

## SPECIAL ISSUE

# Biofeedback Treatment for Headaches

Inna Khazan, PhD, BCB

Boston Center for Health Psychology and Biofeedback, and Harvard Medical School, Boston, MA

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*Classic medical treatment of migraine and tension-type headaches is an ongoing struggle and challenge for the medical practitioner. Pharmacologic treatment does not cure these common conditions and offers only short-term palliation. Biofeedback treatment, on its own or in conjunction with cognitive behavioral therapy, offers long-term encouraging results. The methodology is non-invasive, easy to apply and efficacious. Furthermore, the migraine or tension headache sufferer acquires a sense of self-control and mastery over the short term and especially over the long term. Best results are achieved with continued practice of biofeedback skills over the long term.*

Headaches in adults and children, including migraine and tension-type headache, are one of the most common presenting complaints in a primary care office. Tension-type headaches are the most common primary headache disorder, with a lifetime prevalence estimated between 30% and 78% of the population worldwide (Stovner et al., 2007). Tension-type headaches are characterized by head pain, often diffuse and described as “tight,” “pressing,” and “dull.” Muscle tension in the face, top and back of the head, neck, and shoulders is reported in a majority of cases. Tension headaches may be episodic or chronic. Commonly used ICD-10 codes for tension headache are G44.221 and G44.229 for chronic tension-type headaches and G44.219 for episodic tension-type headaches.

Migraines, estimated to affect 16%–23% of the population (Smitherman, Burch, Sheikh, & Loder, 2013), is a primary headache disorder characterized by over-excitability in certain areas of the brain. Migraines are often, but not always, unilateral, with throbbing pain often accompanied by nausea, sensitivity to light, sound, and movement. The two major subtypes are common migraine (without aura) and classic migraine (with aura or neurological symptoms). Migraines may be episodic or chronic. Some of the commonly used ICD-10 codes for common migraines are G43.001 or G43.009. ICD-10 codes for classic migraines are G43.119 and G43.109.

Biofeedback, together with cognitive behavioral therapy, offer an efficacious way of alleviating these challenging-to-treat conditions for both adults and children (Andrasik & Schwartz, 2016; Silberstein, 2000; Stubberud, Varkey, McCrory, Pedersen, & Linde, 2016; Tan, Shaffer, Lyle, & Teo, 2016). Electromyography (EMG) biofeedback has been shown to be efficacious in the treatment of tension-type headache, while blood volume pulse and thermal biofeedback have been shown to be efficacious in the treatment of migraine. For example, Nestoriuc and Martin (2007), in a meta-analysis of the effectiveness of biofeedback for migraines, reported medium effect sizes for blood volume pulse biofeedback, with benefits maintained over a 17-month period. Similarly, meta-analyses of the effectiveness of biofeedback for tension headaches conducted by Nestoriuc and colleagues (Nestoriuc & Martin, 2007; Nestoriuc, Martin, Rief, & Andrasik, 2008), found medium to large effect sizes for EMG biofeedback, with benefits remaining stable over 15 months.

In an ongoing collaboration with Dr. Katie Fleischman of the Boston Children’s Hospital, we are currently investigating effectiveness of a combined heart rate variability (HRV) and EMG treatment for pediatric headache, both migraine and tension type. While we are still collecting data at this time, results so far are quite promising. When completed, the study will answer the following questions:

1. Can psychophysiological stress and relaxation profiles differentiate between three types of pediatric headache: tension-type headache, migraine headache, and mixed tension and migraine headache?
2. Does combined HRV and EMG biofeedback intervention result in a change of baseline HRV and EMG?
3. Does this intervention produce a reduction in the frequency, severity, and duration of headache symptoms?

Several decades of empirical research point us toward the conclusion that biofeedback is a safe and effective treatment for tension-type and migraine headaches. Biofeedback is a particularly good option for patients for whom medication

is not sufficiently effective, as well as those who cannot or do not wish to take medication. Biofeedback is a non-invasive treatment that empowers patients with a sense of self-mastery in the face of challenges. In fact, biofeedback may help patients move away from seeing headaches as a threat to their wellbeing, and instead begin to see them as a challenge to conquer, for which they possess sufficient resources.

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Inna Khazan

Correspondence: Inna Khazan, PhD, BCB, Boston Center for Health Psychology and Biofeedback, and Harvard Medical School, Boston, MA, email: inna.khazan@gmail.com.