

# Effects of Sensory Integration Therapy on Children with Attention-Deficit/ Hyperactivity Disorder: A Systematic Review

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## Introduction

- Attention Deficit Hyperactivity Disorder (ADHD) is the most commonly diagnosed chronic behavioral disease in children (Lee, Song, 2015), and it is characterized by inattentiveness, distractibility, lack of certain social skills, and impulsive movement, or fidgeting
- ADHD in children is commonly treated with medication, but it can cause adverse side effects to the child
- Sensory integration therapy has been shown to alleviate symptoms of ADHD while not producing the side effects that medications do

## Methods

- Research for this systematic review took place between September and October of 2018 and was completed using PubMed.
- The keywords used were: (socialization OR social skills) AND (youth OR children) AND (SIT OR sensory integration therapy) AND (occupational therapy) AND (ADHD). Inclusion and Exclusion process for the articles can be seen in **Figure 1**.

## Results

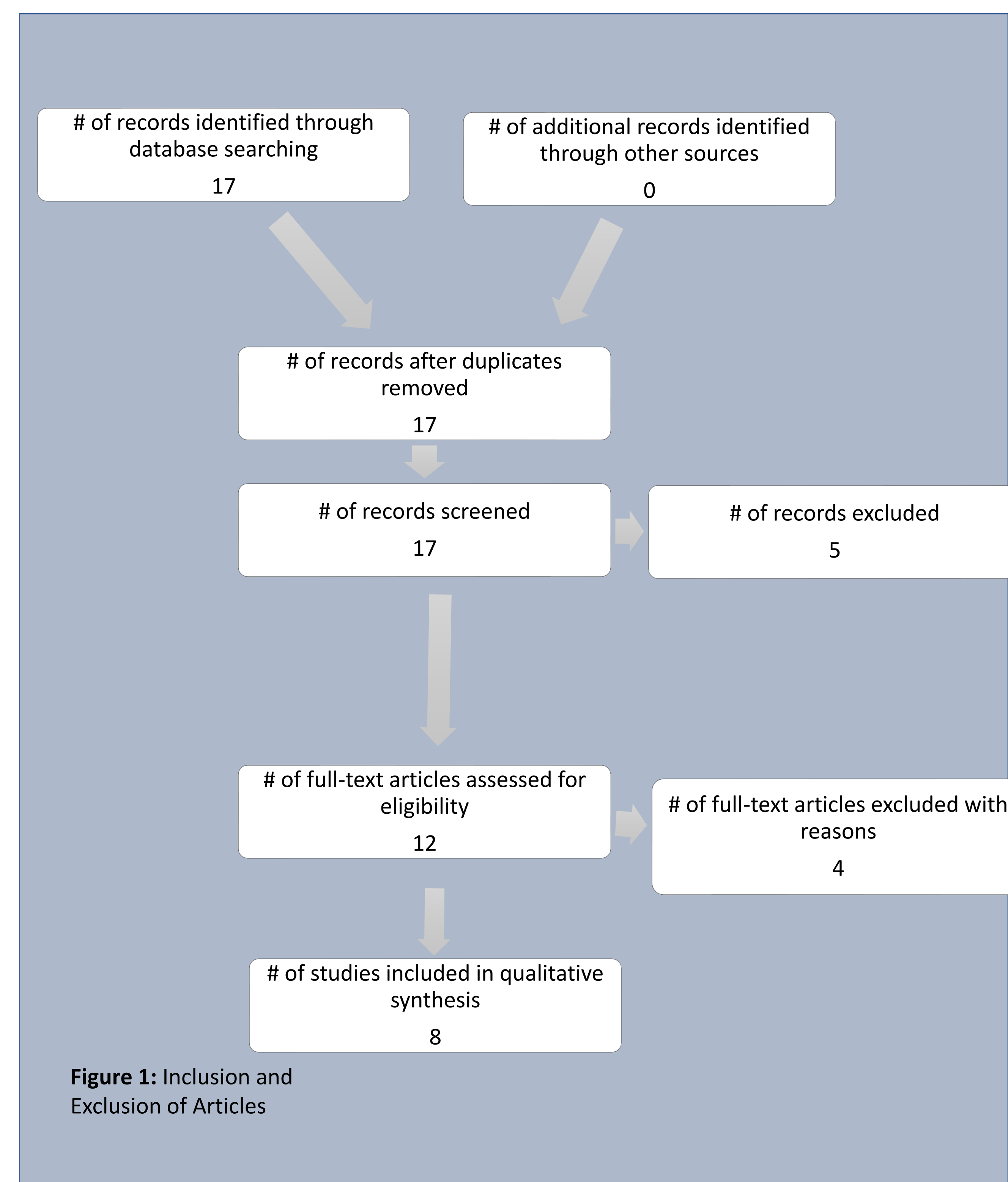
- Evidence from this review suggests that using sensory integration therapy in the treatment of children with ADHD is associated with an improvement in behavior, attentiveness, and social skills.
- . Of the eight studies that were reviewed, six showed a significant improvement after participating in various forms of sensory integration therapy (**Table 1**).

| Author, Year                        | Study Type   | Population  | Intervention  | Results  | Outcome   |
|-------------------------------------|--------------|---|---|--|---|
| VandenBerg, N. (2001)               | Experimental | 4 children who had been diagnosed with ADHD   | Wearing weighted vests  | Measured change in on- task behavior from baseline to intervention in each child. All children showed an increase. Child 1: 54%(pre intervention), 79% (during intervention). Child 2: 63%, 81%. Child 3: 64%, 82%. Child 4: 64%, 81%. p-value less than .05   | When wearing the vest, children who had been diagnosed with ADHD and had difficulties focusing were able to remain on task, without distraction, longer than without the vest.  |
| Fedwea, A., Erwin, H. (2011)        | Experimental | 8 children, 5 previously diagnosed with ADHD, 3 had no formal diagnosis, but displayed symptoms of ADHD | received stability balls for their seats in classrooms  | Measured each group with Attention-Deficit/ Hyperactivity Disorder Test 2 weeks before and 2 weeks after. Children with ADHD averaged a score of 123 before intervention and 104 after intervention. Found a p value less than .001  | Use of stability balls in classrooms showed a significant increase in on task behavior for children with attention issues   |
| Carte,E. et al. (1984) (3)          | Experimental | 87 children between the ages of 6 and 11 that demonstrated learning disabilities                        | Receiving Sensory Integration Therapy   | Performed a one-way ANOVA comparing how easily distracted the treatment group was versus the control group before the intervention was p=.32, which was not significant. The ANOVA conducted after the intervention showed a significant difference (p=.02). however, there was not a significant difference found in the test scores in reading, spelling, and arithmetic of the children (p=.54) | No change   |
| Cho,H. et al. (2014) (4)            | Experimental | 58 children diagnosed with ADHD   | Observed the children with ADHD in a classroom and compared their performance to those without ADHD | Students with ADHD demonstrated significantly lower BOT-2 scores in fine motor control, manual coordination, body coordination, strength and agility, and total motor composite score (p<.001 for all)   | Students with ADHD demonstrate a greater difficulty in controlling their fine motor function. Researchers propose that these fine motor skills can be improved with proper treatment                                  |
| Pfeiffer, B. et al. (2008) (3)      | Experimental | 61 students who demonstrated attention difficulties   | Children received disc 'o' sit cushions to sit on during class                                      | Used BRIEF, a tool used to measure certain aspects of the attention of a child, including problem solving skills, metacognition, and self-control. Calculated one-way ANOVA and found that there was a significant difference (p<.05) between the control group and the treatment group  | Children who received the disc 'o' sit cushions were better focused and more attentive, which greatly improved their academic performance   |
| Lin, H-Y, et al. (2014) (3)         | Experimental | 110 children who had been diagnosed with ADHD   | Weighted vests  | Conners' Continuous Performance Test was used to measure attention to tasks. Found that weighted vests lead to significant improvement in attention with a p value less than .05   | Weighted vests improved on task and in seat behavior for children with ADHD   |
| Wilkes-Gillan, S., et al (2014) (3) | Experimental | 112 children with ADHD  | Play based therapy  | Use of Conners' Comprehensive Behavior Rating Scales to measure the extent to which a child experiences certain symptoms. When comparing the test scores before and after the intervention, a p value of .89 was found, which means that there was no significant improvement  | While the results were not statistically significant and did not prove that there was an improvement, families of the participants claimed to have seen an improvement in their child's behavior and symptoms of ADHD |
| Olson, L., Moulton, H., (2004).     | Experimental | 340 occupational therapists   | Survey sent out to determine how these therapists felt about using weighted vests                   | 77% of the participants used weighted vests with preschool aged children, and 75% used them with elementary aged children. 68% of these therapists used weighted vests to decrease hyperactivity of the children   | The use of weighted vests has had a positive impact on treating children with ADHD, by increasing their ability to focus on the task at hand  |

**Table 1:** Findings from the articles included in this systematic review

## Discussion

- There is a significant improvement shown in multiple areas of behavior in children with ADHD after being treated with sensory integration therapy
- Weighted vests, stability balls, disc 'o' sit cushion were all looked at in these studies, and researchers found that the constant stimuli that these objects provided helped to block out other distracting stimuli and the children were better able to complete a certain task and were much more receptive to their peers and teachers
- . Because this practice often results in positive outcomes, practitioners should consider implementing sensory integration therapy into treatment plans for children with ADHD



**Figure 1:** Inclusion and Exclusion of Articles