Biofeedback

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DESCRIPTION

Biofeedback Therapy

Biofeedback therapy provides visual, auditory, or other evidence of the status of certain body functions so that an individual can exert voluntary control over the functions, and thereby alleviate an abnormal bodily condition. Biofeedback therapy often uses electrical devices to transform bodily signals indicative of such functions as heart rate, blood pressure, skin temperature, salivation, peripheral vasomotor activity, and gross muscle tone into a tone or light, the loudness or brightness of which shows the extent of activity in the function being measured. It emphasizes relaxation, enhancement of muscle contraction and/or stress-reduction. Biofeedback is considered an alternative medicine technique. There are several different types of biofeedback. The biofeedback modality selected for therapy depends on the condition to be treated.

Biofeedback therapy differs from electromyography (EMG), which is a diagnostic procedure used to record and study the electrical properties of skeletal muscles. However, an EMG device may be used to provide feedback with certain types of biofeedback.

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Although there are numerous biofeedback devices available for home use, biofeedback should be performed in a clinical setting with the continuous presence of the physician or by a qualified non-physician practitioner. Continuous presence requires one-on-one face-to-face involvement with the patient and practitioner during training. Qualified non-physician practitioners include physical therapists, Nurse Practitioners, Physician Assistants, and Clinical Nurse Specialists.

Heart rate variability (HRV) biofeedback is a relatively new biofeedback technique for training people to change the variability and dominant rhythms of their heart activity. Research is ongoing applying HRV biofeedback techniques to a variety of medical and psychiatric conditions, including the following: anger, anxiety disorders, asthma, cardiovascular conditions including heart failure, chronic obstructive pulmonary disorder (COPD), depression, irritable bowel syndrome (IBS), chronic fatigue, and chronic pain

Biofeedback Therapy for Anorectal Disorders
Anorectal disorders are a group of medical disorders that occur at the junction of the anal canal and rectum. Anorectal disorders are defined by specific symptoms and, in the case of functional disorders of defecation, also with abnormal diagnostic tests. The main anorectal disorders include fecal incontinence (FI), functional anorectal pain (levator ani syndrome) and functional defecation disorders (DD) (chronic constipation with dyssynergic defecation).

Anorectal disorders are common and can significantly impair a person's quality of life. Diagnosis is made by a comprehensive history of symptoms, visual inspection, and digital rectal examination, along with selective tests. Diet, bowel habit, and lifestyle changes are often first lines of therapy. Biofeedback therapy (BFT) is proposed as a treatment for anorectal disorders.

Biofeedback attempts to improve rectal sensory perception, strength, coordination, or some combination of these 3 components. Sensory training involves inducing intrarectal pressure using a balloon feedback device. A manometric balloon probe is inserted into the rectum, and the balloon is filled with air to produce a sensation of rectal filling. Strength training uses either anal canal pressure (manometric) or intra-anal electromyography feedback of pelvic floor muscles. The purpose is to strengthen the force of the pelvic floor muscle contraction without including rectal distention. Some training increases endurance (duration of external anal sphincter contraction) as well as peak strength. Coordination training uses pressure feedback of intrarectal balloon distention with a water-perfused catheter or Schuster-type balloon probe and pelvic floor muscle contractions in a simultaneous feedback display. The purpose of coordination training is to synchronize the contraction of the external anal sphincter with the relaxation of the internal anal sphincter.

Clinical Context and Therapy Purpose
Several specific methodologic difficulties exist in assessing biofeedback. For example, most interventions that include biofeedback are multimodal and include relaxation and

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behavioral instruction, which may have effects separate from those that may occur due to biofeedback. While some studies have reported a beneficial effect of multimodality treatment, without appropriate control conditions, it is impossible to isolate the specific contribution of biofeedback to the overall treatment effect. For example, relaxation, attention, or suggestion might account for successful results attributed to biofeedback. These are nonspecific therapeutic factors, some of which can be considered placebo effects. Moreover, it is important that studies demonstrate biofeedback improves disease-related health outcomes, as opposed to potentially affecting only physiologic, intermediate outcomes, and that they address the durability of effects beyond the initial, short-term biofeedback training period.

The purpose of biofeedback in patients who have an anorectal disorder is to provide a treatment option that is an alternative to or an improvement on existing therapies.

Populations
The relevant population of interest is individuals with anorectal disorders including but not limited to fecal incontinence, chronic constipation with dyssynergic defecation and levator ani syndrome.

Interventions
The therapy being considered is biofeedback. Biofeedback teaches individuals self-regulation of certain physiologic processes not normally considered to be under voluntary control. Biofeedback attempts to improve rectal sensory perception, strength, coordination, or some combination of these 3 components.

A review of current medical literature indicates that biofeedback is used as an adjunctive service, concurrently provided with a physical therapy program. Depending on the condition being treated, biofeedback is typically provided 2 to 3 times per week for 6 to 8 weeks. Although an individual who responds more quickly to treatment may require less biofeedback therapy, response time can vary if there are existing comorbidities.

Comparators
The comparators of interest are medical management that may consist of the following: bulking agents, anti-diarrheal agents, if anti-diarrheal agents are ineffective bile acid binders may be recommended, fiber supplementation, laxatives, or osmotic agents.

Outcomes
The relevant clinical outcome for biofeedback should be an overall change in patient symptoms. Achieving normal defecation dynamics (e.g., anal pressure, squeeze pressure, sensory threshold, rectal inhibitory reflex, defecation dynamics) does not correspond with symptom relief (i.e., clinical outcomes). Anorectal physiology measurements are a poor proxy for changes in clinical symptoms. Indviduals symptoms are usually assessed through a diary, questionnaire, or interview (completed by the patient and, in the case of children, parents).

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Biofeedback Therapy in the Treatment of Anorectal Disorders (DD) in Children
Chronic constipation with associated fecal impaction and overflow fecal incontinence (FI) is frequently seen in children, and the mechanism for this appears to be dyssynergic defecation because these children squeeze their pelvic floor muscles when instructed to try to defecate. However, the majority of studies in children suggest that biofeedback is no better than laxatives. It is speculated that the poorer outcomes may occur because biofeedback requires a high level of motivation and sustained attention that may be beyond the ability of many children. However, the explanation is unknown.

Biofeedback Treatment of Anorectal Disorders in Adults
The most recent version (i.e., Rome IV) of the Rome criteria for functional gastrointestinal disorders specifies three main anorectal disorders (i.e., defecation disorders (DD), fecal incontinence (FI), and anorectal pain disorders.

Chronic Constipation with Dyssynergic Defecation
Although physicians often regard constipation to be synonymous with infrequent bowel movements, typically fewer than 3 per week, individuals have a broader set of symptoms, including hard stools, a feeling of incomplete evacuation, abdominal discomfort, bloating, and distention, as well as other symptoms (e.g., excessive straining, a sense of anorectal blockage during defecation, and the need for manual maneuvers during defecation), which suggest a defecatory disorder. Frequently, constipation is due to disordered colonic and/or pelvic floor/anorectal function. Assessments of colonic transit and anorectal function allow patients to be categorized into 3 subgroups (i.e., defecatory disorders, normal transit constipation [NTC], and slow transit constipation [STC]), which facilitates management in refractory patients. Treatment can be challenging and needs to be individualized.

The evidence in the published peer-reviewed scientific literature supports the use of biofeedback for the treatment of chronic constipation with dyssynergic defecation (inappropriate contraction of the pelvic floor as measured with manometry with adequate propulsive forces during attempted defecation). Significant improvements in chronic constipation with dyssynergic defecation using biofeedback treatment have been reported in systematic reviews, meta-analysis, and randomized controlled trials (RCTs). Current society guidelines recommend the use of biofeedback in the treatment of chronic constipation with dyssynergic defecation in adults or individuals. The evidence is sufficient to determine the effects of the technology on net health outcomes

Fecal Incontinence
Fecal incontinence (FI) is a frequent and debilitating condition that may result from a multitude of different causes. It is defined as the uncontrolled passage of feces for at least over a 3 month's duration in an individual of at least 4 years of age, who had previously achieved control. Incontinence has a negative impact on self-esteem and quality of life and may result in significant secondary morbidity and disability. Treatment is challenging and needs to be individualized.

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Biofeedback has been proposed for the treatment of fecal incontinence (FI), and overall, results from systematic reviews and randomized controlled trials reported that biofeedback may help improve this condition in certain patients. The American Society of Colon and Rectal Surgeons (ASCRS) (2015) stated that biofeedback should be considered as an initial treatment of fecal incontinence in motivated patients with some preserved voluntary sphincter contraction. ASCRS noted that the benefits are variable and standard care (e.g., advice and education) alone have been shown to be as effective as biofeedback therapy. The recommendation is based on moderate-quality evidence. Biofeedback is recommended in adult patients who do not respond to conservative therapy. The evidence is sufficient to determine the effects of the technology on net health outcomes

Levator Ani Syndrome with Dyssynergic Defecation
Levator ani syndrome is caused by a spasm in the levator ani muscle and this pain may radiate to the hips, tailbone, or other areas. The pain is usually unrelated to a bowel movement, and there appear to be no structural abnormalities or underlying conditions responsible for these symptoms. The precise cause is unknown, and it is believed that chronic tension of the pelvic floor muscles plays a role in this syndrome. Another theory is that inflammation in the pelvic area is a contributing factor. Individuals may be at higher risk of levator ani syndrome after childbirth or following surgery on the pelvic area, anus or spine. Symptoms of levator ani syndrome include pain high in the rectum that may include the following:

- Irregular and spontaneous
- Less than 20 minutes in duration
- Specific or general
- A dull ache
- A sense of pressure in the rectum
- Felt when sitting
- Relieved when standing or lying down
- Unrelated to bowel movements
- Severe enough to interrupt sleep

Furthermore, a person may feel that passing gas or defecating can give them relief from the pain. In severe cases the rectal pain may recur frequently and may last for several hours.

Diagnosis of levator ani syndrome is based upon excluding other diseases that may be responsible for the symptoms. This may be done through a physical examination and diagnostic testing (e.g., imaging tests or endoscopic procedures). Treatment options include biofeedback which uses specialized equipment to measure activity while exercises are done and through feedback the individual learns to control or relax certain muscles to reduce symptoms.

Biofeedback therapy (BFT) for levator ani syndrome (LAS) in a trial compared the efficacy of BFT, electrogalvanic stimulation, and digital massage in 157 patients with

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LAS. Patients were divided into two groups; those with LAS "highly likely" and LAS "possible" respectively had and did not have tenderness with traction of the levator ani. Among patients with highly likely LAS, adequate relief of symptoms was reported in 87% participants who received BFT. The response rate was lower for other treatment groups. The number of pain days per month declined from 14.7 at baseline to 3.3 after BFT, 8.9 after electrogalvanic stimulation, and 13.3 after massage. Clinical improvement was sustained at 12 months. Patients with a "possible" diagnosis of LAS had negligible improvement with any treatment. Biofeedback therapy (BFT) is beneficial for a subset of patients with LAS who also have recto anal dyssynergia. The evidence is sufficient to determine the effects of the technology on net health outcomes

Biofeedback Therapy for Other Anorectal Disorders
Biofeedback has been proposed as a treatment modality for other anorectal disorders including but not limited to the following:

- Isolated internal anal sphincter weakness
- Overflow incontinence associated with behavioral or psychiatric disorders
- Neurological disorders associated with substantial loss of rectal sensation and/or the inability to contract the external anal sphincter
- Decreased rectal storage capacity from resection, inflammation, or fibrosis
- Suspected or established major structural damage to continence mechanisms

Based on the review of the peer reviewed medical literature biofeedback therapy for these conditions have not been established.

Biofeedback for a Treatment of Headaches

Migraine and Tension Type Headache
It is estimated that 50 million Americans suffer from headaches. It is now generally accepted that about 1 in 8 adults in the developed countries have migraine headaches. Women are affected 2 to 3 times more than men. This disorder predominantly affects young adults, and the peak incidence is between the age of 25 and 34.

Migraine, tension-type, and cluster headache are all primary headaches with distinct presentations. Migraine is characterized by intense, often localized, pain or throbbing usually accompanied by nausea, vomiting, light and/or sound sensitivity. Tension headache pain tends to be less intense and may be bilateral or encircle the head. Both migraine and tension-type headache are relatively common conditions. Cluster headache occurs less frequently. Subjects with cluster headache have brief but intensely painful attacks that occur multiple times per day. Cluster attacks may last days, weeks or months.

Biofeedback involves the feedback of a variety of types of physiologic information not normally available to the patient, followed by a concerted effort on the part of the patient to use this feedback to help alter the physiologic process in some specific way. Biofeedback training is done either in individual or group sessions, alone or in combination with other behavioral therapies designed to teach relaxation. A typical

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program consists of 10 to 20 training sessions of 30 to 60 minutes each. Training sessions are performed in a quiet, non-arousing environment. Subjects are instructed to use mental techniques to affect the physiologic variable monitored, and feedback is provided for the successful alteration of the physiologic parameter. This feedback may be signals such as lights or tone, verbal praise, or other auditory or visual stimuli.

The various forms of biofeedback differ mainly in the nature of the disease or disorder under treatment, the biologic variable that the subject attempts to control, and the information that is fed back to the subject. In general, electromyographic biofeedback is used to treat tension headaches. With this procedure, electrodes are attached to the temporal muscles, and the patient attempts to reduce muscle tension. Feedback on the achievement of a decrease in muscle tension is provided to the subject, reinforcing those activities (behaviors or thoughts) that are effective. Thermal biofeedback is a commonly employed technique for migraine headache, in which patients learn to increase the temperature of their fingertips through the use of imagery and relaxation. In this technique, a temperature sensor is placed on the finger, and the subject is taught to increase peripheral vasodilation by providing feedback on skin temperature, an effect that is mediated through sympathetic activity. The combination of thermal biofeedback and relaxation training has also been used to improve migraine symptoms. The pulse amplitude recorded from the superficial temporal artery has also been used to provide feedback. Temporal pulse amplitude biofeedback has been used to treat both chronic tension-type headaches and migraine headaches.

Clinical Context and Therapy Purpose
The purpose of biofeedback for patients who have migraines or tension-type headaches is to provide a treatment option that is an alternative to or an improvement on existing therapies.

Populations
The purpose of biofeedback for individuals who have migraines or tension-type headaches is to provide a treatment option that is an alternative to or an improvement on existing therapies.

Interventions
The therapy being considered is biofeedback.
Biofeedback would be administered in a clinical setting with the continuous presence of the physician or by a qualified licensed non-physician practitioner. Continuous presence requires one-on-one face-to-face involvement with the patient and practitioner during training.

A typical program consists of 10 to 20 training sessions of 30 to 60 minutes each.

Training sessions are performed in a quiet, non-arousing environment.

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Comparators
The following therapy is currently being used to treat migraines or tension-type headaches: standard therapy without biofeedback.

Outcomes
The general outcomes of interest are reductions on instances and intensity of migraines or tension-type headaches and reductions in medication usage.

There are two major types of migraine headaches: (1) migraine with aura (classical migraine) which accounts for 15 to 18 % of all migraine episodes, and (2) migraine without aura (common migraine) which accounts for 80 % of all migraine attacks. Some individuals suffer from both types of migraine at different times. The treatment of choice for frequent migraine sufferers is usually pharmacologic prophylaxis. Avoidance strategies (loud noises flashing lights, stress, and certain foods) also constitute a very important first line approach in managing migraine. Biofeedback training with or without relaxation techniques have also been shown to be effective in treating migraine and tension headache. In particular, thermal biofeedback training has been shown to be effective in treating migraine headache. This technique teaches patients to increase the temperature of their fingers. Supposedly, dilatation of the peripheral blood vessels in the hand is associated with reduced blood flow in the regions of the supra-orbital and superficial temporal arteries, although the exact mechanism by which thermal biofeedback improves migraine headaches is still unclear.

Tension-type headaches can range from the occasional mild headache to daily disabling headaches in some cases. The pain is commonly described on both sides of the head and the pain is generally mild to moderate and is not worse with routine physical activity, which means most people with tension-type headache continue about their normal daily activities despite having their headache. A tension-type headache generally is not accompanied by nausea or vomiting. It may be accompanied by increased sensitivity to light or sound, but not both. It may also be associated with tenderness of the pericranial (head and neck) muscles, particularly with increased frequency of tension-type headache attacks. There are three types of tension-type headaches: 1) infrequent episodic type tension-type headache which is one or fewer episodes per month; 2) frequent episodic type tension-type headache which is more than one, but fewer than 15 episodes per month for three months or more; 3) chronic tension-type headache which is more than 15 episodes per month for three or more months. There may be mild nausea with this type of tension type headache. Treatment of tension-type headaches is for individual episodes (acute treatment). Simple analgesics, such as nonsteroidal anti-inflammatory drugs (NSAIDs) or aspirin, are reasonable choices. Sometimes combination analgesics including caffeine can be more effective; but with frequent use, side effects such as rebound headache may emerge. Use of combination therapies containing either butalbital or opioids for treatment of tension-type headache is generally not recommended because of the risk of tolerance, dependency, toxicity, and the development of medication overuse headache. Acute treatments should be limited to no more than twice per week, otherwise, they can produce medication overuse headache. If tension-type headaches are frequent,

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long-lasting, or associated with a significant amount of disability, then preventive treatment is recommended. Commonly used preventive strategies include medications such as amitriptyline and non-medication treatments for headache such as biofeedback (EMG biofeedback has been employed primarily), relaxation, and cognitive-behavioral therapy, acupuncture, massage therapy or physical therapy.

Cluster Headache
Only small case series and case reports were identified in the treatment of cluster headache with biofeedback. No controlled trials were found

Summary of Evidence
Based on review of the peer reviewed medical literature it has been shown that the combination of thermal and EMG biofeedback has been effective in the control of migraine, tension, and mixed migraine and tension headache. Furthermore, it has been reported that relaxation techniques can produce improvements in headache. Available evidence indicates that biofeedback techniques (thermal, EMG, and temporal blood volume pulse biofeedback), with or without other behavioral therapies (relaxation and cognitive training), are safe and effective methods for the treatment of migraine and tension headache in children, pregnant individuals, and other adults when conservative treatments including avoidance of precipitating stimuli and pharmacologic prophylaxis, should have been tried and failed. This therapeutic modality has no side effects and does not preclude other options. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

Unlike migraine and tension headaches, there is a lack of published data concerning the safety and effectiveness of biofeedback in the management of cluster headaches.
For individuals who have cluster headaches who receive biofeedback, the evidence includes small case series and case reports. No controlled trials were identified on biofeedback for the treatment cluster headache. The evidence is insufficient to determine the effects of the technology on health outcomes.

Biofeedback for Other Conditions
The purpose of biofeedback is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The question addressed in this evidence review is: Does the use of biofeedback improve the net health outcome in patients with any of the following conditions:

- Addictions
- Allergies
- Anger Management
- Anxiety disorders
- Attention deficit hyperactivity disorder (ADHD)
- Asthma
- Autism
- Bell’s palsy

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- Cerebral Palsy
- Chronic Pain excluding cancer pain
- Cluster Headaches
- Concussions
- Depression
- Diabetes
- Epilepsy
- Gait retraining
- Headaches except migraines and tension-type headaches
- Hypertension
- Insomnia
- Irritable bowel syndrome
- Motor function after stroke, injury, or lower-limb surgery
- Movement disorders
- Multiple Sclerosis
- Muscle spasm
- Orthostatic hypotension in patients with spinal cord injury
- Pain management during labor
- Panic Disorders
- Peripheral arterial disease
- Post-traumatic stress disorder (PTSD)
- Psychosomatic conditions
- Raynaud's disease or phenomenon
- Sleep bruxism
- Tinnitus
- Torticollis
- Traumatic brain injury (TBI)
- Vulvodynia

Populations
The relevant population of interest is individuals with the above listed conditions.

Interventions
The therapy being considered is biofeedback.

Comparators
The following practices are currently being used to treat conditions within this review: standard of care without biofeedback.

Outcomes
The general outcomes of interest are symptoms, functional outcomes, and quality of life (QOL). Follow-up times of interest to monitor outcomes vary according to the condition being studied.

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Biofeedback for Cancer Pain
Per the current National Comprehensive Cancer Care (NCCN) Adult Cancer Pain Version 2.2021 integrative interventions in conjunction with pharmacologic interventions to include biofeedback is recommended to relieve cancer pain. The National Cancer Institute (NCI) in 2014 in reference to the management of cancer pain states that alternative therapies (e.g., biofeedback) may be used in conjunction with pain medication in an effort to control pain. NCI stated that even though non-medical therapies have not been tested in cancer pain studies, they may help to relieve pain, stress, and anxiety therefore, improving the patient's quality of life. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

Summary of Evidence
Biofeedback has been proposed as a treatment modality for numerous other conditions including: addictions, allergies, anger management, anxiety disorders, attention deficit hyperactivity disorder (ADHD), asthma, autism, Bell's palsy, cerebral palsy, chronic pain excluding cancer pain, cluster headaches, concussions, depression, diabetes, epilepsy, gait retraining, headaches except migraines and tension-type headaches, hypertension, insomnia, irritable bowel syndrome (IBS), motor function after stroke, injury, or lower-limb surgery, movement disorders, multiple sclerosis (MS), muscle spasm, orthostatic hypotension in patients with spinal cord injury, pain management during labor, panic disorders, peripheral arterial disease, post-traumatic stress disorder (PTSD), psychosomatic conditions, Raynaud's disease or phenomenon, sleep bruxism, tinnitus, torticollis, traumatic brain injury (TBI), and vulvodynia. However, the evidence in the published peer-reviewed medical literature does not support the efficacy of biofeedback for the treatment of these conditions. Overall, there is a lack of randomized controlled trials (RCTs) using sufficient sample sizes, comparing biofeedback to established therapeutic modalities (e.g., pharmacotherapy, behavior therapy) with long-term follow-ups. Patient selection criteria for biofeedback for these conditions have not been established and reported sustained benefit past the treatment period are lacking. The evidence is insufficient to determine that the technology results in a meaningful improvement in the net health outcomes.

Biofeedback Therapy for Temporomandibular Joint Disorder (TMJD) Treatment
Temporomandibular joint disorder (TMJD) refers to a group of disorders characterized by pain in the temporomandibular joint and surrounding tissues. Initial conservative therapy is generally recommended; there are also a variety of nonsurgical and surgical treatment possibilities for individuals whose symptoms persist. A nonsurgical treatment utilized in the treatment temporomandibular joint disorder (TMJD) includes biofeedback.

In the clinical setting, temporomandibular joint disorder (TMJD) is often a diagnosis of exclusion and involves physical examination, patient interview, and a review of dental records. Diagnostic testing and radiologic imaging are generally only recommended for patients with severe and chronic symptoms. Diagnostic criteria for TMJD have been developed and validated for use in both clinical and research settings.

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Symptoms attributed to TMJD vary and include, but are not limited to, clicking sounds in the jaw; headaches; closing or locking of the jaw due to muscle spasms (trismus) or displaced disc; pain in the ears, neck, arms, and spine; tinnitus; and bruxism (clenching or grinding of the teeth).

Clinical Context and Therapy Purpose
The purpose of nonsurgical therapies in individuals with a confirmed diagnosis of temporomandibular joint disorder (TMJD) is to provide a treatment option that is an alternative to or an improvement on existing therapies, such as alternative nonsurgical intervention.

Populations
The relevant population of interest is individuals with confirmed TMJD.

Interventions
The nonsurgical therapy being considered is biofeedback.

Individuals with confirmed TMJD are actively managed by primary care providers, dentists, and otolaryngologists in an outpatient clinical setting.

Comparators
The main comparator of interest is alternative nonsurgical intervention, such as medications.

Outcomes
The general outcomes of interest are symptoms, functional outcomes, quality of life, and treatment-related morbidity.

The existing literature evaluating nonsurgical therapies as a treatment for confirmed TMJD has varying lengths of follow-up, ranging from 1 week to 6 months. Although the systematic reviews and RCTs described below all reported at least 1 outcome of interest, longer follow-up was necessary to fully observe outcomes. Therefore, at least 1 year of follow-up is considered necessary to demonstrate efficacy.

Summary of Evidence
For individuals who have a confirmed diagnosis of temporomandibular joint disorder (TMJD) who receive biofeedback based on the peer reviewed medical literature is limited and the evidence found did not find that this therapy reduced pain or improved functional outcomes significantly more than control treatments. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Biofeedback for Urinary Incontinence

Clinical Context and Therapy Purpose

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The purpose of biofeedback is for individuals with urinary incontinence (stress/urge) to provide at treatment option that is an alternative to or an improvement on existing therapies.

Urinary incontinence (UI) affects people of all ages especially elderly XX individuals. Among adults, there are 4 prevalent types of UI:

- Stress incontinence (closure problem)
- Urge incontinence (storage problem)
- Overflow incontinence, and
- mixed stress and urge incontinence.

Populations
The relevant population of interest is individuals with urinary incontinence.

In XX individuals, stress incontinence is generally caused by an incompetent urethral mechanism which arises from damage to the sphincter(s) or weakening of the bladder neck support that typically occurred during childbirth. Some individuals develop stress incontinence because of multiple anti-incontinence procedures resulting in a condition known as intrinsic urethral sphincter deficiency. In XY individuals, stress incontinence is usually a consequence of operations for benign prostatic hypertrophy or prostatic carcinoma. Urge incontinence is usually associated with an over-activity of the detrusor muscle. When the involuntary contraction of the detrusor muscle is associated with a neurological deficit, it is known as detrusor hyperreflexia. On the other hand, when detrusor over-activity is not associated with any neurological deficit, it is labeled as detrusor instability (unstable bladder). Overflow incontinence may be due to an underactive detrusor muscle or obstruction of the urethra. In XY individuals, overflow incontinence associated with obstruction is usually due to prostatic hyperplasia. Urethral obstruction in XX individuals may occur because of anti-incontinence operation or severe prolapse of the uterus or relaxation of the anterior vaginal wall with cystocele or cystourethrocele.

Interventions
The therapy being considered is biofeedback

Comparators
The following therapy is currently being used to make decisions about urinary incontinence: pelvic floor muscle training (PFMT) without feedback.

Outcomes
The general outcomes of interest are symptom improvement (e.g., incontinence episodes) and functional improvement (generally 1-4 treatments per week for 8-12 weeks).

Review of Evidence
Numerous randomized controlled trials (RCTs) and several systematic reviews have evaluated biofeedback as a treatment for urinary incontinence in women. Trial reporting

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methodologies varied, and many did not isolate the potential contribution of biofeedback. A comparative effectiveness review did not find a statistically significant difference in continence rates when patients received PFMT with or without biofeedback. Other systematic reviews evaluating biofeedback and/or verbal feedback as part of treatment for urinary incontinence found improvement in some outcomes (e.g., improvement or cure, urine volume) but not others (eg, cure, leakage episodes). There is a lack of consistent evidence from well-designed trials to suggest that biofeedback is an effective treatment for urinary incontinence.

A randomized controlled trial (RCT) and systematic reviews have evaluated the efficacy of biofeedback with pelvic floor muscle training (PFMT) for treatment of prostatectomy-related urinary incontinence compared with PFMT without biofeedback. Results of these data are mixed and have not consistently reported significantly improved outcomes with biofeedback added to the intervention. The timing and delivery of the intervention were not well-defined. Systematic reviews have not pooled study findings.

Randomized controlled trials (RCTs) have evaluated the efficacy of biofeedback with pelvic floor muscle training (PFMT) for prevention of prostatectomy-related urinary incontinence compared with PFMT without biofeedback. These trials generally did not report consistently improved outcomes with biofeedback added to the intervention. The timing and delivery of the intervention were not well-defined

Summary of Evidence
For individuals who have urinary incontinence (women) who receive biofeedback with PFMT, the evidence includes randomized controlled trials (RCTs) and systematic reviews. A comparative effectiveness review did not find a statistically significant difference in continence rates when patients received PFMT with or without biofeedback. Other systematic reviews evaluating biofeedback and/or verbal feedback as part of treatment for urinary incontinence found improvement in some outcomes but not others. There is a lack of consistent evidence from well-designed trials that biofeedback effectively treats urinary incontinence. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have post-prostatectomy urinary incontinence, the evidence includes an RCT and systematic reviews that compared PFMT with or without biofeedback. Results of these data were mixed, and did not consistently report significantly improved outcomes when biofeedback was added to the intervention. The timing and delivery of the intervention were not well-defined. Additional well-designed trials are needed that demonstrate the superiority of biofeedback with PFMT over PFMT alone. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who will undergo radical prostatectomy, RCTs have evaluated the efficacy of biofeedback with PFMT compared with PFMT without biofeedback for prevention of prostatectomy-related urinary incontinence. These trials generally did not report improved outcomes with biofeedback added to the intervention. The timing and

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delivery of the intervention were not well-defined. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Electromyography (EMG) Biofeedback
Electromyography (EMG) biofeedback uses electrodes placed on a patient's muscles to general a feedback signal (in vision or sound) in response to muscle activation/relaxation to assist an individual on whether or not they are properly using their muscles and can be trained how to make corrections.

Based on review of the peered reviewed medical literature the addition of electromyography (EMG) biofeedback does not appear to improve long-term outcomes. Additional randomized controlled trials (RCTs) are needed to determine the efficacy of electromyography (EMG) biofeedback. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Practice Guidelines and Position Statements

Biofeedback for Anorectal Disorders

American College of Gastroenterology (ACG)
In 2021, the American College of Gastroenterology updated the clinical guideline on the management of benign anorectal disorders.

Defecatory disorders (DDs) refers to difficulty in evacuating stool from the rectum in a patient with chronic or recurring symptoms of constipation. DD may be caused by functional or structural anorectal disturbances that may coexist. The functional disturbances include dyssynergia, defined as paradoxical contraction or failure to relax pelvic floor muscles during simulated defecation, typically defined as <20% decrease in anal canal pressures, and/or inadequate defecatory propulsion, defined as inadequate increase in rectal or intraabdominal pressure during simulated defecation. DD is not a neurological disorder, and no other structural basis has been identified. Rather, DD is believed to be frequently due to maladaptive learning based on two observations: most patients with DD learn to relax the pelvic floor and/or increase rectal pressure appropriately when provided with biofeedback training (see below); this suggests that DD is not due to an anatomical defect, and it is often associated with a history of painful defecation in children or with a history of sexual abuse or other pelvic floor trauma in adults. These behavioral contributions to the etiology of disordered defecation may explain some of the inconsistencies noted above.

ACG recommendations for the treatment of disordered defecation (DD) includes the following:

- We recommend that instrumented anorectal biofeedback therapy should be used to manage symptoms in disordered defecation (DD). (Strong recommendation, minimal risk of harm, quality of evidence moderate).

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- Biofeedback should involve 4-6 sessions with well-trained therapists aimed at normalizing rectoanal coordination, ensuring good rectal pressure on strain, sensory retracing, and balloon expulsion training.

Fecal Incontinence (FI) is the involuntary loss of solid or liquid feces. Patients with urge incontinence experience the desire to defecate but cannot reach the toilet in time. Patients with passive incontinence are not aware of the need to defecate before the incontinent episode. Patients with urge incontinence generally have reduced squeeze pressures, squeeze duration, or reduced rectal capacity with rectal hypersensitivity. Squeeze pressure usually is a manifestation of external anal sphincter function, whereas resting pressure is largely a manifestation of the internal anal sphincter. Patients with passive incontinence have lower resting pressures

ACG recommendations for the treatment of fecal incontinence (FI) includes the following:

- We recommend that patients with FI who do not response to education and conservative measures should undergo biofeedback (i.e., pelvic floor rehabilitative techniques with visual and auditory feedback) (Strong recommendation; quality of evidence: moderate).

American Gastroenterological Association (AGA)
In 2013, updated their position statement on constipation which included the following:

- Biofeedback and relaxation training have been quite successful and, importantly, free of morbidity. Biofeedback can be used to train patients to relax their pelvic floor muscles during straining and to correlate relaxation and pushing to achieve defecation. By the relearning process, the nonrelaxing pelvic floor is gradually suppressed and normal coordination restored. Biofeedback is also used in the treatment of fecal incontinence. There are, however, major differences between the approaches to fecal incontinence and constipation. Biofeedback has been shown to improve recto anal coordination during defecation and symptoms of constipation despite reduced laxative use.
    - Pelvic floor retraining by biofeedback therapy rather than laxatives is recommended for defecatory disorders (strong recommendation, high-quality evidence).

American Neurogastroenterology and Motility Society and the European Society of Neurogastroenterology and Mobility
In 2015**,** the American Neurogastroenterology and Motility Society and the European Society of Neurogastroenterology and Mobility jointly published consensus guidelines on biofeedback therapy for anorectal disorders. The guideline included the following recommendations:

- "Biofeedback is recommended for the short-term and long-term treatment of constipation with dyssynergic defecation."
- "Biofeedback therapy is recommended for the short-term and long-term treatment of fecal incontinence"

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- "Biofeedback therapy is not recommended for the routine treatment of children with functional constipation, with or without overflow fecal incontinence"
- "Biofeedback may be useful in the short-term treatment of levator ani syndrome with dyssynergic defecation"

American Society of Colon and Rectal Surgeons
In 2015, the American Society of Colon and Rectal Surgeons (ASCRS) updated its 2007 clinical practice guideline on the treatment of fecal incontinence. The guideline states the following:

- "Biofeedback should be considered as an initial treatment for patients with incontinence and some preserved voluntary sphincter contraction. (Strong recommendation based on moderate quality of evidence [1B])"

In 2016, the American Society of Colon and Rectal Surgeons (ASCRS) published a clinical practice guideline for the evaluation and management of constipation and includes the following recommendation:

- "Biofeedback therapy is a first-line treatment for symptomatic pelvic floor dyssynergia. Grade of recommendation: strong recommendation based on moderate quality evidence, 1B."

Biofeedback for Headaches and Other Disorders

American Academy of Neurology (AAN)
The American Academy of Neurology's recommendations for the evaluation and treatment of migraine headaches states that behavioral and physical interventions are used for preventing migraine episodes rather than for alleviating symptoms once an attack has begun. Although these modalities may be effective as monotherapy, they are more commonly used in conjunction with pharmacologic management. Relaxation training, thermal biofeedback combined with relaxation training, electromyographic biofeedback, and cognitive-behavioral therapy may be considered treatment options for prevention of migraine. Specific recommendations regarding which of these to use for specific patients cannot be made.

American Academy of Neurology (AAN) and the American Clinical Neurophysiology Society (ACNS)
A report from The AAN and the ACNS on the assessment of digital EEG, quantitative EEG, and EEG brain mapping was reaffirmed in 2013. The report states that:
"On the basis of current clinical literature, opinions of most experts, and proposed rationales for their use, QEEG remains investigational for clinical use in post-concussion syndrome, mild or moderate head injury, learning disability, attention disorders, schizophrenia, depression, alcoholism, and drug abuse."

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American Academy of Pediatrics (ACP)
In 2019, the American Academy of Pediatrics (ACP) practice guideline for the diagnosis, evaluation, and treatment of attention deficit/hyperactivity disorder in children and adolescents including the following:

- "Some nonmedication treatments for ADHD-related problems have either too little evidence to recommend them or have been found to have little or no benefit. These include mindfulness, cognitive training, diet modification, EEG biofeedback, and supportive counseling"

American College of Cardiology
In 2017, the American College of Cardiology guideline on hypertension in adults states the following:

- "Behavioral therapies including biofeedback lack strong evidence for their long-term blood pressure lowing effect."

American College of Obstetricians and Gynecologists (ACOG)
Currently the American College of Obstetricians and Gynecologists (ACOG) has made no recommendations on the use of biofeedback for pain management during labor or to prevent preterm birth.

American Heart Association and American Stroke Association
In 2016, the American Heart Association and the American Stroke Association guideline on adult stroke rehabilitation and recovery state that the usefulness of biofeedback during gait training in patients after stroke is uncertain.

American Association of Oral and Maxillofacial Surgeons (AAOMS)
The AAOMS Clinical Condition Statements on Temporomandibular Disorders was updated in 2017. The statement lists the following:

- Non-surgical management:
    - Medication (e.g., NSAIDs)
    - Orthotic appliance
    - Physical therapy

Global Initiative for Asthma
The current Global Initiative for Asthma guideline make no recommendations regarding the use of biofeedback for the management of asthma.

National Comprehensive Cancer Network (NCCN)

Adult Cancer Pain Version 2.2022

Integrative Interventions
Consider integrative interventions in conjunction with pharmacologic interventions as needed.

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Pain likely to be relieved or function improve with cognitive, physical, or interventional modalities:

- Cognitive Modalities
  - MBSR
  - Imagery
  - Hypnosis
  - Biofeedback
  - Acceptance-based training
  - Distraction training
  - Relaxation training
  - Active coping training
  - Graded task assignments, setting goals, pacing and prioritizing
  - CBT, cognitive restructuring
  - Behavioral activation

Cognitive interventions are aimed at enhancing a sense of control over the pain or underlying disease. Mindfulness-based stress reduction (MBSR), breathing exercises, relaxation, imagery, hypnosis, biofeedback, music, and other behavioral therapies can be useful. Patient-based educational interventions have a significant impact in providing pain relief.

National Institute for Health and Clinical Excellence (NICE)
The clinical guideline on the management of irritable bowel syndrome (IBS) published by NICE (2008; updated 2017) stated that reviews of biofeedback suggested a positive effect on the control of IBS symptoms, but evidence was limited and not sufficient to make recommendations.

National Institute of Neurologic Disorders and Stroke
The National Institute of Neurologic Disorders and Stroke (2018) indicated that when headaches occur 3 or more times a month, preventive treatment is usually recommended:

"Drug therapy, biofeedback training, stress reduction, and elimination of certain foods from the diet are the most common methods of preventing and controlling migraine and other vascular headaches. Drug therapy for migraines is often combined with biofeedback and relaxation training."

Regulatory Status
A variety of biofeedback devices have been cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process. These devices are designated by the FDA as class II with special controls and are exempt from premarket notification requirements. The FDA defines a biofeedback device as "an instrument that provides a visual or auditory signal corresponding to the status of 1 or more of a patient's physiological parameters (e.g., brain alpha wave activity, muscle activity, skin temperature, etc.) so that the patient can control voluntarily these physiological parameters."

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PRIOR APPROVAL

Not applicable.

POLICY

See Related Medical Policies

- 02.01.51 Fecal Incontinence Management
- 02.01.65 Neurofeedback
- 02.01.27 Urinary Incontinence/Voiding Dysfunction Treatments and Devices

Medically Necessary

Biofeedback for Anorectal Disorders
Biofeedback therapy training sessions supervised by a physician or licensed qualified non-physician practitioner (a licensed non-qualified non-physician may include the following: physical therapists, Nurse Practitioners, Physician Assistants, or Clinical Nurse Specialists practitioner) may be considered **medically necessary** 2 to 3 times per week up to 8 weeks in individuals for the following anorectal disorders:

1. Chronic constipation with dyssynergic defecation in individuals when **ALL** the following criteria are met:
    a. Symptoms of functional constipation that meet the ROME IV criteria below (see Note); **and**
    b. Objective physiologic evidence of pelvic floor dyssynergia demonstrated by inappropriate contraction of the pelvic floor muscles or less than 20% relaxation of basal resting sphincter pressure by manometry or imaging (barium defecography, MRI of the pelvic floor, or whole-gut transit); **and**
    c. Failure/intolerance/contraindications of a 3-month trial of conservative treatments for constipation including any of the following: laxatives, dietary changes, and exercises; **and**
    d. The patient is capable of learning and performing the treatment program.

Note: Rome IV Criteria for Functional Constipation

- Must include two or more of the following:
    - Straining during more than 25% of defecations
    - Lumpy or hard stools (Bristol Stool Form Scale 1-2) more than 25% of defecations
    - Sensation of incomplete evacuation more than 25% of defecations
    - Sensation of anorectal obstruction/blockage more than 25% of defecations
    - Manual maneuvers to facilitate more than 25% of defecations (e.g., digital evacuations, support of the pelvic floor)
    - Fewer than three SBM per week
    - Loose stools are rarely present without the use of laxatives

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- Insufficient criteria for irritable bowel syndrome; **and**
- Must meet the following diagnostic criteria for functional constipation:
  - The above criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis.

2. Fecal incontinence for individuals when **ALL** the following criteria are met:
   a. Some degree of rectal sensation and ability to contract the sphincter voluntarily as determined by anorectal physiology testing (manometry, anorectal sensation, volume tolerance or rectal compliance); **and**
   b. Diagnosed with fecal incontinence according to the Rome IV criteria which requires the following for the past 3 months the individual has recurrent uncontrolled passage of fecal material who had previously achieved bowel control; **and**
   c. Failure/intolerance/contraindication of a 3- month trial of conservative treatment with any of the following: dietary changes, devices, or drugs; **and**
   d. The individual is capable of learning and performing the treatment program.

3. Refractory levator ani syndrome (e.g., proctalgia fugax or chronic anal pain syndrome) **with** dyssynergic defecation when **ALL** the following criteria are met:
   a. Diagnosed with refractory levator ani syndrome according to the Rome IV criteria which requires the following for the past 3 months, with symptom onset at least six months prior to the diagnosis:
      i. Chronic or recurrent episodes of pain or aching localized to the rectum and unrelated to defecation; **and**
      ii. Episodes last with a maximum duration of 30 minutes or longer; **and**
      iii. Exclusion of other causes of anorectal pain (e.g., inflammatory bowel disease, intramuscular abscess or fissure, thrombosed hemorrhoid, coccydynia, and major structural alterations of the pelvic floor); **and**
   b. Diagnosed with dyssynergic defecation according to the Rome IV criteria which requires the following for the past 3 months, with symptom onset at least six months prior to the diagnosis: inappropriate contraction of the pelvic floor as measured with manometry with adequate propulsive forces during attempted defecation; **and**
   c. Failure/intolerance/contraindication of a 3-month trial of conservative treatments including any of the following:
      i. High fiber diet
      ii. Withdrawal of drugs that cause constipation (e.g., calcium channel blockers, narcotics) or diarrhea (e.g., antibiotics, quinidine, theophylline)
      iii. Perineal strengthening exercises
      iv. Rectal message

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v. Warm baths
vi. Drug therapy (e.g., muscle relaxants, non-narcotic analgesics, and sedatives); and

d. The individual is capable of learning and performing the treatment program.

Required Documentation for Biofeedback for Anorectal Disorders
The medical record documentation must support the medical necessity of the services as directed in this policy. Documentation in the individuals medical record must include the following:

- There should be a written treatment plan which includes **ALL** the following information:
  - The specific diagnosis/conditions to be treated; **and**
  - Documentation supporting how the individual meets the Rome IV criteria; **and**
  - Documentation supporting the failure/intolerance/contraindications to the 3-month trial of conservative treatments; **and**
  - Indicate the types of biofeedback training to be utilized to include the individual's response and educational efforts and progress; **and**
  - The time frame and the frequency of treatment in which the goals and objectives will be achieved.

Note: *If the provider or licensed qualified non-physician practitioner (a licensed non-qualified non-physician may include the following: physical therapists, Nurse Practitioners, Physician Assistants, or Clinical Nurse Specialists practitioner) has determined that the individual does not appear to be benefiting from biofeedback or moving forward toward individual treatment goals after 8 weeks, the use of biofeedback should be re-evaluated and the documentation provided should include information to support the need for the additional biofeedback training sessions or the provider should consider suggesting an alternative treatment plan.*

Biofeedback for Headaches and Other Disorders
Biofeedback therapy training sessions supervised by a physician or licensed qualified non-physician practitioner (a licensed non-qualified non-physician may include the following: physical therapists, Nurse Practitioners, Physician Assistants, or Clinical Nurse Specialists practitioner) may be considered **medically necessary** up to 20 sessions as part of the treatment plan for the management of the following conditions:

- Cancer pain (acute or chronic); **or**
- Migraine headaches and tension-type headaches after failure/intolerance/contraindications of 3-month trial of conservative treatment which includes one of the following:
  - Medication management
  - Relaxation techniques
  - Cognitive-behavioral therapy
  - Acupuncture

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- Message therapy
- Physical therapy
- Avoidance strategies of loud noises, flashing lights, stress and certain foods

Required Documentation for Headaches and Other Disorders
The medical record documentation must support the medical necessity of the services as directed in this policy. Documentation in the individuals medical record must include the following:

- There should be a written treatment plan which includes **ALL** the following information:
  - The specific diagnosis/conditions to be treated; **and**
  - Documentation supporting the failure/intolerance/contraindications to the 3-month trial of conservative treatments; **and**
  - Indicate the types of biofeedback training to be utilized to include the individual's response and educational efforts and progress; **and**
  - The time frame and the frequency of treatment in which the goals and objectives will be achieved.

Note: *If the provider or licensed qualified non-physician practitioner (a licensed non-qualified non-physician may include the following: physical therapists, Nurse Practitioners, Physician Assistants, or Clinical Nurse Specialists practitioner) has determined that the individual does not appear to be benefiting from biofeedback training or moving forward toward individual treatment goals after 20 sessions the use of biofeedback should be re-evaluated and the documentation provided should include information to support the request for further biofeedback therapy training sessions or the provider should consider suggesting an alternative treatment plan*.

Investigational
Biofeedback therapy regardless of the technique utilized is considered **investigational** not meeting the above criteria and for all other indications including, but not limited to following because the evidence is insufficient to determine the effects of the technology on net health outcomes:

- Addictions
- Allergies
- Anger Management
- Anorectal disorders except as indicated above
- Anxiety disorders
- Attention deficit hyperactivity disorder (ADHD)
- Asthma
- Autism
- Bell's palsy
- Cerebral Palsy
- Chronic Pain except for cancer pain as indicated above

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- Cluster Headaches
- Concussions
- Depression
- Diabetes
- Epilepsy
- Gait retraining
- Headaches except as indicated above
- Hypertension
- Insomnia
- Irritable bowel syndrome (IBS)
- Motor function after stroke, injury, or lower-limb surgery
- Movement disorders
- Multiple Sclerosis (MS)
- Muscle spasm
- Pain management during labor
- Panic Disorders
- Peripheral arterial disease
- Post-traumatic stress disorder (PTSD)
- Psychosomatic conditions
- Raynaud's disease or phenomenon
- Sleep bruxism
- Tinnitus
- Torticollis
- Traumatic brain injury (TBI)
- Urinary Incontinence
- Vulvodynia

Biofeedback Therapy for Temporomandibular Joint Disorder (TMJD) Treatment
Biofeedback therapy is considered **investigational** for the treatment and management of temporomandibular joint disorder (TMJD) because the evidence is insufficient to determine the effects of the technology on net health outcomes.

Electromyography Biofeedback (E0476)
Biofeedback therapy using electromyography (EMG) is considered **investigational** because the evidence is insufficient to determine the effects of the technology on net health outcomes.

Home Biofeedback Devices
In-home biofeedback devices including but not limited to the following are considered **investigational** for all indications because the evidence in the published peer-reviewed medical literature does not support the effectiveness of home electronic biofeedback devices as the results of the clinical trials were limited due to the inability to monitor the use of the home biofeedback used by subjects in these trials. The evidence is insufficient

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to support a conclusion concerning net health outcomes or benefits associated with this therapy:

- FreeSpira
- Heart Rate Variability
- StressEraser

PROCEDURE CODES AND BILLING GUIDELINES

To report provider services, use appropriate CPT* codes, Alpha Numeric (HCPCS level 2) codes, Revenue codes, and/or ICD diagnosis codes.

- 90875 Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (e.g., insight oriented, behavior modifying or supportive psychotherapy); 30 minutes
- 90876 Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (e.g., insight oriented, behavior modifying or supportive psychotherapy); 45 minutes
- 90901 Biofeedback training by any modality
- 90912 Biofeedback training, perineal muscles, anorectal or urethral sphincter, including EMG and/or manometry, when performed initial 15 minutes of one-on-one physician or other qualified health care professional contact with the patient
- 90913 Biofeedback training, perineal muscles, anorectal or urethral sphincter, including EMG and/or manometry, when performed; each additional 15 minutes of one-on-one physician or other qualified health care professional contact with the patient (List separately in addition to code for primary procedure)
- E0746 Electromyography (EMG), biofeedback device
- E1399 Durable medical equipment, miscellaneous (may be used for home biofeedback devices which may include the following: FreeSpira, Heart Rate Variability, or StressEraser)

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POLICY HISTORY		
Date	**Reason**	**Action**
June 2022	Interim Review	Policy Revised
July 2021	Annual Review	Policy Revised and biofeedback content incorporated into this medical policy from medical policies: Biofeedback/Neurofeedback as a Treatment of Headaches and Other Disorders and Temporomandibular Joint Dysfunction (TMJ/TMD) Treatment
July 2020	Annual Review	Policy Revised
July 2019	Annual Review	Policy Revised
July 2018	Annual Review	Policy Revised
July 2017	Annual Review	Policy Revised
July 2016	Annual Review	Policy Revised
August 2015	Annual Review	Policy Revised
September 2014	Annual Review	Policy Revised
April 2014	Interim Review	Policy Revised
October 2013	Annual Review	Policy Revised
December 2012	Annual Review	Policy Renewed
December 2011	Annual Review	Policy Renewed
December 2010	Annual Review	Policy Renewed

New information or technology that would be relevant for Wellmark to consider when this policy is next reviewed may be submitted to:

Wellmark Blue Cross and Blue Shield
Medical Policy Analyst
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