

## Treatment Intervention Advisory Committee Review and Determination

**Date:** October 31, 2014

**To:** DHS/DLTC

**From:** Wisconsin Department of Health Services Autism and other Developmental Disabilities *ACK*  
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.

---

### 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

Sensory Integration Therapy is defined by the American Occupational Therapy Association (letter from AOTA to DHS 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 the years 2013 and 2014 in order to find studies that have been published since the last review. Only one study was found, which was a pilot study. It met criteria on the EBP checklist with some limitations; results indicated that children who received SIT showed greater improvement in the areas of motor coordination, non-verbal, and complex tasks (as assessed by the JMAP) compared to children who received group therapy. However, major limitations include: 1) this study was a retrospective analysis with a small sample size (n=20); 2) participants were not randomly assigned to groups; and 3) the first author conducted SIT testing and intervention.

In sum, it is the decision of the committee that Sensory Integration Therapy retain a rating of 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 31, 2014

Committee Members Completing Initial Review of Research Base: Tia Schultz, Julie LaBerge, and Lana Collett-Klingenberg

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

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.

From previous 2013 review:

Case-Smith, J., & Bryan, T. (1999). The effects of occupational therapy with sensory integration emphasis on preschool-age children with autism. *The American Journal of Occupational Therapy*, 53, 489-497.

Fazlioglu, Y., & Baran, G. (2008). A sensory integration therapy program on sensory problems for children with autism. *Perceptual and Motor Skills*, 106, 415-422.

Linderman, T. M., & Stewart, K. B. (1999). Sensory integrative-based occupational therapy and functional outcomes in young children with pervasive developmental disorders: A single subject study. *The American Journal of Occupational Therapy*, 53, 207-213.

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., & Summers, C.A. (2007). Fidelity in sensory integration research. *The American Journal of Occupational Therapy*, 61(2), 216-227.

Pfeiffer, B. A., Koenig, K., Kinnealey, M., Sheppard, M., & Henderson, L. (2011). Effectiveness of sensory integration interventions in children with autism spectrum disorders: A pilot study. *The American Journal of Occupational Therapy*, 65, 76-85.

Schaaf, R. C., Benevides, T., Mailloux, Z., Kelly, D., Leiby, B., Faller, P,...Hooydonk, E. V. (in press). Occupational therapy using sensory integration for children with autism: A randomized trial. *Journal of Autism and Developmental Disorders*.

Smith, S. A., Press, B., Koenig, K. P., & Kinnealey, M. (2005). Effects of sensory integration intervention on self-stimulating and self-injurious behaviors. *American Journal of Occupational Therapy*, 59, 418-425.

Article Reference:	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. <i>Occupational Therapy International</i> , 21, 4-11.
IV Description	Sensory Integration Therapy (SIT)
DV	Cognition, verbal ability, and sensory-motor ability
# in study	SIT group: 8 Group Therapy (GT) group: 12
Age ranges	65.8 months to 47.8 months
Diagnoses	Autism and Asperger's
Study Results	Participants in the SIT group had greater improvement on the JMAP than participants in the GT group.
Reviewer Comments	Limitations: This study was a retrospective analysis with a small sample size (n=20). Participants were not randomly assigned to groups. The first author conducted SIT testing and intervention.

### Group Design EBP Inclusion Criteria Checklist

Item	YES	NO	Rationale
Does the study have experimental and control/comparative groups?	x		Study has a comparison group
Were appropriate procedures used to increase the likelihood that relevant characteristic of participants in the sample were comparable across conditions?	x		Assignment was not random. However, the authors did not find a significant difference between groups in the areas of male to female ratio, IQ, diagnosis, age, or therapy duration
Was their evidence for adequate reliability for the key outcome measures? And/or when relevant, was inter-observer reliability assessed and reported to be at an acceptable level?			Study used the Japanese version of the Miller Assessment for Preschoolers (JMAP). Authors note it is standardized, but do not report psychometric properties.
Were outcomes for capturing the intervention's effect measured at appropriate times (at least pre- and post-test)?	x		JMAP administered pre and post intervention for both groups.
Was the intervention described and specified clearly enough that critical aspects could be understood?	x		
Was the control/comparison condition(s) described?	x		
Were data analysis techniques appropriately linked to key research questions and hypotheses?	x		Pre to post data were compared using the Wilcoxon signed-rank test; groups were compared using the Mann-Whitney test
Was attrition NOT a significant threat to internal validity?	x		Study was a retrospective analysis
Does the research report statistically significant effects of the practice for individuals with ASD for at least one outcome variable?	x		Total score, p=.005 Motor Coordination, p=.016 Complex Task, p=.034 Non-verbal, p=.018
Were the measures of effect attributed to the intervention? (no obvious unaccounted confounding factors)	x		