AUDITORY INTEGRATION TRAINING

Policy Number: ENT 013.11 T2
Effective Date: July 1, 2013

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Certain policies may not be applicable to Self-Funded Members and certain insured products. Refer to the Member's plan of benefits or Certificate of Coverage to determine whether coverage is provided or if there are any exclusions or benefit limitations applicable to any of these policies. If there is a difference between any policy and the Member's plan of benefits or Certificate of Coverage, the plan of benefits or Certificate of Coverage will govern.

APPLICABLE LINES OF BUSINESS/PRODUCTS

This policy applies to Oxford Commercial plan membership.

NON-COVERAGE RATIONALE

Auditory integration training (AIT) is considered not medically necessary.

There is insufficient reliable data indicating that AIT devices significantly improve behavior, language, listening ability, or learning ability. AIT is based on the unproven theory that some disorders are caused by hearing or listening deficiencies. It is unknown if the sound levels used for AIT are harmful to hearing.

BACKGROUND

Auditory Integration Training (AIT) is a method of reducing painful hypersensitivity to sound in which the recipient listens to specially modulated music to potentially improve the ability to process auditory stimuli. In appropriate candidates for AIT, the treatment program for AIT consists of 20 half-hour sessions during a 10- to 12-day period, with 2 sessions conducted on a daily basis. These sessions consist of listening to music that has been computer-modified by a device called an AudioKinetron. To resolve whether extra sessions are needed, audiograms are repeated midway, and at the end of the training session. (ECRI, 2010)
Review of published, peer reviewed literature did not identify any additional studies since 2008.

**Autism**

The Agency for Healthcare Research and Quality (AHRQ) published a comparative effectiveness review of therapies for children with autism spectrum disorders. The review was prepared by the Vanderbilt Evidence-based Practice Center (Warren, et al., 2011). Among the allied health therapies in the review were auditory integration therapy. The research provided little support for their use. Specifically, two fair-quality studies of auditory integration showed no improvement associated with treatment.


An assessment of auditory integration therapy (AIT) for autism by the Wessex Institute concluded that trials have produced conflicting results, and it is uncertain whether AIT is any more effective than placebo (Best and Milne, 1997). A systematic evidence review by Cullen et al (1999) concluded: "Previous claims for the benefits of AIT in reduction of problem behaviors and increases in IQ and adaptive/social skills were not supported by the results. AIT may divert parents' and service providers' resources from better-validated interventions".

Sinha et al. (2006) conducted a systematic review to evaluate AIT and included 6 randomized controlled trials (RTCs) with 171 autistic individuals. Three RTCs did not demonstrate the benefit of AIT over control conditions. The remaining trials identified improvements at 3 months for the AIT group based on improvements of total mean scores for the Aberrant Behavior Checklist, which is of questionable validity. There were no reported significant adverse effects of AIT. The reviewers concluded that more research is needed to determine the effectiveness of AIT for autism.

Mudford et al. (2000) reported on a controlled crossover design study of 16 children with autism. Treatment was with either AIT or placebo control. The children were rated on behavior by both parents and teachers. No differences were noted by the teacher-rated measures and 56% of parents were unable to retrospectively report when their child had received AIT. Children's language comprehension did not increase. Decreases were noted in adaptive/social behavior scores and expressive language quotients.

Bettison (1996) reported on 80 children with autism or Asperger syndrome who were randomized to 2 groups. One received AIT and the other listened to unmodified music. Significant improvements in behavior and verbal and performance IQ were demonstrated by both groups 12 months after intervention.

**Central Auditory Processing Disorder**

In a 1998 published study, Yencer (1998) found no meaningful changes based on statistical analysis, between the experimental group that received AIT and a placebo group that listened to the same music which was non-altered. The study group was 36 children with auditory processing deficits. Zollweg et al. (1997) reported no improvement for the experimental group compared to placebo, based on pure tone thresholds, the Aberrant Behavior Checklist, and a loudness discomfort test. Both studies show the necessity of using control groups, because without them it would appear that there was significant improvement with the AIT. This finding is likely why case reports alone have reported such positive findings.

Auditory integration therapy and music therapy have been proposed for use in patients with central auditory processing disorder; however, no new studies that provide substantial new evidence were found.

**Depression**
In a randomized, blinded, placebo-controlled crossover experiment in 4 healthy adult subjects by Wahbeh et al. (2007b), the neuropsychologic, physiologic, and electroencephalographic effects of binaural beat technology was assessed. Subjects were randomized to experimental auditory stimulus of 30 minutes of binaural beat at 7 Hz (carrier frequencies: 133 Hz L; 140Hz R) with an overlay of pink noise resembling the sound of rain on one session and control stimuli of the same overlay without the binaural beat carrier frequencies on the other session. Neuropsychologic and blood pressure data were collected before and after the intervention; electroencephalographic data were collected before, during, and after listening to either binaural beats or control. There were no significant differences between the experimental and control conditions in any of the EEG measures. There was an increase of the Profile of Mood States depression subscale in the experimental condition relative to the control condition \( p = 0.02 \). There was also a significant decrease in immediate verbal memory recall \( p = 0.03 \) in the experimental condition compared to control condition. The data indicated increased depression and poorer immediate recall after listening to binaural beats however support for steady-state entrainment of the scalp-recorded EEG while listening to 7-Hz binaural beats was not found and larger studies are needed to confirm these findings.

**Epilepsy**

Although auditory integration therapy has been proposed for use in patients with epilepsy, only one limited pilot clinical trial was available for review. Further studies are needed to determine the safety and efficacy of AIT therapy for the treatment of epilepsy.

**Migraine Headache**

In a study by Trinka et al. (2002), 32 patients with migraine without any pharmacological migraine prophylaxis in the past three months were studied utilizing auditory electrophysiological intervention. A randomized, double-blind, placebo-controlled study with a parallel group add on design and a 12-week treatment phase was conducted in a large outpatient headache clinic in a neurological center. The electrophysiological stimulation with sound therapy applied via headphones three times a day for 10 minutes was compared against a placebo audiotape. The main outcome measure was a change in the headache subtest of a self-report test instrument, Giessener Beschwerdebogen (GBB), after 12 weeks of treatment. No adverse events occurred during the treatment period. The small sample studied utilized the Psychofonie and showed promise as an add-on treatment in reducing subjective pain in migraine patients. The study is limited by small sample size and short term follow-up.

**Mood Disorder**

In another study by Wahbeh et al. (2007a), 8 healthy adults participated in an uncontrolled pilot study to assess the psychologic and physiologic effects of binaural beat technology. Participants listened to a CD with delta (0-4 Hz) binaural beat frequencies daily for 60 days. Psychologic data on depression (Beck Depression Inventory-2), anxiety (State-Trait Anxiety Inventory), mood (Profile of Mood States), absorption (Tellegen Absorption Scale) and quality of Life (World Health Organization-Quality of Life Inventory) was reviewed. Physiological data such as cortisol, dehydroepiandrosterone, melatonin, insulin-like growth factor-1, serotonin, dopamine, epinephrine, norepinephrine, weight, blood pressure, high sensitivity C-reactive protein was also collected. There was a decrease in trait anxiety \( p = 0.004 \), an increase in quality of life \( p = 0.03 \), and a decrease in insulin-like growth factor-1 \( p = 0.01 \) and dopamine \( p = 0.02 \) observed between pre- and postintervention measurements. Binaural beat technology may exhibit positive effect on self-reported psychologic measures, especially anxiety; however, further research is warranted to explore the effects on anxiety using a larger, randomized and controlled trial.

**Professional Societies:**

The American Academy of Pediatrics considers AIT and facilitated communication (FC) to be a controversial treatment option for autism and other disorders (AAP, 1998/2010). The AAP further states that in the absence of good, controlled studies and until further information are available; the use of these AIT devices does not appear warranted at this time, except within research protocols.
The American Academy of Audiology (AAA): A 2010 position statement by the AAA concludes that Auditory Integration Training (by any name) is investigational. The Academy believes that prospective, systematic research of this technique is needed to demonstrate its efficacy.

American Speech-Language-Hearing Association (ASHA): ASHA prepared an evidenced-based technical report regarding AIT (ASHA, 2004). They noted that, despite approximately one decade of practice, this method has not met scientific standards for efficacy and safety that would justify its inclusion as a mainstream treatment for a variety of communication, behavioral, emotional and learning disorders.

Educational Audiology Association (EAA): The EAA issued a position statement regarding AIT (EAA, 1997). They stated that “Auditory integration therapy has not been proven to be a viable treatment for any disability. Only inconsistent, uncontrolled, anecdotal evidence has been provided to support claims of changes in auditory performance.” In addition, the position statement noted that without controls to protect against excessively loud auditory stimuli, AIT may cause harm to the auditory system.

Additional Search Terms
Acoustic stimulation, acoustic training, audio-psycho-phonology, discrimination learning

U.S. FOOD AND DRUG ADMINISTRATION (FDA)

Auditory integration training (AIT) devices do not have FDA approval for treating medical, behavioral, or emotional disorders. The FDA has banned the importation of AIT devices such as AudioKinetron (SAPP, France) and Electronic Ear (Tomatis Electronics, France).

Additional information regarding alerts of unapproved devices may be obtained from the U.S. Food and Drug Administration [Website] at: http://www.accessdata.fda.gov/cms_ia/importalert_244.html. Accessed March 11, 2013

Additional Medical Products
Earducator, Audio Effects Generator, Digital Auditory Aerobics, Kirby Auditory Modulation System

APPLICABLE CODES

The codes listed in this policy are for reference purposes only. Listing of a service or device code in this policy does not imply that the service described by this code is a covered or non-covered health service. Coverage is determined by the Member’s plan of benefits or Certificate of Coverage. This list of codes may not be all inclusive.

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<tr>
<th>CPT® Code</th>
<th>Description</th>
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<tr>
<td>97533</td>
<td>Sensory integrative techniques to enhance sensory processing and promote adaptive responses to environmental demands, direct (one-on-one) patient contact, each 15 minutes</td>
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CPT® is a registered trademark of the American Medical Association.

REFERENCES

The foregoing Oxford policy has been adapted from an existing UnitedHealthcare national policy that was researched, developed and approved by UnitedHealthcare Medical Technology Assessment Committee. [2013T0110J]


POLICY HISTORY/REVISION INFORMATION

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<tr>
<td>07/01/2013</td>
<td>• Added reference link to policy titled Sensory Integration Therapy</td>
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<tr>
<td></td>
<td>• Updated description of services to reflect most current clinical evidence, FDA information, and references; no change to coverage rationale or lists of applicable codes</td>
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