Cognitive Remediation Journal

The editorial board

Content

BFE 18th Annual Meeting - March 24-28, 2015 Rome

WORKSHOP ABSTRAKTS

STEVEN M. BASK1N, PH.D.

2-Day Workshop: Biobehavioral Considerations in the Diagnosis and Treatment of Primary Headache Disorders

Tuesday, March 24, 2015 and Wednesday, March 25, 2015

Registration Code: BFBEN01

This workshop is an in-depth clinical guide to the many advances in the diagnosis and management of migraine, cluster headache, tension-type headache and their many variants. The workshop will first provide the participants with a thorough overview of the basic headache diagnostic interview. It will then explore the pathophysiology of the different disorders integrating neurochemical, physiological, behavioral, and psychological perspectives. Pharmacological, psychophysiological and behavioral treatment alternatives will be reviewed in relation to both clinical effectiveness and underlying pain mechanisms. The workshop will help the biofeedback and neurofeedback therapist understand the basics of successful headache diagnosis and treatment and better communicate with the medical community. Behavioral and psychophysiological protocols will be thoroughly discussed. Chronic daily headache and chronic migraine will be extensively examined including the transformation process from episodic to chronic headache. Issues of psychiatric co-morbidity will be explored. Numerous cases will be presented to help the learning process.

Learning Objectives:

1) Learn how to perform a headache diagnostic interview to make an informed diagnosis.
2) Describe the clinical symptoms and mechanisms of the primary headache disorders.
3) Recognize the signs and symptoms of dangerous headaches.
4) Outline behavioral, biofeedback, neurofeedback and pharmacologic treatment alternatives.
5) Consider the issues of psychiatric comorbidity and medication overuse.

ANNETTE BOOIMAN, PT

1-Day Workshop: The Advantage of EMG by Movement Corrections Friday, March 27,2015 Registration Code: EMGEN01

In this workshop, we will explore the use of practical exercises for daily life and what the changes will be in the EMG recordings when these simple daily activities are executed well. The workshop will be partly theoretical and partly practical and focus on good posture and effective muscle functioning combined with breathing techniques. The participants will practice the techniques by themselves during the workshop and learn how to implement the exercises into their own or their clients everyday life. The EMG or other biofeedback signals will guide the activities and give more information about the advantages of a good posture and movements, exercises and attention.

FRANK DEGREGORIO

1-Day Pre-Conference Workshop: General Introduction to Biofeedback Peripherals

Monday, March 23, 2015

Registration Code: PCWEN01

This 1-day workshop is for researchers and health professionals who want to learn how to use the latest "cutting edge" biofeedback technology. The morning session provides an overview of the key features of the BioGraph Infiniti 6.0 software and hardware. Software suites that can be showcased include Neurofeedback, Physiology, Rehab-Muscle, Z-Score, HRV and Reaction Time.

During the afternoon session, participants will have a "hands-on" experience using Surface Electromyography (SEMG), Respiration, Temperature, Skin Conductance, Electroencephalography (EEG), Heart Rate and Electrocardiology (EKG) with audio and visual multimedia biofeedback screens. (This workshop is NOT limited to current BioGraph Infiniti users only. Clinicians who have an interest in Biofeedback and in BioGraph Infiniti but do not currently possess our equipment are welcome to register.) *This course has been approved by BCIA to provide 7 hours of category A accredited continuing education for BCIA re-certification.*

DR. RICHARD GEVIRTZ

2-day Workshop: Heart Rate Variability Biofeedback: Principles and Applications Friday, March 27, 2015 and Saturday, March 28, 2015 Registration Code: HRVEN01

Over the last 20 years, Paul Lehrer and I have studied aspects of heart rate variability and discovered a biofeedback technique (HRVB) that appears to have a number of applications, some of them very powerful. In this workshop, I will:

Day 1

- Introduce the physiology and psychophysiology of heart rate and heart rate variability.

- Explain in detail the measurement of parameters such as SDNN, RMSSD, HF (vagal tone), and other less frequently used measures.
- Introduce the "meditational model" for unexplained medical and anxiety conditions.
- Demonstrate the HRV biofeedback protocol that we have developed.
- Discuss home training and home practice devices.

Day 2

- Discuss the Spindle/Triggerpoint pain model.
- Show how HRVB can be used together with other physical and psychological therapies.
- Review the HRV measurements, and biofeedback protocol.

- Discuss HRVB applications for Anxiety disorder: Gastrointestinal symptoms, Migraine, Cardiac Rehab, and others.
- Wrap up with a consolidated review of the measurement of HRV and the biofeedback techniques.

DR. CHRISTEL KANNEGIERER-LEITNER AND RALPH WARNKE

1-Day Workshop: Hemoencephalography: HEG Based Neurofeedback Practically Introduced as a Smart and Easy-to-Use Training Method in ADD/ADHD, Dyslexia and other Learning Disorders Tuesday, March 24, 2015 Registration Code: EEGEN04

Neurofeedback is a fast progressing treatment method. The scope of pathologies and non-pathologies being treated with neurofeedback is likewise growing steadily. A key downside of current standard neurofeedback training is the lengthy treatment periods. I.e. in ADD patients, standard number of sessions often exceeds 40 weekly trainings.

This work describes a different approach to neurofeedback treatment. It is based on the concept of nlR- based HEG therapy as proposed by Toomin and others. The key target groups here are ADD/ADHD children, dyslexic children and children with other forms of learning disorders. Providing clients with a rather compact structure of HEG based neurofeedback training with several sessions per day over a duration of one or two weeks each appears to have similar if not better effects on clients than a lengthy form of therapy. The overall aim of this approach is to provide children and youth with limited concentration and endurance with a treatment they can more easily cope with and perceive as successful in a fast and convincing way.

ANTONIO MARTINS-MOURAO, CHARTERED CLIN, PSYCH., PH.D

1-Day Workshop: Biomarkers for Anxiety Disorders (OCD and PTSD): Implications for the Design of Effective Neurotherapy Protocols Friday, March 27, 2015 Registration Code: EEGEN09

What does Anxiety look like in the EEG? This workshop presents an in-depth clinical guide to the identification of neurophysiological subtypes, or EEG-phenotypes, for Anxiety disorders with the focus on Obsessive-Compulsive Disorders (OCD). OCD is an anxiety-related mental health condition affecting 3% of the population. Sufferers experience frequent obsessional thoughts, often resulting in compulsions, impulses or urges. However, symptoms of OCD vary considerably from the 'mild' double checking of locks and appliances when leaving home, to the more compulsive hand washing, or the need to keep items symmetrical and object hoarding. You will be introduced to group data and case studies showing neurophysiological differences between subgroups with Anxiety, OCD and healthy controls, and how these differences impact the scores obtained on behavioural questionnaires like the YBOCS (OCD scale) and the MMPI-2-RF (psychopathology scale). We will also discuss how the EEG may predict the best medication for individual cases. Given that nearly half of OCD patients currently fail to respond to drug treatments (Pallanti et al., 2002; Bandelow & Ruther, 2004), this emerging approach represents a clear development from the traditional 'one-size-fits-all' classification of behavior solely based on

diagnostic manuals such as the DSM-IV. In this 1-day workshop you will learn:

1. the basics of how to record, deartifact and interpret a QEEG recording,
2. how to identify the main EEG-phenotypes underlying Anxiety and OCD, and
3. how to design effective protocols that may predict individual response to neurotherapy and enhanced clinical outcomes within shorter periods.

Intended audience: psychologists, psychotherapists, physicians, graduate students, neurofeedback practitioners, and other mental health care professionals with an interest in QEEG and neurofeedback integration for treatment planning.

Learning objectives: By the end of this workshop participants will have an understanding of the various neurophysiological and behavioural subtypes found in patients with Anxiety disorders and how this information may support the design of personalised neurofeedback protocols for these patients.

RALF NICKEL AND DR. NADINE HERZIG

2-Day Workshop: Brucker-Biofeedback-Method (BBFM)® Biofeedback in Neurological Rehabilitation after Central Nervous System Damage
Tuesday, March 24, 2015 and Wednesday, March 25, 2015
Registration Code: EMGEN06

Based on the knowledge that the central nervous system (CNS) has long term structural repair capability, alternate cell structures can be utilized to take the functional place of damaged or destroyed cells. The CNS also has the possibility of establishing neuro-networking in different ways which is known as neuroplasticity or cortical remapping. This type of neuroplasticity is the basis of our daily biofeedback work in neurological rehabilitation and also in neurofeedback procedures when used properly with operant conditioning paradigms. Evidence from our laboratory founded in 2002 and others worldwide, have clearly shown that operant conditioning procedures for learned control of specific neurophysiological responses can lead to significantly greater utilization of surviving CNS tissue after damage caused by strokes, brain injuries, cerebral palsy and spinal cord injuries, even after years. This workshop will focus on the important variables that clinicians need to understand in order to have most effective functional outcomes from their biofeedback procedures in treating neurological patients.

LOTHAR NIEPOTH, DIPL. PSYCH.

1-Day Workshop: Biofeedback in the Treatment of Insomnia Saturday, March 28, 2015 Registration Code: BFBEN03

Approximately 8 million people are suffering from psychophysiologic (non-organic) sleeping disorders in Germany - how can Bio- and Neurofeedback be used in the treatment of sleeping disorders? This one- day-workshop aims at introducing the participants to the basics of sleep disorders, like classification, common diagnostic tools, sleep architecture and relevant comorbidities. Furthermore, you will learn basic knowledge about standard treatment and medication.

There are some sleep disorders that are of special interest to Bio- and Neurofeedback- practitioners thus we will focus on:

- Psychophysiological Insomnia
- Inadequate Sleep Hygiene
- Mood Disorders, Anxiety Disorders and differentiate from:
    o Insomnia associated with medical disorders
    o Insomnia associated with substance-related addiction
    o RLS, Apnea, Narcolepsy

When it comes to Biofeedback, a muscle relaxation training of our own devising will be presented and trained.

Lots of research has also proven the efficacy of Neurofeedback in the treatment of sleeping disorders - we will discuss the latest study results and practice the implementation of SMR training, theta training and training of sleep spindles. Participants may exercise electrode placement following AASM and detecting common artifacts. Depending on the needs of the participants a digression to brain mapping in diagnostics can be offered. In recent years, more and more devices have been developed which make

an outpatient analysis of one's EEG-pattern during sleep possible. The pros and cons of those devices will be outlined and discussed.

DR. ERIK PEPER

2-Day Workshop: Building Hope: Integrating Biofeedback and Somatic Feedback with Self-healing Skills Resolving Chronic Disorders from Test Anxiety to Severe Chronic Pain Tuesday, March 24, 2015 and Wednesday, March 25, 2015 Registration Code: BFBEN02

The workshop focuses upon Integrating biofeedback and somatic feedback with self-healing skills embedded within an evolutionary developmental perspective. The components include assessing the person from a holistic perspective (e.g., diet, movement, internal self-talk, social support, and circadian patterns) and identifying the chained behavior. The workshop includes assessment of dysfunctional respiration and motor patterns, training in effortless breathing with scalene/trapezius and transverse abdominis SEMG, respiratory strain gauges and blood volume pulse. The somatic biofeedback includes movement patterns, visual and kinesthetic imagery, touch,

cognitive and postural strategies to reduce dysfunctional patterns and optimize health. Participants will learn to recognize and experience subtle dysfunctional illness promoting patterns such as those triggered by the startle response and defense reaction, breath holding, gasping, absence of pelvic floor movement, and hyperventilation. Applications of this integrated approach has been demonstrated to reverse numerous illnesses such as vulvodynia, test anxiety, epilepsy and eczema. The workshop includes self-practices, physiological monitoring, demonstrations and strategies to teach clients.

PIOTR SOBANIEC, BCIA-BCN

1-Day Workshop: Effective Intervention in Patients with Autism and ADHD - Tips and tricks for successful neurotherapy. Saturday, March 28, 2015 Registration Code: EEGEN10

This workshop will assist participants to understand the basic concepts of neurofeedback

training protocols and possible cognitive strategies used in the treatment of children with autistic

spectrum disorder, ADHD and learning disabilities. It will demonstrate how to improve clinical studies and everyday private practice with neurofeedback.

Presented material is based on our experiences gained from numerous studies conducted at the Department of Pediatrics Neurology and Rehabilitation, Medical University of Bialystok, Poland and Neuromaster Centre in Biatystok as well as supervising in various pedagogical and psychological clinics in Poland. Suggested approach consists of a model of cooperation between interdisciplinary therapists and conducting evidence-based therapy with QEEG and ERP analysis. Furthermore, during the workshop 10 points will be discussed that should be considered in planning successful therapy along with another 10 points about what should be avoided.

PAUL G. SWINGLE, PH.D.

1-Day Workshop: Basics of the ClinicalQ Database and Braindriving Tuesday, March 24, 2015 Registration Code: EEGEN02

Neurotherapy is rapidly evolving into a primary care option for many disorders. Problems with mood, anxiety, sleep quality, learning, cognitive processing, pain, addictions, anger management, and age related memory are all amenable to rapid assessment and treatment. The assessment procedures are simple and straight forward involving assessment of a limited number of brain sites. Treatment options other than neurofeedback have been developed to markedly accelerate neurotherapy. These complementary techniques markedly facilitate neurotherapy as a viable primary care alternative to dangerous and often ineffective pharmaceuticals.

The workshop starts with the precise ClinicalQ assessment procedure that determines treatment strategies. Emphasis is on Braindriving treatment procedures including review of major unconditioned stimuli required for treatment. Other treatment options including neurofeedback, AVS, CES, energy psychology methods, craniosacral manipulations, harmonic sounds, electrostimulation, and behavior therapies appropriate for a wide range of disorders are presented. Practitioners will be able to immediately apply these efficient techniques. Conditions that require full QEEG and normative data base procedures will be identified as will conditions in which the more aggressive treatments are contraindicated.

PAUL G. SWINGLE, PH.D.

1-Day Workshop: Neurotherapeutic Treatment of Depression Wednesday, March 25, 2015 Registration Code: EEGEN03

Neurotherapy has been shown to be very efficient for treatment of the many forms of "depression." Most important, EEG assessments based on clinical normed data bases precisely identifies the various forms of this condition and critically identifies those conditions that are mistakenly treated as depression. Severe anxiety, for example, has a very different neurological profile from depression but clients often report "depression" because their lives are in shambles as a result of disabling anxiety.

Many clinical clients also have histories of emotional trauma and many also present for treatment as a result of on-going or recent traumatic stress. The ClinicalQ assessment helps identify those conditions that may be more

efficaciously treated with therapies other than those neurologically based.

The ClinicalQ EEG intake assessment is remarkably accurate for identifying clients with unresolved posttraumatic stress, endogenous predispositions to depression or anxiety as well as other conditions that mimic "depression." Combining the EEG markers for "trauma" with endogenous neurological conditions that affect manifestation of depression provide guides for neurotherapeutic treatment.

The workshop reviews the diagnostic procedures for identifying the neurological conditions associated with the client's symptoms as well as identifying the neurological "foot-print" for exposure to severe emotional stressors that have not been resolved. Neurotherapy is not a stand-alone treatment modality. The second portion of the workshop, therefore, focuses on the combination of neurotherapy, particularly braindriving technology, with other therapeutic procedures for very effective treatment of the wide array of clinical conditions that are the basis for clients seeking treatment for "depression."

DRS. LYNDA AND MICHAEL THOMPSON

5-Day Workshop: BCIA Neurofeedback Program

Monday, March 23, Tuesday, March 24, Wednesday, March 25, Friday, March 27 and Saturday, March 28, 2015

Registration Code: EEGEN01

This workshop is designed to train professionals to effectively carry out basic Neurofeedback (NFB) and Biofeedback (BFB) interventions in order to optimize the performance of their clients or to ameliorate the symptoms of a variety of disorders that have been shown to respond to the combination of NFB and BFB. The material covered in the workshop meets the requirements of the Biofeedback Certification International Alliance for the didactic knowledge portion of their certification process. (For the full certification requirements, see www.bcia.org.) We will cover the basics and also introduce participants to more advanced methodologies, including LORETA NFB, z-score training, and transcranial direct current stimulation (tDCS). Designing interventions that are based on integrating knowledge of clinical symptoms, knowledge of functional neuroanatomy, and knowledge of quantitative EEG analysis will be emphasized. Demonstrations will augment the lecture material.

1st Day: Introduction to Neurofeedback including scientific basis for NFB, basic terms & definitions, understanding the EEG, origin of the EEG, montages, removing artifacts, single channel assessment, learning theory (operant & classical conditioning) as it applies to NFB, designing training sessions, tracking results.

2nd Day: Psychophysiological stress assessment, how to effectively run neurofeedback sessions that combine NFB with heart rate variability and other biofeedback variables. Case examples will include ADHD, learning disabilities, seizure disorders and anxiety.

3rd Day: Basic Neuroanatomy and Neurophysiology will be covered to provide the neurophysiological and neuroanatomical rationale for combining HRV with NFB to improve performance in executives and athletes and assist people who have had a concussion. The third day will cover international 10-20 sites and their relation to Brodmann Areas (BA's), the basics of understanding functions of BAs and neural networks, and an explanation of Brain Maps & LORETA. Case examples will be used extensively.

4th Day: Assessment and treatment of disorders such as Depression, Anxiety and Panic Disorders, Obsessive Compulsive Disorder, Tourette's Syndrome, Asperger's and Autistic Spectrum Disorders, plus other problems as requested by participants.

5th Day: Review of other required material from the BCIA Blueprint of Knowledge such as basic statistics, research design, levels of efficacy based on research, data bases, slow cortical potentials, evoked potentials (ERPs), medication effects, adjunctive techniques and ethics.

DR. LINDSAY THORNTON

2-Day Workshop: Applied Work with Athletes in Peak Performance and Sports Tuesday, March 24, 2015 and Wednesday, March 25, 2015 Registration Code: SPOENOl

Abstract: Psychophysiological assessment and training tools, including biofeedback and neurofeedback, are increasingly integrated with sport psychology services for elite and Olympic level athletes. This workshop will detail Dr. Thornton's working model of a typical psychophysiology session with high performers. Demonstrations of a thorough assessment (1 Vi hours) and a brief assessment (4 minutes) will be completed. The screens, thresholds, reward guidelines and timing of training will then be presented. Elite athletes (as compared to clinical populations) learn to quickly control states such as focusing, calming, and quieting the mind. The skills to be used within the performance (cue words, intention, quieting, parking, etc.) will be matched with the desired psychophysiological states. How to prioritize and incorporate the office skill training with the actual performance needs will be illustrated with examples from several different sports. In this workshop, examples of the assessment-to-training plan development will be reviewed with an emphasis on the transfer of self-regulation skills to a high pressure competitive environment. Case studies with Olympic level athletes using including QEEG, neurofeedback and biofeedback will be shared. The goal of how to provide and tailor real time feedback to athletes regarding shifts in physiological states and enhance their mastery of state regulation will be demonstrated. The use of other technologies in the assessment and development of wellbeing and performance of athletes will be discussed.

Intended Audience: Individuals who work with elite performers, those who have to produce quality performance typically under the stress of time or importance (athletes, musicians, executives, surgeons, etc., will be highlighted). It will be assumed that the clinician knows the basics of neurofeedback and biofeedback.

Learning objectives: Participants will learn:

- How biofeedback is used with elite/Olympic athlete
- A preliminary understanding of psychophysiology
- How biofeedback/neurofeedback can be used in practice

EDNA TUNE, B.SC. AND DAN TUNE, BA

1-Day Workshop: From Disabilities to (Learning) Differences Over to Abilities & Control and Learning

Gifts in Correlation with the Frontal Lobe

Wednesday, March 25, 2015

Registration Code: EEGEN05

Topics:

- What is a learning disability (LD) and what isn't one?
- A brief history of treatment methods for learning disabilities (LD) - both comic and tragic
- A new and promising key to unlocking the mystery of LD - Sensory Processing Disorder (SPD)
- Stress as a major factor in dealing with disabilities (theirs, their families, their teacher's/employer's)
- The Intake Interview Tools - psychophysiological instruments and more
- The Confusion Cycle, how you can identify it and what you can do about it

- Perceptual distortions and how they affect learning, their triggers, their effects throughout the school day and at home
- A micro look at Thinking Styles - what teachers and parents may not know
- Lateral Training: a breakthrough approach to balancing the processing speeds of the brain to visual and auditory stimuli at the basal level of the central nervous system for more consistent attentional skills.
- "THE MIX": some variations on how we combine the various systems (sequentially and parallel) peripheral multimodal biofeedback, neurofeedback, Brain Boy /Lateral Trainer, HEG (nIR HEG and pIR HEG), HRV (Heart Math), pROSHI.

LINDA WALKER, MHR, LPC, BCIA-EEG

1-Day Workshop: Practical Tips for Getting the Most Out of Biofeedback Friday, March 27, 2015 Registration Code: BFBEN04

This introductory workshop will help newcomers get the most our of their biofeedback interventions. Whether participants already have equipment or are considering new interventions, this workshop will review biofeedback modalities including sEMG, respiration, BVP, skin conductance and temperature. Participants will learn ways to ensure a good signal and sensor placement, consider

training strategies to optimize their patients' and clients' learning needs and explore ways in which learning from biofeedback can be transferred into practical environments. This includes selection of homework tasks and materials for trainees. This is a hands-on course. Participants will have the opportunity to use equipment and conduct practical recordings.

LINDA WALKER, MHR, LPC, BCIA-EEG

1-Day Workshop: Getting the Most Out of Z-Score Neurofeedback: Tips and Methods for Effective Integration in Practice Saturday, March 28, 2015 Registration Code: EEGEN08

This one-day workshop will cover the foundations and concepts behind Z-Score neurofeedback, current research, assessment and training methods. Participants will learn proper preparation for Z-score training, as well as consider training and feedback strategies. Assessment techniques, interpretion, statistical tracking and reporting will

be discussed. Finally, participants will explore integration of Z- score neurofeedback with other modalities, including traditional neurofeedback and heart rate variability training.

Case studies to illustrate Z-score concepts will be provided. Participants are also welcome to bring

case presentations to the discussion of training and assessment strategies. This is a hands-on course and participants will have the opportunity to practice setting up a feedback session.

PENNY WERTHNER, PHD AND MARC SAAB, M.ENG.

2-Day Workshop: Practical Applications of Biofeedback and Neurofeedback in Sports Friday, March 27, 2015 and Saturday, March 28, 2015 Registration Code: SPOEN02

Penny Werthner, PhD, has, since 2006, been using the tools of biofeedback, neurofeedback, and psychophysiological assessment to complement her practice with high performance athletes and coaches. The techniques are based on quantification of the autonomic nervous system for use in a self-regulation paradigm. This offers the athlete the awareness of how their individual stress response can manifest itself physiologically, as the production of adrenaline and Cortisol introduce short and long term changes in the muscles and organs of the body. With that awareness in place, the athlete can begin self-regulation training to build performance based strategies for conscious control of the underlying mechanisms. Anxiety response, mental acuity, reaction time and recovery time are fine- tuned, essentially offering the athlete tools to maximize the probability of effortless performance. Athletes learn to associate physiological markers with moments of excellence, essentially learning to enter the sought-after "zone" more quickly and for longer periods of time and to control the moments that can hinder performance. The strategies for awareness, mental and emotional preparation, performance and recovery are all addressed using a similar technique, used by athletes and coaches to prepare psychologically for both the training environment and the highly stressful environment of Olympic Games and World Championships. *The workshop is appropriate for beginning and intermediate attendees.*

This workshop will:

- present the underlying mechanisms of the ANS response to stress and describe the manifestation in context of elite athletic training and performance
- allow participants to understand how to work effectively with athletes and coaches to integrate the methods in a formal training paradigm
- delineate the key psychological skills necessary for athletes to develop
- discuss and demonstrate relevant assessment tools and methods for use of biofeedback and neurofeedback with athletes
- discuss the importance of including coaches in the learning process
- utilize several case studies of Olympic medalists to illustrate how to individualize the specific training protocols
- discuss the critical techniques required for effective transfer of the skills to the training and competitive setting

Dr. Steven Baskin, Dr. Richard Gevirtz, Dr. Daniel Hamiel, Dr. Lynda Thompson, Dr. Michael Thompson, Dr. Lindsay Thornton

STEVEN M. BASKIN PH.D.

Migraine and Psychiatric Comorbidity: The Complicated Patient New England Institute for Neurology and Headache Stamford, Connecticut, USA Email: sbphd@aol.com

Migraine is associated with a wide range of medical and psychiatric comorbidities. Population and clinic-based studies show that mood and anxiety disorders are common in migraine sufferers and are most prevalent in those patients that have progressed to chronic migraine. This talk will review the challenges in managing the complicated headache patient with psychiatric comorbidities, exploring the reasons why some patients get more progressive and debilitating migraine. Comorbid anxiety will be conceptualized as a driver of distress in migraine sufferers across the emotional disorders. Similarities between migraine and panic disorder will be explored showing the role of interoceptive conditioning and therapeutic exposure in the management of both conditions. The effects of extreme forms of emotional dysregulation such as borderline personality disorder will also be reviewed in relation to migraine progression and treatment outcome. Possible shared mechanisms between migraine and affective disorders will be discussed.

Keywords: migraine, anxiety, mood disorders, psychiatric comorbidities

RICHARD GEVIRTZ, PHD, (STARR MCKINNON, PH.D., AND CHRISTINA HUANG, PH.D.)

Measuring the Afferent Pathways During HRV Biofeedback: Heartbeat Evoked Potentials California School for Professional Psychology at Alliant International University San Diego, CA, USA *Email: rgevirtz@alliant.edu*

Background. Recent reviews have shown that biofeedback techniques that use slow abdominal breathing (Heart Rate Variability Biofeedback, HRVB) can reduce anxiety and depression to a greater extent than relaxation interventions. In a number of studies in our lab and elsewhere, depression levels following HRVB have been reduced to a greater degree than reported results of pharmacological or behavioral interventions. Although a number of mechanisms may mediate this effect, based on recent findings, using an implanted vagal nerve stimulator, a likely candidate is vagal afferent activity into the NTS and projected to Broadmann Area 25. To test this hypothesis, we have conducted studies that look at the effect of various Cardio-respiratory maneuvers on the heartbeat evoked potential (HEP). The HEP is an event-related EEG response that is triggered by the R-wave of the ECG. At about 250 ms following the R spike in the EEG, a negative deflection can be seen in the Averaged Evoked Potential (N250).

Methods: In two studies we investigated the effects of HRVB on the HEP.

Results: In the first study a short term breathing maneuver was compared to two emotion inductions and a control. In the second study, Ss were trained in either EMG biofeedback or HRVB over 4-5 weeks with home practice. The results of both studies demonstrate that the HEP is affected by both short term and long term (HRVB) slow breathing interventions, but not by EMG relaxation training or positive emotional states.

Discussion. We speculate that this CNS effect is mediated by the vagal afferent pathway which has been shown to be triggered by slow diaphragmatic breathing.

Keywords: heart rate variability, HRV, biofeedback, heartbeat evoked potentials

DR DANIEL HAMIEL

From Crisis to Growth: Resilience Training with Children and Adults to Prevent Psychopathology and Build Life Skills

Cognitive-Behavioral unit, Tel-Aviv Community Mental Health Center- Tel-Aviv University Medical School; Cohen Harris Resilience Center, Tel-Aviv, Israel Email: *dhamiel@gmail.com*

I will present a preventive intervention program based on a school resilience program aimed to prepare children from kindergarten to high school to cope with daily as well as with traumatic stressors. In 2009- 2014 the School Resilience Program trained thousands of teachers and counselors in Israel, to conduct resilience- and trauma-focused interventions. In children trained both before and after exposure to missile attacks, war and natural disasters, the program was effective in reducing by 50% their symptoms of post-trauma, anxiety, nightmares, fears, school and sleeping difficulties, detachment and social withdrawal, compared with children who didn't participate in the program.

We have proved the possibility and the dramatic efficiency of a preventive intervention with children done by teachers in the school setting.

The program was chosen by the Israeli government for a national pilot program for the 2010-2013 school years. It is activated now in 1000 schools and kindergartens (approx. 350,000 students).

An advantage of the program is the use of class setting and teachers as moderators and the use of simple but effective methods on everyday stressors, to help the children cope and process their feelings and experiences. The program integrates emotional, physiological and cognitive-behavioral techniques as well as methods of changing focus of attention (mindfulness and more) into a self regulation method. It is based on the principles the 3rd wave of CBT and of Low Intensity CBT Intervention (LICBT-I). We have simplified therapeutic techniques into educational simple techniques that can be used by teachers and students. An interesting finding is that many of the techniques that have been created in the program were found to be very effective in our therapeutic setting by psychotherapies as well.

Based on this program we have developed and implemented programs for different ages and mainly for the elderly, done by volunteers, to cope with the challenges of this age. We found out that it is never too late to build resilience!

Keywords: prevention, self regulation, resilience, daily stressors, trauma, class setting, community, biofeedback (psycho-physiology), third wave CBT, LICBT-I) cognitive techniques, mindfulness, elderly.

DRS. LYNDA AND MICHAEL THOMPSON

Dynamic Assessment of Head Injury Using EEG: Effective Intervention Based on Assessment The ADD Centre, Toronto, ON, Canada Email: *addcentre@gmail.com*

Assessment of the patient who has suffered a concussion should be first carried out by a knowledgeable medical specialist. Unfortunately this is too often done with testing that is unlikely to detect damage that underlies the symptoms that the patient is experiencing. MRI, PET, and CAT scans often show no abnormality. In addition, traditional rehabilitation often meets the criteria of

conservative do no harm but may do little to remedy the deficiencies caused by minimal to moderate injury. This presentation will suggest a methodology for efficient and accurate assessment that can lead to effective intervention. The EEG and evoked potentials (ERP) can reveal the effects of damage elicited by stretching and twisting of axons, called diffuse axonal injury (DAI). The evoked

potentials are particularly important for reflecting brain speed. Traumatic brain injury (TBI) will often have a negative impact on the right and/or left insula which, in turn, relates to changes in heart rate variability. Thus concussion assessment should measure QEEG, ERPs, HRV, and, using continuous performance tests, measure attention, impulsivity and variability of response time. This should be combined with neuropsych testing, in particular for short and long term memory, attention span, impulsivity and questionnaires regarding medical health, depression, and anxiety. When available, balance assessment of vestibular function with a 'force-plate' can be helpful. All this can be accomplished in a half-day assessment, which will be described. Extended biochemical assessment can be added and this can lead to appropriate dietary and supplement interventions.

This presentation will review some of the literature on TBI and the connection to cardiac problems. It will then outline the neuroanatomical underpinnings regarding why, how, and with what effect, LORETA z-score NFB can be used in conjunction with some combination of HRV training, transcranial direct current stimulation (tDCS), passive infra-red feedback (pIR), and metacognitive strategies, in addition to dietary interventions, to bring a client back to high level functioning. The theoretical aspects of this presentation will be supported by case examples: a Ph.D. candidate in artificial intelligence, an author, a graduate student in finance, and an athlete.

Keywords: concussion, EEG, evoked potentials

LINDSAY THORNTON, SPORT PSYCHOLOGIST

Integrating Sport Psychology with Applied Psychophysiology in the Elite and Olympic Sport Environment
Senior Sport Psychophysiologist at the United States Olympic Committee *Email: Lindsay. Thornton@usoc.org*

Interest in psychophysiology applications in the elite sport environment, particularly among National Olympic Committees and professional teams, has been growing with the goal of giving players a competitive edge in performance and recovery. While the recent attention to the field could make one think it is a novel application, psychophysiology has had a slow maturation in. In the 1970's Zaichkowsky and Wilson published their first research papers using biofeedback with athletes. In the last few years, the United States Olympic Committee has begun to include applied psychophysiology as a part of integrated sport performance service provision at Training Centers in the US. Psychophysiological assessment and training are integrated with traditional sport psychology skills, and conducted with an emphasis on the transfer of self-regulation skills to a high pressure competitive environment. This session will include the speaker's reflections on the role of psychophysiology as a rapport building tool with athletes, the use of psychophysiology as method to quantify and further refine mental skills for performance enhancement, and understanding the real world limits of psychophysiology, both from the state of technology and how this tool can best serve athletes. Lessons learned in the course of introducing the concept of psychophysiology to an organization, and blending applied psychophysiology with sport psychology in the elite sport environment will be shared.

Keywords: sport psychology, Olympics, elite sport, psychophysiology

Scientific Program abstracts are listed in alphabetical order by the lead presenter's name.

AISENPREIS

The Improvement of the Parasympathetic Response Through a Personalized 9-week Biofeedback Training vs Individual Biofeedback Training Without Specific Instructions in Stress Exposed Patients

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People in stressful situations are looking for ways to control their bodily reactions to stressful stimuli on their own, e. g. with HRV biofeedback training. Within a period of about 3 years, patients of a somatic practice were selected, to conduct a 9 week, specially personalized HRV biofeedback training. It was explored in which areas this training was successful regarding the improvement of the parasympathetic response of the ANS. It consisted of an initial and final HRV measurement, a questionnaire at beginning and end, a special questionnaire to individual stressors & resources, and 3 one-hour coaching sessions (in practice or via Skype) at beginning, middle and end of the training. The subjects practiced at least 20 minutes daily and received instructions to HRV Biofeedback every week for the following week plus a feedback form. The subjects used different HRV BF equipment (HRV Scanner, Qiu, Nexus) and sent their exercises by e-mail. At the beginning and end, they were measured with a HRV short-term analysis. Average HR, SD1, SD2, SDNN were determined. A control group (n = 19, 11 m / 8f) occasionally conducted HRV biofeedback training on their own without special accompaniment. Data were imported into HRV Scanner, artifact-adjusted and analyzed. The used statistics was ANOVA with replication. The Verum group has improved significantly in all investigated HRV parameters after the training compared with the control group. The Verum group showed a significant difference between input & final measurement for all examined parameters. The control group showed no significant change of above HRV parameters. (Wilcoxon test). A personalized HRV biofeedback training significantly improves the parasympathetic response of ANS. It develops a high level of client motivation and compliance and lets a therapist steer the process on a daily base as the clients send their measurements by email. With easy-to-use client equipment and multiple import channels into HRV analysis software it shows to be a valuable extension to the biofeedback practice. Murnau, November 2013

Key words: HRV biofeedback, heart coherency training, stress reduction, HRV Coaching concept

ARROYO

Clinical Process Based on The Applied Neuropsychophysiological Paradigm *Psic. Npf. David Arroyo*

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The clinical process in health sciences aims to gather, organize and interpret sufficient data that makes possible for us to: a) arrive to an accurate diagnosis of the situation, b) to develop a treatment

plan or intervention for the identified problem, c) to implement such plan, d) to evaluate its effectiveness transversely to determine if it's adequate to continue the original plan or to modify it according to the specific situation, and finally, e) to track the results.

Nowadays, the paradigm in which clinical process is currently based has proved to be insufficient to achieve those goals successfully as it may, on one hand, underutilize the full capacity of the resources that modern scientific and technological advances can provide, or otherwise, to rely too much on these developments and dismiss the human dimension of the patient or client and most of the factors and variables that play a key role in attaining a real state of wellbeing, when that's possible.

Because of its multi and interdisciplinary nature, the Clinical Process based on the Applied Neuropsychophysiology Paradigm requires the consideration of the human being in all of his physical, mental, social - and even spiritual - dimensions in a holistic manner, taking into account a great number of intrinsic and extrinsic variables that can alter its health status and relying on the latest technology to thus be able to accomplish a much more effective clinical process, from the potential to obtain more accurate multifactorial diagnoses - that even allows us to assess objectively what is traditionally considered subjective-; to help us implement treatment programs that could complement other conventional treatments increasing their effectiveness or to replace them with new options which can be less intrusive with fewer undesirable side effects with a higher rate of success improving the quality of life and functional capacity.

Keywords: clinical process, neuropsychophysiology, applied neuroscience

ASIF

Bio/Neuro Evaluation and Neuro Psychotherapy *Hasan Asif, MD, Aza Mantashashvilli, MD* **Brain Wellness Center, New York, USA** *Email:* hasanasifmd@gmail.com

Combining QEEG and BIO parámétrés in psychiatric evaluation improves our understanding of underlying neurophysiological factors involved in disturbance of larger mind body homeostasis. Beside the clinical evaluation in psychiatric practice, addition of QEEG and bio parameters (respiration, HRV, skin conductance) not only greatly enhances our diagnostic formulation but also helps us formulate a much more effective Bio-Neurofeedback protocol especially for PTSD, anxiety disorder and attention deficit disorder. Furthermore, exploring the role of combining bio neuro feedback with psychotherapy for enhanced efficacy of treatment as compared to when these treatment modalities are practiced separately.

Case studies are presented along with QEEG surface and S Loreta maps, dynamics display of S Loreta changing values in relationship to respiration and skin conductance.

Keywords: biofeedback, neurofeedback, QEEG, psychotherapy

BERTOLLO

Is the Athlete's Brain Efficient or Proficient? Cortical Patterns of Athletic Performance Within the Multi-Action Plan Model

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Electroencephalographic (EEG) measurements have been essential in shaping our understanding of the mechanisms underlying "economy of effort" in skilled performance in sports, such as precision sports and self-paced tasks (Hatfield & Kerick, 2007; Babiloni et al. 2008). Although various studies have supported the neural efficiency hypothesis in sports (which explains the occurrence of decreased cortical activation during skilled performance), there is also evidence that this hypothesis does not fully account for elite athletes' brain activity in some conditions and/or tasks (Hatfield et al 2013; Babiloni et al. 2009).

Thus, we introduce the neural proficiency hypothesis of superior performance, in which cortical activity is not only related to automaticity and economy of effort, but also to notions of degree of control, maximum certainty and minimum movement time (Bertollo et al., submitted).

To test this hypothesis, we have subscribed to the Multi Action Plan (MAP) model (Bortoli et al. 2012), which uses performance (optimal and sub-optimal) and action control (automatized and controlled) levels to define four distinct performance profiles.

Our purpose herein is to discuss neural activation changes (i.e. ERD/ERS patterns in the theta, alpha and beta bands) associated with these four performance profiles in athletes from different sports/specialties, such as shooting, cycling, driving and juggling. On one hand we found that lower cortical activation is associated with optimal-automatic performance, in agreement with the "neural efficiency hypothesis", but we observed higher cortical activation in optimal-controlled performance, achieved by exerting control of idiosyncratic core components of action. The latter result is in agreement with the neural proficiency hypothesis, which states a high level of neural adaptability. From an applied point of view, our research suggests that the MAP model can help to (1) develop performance enhancement strategies based on bio- and neurofeedback techniques, and (2) improve self-regulation skills to prevent choking under competitive pressure.

Keywords: MAP model, performance, sport, neural efficiency

COSENTINO

Heart Rate Variability Biofeedback and Psychotherapy in Polycystic Ovary Syndrome: A Case Report Carlo A. Pruneti, Chiara Cosentino University of Parma, Parma, Italy Email: *carlo.pruneti@unipr.it*

Polycystic ovary syndrome (PCOS) is a common disorder affecting 4%-8% of women of reproductive age (Azziz et al., 2004). PCOS is characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovaries. Infertility

affects 40% of women with PCOS. Women with PCOS are also at increased risk of a number of mental health disorders including depression, bipolar disorder, anxiety, and eating disorders (Sirmans & Pate, 2014). Also autonomic innervation

of the heart can be affected in PCOS with increased sympathetic and decreased parasympathetic components of HRV (Yildirir et al., 2006). Typically, oral contraceptive pills (OCPs) are first-line for pharmacologic management PCOS (Badawy & Elnashar, 2011).

We present a PCOS patient who followed a psychotherapeutic and biofeedback treatment integrated with a specific endocrinology treatment. The patient, aged 32, was sent to visit from her endocrinologist for evaluation and counselling intervention aimed at stress management. The psychological assessment included the compilation of the CBA 2.0, MMPI - 2 , SQ, Psychophysiological Base Assessment and after stress induction (MAT). The equipment used was the Psycholab V35 of the company SATEM, Rome and emWave for HRV biofeedback. Rigidity and repressive attitude towards emotions emerges both at the behavioral

level and in thought processes in a general absence of psychopathology with coping strategies "emotions centered " and "avoidance" and anxious symptomatology.

The assessment phase was followed by sessions of cognitive behavioral psychotherapy. The HRV biofeedback was suggested because the patient showed a clear chest breathing with diaphragmatic stiffening in correspondence to emotionally significant stimuli. There have been 24 sessions of psychotherapy and 18 sessions of HRV BFB , with home exercises for a total duration of 11 months. The p ., who underwent a medical treatment to promote endogenous production of estrogen and progestin and psychological treatment based on HRV BFB, has recently been pregnant.

Keywords: PCOS, HRV biofeedback, multidimensional assessment, integrated treatment

DEMICHELIS

Unique Peak Performance Database: 25 Years Inside the Brain of Top Athletes Bruno Demichelis (1); Harkness, Tim (1); Demichelis, Hiroko (1,2); Resta, Valeria (1) (l)Demichelis Mindroom , Milano, Italy; (2)Precision Neurometries, Vancouver, Canada Email: *valeriaresta@demichelismindroom.com*; *hirokodem@hotmail.com*

This presentation aims to cover issues related with measurability and trainability in peak performance with top level sports teams. Based on proprietary database, collected during 25 years of intervention in human performance enhancement, we will present results about pre-post neuro-biofeedback training, markers of peak performance, correlation with performance.

Presented for the first time by its owner, this unique database will demonstrate the difference in special characteristics between first team athletes, reserves and management of elite soccer teams. This data informs sport psychologists and performance experts in structuring training protocols and set parameters for devising custom interventions.

Keywords: optimal performance, psychophysiological correlates to peak performance, stress management, sport and corporations

DIAZ

Use of Neurofeedback in Different Psychopathologies Juan Ricardo Díaz (1), Sandra Mi lena Camelo(2), Bertha Lucía Avendaño *(2)* (l)Training for Life,(2)Facultad de Psicología - Universidad Católica do Colombia (1) Florida, USA, (2) Bogotá, Columbia

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In the last few years, the use of electroencephalographic Neurofeedback has increased exponentially; the practice of which is based on the registration and automatic analysis of the brain's electric activity. Using the signals directly emitted from the Central Nervous System, which is characterized for its wider range of actions, Neurofeedback allows for the recording of a considerable amount of the correlations between the superior cognitive functions. The parameters put in place for this technique represent some of the principle processes that, generally speaking, remain at an unconscious level and therefore escape rational control. The general idea is that the individual, having been presented with the registered information, is then able to exercise a control over these processes, therefore optimizing cerebral as well as entire bodily functions of the subject. Empirical literature has shown a substantial amount of studies that have applied Neurofeedback to the treatment of different psychopathologies with results pointing towards a beneficial use of this technique. For this reason, the following study proposed to examine the applicability of Neurofeedback in 50 patients: 26 of which were diagnosed with ADD, 16 diagnosed with ADHD, and 8 with a diagnosis of an autistic disorder. The ages ranged between 5 and 38 years with a median age of 12.65 and a deviation of 7.73 years. The number of sessions ranged between 10 and 75 with a median of 27 sessions and a deviation of 14 sessions. The final results, based on an evaluation on the effectiveness of the treatment, expressed that 4.1% of the patients received an A+ (outstanding), 57.1% received an A (excellent), 24.5% received a B (satisfactory), and 14.3% received a C (average).

Keywords: neurofeedback, psychopathology, effectiveness

ETERNO

Continuity of Hospital Care to Trauma Patient in CBT Approach: BFB/EMDR Outpatient Clinic Eterno, Roberta; Mastronardi, Luciana; Manzone, Maria Grazia; Masse, Alessandro; Massazza, Giuseppe A.O.U. Citta della Salute e della Scienza - C.T.O./M.Adelaide Hospital, Torino, Italy *Email: eterno.roberta@gmail.com*

Introduction: A traumatic event, such as a crash, a sport or working accident, or other events that threaten life, put involved people through a huge distress, and also their families. This experience may produce important psychological diseases as responses to a peritraumatic stress, Acute Stress Disorder or Post-Traumatic Stress Disorder (PTSD), with consequences on an emotional, cognitive, physical and social level, significantly affecting the psychophysical well- being and at-large the quality of life.

Objective:: The psychological care activity at the Trauma Center offers a psychological treatment continuity to patients dismissed from the same hospital and their families, already taken on responsibility during admission, as well as patients with previous and serious traumas coming from other hospitals. Therefore a dedicated Psychotraumatology Outpatient Clinic has been activated.

Method: Assessment, essential for a personalized psychological treatment, includes a patient's global

evaluation: a personological profile, emotional and interpersonal conditions, risks factors, cognitive/behavioral disorders, personal resources, life story and social context; through interviews and specific questionnaires about stressful and traumatic events, peritraumatic experiences/event impact, psychophysiological profile. The specific CBT intervention uses EMDR and BFB in addition.

Results/Conclusions: The overall reactive symptoms shown by the patients guide to an accurate and focused therapeutic choice as response to specific problems: CBT and/or EMDR and/or Biofeedback

Keywords: trauma, outpatient clinic, CBT-EMDR-BFB

in addiction. Specifically, Biofeedback is used for psychophysiological screenings and also for therapeutic purposes. Patients thus treated bring back effective results regarding the symptom management, in particular decrease or remission of the traumatic event reactive symptoms, personal resources activation, compliance to the medical-surgical treatment considered the serious physical outcomes, preventing the onset or the establishment of important psychological disorders. Clinical results will be presented. *Thanks to Compagnia di San Paolo di Torino Foundation for contribution.*

FILHO

Shared-Regulation Training: An Applied Framework for Using Biofeedback in Team Sports *Edson Filho, Davide Pierini, Maurizio Bertollo*

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Research and practice on bio-neurofeedback has been based on individual-centered methods, namely idiosyncratic approaches (Bertollo, Bortoli, Gramaccioni, Hanin, Comani, & Robazza, 2013). To date, there is extant research on biofeedback methods tailored to individual-centered approaches. However, there remains a need for additional studies advancing reliable group-level biofeedback interventions in team sports (Filho, Tenenbaum, & Yanyun, 2014). Stemming from recent research in socio-biology and socio-neuroscience (see Schilbach et al., 2013), we propose a conceptual framework to orient research and practice based on a group-level approach. To this extent, there is growing empirical evidence suggesting that sport and performance psychologists should focus on the notion of "shared

regulation" training to facilitate coordination in team sports (see Filho, Pierini. Comani, Robazza, Tenenbaum, & Bertollo, 2014). From a research standpoint, we propose specific guidelines on nested data measurement and socio-cognitive task analysis for group bio-neurofeedback approaches. From an applied standpoint, we explain how contemporary bio-feedback techniques (e.g., breathing relaxation, heart rate variability, open focus) can be used to advance "shared regulation" training in team sports, particularly in cooperative sport dyads and triads. In conclusion, we forecast how neuroimaging methods can be used in future research and applied work in naturalistic environments in general, and sport settings in particular.

Keywords: shared mental model, team sport, shared regulation, juggling

FOLEN

Providing Biofeedback Services from a Distance: Lessons Learned from Telehealth Raymond A. Folen, Ph.D., ABPP (1), Sarah D. Miyahira, Ph.D. (2) (l)Tripler Army Medical Center, (2)Pacific Regional Medical Command Hawaii, USA

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For patients in rural and underserved areas, specialized health care services like biofeedback are often difficult to access. The limited availability of qualified biofeedback practitioners further exacerbates this problem. The tremendous expansion of technology infrastructure at both provider and patient locations has created the opportunity for an individual to receive treatment services, such as biofeedback, from distant providers who may be physically located thousands of miles away from the patient. Studies from behavioral telehealth suggest that treatments provided via distance modalities are equivalent to services provided face-to-face with regard to patient-provider rapport, the ability to accurately assess and diagnose, treatment outcome, and the frequency of adverse events. There is also evidence that behavioral telehealth increases access to care, reduces stigma, allows for closer patient follow-up, reduces cost, and results in increased patient and provider satisfaction. Providing biofeedback telehealth services via this modality requires a special skill set, however, as it presents many unique challenges not present in face-to-face care. This presentation addresses important considerations related to equipment, provider competence, patient selection, informed consent, safety, ethics and licensure. The results of a survey of the technologies currently available to provide biofeedback via telehealth will also be presented.

Keywords: biofeedback, telehealth, distance healthcare

FRIEDRICH

CoKeTT - Application and Usability Centre for Healthcare and Assistance in Old Age *Petra Friedrich, Kai Hinderer, Michael Hacker, Bernhard Wolf* **University of Applies Sciences Kempten, Kempten, Germany** *Email: petra.friedrich@hs-kempten.de*

CoKeTT (COMES Kempten Test and Training Centre) enables the testing of practically oriented therapy management systems for conditions such as diabetes, obesity, cardiovascular diseases, psychosomatic disorders, as well as for patients who require rehabilitative care. For this purpose, the test and training centre is equipped with various telematic measuring systems, providing different configuration options and allowing for different settings according to the different ICT infrastructures of medical institutions. Landline and mobile communications-enabled analysis and therapy platforms can be used, all of which are able to access an already existing server (COMES"[1]) by means of which problems such as telemonitoring and the development of personalised telematic therapy structures may be addressed. Together with CoKeTT, potential users may develop suitable test scenarios, enhance existing equipment and also perform on-site tests of new diagnostic and therapeutic systems. The presentation will give an overview of current research projects related to teletherapy, virtual coaching, motivation based on feedback and gaming.

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[1] COMES is a registered trademark of the Heinz Nixdorf-Lehrstuhl für

Medizinische Elektronik, Technische Universität München

Development of novel therapy concepts for diabetes and obesity:

By using the mobile diagnosis and therapy platform COMES[8], patients are enabled to view their physiological data such as blood pressure, blood glucose or their weight as well as their trends over time everywhere, at all times. Thanks to the already existing option of sending individualised feedback from the system to the user, he or she can rely on a telemedical companion and coach as a support during therapy or when changing habits and lifestyle.

- Biophysical feedback therapies
- Telemedical exercise therapies

With motivation, feedback and the telemedical companion it should be easier for the patients to transfer their findings into daily life. Thus achieving a better compliance and an increasing sustainability.

Keywords: biofeedback, virtual therapy, ambient assisted living, ambient medicine

JIMOH

Mindfulness Attention as a Predictor of Psychopathology Among University Students Morayo Jimoh

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Introduction: Mindfulness is regarded as the ability to pay attention on purpose, in the present moment, in a nonjudgmental manner (Kabat- Zinn, 1990). This new construct has gained prominence in the field of counseling psychology and psychotherapy. Several therapeutic approaches have incorporated mindfulness as a technique in intervening in various psychopathological conditions. Prior studies have also examined mindfulness as a construct in relation to other variables. Garra & Barajas (2014) examined the relationship between mindfulness and psychopathology in a clinical sample of patients with anxiety disorders, depressive disorders and borderline personality disorder, general population and a sample of university undergraduates. However, little is known about this construct in the Nigerian context.

Objective: The general aim of this study is to ascertain psychology student's knowledge about the concept of mindfulness, their level of mindfulness attention and its relationship with the experience of anxiety and depression.

Method: A total of 100 undergraduate and postgraduate psychology students were used in the study. The Mindfulness Awareness Attention Scale (Brown & Ryan, 2003) as well as Beck's depression Inventory (Beck et al, 1961) and State Trait Anxiety Inventory-Form Y (Speilberger et al, 1983) was used. A questionnaire was also developed to collate demographic data as well as information on their knowledge about mindfulness. Descriptive results were analyzed using T-lndependent test. Correlation and Regression Analysis.

Conclusion: Thus the research gives occasion for the recommendation of mindfulness based intervention strategies for individuals with clinical and nonclinical cases of anxiety and depression.

Keywords: mindfulness, predictor, anxiety, depression, psychopathology

PABST

Biofeedback as a Tool for Pain Management - A Case Based Approach

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This case based approach provides an example of how biofeedback can be used as an effective pain management tool for chronic pain. Broken down into a three step process, this case example explains how a chronic pain patient was able to see, learn and change his response to pain using biofeedback.
Keywords: pain management, biofeedback, case example

Pre/post treatment examples of surface electromyograph and respiratory biofeedback demonstrate significant changes the patient was able to implement through mastery of self-regulation skills.

SIMSEK

Complementary Therapy for Brucker-Biofeedback - Implementation of Gamification and eHealth to Increase Motivation and Compliance

Hasan Simsek (1), Kubi Mensah(l), Prof. Heiko Krumm(l), Stefanie Weber(2), Ralf Nickel(2) (1) TU Dortmund University, Dortmund; (2) Schön Klinik München, Harlaching, München, Germany Email: hasan.slmsek@tu-dortmund.de

At the final check-up of the Brucker-Biofeedback-Therapy (BBFT), the therapist evaluates patients' innervation improvements and infers a physical activity program to strengthen and increase functionality of the, by now better controllable, muscles. Because the program is recommended as a self-workout to the patient, personal assistance is needed over this period. At the Dortmund-University and in cooperation with the Schön-Klinik (Munich, Germany) we are developing a Cyber-Physical- System to cover the specified need. A (low cost) 3D-sensor with a complementary intelligent software can detect, measure, track and analyse users" body and movement to return a correspondent visual or auditive feedback. This enables the therapist to quantify the results of the BBFT and capture an individual movement of the patient, which represents the goal-movement in further exercises. Thus, the therapist sets up training parameters individually and under system instructions the patient tries to match the movement in a given time, until 100% is achieved. System-parameters, resulting vital- and training-data and additional information is administrated on an application server, so the patient or therapist can view and adjust the values regardless of their location. Elements of Gamification are implemented as well. Gamification describes the introduction of game elements into hitherto non-game environments like physical exercises with the intention of raising user engagement and motivation. The system is evaluated in cooperation with the Schön-Klinik, SportsCenter (Dortmund, Germany) and Medical Rehabilitation Department (Wetter, Germany). Test persons who underwent physical exercise with our system have shown high user acceptance, increased motivation and better overall compliance based on a questionnaire. Therefore, the work strongly indicates positive effects of gamification and eHealth on a complementary therapy for Brucker-Biofeedback.

Keywords: eRehabilitation, Assistive-System, Posture-Movement-Analysis, Compliance

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SWINGLE

EEG Deregulation Patterns in Adults Diagnosed with an Internet Addiction

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Abstract: In private practice, excessive use of lnternet/(digital media) is rarely reported at intake. For many clients however, excessive usage is central in the development and maintenance of the primary disorder or symptom for which the individual is seeking neurotherapeutic services (e.g., ADHD, anxiety, depression, CD, ODD, insomnia, memory, marital conflict, etc.). Debate is currently centered on whether Internet Addiction (IA) is a discrete disorder, a co-morbid disorder, or a behavioral manifestation of a clinical or a subclinical disorder. This study, examined 19 site QEEG and 5-site Clinical Q's of 30 adults with Internet Addiction. Findings of the 19 site QEEG's indicate that IA follows a deregulation pattern rather than a cluster pattern implying that any neurometric variation is a liability to the disorder. Further magnification of the data revealed a pattern of central deregulation in slow frequency wave lengths. Data from the Clinical Q revealed distinct patterns associated with emotional deregulation (40%), high frontal Alpha ADHD (89%), anxiety (100%) and compulsive perseveration (66%). Data collected on qualitative differences in Internet usage indicate that the severity of neurological deregulation is associated with the perceived degree of immersion with the technology.

Keywords: internet addiction, deregulation patterns, sub-clinical disorders.

KANNEGIESSER-LEITNER

Hemoencephalography: HEG Based Neurofeedback Practically Introduced as a Smart and Easy-to-use Training Method in ADD/ADHD, Dyslexia and Other Learning Disorders

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Often enough, biofeedback treatment will lead to immediate positive effects for the clients in one or just a handful of training sessions. On the other hand, particularly neurofeedback training can be Intense and time consuming. Previous studies show that for example in treatment of ADD/ADHD, 30-40 training sessions (typically once per week) are necessary for corresponding and lasting training effects requiring a year of treatment for the client.

This work describes a different approach to neurofeedback treatment. It is based on the concept of nlR- based HEG therapy as proposed by Toomin and others and primarily addresses ADD/ADHD clients as well as clients with dyslexia and other forms of learning disorders. Recent findings

indicate that a compact HEG based neurofeedback treatment which offers several sessions per day offers comparable or even better effects in clients than the common lengthy form of therapy. The overall aim of this approach is to provide such clients who show limited concentration and endurance with an easier and faster treatment program.

In this presentation the authors will share the progress showing in a group of n>20 and provide a thorough understanding of the approach and its benefits for both clients and trainers. More details and practical experience on the method can be obtained in the corresponding workshop which is part of this year's BFE conference in Rome. The workshop includes extensive hands-on self-experience for all workshop participants.

Keywords: HEG, hemoencephalography, neurofeedback compact training, ADD, ADHD, learning disorders

KOBERDA

QEEG/Electrical Imaging and Z-score LORETA Neurofeedback in Neuropsychiatric Practice *J. Lucas Koberda, MD, PhD.* Talahassee NeuroBalance Center, Talahassee, FL, USA Email: **jlkoberda@yahoo.com**

Introduction of QEEG/LORETA imaging has improved our diagnostic ability in neuro-psychiatric practice by identification of dysregulated cortical areas implicated in patient's symptoms. Additional use of LORETA Z-score neurofeedback (NFB) enables us to directly target this area of dysregulation in order to improve associated symptoms. Based on approximately 300 patients treated in our clinic with Z-score LORETA NFB a detailed analysis of selected cases will be presented. Cases will include depression/anxiety,

chronic pain, epilepsy, stroke and cognitive dysfunction. Specific areas of dysregulation attributed to particular condition identified by LORETA will be presented including Anterior Cingulate and Insular cortex in pain syndromes as well as specific Brodmann's Areas in other cases. Follow up findings of QEEG/LORETA electrical imaging after NFB and computerized cognitive testing will be discussed. In addition, cases of Z-score LORETA NFB mediated cognitive enhancement will be shown.

Keywords: Loreta neurofeedback, neuropsychiatry

MASTRONARDI

Biofeedback Outpatient Clinic Dedicated for the Treatment of High Complexity Amputees and Reimplanted Patients at CTO Hospital

Mastronardi, Luciana; Manzone, Maria Grazia ; Pontini, Italo; Massazza, Giuseppe A.O.U. Citta della Salute e delta Scienza - C.T.O./M.Adelaide Hospital, Torino, Italy *Email: mastronardi.luciana@gmail.com*

Introduction: A Biofeedback/Psychotraumatology Outpatient Clinic is operative at Psychology Service, AOU Citta della Salute e della Scienza, C.T.O./M.Adelaide Hospital, for traumatized patients in a multidisciplinary approach and in medical and psychological care continuity, thanks to contribution of Compagnia di San Paolo di Torino Foundation.

Objective: Offering a care continuity to patient and his family, in collaboration with GIM (Interdisciplinary Group Microsurgery), Hand Surgery and Plastic Surgery Wards, making sure there is a global take on responsibility. Intervention, focused on rising psychological disorders, aims to stress containment and management, paying specific attention to

symptoms reactive to traumatic event, pain control, personal resources activation, in order to support a compliance in medical, surgical and rehabilitative care in the treatment pathway, improving patient and his family's quality of life. Therefore a dedicated Biofeedback Outpatient Clinic is operative for high complexity patients' treatment.

Methods/Instruments: At the Outpatient Clinic, after psychological and psychophysiological assessment and diagnostic return, CBT intervention includes Biofeedback Training. Biofeedback Training consists in a first psychophysiological assessment phase on five channels (EMG, BVP, Temp, SC, Resp) and later Biofeedback Training along with Relaxation Training, in order to develop more awareness and voluntary control of physiological processes and to reach a significant symptom decrease. Biofeedback psychological intervention is also used in pre and post surgery preparation, focusing specifically on the management of painful symptoms in collaboration with medical teams.

Results/Conclusions: Although data are preliminary whereas the outpatient clinic is operative since about six months, results highlight in treated patients a decrease/remission of the reactive symptoms, allowing to develop a better stress management, improving interpersonal and medical relationship, promoting compliance to the medical-surgical treatment. Preliminary data will be reported and discussed. Moreover, dedicated psychological intervention towards very high emotional level patients has been effective within a multidisciplinary approach, allowing a continuity of psychological care making sure of an outpatient global take on responsibility in team. *Thanks to Compagnia diSan Paolo di Torino Foundation for contribution.*

Keywords: hand surgery, amputation, reimplant, hospital psychological care

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PABST

Biofeedback as a Tool for Pain Management - A Case Based Approach

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This case based approach provides an example of how biofeedback can be used as an effective pain management tool for chronic pain. Broken down into a three step process, this case example explains how a chronic pain patient was able to see, learn and change his response to pain using biofeedback.

Keywords: pain management, biofeedback, case example

Pre/post treatment examples of surface electromyograph and respiratory biofeedback demonstrate significant changes the patient was able to implement through mastery of self-regulation skills.

PEPER

Biofeedback, Posture Awareness Embedded Within an Evolutionary Perspective *Dr. Erik Peper*

San Francisco State University, San Francisco, CA, USA Email: epeper@sfsu.edu

Implementing strategies to mobilize health after traditional treatments have been unsuccessful may be possible when the problems are reframed. The reframing is based upon perceiving the dysfunctions from a holistic health evolutionary perspective. Discussed is the process by which integrating a holistic framework, somatic awareness and posture with biofeedback reduce illness. The process is illustrated with four cases—six year chronic migraine, psychogenic nonepileptic seizures, vulvodynia, and CIN III carcinoma in situ cervical dysplasia—which were treated in less than 5 sessions over a three month period. The common themes that contributed to the etiology and maintenance of the illnesses were dysregulation of breathing patterns, lack of hope, unhealthy life style, and absence of self-regulation skills to nurture the self-healing potential. Discussed are strategies by which these students/clients mobilized health and eliminated migraines from three per week to zero, epileptic seizures from 11 per week to zero, reduced pelvic floor pain from an average of 7 to 1, and reversed cervical dysplasia so that the next Pap test was normal.

Keywords: evolution, posture, respiration, migraine, epilepsy, vulvodynia, cervical dysplasia, biofeedback

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SGROMO

Heart Rate Variability Biofeedback Reduces Symptoms of Depression and Anxiety in Depressed People

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Background: Reduced Heart Rate Variability (HRV) has been associated with symptom severity in Major Depressive Disorder (MDD), indicating that at least part of the depressive symptoms could be caused by impairment in the autonomic nervous system. HRV biofeedback (HRVB) seems able to improve autonomic function and recently it has been applied with positive results in the treatment of MDD. **Objective:** The present study aims to measure the effect of solely HRVB training on symptoms of depression, anxiety, and on the quality of life in subjects suffering from MDD.

Procedure: 15 subjects, satisfying the DSM-5 criteria for MDD and a rating of moderate-to-severe depression scored by the BDI-II, participated in 10-session HRVB training. We administered measures of anxiety (BAI), depression (BDI-II) and quality of life (WHO-QOL) at session 1, 6, and 10, as well as in a 1- month follow up. We also recorded two psychophysiological baselines before and after the training. **Results:** Participants reported lower levels of Depression both at the post training assessment and at follow-up. Such modifications became evident at the intermediate recording after five HRVB sessions [$F(l,3)$= 9.866; P=.002; a= .97], and both for somatic [$F(l,3)$=17.538; P= .000; a=l] and cognitive symptoms [$F(l,3)$=13.74; P= ,000;a=.999]. Also for Anxiety and satisfaction for Quality of life, there were significant differences along the time. We didn't find significant differences in physiological measures related to HRV neither in time nor in frequency domain.

Conclusion: HRVB training probably had a positive effect on symptom perception; however data suggested once again the need of understanding the asynchrony in pattern of responses, between cognitive and physiological components. We argue that the use of HRVB can be more effective and better évaluable if used in a wider cognitive behavioral therapy context.

Keywords: HRV biofeedback, positive psychology, major depressive disorder, MDD

SZTEMBIS

Doctor Stent - Model of Early In-hospital, HRV-based Rehabilitation for Cardiac Patients *Rafal Sztembis, PhD, MD; Tomasz Kaczmarski, IT; Marcin Chlebus MD; Janusz Romanek MD, PhD* Invasive Cardiology Unit, State Hospital No 2, Rzeszow, Poland *Email: rsztembis@gmal.com*

As hospitalization becomes shorter, medical personnel have less time for patient education which is on the other hand perceived in practical guidelines of European Cardiac Society as a crucial element of treatment. However, there is no single model of such education and very few experimental programs targeted psychophysiological issues. Heart rate variability is one of psychophysiological modalities which is well known not only as a inner physiological imbalance and marker of increased risk of cardiac events but also as convenient tool of self-regulation techniques which potentially may bring about positive changes. Such context was a background for developing by author independent nongovernmental experimental educational project for cardiac patients, mainly those after percutaneous coronary interventions. The program is based upon concept of self-education, promoting skills of self- regulation techniques and encompasses several areas covering both in-hospital and early post- discharge periods. The bonding icon of the program is virtual Doctor Stent.

The program was gradually expanded since 2010 and in 2014 a new element was added - application for tele-monitoring of heart rate. Application is loaded on a tablet that contains other elements of educational program including e-book, audiobook, comics, film and website. The app is divided into two basic groups of exercises: relaxation exercises based upon concept of slow breathing and physical exercises customized to medical condition of patient. The app allows for detection of significant arrhythmias what is signal for termination of exercises. It allows also for constant tele-monitoring of patients in real time and allows for retrospective data analysis. Tests of application were done in summer and autumn 2014 in clinical ward of cardiology and this presentation discusses results in context of practical, medical and psychological aspects.

Keywords: heart rate variability, myocardial infarction, cardiology, percutaneous coronary intervention, self-regulation

TAN

Heart Rate Variability Biofeedback to Improve Health and Well-Being of Senior Citizens in Singapore: A Pilot Study
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In this study we assessed the feasibility, acceptability, and efficacy of an 8 week biofeedback intervention program to increase the heart rate variability (HRV) and overall wellbeing of senior citizens (aged 65 and over) in Singapore. Twenty-five senior citizens who were recruited from a local community center volunteered to participate in the study. After recruitment, participants were taught to use a portable biofeedback device (i.e. a "stress eraser"), which aids the participant to breath in resonant frequency via visual and auditory signals. The participants were required to use the biofeedback device for at least 30 minutes a day, during the 8 week intervention. The participants

underwent a 10 minute ECG recording before and following the intervention in order to assess potential changes in HRV that may occur as a consequence of the intervention. In addition, in order to assess changes in emotional wellbeing, participants were administered several questionnaires before and after the intervention (e.g. PANAS, EQ-5D). Our results showed that the intervention led to an increase in emotional wellbeing, evidenced by an increase in the PANAS positive emotions scale, as well as the PANAS

Keywords: HRV, well-being, senior citizens

positive- emotions/negative-emotions ratio. On the other hand, we did not observe significant HRV changes before and after the intervention. These results suggest that the 8 week biofeedback intervention was effective in increasing emotional wellbeing, albeit it is unclear whether this increase is related to HRV changes. Multiple issues relating to feasibility, acceptability and logistics of implementing research in the Singapore context will also be discussed.

VARLI

The Effect of EEG-Biofeedback Method on Memory Performance of Gifted and Talented Children

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The main aim of this study is to investigate the effects of EEG-Biofeedback method on memory performances of gifted and talented individuals. The subsidiary aim of the study is to investigate and compare the effects of EEG-Biofeedback method and Memory Exercise Program on memory performances of gifted and talented individuals. Thirty-four gifted and talented 5th and 6th grade students enrolled in Istanbul Science and Art Center constitute the sample of the study. Ôktem Verbal Memory Process Test -T1 (ÔKTEM-VMPT), Visual Aural Digit Span Test -T2 (VADS) and Visual Memory Test - T3 (VMT) were applied as preliminary tests. These 34 students were grouped into three groups according to their average scores of their memory preliminary test scores. The standard deviations do not show any significant differences which confirms that the groups were homogeneous. The numbers of students are as follows: Experimental Group 1 (EGI): 6; Experimental Group 2 (EG2): 14; and the Control Group (CG): 14. EEG-Biofeedback training was applied in EGI and Memory Exercise Program was applied in EG2. At the end of the application, Tl, T2 and T3 were administered to each of the three groups as a final test. Non-parametric Kruskal Wallis Test, Wilcoxon Signed Rank Test and Mann Whitney U Test were used in the analysis of the data.

According to the findings of the study, it was observed that the total average scores of the final test of both EGI and EG2 are significantly higher than their preliminary test total average scores. Regarding the comparison of experimental groups, which is the main aim of this study, the findings indicate that the final test total average scores of EGI are significantly higher than the final test total average scores of EG2. As a result, these findings provide evidence that EEG- Biofeedback Training and Memory Exercise Program improve the memory performances of gifted and talented individuals, yet EEG-Biofeedback Training is found to be more effective.

Keywords: memory performance, gifted and talented students, EEG Biofeedback

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