expectations)
- **Educating Clients** (courses opportunities, using only our philosophy/language and branding)
- **Answering questions** (create answers ahead of time, so you are comfortable)
- Helping see changes (**monitoring** the shifts & **DIFS**)
- **Be ok if Client isn't "happy"**

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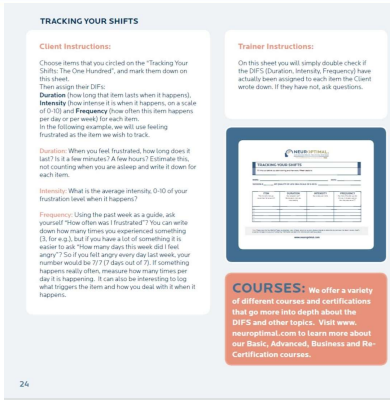
Tracking Shifts:

- Checklist 100
- WishList
- Pre- Session Evaluation



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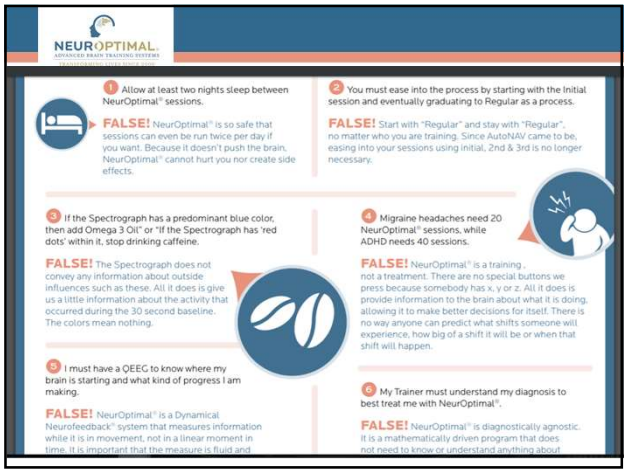
Myth Busters
Rumor Has It...
Funny how rumors get started...One person thinks they understand how something works and says, "it must work like this" while another says "no, I heard it worked like this", and yet another says, "in my experience it must be like this". Before you know it suddenly, all these funny rumors, inventions and in some cases superstitions, have started and with little to no truth to it! So, I am going to take a moment to dispel a few rumors.
1 Allow at least two nights sleep between
2 You must ease into the process by starting with the Initial

25


NEUROPTIMAL®
1 Allow at least two nights sleep between NeurOptimal® sessions.
FALSE! NeurOptimal® is so safe that sessions can even be run twice per day if you want. Because it doesn't push the brain, NeurOptimal® cannot hurt you nor create side effects.
2 You must ease into the process by starting with the Initial session and eventually graduating to Regular as a process.
FALSE! Start with "Regular" and stay with "Regular", no matter who you are training. Since AutoNAV came to be, easing into your sessions using initial, 2nd & 3rd is no longer necessary.
3 If the Spectrograph has a predominant blue color, then add Omega 3 Oil" or "If the Spectrograph has 'red dots' within it, stop drinking caffeine.
FALSE! The Spectrograph does not convey any information about outside influences such as these. All it does is give us a little information about the activity that occurred during the 30 second baseline. The colors mean nothing.
4 Migraine headaches need 20 NeurOptimal® sessions, while ADHD needs 40 sessions.
FALSE! NeurOptimal® is a training , not a treatment. There are no special buttons we press because somebody has x, y or z. All it does is provide information to the brain about what it is doing, allowing it to make better decisions for itself. There is no way anyone can predict what shifts someone will experience, how big of a shift it will be or when that shift will happen.
5 I must have a QEEG to know where my brain is starting and what kind of progress I am making.
FALSE! NeurOptimal® is a Dynamical Neurofeedback® system that measures information while it is in movement, not in a linear moment in time. It is important that the measure is fluid and
6 My Trainer must understand my diagnosis to best treat me with NeurOptimal®.
FALSE! NeurOptimal® is diagnostically agnostic. It is a mathematically driven program that does not need to know or understand anything about

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NEUROPTIMAL®
7 NeurOptimal® results (data) must be interpreted by an expert.
FALSE! The information derived from NeurOptimal® is not necessary for continued training and is therefore not used in monitoring progress. Instead we use the 'progress tracking tools' to measure the DIFs (Duration, Intensity, Frequency and Shift) of the changes.
8 The NeurOptimal® Trainer must manipulate the software to create physiological changes in the CNS (Central Nervous System).
FALSE! NeurOptimal® does not aim to make physiological changes in the CNS, or any other changes for that matter. That is up to your CNS, not NeurOptimal®, which acts more like a mirror. NeurOptimal® also has its expertise built right in, so it is not necessary to monitor and change parameters. Simply put the sensors on your head and start your session!
9 Zen 2 during a session can create more Dopamine, while Zen 3 will encourage more Serotonin production.
FALSE! NeurOptimal® does not encourage or discourage any specific frequency or neurochemical production. Instead, it is a 'feedback' system that 'detects change' within the Central Nervous System (CNS). By mathematically mirroring that information back to the individual, their brain responds to that information and a 'shift' may occur.
10 Zen 3 is too strong for this person or this age (for whatever reason).
FALSE! While each zen mode has a very precise 'mathematical' timing which results in each providing powerful feedback in its own way, there is no need to adjust the default timings. Since the introduction of autoNAV all the zen modes are fluidly navigated by the brain. Also remember, NeurOptimal® does not push the brain to 'do anything', no matter which mode you are in! Select "Regular" and trust NeurOptimal® to do its job.
11 I must stay with my client as
12 I believe my vibration bed,

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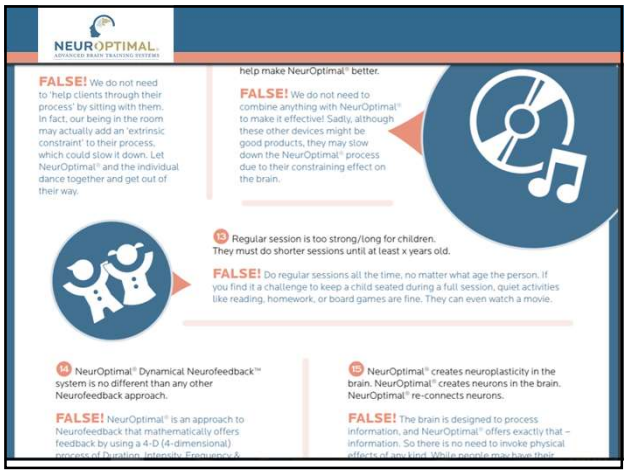
NEUROPTIMAL
help make NeurOptimal® better.
FALSE! We do not need to 'help clients through their process' by sitting with them. In fact, our being in the room may actually add an 'extrinsic constraint' to their process, which could slow it down. Let NeurOptimal® and the individual dance together and get out of their way.
FALSE! We do not need to combine anything with NeurOptimal® to make it effective! Sadly, although these other devices might be good products, they may slow down the NeurOptimal® process due to their constraining effect on the brain.
13 Regular session is too strong/long for children. They must do shorter sessions until at least x years old.
FALSE! Do regular sessions all the time, no matter what age the person. If you find it a challenge to keep a child seated during a full session, quiet activities like reading, homework, or board games are fine. They can even watch a movie.
14 NeurOptimal® Dynamical Neurofeedback™ system is no different than any other Neurofeedback approach.
FALSE! NeurOptimal® is an approach to Neurofeedback that mathematically offers feedback by using a 4-D (4-dimensional)
15 NeurOptimal® creates neuroplasticity in the brain. NeurOptimal® creates neurons in the brain. NeurOptimal® re-connects neurons.
FALSE! The brain is designed to process information, and NeurOptimal® offers exactly that – information. So there is no need to invoke physical

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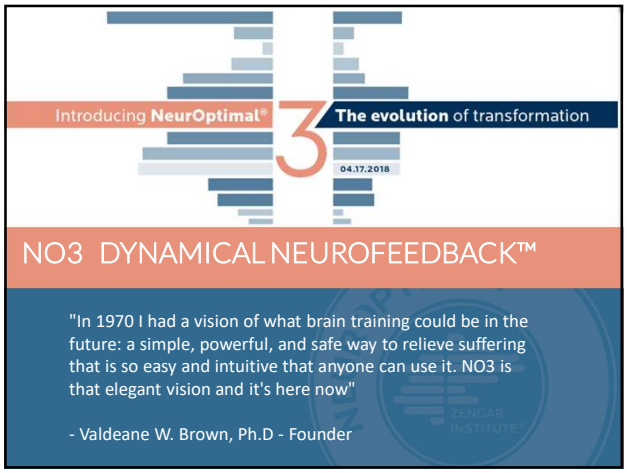
Introducing NeurOptimal®
3
The evolution of transformation
04.17.2018
NO3 DYNAMICAL NEUROFEEDBACK™
"In 1970 I had a vision of what brain training could be in the future: a simple, powerful, and safe way to relieve suffering that is so easy and intuitive that anyone can use it. NO3 is that elegant vision and it's here now"
- Valdeane W. Brown, Ph.D - Founder

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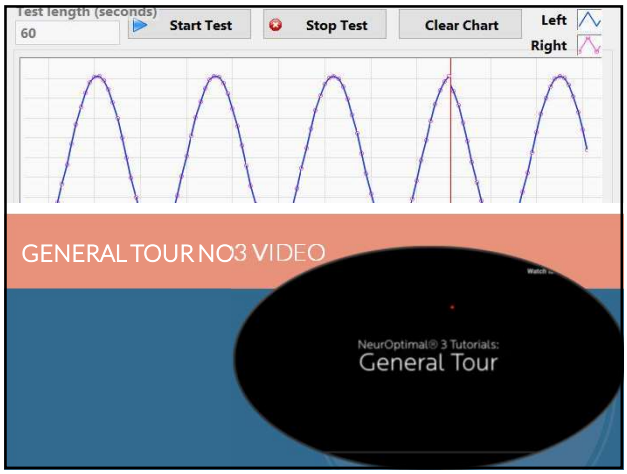
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Start Test
Stop Test
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GENERAL TOUR NO3 VIDEO
NeurOptimal® 3 Tutorials:
General Tour

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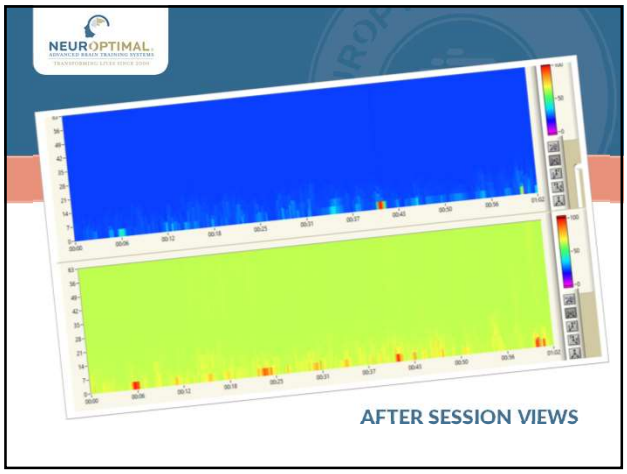

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The **Waterfalls**: Introduction

- The **Waterfalls Display** replaces the Legacy **Spectrograms**
- Multiple **Perspective Views** accessed by a **Tap** with their own **Grab and Drag, Zoom** and **Reorient View**
- **Line Noise** is removed by default
- You can **Zoom by Intensity** and you can set different **Regions of Interest (ROI)** for greater precision and clarity
- You can migrate **ROIs** between the Left and Right Channel **Waterfalls**

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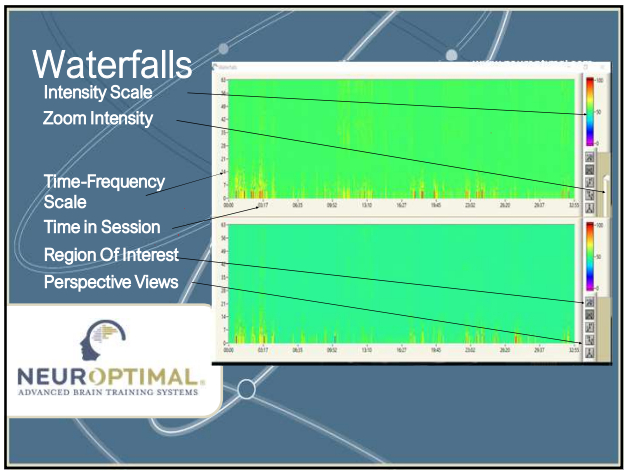

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Cross Ambiguity Function

- The **Cross Ambiguity Function (CAF)** replaces the **Legacy CCACs**
- **CAF** is the larger group of mathematical algorithms. The **CCAC** is a particular way of determining the **CAF** for the transition of **Eyes Open to Eyes Closed**
- **NO3** calculates **CAFs** from 3 minute segments of **EEG** throughout a **Training Session**
- These segments overlap 1 minute, making the **CAFs** even more robust

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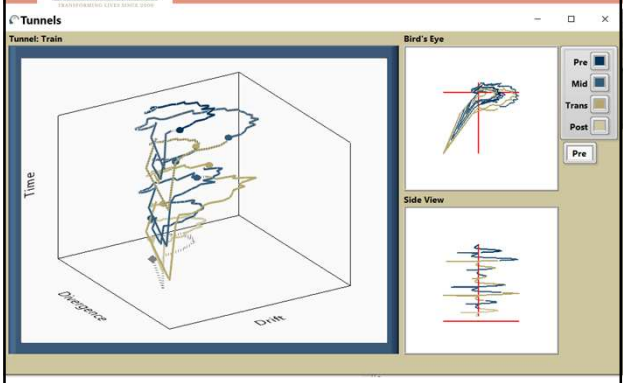
After Session Views



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• Website, PASS Membership & Resources

How to Help-Yourself…

The Guides, Manuals, PDF's and other Resources for Self-Empowerment

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Face Book Community Page Forum
NeurOptimal® Community Group
A community
is a group of people who agree to grow together

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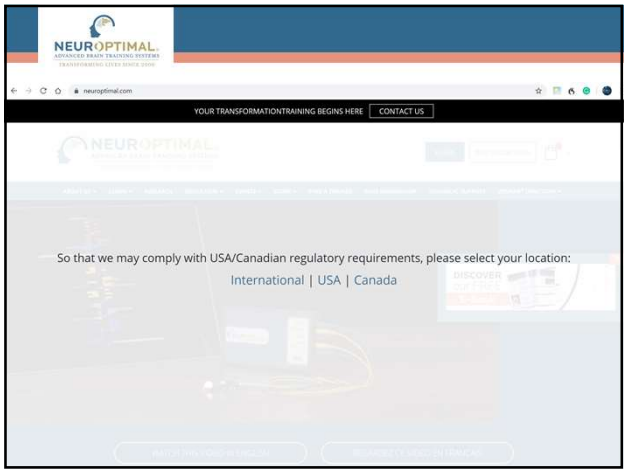
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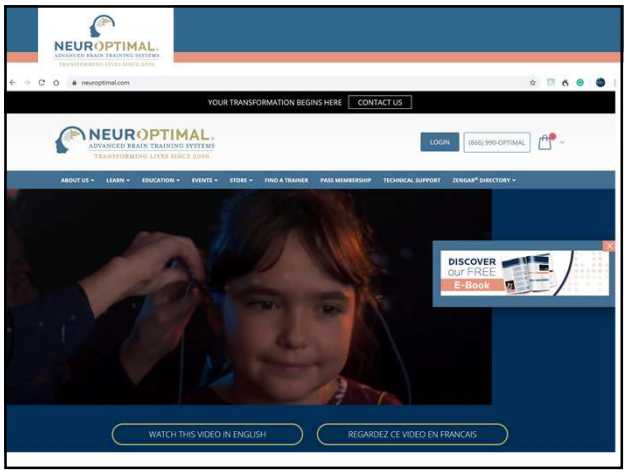
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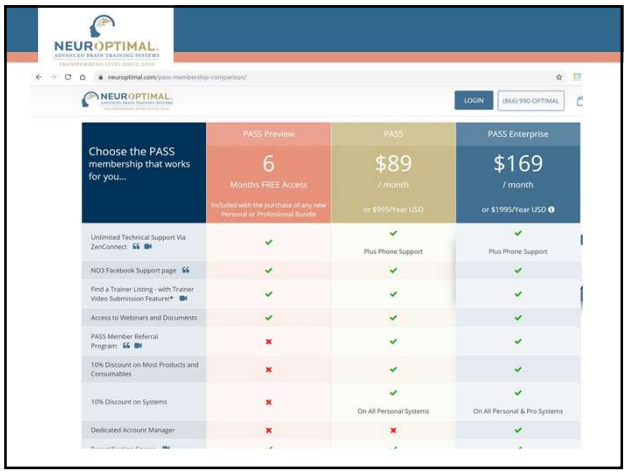
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/ month
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Access to Webinars and Documents
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10% Discount on Systems
On All Personal Systems
On All Personal & Pro Systems
Dedicated Account Manager

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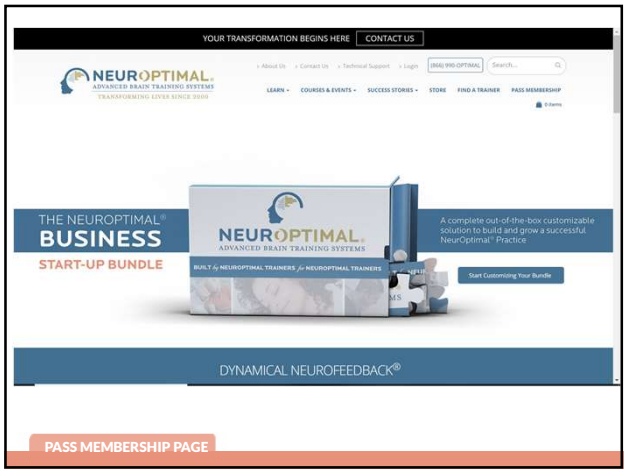
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A complete out-of-the-box customizable solution to build and grow a successful NeurOptimal® Practice
Start Customizing Your Bundle
DYNAMICAL NEUROFEEDBACK®
PASS MEMBERSHIP PAGE

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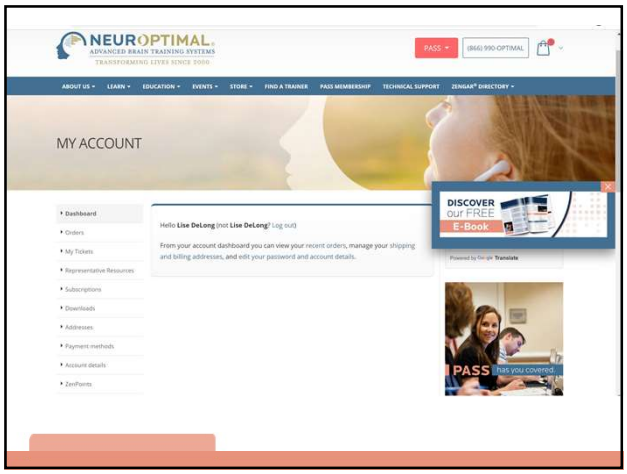
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From your account dashboard you can view your recent orders, manage your shipping and billing addresses, and edit your password and account details.
DISCOVER our FREE E-Book
PASS has you covered

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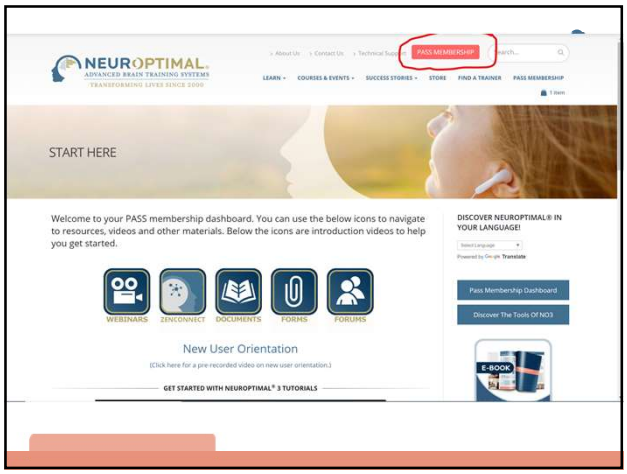
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Welcome to your PASS membership dashboard. You can use the below icons to navigate to resources, videos and other materials. Below the icons are introduction videos to help you get started.
DISCOVER NEUROPTIMAL® IN YOUR LANGUAGE!
Pass Membership Dashboard
Discover The Tools Of NO3
WEBINARS
ZENCONNECT
DOCUMENTS
FORMS
FORUMS
New User Orientation
(Click here for a pre-recorded video on new user orientation.)
GET STARTED WITH NEUROPTIMAL® 3 TUTORIALS
E-BOOK

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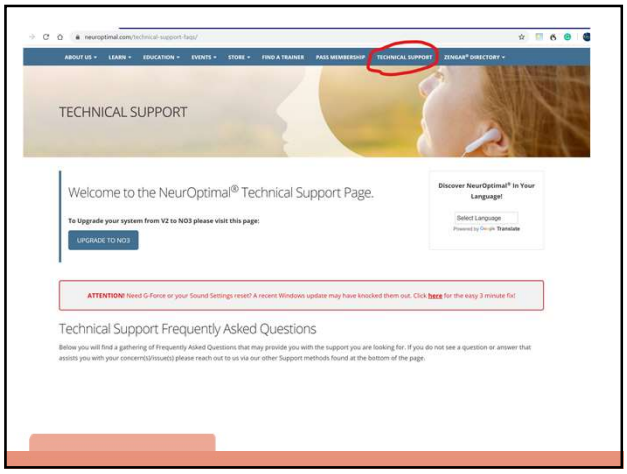
TECHNICAL SUPPORT
Welcome to the NeurOptimal® Technical Support Page.
To Upgrade your system from V2 to NO3 please visit this page:
UPGRADE TO NO3
Discover NeurOptimal® In Your Language!
Technical Support Frequently Asked Questions

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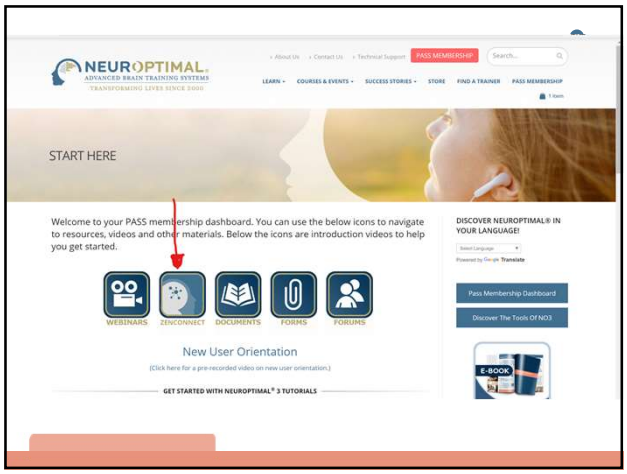
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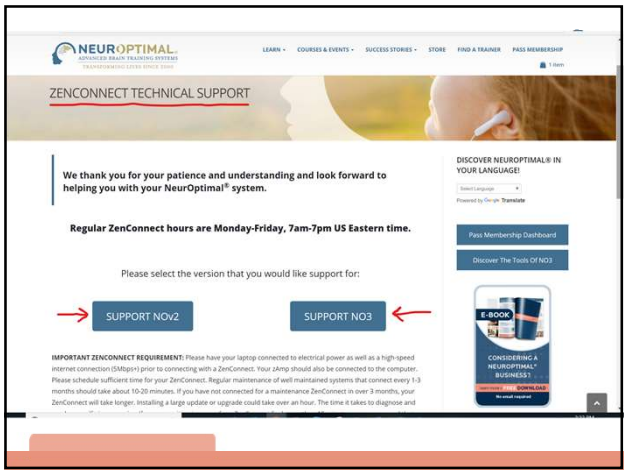
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We thank you for your patience and understanding and look forward to helping you with your NeurOptimal® system.
Regular ZenConnect hours are Monday-Friday, 7am-7pm US Eastern time.
Please select the version that you would like support for:
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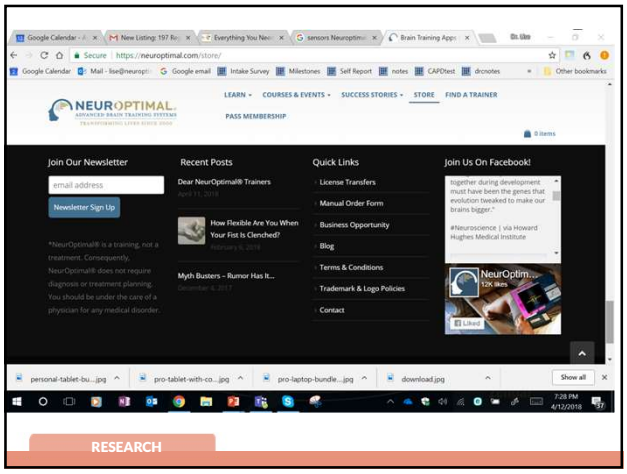
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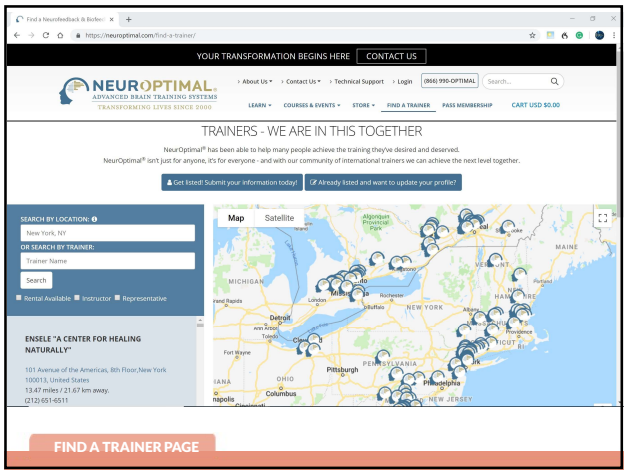
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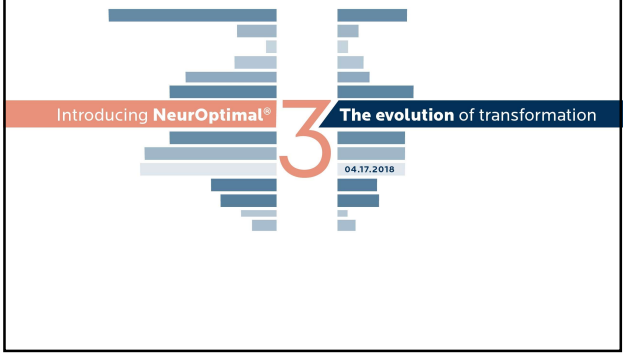
Thank You For Attending the BASIC Re-Certification Course



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