Sensory Integration Therapy and Auditory Integration Training (for Ohio Only)

Policy Number: CS108OH.E
Effective Date: February 1, 2026

Instructions for Use

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Related Policies
None

Application

This Medical Policy only applies to the state of Ohio. Any requests for services that are stated as unproven or services for which there is a coverage or quantity limit will be evaluated for medical necessity using Ohio Administrative Code 5160-1-01.

Coverage Rationale

For medical necessity clinical coverage criteria for sensory integration therapy (SIT) and auditory integration training (AIT), refer to Ohio Administrative Code, Rule 5160-1-01, Medicaid medical necessity: definitions and principles.

Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by federal, state, or contractual requirements and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

CPT Code	Description
97533	Sensory integrative techniques to enhance sensory processing and promote adaptive responses to environmental demands, direct (one-on-one) patient contact, each 15 minutes

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Description of Services

Sensory Integration Therapy (SIT)

SIT seeks to improve perception and integration of sensory information and thereby help individuals with learning disabilities improve their sensorimotor skills. In theory, this will result in improved behavior and academic performance. Therapy is usually provided by an occupational therapist (OT) and combines primitive forms of sensation with motor activity during an individual therapy session that typically lasts 60 to 90 minutes. The therapist provides vestibular, proprioceptive, and tactile stimulation during activities designed to elicit appropriate adaptive motor responses. Sensory integration techniques include the use of textured mitts, carpets, scooter boards, ramps, swings, bounce pads, suspended equipment, and weighted vests and blankets to encourage a noncognitive, creative, and explorative process. Therapy is usually given in 1 to 3 sessions per week over several months or a few years and it does not involve tutoring, the more traditional approach to treatment of learning disabilities (Salokorpi, 2002; Uyanik, 2003).

Auditory Integration Training (AIT)

AIT was developed as a technique for improving abnormal sound sensitivity in individuals with behavioral disorders or autism spectrum disorders (ASDs) (Sinya et al., 2011). The Berard AIT protocol requires that a participant listen to modulated music on a specific device using high quality headphones for a total of 10 hours, over 10 or 12 consecutive days under the supervision of a professionally trained AIT practitioner (AIT Institute, 2018).

Clinical Evidence

Sensory Integration Therapy (SIT)

SIT been investigated as treatment for multiple sensorimotor disorders. There is insufficient evidence to demonstrate an increased clinical benefit of SIT when compared to standard care alone. A number of small randomized controlled trials (RCTs) suggest a possible benefit of SIT, but these studies are limited by important design weaknesses, such as short follow-up period, lack of masking of the outcomes assessors, multiple companions, or large attrition rate. Furthermore, the findings are conflicting with a larger RDT (Randell et al., 2022) failing to show benefit and a large propensity-score adjusted population-based cohort study raising concerns about possible harm (Tzang et el., 2019).

Acuña et al. (2025) conducted a systematic review of RCTs to evaluate the efficacy of Ayres Sensory Integration® (ASI) for children. The authors followed Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. RCTs were published in peer-reviewed English-language literature and compared implementation of ASI with its Fidelity Measure™ with children ages 0 to 12 years with treatment as usual, other treatment, or no treatment. Nine RCTs (n = 344 participants), six with autistic children and three with other child populations, were included. RCTs were categorized as Level 1b (well designed) or 2b (low quality); strength of evidence was determined according to U.S. Preventive Services Task Force guidelines. Strong evidence from five RCTs (four Level 1b) indicates that ASI supports autistic children in meeting their individualized goals. Moderate evidence from three RCTs (two Level 1b) indicates no benefits of ASI for behaviors of concern, such as noncompliance or irritability. Bias concerns persist among included studies. The authors concluded that ASI supports autistic children's individualized goals related to occupational performance, function, and participation. It is not recommended to address behaviors of concern, such as resistance to change or irritability. More research is needed to determine ASI's benefits for other child populations. This systematic review has limitations. The heterogeneity among studies prevented meta-analysis, imposing methodological limitations. Additionally, bias concerns persisted for most of the included studies, warranting caution in interpreting the results. Further investigation is needed before the clinical usefulness of this procedure is proven.

Wen and Wu (2025) conducted an RCT to evaluate the effects of a 12-week sensory integration-based sports training program on motor and social outcomes in children with autism spectrum disorder (ASD). Forty participants, aged 6-12, were randomly assigned to either an experimental group receiving sensory integration-based sports training or a control group engaged in standard physical activity. Motor coordination was assessed using the Bruininks-Oseretsky Test of Motor Proficiency (BOT-2), and social responsiveness was measured using the Social Responsiveness Scale (SRS-2). Weekly behavioral engagement was also recorded. Data was analyzed using paired t-tests and Cohen's d for effect size. Participants in the intervention group demonstrated a 17.2-point increase in BOT-2 scores, reflecting improved motor coordination. SRS-2 scores decreased by 13.2 points, indicating enhanced social responsiveness. Participation rates in structured activities increased from 45 to 85% over the 12 weeks. Statistical analysis revealed a large effect size (Cohen's d > 0.8) for both outcomes. The authors concluded that sensory integration-based sports training improves motor and social functioning in children with ASD and offers a promising approach for therapeutic and educational rehabilitation programs. This RCT has limitations. The sample size of 40 limits the generalizability of findings. In addition, the 12-week duration may not reflect long-term developmental trajectories. Participant variability in age, sensory thresholds, and cognitive function also presents a challenge. While no adverse effects were observed, future studies should formally monitor safety and stress responses during interventions. Furthermore, the lack of neurophysiological data (e.g., EEG, fMRI) limits insight into the neural basis of observed improvements. Future research could investigate how sensory-motor integration alters brain connectivity, informing more targeted interventions. Additionally, exploring the impact of the intervention across different autism profiles, including non-verbal children and those with sensory hypersensitivities, can improve accessibility and personalization. Future research may also compare exercise modalities such as yoga, martial arts, or swimming to determine which sport types yield the most transferable benefits.

Yamanishi et al. (2025) conducted an RCT to examine the effectiveness of the ASI intervention for children with developmental coordination disorder (DCD) in improving motor coordination and daily activity function. Seventeen children with DCD (aged 4-8.5 years old) were randomly assigned to either an intervention or a control group. ASI intervention was provided to the intervention group twice a week for 10 weeks. In addition to participants' goals in daily activities, sensory integration abilities and motor coordination were assessed before and after the intervention. The split-plot factorial design demonstrated significant time × group interaction in the total score [$F(1, 15) = 7.651$, $p = 0.014$, partial $\eta2 = 0.338$] and balance score [$F(1, 15) = 11.163$, $p = 0.004$, partial η 2 = 0.427] of the Movement Assessment Battery for Children-Second Edition (MABC-2), with differences in simple main effects before and after intervention for the intervention group. The post-intervention Goal Attainment Scale (GAS) score showed a difference in the time × group interaction [$F(1, 15) = 15.662$, $p = 0.001$, partial $\eta2 = 0.511$] and a simple main effect in the intervention group. The authors concluded that a short-term, intensive ASI intervention improves motor performance, coordination, and daily activities function in children with DCD. This RCT has limitations. Blinding of the parents was not possible, although blinding of the assessors was done in practice. In this study, the authors requested parents to keep their usual daily life regardless of the intervention. However, there is a possibility of bias in parents in the intervention group, since the parents themselves knew whether their child had received the intervention. Furthermore, the sample size in this study was small with each group. Small samples may not adequately capture the variability within a population, leading to potential biases or limited statistical power. Although there are limitations in recruiting suitable participants in practical clinical conditions, future studies need to consider larger samples.

Kelly et al. (2023) conducted a pilot RCT to establish the feasibility of a RCT comparing contextual sensory integration (C.S.I.) training to traditional vestibular rehabilitation. Thirty patients with vestibular dysfunction completed the Dizziness Handicap Inventory (DHI), Activities Specific Balance Confidence Scale (ABC), Visual Vertigo Analog Scale (VVAS), Functional Gait Assessment (FGA), TimedUp-and-Go (TUG), and Four-Square Step Test (FSST). Following initial assessment, the participants were randomized into 8 weeks (once per week in clinic+home exercise program) of traditional vestibular rehabilitation or C.S.I. training. Six patients had to stop participation due to the COVID-19 pandemic, six dropped out for other reasons (3 from each group). Ten patients in the traditional group and eight in the C.S.I. group completed the study. The authors applied an intention to treat analysis. Following intervention, the authors observed a main effect of time with no main effect of group or group by time interaction for the DHI [mean difference −18.703, 95% CI (-28.235, -9.172), $p = 0.0002$], ABC [8.556, (0.938, 16.174), $p = 0.028$], VVAS, [-13.603, (-25.634, -1.573), $p = 0.027$] and the FGA [6.405, (4.474, 8.335), $p < 0.0001$]. No changes were observed for TUG and FSST. The authors concluded that patients' symptoms and function improved following either vestibular rehabilitation method. C.S.I. training appeared comparable but not superior to traditional rehabilitation. This study has limitations including a small sample size and high attrition rate. Well-designed, adequately powered, prospective, controlled clinical trials of C.S.I. are needed to further describe safety and efficacy.

Cemali et al. (2022) conducted a single blind RCT to examine the effectiveness of sensory integration interventions on sensory, motor, and oculomotor skills in infants with cortical vision impairment (CVI) and Cerebral Palsy (CP). Thirty-four infants with CVI and CP aged 12-18 months were enrolled to the study. The infants were randomly divided into two groups as the control ($n = 17$) and intervention ($n = 17$) groups. The intervention group took sensory integration intervention 2 days a week for 8 weeks in addition to conventional physiotherapy 2 days a week for 8 weeks. The control group only received the conventional physiotherapy program 2 days a week for 8 weeks. The duration of the treatment sessions was 45 min for both interventions. Before and after the intervention, sensory processing functions were evaluated with the Test of Sensory Functions in Infants (TSFI), and motor functions were evaluated with the Alberta Infant Motor Scale (AIMS). There was a noted difference between the pre- and post-test mean TSFI total and AIMS scores in the intervention group and control group ($p < 0.001$). The intervention group mean TSFI scores showed a statistical difference compared to those of the control group. Mean post-intervention AIMS scores did not differ between groups. The authors concluded that sensory integration intervention delivered with the conventional physiotherapy program was more effective than the conventional physiotherapy program in increasing sensory processing skills in one measure in infants with CVI and CP. This study was limited by its heterogeneous patient population, unclear masking of the assessment, and short duration of follow-up (8 weeks). Infants with different types of CP may cause differences in results because different CP types exhibit different symptoms. Further studies should evaluate sensory integration therapy effect on motor development with longer interventions.

Omairi et al. (2022) conducted a RCT to evaluate the outcomes of occupational therapy using ASI in a sample of Brazilian children with ASD. Seventeen children with ASD ages 5-8 years ($n = 9$ in the intervention group, $n = 8$ in the usual-care control group) completed pretreatment characterization and baseline measurement. The intervention group received occupational therapy using ASI, and the control group received usual therapeutic and educational services only. Participants received the intervention in 60-min sessions three times per week for 10 weeks. The authors conducted a pre-post assessment of self-care and socialization using the Pediatric Evaluation of Disability Inventory and individualized goal ratings. Participants in the intervention group scored higher on outcome measures of self-care ($p = .046$), social function (p = .036), and parent-identified goal attainment (p < .001) compared with the control group. Changes in the other domains were not statistically different between groups. The authors concluded that occupational therapy using ASI was effective in enhancing self-care, socialization, and goal attainment for children with ASD in a Brazilian cohort. Although the evaluators were blinded to group assignment, the parents were not. Thus, it is possible that some bias may have influenced parent-reported outcome measures. In addition, the sample sizes were small for each group and multiple comparisons were performed. Well designed, comparative studies with larger patient populations are needed to further describe safety and clinical outcomes.

Randell et al. (2022) conducted a parallel group RCT (SenITA) to determine the behavioral, functional and quality-of-life outcomes of SIT for children with autism and sensory difficulties as compared to usual care in children in mainstream primary school with an autism diagnosis and having processing difficulties. Exclusion criteria included children that had previous SIT, and/or current applied behavior analysis therapy. A total of 138 children were randomized via randomized permuted blocks, with 69 each assigned to the intervention group and comparator. The primary outcome assessed was improvement in problem behaviors (irritability and agitation). Secondary outcomes assessed were adaptive behavior, function and socialization, stress of carers, functional change, and sensory processing. The intervention used ASI therapy administered in one-hour sessions over 26-week period via two sessions per week for 10 weeks, then two sessions per month for 2 months and then one telephone session per month for 2 months. The comparator of usual care included those awaiting services, or those receiving sensory based interventions that did not meet the criteria as sensory integration. The results showed no statistically significant effects of SIT on the primary outcome after 6 months, and that no meaningful improvements were seen at 6 and 12 months across the secondary outcomes assessed (behavioral, adaptive functioning, socialization, carer stress, health utility or quality-of-life measures). There were some significant improvements observed in boys, and children with concomitant ADHD, however these findings should be considered hypothesis generating only, and future research is required. The authors concluded that SIT did not demonstrate superior clinical effectiveness over usual care across all outcomes measured.

In a population-based cohort study, Tzang et el. (2019) Investigated whether intervention with sensory integration training (SI) in children with attention deficit hyperactivity disorder (ADHD) was associated with a reduced risk of subsequent mental disorders. From children < 8-years-old newly diagnosed with ADHD in a nationwide population-based dataset, the investigators established a SI cohort and a non-SI cohort (n = 1945) matched by propensity score. Incidence and hazard ratios of subsequent psychiatric disorders were compared after a maximum follow-up of 9 years. The incidence of psychiatric disorders was 1.4-fold greater in the SI cohort, with an adjusted hazard ratio of 1.41 (95% confidence interval 1.20-1.67), comparing to the non-SI cohort. Risks were elevated for emotional disturbances, conduct disorders, and adjustment disorders independent of age, gender, or comorbidity. Among children with only psychosocial intervention, the incidence of psychiatric disorders was 3.5-fold greater in the SI cohort than in the non-SI cohort. The authors stated that to their knowledge, this is the first study showing an increased risk of developing psychiatric disorders in children with ADHD who received SI, compared to other children who did not receive SI. They further stated that potential adverse effects of SI in children with ADHD should be carefully examined. The findings are limited by the observational design of the study.

Kashefimehr et al. (2018) studied the effect of SIT on different aspects of occupational performance in children with ASD. The study was conducted on an intervention group (n = 16) receiving SIT and a control group (n = 15) with 3- to 8-year-old children with ASD. The Short Child Occupational Profile (SCOPE) was used to compare the two groups in terms of the changes in their occupational performance and the Sensory Profile (SP) was used to assess sensory problems. The intervention group showed significantly greater improvement in all the SCOPE domains, as well as in all the SP domains, except for the "emotional reactions" and "emotional/social responses" domains, (p < .05). The authors concluded that the effectiveness of SIT in improving occupational performance in children with ASD as a health-related factor is supported by their findings. Limitations of this study include small patient population, apparent lack of randomization, and lack of long-term follow-up.

In a systematic review of three RCTs, 1 retrospective review, and 1 single-subject ABA design, Schaaf et al. (2018) studied the effects of ASI in children with autism. The authors reported that the evidence is strong that ASI intervention demonstrates positive outcomes for improving individually generated goals of functioning and participation as measured by Goal Attainment Scaling for children with autism. Moderate evidence supported improvements in impairment-level outcomes of improvement in autistic behaviors and skills-based outcomes of reduction in caregiver assistance with self-care activities. Child outcomes in play, sensory-motor, and language skills and reduced caregiver assistance with social skills had emerging but insufficient evidence. This review is limited by the small number of studies, and unknown long-term follow-up.

In a non-RCT, Lecuona et al. (2017) investigated the effect of ASI on the development of premature infants in the first 12 months of life. A pre-/post-test experimental design was used to randomly divide 24 premature infants from a low socioeconomic setting. Developmental status was determined with the Bayley III Scales of Infant and Toddler Development, the Test of Sensory Functions in Infants and the Infant/Toddler Sensory Profile. Infants were divided into a control and experimental group. The experimental group received 10 weeks of ASI intervention. The authors reported that ASI intervention had a positive effect on the sensory processing and development of premature infants, especially in terms of cognitive, language and motor development. This study is limited by small sample size, lack of long-term follow-up and non-randomization.

A comparative effectiveness review was conducted by Weitlauf et al. (2017) for the Agency for Healthcare Research and Quality (AHRQ) to evaluate the effectiveness and safety of interventions targeting sensory challenges in ASD. Twenty-four studies were identified including 20 RCTs, one nonrandomized trial and three retrospective cohort studies. The included studies compared interventions incorporating sensory-focused modalities with alternative treatments or no treatment. The authors concluded that sensory-related outcomes improved in children receiving a sensory integration (SI)-based intervention compared with those receiving usual care or other treatment (low strength of evidence). Motor skills outcomes were improved in children receiving SI-based treatment compared with those receiving usual care or other treatment (low strength of evidence). Studies in the review had small sample sizes and typically limited duration of intervention and follow-up after intervention.

A systematic review which examined the research evidence for SIT and sensory-based intervention (SBI), for children with ASD and sensory processing disorders was conducted by Case-Smith et al (2015). A total of 19 studies were reviewed; 5 examined the effects of sensory integration therapy and 14 examined sensory-based intervention. Two of the five SIT studies were RCTs; one RCT compared SIT to usual care, one compared SIT to a fine motor activity protocol, and one was a case report. Two RCTs found positive effects for SIT on child performance using Goal Attainment Scaling (effect sizes ranging from .72 to 1.62); other studies (Levels III-IV) found positive effects on reducing behaviors linked to sensory problems. Sensory-based interventions are characterized as classroom-based interventions that use single-sensory strategies (weighted vests or therapy balls), to influence a child's state of arousal. The authors concluded that although small RCTs resulted in positive effects for SIT, additional rigorous trials using manualized protocols for SIT are needed to evaluate effects for children with ASDs and sensory processing problems. The studies were small samples, did not use blinded evaluation, examined short-term interventions, and did not examine retention of intervention gains.

Clinical Practice Guidelines

American Academy of Pediatrics (AAP)

In 2020, the AAP Council on Children with Disabilities published guidelines for the identification, evaluation, and management of children with ASDs. Regarding sensory therapies, the guidelines state that sensory based interventions may be included in the context of motor and behavioral therapies and in educational settings, and the evidence to support the general use of commonly used sensory based interventions is limited. Sensory goals may be included in treatment objectives.

American Occupational Therapy Association (AOTA)

In an updated practice guideline for individuals with ASD (Tomchek et al., 2016; reaffirmed 2024), the AOTA includes the following as interventions for sensory integration:

- ASI to address individualized goal areas with measurement by Goal Attainment Scaling (B-moderate evidence)
- Multisensory activities to improve occupational performance and behavior regulation (B-moderate evidence)
- ASI to improve sleep, adaptive skills, autism features, and sensory processing (C–I-weak/insufficient evidence)
- Multisensory center and non-customized sensory diets to improve occupational performance and behavioral regulation (I-insufficient evidence)
- Sound therapies to improve behavioral regulation (I-insufficient evidence)
- Dynamic seating to improve in-seat and on-task behavior and engagement (I- insufficient evidence)
- Linear movement or tactile input (via surgical brush) to improve learning or behavior (I- insufficient evidence)
- Environmental modifications (i.e., sound-absorbing walls and ceiling with additional halogen lighting) to improve attention behaviors, emotional control, and classroom performance (I- insufficient evidence)
- Weighted vests to support improved behavior or performance in daily life activities (D-not recommended due to ineffectiveness and/or potential harm outweighs the benefits)

Auditory Integration Training (AIT)

There is limited published literature regarding AIT. Much of the literature consists of uncontrolled studies with small numbers of participants, and treatment protocols have not been standardized. Review of older RCTs are not consistently supportive of a benefit. Supportive findings from two recent RCTs with important design limitations performed in China and Egypt need to be confirmed independently in US populations, considering the potential cultural component of the intervention. Furthermore, safety concerns have been raised as this treatment may cause distress and/or damage hearing (American Academy of Audiology 2010). The efficacy and safety of this training has not been demonstrated by larger studies with comparison groups using standardized protocols.

Fu et al. (2024) conducted a cross-sectional and longitudinal study to evaluate the effectiveness of TOMATIS® auditory stimulation therapy as a possible intervention for ASD. A total of 90 children ages three to eight years, who met the eligibility criteria were initially screened to assign 33 in the cross-sectional study and 57 in the longitudinal study. In the cross-sectional study, the children were then paired according to their sex, chronological age, and severity of ASD (measured with CARS and ABC). Finally, within each pair, children were randomly assigned to one of two groups by random draw: participants were randomly assigned to the experimental (17) and control (16) groups, who received either two sessions of TOMATIS training or intervention training with placebo music over 34 days. The final analyses excluded two participants who did not undergo a completed TOMATIS® training assessment after random assignment and one participant who did not have baseline Childhood Autism Rating Scale (CARS) and Autism Behavior Scale (ABC) scores. In the longitudinal study, participants received at least six phases of intervention training over 7.5 months (90 weeks). Thirty-two participants were excluded because of loss or missing data, and a total of 25 participants ultimately completed the trial. In the cross-sectional study, the experimental group showed improvement in symptoms after TOMATIS® training compared to the control group of children with ASD. The results validated the effect of TOMATIS® treatment for ASD-related deficits, including perceptual-motor, attentional, social, and emotional issues. Analysis of the TOMATIS® listening ability curves revealed that, compared to the control group, participants in the experimental group had better quality of completion at the end than in the first training period after two training periods, participants' cooperation increased, audiometric curve index scores improved, left- and right-ear curve balance improved and became more symmetrical, the slopes of the curves in the frequency bands flattened, spatial localization errors decreased, and left- and right-ear laterality was reduced. ASD's auditory hypersensitivity hampers social information processing, but TOMATIS® enhances cochlear frequency selectivity, aiding in capturing relevant auditory stimuli. In addition, the longitudinal study confirmed these findings, which revealed TOMATIS® training to be effective in clinically treating ASD. This study focused on audiometric indicators and behavioral improvement, elucidating the mechanisms behind the training's success. Behavioral improvements might stem from TOMATIS® frequency selectivity, reshaping auditory organ-cortical feedback loops to filter interference and focus on valid information. The authors concluded by stating that the rationale behind TOMATIS® music training is not yet fully understood, but the results of this study suggest that the brain's unique patterns in various frequency bands may be associated with improvements in behavioral disorders. This study has several limitations. The study discusses the improvement of therapy on the behavior of children with ASD, but future research is necessary to explore the mechanisms involved in TOMATIS® in depth using electrophysiological means. In the future, the sample and intervention period should be increased, and physiological tests such as auditory evoked potentials, electroencephalography, and MRI should be combined to explore the robust effects of TOMATIS®. Secondly, TOMATIS® training is mainly for children, and it is prudent to generalize the effects of the training to adults with ASD. Other limitations include exclusion of participants after randomization, which could have introduced biases, and questionable generalizability to US populations.

El-Tellawy et al. (2022) conducted a prospective, open label, randomized interventional clinical trial to evaluate the efficacy of hyperbaric oxygen therapy (HBOT) and TOMATIS® sound therapy (TST) in an Egyptian cohort of children with ASD. One hundred forty-six children with ASD with no previous rehabilitation therapy were enrolled in this study. Participants were randomly divided into four groups: the first group received hyperbaric oxygen therapy, the second group received TOMATIS® sound therapy, the third group received a combination of both modalities, and the fourth group, the control group, received no intervention. The authors found that the combination of TOMATIS® sound therapy with hyperbaric oxygen therapy had a superior effect in improving autism symptoms than each intervention alone (CARS after therapy 35.04 ±13.38 versus 49.34 ±17.54 before the intervention, $p < 0.001$). The authors concluded that the combination of both modalities may be helpful for children with ASD. The most distinctive evidence that supports the use of combination therapy for ASD is still controversial; however, the study provided some evidence of the benefit of combination therapy for children with ASD. Future studies should use a more sophisticated research design and begin by finding a consistent baseline measure that can be used to evaluate the effects of these therapies for ASD. Limitations of this study include inconsistent baseline measure, lack of control for baseline values, and absence of double-blinded evaluation. Well-designed, adequately powered, prospective, controlled clinical trials are needed to further describe safety and clinical outcomes.

The Agency for Healthcare Research and Quality (AHRQ) published a comparative review on interventions targeting sensory challenges in children with ASD. Inclusion criteria were studies comparing interventions incorporating sensory-focused modalities with alternative treatments or no treatment, and inclusion of at least 10 children with ASD ages 2-12 years. The authors extracted and summarized data qualitatively because of the significant heterogeneity, as well as the strength of evidence (SOE). In regard to auditory integration-based approaches which included evidence in 4 small RCTs

(2 moderate and 2 high risk of bias), they concluded that these did not improve language outcomes (low SOE) (Weitlauf et al., 2017).

Sokhadze et al. (2016) conducted a study using Berard's technique of auditory integration training (AIT) to improve sound integration in children with autism. It was proposed that exposure to twenty 30-min AIT sessions (total 10 h of training) would result in improved behavioral evaluation scores, improve profile of cardiorespiratory activity, and positively affect both early [N1, mismatch negativity (MMN)] and late (P3) components of evoked potentials in auditory oddball task. Eighteen children with ASD participated in the study. A group of 16 typically developing children served as a contrast group in the auditory oddball task. The study reflected a linear increase of heart rate variability measures and respiration rate. Comparison of evoked potential characteristics of children with ASD versus typically developing children revealed several group difference findings, more specifically, a delayed latency of N1 to rare and frequent stimuli, larger MMN: higher P3a to frequent stimuli, and at the same time delayed latency of P3b to rare stimuli in the autism group. Parental questionnaires demonstrated improvements in behavioral symptoms such as irritability, hyperactivity, repetitive behaviors, and other important behavioral domains. The authors concluded that the results of the study propose that more controlled research is necessary to document behavioral and psychophysiological changes resulting from Berard AIT and to provide explanation of the neural mechanisms of how auditory integration training may affect behavior and psychophysiological responses of children with ASD. The findings of this study need to be validated by larger, well-designed studies.

Sinha et al. (2011) conducted a systematic review to evaluate AIT and included six RCTs with 171 individuals with autism. Three RTCs did not demonstrate the benefit of AIT over control conditions. The remaining trials identified improvements at three 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.

Clinical Practice Guidelines

American Academy of Audiology (AAA)

A 2010 position statement by the AAA Task Force on AIT concludes that AIT (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)

The 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.

National Institute of Healthcare Excellence (NICE)

In guidance document for the support and management of ASD in patients under 19 years of age, NICE (2013: updated 2021) states that auditory integration training to manage speech and language problems in children and young people with autism should not be used.

U.S. Food and Drug Administration (FDA)

This section is to be used for informational purposes only. FDA approval alone is not a basis for coverage.

The equipment used for sensory integration therapy and auditory integration training is not considered medical in nature, and therefore not regulated by the FDA.

References

Acuña C, Gallegos-Berrios S, Barfoot J, et al. Ayres Sensory Integration® with children ages 0 to 12: A systematic review of randomized controlled trials. Am J Occup Ther. 2025 May 1;79(3):7903205180.

AIT Institute website. Available at: https://www.aitinstitute.org/what_is_auditory_integration_training.htm. Accessed July 29, 2025.

American Academy of Audiology. Auditory integration training. Position statement. 2010. Available at: https://audiology-web.s3.amazonaws.com/migrated/AIT_Position%20Statement.pdf_539978b2a238a5.97970694.pdf. Accessed July 29, 2025.

American Academy of Pediatrics (AAP). Prescribing therapy services for children with motor disabilities. June 2004. Revised April 2019. Available at: https://pediatrics.aappublications.org/content/113/6/1836. Accessed July 29, 2025.

American Academy of Pediatrics Council on Children with Disabilities; Section on Developmental and Behavioral Pediatrics. Identification, evaluation, and management of children with autism spectrum disorder. 2020. Available at: https://pediatrics.aappublications.org/content/pediatrics/145/1/e20193447. Accessed July 29, 2025.

American Speech-Language-Hearing Association (ASHA). Auditory integration training. Position statement. 2004. Available at: https://apps.asha.org/EvidenceMaps/Articles/ArticleSummary/26394522-af86-4f32-9f77-69fab0c0d0e7. Accessed July 29, 2025.

Association for Comprehensive Neurotherapy (ACN) [website]. Sensory Integration Therapy 2013. Available at: https://latitudes.org/benefits-of-sensory-motor-integration-therapy/. Accessed July 29, 2025.

Baltazar A. The American Occupational Therapy Association (AOTA), Inc. Addressing sensory integration and sensory processing disorders across the lifespan: the role of occupational therapy. 2015.

Bodison SC, Parham LD. Specific sensory techniques and sensory environmental modifications for children and youth with sensory integration difficulties: a systematic review. Am J Occup Ther. 2018 Jan/Feb;72(1):7201190040p1-7201190040 p11.

Case-Smith J, Weaver LL, Fristad MA. A systematic review of sensory processing interventions for children with autism spectrum disorders. Autism. 2015;19(2):133-148.

Cemali M, Pekçetin S, Akı E. The effectiveness of sensory integration interventions on motor and sensory functions in infants with cortical vision impairment and cerebral palsy: a single blind randomized controlled trial. Children (Basel). 2022 Jul 27;9(8):1123.

Chan SW, Thompson DR, Chau JP, et al. The effects of multisensory therapy on behavior of adult clients with developmental disabilities-a systematic review. Int J Nurs Stud. 2010 Jan;47(1):108-22.

El-Tellawy MM, Ahmad AR, Saad K, et al. Effect of hyperbaric oxygen therapy and Tomatis sound therapy in children with autism spectrum disorder. Prog Neuropsychopharmacol Biol Psychiatry. 2022 Mar 8;113:110457.

Fu Y, Tian M, Chen J, et al. Improvement of symptoms in children with autism by TOMATIS training: a cross-sectional and longitudinal study. Front Behav Neurosci. 2024 Mar 18;18:1357453.

Healthy Children website. American Academy of Pediatrics (AAP). Sensory Integration Therapy. Updated 10/7/2019. https://www.healthychildren.org/English/health-issues/conditions/developmental-disabilities/Pages/Sensory-Integration-Therapy.aspx. Accessed July 29, 2025.

Hodgetts S, Magill-Evans J, Misiaszek JE. Weighted vests, stereotyped behaviors and arousal in children with autism. J Autism Dev Disord. 2010 Sep 14.

Kashefimehr B, Kayihan H, Huri M. The effect of sensory integration therapy on occupational performance in children with autism. OTJR (Thorofare n J). 2018 Apr;38(2):75-83.

Kelly J, Harel D, Krishnamoorthy S, et al. Contextual sensory integration training vs. traditional vestibular rehabilitation: A pilot randomized controlled trial. J Neuroeng Rehabil. 2023 Aug 12;20(1):104.

Kim Y, Kim M, Park C, et al. Effects of integrative autism therapy on multiple physical, sensory, cognitive, and social integration domains in children and adolescents with autism spectrum disorder: a 4-week follow-up Study. Children (Basel). 2022 Dec 15;9(12):1971.

Koller D, McPherson AC, Lockwood I, et al. The impact of Snoezelen in pediatric complex continuing care: a pilot study. J Pediatr Rehabil Med. 2018;11(1):31-41.

Lecuona E, Van Jaarsveld A, Raubenheimer J, et al. Sensory integration intervention and the development of the premature infant: a controlled trial. S Afr Med J. 2017 Oct 31;107(11):976-982.

Lotan M, Gold C. Meta-analysis of the effectiveness of individual intervention in the controlled multisensory environment (Snoezelen) for individuals with intellectual disability. J Intellect Dev Disabil. 2009 Sep;34(3):207-15.

May-Benson TA, Koomar JA. Systematic review of the research evidence examining the effectiveness of interventions using a sensory integrative approach for children. Am J Occup Ther. 2010 May-Jun;64(3):403-14.

National Institute for Health and Care Excellence (NICE). Autism spectrum disorder in under 19s: support and management. Clinical guideline [CG170]. August 2013; updated 2021 Jun 14. https://www.nice.org.uk/guidance/cg170/chapter/1-Recommendations#interventions-for-autism-that-should-not-be-used. Accessed July 29, 2025.

Ohio Administrative Code/5160/Chapter 5160-1-01. Medicaid medical necessity: definitions and principles. Available at: https://codes.ohio.gov/ohio-administrative-code/rule-5160-1-01. Accessed August 25, 2025.

Omairi C, Mailloux Z, Antoniuk SA, et al. Occupational therapy using Ayres sensory integration®: a randomized controlled trial in Brazil. Am J Occup Ther. 2022 Jul 1;76(4):7604205160.

Parham LD, Cohn ES, Spitzer S, et al. Fidelity in sensory integration intervention research. Am J Occup Ther. 2007 Mar-Apr;61(2):216-27.

Pfeiffer B, Clark GF, Arbesman M. Effectiveness of cognitive and occupation-based interventions for children with challenges in sensory processing and integration: a systematic review. Am J Occup Ther. 2018 Jan/Feb;72(1):7201190020p1-7201190020 p9.

Randell E, Wright M, Milosevic S, et al. Sensory integration therapy for children with autism and sensory processing difficulties: the SenITA RCT. Health Technol Assess. 2022 Jun;26(29):1-140.

Salokorpi T, Rautio T, Kajantie E, et al. Is early occupational therapy in extremely preterm infants of benefit in the long run? Pediatr Rehabil. 2002;5(2):91-98.

Schaaf RC, Dumont RL, Arbesman M, et al. Efficacy of occupational therapy using Ayres Sensory Integration®: a systematic review. Am J Occup Ther. 2018 Jan/Feb;72(1):7201190010p1-7201190010 p10.

Sensory Integration Therapy in Autism: Mechanisms and Effectiveness. Clinical Trial. NCT02536365. https://clinicaltrials.gov/ct2/show/NCT02536365?term=NCT02536365&rank=1. Accessed July 29, 2025.

Sinha Y, Silove N, Williams K, Hayen A. Auditory integration training and other sound therapies for autism spectrum disorders. Cochrane Database of Systematic Reviews 2004, Issue 1. Art. No.: CD003681. Updated 2007.

Sokhadze EM, Casanova MF, Tasman A, et al. Electrophysiological and behavioral outcomes of Berard auditory integration training (AIT) in children with autism spectrum disorder. Appl Psychophysiol Biofeedback. 2016 Dec;41(4):405-420.

Tomchek SD, Koenig KP. Occupational therapy practice guidelines for individuals with autism spectrum disorder. Bethesda (MD): American Occupational Therapy Association, Inc. (AOTA); 2016. 97 p. Updated 2023 Jan 5.

Tran HT, Li YC, Lin HY, et al. Sensory processing impairments in children with developmental coordination disorder. Children (Basel). 2022 Sep 22;9(10):1443.

Tzang RF, Chang YC, Kao KL, et al. Increased risk of developing psychiatric disorders in children with attention deficit and hyperactivity disorder (ADHD) receiving sensory integration therapy: a population-based cohort study. Eur Child Adolesc Psychiatry. 2019 Feb;28(2):247-255.

Uyanik M, Bumin G, Kayihan H. Comparison of different therapy approaches in children with Down syndrome. Pediatr Int. 2003;45(1):68-73.

Warutkar VB, Kovela RK, Samal S. Effectiveness of sensory integration therapy on functional mobility in children with spastic diplegic cerebral palsy. Cureus. 2023 Sep 21;15(9): e45683.

Watling R, Hauer S. Effectiveness of Ayres sensory integration® and sensory-based interventions for people with autism spectrum disorder: A systematic review. Am J Occup Ther. 2015;69(5):1-12.

Weitlauf AS, Sathe NA, McPheeters ML, et al. Interventions Targeting Sensory Challenges in Children with Autism Spectrum Disorder—An Update [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2017 May. (Comparative Effectiveness Reviews, No. 186.) Available from: https://www.ncbi.nlm.nih.gov/books/NBK448053/. Accessed July 29, 2025.

Wen L, Wu Z. The impact of sensory integration based sports training on motor and social skill development in children with autism spectrum disorder. Sci Rep. 2025 Jun 6;15(1):19974.

Wuang YP, Wang CC, Huang MH, et al. Prospective study of the effect of sensory integration, neurodevelopmental treatment, and perceptual-motor therapy on the sensorimotor performance in children with mild mental retardation. Am J Occup Ther. 2009 Jul-Aug;63(4):441-52.

Yamanishi Y, Orita Y, Nagayoshi M, et al. Examining the effectiveness of Ayres Sensory Integration® intervention for children with developmental coordination disorder in improving motor coordination and daily activity function: A randomized controlled trial. Cureus. 2025 Jan 5;17(1): e76971.

Zimmer M, Desch L, et al. American Academy of Pediatrics Section on Complementary and Integrative Medicine; Council on Children with Disabilities; Sensory integration therapies for children with developmental and behavioral disorders. Pediatrics. 2012 Jun;129(6):1186-9.

Policy History/Revision Information

Date	Summary of Changes
02/01/2026	**Coverage Rationale** • Replaced language indicating "sensory integration therapy (SIT) and auditory integration training (AIT) *should be evaluated for medical necessity using* the *Ohio Administrative Code, Rule 5160-1-01, Medicaid medical necessity: definitions and principles*" with "refer to the *Ohio Administrative Code, Rule 5160-1-01, Medicaid medical necessity: definitions and principles* for *medical necessity clinical coverage criteria* for sensory integration therapy (SIT) and auditory integration training (AIT)" **Supporting Information** • Updated *Clinical Evidence* and *References* sections to reflect the most current information • Archived previous policy version CS108OH.D

Instructions for Use

This Medical Policy provides assistance in interpreting UnitedHealthcare standard benefit plans. When deciding coverage, the federal, state (Ohio Administrative Code [OAC]), or contractual requirements for benefit plan coverage must be referenced as the terms of the federal, state (OAC), or contractual requirements for benefit plan coverage may differ from the standard benefit plan. In the event of a conflict, the federal, state (OAC) or contractual requirements for benefit plan coverage govern. Before using this policy, please check the federal, state (OAC) or contractual requirements for benefit plan coverage. UnitedHealthcare reserves the right to modify its Policies and Guidelines as necessary. This Medical Policy is provided for informational purposes. It does not constitute medical advice.

UnitedHealthcare uses InterQual® for the primary medical/surgical criteria, and the American Society of Addiction Medicine (ASAM) for substance use, in administering health benefits. If InterQual® does not have applicable criteria, UnitedHealthcare may also use UnitedHealthcare Medical Policies, Coverage Determination Guidelines, and/or Utilization Review Guidelines that have been approved by the Ohio Department for Medicaid Services. The UnitedHealthcare Medical Policies, Coverage Determination Guidelines, and Utilization Review Guidelines are intended to be used in connection with the independent professional medical judgment of a qualified health care provider and do not constitute the practice of medicine or medical advice.