Research Summary

Kishida, Y., Stephenson, J., Kemp, C., & Salisbury, C. (2026) Efficacy of interventions adhering to the revised Ayres sensory integration fidelity measure: A systematic review. *Journal of Autism and Developmental Disabilities*. https://doi.org/10.1007/s10803-026-07283-7

Although sensory integration therapy is widely used, the evidence for its efficacy has been contested over the years. More recently there has been support for the efficacy of Ayres Sensory Integration (ASI®), an intervention approach developed by Jean Ayres for children with learning disabilities and autism spectrum disorder (ASD) in the 1970s. ASI® was manualised in 2015 and now includes a revised fidelity measure based on the identification of ASI® principles. The theory is that sensory integration intervention changes processes in the brain and that, with improved sensory integration, attention, behaviour, motor tasks, school participation and play will improve.

Purpose of the Systematic Review

The purpose of the systematic review was to evaluate the effect of interventions in studies that reported the use of the process elements of the revised ASI® fidelity measure or are consistent with the principles of the measure. The following research questions were the focus of the review:

1. Who are the participants in the interventions?
2. How are the interventions implemented in studies published since 2010?
3. What is the quality of the research?
4. What are the child outcomes of the interventions, both proximal (sensory integration) and distal (functional) reported in higher quality studies, and how are they measured?

Method

An electronic search of relevant databases was used to identify articles in which descriptions of the provision of ASI® were included. Articles were also identified using a citation search of the article reporting the development of the ASI® fidelity measure (Parham et al. 2011).

In the initial search 2561 articles were identified and article abstracts were downloaded. The following inclusion criteria were used for the initial screening of article abstracts: (a) an article published in a refereed journal or a dissertation at PhD or Master's level, (b) published in 2010 or later, (c) written in English, (d) included human participants, and (e) reported an intervention that included sensory integration. Reviews and descriptive studies were excluded. A total of 182 articles was retained for further screening. At each phase of the screening process, interrater reliability checks were implemented by the researchers and any disagreements were resolved though discussion.

Three phases were used to screen full text. In the first phase of full text screening, papers were identified that included the use of Ayres Sensory Integration. This resulted in 27 papers included in the second phase of full text screening. Articles were then retained if the authors (a) specifically stated they used ASI®, (b) reported the use of the revised fidelity measure, or (c) explicitly reported the use of the principles of ASI® as described by Parham et al. Twenty articles were assessed in the third phase of full text screening, 17 from the second stage of screening and another three following additional searches. In this screening phase, a detailed examination of the articles was used to determine that (a) the ASI® intervention was the only intervention used and (b) the process elements

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of the fidelity measure were used or it was stated that the intervention adhered to the principles of the process measures.

Finally 10 articles were coded for (a) participant characteristics, (b) reasons for the intervention, (c) research design, (d) intervention dosage, (e) interventionist (f) fidelity, (g) outcome measures, (h) reported outcomes for each measure.

Results

The ten studies that were ultimately coded included 171 (range 1-69) participants (ages 12 months to 9 years 10 months) receiving an ASI® intervention. Autism spectrum disorder was the most common diagnosis for the study participants. Participants in four studies received the intervention based solely on their diagnoses.

Interventions were typically implemented for an hour, two to three times a week, by occupational therapists in clinical settings. The Parham et al. (2011) fidelity measure was used for most interventions, with fidelity reported to be high.

Of the ten studies, two were case studies, two were single case designs, one was an interrupted time series, one was a pre-post comparison and four were randomised controlled trials. Only four of the ten studies had a low risk of bias (three random controlled trials and one interrupted time series).

Outcome measures were classified as direct (formal test or observation) or indirect (reported outcomes). Thirty three outcomes were reported for the ten studies. Of the 33, 13 relied on direct observation and 20 were reported outcomes. Direct measures of sensory integration were included in three studies. Direct measures of gross and fine motor skills and play skills were included in six studies. Third party reports were used to measure individualised goal outcomes, behaviours of concern, adaptive behaviours, self-care, mobility, and social functions. Goal Attainment Scaling (GAS) used as third party measures was poorly implemented on the whole. Outcomes were generally measured immediately after the intervention had finished. Only one study measured long-term outcomes using reported measures.

The four studies having a low risk of bias reported mixed findings, with the evidence supporting a positive effect for ASI® being weak.

Discussion Points

- The quality of the research was generally poor, even in the four studies deemed to have a lower risk of bias.
- Fidelity scores (ensuring that the intervention was implemented as directed) were not always reported.
- As sensory integration was not directly measured pre- and post-intervention for the majority of the studies, it cannot be claimed that any increase in functional skills was attributable to the ASI® intervention itself.
- Many of the outcome measures were indirect (i.e., reported measures) increasing the risk of positive bias by parents/caregivers.
- It is concerning that almost half of the included studies appear to have provided ASI® solely because of participant diagnosis rather than the sensory issues presented by participants.

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Conclusion

To date, there is no strong evidence to support the effectiveness of interventions adhering to the ASI® fidelity measure. Strategies supported by a higher level of evidence are needed to address prioritised goals, and environments should be modified to support individuals who present with sensory difficulties.

References

Parham, L. D., Roley, S. S., May-Benson, T. A., Koomar, J., Brett-Green, B., Burke, J. P., Cohn, E. S., Mailloux, Z., Miller, L. J., & Schaaf, R. C. (2011). Development of a fidelity measure for research on the effectiveness of the Ayres Sensory Integration® intervention. *American Journal of Occupational Therapy, 65*(2), 133–142. https://doi.org/10.5014/ajot.2011.000745

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