



WINTER / SPRING 2010

S I E R R A T U C S O N
P R O G R E S S

**“Biofeedback Training at Sierra Tucson:
Mind-Body Medicine in Action”**

By Antoinette Giedzinska-Simons, Ph.D.

As the momentum of mind-body medicine continues to evolve, sorting out popular modalities from those that are evidence-based can often pose a challenge. Biofeedback is one modality that can seemingly side step much of this issue; despite its popularity among practitioners as well as patients, it continues to gather greater scientific support for its efficaciousness. In fact, clinical use and academic research of biofeedback has been in practice for more than 50 years. So why is this “older” modality surfacing into current trends in mind-body medicine? A possible explanation can be framed through Thomas Kuhn’s argument on how mature sciences follow a predictable developmental pattern, often in the form of paradigmatic shifts toward scientific advancement (1962). In order to achieve clinical scientific credibility, biofeedback as a methodology had to address and surpass challenges, such as (1) operationalizing definitions of the science so that reliable research could be conducted, (2) developing better, more sophisticated, and user-friendly apparatus to measure and observe interactions in psychophysiology, and (3) overcoming medical and social cultural presumptions of the credibility of a field of study in “psychophysiology.” The biofeedback of today has established itself not only as a worthwhile academic pursuit, but as a viable clinical practice to enhance patient quality of life. So, what is biofeedback, exactly, and why should we use it with our patients?

Learning to Control Physiological Responses

According to Andrasik and Lords (2004), biofeedback is a non-pharmacological treatment that uses electrical instruments to help people become aware of, and then exert control over, physiological responses. Biofeedback training is just that: training to learn various techniques through immediate feedback of one’s biological responses in order to learn skills to improve one’s physical and/or emotional quality of life. The biology commonly manipulated in Biofeedback Training (BFT) is that associated with the autonomic nervous system. In lay terms, this is the system of the body where the “stress and relaxation” responses generally are observed. One of the main goals of BFT is to teach patients to acquire an ability to regulate targeted physiology (e.g., respiration, blood flow, heart rate) in a desired direction (Schwartz & Schwartz, 2003). Secondary to learning how to improve various physiological functioning is the enhancement

to patient internal locus of control. It is not uncommon for me to observe the “aha!” of awareness and enthusiasm when patients experience such empowerment. As physiological insight is acquired, patients begin to grasp how psychological factors are interconnected to physical manifestations. This is mind-body medicine in action.

Breathwork to Achieve Relaxation

One of the most popular uses of BFT is to reduce overall arousal and promote a generalized state of relaxation (Schmidt & Willis, 2007). Psychological and physical symptoms that may improve by ways of stress reduction or management are commonly prescribed for biofeedback. Thus, BFT, in these cases, may best serve as adjunct in the overall treatment process in a holistic or interdisciplinary treatment program, such as those practiced here at Sierra Tucson. The key training focus to achieve these outcomes is through breathwork. There is considerable evidence that respiration is an important mediator of the autonomic nervous system (Lehrer, 2003), and manipulation of breath can affect some influence on parasympathetic and sympathetic homeostasis. The manipulation of breath during biofeedback not only provides information to patients of their internal state of tension/relaxation but also feeds back how they can influence their own mental and physical tension (van Dixhoorn, 2008). Respiration training usually involves instruction and coaching to modify the breath for short periods of time, and to generalize these skills to (1) better cope with exogenous and endogenous stressors (e.g., pain, anxiety, job strain, cravings, etc.), (2) elicit the relaxation response, and (3) increase one’s overall awareness of his/her resonant breathing. The strategies to induce stress reduction through biofeedback are complex and often not typifying an “exact” linear relationship (Conrad et al., 2007, & van Dixhoorn, 2008); therefore, training is truly tailored coaching based on patient need, limitations, and goals.

(Continued on page 2)

<i>In this Issue</i>	<i>Page</i>
Biofeedback Training at Sierra Tucson . . .	1
Letter from the Executive Director	2
Summit for Clinical Excellence	3
Meet Kermit L. Firestone, Wrangler	4



(Continued from page 1)

Heart Rate Variability

Another application in biofeedback is through Heart Rate Variability training, or HRV biofeedback. This newer technique aims to improve the variability and dominant rhythms in heart activity. Scientific study of HRV biofeedback is fairly recent, and only in the past ten years did it become possible to train people to change the variability in heart rhythms. Higher heart rate variability is correlated to an optimal modulation between the two branches of the autonomic nervous system, resulting in a regulated balance. Due to findings that symptoms of depression are linked to attenuated heart rate variability, whereby increased sympathetic tone, decreased parasympathetic activity, and a "blunted" physiological response to stress is observed in depressed patients (La Rovere et al., 1998; Siepmann et al., 2008), the therapeutic effects of HRV biofeedback in this patient population has meaningful clinical implications. The ultimate aim of HRV biofeedback is to increase heart rate variability through practicing one's identified "resonant breathing." This is achieved through several parallel training pathways, such as to coach patients to 1) learn how to relax physically and emotionally, 2) reduce anxious thoughts and negative emotions (by what I have coined as "mental discipline" through mindfulness techniques), and 3) engage in smooth full diaphragmatic breathing. Patients learn to breathe in synchrony with their own heart rate variability, resulting in an awareness of what their resonant breathing pattern is. According to Karavidas et al. (2006), each individual has an optimum resonant frequency at which their heart rate variability is the greatest, and this resonant frequency, measured by biofeedback instruments as a live-feed

for patients to track, is the training in which patients learn how to trace their HRV with their breathing. Current scientific studies are researching how autonomic nervous system regulation through HRV biofeedback contributes to improvement in other physical and psychological conditions, such as anger management, anxiety disorders, asthma, cardiovascular conditions, chronic obstructive pulmonary disorder, irritable bowel syndrome, chronic fatigue, and chronic pain (Moss & Shaffer, 2009).

Other Measures of Stress

Other biofeedback electrical instruments used to measure targeted physiological stress/relaxation comprise electromyogram (EMG), thermal (peripheral temperature), and galvanic skin response (GSR). EMG biofeedback trains patients first to identify muscle tension and then to learn skills to reduce this tension. The EMG signal is captured by electrodes placed along muscle fibers (typically placed along the forehead, neck, and shoulders) which measure the electrochemical changes that occur when a muscle contracts (Andrasik & Thorn, 2007). Muscular activity, like respiration, is considered to mediate autonomic activity, such that when patients learn how to reduce targeted neuromuscular tension, reduction in anxiety, hypertension, pain, and tension headache have been observed (Lehrer, 2003; Jacobson, 1970). Thermal biofeedback is often measured in conjunction with respiration BFT and EMG biofeedback to augment the stress reduction feedback process. However, it also is used as primary training for those conditions alleviated by increases to vasodilation in the body, the most common conditions being migraine (Holroyd & Penzien, 1994) and Raynaud's Syndrome (Karavidas et al., 2006).

(Continued on page 3)

Letter from the Executive Director Patricia L. Ryding, Psy.D.

Dear Friends,

Greetings from Sierra Tucson! I am filled with optimism and great hope for the New Year; 2010 feels like the dawning of a new day, as many of the challenges of 2009 appear to be fading. It is with this renewed energy that we continue focusing on saving lives.

Much of the clinical focus this past year has been on optimizing patients' ability to self-regulate their thoughts, feelings, and behaviors to support their recovery and functioning post-discharge. SPECT has been a huge success in helping patients understand and link the underlying neurobiology of their impulses and struggles to follow rules while in treatment. It helps patients find renewed motivation rather than shame when they have a misstep.

Additionally, we have added Life Coaching and the very popular "First Thought Wrong" groups to all patients' schedules. In these groups patients discover where they are in the cycle of change and explore their passions and purpose while acknowledging risky behaviors that prevent them from reaching their goals and living in their authentic selves. It is truly a miracle to see the patients' transformation.

We have been so pleased with the depth of information that SPECT adds to the treatment plan that we obtained an outpatient license for SPECT and will begin providing outpatient SPECT services by the end of the first quarter. We aspire to provide state-of-the-art diagnostic services in our local community.

Within this newsletter an insert gives special credit to our staff members who have achieved significant milestones of service. Many of you who visit Sierra Tucson comment on the passion of our staff, and we are so proud of our exceptional employees who make it possible to give patients the highest quality of care. I thank all of our staff for their amazing contributions that make Sierra Tucson a place of Compassionate Care and Clinical Excellence.



I am so grateful to you for your continued trust and support.

Namaste,

Patricia L. Ryding, Psy.D.
Executive Director

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(Continued from page 2)

Biofeedback as Self-Efficacy for Recovery

Biofeedback as a clinical practice continues to advance as its scientific progress expands beyond its original challenges. One of the advantages of biofeedback is that it is simple, replicable, and standardized (Lehrer, 2003). Its practical functionality makes it easy for allopathic medicine to embrace and, thus, may serve to further its clinical application to promote techniques to improve physical and mental health. Its practical functionality also provides a clear framework from which the western rigors of scientific empiricism can continue to study, challenge, and advance the field. Gone are the days when biofeedback systems filled a room with large, clunky boxes of gauges, wires, and dials; it has evolved into a sophisticated and recognized clinical practice and science comfortable among its bedfellows in the bio-psycho-social and integrative behavioral medicine community. To quip, academics will acknowledge that a field of study "has arrived" when it has its own peer-reviewed journal (*Applied Psychophysiology and Biofeedback*) and its own professional organization (Association of Applied Psychophysiology and Biofeedback). Furthermore, practitioners wishing to be trained in biofeedback are encouraged to culminate their training through obtaining certification (Biofeedback Certification Institute of America). In short, biofeedback training "has arrived" because it works, and this is why we offer it to patients at Sierra Tucson. We readily observe the benefits it provides our patients who struggle with mood disorders, chronic pain, stress, or addiction, as it complements the good work of our physicians and therapists. Patients are empowered by the training, and as a result, are empowered by their own self-efficacy for recovery.

~By Antoinette Giedzinska-Simons, Ph.D.

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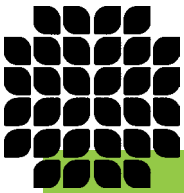


Antoinette Giedzinska-Simons, Ph.D., joined Sierra Tucson's Department of Psychology in February 2008, providing assessment and diagnostic testing for mood, personality, PTSD, mild cognitive impairment, attention deficit, etc.

In June 2009, Dr. Giedzinska-Simons began incorporating Biofeedback Training into the treatment process, developing this service for Sierra Tucson's patients. She also moved into a team role in the Pain Management Program, giving daily education classes to pain patients, as well as developing outcomes measurement to assess patient progress.

Dr. Giedzinska-Simons' impressive educational background enhances her success with Sierra Tucson's patients. She obtained her Ph.D. in Clinical Psychology from University of Southern California, where her training emphasized the bio-psycho-social approach in clinical health psychology. Much of Dr. Giedzinska-Simons' scientific research has addressed quality of life issues of patients suffering from chronic illness. Her passion is to work collaboratively on multidisciplinary teams, as evidenced by the 5-year longitudinal research she developed and implemented alongside renowned oncologists from Cedars Sinai Medical Center in California. The collegial atmosphere among staff at Sierra Tucson is a natural extension of Dr. Giedzinska-Simons' desire to work in collaboration with others.

Finding motivation through her family, work, and spirituality, she talks about her "amazing 6-year-old son—the light of my life!" Dr. Giedzinska-Simons is also energized to support and educate patients to cope better with stressors in their lives by coaching them to recondition their own physiology through breathwork and mindfulness. She reflects, "Patients are so hungry to advance themselves, it is exciting to be a part of their transcendence."



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*Meet Kermit L. Firestone
Wrangler*

Sierra Tucson celebrates with Kermit Firestone his 20 years of employment! On July 1, 1989, Kermit was hired as an Equine Manager to care for the 18 horses that were already a part of Sierra Tucson’s treatment programs. He took charge of purchasing/training horses, maintenance of horses (feeding/grooming) and stables, purchasing feed/supplies, plus farrier and veterinary services.

In 1991 Kermit became involved with Equine-Assisted Therapy as an Equine Specialist. He is a licensed Professional Trainer and Horseman, Certified Farrier, and also holds an Equine Assisted Therapy Certification from the Equine Assisted Growth and Learning Association (EAGALA).

Now serving as Wrangler, Kermit continues to manage the horses and stables, as well as facilitate Equine-Assisted Therapy groups, lead horseback rides, and oversee the maintenance of other areas in the Therapeutic Recreational and Activities Program. He places a high emphasis on safety for patients and staff.

Arriving at 5:30 a.m. daily, Kermit feeds and grooms the 10 horses “on staff.” Although horses need no special training for equine therapy, they must be gentle (no kicking or biting), and they are trained in round pen work.

Born in Yakima, Washington, Kermit has lived in the western United States from Alaska to Texas. He worked with horses throughout his teenage years, training his first “pay horse” at age 14. He served in the Army Special Forces from 1965 to 1968, and his background includes construction, logging, training racehorses, and service as a Sheriff deputy. After living 15 years in Wickenburg, Arizona, Kermit moved to Tucson in 1989.

Kermit’s experience with horses over the past 55 years has given him a natural ability to “read” horses. It is this insight with the horse and his keen sense of “real issues” that has given him the ability to provide thoughtful guidance to patients working through their addictions and critical issues of life. His sensitivity, common sense, and passion for horses—combined with their healing connection to people—produce a win-win situation for the patient.



Kermit finds great satisfaction in his work. “Even people experienced with horses find that they learn about themselves, and it’s not about the horse,” he comments. “I love to see the light bulb come on when a person realizes where they are and what they need to change.”