

2.01.30 Biofeedback as a Treatment of Chronic Pain

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Section:	2.0 Medicine	Page:	Page 1 of 11

Policy Statement

Biofeedback as a treatment of chronic pain, including but not limited to low back pain, is considered **investigational**.

Policy Guidelines

Note: Some Blue Shield of California (BSC) plans exclude coverage of biofeedback. Please check benefit plan descriptions for details.

Biofeedback devices: Unsupervised home use of a biofeedback device has not been well studied, and further is excluded from coverage per Blue Shield Evidence of Coverage (EOC) General Exclusions and Limitations.

Description

Biofeedback is a technique intended to teach patients self-regulation of certain physiologic processes not normally considered to be under voluntary control. Electromyography biofeedback has been evaluated as a method to reduce chronic or recurrent pain of musculoskeletal or psychosomatic origin.

Related Policies

- Biofeedback as a Treatment of Fecal Incontinence or Constipation
- Biofeedback as a Treatment of Headache
- Biofeedback as a Treatment of Urinary Incontinence in Adults
- Biofeedback for Miscellaneous Indications
- Neurofeedback

Benefit Application

Benefit determinations should be based in all cases on the applicable contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Some state or federal mandates (e.g., Federal Employee Program [FEP]) prohibits plans from denying Food and Drug Administration (FDA)-approved technologies as investigational. In these instances, plans may have to consider the coverage eligibility of FDA-approved technologies on the basis of medical necessity alone.

Regulatory Status

Since 1976, a large number of biofeedback devices have been cleared for marketing by the U.S. Food and Drug Administration through the 510(k) process. Food and Drug Administration product code: HCC.

Rationale

Background

Treatment for chronic pain is often multimodal and typically includes psychological therapy. Psychological techniques vary but may include cognitive therapy, which teaches subjects the ability to cope with stressful stimuli by attempting to alter negative thought patterns and dysfunctional attitudes, and behavioral approaches to reduce muscle tension and break the pain cycle. Relaxation, using any of a variety of techniques including meditation or mental imagery, is considered a behavioral therapy that may be used alone or as a component of a cognitive-behavioral therapy program. Electromyography biofeedback has also been used for the treatment of chronic pain, on the assumption that the ability to reduce muscle tension will be improved through feedback of data to the patient regarding the degree of muscle tension. While some consider electromyography biofeedback to be a method used to obtain relaxation, others consider biofeedback to be distinct from other relaxation techniques.

Biofeedback provides physiologic information not normally available to the patient, with a concerted effort employed by 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 program consists of 10 to 20 training sessions of 30 minutes each. Training sessions are performed in a quiet, nonstimulating environment. Patients are instructed to use mental imagery techniques to affect the physiologic variable being monitored, and feedback is provided for successful alteration of that physiologic parameter in the form of lights or tone, verbal praise, or other auditory or visual stimuli.

Literature Review

This evidence review was informed by Blue Cross Blue Shield Association Technology Evaluation Center (TEC) Assessment (1995), which concluded that evidence was insufficient to demonstrate the effectiveness of biofeedback for the treatment of chronic pain.¹

Evidence reviews assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life (QOL), and ability to function^{3,4}including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, two domains are examined: the relevance, and quality and credibility. To be relevant, studies must represent one or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. RCTs are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

Psychological treatments involve both nonspecific and specific therapeutic effects. Nonspecific effects sometimes called placebo effects, occur as a result of contact with the therapist, positive expectations on the part of the patient and therapist, and other beneficial effects that occur as a result of the patient being in a therapeutic environment. Specific effects are those that occur only because of the active treatment, beyond any nonspecific effects that may be present. This literature review focuses on identifying evidence that the effects of

biofeedback are distinct from nonspecific placebo effects. Because establishing an ideal placebo control is problematic with psychological treatments and because treatment of chronic pain is typically multimodal, isolating the specific contribution of biofeedback is challenging.

Biofeedback

Clinical Context and Therapy Purpose

The purpose of electromyography (EMG) biofeedback in patients who have chronic pain 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 EMG biofeedback improve the net health outcome in those who suffer from chronic pain?

The following PICOs were used to select literature to inform this review.

Patients

The relevant population of interest are individuals who suffer from chronic pain, including low back, knee, neck and shoulder, orofacial, and abdominal pain as well as fibromyalgia, osteoarthritis, systemic lupus erythematosus, and vulvar vestibulitis.

Interventions

The therapy being considered is EMG biofeedback. Biofeedback may be administered, using different techniques and monitoring devices and sensors (e.g., electromyograph), in an outpatient setting by psychiatrists, psychologists, and general practitioners.

Comparators

The following therapies are currently being used to treat chronic pain: pharmacologic and nonpharmacologic therapy.

Outcomes

The general outcomes of interest are reductions in symptoms and medication usage and improvements in functional outcomes.

Biofeedback training is taught over a series of sessions, depending on the condition. Sessions can take up to 90 minutes.

General Chronic Pain

Several meta-analyses have reviewed RCTs assessing psychological therapies for a variety of nonheadache chronic pain conditions. A Cochrane review by Eccleston et al (2009) focused on chronic pain in adults.² Two RCTs were identified that compared behavioral therapy with an active control designed to change behavior (i.e., exercise or instruction). Three RCTs had sufficient follow-up to be included in a comparison of behavioral therapy and usual treatment. Reviewers found that although the quality of trial design had improved over time, there were too few studies to achieve a meaningful conclusion about the effects of behavioral therapy on pain, disability, or mood.

Another Cochrane review by Eccleston et al (2009) focused on children and adolescents with chronic and recurrent pain.³ Although psychological therapies were found to improve pain, only one of the five studies on nonheadache pain evaluated biofeedback. Biofeedback did not improve abdominal pain more than cognitive-behavioral therapy (CBT) in this trial (by Humphreys and Gevirtz [2000]⁴; see the section on Abdominal Pain). Palermo et al (2010) published an updated meta-analysis of studies on psychological therapies for the management of chronic pain in children and adolescents.⁵ They did not identify any new RCTs on biofeedback for managing nonheadache pain.

Low Back Pain

Systematic Reviews

A Cochrane review by Henschke et al (2010) assessed behavioral treatments for chronic low back pain and conducted a meta-analysis of 3 small randomized trials that compared EMG biofeedback with a waiting-list control group.⁶ In the pooled analysis, there were a total of 34 patients in the intervention group and 30 patients in the control group. The standardized mean difference (SMD) in short-term pain was -0.80 (95% confidence interval [CI], -1.32 to -0.28); this difference was statistically significant favoring the biofeedback group. Reviewers did not conduct meta-analyses of trials comparing biofeedback with sham biofeedback and therefore were unable to control for any nonspecific effects of treatment.

Randomized Controlled Trials

At least one RCT has compared biofeedback with a sham intervention for the treatment of low back pain. Kapitza et al (2010) compared the efficacy of respiratory biofeedback with sham biofeedback in 42 patients with low back pain.⁷ All participants were instructed to perform daily breathing exercises with a portable respiratory feedback machine; exercises were performed for 30 minutes on 15 consecutive days. Patients were randomized to an intervention group that received visual and auditory feedback of their breathing exercises or to a control group that received a proxy signal imitating breathing biofeedback. Patients recorded pain levels in a diary three times a day, measuring pain on a 10-point visual analog scale (VAS). Both groups showed a reduction in pain levels at the end of the intervention period and at three-month follow-up. Between-group differences were not statistically significant. For example, 3 months after the intervention, mean change in pain with activity decreased by 1.12 points in the intervention group and 0.96 points in the sham control group ($p>0.05$); mean change in pain at rest decreased by 0.79 points in the intervention group and 0.49 points in the control group ($p>0.05$).

Several trials with active comparison groups have not found that biofeedback is superior to alternative treatments. More recently, Tan et al (2015) evaluated 3 self-hypnosis interventions and included EMG biofeedback as a control intervention.⁸ This RCT enrolled 100 patients with chronic low back pain. After the 8-week intervention, reported reductions in pain intensity were significantly higher in the combined hypnosis groups than in the biofeedback group ($p=0.042$).

A trial published by Glombiewski et al (2010) assessed whether the addition of EMG biofeedback to CBT improved outcomes in 128 patients with low back pain.⁹ Patients were randomized to one of three groups: CBT, CBT plus biofeedback, or waiting-list control. Both treatments improved outcomes including pain intensity compared with the waiting-list control (moderate effect size of 0.66 for pain intensity in the CBT plus biofeedback group). However, the addition of biofeedback did not improve outcomes over CBT alone.

Chronic Knee Pain

Collins et al (2012) conducted a systematic review and meta-analysis of RCTs on nonsurgical interventions for anterior knee pain.¹⁰ In a pooled analysis of data from 2 trials, there was no significant benefit of adding EMG biofeedback to an exercise-only intervention at 8 to 12 weeks (SMD=-0.22; 95% CI, -0.65 to 0.20).

Chronic Neck and Shoulder Pain

Ma et al (2011) in Hong Kong published an RCT that included 72 patients with chronic (at least 3 months) computer work-related neck and shoulder pain.¹¹ Patients were randomized to one of four, six-week interventions: biofeedback, exercise, passive treatment (e.g., hot packs), or a control group receiving only an educational pamphlet. Members of the biofeedback group were given a portable EMG biofeedback machine and were instructed to use it for two hours daily while performing computer work. The exercise group was given an active routine to perform on their own for no more than 20 minutes, 4 times a day. At the postintervention follow-up, 60 (83%) of 72 participants were available for assessment ($n=15$ per group). By the end of the intervention, the average VAS and Neck Disability Index scores were significantly lower

(improved) in the biofeedback group than in the other three groups. The mean VAS score postintervention was 1.87 in the biofeedback group and 2.10 in the exercise group ($p < 0.05$). Although this trial found a short-term benefit of a biofeedback intervention, the magnitude of difference in the VAS and Neck Disability Index scores was small and of uncertain clinical significance. In addition, there were several methodologic limitations. The trial had a small sample size and had a substantial number of dropouts. The intensity of the interventions was unbalanced; e.g., the biofeedback intervention was more intensive (2 h/d) than other interventions (e.g., passive treatment), which received 2, 15-minute sessions per week. Long-term data were not available due to the low rate of follow-up; at 6 months, data were available on only 39 (54%) of 72 of participants, which was too small for meaningful analysis.

Ribeiro and Silva (2019) published an RCT assessing whether visual feedback improves range of motion in patients with chronic idiopathic neck pain.¹² Forty-two patients from a single Portuguese clinic were included in the study and randomly assigned to either the visual feedback group ($n=21$) or the control group ($n=21$). The interventions consisted of ten repetitions of various neck movements with visual feedback of the posterior neck region or the same number of movements without visual feedback. There was no significant interaction between time and intervention ($p=0.297$) and no effect of time on pain intensity ($p=0.729$). However, there was significant interaction between time and intervention for all the neck movements: flexion ($p < 0.001$), extension ($p < 0.001$), right side flexion ($p < 0.001$), left side flexion ($p < 0.001$), right rotation ($p < 0.001$), and left rotation ($p < 0.001$). The study was limited by its small sample size, short duration of intervention, and by the researcher assessing patients not being blinded.

Orofacial Pain

A Cochrane review by Aggarwal et al (2011) identified 17 trials evaluating nonpharmacologic psychological interventions for adults with chronic orofacial pain (e.g., temporomandibular joint disorder).¹³ For studies reporting on short-term pain relief (≤ 3 months), a significantly greater reduction in pain was found for interventions that combined CBT plus biofeedback compared with usual care (2 studies; SMD=0.46; 95% CI, 0.02 to 0.90). However, when reviewers assessed results from studies reporting on long-term pain relief (> 3 months), no significant benefit was found with a combined intervention of CBT plus biofeedback, and there were no studies that compared CBT alone with CBT plus biofeedback. For studies reporting on biofeedback-only interventions, a pooled analysis of 2 studies on short-term pain relief did not find a significant benefit compared with usual care (SMD=-0.41; 95% CI, -1.06 to 0.25). Only one study reported long-term pain relief after a biofeedback-only intervention, so a pooled analysis could not be done. Reviewers concluded that there was weak evidence to support psychosocial interventions for managing chronic orofacial pain and the most promising evidence was for CBT, with or without biofeedback. They noted that the trials comprising the review were few in number and had a high-risk of bias.

The conclusions drawn from this Cochrane review are similar to those of earlier systematic reviews on the treatment of temporomandibular joint disorder.^{14,15} These older reviews also concluded that there was weak evidence that psychosocial/physical therapy interventions (including biofeedback) are beneficial for treating temporomandibular joint disorder and that, of the few studies available, they tended to be of poor methodologic quality.

Abdominal Pain

Systematic Reviews

In a systematic review of therapies for recurrent abdominal pain in children by Weydert et al (2003), the behavioral interventions of CBT and biofeedback had a generally positive effect on nonspecific recurrent abdominal pain and were deemed safe.¹⁶ The specific effects of biofeedback were not isolated in this systematic review and therefore cannot be assessed.

Randomized Controlled Trials

In a study by Humphreys and Gevirtz (2000), 64 children and teenagers diagnosed with recurrent abdominal pain were randomized to groups treated with increased dietary fiber; fiber and

biofeedback; fiber, biofeedback, and CBT; or fiber, biofeedback, CBT, and parental support⁴. The similar nature of the three multicomponent treatment groups was associated with greater pain reduction than the fiber-only group. This trial did not address placebo effects.

Fibromyalgia

Systematic Reviews

Glombiewski et al (2013) published a systemic review and meta-analysis of RCTs reporting data on the efficacy of EMG and electroencephalography (EEG) biofeedback (i.e., neurofeedback) for treating patients with fibromyalgia.¹⁷ Reviewers identified seven RCTs that compared EEG biofeedback with a control method in patients with fibromyalgia. Studies in which biofeedback was evaluated only as part of multicomponent interventions were excluded. Three studies used EEG biofeedback and 4 used EMG biofeedback (total n=321 patients). A sham intervention was used as a control condition in four studies, two using EEG biofeedback and two using EMG biofeedback. In a pooled analysis of the studies using EMG biofeedback, a significant reduction in pain intensity was found compared with a different intervention (effect size, Hedges $g=0.86$; 95% CI, 0.11 to 0.62). A pooled analysis of studies on EEG biofeedback did not find a significant benefit in pain reduction compared with control methods. Pooled analyses of studies of EMG and EEG biofeedback did not find a significant benefit of either intervention on other outcomes such as sleep problems, depression, and health-related QOL. None of the studies reviewed were of high quality, with the risk of bias assessed as unclear or high for all included studies. In addition, all studies reported short-term outcomes, resulting in a lack of evidence on whether longer-term outcomes improved with these interventions. (For more information on EEG biofeedback, see Blue Shield of California Medical Policy: Neurofeedback)

Randomized Controlled Trials

In a small, double-blind RCT from Asia, Babu et al (2007) compared actual and sham biofeedback for effects on pain, fitness, function, and tender points in 30 patients with fibromyalgia.¹⁸ Pain reduction, as assessed on a VAS, did not differ significantly between groups. The trialists calculated that a sample size of 15 patients could detect a difference of 5 cm (on a 10-cm scale) on a VAS, suggesting that the trial lacked adequate power.

A larger unblinded RCT by van Santen et al (2002) evaluated 143 women with fibromyalgia, and compared EMG biofeedback with fitness training and with usual care.¹⁹ The primary outcome was pain measured on a VAS. Compared with usual care, the investigators reported no clear improvements in objective or subjective patient outcomes with biofeedback (or fitness training).

In another large RCT on EMG biofeedback for fibromyalgia is that by Buckelew et al (1998), which enrolled 119 patients; however, the trial did not follow a double-blind design.²⁰ Patients were randomized to one of four treatment groups: (1) biofeedback/relaxation training, (2) exercise training, (3) combination treatment, and (4) an educational/attention control program. While the combination treatment group had better tender point index scores than other treatment groups, this trial did not address placebo effects or the impact of adding biofeedback to relaxation therapy.

Osteoarthritis

A systematic review by Macfarlane et al (2012) evaluated practitioner-based complementary and alternative medicine treatments (defined as any treatment not taken orally or applied topically) for osteoarthritis and identified 2 trials on biofeedback.²¹ One was an RCT by Yilmaz et al (2010) that assessed whether the addition of EMG biofeedback to strengthening exercises improved outcomes in 40 patients with knee osteoarthritis.²² After a three-week treatment period, no significant differences between the two treatments regarding pain or QOL were found. The other RCT, by Durmus et al (2007), compared electrical stimulation with biofeedback-assisted exercise in 50 women with knee osteoarthritis.²³ After four weeks of treatment, there were no statistically significant differences between groups in pain and functioning scores.

Systemic Lupus Erythematosus

In an RCT by Greco et al (2004), of 92 patients with systemic lupus erythematosus, those treated with 6 sessions of biofeedback-assisted CBT for stress reduction had statistically greater reductions in pain posttreatment than a symptom-monitoring support group ($p=0.044$) and a group receiving usual care ($p=0.028$).²⁴ However, these reductions in pain were not sustained at a nine-month follow-up.

Vulvar Vestibulitis

A randomized study by Bergeron et al (2001) of 78 patients with dyspareunia resulting from vulvar vestibulitis compared treatment with EMG biofeedback, surgery, or CBT.²⁵ Patients who underwent surgery had significantly lower pain scores than patients who received biofeedback or CBT. No placebo treatment was used.

Summary of Evidence

For individuals who have chronic pain (including low back, knee, neck, and shoulder, orofacial, and abdominal pain as well as fibromyalgia, osteoarthritis, systemic lupus erythematosus, and vulvar vestibulitis) who receive biofeedback, the evidence includes multiple RCTs for different pain syndromes. The relevant outcomes are symptoms, functional outcomes, QOL, and medication use. The results of these RCTs, some of which were sham-controlled, did not consistently report a benefit for biofeedback. Some RCTs reported improved outcomes with biofeedback, but these improvements were often of uncertain clinical significance or were not durable. Many other RCTs have found that biofeedback did not provide a significantly greater benefit in outcomes when it was used instead of or in addition to other conservative interventions such as exercise. Overall, the available RCTs were limited by small sample sizes and high dropout rates. This evidence base does not permit conclusions about the specific effects of biofeedback beyond the nonspecific effects of sham interventions, nor does it permit conclusions about the contribution of biofeedback beyond that of other conservative treatments for pain. The evidence is insufficient to determine the effects of the technology on health outcomes.

Supplemental Information**Practice Guidelines and Position Statements****American College of Physicians**

The American College of Physicians (2017) issued practice guidelines on noninvasive treatments for acute, subacute, and chronic low back pain.²⁶ For patients with chronic low back pain, the guidelines recommended that initial treatment should be nonpharmacologic, such as "exercise, multidisciplinary rehabilitation, acupuncture, mindfulness-based stress reduction, tai chi, yoga, motor control exercise, progressive relaxation, electromyography biofeedback, low-level laser therapy, operant therapy, cognitive behavior therapy or spinal manipulation" (strong recommendation).

American College of Occupational and Environmental Medicine

The guidelines by the American College of Occupational and Environmental Medicine (2016) recommended biofeedback for "highly select patients with chronic low back pain as part of a multi-disciplinary rehabilitation program."²⁷ Biofeedback was not recommended for acute or subacute back pain.

American Society of Anesthesiologists et al

The practice guidelines from the American Society of Anesthesiologists and the American Society of Regional Anesthesia and Pain Medicine (2010) suggested that "Cognitive behavioral therapy, biofeedback, or relaxation training....may be used as part of a multimodal strategy for patients with low back pain, as well as for other chronic pain conditions."²⁸

U.S. Preventive Services Task Force Recommendations

Not applicable.

Medicare National Coverage

Biofeedback therapy is covered by Medicare "only when it is reasonable and necessary for the individual patient for muscle reeducation of specific muscle groups or for treating pathologic muscle abnormalities of spasticity, incapacitating muscle spasm, or weakness and more conventional treatments (heat, cold, massage, exercise, support) have not been successful. This therapy is not covered for the treatment of ordinary muscle tension states or for psychosomatic conditions."²⁹

Ongoing and Unpublished Clinical Trials

Current ongoing and unpublished clinical trials that might influence this review are listed in Table 1.

Table 1. Summary of Key Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date
Ongoing			
NCT02426476	HRV Biofeedback in Pain Patients: Pilot Intervention for pain, Fatigue, and Sleep	80	Dec 2019
Unpublished			
NCT02920853	Testing the Efficacy of Enhanced Biofeedback on Chronic Musculoskeletal Pain	6	Aug 2018 (completed)
NCT03182556	Comparison of the Efficacy of Electromyographic Biofeedback, Aerobic Exercise (Biodanza) and Stretching in Patients with Fibromyalgia	89	Sep 2016 (completed)

NCT: national clinical trial.

References

1. Blue Cross and Blue Shield Association Technology Evaluation Center (TEC). Biofeedback. *TEC Assessments*. 1995;Volume 10:Tab 25.
2. Eccleston C, Williams AC, Morley S. Psychological therapies for the management of chronic pain (excluding headache) in adults. *Cochrane Database Syst Rev*. Apr 15 2009(2):CD007407. PMID 19370688
3. Eccleston C, Palermo TM, Williams AC, et al. Psychological therapies for the management of chronic and recurrent pain in children and adolescents. *Cochrane Database Syst Rev*. Apr 15 2009(2):CD003968. PMID 19370592
4. Humphreys PA, Gevirtz RN. Treatment of recurrent abdominal pain: components analysis of four treatment protocols. *J Pediatr Gastroenterol Nutr*. Jul 2000;31(1):47-51. PMID 10896070
5. Palermo TM, Eccleston C, Lewandowski AS, et al. Randomized controlled trials of psychological therapies for management of chronic pain in children and adolescents: an updated meta-analytic review. *Pain*. Mar 2010;148(3):387-397. PMID 19910118
6. Henschke N, Ostelo RW, van Tulder MW, et al. Behavioural treatment for chronic low-back pain. *Cochrane Database Syst Rev*. Jul 07 2010(7):CD002014. PMID 20614428
7. Kapitza KP, Passie T, Bernateck M, et al. First non-contingent respiratory biofeedback placebo versus contingent biofeedback in patients with chronic low back pain: a randomized, controlled, double-blind trial. *Appl Psychophysiol Biofeedback*. Sep 2010;35(3):207-217. PMID 20237953
8. Tan G, Rintala DH, Jensen MP, et al. A randomized controlled trial of hypnosis compared with biofeedback for adults with chronic low back pain. *Eur J Pain*. Feb 2015;19(2):271-280. PMID 24934738
9. Glombiewski JA, Hartwich-Tersek J, Rief W. Two psychological interventions are effective in severely disabled, chronic back pain patients: a randomised controlled trial. *Int J Behav Med*. Jun 2010;17(2):97-107. PMID 19967572

10. Collins NJ, Bisset LM, Crossley KM, et al. Efficacy of nonsurgical interventions for anterior knee pain: systematic review and meta-analysis of randomized trials. *Sports Med*. Jan 1 2012;42(1):31-49. PMID 22149696
11. Ma C, Szeto GP, Yan T, et al. Comparing biofeedback with active exercise and passive treatment for the management of work-related neck and shoulder pain: a randomized controlled trial. *Arch Phys Med Rehabil*. Jun 2011;92(6):849-858. PMID 21621660
12. Aggarwal VR, Lovell K, Peters S, et al. Psychosocial interventions for the management of chronic orofacial pain. *Cochrane Database Syst Rev*. Nov 09 2011(11):CD008456. PMID 22071849
13. McNeely ML, Armijo Olivo S, Magee DJ. A systematic review of the effectiveness of physical therapy interventions for temporomandibular disorders. *Phys Ther*. May 2006;86(5):710-725. PMID 16649894
14. Medicott MS, Harris SR. A systematic review of the effectiveness of exercise, manual therapy, electrotherapy, relaxation training, and biofeedback in the management of temporomandibular disorder. *Phys Ther*. Jul 2006;86(7):955-973. PMID 16813476
15. Weydert JA, Ball TM, Davis MF. Systematic review of treatments for recurrent abdominal pain. *Pediatrics*. Jan 2003;111(1):e1-11. PMID 12509588
16. Glombiewski JA, Bernardy K, Hauser W. Efficacy of EMG- and EEG-biofeedback in fibromyalgia syndrome: a meta-analysis and a systematic review of randomized controlled trials. *Evid Based Complement Alternat Med*. Oct 2013;2013:962741. PMID 24082911
17. Babu AS, Mathew E, Danda D, et al. Management of patients with fibromyalgia using biofeedback: a randomized control trial. *Indian J Med Sci*. Aug 2007;61(8):455-461. PMID 17679735
18. van Santen M, Bolwijn P, Verstappen F, et al. A randomized clinical trial comparing fitness and biofeedback training versus basic treatment in patients with fibromyalgia. *J Rheumatol*. Mar 2002;29(3):575-581. PMID 11908576
19. Buckelew SP, Conway R, Parker J, et al. Biofeedback/relaxation training and exercise interventions for fibromyalgia: a prospective trial. *Arthritis Care Res*. Jun 1998;11(3):196-209. PMID 9782811
20. Macfarlane GJ, Paudyal P, Doherty M, et al. A systematic review of evidence for the effectiveness of practitioner-based complementary and alternative therapies in the management of rheumatic diseases: osteoarthritis. *Rheumatology (Oxford)*. Dec 2012;51(12):2224-2233. PMID 22923762
21. Yilmaz OO, Senocak O, Sahin E, et al. Efficacy of EMG-biofeedback in knee osteoarthritis. *Rheumatol Int*. Aug 20 2010;30:887-892. PMID 19693508
22. Durmus D, Alayli G, Canturk F. Effects of quadriceps electrical stimulation program on clinical parameters in the patients with knee osteoarthritis. *Clin Rheumatol*. May 2007;26(5):674-678. PMID 16897119
23. Greco CM, Rudy TE, Manzi S. Effects of a stress-reduction program on psychological function, pain, and physical function of systemic lupus erythematosus patients: a randomized controlled trial. *Arthritis Rheum*. Aug 15 2004;51(4):625-634. PMID 15334437
24. Bergeron S, Binik YM, Khalife S, et al. A randomized comparison of group cognitive-behavioral therapy, surface electromyographic biofeedback, and vestibulectomy in the treatment of dyspareunia resulting from vulvar vestibulitis. *Pain*. Apr 2001;91(3):297-306. PMID 11275387
25. Qaseem A, Wilt TJ, McLean RM, et al. Noninvasive treatments for acute, subacute, and chronic low back pain: a clinical practice guideline from the American College of Physicians. *Ann Intern Med*. Apr 04 2017;166(7):514-530. PMID 28192789
26. Macfarlane GJ, Kronisch C, Dean LE, et al. EULAR revised recommendations for the management of fibromyalgia. *Ann Rheum Dis*. Feb 2017;76(2):318-328. PMID 27377815
27. American College of Occupational and Environmental Medicine (ACOEM). Low back disorders. 2016; <https://www.dir.ca.gov/dwc/MTUS/ACOEM-Guidelines/Low-Back-Disorders-Guideline.pdf>. Accessed October 23, 2018.
28. American Society of Anesthesiologists Task Force on Chronic Pain Management, American Society of Regional Anesthesia and Pain Medicine. Practice guidelines for

chronic pain management: an updated report by the American Society of Anesthesiologists Task Force on Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine. *Anesthesiology*. Apr 2010;112(4):810-833. PMID 20124882

29. Centers for Medicare & Medicaid Services. National Coverage Determination (NCD) for Biofeedback Therapy (30.1). n.d.; <https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=41&ncdver=1&bc=AgAAQAAAAAAAAAA%3d%3d&>. Accessed October 23, 2018.
30. Blue Cross Blue Shield Association. Medical Policy Reference Manual, No. 2.01.30 (November 2019).

Documentation for Clinical Review

- No records required

Coding

This Policy relates only to the services or supplies described herein. Benefits may vary according to product design; therefore, contract language should be reviewed before applying the terms of the Policy. Inclusion or exclusion of codes does not constitute or imply member coverage or provider reimbursement.

IE

The following services may be considered investigational.

Type	Code	Description
CPT®	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
HCPCS	E0746	Electromyography (EMG), biofeedback device

Policy History

This section provides a chronological history of the activities, updates and changes that have occurred with this Medical Policy.

Effective Date	Action
09/30/2014	BCBSA Medical Policy adoption
06/30/2015	Policy revision without position change
03/01/2016	Policy revision without position change
05/01/2017	Policy revision without position change
01/01/2018	Policy revision without position change
01/01/2019	Policy revision without position change
02/01/2020	Annual review. No change to policy statement. Literature review updated.

Definitions of Decision Determinations

Medically Necessary: Services that are Medically Necessary include only those which have been established as safe and effective, are furnished under generally accepted professional standards to treat illness, injury or medical condition, and which, as determined by Blue Shield, are: (a) consistent with Blue Shield medical policy; (b) consistent with the symptoms or diagnosis; (c) not furnished primarily for the convenience of the patient, the attending Physician or other provider; (d) furnished at the most appropriate level which can be provided safely and effectively to the patient; and (e) not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of the Member's illness, injury, or disease.

Investigational/Experimental: A treatment, procedure, or drug is investigational when it has not been recognized as safe and effective for use in treating the particular condition in accordance with generally accepted professional medical standards. This includes services where approval by the federal or state governmental is required prior to use, but has not yet been granted.

Split Evaluation: Blue Shield of California/Blue Shield of California Life & Health Insurance Company (Blue Shield) policy review can result in a split evaluation, where a treatment, procedure, or drug will be considered to be investigational for certain indications or conditions, but will be deemed safe and effective for other indications or conditions, and therefore potentially medically necessary in those instances.

Prior Authorization Requirements (as applicable to your plan)

Within five days before the actual date of service, the provider must confirm with Blue Shield that the member's health plan coverage is still in effect. Blue Shield reserves the right to revoke an authorization prior to services being rendered based on cancellation of the member's eligibility. Final determination of benefits will be made after review of the claim for limitations or exclusions.

Questions regarding the applicability of this policy should be directed to the Prior Authorization Department at (800) 541-6652, or the Transplant Case Management Department at (800) 637-2066 ext. 3507708 or visit the provider portal at www.blueshieldca.com/provider.

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. Blue Shield of California may consider published peer-reviewed scientific literature, national guidelines, and local standards of practice in developing its medical policy. Federal and state law, as well as contract language, including definitions and specific contract provisions/exclusions, take precedence over medical policy and must be considered first in determining covered services. Member contracts may differ in their benefits. Blue Shield reserves the right to review and update policies as appropriate.