

## SPECIAL ISSUE

# Resilience Training for Army ROTC Cadets: Both Pre- and Postdeployment Soldiers

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*This article describes a performance enhancement/resilience training program developed and implemented for both pre- and postdeployment ROTC cadets at California State University, Fullerton. The program integrates a psychophysiological stress profile, multimodal biofeedback training, and a skills-based group educational program to modulate stress reactivity and promote autonomic nervous system flexibility. Heart rate variability biofeedback training receives special emphasis. The impetus for the program and practical guidelines for using biofeedback with military personnel are presented.*

### From a Concept to a Program

His demeanor, as well as his cadence and rhythm, when he began to address 60 students enrolled in the stress management class made it abundantly clear this was no typical college student. In contrast to the reticence and sentences punctuated with “like” and “um” by his classmates, he was conversant and articulate. Moreover, the moment he began to speak, the posture of the entire class improved, mirroring his command presence. In a heartbeat, the class had been transformed from a texting, clock-watching group, impatiently listening to a discussion of stressors peers were dealing with, to a group mesmerized by a fellow student’s sharing. This was indeed no typical college student; this was a U.S. Army soldier. I was struck by his composure as he commented on the stressor he had dealt with: witnessing his comrade killed by a suicide bomber while on patrol in Iraq. He stated the platoon remained stoic throughout the ordeal; however, many tears were shed later in memory of their fallen comrade. Although his sharing was certainly beneficial for his classmates, giving them a newfound sense of perspective and gratitude, I wondered if his physiology matched his external composure. Fortunately, the class had been provided thermometers to monitor temperature during the discussion. I had an objective measure. The numbers were daunting. His initial hand temperature was 78°F and dropped to 73°F during sharing.

As the semester progressed, a strong bond developed among members of this class, unlike any other I had

witnessed in 25 years of teaching. It was a homogeneous group in terms of age, but this student was mature beyond his years. He had struck a chord with his classmates and served as a reminder of how fortunate they truly were. By the semester’s end, the student who had imparted the gift of perspective in that first class had mastered the self-regulation skill of warming his hands to 95°. Although this was gratifying, I wondered if more could be done for these brave young men and women who put themselves in harm’s way. My previous work with Vietnam veterans at the VA Medical Center in Long Beach, California, had shown me all too clearly what happens when we don’t do more for these young patriots. I designed and implemented a psychosocial rehabilitation program for these veterans in Long Beach in the early 1980s (Haney & Rabin, 1984).

In subsequent semesters, there was an increase in ROTC cadets enrolled in my sections of stress management. At the time I was unaware of the source, but I certainly noticed the life energy and optimism exuded by these young cadets and how they spoke bravely of upcoming deployments. During the same time frame, I met with various experts in the field of applied psychophysiology and visited numerous psychophysiology labs.<sup>1</sup> I realized then I could do more. What started out as a vague concept, with the impetus being a soldier who so stoically shared his trauma while hand temperature clearly reflected autonomic nervous system dysregulation, became a biofeedback performance enhancement/resilience training program for Army ROTC cadets at California State University, Fullerton.

<sup>1</sup> This included Drs. Patricia Cowings and William Toscano, at NASA Ames Research Center, Moffett Field, California; LT Marc Taylor, at the Naval Health Research Center Psychophysiology Lab, San Diego, California; Dr. Paul Lehrer, at Robert Wood Johnson Medical School, Piscataway, New Jersey; Drs. Bronya Vaschillo and Evgeny Vaschillo, at Rutgers University, Piscataway, New Jersey; Dr. Afton Hassett, at the University of Medicine and Dentistry of New Jersey, East Brunswick; Dr. Richard Gevirtz, at Alliant University; Dr. Celeste DeBease at Widener University; Dr. Erik Peper, at San Francisco State University; and Harry Campbell, with Biofeedback Resources International.

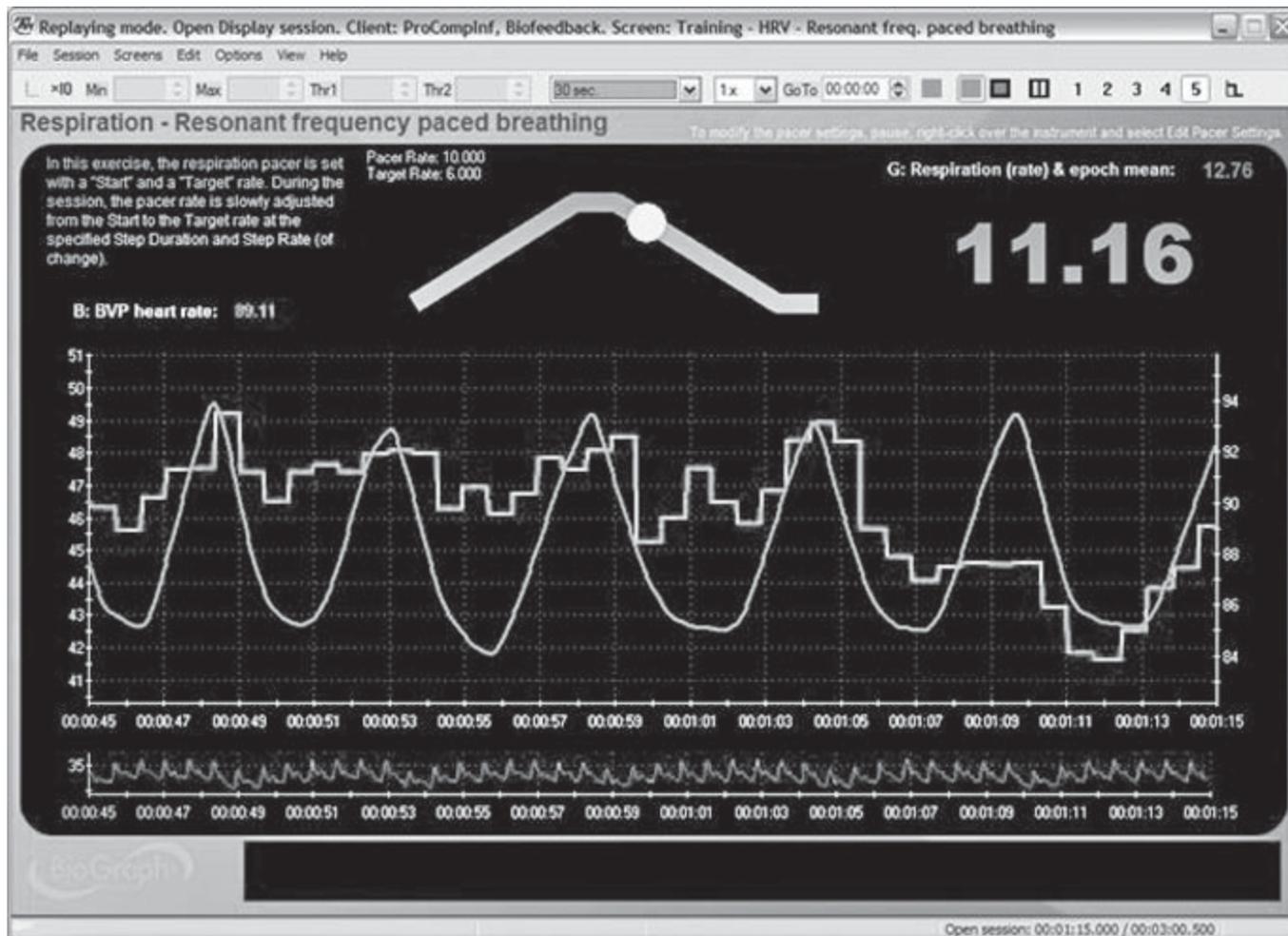


Figure 1. An Ininiti™ system training screen with a breath pacer bar, which is used to determine resonance frequency. The relatively smooth line represents respiration, whereas the jagged line represents heart rate variability.

### Practical Program Guidelines and Lessons Learned

Our performance enhancement/resilience training program is a skills-based educational program designed to modulate stress reactivity and promote autonomic nervous system flexibility. The 6-week program includes a psychophysiological stress profile in Weeks 1 and 6. The 45-minute weekly sessions involve determining the cadets' resonance frequency as described by Leher, Vaschillo, and Vaschillo (2000). Cadets are instructed to practice breathing at their resonance frequency twice a day for 20 minutes using the EZ-Air™ pacer bar to facilitate home practice.<sup>2</sup> Additional sessions include breathing at resonance frequency with feedback from the Thought Technology Ininiti™ system, as illustrated in Figure 1, followed by feedback using multimodality biofeedback (surface electromyograph,

thermal, skin conductance level, and respiration) combined with an adjunctive technique each week (i.e., imagery, autogenic training, and progressive muscle relaxation).

A unique feature of our program is the group didactic training prior to the individual biofeedback session each week. During the group presentation, the emphasis of the week's training session is explained, for example, developing psychophysiological countermeasures to stressful circumstances, understanding heart rate variability (HRV) as relates to autonomic nervous system adaptability, and Cowings' autogenic training protocol for improving operational readiness (Cowings, Toscano, Kamiya, Miller, & Sharp, 2000). The cadets also meet briefly in the group presentation area following each individual session. This format has resulted in strong group cohesiveness and at times a rather entertaining albeit competitive environment for achieving the highest HRV amplitude in the low-frequency (LF) range.

The trainers for the program are students enrolled in Health Psychophysiology II (HESC431), which is designed

<sup>2</sup>The EZ-Air is a breath pacer, available as a download from the Biofeedback Foundation of Europe Web site at [www.bfe.org](http://www.bfe.org).



**Figure 2.** Trainer Scott Moore and ROTC cadets Minh Pham and Robert Fisher during a resilience training session.

to fulfill the Biofeedback Certification Institute of America practical training requirements, as well as students enrolled in independent study following completion of HESC431. All of the students have previously served as trainers for our lab’s Energy Management Biofeedback Training program. Figures 2 and 3 feature trainers and ROTC cadets during resilience training sessions in the psychophysiology lab. One of the observations trainers immediately made was the lower HRV of previously deployed cadets in comparison with predeployment cadets. In addition, cadets who had not been to war progressed more rapidly in training HRV peaks in the LF range. Although postdeployment cadets were able to increase HRV amplitude as determined by within-session data, the increase was significantly less than their predeployment peers. This observation mirrors the research finding that individuals with post-traumatic stress



**Figure 3.** Cadet Minh Pham working with multimodality feedback.



**Figure 4.** Karen Quigley, PhD, associate director for research at the War Related Illness and Injury Study Center (WRIISC); Masahito Sakakibara, PhD; Wunmi Osinubi, PhD; Evengy Vaschillo, PhD; Bronya Vaschillo, MD; Maureen Haney, MS; Maria Karavidas, PsyD; and Harry Campbell at the WRIISC in East Orange, New Jersey.

disorder show lower heart rate variability (Sack, Hopper, & Lamprecht, 2004).

### Discussion

The training program was presented to the War Related Illness and Injury Study Center in East Orange, New Jersey, last summer (Figure 4). Data analysis is pending. I hope a follow-up report will show quantitative measures of the autonomic nervous system just as impressive as the qualitative self-reports of improved sleep, increased energy, the ability to handle aircraft motion sickness, and—my favorite—no longer falling asleep during the professor’s lectures.



**Figure 5.** Scott Moore, Cadet Minh Pham, Maureen Haney, and Cadet Robert Fisher following completion of the performance enhancement/resilience training program.

Finally, the cause of the influx of ROTC cadets enrolled in my stress management sections was twofold: an increase in the number of cadets on campus due to the leadership of LTC Billy Howard followed by LTC Jonathan Nepute, combined with a high recommendation to enroll in my course from a stoic soldier with warm hands and a healed heart thanks to the support he was willing to embrace from his classmates and the skills he acquired to regulate his autonomic nervous system and process his trauma after completing our campus resilience training program. Figure 5 shows Maureen Haney with cadets at the completion of the performance enhancement/resilience training program.

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