



**Therapist-directed, structured sensorimotor therapy and child-initiated sensorimotor exploration have beneficial outcomes for preschoolers with sensorimotor problems**

**CITATION:** DeGangi, G. A., Wietlisbach, S., Goodin, M., & Scheiner, N. (1993). A comparison of structured sensorimotor therapy and child-centered activity in the treatment of preschool children with sensorimotor problems. *American Journal of Occupational Therapy, 47*, 777–786.

**LEVEL OF EVIDENCE: IB2a**

**RESEARCH OBJECTIVE/QUESTION**

The purpose of the study was to compare the performance of 12 children's responses in two types of interventions:

- an intervention approach emphasizing child-interactions sensory and motor exploration during play interactions, and
- a structured development approach focusing on therapist-prescribed sensorimotor activities.

**DESIGN**

	RCT		Single Case		Case Control
	Cohort		Before-After	X	Cross Sectional

A-B crossover design with randomization of the treatment interventions.

**SAMPLING PROCEDURE**

	Random		Consecutive
X	Controlled		Convenience

**SAMPLE**

N=12	M age=53 months	Male=10	Ethnicity=White	Female=2
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## **PARTICIPANT CHARACTERISTICS**

For inclusion in the study, all subjects had to display at least one of the following: motor delay, sensory processing, or motor planning deficits. Excluded from the study were children with moderate to severe cerebral palsy functioning at less than an 18-month level in motor skills; children with major sensory impairments (e.g., deafness, blindness); children with major orthopedic handicaps (e.g., spina bifida); children with serious medical problems; and children with severe cognitive delays with functioning at less than an 18-month level.

## **MEDICAL DIAGNOSIS/CLINICAL DISORDER**

The participants in the study displayed a range of the following: development, motor, emotional-behavioral, and sensory integrative disorders.

## **OT TREATMENT DIAGNOSIS**

Sensorimotor dysfunction

## **OUTCOMES**

<b>Measures</b>	<b>Reliability</b>	<b>Validity</b>
Peabody Developmental Motor Scales	NR	NR
DeGangi-Berk Test of Sensory Integration	NR	NR
Touch Inventory for Preschoolers	NR	NR
McCarthy Scales of Children' Abilities	NR	NR
Revised Dimensions of Temperament Survey	NR	NR
Therapist observation	NR	NR

NR=Not reported

Measurements were taken after completion of intervention A and intervention B. Observations were recorded after each therapy session.

### **Outcome—OT terminology**

Performance components (impairment): fine and gross motor skills; sensory integration; cognitive, perceptual, and language skills; and temperament

Performance area (activity): play

### **Outcome—ICIDH-2 terminology**

Impairment; activity

## **INTERVENTION**

### **Description**

Each child received a pretest, 8 weeks of intervention (A or B) provided once weekly for 1-hour sessions, a retest, 8 weeks of intervention (B or A) provided once weekly, and a final test. The order of intervention was randomized. Six subjects received intervention

A first, and the other 6 subjects began with intervention B first. Intervention A used a child-centered activity approach, had a flexible sequence, used and emphasized interaction (performance area/activity). Intervention B used a structured therapy approach, with the aim of teaching the child developmental skills and providing activities directed at developing sensory integration and motor skills (performance area and component level/activity and impairment level). Intervention B had a predetermined sequence, used repetition, and was adult directed. Each subject's therapy program was individualized based on needs. The treating occupational therapist for each subject provided both interventions.

### **Who delivered**

Six pediatric occupational therapists participated in the study, with four therapists providing the intervention and two conducting the testing. Four of the therapists had more than 10 years' experience.

### **Setting**

Not specified; the study was conducted at the Reginald S. Lourie Center for Infants and Young Children in Rockville, Maryland.

### **Frequency**

1 hour sessions, 1 time per week for 8 weeks per intervention

### **Duration**

Each intervention lasted 8 weeks.

### **Follow-up**

Not reported

## **RESULTS**

- No order effects were found for interventions A and B for the various measures used in this study.
- Significant progress was obtained for all subjects in the number of months gained in gross motor skills for structured sensorimotor therapy ( $t=-2.966$ ,  $df=9$ ,  $p=.016$ ) and functional skills (i.e., self-care, fine and gross motor, visuomotor skills) for structured sensorimotor therapy ( $t=2.132$ ,  $df=11$ ,  $p=.05$ ).
- No differences were found for behaviors ( $t=.320$ ,  $df=11$ ,  $p=.75$ ), number of months gained in fine motor skills ( $t = 1.84$ ,  $df=9$ ,  $p=.09$ ), or sensory integrative functions ( $t=2.04$ ,  $df = 11$ ,  $p = .06$ ).
- For the sensory integrative skills, there was an overall gain of 70% in skills across subjects from structured sensorimotor therapy and a gain of 56% across subjects from child-centered activity.
- In the area of behavior, attention, and play, four subjects responded better to child-centered therapy three responded better to structured therapy, and another four responded equally well to both.
- No differences by group were apparent for those subjects with a difficult temperament, those with sensory integrative problems with or without behavioral

problems, those with high family stress, those who had received treatment before, those with attention deficits, and those with moderate to severe sensorimotor problems.

- Child-centered therapy was better in helping behaviors, attention, and play for subjects from families with low stress, those with an easy temperament, those who had just begun treatment, those with no attention difficulties, and those with mild sensorimotor problems.

## CONCLUSIONS

- Structured sensorimotor therapy was found to be more useful than child-centered therapy in promoting gross motor skills, functional skills (i.e., self-care, fine motor, gross motor, and visual motor), and sensory integrative skills, due to repetition and practice of skills.
- Fine motor skills seemed to improve more as a result of child-centered activity, suggesting that different approaches are needed to promote motor skill development.
- No definitive findings were found for the areas of behavior, attention, and play.
- The majority of children with sensorimotor dysfunction would benefit from a combination of approaches.

## LIMITATIONS

- Small sample size.
  - No control group.
  - Method of subject recruitment were unknown.
  - The cohort dates were unknown.
  - 10 males and 2 females, all of whom were White – which limits generalizability.
  - Only one metropolitan area and one treatment center were involved.
  - The reliability of assessors was not stated.
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- Terminology used in this document is based on two systems of classification current at the time the evidence-based literature reviews were completed: *Uniform Terminology for Occupational Therapy Practice—Third Edition* (AOTA, 1994) and *International Classification of Functioning, Disability and Health (ICIDH-2)* (World Health Organization [WHO], 1999). More recently, the *Uniform Terminology* document was replaced by *Occupational Therapy Practice Framework: Domain and Process* (AOTA, 2002), and modifications to *ICIDH-2* were finalized in the *International Classification of Functioning, Disability and Health* (WHO, 2001).

This work is based on the evidence-based literature review completed by L. Diane Parham, PhD, OTR, FAOTA, and Nancy Bagatell, MA, OTR, with contributions from Christine R. Berg, PhD, OTR/L, and Patricia D. LaVesser, PhD, OTR/L.

For more information about the Evidence-Based Literature Review Project, contact the Practice Department at the American Occupational Therapy Association, 301-652-6611, x 2040.

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