

Sensory Integration Therapy and Auditory Integration Therapy



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DESCRIPTION

Note: This medical policy applies to sensory and auditory integration therapy completed in the outpatient setting.

Auditory Integration Therapy (AIT)

Auditory integration therapy (AIT) (also known as AI training, auditory enhancement training, audio-psycho-phonology) is an intervention developed to correct or improve auditory hypersensitivity, distortions, and delays in the signals that interfere with an individual's ability to process auditory information normally. Inconsistencies and distortions in the way sounds are perceived can make it difficult to interpret auditory stimuli. In addition, the ears must work together in a coordinated fashion. If the hearing in one ear is different than the other, the person may have auditory processing problems. This lack of coordination between the ears contributes to difficulties in following directions, comprehending what is said or read, and putting thoughts into words. Also,

some people hear certain frequencies much better than other frequencies. When this occurs, the person perceives sounds in a distorted manner, may be easily distracted, and may have difficulty understanding auditory information. AIT therapy has been proposed for individuals with a range of developmental and behavioral disorders, including learning disabilities, attention deficit and hyperactivity disorder, dyslexia, central auditory processing disorder, sensory processing disorder and autism and pervasive developmental disorder.

Auditory integration therapy (AIT) refers to listening to music that has been computer modified to remove frequencies to which an individual demonstrates hypersensitivities and to reduce the predictability of auditory patterns. The individual listens per headphones to a program of specifically filtered and modulated music with wide frequency range. A special device is used to modify the music for the treatment sessions. The treatment program consists of 20 half-hour sessions during a 10 to 12-day period, with two sessions daily. Auditory thresholds are determined via audiograms. The audiogram is then reviewed for evidence of hyperacusis (i.e., an abnormal sensitivity to sound). A clinical history of sound sensitivities and behavior is also reviewed. Audiograms are repeated midway and at the end of the training session to document progress and to determine whether further treatment sessions are necessary. AIT is usually performed by a speech-pathologist or audiologist.

Although at least three AIT methods currently exist, the Berard method has emerged as the most commonly used in the United States and has been described most often in professional literature which is limited. The Educational Audiology Association (EAA) issued a position statement regarding auditory integration therapy, which stated: Auditory integration therapy has not been proven to be a viable treatment for any disability. On inconsistent, uncontrolled, anecdotal evidence has been provided to support claims of changes in auditory performance. Education audiologists must advise parents of the risk of experimental procedures such as auditory integration therapy, and of their right to request a forthright statement of expected outcomes by providers of such experimental methods. Furthermore, the Educational Audiology Association warns that without controls to protect against excessively loud auditory stimuli, auditory integration therapy may cause harm to a child's auditory system.

Sensory Integration Therapy (SIT)

Sensory integration therapy (SIT) also known as sensory integrative techniques has been proposed as a treatment of developmental disorders in individuals with established dysfunction of sensory processing e.g., children with autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), brain injuries, fetal alcohol syndrome and neurotransmitter disease. Sensory integration therapy may be offered by occupational and physical therapists who are certified in sensory integration therapy. Practitioners have used SIT for years selecting individuals who demonstrate a variety of problems, including sensory defensiveness, over-reactivity to environmental stimuli, attention difficulties, and behavioral problems.

Sensory integration therapy techniques are used to organize the sensory system by involvement of full body movements that provide vestibular, proprioceptive, and tactile stimulation. The ultimate goal of sensory integration therapy (SIT) is to improve cognitive, behavioral and social functioning. The therapeutic techniques may include different kinds of equipment such as textured mitts, brushes, balls, large foam pillows or mats, scooter boards, ramps, swings, trapeze bars and bounce pads. For example, swings are commonly used to incorporate vestibular input, while trapeze bars and large foam pillows or mats may be used to stimulate somatosensory pathways of proprioception and deep touch. Tactile reception may be addressed through a variety of activities and surface textures involving light touch. It is believed that SI therapy does not teach higher level skills but enhances the sensory processing abilities of the patient to acquire them.

Clinical Context and Therapy Purpose

The purpose of sensory integration therapy in individuals who have developmental disorders 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 sensory integration or auditory integration therapy improve the net health outcome in individuals with developmental disorders?

The following PICO was used to select literature to inform this review.

Populations

The relevant population of interest is individuals with developmental disorders.

- Although auditory integration therapy has been proposed as a therapy for a number of neurobehavioral disorders, the largest body of evidence, including systematic reviews, relates to its use in ASD.

Interventions

The treatment being considered is the use of sensory integration or auditory integration therapy. Auditory integration therapy involves having individuals listen to music modified to remove frequencies to which they are hypersensitive, with the goal of gradually increasing exposure to sensitive frequencies.

Treatment sessions are usually delivered in a one-on-one setting by occupational therapists with special training from university curricula, clinical practice, and mentorship in the theory, techniques, and assessment tools unique to sensory integration therapy. The sessions are often provided as part of a comprehensive occupational therapy or cognitive rehabilitation therapy treatment plan and may last for more than one year.

Comparators

The following practices are currently being used to treat developmental disorders: specialized developmentally appropriate interventions for specific developmental disorders, which are administered by developmental specialists in an outpatient setting.

Outcomes

The general outcomes of interest are functional outcomes and quality of life.

Follow-up of at least 6 months would be desirable to assess outcomes.

(2014) Shaaf et al. published an overview of measurement issues in sensory integration. They proposed several changes to the outcomes used in sensory integration research, as follows:

- Additional measures are needed to ensure a comprehensive assessment of the sensory and motor factors that may be influencing function and participation. Key areas that would benefit from additional development include examiner-administered measures of sensory modulation to complete the currently available caregiver and teacher questionnaires; broader assessment tools of sensory perception and discrimination, including expanded assessment of proprioceptive and vestibular functions; formal standardized assessment of posture and balance; and measure of specific areas of praxis (e.g., ideation, motor planning)
- Assessment measures need to be developed to address a wider age range. Mandates for early identification indicate that reliable and valid measures of sensory integration and praxis for young children are essential, yet few adequate tools are available. In addition, measures for adolescents and adults are currently lacking, resulting in this population being underserved.
- Neurophysiological studies are needed to define the underlying neural functions that may explain diverse patterns of sensory integration difficulties, to expand our repertoire of intervention strategies, and to measure changes in neural functions that may result from intervention.
- Although much has been accomplished with regard to measurement of fidelity to the core principles of OT-SI, expansion of this research is needed to develop measures that will allow application of this approach in varied settings and with different populations.
- Studies are needed that evaluate dosage to understand the best candidates for intervention and the appropriate intensity and frequency of intervention.
- Practitioners and researchers need to continue to identify outcomes that are meaningful to clients and sensitive to the change observed after intervention. Although measures at each level of the ICF have been used in existing studies, more assessments are needed at every level. Proximal outcomes that measure changes in sensory and motor behaviors associated with sensory integration and neural functioning are needed to determine whether the change in function and participation observed are concomitant with changes in nervous system functioning. Measures at the activity level of the ICF are also needed and may include specific performance-based skills such as improved balance, posture, or praxis or changes in daily activities. Distal outcome measure of participation is needed that are sensitive and meaningful to families. Consumer satisfaction, quality of life changes, longitudinal effects, cost-effectiveness, and caregiver and societal burden are all important outcomes that need focused attention.

Auditory Integration Therapy (AIT)

Although auditory integration therapy (AIT) has been proposed as a therapy for a number of neurobehavioral disorders, the largest body of evidence, including systematic reviews, relates to its use in autism spectrum disorder (ASD).

(2022 Literature Review) UpToDate with Hahn et al. noted the following on asperger syndrome (a specific autism spectrum disorder): Investigational therapies — Facilitated communication, auditory integration training (AIT), sensory integration (SI) therapy, and Fast ForWord are examples of controversial practices that have not been validated in large, controlled trials. AIT has been advocated for children with autism and a variety of communication, behavioral, and emotional disorders, although this practice lacks a reasonable theoretic basis and has been denounced by the American Speech-Language-Hearing Association. The research supporting the effectiveness of SI therapy in children with language-learning disorders is limited and inconclusive at best.

(2017) Weitlauf et al. in a systematic review evaluated the effectiveness and safety of interventions targeting sensory challenges in autism spectrum disorder (ASD). Twenty-four studies, including 20 randomized controlled trials (RCTs), were included. Only 3 studies had low risk of bias. Populations, interventions, and outcomes varied. Limited, short-term studies reported potential positive effects of several approaches in discrete skill domains. Specifically, sensory integration-based approaches improved sensory and motor skills-related measures (low SOE). Environmental enrichment improved nonverbal cognitive skills (low SOE). Studies of auditory integration-based approaches did not improve language (low SOE). Massage improved symptom severity and sensory challenges in studies with likely overlapping participants (low SOE). Music therapy studies evaluated different protocols and outcomes, precluding synthesis (insufficient SOE). Some positive effects were reported for other approaches, but findings were inconsistent (insufficient SOE). Limitations are the studies were small and short-term, and few fully categorized populations. The authors concluded, some interventions may yield modest short-term (<6 months) improvements in sensory and ASD symptom severity-related outcomes; the evidence base is small, and the durability of the effects is unclear. Although some therapies may hold promise, substantial needs exist for continuing improvements in methodologic rigor.

(2015) A systematic review examining complementary and alternative therapies for autism spectrum disorder (ASD), Brondino et al. (described above) identified the same 6 RCTs of in auditory integration therapy (AIT) included in the 2011 Cochrane review. Like the Cochrane review, Brondino et al. concluded that the largest studies did not report improvements with AIT.

(2011) A cochrane review evaluated auditory integration therapy (AIT) or other methods of sound therapy in individuals with autism spectrum disorders (ASD). Randomized controlled trials involving adults or children with autism spectrum disorders. Treatment

was auditory integration therapy or other sound therapies involving listening to music modified by filtering and modulation. The outcomes were changes in core and associated features of autism spectrum disorders, auditory processing, quality of life and adverse events. Six randomized controlled trials (RCTs) of auditory integration therapy (AIT) and one of Tomatis therapy, involving a total of 182 individuals (age range, 3-39 years). For most studies, the control condition was listening to unmodified music for the same amount of time as the active treatment group. Allocation concealment was inadequate for all studies, and 5 trials had fewer than 20 participants. Meta-analyses could not be conducted. Three studies did not demonstrate any benefit of AIT over control conditions, and 3 studies had outcomes of questionable validity or outcomes that were not statistically significant. The authors concluded there is no evidence that auditory integration therapy or other sound therapies are effective as treatments for autism spectrum disorders. As synthesis of existing data has been limited by the disparate outcome measures used between studies, there is not sufficient evidence to prove that this treatment is not effective. However, of the six studies including 182 participants that have been reported to date, only two (with an author in common), involving a total of 35 participants, report statistically significant improvements in the auditory integration therapy group and for only two outcome measures (Aberrant Behavior Checklist and Fisher's Auditory Problems Checklist). As such, there is no evidence to support the use of auditory integration therapy at this time.

Summary of Evidence: Auditory Integration Therapy (AIT)

For individuals who have developmental and behavioral disorders who receive auditory integration therapy (ATI), the evidence includes randomized controlled trials (RCTs) and systematic reviews of these trials. For auditory integration therapy (AIT), the largest body of literature relates to its use in autism spectrum disorder (ASD). Several systematic reviews of auditory integration therapy (AIT) in the treatment of autism have found limited evidence to support its use. No comparative studies were identified that evaluated the use of AI therapy for other conditions. Further well-designed clinical trials are needed regarding auditory integration therapy (AIT) in order to determine the clinical effectiveness of this intervention. The evidence is insufficient to determine the effects of the technology on net health outcomes.

Sensory Integration Therapy

The literature on the use of sensory integration therapy (SIT) consists primarily of small case series as well as a small number of comparative studies and systematic reviews. Given the individualized nature of SIT and the potential for confounding due to effects of treatment other than the SIT itself, large comparative studies are needed to demonstrate effectiveness.

Sensory Integration Therapy: Controlled Trials

(2014) Schaaf et al. reported results from a randomized trial of a manualized intervention for sensory difficulties in children with autism spectrum disorder (ASD). The trial enrolled 32 children from a convenience sample of eligible families with children ages 4 to 8 years who had a diagnosis of ASD and demonstrated difficulty processing and

integrating sensory information as measured by the Sensory Profile or the Sensory Integration and Praxis Test. Subjects were randomized to usual care or to an intervention described as following the principles of ASI. The intervention was delivered by 3 licensed occupational therapists experienced working with children with ASD. The primary outcome was Goal Attainment Scaling (GAS), a systematic process for identifying goals relevant to individuals and their families that has been used to evaluate patients with ASD. Sample goals include: “Improve auditory process as a basis for sleeping through the night without getting out of bed for 7–8 h per night” and “Decrease oral sensitivity and will try 5 new foods.” Each goal is associated with a scale for level of attainment. For the primary outcome, the intervention group had a significantly higher goal achievement score than the control group (mean, 56.53 [n=17] vs 42.72 [n=14], $p=0.003$). Change in functional skills did not differ significantly between groups, but intervention group subjects had significantly greater improvements in the 2 subscales of self-care caregiver assistance ($p=0.008$) and social function caregiver assistance ($p=0.039$). The groups did not differ in terms of autistic or adaptive behaviors. Strengths of this trial were its use of a protocolized intervention and its attempt to use an outcome measure relevant to patients and families. However, further replication in a larger sample of patients is required.

(2011) Pfeiffer et. al. completed a pilot study and reported the purpose of this study was to establish a model for randomized controlled trial research, identify appropriate outcome measures and address the effectiveness of sensory integration (SI) interventions in children with autism spectrum disorders (ASD). Children ages 6-12 with ASD were randomly assigned to a fine motor or SI treatment group (18 treatments over 6 weeks). Pretests and post-tests measured social responsiveness, sensory processing, functional motor skills and social-emotional factors. The results of this study were mixed yet demonstrated significant changes in the autistic mannerisms (a component of social responsiveness) and significant progress toward individualized goals in the areas of sensory processing and regulation, social-emotional function, and FM skills. No significant differences were found in the scores on the SPM (sensory processing measure) or the QNST-II (Quick Neurological Screening Test). A subsequent analysis did identify that significantly more children could complete or partially complete the QNST-II after intervention. The authors concluded this study provides preliminary support for using sensory integration (SI) interventions in children with ASD, although further research is necessary. Results identified significant progress toward individualized goals and a decrease in autistic mannerisms after SI interventions, although no significant changes were found on the other measures. Results suggest implementing interventions that are generalized to home and community settings, using tools that allow for individualized sensitive measurement in future studies, and completing future studies with a larger sample.

Sensory Integration Therapy: Systematic Reviews

Several systematic reviews have addressed the use of sensory integration therapy (SIT) in various clinical conditions.

(2020) Wuang et al. examined the sensory integration and perceptual-motor performances in elementary school children (5 to 12 years) with ASD in Taiwan. The impacts of comprehensive body functions on activity participations in ASD were also examined to provide evidence for clinical applications and further study. A total of 117 children with ASD (42 girls; aged 5 to 13 years, average age of 8 years 3 months) were recruited. All subjects were evaluated with standardized measures of body functions and activity participations. The body function measures included Bruininks-Oseretsky of Motor Proficiency - 2nd Edition, Sensory Profile, Test of Sensory Integration Functions, and Test of Visual Perception Skills - 3rd Edition. The activity participation measures included the Chinese versions of both Vineland Adaptive Behavior Scale and School Function Assessment. School-aged children with ASD had different levels of impairments on body function measures. Most subject scores fell within the impairment range on 13 to 15 items out of the total 19 sensory and perceptual-motor measure subtests, with worst performance on coordination-related motor task and most sensory integrative dimensions. The results indicated a significant main effect for age and sex on some body functions and activity participations. Correlation analyses indicated strong associations between body function and activity participation across settings in ASD. The authors concluded that the findings of this study characterized the developmental continuum of body functions of school-aged children with ASD and showed their associations with adaptation and participation. While emphasizing the development of functional skills to facilitate age-appropriate activity participation in multiple scenarios, interventions aiming to improve body functions were indispensable. These researchers stated that there were several drawbacks with respect to the lack of control group and intellectual functioning measures. For further study, these investigators recommended the completion of longitudinal studies with various subtypes (e.g., Asperger's, high-functioning autism) and intellectual functioning to examine the effects of maturation and individual differences on sensory integration and perceptual-motor skills in ASD school-aged individuals.

(2019) Kilroy et al. revisited Ayres theories of autism and sensory integration which concluded, further research is necessary to better understand the relationship between neural abnormalities in autism spectrum disorder (ASD) and therapeutic approaches intended to ameliorate sensory impairment symptoms and to promote easier participation in everyday life activities. To our knowledge, no published studies have specifically investigated the neural response to Ayres sensory integration therapy in individuals with ASD. Research is needed to examine whether intervention using a sensory integration approach will help improve sensory registration and/or modulation impairments in ASD by developing a more efficient network connectivity.

(2015) Barton et al. published a systematic review to conduct a comprehensive and methodologically sound evaluation of the efficacy of sensory-based treatments for children with disabilities. Methods for this review were registered with PROSPERO (CRD42012003243). Thirty studies involving 856 participants met inclusion criteria and were included in this review. Considerable heterogeneity was noted across studies in implementation, measurement, and study rigor. The research on sensory-based treatments

is limited due to insubstantial treatment outcomes, weak experimental designs, or high risk of bias. Although many people use and advocate for the use of sensory-based treatments and there is a substantial empirical literature on sensory-based treatments for children with disabilities, insufficient evidence exists to support their use.

(2015) Brondino et al. published a systematic review of complementary and alternative therapies for autism, which included sensory integration therapy (SIT) and auditory integration therapy (AIT). Regarding SIT for autism spectrum disorder (ASD) treatment, reviewers identified 4 trials, including the RCT reported by Pfeiffer et al (described below), and additional studies published in 1983, 2008, and 2011, with sample sizes of 18, 30, and 50, respectively. All four studies reported significant improvements in autistic core symptoms, including communication, social reciprocity, and motor activity. However, reviewers noted that two studies did not use a standardized form of SIT, and two did not use standardized outcome measures.

(2015) Case-Smith et al. updated a systematic review on sensory processing interventions, including sensory integration therapy (SIT), which they defined as clinic-based interventions that use sensory-rich, child-directed activities to improve a child's adaptive responses to sensory experiences, and sensory-based interventions (defined as adult-directed sensory modalities applied to the child to improve behaviors associated with modulation disorders), for children with autism spectrum disorder (ASD) with concurrent sensory processing problems. This review was designed to focus on interventions that activate the somatosensory and vestibular systems for patients with ASD with co-occurring sensory processing problems. Nineteen studies published since 2000 were included, 5 of which evaluated SIT in patients with ASD and sensory processing disorders. Two studies reviewed were randomized controlled trials (RCTs); both were small (n=20 and n=17 in the SIT groups). The authors noted that the studies showed low or low-to-moderate effects and concluded that it is premature to draw conclusions as to whether SIT for children with ASD, which is designed to support a child's intrinsic motivation and sense of internal control, is ultimately effective.

(2015) Watling and Hauer published a systematic review of Ayres Sensory Integration (ASI) and sensory-based interventions for individuals with autism spectrum disorder (ASD). Reviewers described ASI as a play-based method that “uses active engagement in sensory-rich activities to elicit the child's adaptive responses and improve the child's ability to successfully perform and meet environmental challenges.” The therapy is individualized by the therapist in response to an initial assessment. Sensory-based interventions are described as “applying adult-directed sensory modalities to the child with the aim of producing a short-term effect on self-regulation, attention, or behavioral organization.” Twenty-three articles met reviewers' inclusion criteria, 3 of which were systematic reviews and 5 of which were RCTs. Overall, 4 studies evaluated ASI and the remaining 18 evaluated sensory-based interventions. Of the 4 studies evaluating ASI, 3 were RCTs, including the studies by Pfeiffer et al and Schaaf et al (described below). Findings from 1 RCT included significant improvement in individualized goals, improved sleep, decreased ASD mannerisms, and reduced caregiver burden.

Sensory Integration: Miscellaneous

(2022 Literature Review) UpToDate with Hamilton et al. noted the following on a developmental coordination disorder: management and outcome. Neither sensory integration therapy nor kinesthetic (ie, proprioception) sensitivity training have been conclusively proven to be beneficial for children with DCD.

(2022 Literature Review) UpToDate with von Hahn et al. noted the following on asperger syndrome (a specific autism spectrum disorder): The efficacy of sensory integration therapy has not been objectively demonstrated. However, use in individual cases may be warranted if empirical benefit is demonstrated.

Investigational therapies — Facilitated communication, auditory integration training (AIT), sensory integration (SI) therapy, and Fast ForWord are examples of controversial practices that have not been validated in large, controlled trials. AIT has been advocated for children with autism and a variety of communication, behavioral, and emotional disorders, although this practice lacks a reasonable theoretic basis and has been denounced by the American Speech-Language-Hearing Association. The research supporting the effectiveness of SI therapy in children with language-learning disorders is limited and inconclusive at best.

(2021 Literature Review) UpToDate with Weissman et al. noted the following information for the topic on autism spectrum disorder in children and adolescents: behavioral and educational interventions. Sensory integration therapy is often used for children with ASD because many of their behaviors are thought to be related to deficiencies in the sensory system (hyperresponsiveness or hyporesponsiveness). However, the validity of the sensory integration model and sensory integration therapy are controversial, with strong supporters on both sides.

(2020) Camarata et al. noted that for more than 50 years, "Sensory Integration" has been a theoretical framework for diagnosing and treating disabilities in children under the umbrella of "sensory integration dysfunction" (SID). More recently, the approach has been reframed as "the dimensions of sensory processing" or SPD in place of SID. These investigators described this collective framework as sensory integration/sensory processing treatment (SI/SP-T) for ASD; this review was not focused on diagnosis of SI/SPD. Broadly, the SI/SPD intervention approach views a plethora of disabilities such as ADHD, ASD, and disruptive behavior as being exacerbated by difficulties in modulating and integrating sensory input with a primary focus on contributions from tactile, proprioceptive, and vestibular systems which are hypothesized to contribute to core symptoms of the conditions (e.g., ASD). SI/SP intervention procedures include sensory protocols designed to enhance tactile, proprioceptive, and vestibular experiences. SI/SP-T procedures utilize equipment (e.g., lycra swings, balance beams, climbing walls, and trampolines), specific devices (e.g., weighted vests, sensory brushes) and activities (e.g., placing hands in messy substances such as shaving cream, sequenced movements)

hypothesized to enhance sensory integration and sensory processing. The approach is reviewed to provide a framework for testing SI/SP-T using widely accepted clinical trials and event coding methods used in applied behavior analysis (ABA) and other behavioral interventions. Furthermore, a related but distinct neuroscientific paradigm, multi-sensory integration, was presented as an independent test of whether SI/SP-T differentially impacted sensory integration and/or multi-sensory integration. Finally, because SI/SP-T activities include many incidental behavioral events that are known as developmental facilitators (e.g., contingent verbal models/recasts during verbal interactions), there is a compelling need to control for confounds to study the unique impact of sensory-based interventions. Note that SI/SP-T includes very specific and identifiable procedures and materials, so it is reasonable to expect high treatment fidelity when testing the approach. A patient case was presented that illustrated this confound with a known facilitator (recast intervention) and a method for controlling potential confounds in order to conduct unbiased studies of the effects of SI/SP-T approaches that accurately represent SI/SP-T theories of change. These researchers stated that SI/SP-T is testable within the context of rigorous treatment studies, and key ingredients can be measured. More importantly, these trials should be conducted fairly and without bias to examine the efficacy of SI/SP-T. Moreover, there has been an ongoing need for fair clinical trials of SI/SP-T. This review indicated that such trials can be conducted using the highest quality standards of implementation and employing objective quantitative proximal and distal measures in addition to more qualitative indices such as goal attainment scaling. Finally, these studies must be conducted using procedures that are not only faithful to the authentic implementation of SI/SP-T but also control for confounding factors. These studies should be conducted with all populations posited to benefit from SI/SP-T such as ASD, ADHD, language disorders, and Down syndrome. Calls for fair studies have been appearing in the literature for more than 20 years; these must be conducted soon.

(2017) A systematic review of small, randomized trials concluded that sensory integration therapy improves sensory-related and motor skills measures. The evidence is limited by small sample size, short duration of follow-up, and inconsistent blinding, diagnostic criteria, treatment, and outcome measures. There is little information about the potential harms of sensory integration therapy. However, many of the interventions that are used in sensory integration therapy also are used in traditional occupational therapy treatment without adverse effect. The role of sensory integration therapy in ASD is not clear. The American Academy of Pediatrics recommends that treatment programs focus on behavioral and educational interventions as described above. However, sensory integration therapy may be included as part of a comprehensive program that focuses on behavioral and educational interventions to calm the child, reinforce desired behaviors, or help with transitions between activities. Continued use of sensory integration should be based upon the treatment response in the individual child.

Summary of Evidence: Sensory Integration Therapy

Due to the individual nature of sensory integration therapy and the large variation in individual therapists and patients, large multicenter randomized controlled trials (RCTs) are needed to evaluate the efficacy of this intervention. The most direct evidence related

to outcomes from sensory integration therapy comes from randomized trials. Although some of the studies demonstrated some improvements on subsets of outcomes measured, the studies are limited by sizes, heterogeneous patient populations, and variable outcome measures. As a result, the evidence is insufficient to draw conclusions about the effects of and the most appropriate patient populations for sensory integration therapy.

For adult patients, sensory integration therapy has been used for acquired sensory problems resulting from head trauma, illness, or acute neurologic events including cerebrovascular accidents. Sensory integration techniques are not appropriate for patients with progressive neurological conditions without potential for functional adaptation. Therapy is not considered a cure for sensory integrative impairments but is used to facility the development of the patient's ability to process sensory input differently. Research studies are lacking for the adult population and sensory integration therapy.

Practice Guidelines and Position Statements

American Academy of Child and Adolescent Psychiatry (AACAP)

(2014) A practice parameter for the assessment and treatment of children and adolescents with autism spectrum disorder states the following:

- “Studies of sensory oriented interventions, such as auditory integration training (AIT), sensory integration therapy (SIT) and touch therapy/massage, have contained methodological flaws and have yet to show replicable improvements.”
(*Accessed February 2022*)

American Academy of Pediatrics (AAP)

(2012) A policy statement by the AAP on sensory integration therapies for children with developmental and behavioral disorders states the following:

- “Sensory based therapies are increasingly used by occupational therapists and sometimes by other types of therapists in treatment of children with developmental and behavioral disorders. However, it is unclear whether children who present with sensory-based problems have an actual “disorder” of the sensory pathways of the brain or whether these deficits are characteristics associated with other developmental and behavioral disorders. Because there is no universally accepted framework for diagnosis, sensory processing disorder generally should not be diagnosed. Other developmental and behavioral disorders must always be considered, and thorough evaluation should be completed. Difficulty tolerating or processing sensory information is characteristic that may be seen in many developmental behavioral disorders, including autism spectrum disorders, attention deficit/hyperactivity disorder, developmental coordination disorders and childhood anxiety disorders.”
- “Occupational therapy with the use of sensory based therapies may be acceptable as one of the components of a comprehensive treatment plan. However, parents should be informed that the amount of research regarding the effectiveness of sensory integration is limited and inconclusive. Important roles for pediatricians and other clinicians may include discussing these limitations with parents.”

(Accessed February 2022)

American Occupational Therapy Association (AOTA)

(2015) According to the article Occupational Therapy for Children and Youth using Sensory Integration Theory and Methods in School-Based Practice in the American Journal of Occupational Therapy the “American Occupational Therapy Association (AOTA) recognizes sensory integration as one of several theories and methods used by occupational therapists and occupational therapy assistants working with children in public and private schools. Regardless of the theories and methods used, occupational therapy practitioners work within the framework of occupational therapy toward the desired outcome of enhancing a person’s ability to participate in life through engagement in everyday activities. When children demonstrate sensory, motor, or praxis deficits that interfere with their ability to access the general education curriculum, occupational therapy using a sensory integration approach is appropriate.” (Accessed February 2022)

(2011) The AOTA published evidence-based occupational therapy practice guidelines for children and adolescents with challenges in sensory processing and sensory integration (SI).

- AOTA gave a level C recommendation for SI therapy for individual functional goals for children, for parent-centered goals, and for participation in active play in children with sensory processing disorder and to address play skills and engagement in children with autism. A level C recommendation is based on weak evidence that the intervention can improve outcomes, and the balance of the benefits and harms may result in a recommendation that occupational therapy practitioners routinely provide the intervention to eligible clients or in no recommendation because the balance of the benefits and harm is too close to justify a general recommendation. Specific performance skills evaluated were motor and praxis skills, sensory-perceptual skills, emotional regulation, and communication and social skills. There was insufficient evidence to provide a recommendation on sensory integration for academic and psychoeducational performance (e.g., math, reading, written performance).

National Institute for Health and Care Excellence (NICE)

(2013; Updated 2021) Provided a statement on auditory integration in the clinical guideline for *Autism Spectrum Disorder in Under 19s: Support and Management*:

- Do not use auditory integration training to manage speech and language problems in autistic children and young people.

PRIOR APPROVAL

Not applicable.

POLICY

Note: This medical policy applies to sensory and auditory integration therapy completed in the outpatient setting.

Sensory integration therapy (SIT) and auditory integration therapy (AIT) are considered **investigational** for all indications as the evidence is insufficient to determine the effects on net health outcomes.

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.

- 97533 Sensory integrative techniques to enhance sensory processing and promote adaptive responses to environmental demands, direct (one to one) patient contact, each 15 minutes. (*This code may also be used for auditory integration therapy*).

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POLICY HISTORY

Date	Reason	Action
March 2022	Annual Review	Policy Renewed
March 2021	Annual Review	Policy Renewed
March 2020	Annual Review	Policy Renewed
March 2019	Annual Review	Policy Revised
March 2018	Annual Review	Policy Revised
March 2017	Annual Review	Policy Revised
March 2016	Annual Review	Policy Renewed
April 2015	Annual Review	Policy Revised
May 2014	Annual Review	Policy Renewed
August 2013	Annual Review	Policy Renewed
September 2012	Annual Review	Policy Renewed
September 2011	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
 PO Box 9232
 Des Moines, IA 50306-9232

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