

Treatment Intervention Advisory Committee Review and Determination

Date: April 28, 2017

To: DHS/DLTC

From: Wisconsin Department of Health Services Autism and other Developmental Disabilities
Treatment Intervention Advisory Committee: Lana Collet-Klingenberg, Ph.D. (chairperson)

RE: Determination of Sensory Integration Therapy as a proven and effective treatment for individuals with autism spectrum disorder and/or other developmental disabilities

This is an initial review

This is a re-review. The initial review was November 2013 with a Determination of Level 4; the second review was October 2014 with a Determination of Level 4.

Section One: Overview and Determination

Please find below a statement of our determination as to whether or not the committee views Sensory Integration Therapy as a proven and effective treatment for children with autism spectrum disorder and/or other developmental disabilities. In subsequent sections you will find documentation of our review process including a description of the proposed treatment, a synopsis of review findings, the treatment review evidence checklist, and a listing of the literature considered. In reviewing treatments presented to us by DHS/DLTC, we implement a review process that carefully and fully considers all available information regarding a proposed treatment. Our determination is limited to a statement regarding how established a practice is in regard to quality research. We do not make funding decisions.

Description of proposed treatment

As stated in previous reviews:

Sensory Integration Therapy is defined by the President of the American Occupational Therapy Association (see attached letter dated June 7, 2013) as follows: "Sensory integration therapy (SIT), as originally described by A. Jean Ayres (1975, 1979), represents a neuroscientifically based therapeutic approach for treating children with ASD. The aim of SIT is to promote the child's ability to organize increasingly complex, successful adaptive responses (Ayres, 1972). To be correctly labeled as SIT an intervention must meet the following criteria, as described in the Ayres Sensory Integration Fidelity Measure (Parham et al., 2007; Parham et al., 2011): (a) assurance of physical safety; (b) presentation of multimodal sensory opportunities; (c) maintenance of appropriate levels of alertness; (d) challenge to postural, ocular, oral, or bilateral motor control; (e) challenge to praxis and organization of behavior; (f) therapist-child collaboration in activity choice; (g) tailoring of activity to present a "just-right" challenge; (h) assurance that the therapeutic activities successfully engage the child; (i) support of the child's intrinsic motivation to play; and (j) establishment of a therapeutic alliance. The American Occupational Therapy Association (AOTA) recognizes SIT as one of many treatment approaches used by occupational therapists working with children ASD. When providing SIT, the therapist may utilize sensory-based modalities (e.g., a pressure vest) or recommend specific sensory strategies, but unless these procedures are embedded in a multifaceted treatment plan that adheres to the above criteria (including the presentation of multi-modal sensory opportunities), the approach cannot appropriately be

described as SIT. SIT is provided utilizing a direct one-on-one intervention model in a clinic environment that contains specialized equipment (e.g., suspended swings) capable of providing graduated and varied forms of multisensory input. Treatment sessions last approximately 30 minutes to one hour, one to three times per week. Ideally, SIT should be administered for a minimum of several weeks.”

Synopsis of review

In the case of Sensory Integration Therapy, please refer to the attached reference listing that details the reviewed research. The committee’s conclusions regarding Sensory Integration Therapy include : A literature search was conducted for 2015 in order to find studies that have been published since the last review. Three new research articles were found and article inclusion checklists completed. An article from Focus on Autism and Other Developmental Disabilities, titled "Investigating the Effects of Sensory Integration Terhapy in Decreasing Stereotypy" by Sniezyk and Zane (2015) concluded that "the research that exists on testing the effectiveness of SIT is at best inconclusive, at worst showing thus far that it is not na effective treatment strategy." This article was a well designed, experimenal study with Interobserver Agreement and procedural validity built in. The authors were unable to demonstrate that SIT was effective in reducing stereotypical behavior. Another study from the journal, Behavioral Interventions, was titled, "Sensory Integration as a Treatment for Automatically Maintained Stereotypy" by Moore, Cividini-Motta, Clark and Ahearn (2015) also concluded that SI had no impact on the target behavior. A third, quasi-experimental, study was conducted by Mishra and Senapati (2015) to determine whether a combined approach involving Craniosacral Therapy and Sensory Integration Therapy would be more effective than Sensory Integration Therapy alone. Results show a reduction in autism symptoms as measured by the Autism Treatment Evaluation Checklist in children with autism who participated in an intervention involving both Craniosacral and Sensory Integration Therapies. Children who participated in Sensory Integration Therapy alone demonstrated some reduction in symptoms of autism, but such results were not significant. These three recent articles underscore concerns from the field, including those in the field of Occupational Therapy (e.g., Parham et al, 2007), regarding the lack of evidence to support SIT as an evidence-based practice. As noted in a personal communication from AOTA, dated June 7, 2013, authoritative bodies such as the National Autism Council, AHRQ, and the Rand Corporation also find inconclusive evidence regarding SIT as an evidence-based practice.

Two studies were reviewed for the 2017 evaluation and extend the findings reported above. Case-Smith et al. Nineteen studies were reviewed including two RCTs and they found numerous methodological shortcomings and equivocal findings: "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."

Leong et al. (2015) likewise "Concluded that based on limited comparative evidence, functional analysis-based interventions for challenging behavior were more effective that SIT. They further stated that the studies did not provide convincing evidence for the efficacy of SIT and advise that the use of SIT be limited to experimental contexts."

In sum, it is the decision of the committee that Sensory Integration Therapy, remain a Level 4- Insufficient Evidence.

Section Two: Rationale for Focus on Research Specific to Comprehensive Treatment Packages (CTP) or Models

In the professional literature, there are two classifications of interventions for individuals with Autism Spectrum Disorder (National Research Council, 2001; Odom et al., 2003; Rogers & Vismara, 2008):

- (a) **Focused intervention techniques** are individual practices or strategies (such as positive reinforcement) designed to produce a specific behavioral or developmental outcome, and
- (b) **Comprehensive treatment models** are “packages” or programs that consist of a set of practices or multiple techniques designed to achieve a broader learning or developmental impact.

To determine whether a treatment package is proven and effective, the Treatment Intervention Advisory Committee (TIAC) will adopt the following perspective as recommended by Odom et al. (2010):

The individual, focused intervention techniques that make up a comprehensive treatment model may be evidence-based. The research supporting the effectiveness of separate, individual components, however, does *not* constitute an evaluation of the comprehensive treatment model or “package.” The TIAC will consider and review only research that has evaluated the efficacy of implementing the comprehensive treatment *as a package*. Such packages are most often identifiable in the literature by a consistently used name or label.

National Research Council. (2001). *Educating children with autism*. Washington, DC: National Academy Press.

Odom, S. L., Brown, W. H., Frey, T., Karusu, N., Smith-Carter, L., & Strain, P. (2003) Evidence-based practices for young children with autism: Evidence from single-subject research design. *Focus on Autism and Other Developmental Disabilities, 18*, 176-181.

Odom, S. L., Boyd, B. A., Hall, L. J., & Hume, K. (2010). Evaluation of comprehensive treatment models for individuals with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders, 40*, 425-436.

Rogers, S., & Vismara, L. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child and Adolescent Psychology, 37*, 8-38.

Section Three: DLTC-TIAC Treatment Review Evidence Checklist

Name of Treatment: Sensory Integration Therapy

Level 1- Well Established or Strong Evidence (DHS 107 - Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, National Professional Development Center) have approved of or rated the treatment package as having a strong evidence base; authorities are in agreement about the level of evidence.
- There exist ample high quality studies that demonstrate experimental control and favorable outcomes of treatment package.
 - Minimum of two group studies or five single subject studies or a combination of the two.
 - Studies were conducted across at least two independent research groups.
 - Studies were published in peer reviewed journals.
- There is a published procedures manual for the treatment, or treatment implementation is clearly defined (i.e., replicable) within the studies.
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 2 – Established or Moderate Evidence (DHS 107 - Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have approved of or rated the treatment package as having at least a minimal evidence base; authorities may not be in agreement about the level of evidence.
- There exist at least two high quality studies that demonstrate experimental control and favorable outcomes of treatment package.
 - Minimum of one group study or two single subject studies or a combination of the two.
 - Studies were conducted by someone other than the creator/provider of the treatment.
 - Studies were published in peer reviewed journals.
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 3 – Emerging Evidence (DHS 107 – Promising as a Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have recognized the treatment package as having an emerging evidence base; authorities may not be in agreement about the level of evidence.
- There exists at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package.
 - May be one group study or single subject study.
 - Study was conducted by someone other than the creator/provider of the treatment.
 - Study was published in peer reviewed journal.
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 4 – Insufficient Evidence (Experimental Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence.
- There is not at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package.
 - Study was conducted by the creator/provider of the treatment.
 - Study was not published in a peer reviewed journal.
- Participants (i.e., N) are not clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes:

Level 5 – Untested (Experimental Treatment) &/or Potentially Harmful

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence.
- There are no published studies supporting the proposed treatment package.
- There exists evidence that the treatment package is potentially harmful.**
 - Authoritative bodies have expressed concern regarding safety/outcomes.
 - Professional bodies (i.e., organizations or certifying bodies) have created statements regarding safety/outcomes.

Notes: At this level, please specify if the treatment is reported to be potentially harmful, providing documentation

Date: October 30, 2015

Committee Members Completing Initial Review of Research Base: Lana Collet-Klingenberg, Julie LaBerge

Committee Decision on Level of Evidence to Suggest the Proposed Treatment is Proven and Effective:
Level 4- Insufficient Evidence

References Supporting Identification of Evidence Levels:

- Chambless, D.L., Hollon, S.D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology*, 66(1) 7-18.
- Chorpita, B.F. (2003). The frontier of evidence---based practice. In A.E. Kazdin & J.R. Weisz (Eds.). *Evidence-based psychotherapies for children and adolescents* (pp. 42---59). New York: The Guilford Press.
- Odom, S. L., Collet-Klingenberg, L., Rogers, S. J., & Hatton, D. (2010). Evidence-based practices in interventions for children and youth with autism spectrum disorders. *Preventing School Failure*, 54(4), 275-282.

Section Four: Literature Review

(from earlier review) Iwanaga, R., Honda, S., Nakane, H., Tanaka, K., Toeda, H., & Tanaka, G. (2014). Pilot study: Efficacy of Sensory Integration Therapy for Japanese children with High-Functioning Autism Spectrum Disorder. *Occupational Therapy International*, 21, 4-11.

Mishra, D.J., and Senapati, A. (2015). Effectiveness of combined approach of craniosacral therapy (CST) and sensory-integration therapy (SIT) on reducing features in children with autism. *The Indian Journal of Occupational Therapy*, 47(1), 3-8.

Moore, K.M., Cividini-Motta, C., Clark, K.M., and Ahearn, W.H. (2015). Sensory Integration as a Treatment for Automatically Maintained Stereotypy. *Behavioral Interventions*, 30, 95-111.

Snieszek, C.J., and Zane, T.L. (2015). Investigating the Effects of Sensory Integration Therapy in Decreasing Stereotypy. *Focus on Autism and Other Developmental Disabilities*, 30(1), 13-22.

Review Article:

Parham, L.D., Cohn, E.S., Spitzer, S., Koomar, J.A., Miller, L.J., Burke, J.P., Brett-Green, B., Mailloux, Z., May-Benson, T.A., Roley, S.S., Schaaf, R.C., Schoen, S.A., and Summers, C.A. (2007). Fidelity in sensory integration intervention research. *American Journal of Occupational therapy*, 61, 216-227.

For the 2017 review:

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.

Leong HM, Carter M, Stephenson J. Systematic review of sensory integration therapy for individuals with disabilities: Single case design studies. *Res Dev Disabil*. 2015; 47:334-351.