14th Annual BFE Meeting
Rome, Italy
April 13—17, 2010
Making the Invisible Visible

Biofeedback Foundation of Europe
P.O. Box 555  3800 AN Amersfoort, The Netherlands
www.bfe.org

Conference location

Ergife Palace hotel
Via Aurelia 619
Rome, Italy
Tel. + 38 (0)6 66441 Fax + 38 (0)6 6632689
www.ergifepalacehotel.com
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**WORKSHOP SCHEDULE**

**F** = Fundamental Workshop (basic)  **U** = Universal (fits all needs)  **A** = Advanced Workshop (basic knowledge required)

Click on the name of the presenter to view the biography. Click on the workshop title to view the abstract.

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<thead>
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<th>April 14</th>
<th>April 15</th>
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<tbody>
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<td>9 am – 5 pm</td>
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<td>Integrative Approaches in the Treatment of Children using Neurofeedback and Biofeedback</td>
<td>Integrating Peripheral BF, EEG NF, and Adjunctive Techniques to Achieve Optimal performance</td>
<td>Effective Interventions using NF and BF for Comorbidities that present with ADHD</td>
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<td>Jay Gunkelman</td>
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<td>Ute Strehl</td>
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<td>Marc Saab</td>
<td>Spiro Diamantidis</td>
<td>Steve Baskin &amp; Marc Saab</td>
<td>Steve Baskin &amp; Marc Saab</td>
<td>Monika Fuhs</td>
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<tr>
<td>Introduction to EEG Fundamentals and Signal Processing Methods for Non-Technical Practitioners</td>
<td>Hot Tips for Immediate Biofeedback Success</td>
<td>Biobehavioral Considerations in Diagnosis and Treatment of Primary Headache Disorders</td>
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<td>Monika Fuhs</td>
<td>Erik Peper</td>
<td>Bob Whitehouse</td>
<td>Bob Whitehouse</td>
<td>Wilson, Sue</td>
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<tr>
<td>Wired for success: helping Kids to Develop Resilience and Empathy</td>
<td>Expanding Biofeedback with Touch and Imagery: Advanced Techniques</td>
<td>Resonant Heart, Breath &amp; Emotions: Self-Regulation for Health, Stress Resilience and Transformation</td>
<td>Heart Rate in Trauma: Patterns Found in Somatic Experiencing® and Trauma Resolution</td>
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<td>Wilson, Sue</td>
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<td>Gabe Sella</td>
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<td>Friedrich Vogt</td>
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<td>Optimizing Performance and Health for Sport through Biofeedback/Neurofeedback Assessment</td>
<td>Optimizing Performance and Health for Sport through Biofeedback/Neurofeedback Training</td>
<td>SEMG clinical approach to muscular dysfunction conditions, from diagnosis to treatment</td>
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<td>Gabe Sella</td>
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<td>Giuseppe Sacco</td>
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<td>Self-efficacy in treatment of psychosomatic disorders: HRV-Biofeedback</td>
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<td>SEMG clinical approach to muscular dysfunction conditions, from diagnosis to treatment</td>
<td>L’utilizzo del Biofeedback nel trattamento dei disturbi d’ansia e dell’umore</td>
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<td>Giuseppe Sacco</td>
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<td>Gabe Sella</td>
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<td>L’utilizzo del Biofeedback nel trattamento dei disturbi d’ansia e dell’umore</td>
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**Please note**

- All workshops run from 9 a.m. to 5 p.m.
- All workshops that have similar titles for 2 days are 2 day workshops that can just be booked together.
- Changes between the different classes during the day are not allowed.
- Certifications of attendance (that can be approved by credits of BCIA or other organisations) can just be handed out if the workshop has been attended fully – proved through your signature in the morning and in the afternoon.
Integrative Approaches in the Treatment of Children Using Neurofeedback (NF) and Biofeedback (BF)
Lynda Kirk, MA, LPC, BCIA Senior Fellow, BCIA EEG Fellow, QEEG Diplomate
Registration code 13-01 / Fundamental workshop / Universal workshop / English language

Abstract: With increasing concerns about dangerous side effects and the effect of long-term medication use for a number of children's diagnoses such as ADHD, anxiety and depression, more parents are seeking effective, non-pharmacological alternatives to help their children. Biofeedback, neurofeedback, and adjunctive techniques are excellent and effective options. The content of this workshop will focus on techniques for successfully working with children, teens and their families, using examples and case studies of how we work with this population in our clinic. We will share our integrative protocols for several of the most common diagnoses, including ADHD and ADHD subtypes, ADHD comorbidities, headaches, anxiety disorders, depression, PDD/autistic spectrum, and bladder and bowel issues. We will also share our techniques for getting and keeping excellent rapport with kids. Workshop attendees will learn specific neurofeedback and biofeedback protocols for the most common child and teen diagnoses seen at Austin Biofeedback and EEG Neurotherapy Center. We will explain and demonstrate how we use adjunctive techniques and other interventions, plus some of our favorite multi-treatment therapies. As a bonus, we will share techniques we use in our popular workshop “Peak Zone Kids.” Back to workshop schedule

Key words: ADHD, adjunctive techniques, biofeedback, neurofeedback

Mind/Brain/Consciousness: A Potential Mechanism for Distant Effects in Healing
Jay Gunkelman, QEEGD
Registration code 13-02 / Advanced workshop / English language
Please note: this is a 2-day workshop. Workshop continues on April 14, 2010

Abstract: This two day workshop will focus on brain function, specifically the neurophysiological findings associated with consciousness. Though this workshop will be dense with EEG and even some ERP data, it will also have material of interest for the non-EEG attendees deeply interested in consciousness and healing.
Day one will build a brain function model based on neuroanatomical and neurophysiological findings. These findings are drawn from the International Federation of Clinical Neurophysiology position paper on EEG generator sources, with focus on the sources of DC/SCP as well as the oscillatory EEG rhythms.
Day two will present a model of consciousness based on day #1 content and also presentation of data collected during simultaneous EEG recordings from healer and healee. The healer study data will propose a mechanism for a “connection” between the healer/healee based on Schumann’s Resonance and Standing Potential effects with phase entrainment. This is the first international presentation of this new and exciting data with implications for transpersonal studies. Back to workshop schedule

Keywords: brain function, consciousness, healing, Schumann’s Resonance and Standing Potential effects
Introduction to EEG Fundamentals and Signal Processing Methods for Non-Technical Neurofeedback Practitioner
Marc Saab, BASc, MEng
Registration code 13-03 / Fundamental workshop / Universal workshop / English language

Abstract: The practice of neurofeedback requires knowledge in such varied areas as psychology, neurophysiology, electroencephalography (EEG) and signal processing. Where EEG and computer-based neurofeedback are concerned, often an understanding of complex concepts is required to use the many tools available. This workshop will present the fundamental concepts of both EEG and commonly-used software methods in a simple, clear manner for the non-technical practitioner to appreciate, retain and apply, with the intention of improving clinical outcomes.

This workshop is of interest to anyone recording EEG and performing neurofeedback using computer software. Topics will include (among others, and as time permits): a physiological basis of EEG, electrode placement and measurement fundamentals, surface QEEG characteristics, clinical recommendations, digital filtering, an explanation of time and frequency, DC recording and evoked and slow cortical potentials (EP and SCP).

Keywords: EEG fundamentals, signal processing

Wired for Success: Helping Kids to Develop Resilience and Empathy
Monika Fuhs, Mag.rer.nat., BCIAC
Registration code 13-04 / Advanced workshop / English language

Abstract: We constantly live in a rapidly changing world. Never before did we need to have so many skills to adapt to ongoing changes. The western “civilized” world it may seem like paradise- but obviously it isn’t. Children are often neglected and not understood which may cause significant behavioural problems in school and at home. Thus, it is not surprising that teachers have one of the highest burnout rate and so many kids fail at school.

This workshop focuses on the reasons for the increasing dropout rate of children and teacher and behavioural biofeedback based treatment strategies. It includes
1) Examination of paediatric depression which is often differently expressed than adult depression;
2) Understanding the importance of gender differences as developed by Ellen Langer and Leonhard Sax and explains why boys show significantly more symptoms than girls
3) Biofeedback techniques to learn how to cope and adapt to different stressors and take over self control;

The intervention strategies include
1) Holistic biofeedback treatment of pediatric symptoms;
2) Development of the children’s resilience and empathy to prevent problems. Resilience is essential for coping with stressors throughout life—learn it early and prevent future disfunctionning. Enhancing empathy allows the child to increase communication and increase the experience of safety.

The workshop describes the biofeedback protocol which combines resilience and empathy training based upon the Mirror Neurons concept (Joachim Bauer: “Warum ich fühle, was du fühlst”) and offers a strategic training plan to use in your practice with children and adults.

Key words: gender differences, paediatric depression, ADHD, Empathy and Resilience training with Biofeedback

Optimizing Performance and Health for Sport through Biofeedback/Neurofeedback - Assessment
Wilson, Vietta E. (Sue), Ph.D.
Registration code 13-05 / Fundamental workshop / English language

Abstract: This workshop will walk participants through an assessment for athletes with the new profiles that simplify the process of presentation. New to the workshop is the automatic profiling of the Infiniti and a semi-automatic interpretation information handout for the athlete. The workshop will provide sample intake and consent forms, interview questions to accompany the paper and pencil educational assessment inventories. The inventories include an assessment of the mental skills used in elite performance, with an interpretation of how to use this information with biofeedback/neurofeedback. Each workshop participant can then use the inventories for personal or professional purposes. An extensive review of the screens/stats of the Performance Psychophysiological Profile Assessment (2 emg,2eeg,temp,hr/hrv,rr,eda -Infiniti), individual reports will be presented. The profile assesses the person under performance, imagery, learning and recovery conditions and typical data ranges and means will be provided.
Much of the time will be spent on how to integrate the information from the profile to better design a program for the individual. Key references for each phase of the assessment profile will be included. Back to workshop schedule

Keywords: assessment for athletes, mental skills, automatic profiling

Self-Efficacy in Treatment of Psychosomatic Disorders: HRV-Biofeedback
Friedrich Vogt, PhD/MSc (Austria, SVA)
Registration code 13-07 / Fundamental workshop / English language

Abstract: “False face must hide what false heart doth know” (Shakespeare/MacBeth). In Biofeedback-practice diseases are seen as a condition of lost balance and/or insufficient competence in regeneration. Besides its organic functions, physical behaviour like heart-rate, blood-pressure or respiration can be also seen as an inner memory, behaves like an extended executor of represses and forgotten experiences in our mind. The workshop will face the question of heart-mind-interaction. How can I integrate cryptic lines on my “closed” Biofeedback-Screen into an open therapeutic interaction with my clients/patients? And how it feeds back to our self-efficacy? The functional understanding of the heart-rate-variability (HRV) is a key, opens a door between mind and body. Becoming healthy is seen more like a way than a designation. This way is not paved solely by mileage, expressed by lost symptoms. Becoming healthy is the more or less burdensome trail of discovery and insight in the accepted organisation of a way of living. And sometimes the destination fits more to inner growth than to intentional expectations. Closing the missing link between science and practical application is one of the most fascinating challenges for practitioners today. Workshop includes:

Day 1:
- Heart functions and respiration
- The breathing mind – respiration patterns
- Interpretation of HRV-indicators (SDNN, pNN50, RMSSD, LF, HF…)
- Watching and listen to the hearth (Biofeedback)
- The heart as a supervisor in the therapeutic setting

Day 2:
- HRV-feedback, self-efficacy and pain-management: example migraine
- Interactions between heart- and brain-functions
- HRV-feedback and its impact to cerebral functions
- HRV-feedback and its impact to bodily functions
- Biofeedback, salutogenesis and self-efficacy

Keywords: physical behaviour as an inner memory, heart-mind interaction, hear-rate-variability

L’utilizzo del Biofeedback nel trattamento dei disturbi d’ansia e dell’umore
Giuseppe Sacco, Dr.
Registration code 13-08 / Fundamental workshop / Universal workshop / Italian language

Abstract (please note that the workshop will be taught in the Italian language).
This workshop will focus on the researches and clinical use of biofeedback (BF) and neurofeedback (NF) in the treatment of anxiety and mood disorders.
A particular attention will be focused also on clinical use of heart rate variability (HRV)
Moreover, it there will be an ample practice section where will be to present a clinical case and some exercitations with participants. The workshop will be so organized:
1. Short general information on biofeedback (BF)
2. Clinical application of BF
3. BF in the treatment of psychosomatic disorders and anxiety disorders: experimental studies
4. II neurofeedback (NF): Short general information
5. NF in the treatment of mood disorders and anxiety disorders: experimental studies
6. Myographic patterns, cognitive processes and symptom patterns: a research’s outcomes
7. Clinical use of heart rate variability (HRV)
8. Exposure of clinical case
9. Practical demonstrations with participants
Key words: anxiety disorders, biofeedback, heart rate variability, mood disorders, neurofeedback research and clinical use with biofeedback and neurofeedback

**Wednesday April 14, 2010**

**Integrating Peripheral Biofeedback, EEG Neurofeedback, and Adjunctive Techniques to Achieve Optimal Performance**
Lynda Kirk, MA, LPC, BCIA Senior Fellow, BCIA EEG Fellow, QEEG Diplomate
Registration code 14-01 / Fundamental workshop / Universal workshop / English language

**Abstract**: Peak performance and optimal performance are current buzzwords in many arenas, from sports to the arts to business. Whether you work with athletes, artists, businesses, or clinical clients and patients, they all have something in common: They want to improve their performance. Being blessed to have a career over the past 30 years that deals with integrating body, mind, brain, and spirit, I have seen thousands of clients whose goals could be summarized as follows: 1) they had some dysfunction they wanted to improve, and/or 2) they could function reasonably well but they wanted to achieve optimal function. My vision of optimal performance is a spectrum, with dysfunction at one end and optimal function at the other:

<table>
<thead>
<tr>
<th>Dysfunction</th>
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<th>Optimal Function</th>
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The Optimal Performance Spectrum

Clients can begin training at any start-point on this spectrum. Our mission as clinicians is to move our clients toward the optimal function end of the spectrum. The methods I use depend heavily on biofeedback and neurofeedback. With biofeedback and neurofeedback we can self-regulate our brainwaves, physiology, emotions, cognition, intellect, and consciousness in ways that were not previously possible. These skills are the keys to optimal health, optimal success and optimal function.

Attendees will learn how to use biofeedback and EEG neurofeedback modalities over the entire Optimal Performance Spectrum. You will learn how to create training applications specifically targeted to the goals of clients seeking your help. This workshop includes examples of optimal performance training with athletes, performing artists, students, and businesses.

The workshop also addresses symptoms categorized as physical dysfunction such as: Hypertension, Chronic Pain, Headaches and Migraines, TMJ, Fibromyalgia, Gastrointestinal Problems, Esophageal Spasm, Irritable Bowel Syndrome, Bladder and Bowel and Dystonias

It also addresses symptoms categorized as psychophysiological dysfunction such as: ADHD, Anxiety/Panic Disorders, Depression, Bipolar Disorder, Tourette’s, Learning Disabilities, Conduct Disorder, Obsessive Compulsive Disorder, Seizures, Sleep Disorders, Stress, Mild Traumatic Brain Injury, PTSD and Autism/ PDD

Key Words: Optimal performance, EEG neurofeedback, biofeedback, adjunctive techniques

**Mind/Brain/Consciousness: A Potential Mechanism for Distant Effects in Healing**
Jay Gunkelman, QEEGD
Registration code 14-02 / Advanced workshop / English language
Please note: this is a 2-day workshop. First part is schedule on April 13, 2010

**Abstract**: see abstract on April 13, 2010

**Hot Tips for Immediate Biofeedback Success**
Spiro Diamantidis, MD
Registration code 14-03 / Fundamental workshop / English language
Abstract: Biofeedback is a technically supported scientific process demanding special knowledge and understanding of the equipments as well as of the monitored organism's neurophysiology, in order to enable practitioner to achieve the best of valid for evaluation data. Although there are no tricks in science and especially in neurophysiology, still there are some processes helping the biofeedback applier to organize and utilize his practice without loosing any info useful for assessment or application. The do's and don'ts in biofeedback, consisting the set of skills required for successful biofeedback practices, will be presented in this workshop in order to establish, support or enhance practitioner's skills according to their former knowledge and understanding. The electronic data labyrinth usually under or hyper estimated, need an Ariadne's clew which will be provided to the attendees of this workshop in order to help them practice and develop mastery on how to understand the function mechanism of the equipments, how to operate the equipments, how to record the physiological signals, how to distinguish them from artifacts and how to find the correlation between the physiological signals and the person's internal or external events. Skin conductance, temperature, surface electromyography, photoplethysmograph and respiration will be discovered.

Keywords: Hot Tips on Biofeedback, Biofeedback Equipments, Neurophysiology

Expanding Biofeedback with Touch and Imagery: Advanced Techniques
Erik Peper, Ph.D., BCIAC
Registration code 14-04 / Advanced workshop / English language

Abstract: Even with the biofeedback training the pain did not change or the client did experience any change or enough benefits. This workshop shares pragmatic teaching skills that are derived from more than 35 years of clinical biofeedback training and supervision. Learn to optimize your clients self-healing capability from a holistic perspective by integrating diet, exercise, and cognitive changes. The workshop focuses upon complementary techniques of touch and movement, imagery and kinesthetic modeling, cognitive reframing, and breathing that facilitate biofeedback training and clinical success with patients who have pain, hypertension, muscle tension, anxiety, asthma or chronic disorders. The workshop includes teaching therapeutic touch to evoke a state of safety within the client that is necessary for regeneration and healing. Specifically taught are strategies to use touch to direct passive attention and effortless breathing, integrate somatosensory imagery, and kinesthetic sculpting as homework practices to reduce symptoms and pain. The workshop includes experiential practices, role playing with physiological monitoring and training.

Key words: Respiration, Pain, Therapeutic touch, Imagery Back to workshop schedule

Optimizing Performance and Health for Sport - Training
Wilson, Vietta E. (Sue), Ph.D.
Registration code 14-05 / Fundamental workshop / English language

Abstract: This workshop will provide the 'how to integrate' the biofeedback/neurofeedback protocols with the sport psychology skills necessary for elite performance. The sport psychology skills include motivation, imagery, self regulation skills, confidence, self talk and attention. Included are some of the Edutainment exercises that can be used in presenting seminars or teaching self regulation to athletes or teams. The new biofeedback (emg, rr, br, hr/hrv, temp,eda) and neurofeedback (1 & 2 channel) training screens used for performance enhancement are reviewed. Also demonstrated will be the reaction time protocol used by the speed skaters enroute to Olympic Gold Medals. Case studies will be used to illustrate the training protocol. Additionally, what and how to integrate the biofeedback home trainers with the sport psychology skills will be demonstrated. A CD of the text Owners' Manual of How to Control the Mind/Body and Edutainment will be given to each participant.

Keywords: sport psychology skills, elite performance, edutainment exercises, reaction time protocol

Self-Efficacy in Treatment of Psychosomatic Disorders: HRV-Biofeedback
Friedrich Vogt, Ph.D./MSc (Austria, SVA)
Registration code 14-07 / Fundamental workshop / English language
Please note: this is a 2-day workshop. First part is schedule on April 13, 2010

Abstract: see abstract on April 13, 2010
## SCIENTIFIC PROGRAM SCHEDULE

### April 14, 2010 - Evening program

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<th>Time</th>
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<tr>
<td>5:00-5:30 pm</td>
<td>Welcome party with snacks and drinks</td>
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<td>5:30-6:00 pm</td>
<td>Official opening</td>
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<td>Welcome by Prof. Erik Peper (President BFE) &amp; Monika Fuhs (Executive Director BFE)</td>
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<td>6:00 – 8:00 pm</td>
<td>Invited lectures</td>
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<td>Ute Strehl: Long term effects of Neurofeedback in ADHD and Epilepsy</td>
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<td>Sue Wilson: Biofeedback at the 2010 Vancouver Olympics</td>
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### April 15, 2010 – Day program

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<tr>
<td>9:00 – 11:00 am</td>
<td>Invited lectures</td>
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<td>Jay Gunkelman: QEEG-Based Insights into Consciousness and Healing Neuroscience tackles the hard questions</td>
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<td>Robert Whitehouse: Heart Rate Variability and Capnometry, the importance of using both in self-regulation, &amp; what’s special about the heart’s Resonant Frequency</td>
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### Break & Poster presentations

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<tbody>
<tr>
<td>11:30 am – 1:00 pm</td>
<td>Neurofeedback symposium / EMG symposium</td>
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<td>Oral presentations:</td>
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<td>I. Phillipens</td>
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<td>L. Mattulich</td>
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<td>C. Fazekas</td>
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<td>E. Peper</td>
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<td>A. Lampropoulou</td>
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<td>1:00 – 2:30 pm</td>
<td>Lunch Break &amp; Poster presentations</td>
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<td>2:30 – 4:00 pm</td>
<td>Neurofeedback symposium (continued)</td>
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<td>Oral presentations:</td>
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<td>T. Surmeli</td>
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<td>R. Warnke</td>
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<td>M. Breteler</td>
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<td>J. Hageman</td>
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<td>D. Moss</td>
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<td>I. Zivoder</td>
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<td>H. Kirlum &amp; R. Nickel</td>
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### Symposium Integrative health

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<td>D. Moss</td>
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### Break & Poster presentations

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<tbody>
<tr>
<td>4:30 – 6:00 pm</td>
<td>Heart Rate Variability symposium / Symposium Related topics</td>
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<td>Oral presentations:</td>
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<td>K. Blase</td>
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<td>A. Purwandini Sutarto</td>
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### List of poster presentations

- **Aaron Truitt & Chris Wally**: The Effects of Kargyraa Throat-Singing and Singing a Fundamental Note on Heart Rate Variability
- **Figueroa López, Carlos**: Psychophysiological Stress Profile in Patients with Heart Failure
- **Sakoman, Andrea**: Psychophysiological Response to Emotional Words in Patients Suffering from Combat related Posttraumatic Stress Disorder
- **Kirlum, Hans-Joachim**: Electromyographic Response In Patients with Hemiparesis – There Is No Influence on The Effect Of Brucker-Biofeedback-Therapy By Latency To Incident Or Age
- **Rausa, Marialuisa**: Biofeedback Assisted Control of Emotional Fainting: Preliminary Results
- **Sato, Toshihiko**: Effects of Neurofeedback Training for an Increase in Upper Alpha Power
- **Wyckoff, Sarah**: On Cognitive Performance in a Choice Reaction Time Task: A Preliminary Study
- **Zivodra**: Quantitative Electroencephalograph Effects as a Result of Single Session
- **Sato, Toshihiko**: Respiratory Sinus Arrhythmia Feedback in an Anxiety Population
Long Term Effects of Neurofeedback in ADHD and Epilepsy
Ute Strehl, Ph.D., (Co-authors: C. Gani, S. Birkle), Institute of Medical Psychology and Behavioral Neurobiology, University of Tübingen, Germany
Email: ute.strehl@uni-tuebingen.de

Abstract: For 30 years it has been reported that neurofeedback reduces symptoms in ADHD and Epilepsy. Recently, a meta-analysis has shown that neurofeedback can indeed be considered as an evidence-based treatment for ADHD. The results confirm that neurofeedback treatment has large and clinically significant effects on Impulsivity and Inattention with a modest improvement in Hyperactivity. A meta-analysis of EEG biofeedback in Epilepsy demonstrated its clinical efficacy. While these analyses are based on pre-post comparisons there is still a lack of long term follow-up studies. Here we present data for the first time concerning the long term efficacy of neurofeedback on ADHD and epilepsy. **Methods:** Follow-up evaluation for ADHD was carried out 6 months and more than 2 years after the last training session. Out of 52 children, 23 participated in the follow-up which included three EEG training sessions. Parents rated behavioral symptoms as well as the frequency and impact of problems. Attention was measured with the Testbatterie zur Aufmerksamkeitsprüfung (TAP). For epilepsy, the evaluation of 14 patients was conducted 10 years (mean) after the end of treatment. The original patient group consisted of 40 participants.

**Results:** In the ADHD study all improvements in behavior and attention that had been previously observed through assessments were found to be stable in the long term. Furthermore, an even greater significant reduction for a number of problems and a significant improvement in attention were observed. EEG-self regulation skills were preserved. The epilepsy patients still reported significantly fewer seizures compared to the baseline measured 10 years prior and EEG-self regulation skills were still observable.

**Conclusion:** This is the first time long term effects of Neurofeedback that are reported. The stability of neurofeedback-induced changes in symptoms and the preserved ability to self regulate EEG parameters support the conclusion that Neurofeedback helps to normalize brain functions. Possible limitations of these findings are the low number of participants and the impact of time since the end of treatment. Their relevance should be further discussed.

Biofeedback at the 2010 Vancouver Olympics
Sue Wilson, Ph.D., Canada
Email: viettaw@yahoo.com

Abstract: Biofeedback and neurofeedback were integrated into several sport psychology programs in Canada for the Vancouver Olympics. These programs were part of the ‘Own the Podium’, Government funded, top secret work that led to the largest awarding of gold medals to the home country in the history of the Winter Olympics. This presentation will report as much feedback as possible from the clinicians as to how well the training was received, utilized and beneficial (the government report may not be available by then). A video of the program of the gold medalist who stated that the bf/nf program helped him lessen stress and stay focused at the start gate will be shown.
Neurofeedback Training in Non-Human Primates
Ingrid Philippens, Ph.D., Biomedical Primate Research Centre (BPRC), The Netherlands, Email: philippens@bprc.nl

Abstract: Neurofeedback is used to improve peak performance or to replace pharmaceutical intervention in several disorders. This is not to say that these are mature, well-tested treatments. Most of the present mechanistic knowledge is based on comparison between neurophysiology and fMRI. To learn more about the mechanistic background and the underlying processes, invasive research is needed. A translational approach in a non-human primate model, close related to human, is recommended to bridge the wide gap between non-validated empirical human research and standardized controlled research. We were able to train marmoset monkeys on sensorimotor rhythm (SMR, spectral peak around 12-14Hz) on guidance of positive reinforcement in only a few daily 30-minute training sessions. SMR appears to reduce muscle tone by affecting the thalamo-cortical circuits. This may also be the explanation that SMR training is effective in Attention Deficit Hyperactive Disorder (Fox et al., 2005, Appl. Psychophysiol. Biofeedback. 30(4):365-73). Interestingly, the thalamo-cortical circuits are also affected in Parkinson's disease (PD). Therefore, SMR training may presumably improve the motor functions in PD patients or decrease the L-dopa induced dyskinesia. On the other hand, SMR training also increases the metabolic activity in the striatum. It is known that a decline in metabolic activity activate microglia involved in the maintenance of the neurodegenerative process. Indeed, a relation between alpha-EEG, metabolic activity and microglia activation was described in a model for septic enphalopathy in rats (Semmler et al., 2008, J Neuroinflammation5:38). Neurofeedback technology may therefore benefit a broad range of neurodegenerative disorders such as PD. Increased knowledge about the underlying mechanistic aspects may increase the possibilities for applications of neurofeedback in order to better exploit its full potential. The first evidence of non-human primates having a voluntary operant control over the sensorimotor rhythm is an initial step in providing a much-needed scientific basis to neurofeedback.

Synergistic High Gamma for Exceptional Performance: Data Makes Visible our Invisible Innate Patterns
Liana Mattulich, BCIA Fellow; CEEG Fellow MD, Inner Key International, USA, Email: lianamattulich@yahoo.com

Abstract: A lifetime of experiences modifies our essence and generates emotional baggage that encumbers our “original” self. That invisible, innate psycho-physiological aware-potential can be re-engaged by specific integrative techniques, which empower average to high-functioning individuals to sustain exceptional life performance in self-regulated mind-body physiology. The system uses a synergistic amalgamation of Eastern medical procedures and time proven ancient practices, applied along with EMG, EDR, HRV, bi-lateral thermals, plus high gamma EEG training using Deymed, Nexus and autonomic F-1000. EEG sequences consolidate changes in relatively few sessions. Neurofeedback over 40 Hz helps disclose psycho-physiological variables required for enhanced mental pliability and personal potential. Data were recorded in the high frequency spectra of creative and high-functioning subjects. Each participant exhibited a dominant frequency with unique, mathematically significant patterns in gamma showing amplitude enhancements. Many normal individuals' training frequencies have been found to be above the range of most neurofeedback instrumentation. Our research suggests: when subjects participated in home practices that ground plasticity, they accomplished faster and sustained personal progress in areas of functions important for their personal goals; dynamic EEG patterns demonstrated Phi Ratio relationships. We propose that the training of exceptional and sustainable human potentials could be facilitated by databases of very high gamma brainwaves. Attendees will be able to:
1) Define “high gamma brainwaves” and identify electrode locations for training
2) Understand theory and a synergistic training sequence for Exceptional Performance Training (EPT) for health-maintaining physiology.
3) Learn new research findings and clinical protocols to produce results beyond peak performance and practices to preserve the training results.
4) Discuss the applications of states of enhanced perceptions and high creativity.

**Integration of EEG / Live Z-scores, DC/SCP, and Peripheral Measures in Biofeedback**  
Thomas F. Collura, BrainMaster Technologies, USA,  
Email: Tomc1@brainm.com

Abstract: This lecture will describe methods for combining EEG biofeedback with DC/SCP feedback, and peripheral biofeedback measures. Recording of DC/SCP potentials will be demonstrated, as well as methods for training DC/SCP simultaneously with conventional EEG recording. Peripheral measures including pulse oximetry, heart-rate variability, skin conductance, temperature, and EMG will also be described.

**EMG symposium (11:30 am – 1:00 pm)**  
Hosted by: Erik Peper. Ph.D.

**How to Use sEMG at the Practice of a Physical Therapist**  
Annette Booiman, PT, The Netherlands,  
Email: acbooiman@zonnet.nl

Abstract: Muscle biofeedback is a useful evidence based teaching and treatment approach for physical/remedial therapists. It can show unnecessary covert muscles co-contractions and the muscles staying tense after performing a task and not relaxing. The physiological monitoring can identify low level muscle activity which is not recognized by neither the client nor the therapist. SEMG allows the invisible muscle tension to become visible and is illustrated thought a case study of a client who sought treatment because of neck/shoulder pain. Her pain started when she became employed in a vegetable store and continued to increase to the point that she was afraid that she would have to stop working. During the assessment sessions the trapezius and deltoid SEMG were recorded while she role played her job task which consisted of picking up apples from a crate, putting them in a paper bag, turning around and placing them in a paper bag on the scale. The SEMG showed increased shoulder tension, which did not return to baseline and there was an absence of regenerative SEMG gaps. She was then trained to change her posture and position of the arms. After the repetition of the movements several times in the new way, she repeated the role play. The SEMG showed significant decrease and relaxation in between the different tasks. After actually working in this posture with reduced dysponesis, she reported a significant decrease in headache and less exhaustion after a day’s work. At the one year follow up, she reported a significant decrease in her neck/shoulder complaints and was able to continue her job without neck and shoulder problems. In summary, SEMG augments the behavioural interventions because the SEMG allows the invisible muscle tension to become visible and helps develop internal awareness. The SEMG provided immediate feedback which enhanced motivation and allowed her to talk to her supervisor to request ergonomic changes that allowed her to work more efficiently.

**Regulation of Trapezius Activity and IQ: Is there Psychosomatic Intelligence?**  
Christian Fazekas PD Dr., Medizinische Universität Graz, Austria,  
Email: christian.fazekas@meduni-graz.at

Abstract: Background: The intelligence quotient (IQ) may influence exteroceptive (e. g. visual, auditory) and interoceptive (e.g. autonomic nervous system, posture) perception, processing and regulation of somatic information. Based on these findings the Psychosomatic Intelligence (PI) hypothesis has been proposed as an additional conceptual framework within intelligence research. Objective: The aim of this study was to probe for an association between conscious, differentiated regulation of trapezius activity and IQ.Methods: Participants in this study were asked to regulate as quickly as possible the tension of the trapezius according to standardized tasks with increasing levels of difficulties. The tasks were shown on the biofeedback monitor in combination with surface electromyographical (EMG) signals which were recorded bilaterally from the upper trapezius. In addition hemoencephalography (HEG) signals were used as a measure of concentration during performance. Results: Data concerning an association between learning curve of regulating trapezius activity, concentration according to HEG signals and dimensions of IQ will be presented at the conference. Conclusion: This contribution is intended to stimulate the discussion about further research in this field.
Reduce Dysponesis and Improve Physical Performance with Surface Electromyography
Erik Peper, Ph.D., BCIAC, San Francisco State University, San Francisco, USA,
Email: epeper@sfsu.edu

Abstract: Motor performance is often impaired through dysponesis which consists of covert muscle tension not needed for task performance. The surface electromyography (SEMG) for analysis of dysponesis and training to reduce dysponesis is illustrated through a case example of a 51 year old woman who worked out in the gym on the elliptical machine. Through SEMG training her dysponetic SEMG recorded from her upper trapezius and forearm flexors was reduced by a factor of 10. After learning how to work out on the elliptical machine without the upper trapezius and forearm muscle dysponesis, she reported being much less exhausted and she significantly increased her exercise intensity. In addition, she generalized the concept of dysponesis awareness and reduction into other areas of her life such as driving. She became aware that gripping the steering wheel made her feel much more stressed then when she relaxed her shoulders and arms and felt much calmer and able to handle difficult driving situations. She reported that her awareness of dysponesis has helped her to take control and make the necessary changes to reduce the physical stress that she encountered every day. The components that contribute to successful dysponesis reduction include:
- The assumption that thoughts, memories, and emotions affect the physiology.
- The identification and reduction of dysponesis during simulated or actual task performance.
- Positive motivation provided by the SEMG feedback because it monitors the dysfunctional patterns and offers immediate feedback.
- Clinical success is enhanced when the client generalizes the skill into daily life activities.
In summary, we recommend that children and adults as they acquire a new motor skill learn dysponesis awareness and reduction to enhance performance.

Respiratory Disorders Treated through Biofeedback Techniques
Anastasia Lampropoulou, MD, Therapeutic Conception, Greece,
Email: anastasialampropoulou@gmail.com

Abstract: 650 subjects, suffered from lower respiratory manifestations of various nosologic entities, were treated with biofeedback. All biofeedback techniques were used, GSR, EMG, HRV as well as new protocols sprung from combination of a respiration patterns variety. The aim of this study was to assess the possible effectiveness of biofeedback strategies applied for treatment of chronic lower respiratory disorders. Treatment outcome was measured and was evaluated as statistical significant. The conclusion is that biofeedback can help significantly in palliating, relieving and treating of chronic lower respiratory disorders.

Neurofeedback symposium Part 2 (2:30 – 4:00 pm)
Hosted by: Lynda Kirk, MA, LPC, BCIA Senior Fellow, BCIA EEG Fellow, QEEG Diplomate

Obsessive Compulsive Disorder and the Efficacy of Qeeg-Guided Neurofeedback Treatment: Case Series
T. Sürmeli, M.D. BCIA-C, Living Health Center for Research & Education, Turkey,
Email: neuropsychiatry@yahoo.com

Abstract: While Neurofeedback has been extensively studied in the treatment of many disorders, there have been only two published reports by Hammond, D.C (2003, 2005) on its clinical effects in the treatment of obsessive compulsive disorder. The efficacy of qEEG-Guided Neurofeedback (NF) for subjects with obsessive compulsive disorder was studied as case series.
Method: Drug resistant 36 subjects were assigned to 80-160 sessions of qEEG- guided neurofeedback treatment. Each session was 30 minutes duration, with 1-2 sessions per day. The approach is to examine the clinical course of these problems and with this case series, to help show the impact of the qEEG guided neurofeedback training on these client's clinical outcomes.
Results: Twenty-eight out of 36 subjects who received NF training showed clinical improvement according to Yale –Brown Obsessive-Compulsive Scale. MMPI was administered pre-post to some of the patients and they showed significant improvements not only in OCD symptoms but also in depression, anxiety symptoms.
Discussion : In follow-ups of those subjects at 24 to 40 months after completion of treatment 28 subjects were maintaining improvements in OCD symptoms through telephone contacts with the family members. This study provides a very good
evidence for positive effects of neurofeedback treatment in obsessive compulsive disorder. The results of this study encourage further controlled research.

Low-Level-Functions as a Key Indicator for Attention and Language Competence
Ralph Warnke, MedITECH, Germany,
Email: ralph.warnke@meditech.de

Abstract: Biofeedback and Neurofeedback training often lacks reliable measures aside from the physiological parameters applied in the training sessions. Low-Level functions allow biofeedback trainers to close this gap and evaluate and document client's progress fast and in a competent manner. Low level functions have been found to provide solid data on the client's level of attention and language competence. Poor low level functions can be found in dyslexics as well as in stroke patients and autistic clients / clients with down syndrome. Capabilities such as order threshold, spatial hearing, pitch discrimination or pattern recognition allow for a swift and solid correlation of clients' deficiencies and training improvements. While simultaneous translators show incredibly impressive results in their low-level functions, they are the only group not showing sincere aging effects in those functions. The author will show related research, explain ways of combining biofeedback and low-level functions and allow for all audience to determine their own low-level scores.

How Do You feel? Progress Monitoring in Neurofeedback Training with a Standardized Questionnaire
Marinus Breteler Dr., Martin van Beek, Drs., EEG Resource Institute, The Netherlands
Email: r.breteler@eegbiofeedback.nl

Abstract: Recent investigations have emphasized the effectiveness of standardized feedback in the process of therapy progress. In the field of neurofeedback, several questionnaires have been used that were developed as a general questionnaire for a particular problem area, such as the Connors in ADHD and the Autism Questionnaire in autism. Apart from these diagnostically important measures, treatment progress may also be measured in terms of daily symptoms, such as feeling tired, angry, or distracted. The quick assessment (QA), originally developed by JD Elder turned out to be an interesting instrument to use in a clinical setting with repeated measures. In this presentation we will present data of the factor structure of the QA, and associate these with the SCL-90; a well-validated symptom checklist. Second, we will show its use in progress monitoring of neurofeedback trainings. Lastly we will discuss cases in which the QA proved useful in directing further treatment.

Dimensions of Attention Questionnaire (Daq): A Potential Pre-Screening Tool to Suggest Initial Use of Biofeedback or Hypnosis for Clients
Joan H. Hageman, PSYmore Research Institute, Inc. Tampa Florida, USA,
Email: jhhageman.psymore@verizon.net

Abstract: Building upon previous research by Quall and Sheehan and mind-body research, Joan H. Hageman, Ph.D. utilized a repeated measures design to explore the relationship of absorption and dissociation in attentional focus, measured by twelve dimensions of the Dimensions of Attention Questionnaire (DAQ), with 59 practitioners from a spiritual/meditative practice. Four visualizations were used in with one unstructured (eyes open, mind blank) and one structured (eyes closed, think about the retreat) for both before and after training. Results with ANOVAs and correlation statistics supported the hypotheses that absorption, measured by the Tellegen Absorption Scale (TAS), and dissociation, measured by the Dissociative Experiences Scale (DES), played significant roles in attentional focus for some DAQ dimensions. TAS was significant on the pre-test unstructured visualization for dimensions Flexibility, Perspicacity, Absorption, and Simultaneity, accounting for 22%, 33%, 24%, and 26% of variance respectively. TAS was also significant on the post-test unstructured and structured visualizations for Perspicacity, each accounting for 28% of the variance. DES was significant on dimensions Flexibility, Perspicacity, Locus, and Absorption in the pre-test unstructured visualization, accounting for 61%, 52%, 61% and 55% of variance respectively. DES was significant for Perspicacity in the post-test unstructured visualization accounting for over 50% of the variance. Findings are in line with previous research on the role of absorption and dissociation and suggest that absorption capabilities with meditative practices may enhance/inhibit attentional focus involving mystical experiences, flexibility of focus, absorption in tasks, and expansion/narrowing of awareness of sensations, thoughts, or feelings. Dissociative capabilities may also enhance/lessen perceived consciousness as localized within/external to the body. Findings raise the provocative consideration to use the DAQ as a screening tool to explore attentional focus, and thereby clarify the choice for the initial use of biofeedback or hypnosis dependent upon the client’s skill in attentional focus and history of meditative practice.
Symposium Integrative Health (2:30 – 4:00 pm)
Hosted by: Monika Fuhs, Mag.rer.nat., BCIAC

Integrative Health Care: The Role of Biofeedback and Mind-Body Therapies
Donald Moss, Ph.D., BCIAC, USA,
Email: dmoss@saybrook.edu

Abstract: Integrative Health Care represents the synthesis of complementary and alternative therapies with mainstream health care. There is a growing emphasis within health care on making a few of the most accepted alternative therapies available in patient care, especially the mind-body therapies (and acupuncture). Efficacy research is best developed for this cluster of mind-body therapies, which includes biofeedback, neurofeedback, and hypnosis. Patients, however, spontaneously have developed patterns of use for a variety of “sexy” and interesting complementary and alternative therapies, for many of which evidence-based research is lacking or negative. In addition, much patient use of alternative therapies is not well-integrated into mainstream care. The result is a waste of health care resources, and a dangerous fragmentation of care. The presenter will highlight challenges to integrative care, but will also point to examples of exemplary programs which integrate biofeedback, hypnosis, and other self-regulation therapies into mainstream medical care.

The Importance of Music in personalized Therapies and Biofeedback
Petra Friedrich, Dipl.Ing., Heinz Nixdorf-Lehrstuhl für Medizinische Elektronik, Technische Universität München, Germany,
Email: friedrich@tum.de

Abstract: Acoustic signals can modulate the human metabolic and central-nervous functions and evoke physiological effects. Especially the anti-hypertensive effect of certain iterative sound-patterns as possible intervention for essential hypertension is examined in many recent studies as well as our own research work. For a therapy, however, it is necessary to identify the musical active ingredients of the sounds. This contribution discusses the systematic analysis of the musical features that are responsible for the anti-hypertensive effect. More than 400 features were extracted and investigated in terms of their relevance concerning a blood pressure lowering effect. The 17 most significant characteristics were used to develop a classifier that decides whether a sound pattern is sedative or stimulating. With this tool it is possible to filter from a large selection of music sequences the most suitable therapeutical sound patterns. We now have the starting basis to provide individualized and personalized therapies while respecting personal preferences of users. The results of a pilot research project with the BFE to investigate the correlation between music and real-time biofeedback parameters will be presented. The study illustrates several ways in which electrophysiological sensors and biofeedback software can be used to analyze and evaluate the effect of music in humans. It also provides a view into the internal musical structures correlated with temperature, respiration rate, skin conductance, and heart rate, and suggests guidelines for how music can be used as:

- a new therapeutic element in biofeedback applications, e.g. supporting stress relaxation by using a patient's favorite songs
- a pacer in BF-sessions with much more character and charm compared with today’s existing simple electronic sounds and songs that can be annoying and repetitive.

A presentation of some results of BF-measurements from cases with some acoustic demonstrations will be given.

Stress Level in Health Professionals: Comparison of Self-Evaluation and Physiological Measurements
Ivana Zwoder M.A. RN, Practice for psychological treatment, biofeedback and psychosomatics «Mens sana», Croatia,
Email: ivanaz@mensana.hr

Abstract: This study examines stress level in health professionals. First part of study included 100 health professionals from Psychiatric Hospital Vrapče, Zagreb. We used “Work related stress level questionnaire” (Radošević-Vidaček,B.) After we analyzed data from questionnaires we selected two groups: 25% with highest score and 25% with lowest score. For the next part of research we used NeXus (Mind Media B.V.) systems process, record and analyze physiological signals (EMG, Temp, SC/GSR, BVP, Respiration) which we can acquire or monitor from the body. For this type of research we use developed a whole stress test. After testing we will compare self-evaluation and physiological measurements. Analysis is in a progress.
Electromyographic Response in Patients with Hemiparesis – There is no Influence on the Effect of Brucker-Biofeedback-Therapy by Latency to Incident or Age
Hans-Joachim Kirlum, MD & Ralph Nickel, PT, Orthopädische Klinik München Harlaching, Germany,
Email: HJKirlum@Schoen-Kliniken.de

Abstract: For patients with hemiparesis after stroke or intracranial bleeding the rehabilitative success usually depends on the latency between the incident and the therapy and on the age of the patients at the incident. To determine the increase of the EMG-response from the treated muscle groups of patients treated with the Brucker-biofeedback-method we compared the mean increase of the EMG-response for patients treated during the first year after the incident (group 1 n=6) and after one year (group 2 n=36) and we compared the patients younger than 60 year at the incident (Group 3 n=27) and older than 60 years (Group 4 n=15). 42 individuals with hemiparesis after stroke or intracranial bleeding were included. 27 patients received treatments of the arm muscles and 32 patients of the leg muscles. The mean increase of the EMG-response of the arm muscles was 181% and of the leg muscles 377%. There was no significant difference between group 1 and 2 and not between group 3 and 4. The results suggest that the Brucker-biofeedback-method is efficient independent from the latency between the incident and the therapy and independent from the age at the incident.

Heart Rate Variability Symposium (4:30 – 6:00 pm)
Hosted by: Fred Schaffer, PhD, BCB

Slim with your Heart Rhythm
Kees Blase, Drs., HeartFocus, The Netherlands,
Email: k.blase@hetnet.nl

Abstract: Nutritionist Dr. David O Hare and medical physicist Kees Blase wrote a book based on the 0,1 resonance frequency of HRV for clients with overweight. The method is based on 9 steps in 9 weeks in 3 phases. The first period clients learn step by step how to reach the 0,1 frequency in effortless breathing. In the second phase emotion regulation is the aim. How can you decrease the charge in emotions with negative valence? In the third phase clients learn to manage eating emotions like hunger, appetite and saturation, and also to handle frustration, loneliness and other eating emotions. The method is effective for self healing of one of the 3 epidemies in the world.

HRV Biofeedback Training Improves Cognitive Performance among Industrial Operators
Auditya Purwandini Sutarto, University of Malaysia Pahang, Malaysia,
Email: auditya_ps@yahoo.com

Abstract: In shop floor, most operators perform their cognitive functions below their peak performance due to many reasons such as fatigue, boredom, and stress. The aim of this study was to examine whether heart rate variability (HRV) biofeedback training could improve cognitive performance among operators in electronic manufacturing industry. Ten operators received five session of weekly HRV biofeedback training of 30-50 minutes each, whereas ten subjects received no intervention. Physiological stress profiles, cognitive performance, and self-reports questionnaire (Depression, Anxiety, and Stress Scale) were assessed at pre and post intervention. There were significant group x time interaction effects for cognitive performance as measured by Stroop Color-Word (interference score) and Sternberg test (response times). No significant interaction effect was present on D2 Attention test (concentration performance). Within group analysis using paired t-tests revealed that, as opposed to the control group, the intervention group improved significantly on all cognitive performance. Partial support was found for the reduction of the DASS score at post intervention. The control participants showed no improvements. These findings were supported with a significant increase in the percent of total low frequency (LF) power in the heart rate spectrum across sessions and stressor period of physiological assessment at post intervention in the biofeedback group while the control group remained constant. In summary, this study provides potential application of HRV biofeedback for operator’s performance enhancement, associated with increases in HRV.
The Future of Peripheral Biofeedback: The Trichromatic Theory of Equilibrium of the Vegetative Nervous System
Nunzio Bonaventura, Dr., Italy,
Email: nunzio.bonaventura@libero.it

Abstract: In this talk the author introduces the Trichromatic Theory of Equilibrium of the Vegetative Nervous System (T.T.E. of VNS). The T.T.E. of VNS is a particular application of the Trichromatic Theory of Equilibrium of Systems (T.T.E.S.). The T.T.E. of VNS is a new theory and an innovative method derived from computerized processing of biofeedback data which establishes a real innovation in this field. This theory states that it's possible to observe, to analyze, to check, and to modify, in real time, the dynamic status of the balance between the sympathetic and the parasympathetic section of the vegetative nervous system. Essential condition for the application of the T.T.E. of VNS is the identification of three specific representative physiological indexes of the general equilibrium of the vegetative nervous system. The three specific representative physiological indexes are: 1) Skin Conductance Response (SCR); 2) Heart Rate (HR); 3) Skin Temperature (THE). With the real time values of these three specific representative physiological indexes an innovative psychophysiological profile can be compiled. Conclusions obtained by the application of these theory and method indicate that they can be used either in scientific research or for diagnostic and psychotherapeutic purposes. Just as an example, in this talk some psychophysiological animated profiles will be presented.

How Reliable is the Resonance Frequency?
Fred Shaffer, PhD, BCB, Truman State University, Christopher Wally, Truman State University, Aaron Truitt, Truman State University
Email: fredricshaffer@gmail.com

Abstract: This within-subjects study examined the 2-week test-retest reliability of the resonance frequency and three global measures of heart rate variability (HRV). Nineteen undergraduates (16 males and 3 females), 19-22 years of age, participated in this study. A Thought Technology ProComp Infiniti™ system monitored HR Max – HR Min, pNN50, and SDNN using an Infiniti EKG™ sensor with leads placed on the torso and respiration rate using a strain gauge placed over the navel. The resonance frequency was the breathing rate that maximized the most global measures of HRV. Subjects sat upright in a straight-backed chair with eyes open throughout this study.

Following 10-minutes stabilization and a 5-minute resting baseline without feedback, subjects were instructed to follow an animated pacing display designed to guide their breathing from 7.5 to 4.5 breaths per minute in seven descending ½-breath-per-minute steps. They breathed at each target rate for 5 minutes followed by a 1-minute buffer period. Subjects were retested using the same procedure 2 weeks later to assess the reliability of these measurements. They received no HRV training or breathing practice during this period. A Pearson Product-Moment Correlation Coefficient revealed that resonance frequency, r(17) = 0.73, p = .000; pNN50, r(17) = 0.65, p = .002; and SDNN measurements, r(17) = 0.59, p = .008, were reliable, but HR Max – HR Min measurements were unreliable, r(17) = 0.30, p = .212. These findings support protocols that train clients to breathe at their unique resonance frequency to maximize HRV.

Symposium Related topics (4:30 – 6:00 pm)
Hosted by: Steve Baskin, Ph.D., BCIAC

Learning Models and Methods for Effective Biofeedback Training
Bruno Kappes, Ph.D., BCIAC, University of Alaska, Anchorage, Alaska, USA,
Email: afbmk@uaa.alaska.edu

Abstract: Biofeedback training constitutes the systematic use of electronic sensing instruments to reveal and amplify specific physiological responses in real time. One of the primary goals of biofeedback training is to teach patients to consciously recognize, influence and essentially learn self-regulation of normally unconscious psychophysiological processes. Understanding multiple training models and procedures promotes successful interventions. Implementing fundamental learning methods influences bio-psycho-social health by facilitating a patient's progress from unconscious incompetence through conscious incompetence, conscious competence and finally toward unconscious competence. Each learning phase in self-regulatory skill development provides goal directives, identifiable developmental tasks and an underlying theoretical rationale. Establishing a training rationale facilitates Education, Acquisition, Discrimination, and Self-Efficacy. This presentation identifies and proposes specific training models as well as respective learning stages during the biofeedback training process.
**Psychophysiological reactions and Pupil Dilation during Stress and Relaxation**

Maurizio Mauri, Ph.D., Institute of Human, Language and Environmental Sciences / IULM University, Milano, Italy,
Email: maurizio.mauri@iulm.it

**Abstract:** In this study we analyze the correlation between biological signals, pupil dilation and certain affective states. This goal has been accomplished combining the two following factors: 1) quantitative indexes extracted from non-invasive recordings of 5 physiological signals: namely skin conductance, blood volume pulse, electrocardiogram, electroencephalogram, respiration; 2) quantitative indexes extracted from eye-tracking recordings; 3) quantitative indexes extracted from a self-questionnaire. Wearable, non-invasive sensors, communicating with a PC, were applied to 53 students and data were collected during exposure to 2 different computer-mediated content stimuli designed to evoke specific emotional states: stress (Stroop task and mathematical task) and relaxation (panoramas slide show). In this paper we describe both the general emotion evaluation algorithm, and present a preliminary result suggesting that some of the quantitative indexes may be successful in characterizing and distinguishing between the 2 different emotional states.

**Synchronizing Physiological Signals Acquired from Biofeedback Equipment and Eye-tracker Systems**

Pietro Cipresso, Ph.D. Candidate, IULM University Milano, Italy,
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**Abstract:** Eye-tracker systems allow the addition of a series of signals from the eyes, such as pupil dilation, the distance between the pupils, and the eyes blink, to standard neurophysiology signals, allowing the assessment of the degree of relaxation or stress felt by the subjects. It is essential to establish the time between the presented stimulus and when the physiological response occurs above all if we acquire signals also from biofeedback equipment so that the exact time of a presented stimulus can be determined. Many psychophysiology scientists have begun to use eye-tracking methodologies in conjunction with standard biofeedback systems. This approach has proven to be useful for analyzing visual stimuli and the physiological reactions they produce. We developed some algorithms to synchronize eye-tracker systems with a biofeedback “Procomp Infiniti” (Thought Technology) using the TT-AV Sync sensor, which was configured through a physical channel on the biofeedback. In a previous work we conducted 500 synchronizations with the device in order to establish its precision, which we determined to be ±0.1 second. The developed algorithms allow researchers to simultaneously analyze physiological signals acquired from different devices.

**Role of Yoga in Facilitating Biofeedback Training**

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**Abstract:** Biofeedback training is a systematic learning exercise which has definite outcome in recognizing and using the biological signals in suitably modifying the biological processes which are otherwise considered to be involuntary. Yoga is an ancient Indian science and a way of life. Yoga includes practicing moral code of conduct [yama & niyama], cleansing techniques [kriyas], physical postures [asanas], voluntarily regulated breathing [pranayama], relaxation techniques and meditation [dhyana]. Yoga is known to increase self awareness and thereby leading to exercising better control over one’s own biological processes. Two studies explored the voluntary pulse reduction in yoga practitioner’s and compared them with respective controls. The first study used physical cues to reduce pulse rate while the second study did not use any external cues to reduce pulse rate. In the first study volunteers who practiced yoga reduced pulse rate as compared to those who did not practice yoga. In the second study a different group of subjects who practiced yoga for 30 days showed more pronounced reduction of heart rate on day 30 compared to day 1 i.e., 10.7 beats per minute. The control group did not show any changes both as baseline and on day 30. These two studies demonstrate that practicing yoga can lead to more pronounced reduction in pulse rate and heart rate. The implication of these two studies is that yoga can be used as an add-on value based solution in biofeedback training. This voluntary ability to control heart rate has wide range of therapeutic implications.
The Effects of Kargyraa Throat-Singing and Singing a Fundamental Note on Heart Rate Variability
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Abstract: This within-subjects study examined the comparative effects of Kargyraa throat-singing and singing a fundamental note on heart rate variability. Eleven male undergraduates participated in this study for academic credit. A Thought Technology ProComp™ Infiniti system monitored alpha and theta amplitude with a gold cup electrode at the vertex of the scalp and a linked ears reference, heart rate, SDRR, and HR Max – HR Min using an Infiniti EKG™ sensor with leads placed on the torso, respiration rate using a strain gauge placed over the navel, skin conductance level using electrodes on the 2nd and 4th fingers of the dominant hand, and temperature using a thermistor on the web dorsum of the dominant hand. In this within-subjects design, participants received from two to three 50-minute individual training sessions in Kargyraa throat-singing and were instructed to practice 30 minutes per day for 5 days a week. All 11 participants sustained singing of two notes at the same time for 180 seconds. They were randomly assigned to three 10-minute conditions that were separated by 5-minute buffer periods: Kargyraa throat-singing, singing a fundamental note (a, e, or u) used in throat-singing, or silence. They were monitored with their eyes open and no feedback. Planned comparisons revealed that SDRR was greater when singing a fundamental note than when sitting quietly, $F(1,5) = 11.29$, $p = .02$, eta squared = 0.69. Throat-singing did not increase SDRR compared to sitting quietly. HR Max – HR Min was greater when singing a fundamental note than when sitting quietly, $F(1,5) = 14.64$, $p = .01$, eta squared = 0.75 and when throat-singing than when sitting quietly, $F(1,5) = 12.67$, $p = .02$, eta squared = 0.72. Regular practice singing a fundamental note might help reinforce HRV training since it increases both SDRR and HR Max – HR Min.

Psychophysiological Stress Profile in Patients with Heart Failure
Figueroa López Carlos, Dr. / Psychophysiological stress profile in patients with heart failure.
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Abstract: Objective: Evaluate the autonomic activity in the presence of psychological stress in patients with Heart Failure (HF). Instruments: Inform consent letter, demographic information questionnaire, computerized Biofeedback equipment (8 channels ProComp Infinity Biograph Mark Thought Technology), digital sphygmomanometer. Method: 1) Cardiology doctor evaluated clinically the II or III functional class of heart failure patients; 2) The patient gave his voluntarily consent, then gave demographic information; 3) A psychophysiological evaluation was performed for 10 minutes, distributed in five stage of 2 minutes each one: base line 1 (BL1), arithmetic stressor (AS), base line 2 (BL2), emotional stressor (ES), and base line 3 (BL3).

The profile consisted of a continuum record of the physiological responses: systolic blood pressure (SBP), diastolic blood pressure (DBP), skin conductance (SC), heart rate (HR), and temperature (TEMP). Results: N=107; Gender: male 59%, female 41%. Age: mean = 55 (20-85). In BL1, SBP mean response was 115 mmHg, DBP mean was 68 mmHg, SC mean response was 2.93 μS, HR mean response was 71.10, TEMP mean response was 31.95°. In reactivity and recovery responses, SBP was 115 mmHg (3.1 to 6.6 increased, 0.36 to 1.0 decreased), DBP was 68 mmHg (1.0 to 4.4 increased, 0.7 to 0.8 decreased), SC was 2.93 μS (0.7 to 1.2 increased, 0.4 to 0.7 decreased), HR was 71.10 (1.2 to 3.7 increased, 1.01 to 0.79 decreased), TEMP was 31.95° (0.2 to 0.4 increased, 0.3° to 0.5° decreased). The sample had a greater reactivity in the ES; furthermore the patients had a good recovery in the both LB1 and LB2. Conclusions: The results show that the psychological stress, same as physical activity, have direct influence in the cardiovascular variability. For this, a multidisciplinary work is necessary in evaluation and treatment of patients with HF, include programs of psychology intervention for the management stress, with the objective of help to care the cardiovascular health of the patients and improve his quality life.
Psychophysiological Response to Emotional Words in Patients Suffering from Combat related Posttraumatic Stress Disorder
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Abstract: Heightened physiological arousal in response to trauma associated stimuli is one the diagnostic criteria for posttraumatic stress disorder (PTSD), according to DSM-IV classification (DSM-IV, Criterion B.5). Psychophysiological research has confirmed this finding for persons suffering from PTSD. Measures of heart rate (HR), blood pressure (BP), skin conductance (SC), and facial electromyogram (EMG) were recorded during the presentations of different trauma related cues in this patients, with the results of heightened startle responses and peripheral physiological hyperactivity, including increases in heart rate and blood pressure, muscle tension, and skin conductivity (Blanchard et.al. 1986; Shalev et al. 1993; Pittman et. al. 2006; Metzger et al. 1999.). Larger SC response was recorded in combat veterans with PTSD after they were presented with combat-related words (Mc Nally et al., 1987). Our group has done psychophysiology research using startle probe with Croatian combat veterans suffering from PTSD and found impaired habituation, elevated baseline heart-rate and decreased respiratory sinus arrhythmia compared to individuals without PTSD (Jovanović et al. 2009). We will present preliminary results of our study of psychophysiological reactivity to emotional words (positive, negative and neutral words) presented on the screen of patients suffering from combat PTSD compared to healthy controls. This has not been done yet in Croatia for this population of patients. The hypothesis is that the patients are oversensitive to negative words. Psychophysiological recording included: electromyogram (EMG), electrodermal activity (GSR) and electrocardiogram (EKG). Chronic PTSD was diagnosed according to DSM-IV criteria. Structured clinical interview (MINI,Sheehan et al, 1998) was used for both groups, the Clinician administered PTSD scale (CAPS -1; Blake et al.,1990), Croatian version, was used for a group of PTSD patients. Emotional words have been chosen by 200 healthy individuals. Our findings show larger skin conductance response (SCR) to negative emotional words in patients suffering from combat PTSD compared to healthy controls.

Electromyographic Response in Patients with Hemiparesis – There is no Influence on the Effect of Brucker-Biofeedback-Therapy by Latency to Incident or Age
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Abstract: For patients with hemiparesis after stroke or intracranial bleeding the rehabilitative success usually depends on the latency between the incident and the therapy and on the age of the patients at the incident. To determine the increase of the EMG-response from the treated muscle groups of patients treated with the Brucker-biofeedback-method we compared the mean increase of the EMG-response for patients treated during the first year after the incident (group1 n=6)and after one year (group 2 n=36) and we compared the patients younger than 60 year at the incident (Group 3 n= 27) and older than 60 years (Group 4 n=15). 42 individuals with hemiparesis after stroke or intracranial bleeding were included. 27 patients received treatments of the arm muscles and 32 patients of the leg muscles. The mean increase of the EMG-response of the arm muscles was 181% and of the leg muscles 377%. There was no significant difference between group 1 and 2 and not between group 3 and 4. The results suggest that the Brucker-biofeedback-method is efficient independent from the latency between the incident and the therapy and independent from the age at the incident.

Biofeedback Assisted Control of Emotional Fainting: Preliminary Results
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Abstract: Emotional fainting is also referred to as vaso-vagal syncope, a condition of loss of consciousness associated with an acute heart rate (HR) and blood pressure (BP) drop in front of emotional stimuli. Emotional fainting often occurs in blood phobics when presented with the feared stimulus (Steptoe, 1988). A diphasic cardiovascular response (initial HR and BP increase followed by an important decrease of both variables) has been observed in these subjects when confronted with their phobic stimulus. Applied tension (AT) has been used with blood phobics in order to counterbalance the BP fall and prevent the syncope (Ost, 1991). Nevertheless AT does not specifically regulate the cardiovascular (CV) response involved in the syncope. Aim: To develop a Biofeedback (BF) protocol of HR stabilization in which patients are trained to maintain HR within a pre-selected range while BP is monitored at regular intervals during the session. Method: Two blood phobics patients underwent a BF protocol including: baseline, HR-BF training, post-treatment baseline (according to the A-B-A’ design). Other than HR, BP was also measured at regular intervals during the session. The BF
treatment consisted of 12-15 sessions, including an acquisition, a maintenance and an exposure phase, the last regarding HR-BF control during the exposure to visual phobic stimuli. Results: Both patients showed an attenuation of the diphasic cardiovascular response during the exposure to phobic stimuli. Moreover they showed clinical reduction of fainting episodes associated with reduced self-reported anxiety. These preliminary data indicate that HR-BF can be used with blood phobics in order to reduce the occurrence of syncope by modulating the CV response associated with fainting. These effects were maintained at 6 months follow up.

Effects of Neurofeedback Training for an Increase in Upper Alpha Power on Cognitive Performance in a Choice Reaction Time Task: A Preliminary Study
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Abstract: We tried to examine the hypothesis that neurofeedback training applied in order to increase upper alpha power could improve cognitive performance in certain tasks. Fourteen female and 14 male college students participated. Neurofeedback training was carried out in order to enhance the magnitude of upper alpha power by using a neurofeedback training system (A620, Autogenic Systems). This training consisted of six sessions: two two-minute resting sessions as baseline with open eyes and closed eyes, respectively, and four five-minute neurofeedback training sessions with a visual presentation of the feedback stimulus. The participants were divided into two groups on the basis of their performance in the neurofeedback training: 14 subjects were categorized as a successful group because their magnitude of upper alpha power was greater in the training session than in the baseline resting session with open eyes; all the other participants were categorized as failed groups. After the completion of these training sessions, a type of choice reaction time task was carried out. This task consisted of four trial blocks. In the first two blocks of this task, the participants were asked to press (1) a red button when a red circle appeared on the PC screen in front of the participants and (2) a blue button when a blue circle appeared. In the remaining two blocks, the standard of response was reversed; they were asked to press the red button when a blue circle appeared and the blue button when a red circle appeared. ANOVA and post hoc tests revealed that the female participants in the successful group showed a shorter response time than those in the failed group. The results of this preliminary study suggested a possibility that neurofeedback training for an increase in upper alpha power might help enhance some aspects of cognitive performance.

Quantitative Electroencephalograph Effects as a Result of Single Session Respiratory Sinus Arrhythmia Feedback in an Anxiety Population
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Abstract
Objective: Previous investigations of electroencephalographs during relaxation has identified increases in slow wave (theta and alpha) band power, correlations between increased levels of alpha activity with lower levels of anxiety, and autonomic changes characterized by decreased sympathetic activity. This study was carried out to determine the impact of a respiratory sinus arrhythmia (RSA) biofeedback device on Quantitative EEG.
Methods: Participants were 43 individuals reporting stress levels at least one standard deviation above the mean on the Perceived Stress Inventory who were randomly assigned into either a control (concentration device) or experimental group (RSA biofeedback: StressEraser). Participants in both groups were novices given a 15-minute training on how to use the devices. The study recorded 19 channel EEG under baseline, stressor task, intervention, post baseline and repeated stressor conditions. For each group QEEG analyses were computed.
Results: Ratios of alpha/beta and to a lesser degree theta/beta increased to a significant level in sites O1 and O2 following RSA feedback. QEEG features of power and relative power exhibited trends worthy of future investigation in a larger sample. There were no significant differences in the concentration only control device group.
Conclusions: These findings suggest that RSA feedback may decrease arousal in areas critical to the experience of stress and anxiety and provides physiological evidence of changes produced by RSA feedback.
Effective Interventions Using Neurofeedback and Biofeedback for Comorbidities that Present with ADHD
Lynda Thompson, Ph.D., & Michael Thompson, M.D., James Thompson, Ph.D., BCIA EEG
Reg. code 16-01 / Fundamental workshop / English language
Please note: this is a 2-day workshop. Workshop continues on April 17, 2010

Abstract:
The Problem: At the ADD Centre we have had the privilege of working with thousands of adults and children who have come for treatment of ADHD. Some of the children just have ADHD. However, many children and almost all of the adults have symptoms of one or more other disorders. In some cases the other disorder should have been the primary diagnosis.

The Comorbidities: Comorbidities discussed in this workshop include: deficiencies in executive functioning, learning disabilities (LD), Autistic Spectrum Disorders (ASD) including Asperger’s Syndrome (AS), Tourette’s, mood modulation dysfunction (including anxiety and depression), traumatic brain injuries (TBI), and seizure disorders. The comorbidities overlap and often more than one difficulty is present in the same client. The prime goal of this workshop is to demonstrate how each of these comorbidities has a definitive neuro-anatomical base and EEG findings. Those assessment findings lead to a NFB + BFB intervention that can be logically and effectively applied. Discussion of efficacy of NFB + BFB for each of these difficulties is a part of the presentation.

The Intervention Approach: The reader will note in the following the lack of the use of the word “protocol”. These cases are far too complex for that kind of approach; they demand careful QEEG assessments and a working knowledge of functional neuroanatomy. A child who only has the symptoms of ADHD and otherwise is doing well academically and socially may have an excellent outcome using a single channel, Cz, single Hz band widths, QEEG assessment. The intervention with these children, when hyperactivity and impulsivity is present, is almost always to initially decrease theta (&/or thalpha) and increase SMR with the specific frequency ranges defined according to the QEEG. They then move on to do what the ADHD without hyperactivity or impulsivity group do from the outset and that is to decrease theta &/or thalpha and increase 15-18 Hz while learning and practicing metacognitive strategies.

The client, however, who presents with comorbidities, will have more complex findings in the 19 channel QEEG assessment. These findings may have some general locations and frequencies which are in the literature as being found with a specific symptom pattern or diagnosis but every patient will show their own unique variations on these general patterns. In rare cases where previously undiagnosed seizure activity is observed, the client is referred to a neurologist and SMR training is started.

Usually the approach is to initially address the symptoms that interfere with the client being able to optimize their performance and/or interact constructively with others including, in the following order: anxiety, modulation of affect, impulsivity, attention span, executive functions, and finally, in cases along the autistic spectrum. Understanding and responding to, social interactions. Anxiety is a primary clinical finding in many clients and it is tackled first using NFB, usually directed at source abnormalities found in the anterior cingulate (AC) gyrus – often beta spindling between 19-22Hz but sometimes combined with ruminating and bursts of high amplitude beta between 23-36 Hz. Often right frontal lobe areas may also show these bursts of high frequency beta especially in people who experience panic. Increasing SMR with its calming effects is part of this training but the QEEG will dictate both the frequency range and the site. If beta spindling is found centrally at 14 Hz, for example, then the SMR training may be done at C4. BFB is added and is most often heart rate variability (HRV) training but EMG, temperature, and electrodermal (EDR) sensors are also used.

Modulation of affect includes anxiety, dysphoria and, rarely, anger control. Affect modulation as well as the ADHD symptoms of impulsivity and hyperactivity are often helped by normalizing anterior cingulate activity and by the NFB + BFB approach outlined above. Specific symptoms of depression may, in addition, require activation of the left frontal lobe. The Tourette’s symptoms (motor and vocal tics and OCD behaviors) in our experience will have diminished with the above training although, in less complex cases, SMR training alone may be sufficient. Specific learning disabilities (LD) require the ADHD approach and, when attention is increased, this is followed with specific training based on the QEEG findings. In dyslexia, for example, usually Wernicke’s area is relatively inactive and we have had both adult and child non-readers reading well in less than 40 sessions by doing NFB at frequencies and sites (usually the left parietal-temporal...
junction) based on the QEEG findings. The NFB is always combined with metacognitive strategy exercises in these cases.

The most common diagnosis that has been missed in clients presenting at the ADD Centre is Asperger’s syndrome (AS). The key to rapid normalization and optimization with these clients is to initially address the symptoms that interfere with that person being able to interact constructively with others, including, in the following order: anxiety, impulsivity, attention span, executive functions, and finally, understanding and responding to, social interactions. Executive functions must be addressed in AS just as they are in ADHD, LD, and TBI. These functions include perception and selection of stimuli, being able to inhibit immediate responses, plan, shift mental-set, use working memory, initiate a thought-out response and then monitor and evaluate the results of that response. In addition to the anterior cingulate these functions require good functioning of the dorsolateral prefrontal cortex, excellent parietal-temporal-frontal connections and good functioning of the entire septal-hippocampal-limbic circuits for memory and basal ganglial-cortical circuits for monitoring. In every learning situation the external and internal (affect) context is critical to understanding the efficiency of remembering and recalling information and this will also be discussed.

In all the above, coherence differences from the database are addressed as needed. In most cases we will redo the QEEG after initial amplitude training has effected behavioral change and we will find that coherence abnormalities have changed and in some cases coherence training is no longer needed.

Trainers: In addition to running the equipment and assuring that the correct frequencies are being addressed, the trainers have the difficult task of modeling a calm, relaxed, focused, concentration directed both to the child and the feedback screen and to the cognitive tasks as they are assigned.

Rational: In some of the interventions the ACC cortex is central to the process. This is because ACC influences the entire limbic system, the amygdala-hypothalamic-pituitary-adrenal (AHPA) axis and the autonomic nervous system. It also links to frontal areas of the cortex and is a crucial part of the systems for attention and executive functioning. Optimal executive functioning requires attention to relevant stimuli while inhibiting irrelevant stimuli and inappropriate responses, deciding on action, monitoring and adjusting responses. Doing these executive tasks in a calm focused manner involves parietal to temporal and frontal-temporal-anterior cingulate and cortical-striatal-thalamic interplay. Thus the combination of NFB, BFB, and metacognitive strategies becomes the logical approach.

Summary: This workshop will help participants understand EEG differences found in clients with the aforementioned difficulties. Interventions that are customized for the client, based on EEG assessment and history of symptoms, will emphasize what is in common and what is unique to each disorder with an emphasis on optimizing performance. Attendees will participate in a combined EEG and Psychophysiological Assessment to emphasize how this leads to appropriate interventions that combine neurofeedback, biofeedback and coaching in strategies.

b. Participants
Level: Intermediate and Advanced
This course is suitable for clinical biofeedback practitioners, especially those doing EEG biofeedback, of any disciplinary background (psychologists, physicians, nurses, teachers, etc.). They should have basic knowledge and skills concerning EEG frequencies and measurement plus an interest in using applied psychophysiology in working with clients who wish to optimize their performance through self-regulation at school, work or in extracurricular activities.

c. Course Objectives
Knowledge:
(1a) Learn the key symptom patterns to assist in the differential diagnosis of various conditions that may present as comorbidity(s) with ADHD including: Asperger’s, LD, TBI, memory dysfunction, anxiety, panic, depression, and some Seizure Disorders.
(1b) Learn the diverse connections of the anterior cingulate (prefrontal, insula, temporal, striatal-thalamic, amygdala, hippocampal, hypothalamic, brain stem and its role in attending, executive functioning and in affect modulation.

Assessment:
(2) Be able to recognize characteristic EEG power (and coherence) patterns in the frequency range 2 to 61 Hz which may be observed in these conditions in addition to learning how to assess the psychophysiological patterns that reflect stress with particular emphasis on heart rate variability.

Intervention:
(3a) Develop rational interventions based on assessment data, which combine elements of neurofeedback, biofeedback and cognitive strategies for an individualized mind-body training program;
(3b) Begin to feel able to discuss the application of this knowledge during a demonstration of a one (or two) channel EEG assessment combined with a stress assessment.

**Keywords**: ADHD, EEG, Comorbidities  
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**Feedback of Slow Cortical Potentials: Basics, Protocols, Applications and Evidence**

Ute Strehl, Ph.D.
Registration code 16-02 / Advanced workshop / English language
Please note: this is a 2-day workshop. Workshop continues on April 17, 2010

**Abstract**: Slow cortical potentials are slow shifts of brain activity that are below 0,5 Hz. They belong to the family of event-related potentials and regulate excitation thresholds. As in many clinical conditions (e.g. epilepsy, ADHD) the regulation of excitation thresholds is impaired slow cortical potentials feedback is a viable option for therapy. The aim of this workshop is to convey basic psychophysiological knowledge (EEG and Event related potentials) and to explain and demonstrate technical requirements and protocols. Hands-on exercises (equipment: Theraprax® by NeuroConn) will give an impression on how to accomplish a training session. Finally issues of evidence base, indications and clinical everyday-life will be discussed.  
[Back to workshop schedule]

**Keywords**: Slow cortical potentials, Epilepsy, ADHD

**Biobehavioral Considerations in Diagnosis and Treatment of Primary Headache Disorders**

Steve Baskin, Ph.D., BCIAC
Registration code 16-04 / Universal workshop / English language
Please note: this is a 2-day workshop. Workshop continues on April 17, 2010

**Abstract**: 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 psychologic perspectives. Pharmacologic, psychophysilogic, and behavioral treatment alternatives will be reviewed in relation to both clinical efficacy and underlying pain mechanisms. The workshop will help the biofeedback therapist understand the basics of successful headache diagnosis and treatment and better communicate with the medical community. Behavioral and psychophysilogic protocols will be thoroughly discussed. This workshop will also review clinical studies on paradoxical effects of medication overuse in relation to treatment outcome. Chronic daily headache will be thoroughly examined including the transformation process from episodic to chronic headache. Issues of psychiatric co-morbidity will be explored. Attendees will be able to:

1) Perform a headache diagnostic interview and make an informed diagnosis
2) Recognize the clinical symptoms and understand the pathophysiology of the different headache types.
3) Understand behavioral, biofeedback, and pharmacologic treatment alternatives and recognize medication overuse problems secondary to immediate-relief medications.
4) Understand the difficult issue of chronic daily headache and the transformation process from episodic headache
5) Communicate better with the medical community

**Key words**: Migraine, Headache, Biofeedback  
[Back to workshop schedule]
Resonant Heart, Breath & Emotions: Self-Regulation for Health, Stress Resilience & Transformation
Bob Whitehouse, Ed.D.
Registration code 16-07 / Advanced workshop / English language

Abstract: The regulation of heart, breath and emotions can have a profound effect on health, longevity, and quality of life. In this workshop the latest biofeedback instruments will be used along with 7 techniques and many tips to help in self-regulation for yourself and your clients. Expect to be surprised and empowered by the techniques and the new information that corrects many misconceptions about heart rate and breathing. Learn what Resilience and Resonance are and how we can move from Freeze through Fight/Flight and on to Resilience, Resonance, and Transcendence. Healthy Breathing is dependent on the right amount of CO² in our lungs, not how slow or deep we breathe. We want the right CO² almost no matter what we are doing. Using a capnometer is the way to assess proper breathing chemistry. In this workshop you will learn techniques for improving breathing and Heart Rate Variability and learn that the desired HRV can occur intrinsically, independent of techniques. This workshop will integrate research and strategies from Lehrer, HeartMath, Wild Divine and Healing Rhythms. Back to workshop schedule

Key words: HRV, self regulation for health, resonance, respiration

An sEMG Clinical Approach to Muscular Dysfunction Conditions, from Diagnosis to Treatment
Gabriel M. Sella, MD, MPH, MSc, PhD (HC), BCIAC
Registration code 16-08 / English language
Please note: this is a 2-day workshop. Workshop continues on April 17, 2010

Abstract: This two day workshop will focus on muscular dysfunction conditions such as myofascial pain syndrome (MPS) and low back pain (LBP). The clinical investigative protocols will be described in the context of SEMG aided diagnosis. The clinical treatments will be described in the context of SEMG guided muscular re-education/rehabilitation. The ergonomic and athletic aspects will be described in the context of the author's protocols of re-education/rehabilitation with SEMG guided statistical database and objective approach. The second day of the workshop will be partly dedicated to a hands-on SEMG investigation and muscular re-education. The participants are encouraged to bring their own SEMG equipment and volunteer as clinical trainers and subjects. An open mind and desire to learn and share knowledge are paramount to the development of this subject.

Key words: muscular dysfunctions, myofascial pain, low back pain and SEMG treatment protocols

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Effective Interventions Using Neurofeedback and Biofeedback for Comorbidities that Present with ADHD
Lynda Thompson, Ph.D., & Michael Thompson, M.D., James Thompson, Ph.D., BCIA EEG
Reg. code 17-01 / Fundamental workshop / English language
Please note: this is a 2-day workshop. First part is schedule on April 16, 2010

Abstract: see abstract on April 16, 2010 Back to workshop schedule

Feedback of Slow Cortical Potentials: Basics, Protocols, Applications and Evidence
Ute Strehl, Ph.D.
Registration code 17-02 / Advanced workshop / English language
Please note: this is a 2-day workshop. First part is schedule on April 16, 2010

Abstract: see abstract on April 16, 2010

Biobehavioral Considerations in Diagnosis and Treatment of Primary Headache Disorders
Steve Baskin, Ph.D., BCIAC
Registration code 17-04 / Universal workshop / English language
Please note: this is a 2-day workshop. First part is schedule on April 16, 2010

Abstract: see abstract on April 16, 2010

Heart Rate and CO2 in Trauma: Patterns found in Somatic Experiencing® and Trauma Resolution
Bob Whitehouse, Ed.D.
Registration code 17-07 / Advanced workshop / English language

Abstract: The presenters find unique patterns in client heart rate variability, spectral analysis of heart rate, and capnometry (measures of CO2) during Somatic Experiencing (SE) (originated by Peter Levine, PhD) and Dynamic Attachment Repatterning Experience (DARE) trauma resolution therapy (developed by Diane Heller, PhD). Heart rate variability, spectral analysis, and CO2 will be explained briefly. Heart rate graphs of different autonomic nervous system states (including the freeze response as well as fight/flight) will be shown and a live SE demonstration will be conducted with heart rate and CO2 monitoring probably of both therapist and a volunteer. The low frequency spectral pattern, often called coherence, is found to typically accompany trauma resolution. Physiological monitoring is presented as a tool for research, for validating therapeutic constructs, and for feedback for client and therapist about their self-regulation states and progress. Back to workshop schedule

Key words: Heart Rate Variability, Trauma, CO2

An sEMG Clinical Approach to Muscular Dysfunction Conditions, from Diagnosis to Treatment
Gabriel M. Sella, MD, MPH, MSc, PhD (HC), BCIAAC
Registration code 17-08 / English language
Please note: this is a 2-day workshop. First part is schedule on April 16, 2010

Abstract: see abstract on April 16, 2010
FACULTY

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He is the Director of the New England Institute for Behavioral Medicine in Stamford, Connecticut and an attending psychologist in neurology and psychiatry at Greenwich Hospital of Yale-New Haven Health. He is a past president of the Association for Applied Psychophysiology and Biofeedback (AAPB). He is a current member of the board of directors of the Headache Cooperative of New England. He is a past board member of the American Headache Society and the Connecticut Psychological Association. He is on the editorial board of the *Journal of Applied Psychophysiology and Biofeedback* and a frequent reviewer for the journals *Headache* and *Cephalalgia*. He has published extensively on primary headache disorders most recently on comorbid psychiatric factors that may chronify migraine and complicate treatment. Back to workshop schedule

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He is a Medical Doctor graduated from Athens University Medical School, specializing in GP and homeopathic medicine in Hellas, Austria, Great Britain and USA. Founder and president of the Medical Institute for Homeopathic Research and Applications (M.H.R.A), founded in 1985 in Athens, educating over 3,500 medical doctors, pharmacists, dentists and veterinarians. Founder and president of the Pan-Hellenic Biofeedback Center founded in Athens 1983. Former General Secretary of the Homeopathic Committee of the Central Health Council of the Ministry of Health, Welfare and Social Security, Founding member of the European Council for Integrated Medicines-E.C.I.M (European committee for the promotion of alternative medical systems in the countries of the E.U, seated in Brussels). With the "Diamantidis medical team" today totaling 43 Medical Doctors, he runs 22 homeopathy and biofeedback clinics in Greece, Cyprus, and abroad on line through video conference. He has carried out and presented with his collaborators in international and pan-Hellenic congresses 93 scientific medical studies and clinical researches on homeopathic treatment for a multitude of pathological issues from fertility to cancer and on biofeedback regarding many psycho physiological entities. Since 1983 he has been the general director of biofeedback programs which are utilized in Hellas and worldwide, and since 2003 on approval and subsidization from the E.U. through the Organization for Employment, and in Cyprus subsidized from the E.U. through the Human Resource Development Authority. He is a pioneering physician who implements biofeedback into his work and has given numerous workshops on this topic. Back to workshop schedule

Fuhs, Monika, Mag. rer. nat., BCIAC
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Studied Psychology at the University of Vienna, worked at the Neuropsychiatric station for children of the Vienna AKH for many years as well as doing a study about kids and development of language for the Vienna Academy of Science. Past board member of the ÖBfP (Österreichische Gesellschaft für Biofeedback und Psychophysiologie), editor of the new BFE Journal ‘Psychophysiology Today’, author of articles with Erik Peper, Co- Director and project manager of Work solutions for the “Healthy Computing and prevention at the worksite” program, lecturing at numerous workshops in the fields of Biofeedback in Europe, Founder and Director of the Holistic Learning Institute. Monika Fuhs is a licensed teacher and trainer for dyslexia and perception problems (ReLeMaKo®) and brain friendly learning, Energy healing, Therapeutic touch and orthomolecular nutrition. She teaches workshops in the fields of stress management, holistic health, “Healthy Computing” and “Optimum Human Functioning” with Erik Peper and “Brain Management” and “Brain Friendly Teaching and Learning” in different schools, workshops for stress management and success for kids as well as leading a private practice for kids and adults. She is a lecturer at Sigmund Freud Privatuniversität (SFU) where she set up a BCIA certified program for Biofeedback and Neurofeedback. Her main interests focus on mind body medicine and what it takes to make people change and how biofeedback and related therapies can help to make this process as successful as possible. Back to workshop schedule
Gunkelman Jay, QEEGD
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Jay entered the field of biofeedback in 1972, co-founding the first state hospital based biofeedback lab in the USA. Jay is an executive officer of the Board of Directors of AAPB, and is a past president of iSNR. He is currently the Executive Vice President of Q-Metrx.com, a company which specializes in EEG/qEEG analysis, as well as Polysomnography. He has lectured on the brain’s anatomy and physiology, and the EEG/qEEG world-wide. Back to workshop schedule

Kirk, Lynda, Ph.D.
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Lynda Kirk is a Phi Beta Kappa graduate of the University of Texas at Austin and is a Licensed Psychotherapist in the state of Texas. As a public health Peace Corps volunteer in West Africa, she became interested in the mind-body connection, which led to her study of biofeedback. Lynda is founder and Clinical Director of the Austin Biofeedback and EEG Neurotherapy Center where she directs a staff of clinicians and sees clients for all applications of biofeedback and neurofeedback. Lynda is Past-President of the Association of Applied Psychophysiology and Biofeedback (AAPB); Past-President and Fellow of the International Society for Neurofeedback and Research (iSNR) and Past-President of the Biofeedback Society of Texas. She is a BCIA Senior Fellow in biofeedback certified by the Biofeedback Certification Institute of America, a BCIA Fellow in EEG neurofeedback, and a Diplomate in Quantitative EEG (QEEG). Lynda is the author of the chapter “Neurofeedback Protocols for Subtypes of Attention Deficit/Hyperactivity Disorder” in the Haworth Medical Press book Handbook of Neurofeedback (2007) edited by James Evans, Ph.D. She has presented at numerous conferences and been an invited speaker both nationally and internationally for 20 years. In 2001, Lynda was heavily involved in helping pass Texas’ House Bill 1676, the United States’ first state law mandating insurance coverage of EEG neurofeedback for brain injury victims. She is personally and professionally interested in promoting the field of biofeedback and neurofeedback and to that end is a board member of the ISNR Research Foundation, whose goal is the advancement of the field of Neurotherapy. Lynda’s clinic, the Austin Biofeedback and EEG Neurotherapy Center, has been selected by the University of Texas Medical School as the site for medical students and resident physicians to observe and learn about medical applications of biofeedback and EEG neurofeedback. Her clinic is the number-one physician referred bio/neurofeedback clinic in Texas. Lynda also works with athletes and performers at all levels, from recreational to professional, to Olympic. She is currently working with the University of Texas athletics and with professional athletes and musicians in peak performance. Back to workshop schedule

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Erik Peper, Ph.D. is an international authority on biofeedback and self-regulation. He is Professor at the Institute for Holistic Health Studies / Department of Health Education at San Francisco State University. He is President of the Biofeedback Foundation of Europe and past President of the Association for Applied Psychophysiology and Biofeedback. He holds Senior Fellow (Biofeedback) certification from the Biofeedback Certification Institute of America He was the behavioral scientist (sport psychologist) for the United States Rhythmic Gymnastic team. He received the 2004 California Governor’s Safety Award for his work on Healthy Computing and the 2005 Sheila Adler Award from AAPB for his efforts to support and encourage student participation. He is an author of numerous scientific articles and books. His most recent co-authored books are Biofeedback Mastery, Muscle Biofeedback at the Computer, Make Health Happen Training: Yourself to Create Wellness and De Computermens. He is also the co-producer of weekly Healthy Computing Email Tips. His research interests focus on psychophysiology of healing, illness prevention, voluntary self-regulation, holistic health, healthy computing, respiratory psychophysiology and optimizing health with biofeedback. Back to workshop schedule

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Marc Saab holds a Bachelor of Applied Science from the University of Waterloo, with a major in electrical engineering and a minor in Biology, and a Masters of Biomedical Engineering from McGill University and the Montreal Neurological Institute. His published research includes automatic early detection of epileptic seizures and other neurophysiological events in scalp and depth EEG. Professional work includes research and development, biosignal algorithm design and product development. He is currently a product manager at Thought Technology Ltd in Montreal, Canada. He is also a
specialized instructor, lecturing on complex scientific concepts in a simple, easy to understand manner for the layman. He has offered workshops describing the theory and clinical applications of EEG signal processing at several annual conferences, including those of the AAPB and ISNR, for the past several years. 

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He has published numerous articles and books like Psicoterapia e sistemi dinamici, Milano: McGraw-Hill (2003), Psicosomatica integrata complessa, Milano: FrancoAngeli (2009), etc.

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Gabriel Sella, MD has dedicated 20 years to the study of different aspects of SEMG in the field of muscular dysfunction. He published 12 textbooks on the subject and authored chapters in several textbooks on pain, rehabilitation and forensic medicine. He published over one hundred articles on the subjects of SEMG, soft tissue pain and dysfunction and gave over 200 international presentations. He is a co-founder of BFE.

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Her main focus is on the development of psychophysiological training methods for epilepsies and attention disorders: feedback of EEG-parameters (slow waves, spikes, frequencies) in a behavioral medicine context for children and adults.

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Lynda Thompson, Ph.D. is a licensed psychologist who has done teaching, clinical psychology, school psychology and owned learning centers. She has been Executive Director of The ADD Centre in Toronto since 1993. Her doctoral dissertation (1979) dealt with hyperactive children treated with methylphenidate. She is co-author with paediatrician William Sears of The A.D.D. Book: New Understandings, New Approaches to Parenting Your Child (1998) and co-author with Michael Thompson of Setting up for Clinical Success with the Procomp+/Bioograph. Her most recent book, also co-authored with Michael Thompson, is The Neurofeedback Book: An Introduction to Basic Concepts in Applied Psychophysiology, which has become a basic text in the field of EEG biofeedback... She has also authored journal articles and contributed chapters on Attention-Deficit/Hyperactivity Disorder, stress management, and autistic spectrum disorders to texts written for professionals. With her husband, Dr. Michael Thompson, she has been invited to teach about neurofeedback and biofeedback on five continents and presents frequently at professional meetings in these fields.

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Michael Thompson devotes his time to the administration of the Biofeedback Institute and teaching. When formerly practicing medicine he was Associate Professor and head of post-graduate education in Psychiatry, University of Western Ontario, examiner for the Royal College of Physicians (Canada) and chairman of their examinations committee in psychiatry. Numerous professional publications include “A Resident’s Guide to Psychiatric Education”. While Associate Professor, University of Toronto, he was psychiatric consultant to The Hospital for Sick Children’s neurology department.

Friedrich Vogt, Dr. Mag.
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Friedrich Vogt is a clinical-, emergency- and health-psychologist from Salzburg/Austria, working as a chief psychologist in one of the largest cardiovascular rehabilitation centers in Austria, owned by a public insurance company. He also has a practice, mainly working with Neurofeedback (ADHD, Tinnitus). Becoming acquainted with psychophysiology in the lab of Prof. Wolfgang Klimesch on the University of Salzburg/Austria while doing EEG and memory studies (SMR- and Alpha-waves), he tried to get more experienced closing the link between mind- and body-functions. While working since more than 10 years with cardiovascular patients, the integration of HRV-Biofeedback was a specific enrichment in a holistic understanding of psycho-physiological applications.

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Bob Whitehouse has 35 years’ experience in exploring these matters and over 11,000 hours in monitoring heart rate and/or breathing. A licensed psychologist, BCIA certified in biofeedback, he is also an emeritus professor of psychology. He has been a board member of the Association of Applied Psychophysiology and Biofeedback, their Legislative and Insurance chair, has given congressional briefings and a Science Forum presentation to decision makers, given hundreds of conference presentations, workshops and consultations, is trained in Somatic Experiencing® and has recently published an article with Diane Heller PhD on “Heart Rate in Trauma: Patterns Found in Somatic Experiencing® and Trauma Resolution” in Biofeedback Summer 2008. Email: BobWhitehouse@gmail.com

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Vietta E. Wilson, Ph.D. (BCIA SF & EEG-AF) is a professor at York University in Toronto. She teaches courses in sport psychology, learned self regulation and how to teach biofeedback assisted relaxation. Dr. Wilson has 30 years of education and experience in Canada and the United States in sport, education, and psychology. She has worked with almost every sport in the alphabet with athletes ranging in expertise from novice to Olympic and professional. She has worked in a clinic for cerebral palsy, a counseling centre and is currently in an ADD and performance enhancement clinic. She has worked with various business corporations since 1978. She authored a text “Learned Self Regulation” and has CD’s with a text “Owner’s Manual for Controlling the Mind and Body” and audios on brief and deep self regulation. Her research includes QEEG of imagery, brain maps of elite performers, RSI, and a recent study on the effects of posture on mood states. Dr. Wilson is best known as an excellent teacher in workshops and seminars on sport psychology, learned self regulation and how to teach biofeedback assisted relaxation. She provides participants with practical ‘how to’ exercises and information that can immediately be used by practitioners.