Abstracts of Papers Presented at the 39th Annual Meeting of the Association for Applied Psychophysiology and Biofeedback

The 39th Annual Meeting of the Association for Applied Psychophysiology and Biofeedback (AAPB) was held at the Hilton Daytona Beach, Daytona Beach, FL, May 15–17, 2008, with preconference workshops and the newly launched Mind-Body Institute being held May 13–15, 2008.

The theme of the meeting was “Expanding the Boundaries of Human Potential.” The meeting included diverse program offerings, consisting of platform and poster presentations, symposia, invited keynote and special addresses, special conversation hour, the presidential address, workshops, short courses, section and division programs, a meet the editors forum, plus a full array of exhibits.

Abstracts for the platform and poster presentations follow, with the first five being accorded the distinction of “Citation Award Papers/Posters.” More extended abstracts, as well as summaries for other offerings, are available for a limited time on the AAPB website (www.aapb.org). The Program Committee members were Chair Fred Shaffer, Susan Antelis, Jeff Bolek, Thomas Collura, Aubrey Ewing, Richard Gevirtz, Chris Gilbert, Jay Gunkelman, Richard Harvey, David Kaiser, Susan Middaugh, Doil Montgomery, Randy Neblett, Richard Sherman, Richard Soutar, Carolyn Yucha, and AAPB President Alan Glaros.

The 40th Annual Meeting will be held April 2–4, 2009, in Albuquerque, NM, where the conference theme will be “Forty Years of Promoting Whole Person Health.”

Citation Paper Award

The Effects of a Portable RSA biofeedback Device on State Anxiety and Heart Rate

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This study examined the acute effects of a portable RSA biofeedback device on state anxiety after exposure to a cognitive stressor (Stroop task) as compared to a concentrative biofeedback alternate intervention in 43 persons reporting moderate to severe levels of stress. Additionally, the study examined the effects on Heart Rate at five—five minute—time points (Baseline, Stressor, Intervention, Rest, Stressor). Participants were randomly assigned to groups based on their scores on the Perceived Stress Scale. All participants were novices and received a minimum of 15–20 training sessions on the procedure. The intervention was 15 min in duration. Results indicate that participants in the RSA biofeedback group and the Passive Biofeedback group significantly reduced their STAI-S scores, t(19) = 5.36 (significant).

Keywords Heart rate variability · Anxiety · Biofeedback

Citation Paper Award

Respiratory Sinus Arrhythmia Feedback Impact upon Limbic Current Source Density in an Anxiety Population Demonstrated by Standardized Low Resolution Electromagnetic Tomography (sLORETA)

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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, and increased parasympathetic activity. The present study seeks to determine the current source density impact of respiratory sinus arrhythmia on the structures of the limbic system as seen by sLORETA. Participants were recruited and enrolled based upon response and completion of the State Trait Anxiety Interview-State Form and were randomized into both a control (placebo device) and experimental group based on STAI-S scores to stratify across groups. RSA feedback was performed on the StressEraser device. The study recorded 24 channel EEG, frontalis electromyography, electrocardiogram, blood volume pulse, respiratory rate, skin conductance and finger temperature under baseline, task, feedback, and post baseline conditions. For each group sLORETA current density in the frequency domain were computed. To compare the current density amplitude of the control and experimental subjects, we used the randomization-permutation multiple comparison approach. We performed one test for each frequency band. For the whole data set we computed voxel-by-voxel within and between t-tests. There were significant increases in relative current source density of alpha frequency in Brodmann’s area 24 and significant decreases in relative beta current source density of beta frequency in Brodmann’s area 31.
following RSA feedback. There were no significant differences in the placebo-controlled group. Brodmann’s Area 24 is a cortical component of the limbic system in the cingulate gyrus that is involved in emotional processing and the affective dimensions of pain. These findings suggest that RSA feedback may decrease arousal in areas critical to the experience of anxiety and provides physiological evidence of RSA feedback.

**Keywords** RSA feedback · sLORETA · Anxiety

**Citation Paper Award**

**Brief Coaching Increases Inhalation Volume**

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Surgical patients and outpatients treated for asthma, chronic obstructive pulmonary disease (COPD), and emphysema are often taught to use an incentive inspirometer to improve ventilation. The present study examined whether brief coaching can increase inhalation volume. Fifty-two undergraduates (26 men and 26 women), ages 18–24, volunteered for academic credit. In this within-subjects design, participants were randomly assigned to one of two orders of coaching separated by a 1-min buffer period. In both coaching and no-coaching conditions, participants received instructions to exhale before inhaling through an incentive inspirometer and received visual feedback from its rising cylinder. They sat upright with eyes open and completed five inhalations. In the coaching condition, an experimenter announced inhalation volume after each inhalation. When their volume was under 2500 ml, they were told “You are doing well. Now let’s see if you can go a little higher. Make sure that you don’t start your next breath until you exhale most of the air from your lungs.” When their volume was over 2500 ml, they were told “Great job! Keep it up.” In the no-coaching condition, the experimenter gave no verbal feedback. A Voldyne 5000 Volumetric Exerciser measured inhalation volume. Two Likert rating scales measured subjective effort and motivation after completing five breaths in each experimental condition. A GLM Repeated Measures analysis found that inhalation volume was significantly higher during the coaching than the no-coaching condition, 3002 ml versus 2845 ml, t(1, 50) = 8.27, p = .006, eta squared = 0.14. There were no differences in subjective effort or motivation. Participants rated the feedback as helpful (M = 4.67, SD = 1.78). The small significant 5% increase in inhalation volume produced by brief coaching should encourage healthcare providers to add a coaching component to the written instructions that surgical patients receive. Coaching could ensure greater patient skill in using an inspirometer and, post-surgically, more complete ventilation of the lungs.

**Keywords** Incentive inspirometer · Coaching · Inhalation volume

**Citation Poster Award**

**The Effects of Respiratory Sinus Arrhythmia (RSA) Biofeedback on the Symptomatology of Posttraumatic Stress Disorder (PTSD)**

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Intervention studies for posttraumatic stress syndrome (PTSD) have focused on psychotherapy and psychopharmacology treatments but have neglected ones for underlying neurobiological alterations. The objective of this study is to assess whether a therapy that targets autonomic homeostasis can improve treatment outcomes for trauma symptoms. Participants were randomized to a respiratory sinus arrhythmia (RSA) biofeedback experimental condition or a progressive muscle relaxation (PMR) control procedure, for an intervention study. The design consisted of a two-cell experimental design which compared the efficacy of the two conditions in decreasing trauma-related symptomatology and increasing HRV measures from baseline to follow-up. A sample of 38 adults was recruited from a residential facility for substance abuse disorder. The following variables were examined: Detailed Assessment of Posttraumatic Stress (DAPS); PTSD Checklist—Civilian Version (PCL-C); Beck Depression Inventory II (BDI-II); Insomnia Severity Index (ISI); Mindful

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Multiple Unexplained Physical Symptoms (MUPS) are the most common presentation for depression and anxiety disorders in primary care. In various studies, the proportion of patients in general medical settings with somatic complaints for which no organic cause can be found has been estimated to range between 20% and 84%. The purpose of this study was to determine whether a psycho-physiological intervention is an effective treatment for patients with MUPS associated with common mental disorders. Psycho-physiological therapies are usually more appealing than psychotherapeutic interventions to patients with unexplained symptoms, who, by definition, tend to think that the problem is in the body, not the mind. Subjects were randomized to an immediate treatment group and wait-list control. Both conditions were augmented by a psychiatric consultation letter sent to each participant’s primary care physician, referred to as augmented standard medical care (ASMC). The treatment comprised 10 weekly training sessions (approximately 1 h each) including muscle relaxation, a structured method of self-hypnosis (autogenic training), and biofeedback (using physiological monitoring equipment as a method to train people to control their heart rate variability (HRV), breathing, and muscle tension). Participants were paid $25 each for the three evaluation sessions (~6 weeks apart, 1.5–2 h/assessment). Evaluators were blinded to the participants’ group assignment. These are preliminary findings on 14 subjects. The study is ongoing. Compared with the wait-list group, treatment subjects showed improvement on illness severity and degree, improvement on depression measures, and improvement on the hyperventilation measure. There were no differences in anxiety measures. The average percent change from the initial assessment to the third assessment on the CGI and HAM-D for the treatment group was 45.7% and 48.9%; while the control group changes were 26.4% and 22.1%, respectively. Hence, there appears to be a notable trend in symptom reduction for the treatment group. Psychophysiological treatment reduces symptoms that are largely unexplained. Self-regulation techniques that focus attention to physical symptoms may be especially appealing to MUPS patients.

**Keywords** Psychophysiological · Treatment · MUPS

**Citation Poster Award**

**Preliminary Results of a Psychophysiological Treatment for Patients with Multiple Unexplained Physical Symptoms (MUPS)**

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