

Heart Rate Variability Biofeedback

Build your capacity to manage overwhelming feeling states

Biofeedback is operant conditioning training, whereby you modify your physiology being measured by shaping responses based on real-time sight and/or sound feedback (The Association for Applied Physiology and Biofeedback, 2008). Biofeedback is regarded as beneficial to assisting you to self-regulate, manage your trauma, reduce your stress and increase your focus (Gevirtz, 2008; Rickles, Onoda, & Doyle, 1982).

There are many forms of biofeedback but for the purposes of my clinical practice Heart Rate Variability Biofeedback has been selected due to its positive clinical results and empirical evidence (Askovich, 2007; Gevirtz, 2008; Karavidas, 2008; Nesser, 2008; Siepmann, 2008; Sperling et al., 2010).

The key process is to 'put a break' on the 'fight or flight' stress of the sympathetic system and allow the parasympathetic 'rest and adapt' system to then dominate (Gevirtz, 2008).

Biofeedback can be viewed as an external mechanism that provides you with information about your internal excitation, that is, physiological arousal, to assist self-regulation. Precise biofeedback instruments rapidly and accurately 'feedback' information to you about physiological activity such as brainwaves, heart function, breathing, muscle activity, and skin temperature. Assisted by the therapist, you use this information to focus your attention on the thoughts and feelings that are associated with maladaptive levels of physiological arousal. Consequently, you have the opportunity to pace yourself to reduce the monitored level of arousal. Through this process biofeedback can assist you to monitor your 'optimal arousal zone' and, subsequently increase your 'window of tolerance'. Over time, these changes can endure without the continued use of a biofeedback

technology (The Association for Applied Physiology and Biofeedback, 2008). One form of biofeedback that can be used to achieve the desired self-regulation is Heart Rate Variability (HRV) Biofeedback

HRV biofeedback refers to the millisecond variations in sequential heart beats and provides real-time auditory and/or visual feedback of heart rate changes. Higher HRV correlates with higher self-regulation, that is, the capacity to be more resilient and more flexible to changes in the environment. Low HRV has been linked to a range of psychological problems including anxiety, depression, stress and post traumatic stress disorder (Friedman, 2007; Gevirtz, 2008; Henriques, Keffer, Abrahamson, & Horst, 2011; McGrady, 2007; Wheat & Larkin, 2010). Numerous studies (Wheat & Larkin, 2010) have found that using HRV can bring about positive change for clients who are treated for major depression (for example Karavidas, 2008). HRV treatment has also been associated with a decrease in the Beck Depression Inventory scores, and depressed subjects often experience a reduction in anxiety (Henriques et al., 2011; Siepmann, 2008).

Training with HRV biofeedback is relatively easy. Since heart rate is related closely to respiration, breathing techniques are a key feature of this intervention as slow breathing can help you regulate (Bradenoch, 2008). You are trained to breathe in a specific pattern while receiving a visual representation of the immediate effects of proper breathing on your body rhythms. This empowers you to self-regulate and manage your arousal patterns (Askovich, 2007).

In so doing, with this increased regulation, the therapist can witness your outcomes and use the information to assist you in processing your concerns and/or your trauma.

References

- Askovich, M. (Producer). (2007). Heart rate variability training in work with trauma.
- Bradenoch, B. (2008). *Being a Brain-wise Therapist*. New York: W. W. Norton & Company.
- Friedman, B. H. (2007). An autonomic flexibility-neurovisceral integration model of anxiety and cardiac vagal tone. *Biological Psychology*, 74(2), 185-199.
- Gevirtz, R. (Producer). (2008, 1 September 2009). MyCalmBeat. *MyBrainSolutions*. Retrieved from <https://http://www.mybrainsolutions.com/MyBrain/PlaySolution.aspx?id=MyCalmBeat>
- Henriques, G., Keffer, S., Abrahamson, C., & Horst, S. J. (2011). Exploring the effectiveness of a computer-base heart rate variability biofeedback program in reducing anxiety in college students. *Applied Psychophysiology and Biofeedback*, Published online 10 March 2011.
- Karavidas, M. K. (2008). Heart rate variability biofeedback for major depression. *Biofeedback*, 36(1), 18-21.
- McGrady, A. (2007). Psychophysiological mechanisms of stress: A foundation for the stress management therapies. In P. M. Lehrer, R. L. Woolfolk & W. E. Sime (Eds.), *Principles and practice of stress management* (3rd ed., pp. 16-37). New York: Guilford.
- Nesser, T. (Producer). (2008). Trauma and chronic pain: Integrating Positive Psychology approaches into biofeedback based heart rate variability training; an overview. *NSW Service for the Treatment and Rehabilitation of Refugee Torture and Trauma Survivors (STARTTS)*. Retrieved from <http://www.psychevisual.com>
- Rickles, W. H., Onoda, L., & Doyle, D. C. (1982). Task force study section report - Biofeedback as an adjunct to psychotherapy. *Biofeedback and self-regulation*, 7(1), 33.
- Siepmann, M., Aykac, V., Unterdofer, J., Petrowski, K., Mueck-Weymann, M. (2008). Pilot study on the effects of heart rate variability biofeedback in patients with depression and in healthy subjects. *Applied Psychophysiology and Biofeedback*, 33(4), 1573-3270.
- Sperling, W., U, R., Bleich, S., F, P., Komhuber, J., & Mueck-Weymann, M. (2010). Cardiac effects of vagus nerve stimulation in patients with major depression. *Pharmacopsychiatry*, 43(1), 7-11.
- The Association for Applied Physiology and Biofeedback. (2008). What is biofeedback? , from <http://www.aapb.org/>
- Wheat, A. L., & Larkin, K. T. (2010). Biofeedback of heart rate variability and related physiology: a critical review. *Applied Psychophysiology and Biofeedback*, Published online 5 May 2010.