Integrating Neurofeedback and Counseling for Successful Client Outcomes

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Neurofeedback (NFT) can be referred to as:

- EEG Biofeedback
- Neuro therapy
- Brain Training
- Peak Performance
Like other forms of biofeedback, NFT uses monitoring devices to provide moment-to-moment information to an individual on the state of their physiological functioning.

– The characteristic that distinguishes NFT from other biofeedback is a focus on the central nervous system and the brain.

– Neurofeedback training (NFT) has its foundations in basic and applied neuroscience as well as data-based clinical practice. It takes into account behavioral, cognitive, and subjective aspects as well as brain activity (ISNR, 2009).
Neurofeedback Defined:

- Self-regulated brain training through operant conditioning
- “Technology’s answer to psychology, cognitive rehabilitation, and poor cerebral functioning”
  
  (Demos, 2005, p. 3)

- “Promotes growth and change at the cellular level of the brain”
  
  (Demos, 2005, p. 3)
Simply put, Neurofeedback:

Exercises your brain!
“Father of NFB” Kamiya & Alpha

- 1965 – Attached electrodes to student’s head & asked student to tell him when student produced alpha
- First session – student guessed
- 4th session – student correctly guessed 400 times in a row when student was producing alpha
- Over time student could identify when alpha was produced and not produced in the brain.
Barry Sterman – Discovery of SMR

• Sensorimotor Rhythm (SMR)
• NASA experiment examining the effects of rocket fuel and seizures
• 50 cats (10 cats from previous study)
• 10 cats that could produce SMR survived
• Epilepsy – Freeman & SMR
Joel Lubar

• Addressed attention disorders
• His protocol is to inhibit 2-10 Hz and 19-22 Hz and encourage 12-19 Hz.
• Lubar’s conclusions indicate 80% of patients improve and can maintain these changes.
Basic Brain Facts

- The brain weighs approximately 3 pounds
- Brain continues to mature until approximately age 25
- Lobes and main structures of the brain
Brain Waves

- Delta: .5 - 4 Hertz – Deep Sleep
- Theta: 4 – 8 Hertz - Meditation and sleep
- Alpha: 8 – 13 Hertz - Daydreaming
- Beta: 13 – 30 Hertz - Alert, learning
- Gamma: 30 – 80 Hertz - Learning and insight
Brain Waves on EEG

Retrieved from: http://www.biogetic.com/img/eeg2.gif
Signatures of Pathology in Brain Waves

• Brain waves are as different in people as their finger prints. However, signatures of pathology are the same in all brain waves.

• Many conditions can be improved as different parts of the brain are normalized using Neurofeedback.
NFB helps to restore brain waves

• Neurofeedback helps to restore a better balance of waves throughout the brain, so the brain can perform on a more optimum level.
Brain Plasticity

• Refers to the brain’s ability to change
• The brain’s plasticity is strongest during childhood
• Impacts our ability to learn and change behaviors

Practitioner Requirements

- Education & Training
- Supervision (Mentor)
- Purchasing a System
- Certification (not necessary, but encouraged): Biofeedback Certification Institute of America; bcia.org
International 10/20 System
Neurofeedback works with other modalities

- Counseling
- Alpha-stim
- Hypnosis
- EMDR
- Breath/Body work
QEEG encouraged, but not required

• Assists with brain assessment
• Allows EEG Biofeedback clinician to see overall brain performance
• Can assist with protocol placement as well as protocol order
• Gives client and clinician ability to see overall EEG connectivity changes pre- and post-assessment
What is Neurofeedback used for?

- ADHD/ADD
- Addiction
- Depression
- TBI and stroke
- Migraines
- Anxiety Disorders
- Panic Attacks
- Mood disorders
- OCD
- Reactive Attachment Disorder

- Improved emotional and affect regulation
- Conduct Disorder, ODD
- Tics, Tourette Syndrome
- Pain
- Rage
- Autism
- PDD
- Improved socialization
- Motor skills (handwriting, clumsiness)
- PTSD
- Concentration, cognitive function
- Sleep Disorders
How Neurofeedback is done?

• Demonstration of types of neurofeedback equipment
  – EEG’er
  – Brain Avatar
Number of Sessions with Neurofeedback depends on:

• Training frequency & duration
• Receptivity of the training site
• Clinical presentation of the client
• Client commitment to training
• Use of client checklists, e.g. symptom checklist, Amen checklist (feedback to practitioner)
Different Ways to Use Neurofeedback

- Normalizing the EEG
- Peak Performance - Personal growth and mental flexibility
  - Executives
  - Opera Stars
  - Athletes (specifically the Italian World Cup winning soccer team)
Neurofeedback is a last chance therapy for some clients

• Case of Mark – Profound IDD 27 year old male with autism and daily seizures
Mark had Profound Autism

- Potty trained, went to church, but mom had to take him to back of church just in case Mark had a tantrum
- Family did limited things outside of home given Mark’s behavior
- Special Ed until age 22
- Limited language - verbal & sign language
Traditional Approaches – Meds & Shots for Allergies, Epilepsy and Behavior

• According to Mark’s mother, “I don’t see any difference.”
Mark’s Epilepsy

• “He would have a seizure once every ten days; he never used to have the same pattern. Some days it would be light and at least once a month it would be one big seizure.”
Neurofeedback and Mark’s Seizures

• NFB changed presentation of seizures
• Fruity Pebbles episode
• Seizure in bathroom & going to bed
• “He remembered what he was doing and before neurofeedback, he didn’t have that.”
NFB and impact on Mark’s family dynamics

• Engaging more with Dad, at his convenience
• Mom feels confident taking him out in public
• Church – used sit in back of church
• Aware of his own feelings (parents not always thrilled)
NFB only intervention that helped Mark

• “I’m just trying to look for some help for him and so far, Jackie, I tell you, you are just about the only person who has really helped us with his therapy.”
Ines and her son, Chaco

- Born premature
- Had Asthma, & anxiety exacerbated it
- School diagnosed him with Dyslexia
Chaco’s Behavior

• Extremely anxious
• Didn’t want to do work by himself at school or home
• Went to School nurse once a day for inhaler because of asthma
• Whiny and difficult to deal with
During NFB with Chaco

- Trained brain using an ADHD protocol
- Allowed him to read or do homework while doing neurofeedback after first 5 sessions, then let him “play” video games with his brain
Chaco after Neurofeedback

• “I believe it's neuro[feedback], I don’t know what else it is. He doesn’t have to use his inhaler as much. The dosage went from 110 to 44. He used to take Xopenex like 3 times a week, but not anymore.”
After Neurofeedback, Family Dynamics Change

- Chaco did homework independently
- Grades increased
- Sibling relationships improved
- Could go to stores again with him
  - “It used to be, ‘Chaco where’s you homework?’ Now he gets home, he has homework and starts it by himself and hardly asks for help at all. I don’t know what to do with myself, it’s so much easier!”
Chacho’s mom, Ines, asked for NFB

• Saw Chaco’s success and wanted to see if it could work for her
Ines’ Previous Diagnoses

- Panic attacks & several trips to hospital
- GAD & OCD
NFB Protocols

- C3-C4 - Cortex
- T3-T4 – Temporal lobes
- FpO2 – Amygdala (after 3 periods, Ines stopped me had me take off the sensors and began to describe childhood sexual abuse)
- FPO2 his the amygdala – the fear center of the brain
Ines Relaxed = family dynamics changing

- Children less stressed
- Children now have chores
- Children responsible for their own hygiene
- Ines demanding that husband calm down in front of kids
- Brother-in-law moved out
2nd Mother & Son Dyad
“Marge & Bart”

- Almost 6 months old, had scabies, impetigo, etc.
- Sensory Issues – didn’t like to be held
- Bottle fed
- Flapped hands in air in crib & walker
  - “He would lay there and his hands would be up, and he would just flap with his hands. He’d also do the same thing in his walker, running around and flapping his hands in the air.”
Atypical Behaviors continued

• Sensory overloading & meltdowns
• Hitting parents
• Lining up Hot Wheels
• “When he got into the Hot Wheels cars, he would be lining them all up on the tile floor in the kitchen. When I saw him do this, it was like DING, DING, DING, DING!”
Neurofeedback at St. Mary’s University

- Bart first approx. age 8
- Then Marge
- Bart reentered NFB Approx. age 13
NFB & Bart

“Since we’ve come back to neurofeedback, he’s calmer; he doesn’t have as much anxiety. I can really see a difference in his school work this year. He’s not missing any assignments and his grades are all passing.”
Bart’s Social Awareness

- “Bart is becoming socially appropriate and aware. He’s learned and incorporated the right things to say and do with other people.”
NFB & Marge’s Anxiety

• “As far as the anxiety is concerned, I think it’s got to be the neurofeedback. I know I’m an anxious person; I’ve been anxious all my life. But since I’ve been on neurofeedback, I’m a lot less anxious.”
NFB & RCT Approach

• “I do think it’s the neurofeedback that helped calm me down, but after calming down, the talking to you has definitely helped me.”
Recommended Reading

• A Symphony in the Brain: The Evolution of the New Brain Wave Biofeedback
  By Jim Robbins

• Getting Started with Neurofeedback
  By John N. Demos

• The Neurofeedback Solution: How to Treat Autism, ADHD, Anxiety, Brain Injury, Stroke, PTSD, and More
  By Stephen Larsen
Recommended Reading

• The Neurofeedback Book
  By Thompson and Thompson

• Protocol Guide
  By Sue Othmer

• The Female Brain
  LouAnn Brizendine, MD

• Biofeedback for the Brain
  By Paul Swingle
Neurofeedback Websites

• isnr.org
• www.aapb.org
• http://www.eeginfo.com/what-is-neurofeedback.php
Questions for presenters?

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