In children with ASD, does sensory integration improve social participation?

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Introduction

Children with autism spectrum disorder (ASD) often have trouble with sensory processing skills such as organizing, interpreting, and responding to sensory input, which can cause functional challenges during their daily activities. Abnormal sensory processing is also seen in other conditions, like attention-deficit/hyperactivity disorder (ADHD). These difficulties interfere with social participation—a critical area of occupation for children. When social participation is impaired, it makes it extremely hard for children to engage in cooperative play, maintain peer and family relationships, tolerate group environments, or follow the social demands of structured or unstructured activities. Within the field of occupational therapy (OT), sensory integration (SI) has more recently been used to combat sensory processing problems among children. Ayres Sensory Integration (ASI) was originally developed by A. Jean Ayres and is an OT approach that provides structured and carefully graded sensory experiences to help a child's nervous system process and organize sensory input more effectively.[1] Given the increasing use of SI and the important role of social participation in child development, it is essential to examine whether SI interventions can improve social functioning for children with ASD. If ASI shows sensory processing improvements in children with ASD, it would be valid to conclude that ASI could also help children with ADHD or other sensory processing disorders. Therefore, this literature review will explore the clinical question: In children with autism spectrum disorder, does sensory integration improve social participation?

Process/Methodology

- **Databases:** CINAHL Complete, MEDLINE, and ERIC
- **Search terms**:
  - "Children" or "Kids" or "Youth" or "Child"
  - "Autism" or "ASD" or "Autism Spectrum Disorder"
  - "Sensory integration" or "Sensory integration therapy"
  - "Social participation" or "Social engagement" or "Social activities"
  - "Randomized controlled trial" or "Randomised controlled trial" or "RCT"
- **Inclusion Criteria**: RCTs, quasi-experimental, and cross-sectional studies, publications after 2011, children under 18 with sensory processing deficits, sensory integration therapy
- **Exclusion Criteria**: Studies before 2011, meta-analyses, systematic reviews

Figure 1. Sensory-rich environment [2]

Figure 2. Groups for social participation [3]

Table 1. Literature Synthesis Articles

Article	Intervention	Assessment	Significance
Dunbar et al., (2012)	SIT	Revised Knox Play Scale	Significant
Erik et al., (2025)	SIT	VADPRS	Significant (p = .0140)
Homayounnia et al., (2025)	Ayres Sensory-Motor Integration	Ulrich and Ulrich Motor Performance Test Teacher Version of the Social Skill Rating	Significant (p < .001)
McQuiddy et al., (2024)	ASI	COPM GAS	Significant (p < .001)
Omari et al., (2022)	ASI	PEDI	Significant (p = .036)
Pfeiffer et al., (2011)	ASI	SRS	Significant (p < .05)
Raditha et al., (2022)	SI-OT	The Vineland Adaptive Behavior Scale-II	Significant (p < .004)
Schaaf et al., (2014)	ASI	GAS	Significant (p = .003)
Wen & Wu et al., (2025)	Sensory-Motor	SRS-2	Significant (p = .002)

Findings/Results

- SI interventions are effective in enhancing social participation among children with ASD through addressing various deficits.
  - ASI delivered in sensory-rich environments consistently improved social participation in children with ASD, which led to gains in regulation, independence, and functional performance.[1, 4-6]
  - SI interventions significantly reduced hyperactivity, impulsivity, and sensory modulation difficulties in children with ADHD, which led to improved social participation behaviors.[7]
    - ADHD and ASD share sensory processing challenges, so findings suggest that SI-related improvements may also apply to children with ASD.
  - Individualized and group SI interventions significantly enhanced social participation in children with ASD by improving sensory regulation, motor planning, and functional engagement; individualized approaches provided targeted support, and group-based interventions fostered meaningful peer interactions. [5, 6, 8-10]
  - SI in combination with sensorimotor techniques increased sensory regulation and motor skills used during play—one of the most common means of social participation in children. [1, 5, 6, 10]
  - SI interventions are effective in the reduction of self-stimulatory and injurious behaviors, which can improve the child's ability to interact and communicate with the environment and in interpersonal relationships.[11]
  - Accuracy in following Ayres's SI theory can improve positive behaviors, which correlates to stronger communication, socialization, and daily living skills, indicating that behavior regulation underlies the ability of children with ASD to participate in social activities. [12]

Implications for Occupational Therapy

- OT practitioners are vital in the management of challenging behaviors of children with ASD, as well as providing the appropriate interventions for each individual child. [11]
- The child's achievement of parent-identified goals can be a useful outcome measure for OT when using ASI.[5]
- The use of Goal Attainment Scaling (GAS) can be useful in measuring intervention outcomes in clinical settings due to the ability to individualize goals.[6]
- Sensory-based activities have a strong impact on the child's ability to participate more effectively in social play.[8]
- Providing education regarding sensory processing can have a positive impact on children's social and motor planning skills.[8]

Recommendations for Future Research

- Additional high-quality RCTs are necessary to establish stronger causal evidence for the effectiveness of SI interventions on social participation. [4, 9-13]
- Future studies should prioritize larger sample sizes to strengthen validity and better represent children with varying levels of ASD severity.
- Future research should include long-term assessment follow-ups to help determine the longevity of the improvement in social participation.
- Future studies should continue to combine standardized performance-based assessments with individualized measures to provide a comprehensive evaluation of sensory integration interventions. [1, 5, 6, 14]

Conclusions

Based on a thorough review of twelve studies, the use of SI techniques in OT interventions for children with ASD has been shown to significantly enhance social participation. Specifically, sensory-rich environments and ASI principles have led to improvements in functional performance, including social participation.[1,6] Sensory integration also enhances motor skills, emotional regulation, and sensory processing, helping children with ASD adapt to new social experiences.[5,6,8-14] Although most of the studies synthesized provided significant findings for SI, the current body of research lacks in volume of RCTs and large sample sizes. To further expand on the effectiveness of SI in enhancing social participation among children with ASD, future research should include higher randomization and larger sample sizes, as well as combine standardized assessments with individual measures to increase comprehensiveness of results. Incorporating SI interventions in OT treatment reveals strong evidence for helping children with ASD increase their social participation through improved sensory-motor, communication, and self-regulation skills.

References