

Abstract 9**Multidisciplinary Research in Biofeedback**

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Biofeedback is gaining acceptance as a therapeutic modality that provides added value for patients with many medical conditions and has been shown to aid in recovery from some of those conditions. The Association for Applied Psychophysiology and Biofeedback (AAPB) has recently completed an analysis of research in biofeedback, and the resulting report concludes that there is sufficient data to label biofeedback as efficacious and specific in certain medical conditions, such as female urinary incontinence, while it is rated efficacious in diseases such as anxiety, headache, chronic pain, and epilepsy, only possibly efficacious in depression, coronary artery disease, and asthma, and not well justified in eating disorders or spinal cord injury. There are many prevalent disease states in which biofeedback has not been tested or has been studied only in very small and specific patient cohorts where no far-reaching conclusions can be drawn.

Biofeedback training can be used to regulate activity of the sympathetic and parasympathetic nervous systems, both of which

are increasingly recognized to be involved in many diseases. Down-regulation of the sympathetic nervous system has been shown to be advantageous in many conditions and is the reason for the success of beta-blocking drugs. Up-regulation of the parasympathetic nervous system has only recently been shown to be anti-inflammatory, and is the rationale for trials of vagal nerve stimulation in several disease states.

We hypothesize that biofeedback should be an efficacious adjunct to conventional therapy in conditions such as coronary artery disease, diabetes, and multiple sclerosis, where the autonomic nervous system is involved in disease progression or symptom generation. For this reason, we are undertaking a study of patients at the Cleveland Clinic with documented coronary artery disease, diabetes, or multiple sclerosis. Within each disease population, patients will be randomized into two groups. One group will receive eight sessions of biofeedback training while the other group receives a valid sham treatment. Measures of autonomic nervous system activation, inflammation, and quality of life will be obtained in all patients in each group. Disease-specific indicators of symptoms, disease progression, and quality of life will also be monitored. Our hypothesis is that the biofeedback-treated subjects will demonstrate progress in symptom control and quality of life, and that progress in this direction will be positively correlated with the ability to self-regulate.

This study is currently ongoing at the Cleveland Clinic and is supported by the Bakken Heart-Brain Institute.

* BHBI = Bakken Heart-Brain Institute