



*Special Collection: Short Report*

**Autism Spectrum Disorder in Children: Sensory Integration in Occupational Therapy**

Joseph Mary Balbuena<sup>1</sup>, Charis Honeylet Lim<sup>1</sup>, Kym Sambo<sup>1</sup>, Valentin Dones III<sup>1,2</sup>

<sup>1</sup>The Graduate School, University of Santo Tomas, Manila Philippines

<sup>2</sup>Center for Health Research and Movement Science – A JBI-Affiliated Group, University of Santo Tomas, Manila, Philippines

Correspondence should be addressed to: Valentin Dones III<sup>1</sup>; vcdones@ust.edu.ph

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**SEARCH DATE**

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**QUESTION**

What is the effectiveness of sensory integration in enhancing occupational performance among children with autism?

**CLINICAL BOTTOM LINE**

Autism Spectrum Disorder (ASD) is a multifaceted developmental condition associated with disruptions in cognitive processes, emotional regulation, and communication abilities.<sup>1</sup> Sensory processing issues such as difficulties processing and integrating sensations are more prevalent in children with ASD, with an estimated occurrence of 56 to 70%.<sup>2</sup> These challenges are associated with dysfunction in occupational performance, encompassing activities such as sleeping, dressing, eating, play activities, school, or leisure participation.<sup>1,2</sup> Sensory integration therapy (SIT), rooted in neuroscience, addresses sensory processing

challenges by offering structured sensory experiences to promote adaptive responses. Conducted in environments rich with sensory stimuli, SIT enhances learning, social engagement, and overall functioning, with caregivers actively involved in goal-setting and treatment planning.<sup>3</sup> The Ayres Sensory Integration® (ASI) intervention, an SIT, encompasses individualized sensorimotor activities done in the context of play to promote adaptive behaviors and foster functional skills as a foundation for occupational participation.<sup>1,2</sup> This evidence summary examines how effective SIT is in improving occupational performance in children with ASD.

- A systematic review examined the effectiveness of sensory integration approaches on school participation in children with sensory disorders. ASI did not consistently show significant improvements in academic and motor skills compared to other interventions or no treatment. The study emphasized the importance of therapists exercising caution and using evidence-based clinical reasoning when selecting interventions tailored to each

child's specific sensory characteristics.<sup>4</sup>  
(Level 1)

- A systematic review investigated the efficacy of ASI in children diagnosed with ASD, finding strong evidence regarding its effectiveness in enhancing functionality and participation levels. ASI significantly reduced autistic behaviors, such as difficulties in processing and integrating sensations, while also decreasing the requirement for caregiver support in social interactions and self-care abilities. Despite the positive results in enhancing individually formulated goals related to functioning and participation, there is insufficient evidence to confirm its impact on play, sensorimotor, perception, cognition, and language skills. Consequently, more well-designed studies with larger sample sizes and consistent outcome measures are necessary to further establish the effectiveness of ASI intervention.<sup>2</sup> (Level 1)
- A randomized controlled trial evaluated the effectiveness of ASI with usual care for children with ASD. Children receiving ASI showed significant improvements in self-care, social function, and goal attainment. Parents reported their children's enhanced abilities in completing daily routines independently, positively affecting family life. The study highlights the importance of parent-identified goals and demonstrates ASI's potential to improve daily functioning in children with ASD. Future research with larger samples and performance-based measures is recommended to further validate these findings and support clinical practice in occupational therapy for ASD.<sup>5</sup> (Level 1)
- A randomized controlled trial assessed the efficacy of ASI compared to usual care for children diagnosed with ASD and sensory challenges, concentrating on functional, behavioral, and quality-of-life outcomes. Despite being delivered with high fidelity and minimal contamination, no significant primary effects of ASI were observed at either 6 or 12 months. The intervention did

not show a clear clinical benefit over standard care. Caregivers and therapists noted enhancements in daily functioning; caregiver-rated goal performance and satisfaction showed improvement over the course of the sessions. Subgroup analyses revealed differences in treatment effects based on sex, ADHD status, region, and neurodevelopmental conditions. However, the health economic evaluation indicated that SIT is not cost-effective compared to standard care alone. These findings suggest that while SIT may benefit specific subgroups, its clinical and economic viability requires further research.<sup>6</sup> (Level 1)

- A randomized controlled trial studied the effectiveness of SIT in enhancing occupational performance and sensory processing of children with ASD. Children who received SIT showed greater outcomes in the following components: communication and interaction skills, volition, motor skills, habituation, process skills, and environment of occupational performance. Furthermore, children who received SIT showed greater improvements in inattention/distractibility, modulation, sedentary, sensory processing, sensory sensitivity, sensory seeking, oral sensory sensitivity, fine motor/perceptual areas, low endurance/tone, poor registration, except for the "emotionally reactive" factor and "emotional/social responses" domain. This study highlighted the effectiveness of SIT interventions in improving both occupational performance and sensory processing abilities in children with ASD.<sup>1</sup> (Level 1)
- A clinical practice guideline recommended SIT based on Ayres' principles to improve functional and social participation in children with ASD. Evidence shows moderate to high certainty of effectiveness for children aged 3-12, with moderate to high effect sizes. SIT involves child-directed activities in a sensory-rich environment, with caregivers playing a key role in goal-setting and treatment planning. SIT is beneficial for enhancing functional and social skills in

children with ASD. Further research is needed to confirm long-term effects and address population diversity.<sup>3</sup> (Level 1)

### CHARACTERISTICS OF EVIDENCE

This evidence summary is derived from a structured literature search and selected evidence-based healthcare databases. The included evidence in this summary originates from:

- A systematic review of six experimental studies published from 2016 to 2017. The participants in these studies ranged from 29 to 103 participants, aged 4 to 17 years, with no detailed information on sex distribution.<sup>4</sup>
- A systematic review that encompassed three randomized controlled trials, one retroactive analysis, and one single-subject ABA design published from 2007 to 2015.<sup>2</sup>
- A randomized controlled trial that included 17 children with ASD aged 5 to 8 years ( $n=9$  in the ASI group,  $n=8$  in the usual-care group).<sup>5</sup>
- A randomized controlled trial of 138 participants of children with ASD aged 4 to 11 years ( $n=69$  in the ASI group,  $n=69$  in the usual-care group).<sup>6</sup>
- A randomized controlled trial that included 31 participants ( $n=16$  in the SIT group;  $n=15$  in the wait-list group) who are 3- to 8-year-old children with ASD.<sup>1</sup>
- A clinical practice guideline that included evidence from six studies regarding sensory integration (5 RCTs and 1 quasi-experimental study).<sup>3</sup>

### BEST PRACTICE RECOMMENDATIONS

- Trained therapists should use ASI for children with ASD to improve functional abilities and engagement levels, focusing on sensory processing and integration difficulties. Trained ASI therapists should target outcomes related to performance and engagement in activities of daily living, play, sleep, and social interactions.

Contraindications for ASI include severe behavioral issues that could endanger the child or therapist, lack of trained ASI therapists, and medical conditions that might be exacerbated by sensory activities. (Grade A)

- Trained ASI therapists should set meaningful goals and regular progress monitoring with parents to maximize ASI's effectiveness and positively impact family life. (Grade A)
- Trained ASI therapists should use ASI cautiously among children with ASD in academic settings due to variability in sensory profiles and limited evidence of effectiveness in this context. (Grade B)

*Disclaimer: This evidence summary adheres to the JBI format. However, it was independently created and is not part of the JBI EBP Database.*

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**Note:** This article is part of a special collection of articles by some graduate students of the Master of Science in Occupational Therapy degree of the University of Santo Tomas. The peer-review was facilitated by the respective course, from which these articles arose from. PJAHS was not involved in the peer-review process of this article. Nevertheless, this article underwent editorial review of PJAHS prior to online publication.