

## FROM THE EDITORS

# Don't Add or Miss a Beat: A Special Issue on Current Evidence and Current Practice in Heart Rate Variability Biofeedback

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### Introduction to the Special Issue

Heart rate variability (HRV) biofeedback arrived on the North American scene in the 1990s, and since that time a proliferation of outcome studies has shown a widening range of applications with promising therapeutic effects, from asthma to depression to hypertension to fibromyalgia to posttraumatic stress disorder (PTSD). This special issue sums up what we now know about HRV and HRV biofeedback, which clinical protocols are supported by research, and what therapists actually do—how they train human beings for clinical benefit.

The cover of this special issue shows a segment of electrocardiogram recording blurred by artifact. This is a reminder that in spite of the growing evidence base for HRV biofeedback, and the remarkably user-friendly instrumentation, which is emerging for both professional and lay use, attention to clinical skill and technical knowledge remain critical to research and practice with HRV. Thanks to Fredric Shaffer and Didier Combatalade for this linegraph, taken from their article in this special issue on HRV recordings.

### Professional Issues

An article by Judy Crawford highlights what is new at the Biofeedback Certification International Alliance (BCIA). The newest development at BCIA is a Certificate of Completion in HRV biofeedback. This Certificate of Completion is a new concept for BCIA, based on an individual completing a 15-hour BCIA-approved didactic program, an ethics requirement, and an exam. The article also provides guidelines for non-licensed biofeedback providers, perspective on the appropriate use of educational credentials, discussion of BCIA certification for those living outside North America, and a discussion of Massive Open Online Courses (MOOCS) for certification or recertification.

### Special Issue Articles: HRV Biofeedback

Paul Lehrer opens the special issue on HRV biofeedback with a brief history of the development of HRV as a topic in medicine and scientific psychophysiology, as well as the development of HRV biofeedback as an intervention tool. Dr. Lehrer includes narratives on these developments by individuals who played a critical role in the development of HRV biofeedback, including Richard Gevirtz, Rollin McCraty, Fredric Shaffer, Robert Nolan, and Dr. Lehrer himself.

Paul Lehrer and six colleagues also provide a comprehensive overview of the intervention protocol developed by Dr. Lehrer, Evgeny and Bronya Vaschillo, and their laboratory in New Jersey. This is the “resonance frequency” protocol utilized in most outcome studies showing HRV biofeedback to have therapeutic benefit for various clinical disorders. The protocol includes the identification of an individual's specific resonance frequency, the breathing rate producing the greatest heart rate variability. This article introduces a modified five-session course of treatment, shorter than the 10-session protocol previously published by Lehrer and his team.

Richard Gevirtz provides an exhaustive review of the evidence for the efficacy of biofeedback for a variety of medical and emotional disorders. He organizes his article around the possible mechanisms accounting for the effects of HRV training, including: (a) restoring autonomic homeostasis, (b) central effects by way of the vagal afferent nerve, and (c) the cholinergic anti-inflammatory system. He groups the discussion of interventions for various disorders with the mechanisms most likely to account for the benefits of HRV training with each disorder. This is an invaluable article for clinical practitioners, showing where the evidence base is strongest, and for advocates who wish to educate the public and health professionals about the promise of HRV biofeedback.

Fredric Shaffer and Didier Combatade have teamed up to produce an overview of the fundamentals of HRV recording. They introduce the relevant physiology, and discuss the two instruments most widely used to record heart rate and HRV—the electrocardiograph and the photoplethysmograph. They discuss recording technology, the statistical indices used to measure HRV, sensor placements, and the diverse sources of signal artifact. This article is a must read for biofeedback practitioners and researchers using HRV recording.

Gabriel Tan, Penelope Wang, and Jay Ginsberg discuss the use of HRV biofeedback for PTSD. Psychophysiological research suggests that PTSD is a disorder of autonomic dysregulation. This article reports on a pilot study conducted by Tan and his colleagues at the Houston VA Medical Center studying veterans with PTSD. The study verified that the veterans with PTSD exhibited lower HRV on baseline. Tan also provided these veterans with PTSD with HRV biofeedback training, following the Lehrer resonance frequency protocol. The resonance frequency training produced significant improvements on two widely used measures of PTSD symptoms. Tan, Wang, and Ginsberg also report on other recent studies applying HRV training to individuals with PTSD.

In the Winter 2012 issue of *Biofeedback*, Leah Lagos, Thomas Bottiglieri, Bronya Vaschillo, and Evgeny Vaschillo provided a review of the neurophysiological research on postconcussion syndrome and presented the hypothesis that HRV biofeedback training will reduce postconcussion symptoms by improving autonomic balance as well as by cerebral auto-regulation. In this issue, Leah Lagos, James Thompson, and Evgeny Vaschillo present a pilot study on a 42-year-old athlete with postconcussion syndrome. After 10 weeks of HRV training, the athlete showed improvements in mood, postconcussion symptoms, and headache severity. This case study offers hope for one additional population to benefit from HRV biofeedback training.

Finally, Zauszniewski, Au, and Musil provide an article discussing the emotional challenges facing grandmothers

raising grandchildren. This group of caregivers is at risk for stress and depressive symptoms. Zauszniewski and her colleagues conducted a pilot study with a group of 20 grandmothers raising grandchildren. They measured perceived stress, negative emotions, and depressive cognitions, at baseline and at three follow-up sessions up to 14 weeks post-biofeedback. Their intervention included an in-office orientation for the use of the StressEraser®, a hand-held HRV device, and a four-week period of home training according to the protocol described in the owner's manual of the StressEraser. The follow-ups showed improvements in all three measures.



Donald Moss



Leah Lagos



Fredric Shaffer

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### Proposal and Abstracts

*Authors are invited to submit case studies illustrating any application of biofeedback, neurofeedback, or self-regulation-oriented therapies for the Winter 2013 and Spring 2014 issues of Biofeedback. Articles are also welcome for a special issue on The Assessment and Treatment of Attention Deficit, Hyperactivity, and Related Disorders for Summer 2014.*