The Neurofeedback Approach to Attention Deficit Hyperactivity Disorder

Steve Kapusta, Owner - BrainTraining of Hampton Roads, Inc.

- Originally from Pittsburgh, PA; resident of VA Beach for 4 years
- Graduate of Clarion University of Pennsylvania
- Entrepreneur for more than 25 years
- Owner of BrainTraining of Hampton Roads
- Received Advanced Certification for QEEG and Neurofeedback from BrainCore Systems
- Since BTHR's inception in 2015, have helped many individuals with their symptomatology from ADHD, Anxiety, Depression, Fibromyalgia and other conditions
- Objective - to help people 'regain their lives' with this incredible non-invasive, drugless and painless technology

www.braintrainingofhamptonroads.com
What is Neurofeedback?

A technique, for dealing with brain-based disorders without the use of medication or invasive procedures, in which brain activity is recorded using sensors and presented visually or audibly so that the patient can know the state of the function he or she is trying to control.

A ‘new’ and not so ‘new’ technology!

What conditions can be helped by Neurofeedback?

Over 40 years of peer reviewed, university based research has demonstrated the efficacy of neurofeedback in addressing many neurological conditions:

<table>
<thead>
<tr>
<th>ADHD</th>
<th>Anxiety</th>
<th>Panic Attacks</th>
</tr>
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<tbody>
<tr>
<td>Insomnia</td>
<td>Chronic Pain</td>
<td>Bedwetting</td>
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<tr>
<td>Migraine</td>
<td>Fibromyalgia</td>
<td>TBI</td>
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<tr>
<td>Tension Headache</td>
<td>PTSD</td>
<td>Depression</td>
</tr>
<tr>
<td>Learning Disorders</td>
<td>Autism / Asperger’s</td>
<td>Tics</td>
</tr>
</tbody>
</table>

As well as other conditions
How Can One Technology Effect So Many Different Conditions?

Each of these conditions has one thing in common:

They all are associated with dysregulated (abnormal) brainwave patterns.

Neurofeedback is designed to correct dysregulated brainwave patterns

Prevalence of ADHD

• The National Institute of Mental Health (NIMH) estimates that 5 million children in the United States have ADHD - that is about 5% of all children!
• The rate of children diagnosed with ADHD has increased more than 50% in the past decade.
• Studies show that up to 70% of children with ADHD continue to have symptoms as adults - that translates to 4% of the US adult population, or 8 million adults!
A study in the *Journal of the American Academy of Child and Adolescent Psychiatry* found that the total spending on ADHD ranges from **$143 billion to $266 billion a year**, and the direct annual costs for treatment are estimated to be $1,574 per person, plus $2,278 a year for family members when indirect costs like productivity losses are taken into account.

- Sales of prescription drugs for ADHD treatment have more than doubled from $4 billion in 2007 to **$9 billion** in 2012.

**THE MEDICAL APPROACH**

- Allopathic medicine generally focuses on the primary complaint and tries to improve the single problem with a medication.

- Medications, however successful, generally carry unwanted side effects

- Often a patient will have one drug to treat a single problem and two other drugs to treat the side effects of the first drug
• In ADHD, for example, the dominant brainwaves are the slow frequency brainwaves known as Theta and Delta.

• Most ADHD medications are stimulants that speed up the brain but the effect is temporary. Remove the stimulant and the brain slows down again.

• In addition to not addressing the root of the problem, stimulant medication also has side effects and we do not know the consequences of its long term use.

THE MEDICAL APPROACH

• The same is true for all of the medications prescribed for these neurological conditions.

• As long as the patient is on the medication, some improvement is noticed but if the medication is discontinued, there is a high probability the condition will return.
Possible side effects of ADHD medications

- ADHD drugs sometimes have side effects
- The most common side effects of ADHD medications include:
  - Decreased appetite/weight loss
  - Sleep problems
  - Headaches
  - Jitteriness
  - Social withdrawal
  - Stomach aches

Incidents of abuse of these stimulants have also increased significantly in recent years.

The Neurofeedback Approach

- Research over the past 40 years has demonstrated that dysregulated brainwave activity is at the core of most of these conditions.

- Neurofeedback is a sophisticated form of biofeedback that actually trains the brain to normalize the brainwaves and make them flexible and adaptable to situational needs.
The Neurofeedback Approach

- Neurofeedback is a simple learning modality
- It is painless, drugless and non-invasive
- It is considered safe and effective for both children and adults

Neurofeedback is based upon the principle that there is a normal pattern of brainwave activity and that the brain regulates itself based upon this pattern.
Research demonstrates that this normal pattern may become disrupted resulting in a dysregulated brain and causing neurological symptoms.

What causes Brainwave Dysregulation?

Dysregulation is initiated by any factor that causes a *prolonged stress response* within the body.

- Any perceived threat
- Drugs/Toxins/Vaccines
- Poor Nutrition
- Lack of Sunlight (Vitamin D)
- Emotional or Physical Trauma and/or Stress
- Lack of Exercise
- Spinal Subluxation
• Mental states are associated with specific brainwaves
• Each brainwave represents a specific processing speed of the brain - also known as arousal level

• These brainwaves include:
  – Delta
  – Theta
  – Alpha
  – Beta

THE AROUSAL SPECTRUM

A healthy, regulated brain is able to shift easily between arousal states as the demands arise
**DELTA/THETA DYSREGULATION - THE UNDER AROUSED BRAIN**

With Delta/Theta Dysregulation the brain tends to operate at a slow processing speed and is considered to be under aroused.

Studies have shown that Delta / Theta Dysregulation may be associated with:

<table>
<thead>
<tr>
<th>Cognitive Impairment</th>
<th>Excessive Speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impulsivity</td>
<td>Disorganized</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>Hyper-emotional</td>
</tr>
<tr>
<td>Focus and Attention Issues</td>
<td>Traumatic Brain Injury</td>
</tr>
<tr>
<td>ADHD</td>
<td>Dementia</td>
</tr>
<tr>
<td>Socially Inappropriate</td>
<td>Learning Disorders</td>
</tr>
<tr>
<td>Easily Distracted</td>
<td>Autism / Asperger's</td>
</tr>
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**ALPHA DYSREGULATION - THE INHIBITED BRAIN**

With Alpha Dysregulation the brain tends to operate at an idle processing speed and is considered to be inhibited.

Studies have shown that Alpha Dysregulation may be associated with:

<table>
<thead>
<tr>
<th>Depression</th>
<th>Ruminination</th>
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</thead>
<tbody>
<tr>
<td>Victim Mentality</td>
<td>Anger</td>
</tr>
<tr>
<td>Excessive Self Concern</td>
<td>Self-Deprecation</td>
</tr>
<tr>
<td>Passive Aggressive</td>
<td>Agitation</td>
</tr>
<tr>
<td>Irritability</td>
<td>Fibromyalgia</td>
</tr>
<tr>
<td>Avoidance Behavior</td>
<td>Withdrawal Behavior</td>
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Different Neurofeedback Processes

Three Neurofeedback Evaluation Procedures:

- Symptom Based Evaluation
- Single Site Evaluation
- QEEG Evaluation

With Beta Dysregulation the brain tends to operate at a fast processing speed and is considered to be over aroused.

Studies have shown that Beta Dysregulation may be associated with:

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<td>OCD</td>
<td>Worry</td>
</tr>
<tr>
<td>Migraine / Tension Headaches</td>
<td>Chronic Pain</td>
</tr>
<tr>
<td>Insomnia</td>
<td>Hyper-vigilant</td>
</tr>
<tr>
<td>Obsessive Thinking</td>
<td>Dislike Change</td>
</tr>
<tr>
<td>Excessive Rationalization</td>
<td>Restless</td>
</tr>
<tr>
<td>Poor Emotional Self Awareness</td>
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</table>
Dysregulated Brainwave Patterns are Identified on a Quantitative Electroencephalogram or QEEG

The Brain Map

A Brain Map provides us with the information that is required to perform neurofeedback training
In addition to identifying global dysregulation, the mapping software will also identify focal sites of dysregulation.

The mapping software will correlate the dysregulated findings at each site, with the function of each site.
The goal of neurofeedback is not to diagnose or treat any particular condition.

The goal is to transform an unhealthy, dysregulated brainwave pattern into a normal, healthy, organized pattern.

**HOW IS NEUROFEEDBACK DONE?**

Individuals are hooked up to a computer using wires and sensors and the computer reads their brainwaves.
Information about these brainwaves is displayed on the technician’s monitor.

The software automatically detects when the brainwaves are properly ordered and it feeds that information back to the client.
This feedback appears in the form of a game, movie, or sound which signals the client that the brainwaves are becoming more ordered.
Neuroplasticity

Neuroplasticity is the brain’s capacity to change and adapt specific neural pathways and synapses in response to the demands placed on it.

This occurs in the brain:
• At the beginning of life when the immature brain organizes itself
• In cases of brain injury, to compensate for lost functions or maximize remaining functions
• Throughout adulthood - whenever something new is learned

Neuroplasticity and Learning

Changes associated with learning occur mostly at the level of the synapses between neurons.

New synapses can form and the internal structure of the existing synapses can change.

Landmark London taxi/bus driver study

Follow up studies in neurofeedback show that the effects continue for up to 30 years.
NEUROFEEDBACK IS BASED IN OVER 40 YEARS OF CLINICAL RESEARCH PROVING IT’S EFFICACY

In fact, Dr Frank H. Duffy, a Professor and Pediatric Neurologist at Harvard Medical School, stated that

“Neurofeedback should play a major therapeutic role in many difficult areas. In my opinion, if any medication had demonstrated such a wide spectrum of efficacy it would be universally accepted and widely used”
More recognition of neurofeedback

The Child and Adolescent Psychiatric Clinics of North America determined that:

“EEG Biofeedback meets the American Academy of Child and Adolescent Psychiatry criteria for clinical guideline for treatment of ADHD, seizure disorders, anxiety (i.e. OCD, GAD, PTSD, phobias), depression, reading disabilities and addictive disorders. This suggests that EEG biofeedback (aka Neurofeedback) should always be considered as an intervention for these disorders by the clinician.”
Thank you for attending our session!

Questions?

Comments?