Medical Policy
Biofeedback for Miscellaneous Indications

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• Authorization Information
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Policy Number: 187
BCBSA Reference Number: 2.01.53 (For Plans internal use only)

Related Policies
• Biofeedback as a Treatment of Chronic Pain, #210
• Biofeedback as a Treatment of Fecal Incontinence or Constipation, #308
• Biofeedback as a Treatment of Urinary Incontinence, #173
• Biofeedback for the Treatment of Headache, #152
• Neurofeedback, #515
• Treatment of Tinnitus, #267

Policy
Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity

Biofeedback is INVESTIGATIONAL as a treatment of the following miscellaneous conditions:
• Anxiety disorders
• Asthma
• Bell’s palsy
• Depression
• Hypertension
• Insomnia
• Movement disorders, such as motor function after stroke, injury, or lower-limb surgery
• Multiple sclerosis
• Orthostatic hypotension in patients with spinal cord injury
• Pain management during labor
• Posttraumatic stress disorder
• Prevention of preterm birth
• Raynaud disease
• Sleep bruxism
• Tinnitus.

Individual psychophysiological therapy with biofeedback training is NOT MEDICALLY NECESSARY.
Prior Authorization Information

Inpatient
- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed inpatient.

Outpatient
- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed outpatient.

<table>
<thead>
<tr>
<th>Commercial Managed Care (HMO and POS)</th>
<th>This is not a covered service.</th>
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<tbody>
<tr>
<td>Commercial PPO and Indemnity</td>
<td>This is not a covered service.</td>
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</table>

CPT Codes / HCPCS Codes / ICD Codes

*Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member’s contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.*

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

*The following codes are included below for informational purposes only; this is not an all-inclusive list.*

According to the policy statement above, the following CPT/HCPCS codes are considered investigational for the conditions listed for Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity:

**CPT Codes**

<table>
<thead>
<tr>
<th>CPT codes:</th>
<th>Code Description</th>
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<tbody>
<tr>
<td>90875</td>
<td>Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); approximately 20-30 minutes</td>
</tr>
<tr>
<td>90876</td>
<td>Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); approximately 45-50 minutes</td>
</tr>
<tr>
<td>90901</td>
<td>Biofeedback training by any modality</td>
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</tbody>
</table>

**HCPCS Codes**

<table>
<thead>
<tr>
<th>HCPCS codes:</th>
<th>Code Description</th>
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<tbody>
<tr>
<td>E0746</td>
<td>Electromyography (EMG), biofeedback device</td>
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**Description**

Biofeedback is a technique intended to teach patients the self-regulation of certain unconscious or involuntary physiologic processes. Biofeedback equipment converts physiological signals into outputs given to patients. The technique involves the feedback of a variety of types of information not usually 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 a specific way.

Biofeedback has been proposed as a treatment for a variety of diseases and disorders including anxiety, headaches, hypertension, movement disorders, incontinence, pain, asthma, Raynaud disease, and insomnia. The type of feedback used in an intervention (eg, visual, auditory) depends on the nature of the disease or disorder being treated. This evidence review focuses on the use of biofeedback for the treatment of hypertension, anxiety, asthma, movement disorders (eg, motor function after stroke, injury, or
lower-limb surgery), and other applications (ie, conditions not addressed in other evidence reviews on biofeedback).

In addition, this evidence review focuses on biofeedback devices that measure and provide information on physiologic processes such as heart rate, muscle tension, skin temperature, and blood flow. Electroencephalographic biofeedback, also called neurofeedback, which measures brainwave activity, is addressed in policy #515. Evidence pertaining to the use of biofeedback for chronic insomnia is addressed in policy #515. Evidence pertaining to the use of biofeedback for chronic pain is addressed in policy #210. Evidence pertaining to the use of biofeedback for headache is addressed in policy #152. Evidence pertaining to the use of biofeedback for urinary incontinence is addressed in policy #173. Evidence pertaining to the use of biofeedback for fecal incontinence or constipation is addressed in policy #308.

**Summary**

Biofeedback is a technique intended to teach patients self-regulation of certain physiologic processes that are otherwise impossible or extremely difficult to control. This review focuses on the use of biofeedback for treating miscellaneous indications—specifically, indications other than urinary and fecal incontinence, headache, and chronic pain.

For individuals with anxiety disorders who receive biofeedback, the evidence includes 2 systematic reviews and a randomized controlled trial (RCT) published after the review. Relevant outcomes are symptoms, functional outcomes, and quality of life (QOL). A systematic review on heart rate variability (HRV) biofeedback (HRVB) and an RCT on diaphragmatic breathing relaxation reported the positive effects of these treatments on anxiety. However, the trials in the systematic review had small sample sizes (median, 14 participants) and study quality was generally poor. Additional limitations included improper randomization, allocation concealment, and inadequate descriptions of randomization or missing data. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with asthma who receive biofeedback, the evidence includes a systematic review of 3 RCTs and 2 RCTs published after the review. Relevant outcomes are symptoms, functional outcomes, and QOL. Each RCT used a different biofeedback technique, which provided patients with information on carbon dioxide, heart rate, and respiratory sinus arrhythmia. While the trials reported improvements in each parameter for which the patients received biofeedback, the improvements did not impact clinical outcomes such as medication use and forced expiratory volume. However, the results of 1 RCT suggested that biofeedback has promise as a protective approach to aiding lung function and reducing stress-induced asthma exacerbation. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with Bell palsy who receive biofeedback, the evidence includes a systematic review of 4 RCTs. Relevant outcomes are symptoms, functional outcomes, and QOL. The RCTs evaluated the efficacy of adding a mirror and/or electromyography (EMG) biofeedback to facial exercises. The sample sizes were small, and there was heterogeneity across techniques used and length of treatments. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with depression who receive biofeedback, the evidence includes a systematic review and 2 small RCTs published after the systematic review. Relevant outcomes are symptoms, functional outcomes, and QOL. The review only identified 2 dissertations assessing the use of biofeedback for depression. One RCT found that respiratory and heart rate biofeedback plus usual care reduced Beck Depression Inventory scores compared to usual care alone, while the other found that respiratory sinus arrhythmia biofeedback plus usual care was associated with greater improvements in Hamilton Depression Rating Scale scores compared to usual care alone; however, these trials were limited by open-label designs, short follow-up periods, and small sample sizes. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.
For individuals with hypertension who receive biofeedback, the evidence includes a systematic review and an RCT published after the review. Relevant outcomes are symptoms, functional outcomes, and QOL. The systematic review identified 36 RCTs, though sample sizes were small and overall study quality was poor. Various biofeedback techniques were used: thermal, galvanized skin response, pulse wave velocity, and HRV. Results across trials did not consistently show a benefit of biofeedback. Conclusions were limited due to the shortage of studies isolating the effect of biofeedback, the generally poor quality of trials, and heterogeneity across interventions used. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with motor dysfunction after stroke who receive biofeedback, the evidence includes systematic reviews and RCTs published after the systematic reviews. Relevant outcomes are symptoms, functional outcomes, and QOL. One systematic review identified 18 high-quality trials using the following biofeedback techniques: weight distribution on a platform sensor, muscle activity from EMG, linear gait parameters, and joint angle from a goniometer. Feedback was visual, auditory, or both. Outcome measures primarily assessed motor activity in research settings, rather than clinical outcomes such as rates of falls or the ability to perform activities of daily living. Pooled effects showed improvements in motor function in the short term. The evidence is limited due to the variability in type, duration, intensity of the interventions, and lack of long-term outcomes. The largest available studies published since the systematic reviews found no differences between biofeedback-assisted rehabilitation and conventional rehabilitation in terms of their impact on gait speed, balance, activities of daily living, fall rate, and return to work. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with motor dysfunction after lower-limb injury or surgery who receive biofeedback, the evidence includes 2 systematic reviews. Relevant outcomes are symptoms, functional outcomes, and QOL. One systematic review identified 4 RCTs evaluating the use of EMG biofeedback in patients undergoing postinjury knee rehabilitation. Sample sizes were small, with half of the trials reporting significant benefits of biofeedback and the other half reporting no difference between study groups. The other systematic review identified 6 RCTs evaluating the use of EMG biofeedback in patients undergoing postsurgical knee rehabilitation. Biofeedback was associated with better range of motion outcomes in a meta-analysis of data from 5 RCTs, but was not associated with a significant benefit in terms of pain or physical functioning. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with multiple sclerosis who receive biofeedback, the evidence includes 2 RCTs. Relevant outcomes are symptoms, functional outcomes, and QOL. One trial used vibrotactile biofeedback and the other provided patients with breathing rate and muscle tension biofeedback. The sample sizes were small, with no statistically significant differences between the biofeedback groups and control groups. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with orthostatic hypotension due to spinal cord injury who receive biofeedback, the evidence includes a systematic review, which included a case series and a case report. Relevant outcomes are symptoms, functional outcomes, and QOL. The case series and case report collectively provided information on 3 patients given visual and auditory feedback. Patients were able to raise their systolic blood pressure by an average of 39%. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who need pain management during labor who receive biofeedback, the evidence includes a systematic review of 4 RCTs. Relevant outcomes are symptoms, functional outcomes, and QOL. A Cochrane review graded the 4 trials as having a high risk of bias due to unclear descriptions of blinding and randomization methods. Due to the heterogeneity in biofeedback methods and outcomes measured, pooled analyses could not be performed. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.
For individuals with posttraumatic stress disorder who receive biofeedback, the evidence includes a systematic review. Relevant outcomes are symptoms, functional outcomes, and QOL. The systematic review included an RCT, a nonrandomized study, and 2 case series. The studies had small sample sizes and inconsistent results. The reviewers rated the evidence a grade C for conflicting scientific evidence. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who are susceptible to preterm birth who receive biofeedback, the evidence includes an RCT. Relevant outcomes are symptoms, functional outcomes, and QOL. In the RCT, women in the treatment group received HRVB. Patients receiving the treatment experienced a decrease in perceived chronic stress, but there was no significant difference in the number of preterm births, gestational duration, or birth weight. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with Raynaud disease who receive biofeedback, the evidence includes a systematic review. Relevant outcomes are symptoms, functional outcomes, and QOL. The systematic review identified 5 RCTs using biofeedback techniques. Pooled analysis was performed on 4 of these trials. The reduction in the frequency of attacks was significantly lower in the sham control group. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with sleep bruxism who receive biofeedback, the evidence includes 2 systematic reviews and an RCT published after the review. Relevant outcomes are symptoms, functional outcomes, and QOL. One systematic review identified 7 randomized and nonrandomized studies using biofeedback techniques, and the most recent systematic review identified 6 additional studies. Studies were generally small, used different techniques, measured different outcomes, and were assessed as having either moderate or high risk of bias. Two studies reported the number of bruxism episodes per hour and a pooled analysis of these studies showed no significant differences between biofeedback groups and control groups. An RCT published after the reviews tested a full-occlusion biofeedback splint in 41 patients with sleep bruxism and temporomandibular disorder. The trial found that, compared to an adjusted occlusal splint, the biofeedback splint allowed for greater reductions in pain after 3 months of treatment. However, no significant differences in sleep bruxism episodes were observed. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with tinnitus who receive biofeedback, the evidence includes a single RCT. Relevant outcomes are symptoms, functional outcomes, and QOL. Treatment consisted of a biofeedback-based behavioral intervention over a 3-month period. The treatment group experienced improvements in tinnitus annoyance, loudness ratings, controllability, coping cognitions, and depressive symptoms. Additional studies are needed to confirm the results of this single trial. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

### Policy History

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
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<tbody>
<tr>
<td>1/2023</td>
<td>Annual policy review. Description, summary, and references updated. Policy statements unchanged.</td>
</tr>
<tr>
<td>1/2022</td>
<td>Annual policy review. Description, summary, and references updated. Policy statements unchanged.</td>
</tr>
<tr>
<td>1/2021</td>
<td>Annual policy review. Description, summary, and references updated. Policy statements unchanged.</td>
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<tr>
<td>1/2021</td>
<td>Medicare information removed. See MP #132 Medicare Advantage Management for local coverage determination and national coverage determination reference.</td>
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<tr>
<td>7/2020</td>
<td>Not medically necessary statement on individual psychophysiological therapy with biofeedback training transferred from medical policy 423, Outpatient Psychotherapy.</td>
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<tr>
<td>1/2020</td>
<td>Annual policy review. Description, summary, and references updated. Policy statements unchanged.</td>
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<td>Date</td>
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<tr>
<td>1/2019</td>
<td>Annual policy review. Description, summary, and references updated. Policy statements unchanged.</td>
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<tr>
<td>10/2017</td>
<td>Annual policy review. Minor edits to the Policy section; statement otherwise unchanged. 10/1/2017</td>
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<td>10/2013</td>
<td>New references from Annual policy review.</td>
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<tr>
<td>10/2006</td>
<td>National policy reviewed 10/2006; no changes to policy statement.</td>
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**Information Pertaining to All Blue Cross Blue Shield Medical Policies**

Click on any of the following terms to access the relevant information:

- Medical Policy Terms of Use
- Managed Care Guidelines
- Indemnity/PPO Guidelines
- Clinical Exception Process
- Medical Technology Assessment Guidelines

**References**