Special Issue: Advances in Biofeedback Technology and Applications

Donald Moss, PhD, BCB, BCN

The cover of this special issue of Biofeedback illustrates the widespread problem of incontinence discussed in the lead article by Debbie Callif. According to Callif, more than 25 million Americans suffer with bladder bowel incontinence (thanks to Shutterstock for the image).

Advances in Biofeedback Applications

Biofeedback for pelvic floor muscle dysfunction provides an effective therapeutic intervention for elimination disorders, pelvic pain disorders, and anorectal disorders. This biofeedback approach offers hope to millions of Americans affected by incontinence disorders and related problems. In this issue, Debbie Callif provides an overview of pelvic muscle dysfunction biofeedback and highlights the skills and competencies needed for effective biofeedback practice for pelvic muscle disorders. She also advocates for the Biofeedback Certification International Alliance certification available in pelvic muscle dysfunction biofeedback.

Thomas Collura, Nancy Wigton, Carlos Zalaquett, SeriaShia Chatters-Smith, and Ronald Bonstetter provide an article in the emerging field of neurophenomenology. Neurophenomenology consists of efforts to pair neuroimaging with studies of the subjective or phenomenological processes of human consciousness. In this report, Collura and colleagues apply an electroencephalogram-based electromagnetic tomographic analysis to investigate precognitive emotional responses critical in human decision making. The authors also apply this approach to illuminate the neural processes contributing to smoking addiction.

Erik Peper, Annette Booiman, I-Mei Lin, and Richard Harvey provide an article exploring the correlations between posture and mood. The authors advocate that clinicians can enhance therapeutic effects by attending to posture and guiding patients to modify posture in order to transform mood and perceived strength. They conclude that, "It only takes two minutes of posture change to initiate changes in your hormones, energy levels, strength, and moods."

Systemic lupus erythematosis is a chronic autoimmune disorder, affecting the skin, joints, kidneys, brain, and other organs. Lupus affects as many as 1.5 million Americans (Lawrence et al., 2008). In this article, Donald Moss describes a multimodal pathways model treatment intervention for a 33-year-old nurse with lupus. The treatment integrated lifestyle changes and skill acquisition with professional therapies, including heart rate variability biofeedback, a functional medicine intervention, and a sleep medicine clinic. The pathways model was developed by Angele McGrady and Moss (2013). The patient in this case significantly reduced her lupus symptoms and enhanced her general wellness.

Siegfried and Susan Othmer provide a discussion of their use of infra-low-frequency neurofeedback for optimal neural functioning. Siegfried Othmer has long advocated that the brain is capable of dynamically achieving new equilibrium states, if neurofeedback interventions can shift the brain from current stuck points or stasis. Here, the Othmers describe their current approach using "simple wave-form following," in which the brain "watches the time course of the slow cortical potential." The bulk of the training focuses on cortical frequencies below 0.1 Hz; hence, they call the approach infra-low-frequency training. The authors cite improvements in continuous performance tests as one indication of the benefits of this approach.

Advances in Biofeedback Technology

Measurement of the continuous variations in the electrical conductance of the skin was one of the earliest tools in scientific psychophysiology. Carl Jung (1907) monitored electrodermal activity to assess the emotional responses of patients to words in a word association test. In their article, Fredric Shaffer, Didier Combatalade, Erik Peper, and Zachary Meehan provide a useful guide to obtain clear
electrodermal activity measurements. Their article reviews the anatomy and physiology underlying electrodermal measures and identifies best practices to manage artifact and achieve clean measurements.

Respiration “belt” sensors are placed around the chest and abdomen to measure the expansion and contraction of the chest and abdomen associated with breathing. These sensors provide measures of both the rate of breathing and the amplitude of breathing. Erik Peper, Grant Hayes Groshans, James Johnston, Richard Harvey, and Fredric Shaffer provide a useful technology note on the calibration of strain gauges used in respiratory biofeedback. They guide the practitioner and researcher alike on how to interpret the signals from strain gauges and how to calibrate two or more sensors to obtain more comparable measurements.

Book Review
In spring 2016, the Association for Applied Psychophysiology and Biofeedback released *Foundations of Heart Rate Variability Biofeedback: A Book of Readings*, including 21 chapters previously published in *Biofeedback* magazine. The book was edited by Donald Moss and Fredric Shaffer. In this issue, noted sport performance coach Pierre Beauchamp provides a review of the new heart rate variability text. Beauchamp recommends this book for all practitioners of biofeedback.

References

Proposals and Abstracts
The Fall 2016 issue will feature “Further Advances in Mindfulness and Compassion-Based Approaches to Clinical Biofeedback,” with guest editor Inna Khazhan. The Winter 2016 issue will focus on “Clinical Practice in Neurofeedback: Advances and Applications.”
Contributions are invited to each of these special issues. General articles on topics in biofeedback, neurofeedback, and applied psychophysiology are welcome, as are proposals for an additional special issue. Feature articles should not exceed 2,500 words; department articles, 700 words; and letters to the editor, 250 words. Articles should be in American Psychological Association (6th Edition) format.