APPENDIX to Sensory Integration Therapy Policy

Prior Authorization Requirements

This service (or procedure) is considered **investigational** in all instances. If you would like to submit additional information please forward to the Prior Authorization Department.

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

Questions regarding the applicability of this policy should also be directed to the Prior Authorization Department. Please call 1-800-541-6652 or visit the Provider Portal www.blueshieldca.com/provider.

Evidence Basis for the Policy

Rationale

Sensory integration (SI) is a theory of neuropsychological development and function that investigators have attempted to validate for the past 25 years. Sensory integration is defined as the ability of an individual to appropriately organize sensory input for perceiving, responding, or learning. Patients with established SI dysfunction (e.g., children with autism, attention deficit hyperactivity disorder (ADHD), brain injuries, fetal alcohol syndrome, and neurotransmitter disease) “are theorized to have a disorder in the reception and integration of sensory information from their environment” (Hayes Inc., 2004). Sensory integration techniques performed by occupational therapists may include swings to incorporate vestibular input, and trapeze bars and large foam pillows or mats 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.

Two organizations currently offer certification for SI therapy; Sensory Integration International, a non-profit branch of the Ayres Clinic in Torrence, CA, and Western Psychological Services, a private organization that has a collaborative arrangement with University of Southern California (Los Angeles) to offer sensory integration training through their Department of Occupational Science and Therapy. The sessions are often provided as part of a comprehensive occupational therapy or cognitive rehabilitation therapy program and may last for more than 1 year.

According to the United States Food and Drug Administration (FDA) the equipment used for SI therapy is considered educational, not medical, and therefore is not subject to regulation by the FDA (Hayes Inc., 2004).

A 1999 Blue Cross Blue Shield Technology Evaluation Center (TEC) Assessment compared the outcomes of SI therapy with that of standard occupational/physical therapy among children with autism, mental retardation, or learning disabilities. Eleven studies were identified that in total included more than 600 learning disabled children. Studies that used random assignment and blinded assessors suggested that SI therapy was not superior to conventional therapy, and, in many cases, was not even demonstrably superior to any treatment at all.

Periodic literature searches using the MEDLINE database since the 1999 TEC Assessment have included primarily small case series. Systematic reviews and comparative studies are described below.

Systematic Reviews

Hayes Inc., (2004) evaluated the evidence from the peer-reviewed literature (10 studies) regarding SI therapy, also known as SI training or SIT, for learning disorders and developmental delays in children. The authors concluded the data failed to provide evidence that SI therapy effectively treated or improved long-term outcomes for children with learning disabilities, Down syndrome, developmental delays, or putative SI disorders. Few studies assessed SI therapy in children with cerebral palsy or autism; therefore there was “insufficient evidence to evaluate SI therapy for these indications.” A Hayes updated search of the literature in January of 2009 failed to change earlier conclusions.

In 2008, Case-Smith and colleague examined the evidence for SI therapy as part of a systematic review of interventions for autism used in occupational therapy. The authors identified one level 1 study, a systematic review, which found only lower quality evidence (levels III and IV, with small sample size and lack of control groups) suggesting that SI intervention was associated with positive changes in social interaction, purposeful play, and decreased sensitivity (Baranek, 2002). It was concluded that “although each of these studies had positive findings, when combined, the evidence remains weak and requires further study.”

In a systematic review of 27 studies, May-Benson and Koomar (2010) evaluated the effectiveness of SI intervention on children with difficulty processing and integrating SI. The review identified 27 research studies (13 level-I randomized trials) that met the inclusion criteria. Most of the studies had been performed in children with learning or reading disabilities; there were two case reports/small series on the effect of SI therapy in children with autism. The results suggested the SI approach may result in positive outcomes in sensorimotor skills and motor planning. However, the authors stated findings were limited because of small sample sizes, variable intervention dosage, lack of fidelity to intervention, and selection of outcomes that may not be meaningful to patients and families or may not change with the amount of treatment provided. Further, methodologically and theoretically sound studies to replicate findings were needed to support the positive outcomes reported.

A 2011 Cochrane review evaluated auditory integration training along with other sound therapies for autism spectrum disorders (Sinha et al., 2011). Included were six randomized controlled trials

(RCTs) of auditory integration therapy and one of Tomatis therapy, involving a total of 182 subjects aged 3 to 39 years. For most of the studies, the control condition consisted of listening to unmodified music for the same time as the active treatment group. Allocation concealment was inadequate for all studies, and five of the trials had fewer than 20 participants. Meta-analysis could not be conducted. Three studies did not demonstrate any benefit of auditory integration therapy over control conditions, and three studies had outcomes of questionable validity or outcomes that did not achieve statistical significance. The review found no evidence that auditory integration therapy is an effective treatment for autism spectrum disorders; however, evidence was not sufficient to prove that it is not effective.

The Vanderbilt Evidence-based Practice Center prepared a comparative effectiveness review of therapies for children with autism spectrum disorders that was published by the Agency for Healthcare Research and Quality (AHRQ) (Warren et al., 2011). Sensory and auditory integration therapies were among the various health therapies included in the review. The authors concluded there was little support for the use of these treatments; indicating specifically that the studies of SI therapy and music therapy were of poor quality.

In 2011, Hayes Inc. performed a systematic review of sensory based treatments for autism spectrum disorders. The types of sensory based treatments included auditory integration training (AIT), sound therapy, SI therapy/training**,** use of a weighted vest, and music therapy. For SI therapy, the authors reported that short-term positive gains in sensory integration abnormalities were consistently observed across four studies, including short-term improvements in touch aversion, off-task behavior, stereotypies, goal attainment, and autistic mannerisms. While two moderately sized RCTs reported positive outcomes, in another two studies there were substantial limitations, including small sample populations, and significant design limitations. The authors concluded there were potential but unproven benefits for SI therapy for children with autism spectrum disorders and no proven benefit for adolescents and adults with an autism spectrum disorder due to the lack of studies evaluating SI therapy for this population. Annual reviews through 2013 did not change the conclusions of the existing Hayes report from 2011.

Controlled Trials

Uyanik and colleagues (2003) conducted a study of 45 children with Down's syndrome who were divided into three treatment groups (SI therapy alone, vestibular stimulation combined with SI therapy and neurodevelopmental therapy). Greater outcome improvements were reported in the vestibular stimulation with SI therapy group and in the neurodevelopmental therapy group when compared to the SI therapy alone group. Outcomes assessed were the Ayres Southern California Sensory Integration Test, Pivot Prone Test, Gravitational Insecurity Test, and Pegboard Test along with physical assessment. The authors concluded all methods of treatment should be considered when planning rehabilitation therapies for children with Down's syndrome even though SI therapy alone was not shown to be superior to the other therapy groups.

In 2007, the Sensory Processing Disorders Scientific Workgroup discussed the methodological challenges of conducting intervention effectiveness studies of dynamic interactional processes, the lack of scientific evidence to support current practice, and methods for improving the quality of research in this area (Malloux et al., 2007; Parham et al., 2007). Members of the workgroup also reported results from a single institution randomized pilot study for a proposed multicenter

trial (Miller et al., 2007). Thirty families agreed to participate over a three-year period. The children had a clinical diagnosis of sensory modulation disorder following a comprehensive evaluation with standardized and clinical testing (including responses to sensory stimuli, attempts by the child to self-regulate, behavioral disorganization, and somatic responses to the testing situations). The 24 children who began treatment were randomized to one of three groups consisting of occupational therapy with sensory-integration (two times per week for 10 weeks, n = 7), equivalent activity control sessions (n = 10) or a wait-list control group (n = 7). Significant improvements relative to both control groups were obtained for Goal Attainment Scaling (37 versus 14 versus 7). A number of the other outcome measures (Leitner International Performance Scale, Short Sensory Profile, and Internalizing on the Child Behavior Checklist) showed trends for improvement in this small study. Additional study with a larger number of subjects is needed.

Another pilot study, reported in 2011, randomized 37 children with a sensory processing disorder (21 with autism and 16 with pervasive developmental disorder not otherwise specified) to SI interventions or to fine motor interventions (18 treatments over 6 weeks) (Pfeiffer et al., 2011). Fidelity to SI interventions was verified with a fidelity measure developed for research by Parham et al. (2007). Blinded evaluation at the conclusion of the intervention found no significant difference between the two groups on the Quick Neurological Screening Test (QNST) or sensory processing scores except for Autistic Mannerisms (e.g., stereotyped or self-stimulatory behavior) subscale. The SI group demonstrated greater improvement than the fine motor group on individualized Goal Attainment Scaling. Post-hoc analysis found that more children in the SI group were able to complete parts of the standardized QNST after the intervention. This finding is limited by the post-hoc analysis and the difference in the two groups at baseline.

Practice Guidelines and Position Statements

A clinical report was published by the American Academy of Pediatrics (AAP) Committee on Children with Disabilities regarding prescribing therapy services for children with motor disabilities. The report advised that “Scientific legitimacy has also not been established for sensory integration intervention for children with motor disabilities” (Michaud et al., 2004; [Reaffirmed in 2007 and 2011]).

Guidance from the American Academy of Pediatrics (AAP) Council on Children with Disabilities published guidelines for the management of children with autism spectrum disorders (Myers et al., 2007; Reaffirmed December 2010). Specific to SI therapy, the guidelines stated:

> Sensory integration (SI) therapy often is used alone or as part of a broader program of occupational therapy for children with ASDs [autism spectrum disorders]. The goal of SI therapy is not to teach specific skills or behaviors but to remediate deficits in neurologic processing and integration of sensory information to allow the child to interact with the environment in a more adaptive fashion. Unusual sensory responses are common in children with ASDs, but there is not good evidence that these symptoms differentiate ASDs from other developmental disorders, and the efficacy of SI therapy has not been demonstrated objectively. Available studies are plagued by methodologic limitations, but proponents of SI note that higher-quality SI research is forthcoming.

A 2012 policy statement by the AAP on SI therapies for children with developmental and behavioral disorders states that “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 therapy is limited and inconclusive.” The AAP indicates that these limitations should be discussed with parents, along with instruction on how to evaluate the effectiveness of a trial period of SI therapy (Zimmer & Desch, 2012).

In 2009, the American Occupational Therapy Association (AOTA) stated that the AOTA recognizes SI as one of several theories and methods used by occupational therapists and occupational therapy assistants working with children in public and private schools to improve a child's ability to access the general education curriculum and to participate in school-related activities (Roley et al., 2009). In 2011, the AOTA published evidence-based occupational therapy practice guidelines for children and adolescents with challenges in sensory processing and sensory integration (Watling et al., 2011). The 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 either in a recommendation that occupational therapy practitioners routinely provide the intervention or in no recommendation because the balance of the benefits and harms 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).

Summary

Overall, the scientific evidence remains insufficient to evaluate the effect of SI therapy on health outcomes for autism, mental retardation, developmental delays, behavioral disorders, or any other indications. As noted by Kratz in 2009, “there exists very little research that supports the effectiveness of any intervention for children with chronic or mild disabilities across all disciplines.” The peer-reviewed literature does not demonstrate that SI therapy, compared with other treatments or with no treatment, provides clinically significant long-term improvements in health outcomes. Due to the individual nature of SI therapy and the large variation in individual therapists and patients, large multicenter RCTs are needed to evaluate the efficacy and role of this intervention in the management of these conditions. Therefore, sensory integration therapy is considered investigational.

Benefit Application

Benefit determinations should be based in all cases on the applicable contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control. Please refer to the member's contract benefits in effect at the time of

service to determine coverage or non-coverage of these services as it applies to an individual member.

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

This Policy relates only to the services or supplies described herein. Benefits may vary according to benefit design; therefore, contract language should be reviewed before applying the terms of the Policy. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement.

Type	Number	Description
CPT	97533	Sensory integrative techniques to enhance sensory processing and promote adaptive responses to environmental demands, direct (one-on-one) patient contact, each 15 minutes
HCPC	None	
ICD9 Procedure	None	
ICD9 Diagnosis	All Diagnoses	
Place of Service	All Places of Service	

Tables

N/A

Definitions

N/A

Index / Cross Reference of Related BSC Medical Policies

The following Medical Policies share diagnoses and/or are equivalent BSC Medical Policies:

- Cognitive Rehabilitation

Key / Related Searchable Words

- Ayres clinic
- Sensory integration
- Sensory integration therapy
- Sensory integration training
- SIT
- SI therapy

References

- American Academy of Pediatrics (AAP). Sensory integration therapies for children with developmental and behavioral disorders. Section On Complementary And Integrative Medicine; Council on Children with Disabilities; American Academy of Pediatrics, Zimmer M, Desch L. Pediatrics. 2012 Jun; 129(6):1186-9. doi: 10.1542/peds.2012-0876. Epub 2012 May 28.
- Baranek GT. Efficacy of sensory and motor interventions for children with autism. J Autism Dev Disord. 2002; 32(5):397-422.
- Blue Cross Blue Shield Association Technology Evaluation Center (TEC) Assessment: Sensory integration therapy. 1999; Vol. 14, Tab 22.
- Blue Cross Blue Shield Association. Medical Policy Reference Manual, No. 8.03.13 (October, 2012).
- Case-Smith J, Arbesman M. Evidence-based review of interventions for autism used in or of relevance to occupational therapy. Am J Occup Ther. 2008; 62(4):416-29.
- Hayes, Inc. Hayes Medical Technology Directory™ Sensor-Based Treatments for Autism Spectrum Disorders. Lansdale, PA: Hayes, Inc.; May, 2011 [Reaffirmed May, 2013].
- Hayes, Inc. Hayes Medical Technology Directory™ Sensory Integration Therapy for Children with Learning Disabilities or Developmental Delays. Lansdale, PA: Hayes, Inc.; December, 2004 [annual review, 2009].
- Kratz SV. Sensory integration intervention: historical concepts, treatment strategies and clinical experiences in three patients with succinic semialdehyde dehydrogenase (SSADH) deficiency. J Inherit Metab Dis. 2009; 32(3):353-60.
- Mailloux Z, May-Benson TA, Summers CA et al. Goal attainment scaling as a measure of meaningful outcomes for children with sensory integration disorders. Am J Occup Ther. 2007; 61(2):254-9.
- 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):403-414.

- Michaud LJ; Committee on Children With Disabilities. Prescribing therapy services for children with motor disabilities. Pediatrics [serial online]. 2004 Jun; 13(6):1836-8. American Academy of Pediatrics (AAP) Policy. [Reaffirmed Sept 2007; May 2011] Retrieved July 10, 2013 from http://aappolicy.aappublications.org/cgi/content/full/pediatrics;113/6/1836.
- Miller LJ, Coll JR, Schoen SA. A randomized controlled pilot study of the effectiveness of occupational therapy for children with sensory modulation disorder. Am J Occup Ther. 2007; 61(2):228-38.
- Myers SM, Johnson CP; American Academy of Pediatrics Council on Children With Disabilities. Management of children with autism spectrum disorders. Pediatrics. 2007 Nov; 120(5):1162-82. [Reaffirmed Dec 2010]. Retrieved July 10, 2013 from http://aappolicy.aappublications.org/cgi/content/abstract/pediatrics;120/5/1162.
- Parham LD, Cohn ES, Spitzer S et al. Fidelity in sensory integration intervention research. Am J Occup Ther. 2007; 61(2):216-27.
- Pfeiffer BA, Koenig K, Kinnealey M et al. Effectiveness of sensory integration interventions in children with autism spectrum disorders: a pilot study. Am J Occup Ther. 2011; 65(1):76-85.
- Roley SS, Bissell J, Clark GF. Providing occupational therapy using sensory integration theory and methods in school-based practice. Am J Occup Ther. 2009; 63(6):823-42.
- Sinha Y, Silove N, Hayen A et al. Auditory integration training and other sound therapies for autism spectrum disorders (ASD). Cochrane Database Syst Rev. 2011; (12):CD003681.
- Uyanik M, Bumin G, Kayihan H. Comparison of different therapy approaches in children with Down syndrome. Pediatr Int. 2003; 45(1):68-73.
- Warren Z, Veenstra-VanderWeele J, Stone W et al. Therapies for Children With Autism Spectrum Disorders. Comparative Effectiveness Review No. 26. (Prepared by the Vanderbilt Evidence-based Practice Center under Contract No. 290-2007-10065-I.) AHRQ Publication No. 11-EHC029-EF. Rockville, MD: Agency for Healthcare Research and Quality. April2011. Retrieved July 10, 2013 from http://www.effectivehealthcare.ahrq.gov/index.cfm/search-for-guides-reviews-andreports/?pageaction=displayproduct&productID=656.
- Watling R, Koenig KP, Davies PL et al. Occupational therapy practice guidelines for children and adolescents with challenges in sensory processing and sensory integration. Bethesda, MD: American Occupational Therapy Association Press; 2011. Retrieved July 10, 2013 from http://www.guidelines.gov/content.aspx?id=34041.
- Zimmer M, Desch L. Sensory integration therapies for children with developmental and behavioral disorders. Pediatrics. 2012; 129(6):1186-9.

Policy History

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

Effective Date	Action	Reason
6/7/2000	BCBSA Medical Policy adoption	Medical Policy Committee
4/1/2001	Policy revision without position change	Medical Policy Committee
1/11/2008	Policy reviewed, updated with BCBSA; no change in position	Medical Policy Committee
10/1/2010	Policy revision without position change	Medical Policy Committee
8/23/2013	Policy revision without position change. Policy placed on No Further Routine Literature Review and Update status.	Medical Policy Committee

The materials provided to you are guidelines used by this plan to authorize, modify, or deny care for persons with similar illness or conditions. Specific care and treatment may vary depending on individual need and the benefits covered under your contract. These Policies are subject to change as new information becomes available.

Click here to view the policy statement for this policy

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