

## Down Syndrome News, Volume 26, No. 4

### Treatment for Dysfunction in Sensory Integration

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#### What is sensory integration dysfunction (also called Dysfunction of Sensory Integration or DSI)?

Jean Ayres, O.T.R., Ph.D., defined sensory integration as “organization of sensory input for use” as she pioneered the research and development of sensory integration theory. Sensory information includes visual, auditory, olfactory, tactile (touch), vestibular (movement) and proprioception (body position). Ayres based much of her research on the last three — tactile, vestibular and proprioception — which are often called the “hidden senses.”

These primitive senses are developed in utero prior to birth and are closely linked with other brain systems as development occurs. For most children, sensory integration is automatically part of typical childhood development. However, as Carol Stock Kranowitz describes in her easy-to-read book *The Out-of-Sync Child*, it does not happen automatically.

Sensory integrative dysfunction occurs when the brain is unable to organize sensory information in a meaningful way. DSI impacts daily life for children and their families, as the children are not able to accurately register, modulate, discriminate and integrate sensory information. The result is that the child cannot adapt as well and may react negatively to everyday life sensations. The results are difficulties with the child’s learning, development and behavior.

#### *How does DSI overlap with Down syndrome?*

Signs of sensory processing problems of a child with DS are often similar to that of a child traditionally labeled with sensory integration dysfunction:

Delays in speech, language and motor skills

Delays in learning

Poor self-concept

Poor self-control (impulsive)

Low muscle tone

Poor body awareness

Over reaction to touch, sound, sight, movement (avoids)  
Under reaction to touch, sound, sight, movement (seeks)  
Resistance to change  
Poor transitions  
Poor social skills  
Poor balance  
Clumsy/awkward movement  
Unusually high or low activity level  
Poor behavior organization

Children with DS often exhibit characteristics which impact motor skills such as hypotonia (low muscle tone), joint laxity, difficulty sensing joint position and movement, hypo or hyper responsivity to touch, discrimination, and integration of touch input. The motor performance and behaviors of a child with DS can also be impacted by sensory processing deficits including deficits in sensory registration, modulation, vestibular, proprioceptive, tactile, visual, and auditory processing.

*Can DSI be treated effectively and what are the benefits?*

Yes. An occupational or physical therapist performs an evaluation using standardized testing, clinical observations and parent surveys, and then makes recommendations regarding appropriate treatment. If treatment seems like a good option for your child, then an individualized treatment plan is designed for your child. Parental involvement is highly encouraged, as specific home program activities will be recommended for your child. These home activities (also known as a “sensory diet”) may be beneficial long after direct therapy ends.

Sensory Integrative Treatment includes direct therapy (one to three times per week for at least a year) in a clinical, home or school setting with collaboration among parents, doctors, school staff and therapists. A sensory-rich environment is important for effective treatment. A spacious treatment area that includes a variety of suspended equipment (swings, climbing walls, ladders) for movement as well as a number of tactile, visual, auditory and taste opportunities is ideal. Most of all, treatment should be fun and motivating for your child!

When a sensory integrative approach is effective, then your child will be able to process environmental sensory information more appropriately. Observed benefits may include improved daily function, increased self-esteem, emotional security, self-regulation,

sensory motor skills, language and social skills. Parents often report the child is easier to live with and appears happier.

*What do you look for in a therapist?*

A qualified occupational therapist has graduated with either a bachelor's or master's degree from an accredited college that includes coursework in biological, physical, medical and behavioral sciences. The most qualified therapist should also have post-graduate training in pediatrics, specifically sensory integrative theory and treatment. Additional continuing education courses in auditory training, oral motor and brushing protocol can be helpful. Children with developmental disabilities have complex needs that require a combination of sensory integrative principles with other approaches such as neuro-developmental, behavioral, skills training and biomechanical. A skilled therapist will use a "holistic" approach to treatment and be flexible to your child's specific needs.

*Elizabeth*

In September 2001, Elizabeth, a 5-1/2 year-old girl with DS, began treatment for sensory integration dysfunction. Therapy consisted of twice-weekly clinical sessions focusing on neuro-muscular developmental treatment, brushing, sensory integration, reflex maturation and oral-motor skills. A brushing program and therapeutic listening program were implemented at home and a sensory diet was in place at school and home.

Home and school reports indicate Elizabeth is happier, less frustrated and thriving socially and academically. Parents and school staff believe Elizabeth's SI treatment lay the groundwork for developing other skills, such as toilet training. Elizabeth once avoided all peer contact and had extremely limited expressive language. She talks more and is beginning to answer simple questions and follow more complex instructions. She actively seeks out her classmates and peers — who respond in kind. Elizabeth now has excellent eye contact and her attention span has grown considerably.

Before SI treatment, she forcefully protested when pushed to try fine motor activities. Today, one of Elizabeth's favorite activities is to write alphabet letters. Haircuts and nail trimming are no longer torture and teeth grinding has nearly stopped. Paper flapping and other self-stimulating behaviors have decreased dramatically and are often self-monitored. Auditory and oral defensiveness is greatly reduced, making meal times and family outings much more pleasant.

*Resources*

Your state Occupational Therapy Association

Sensory Integration International (SII)/The Ayres Clinic

Mail: P.O. Box 5239, Torrance, CA 90501-5339

Phone: 1-310-320-2335

E-mail: [sensoryint@earthlink.net](mailto:sensoryint@earthlink.net)

Web site: [www.sensoryint.com](http://www.sensoryint.com)

Star Center (The Sensory Integration Dysfunction Treatment and Research Center)

Location: The Children's Hospital, Denver, Colorado 80218

Mail: 1901 West Littleton Blvd., Littleton, CO 80120

Phone: 1-303-794-1182

Web site: [www.Sinetwork.org](http://www.Sinetwork.org)

American Occupational Therapy Association, Inc. (AOTA)

Location: 4720 Montgomery Lane, Bethesda, MD

Mail: P.O. Box 31220, Bethesda, MD 20824-1220

Phone: 1-301-652-AOTA or (800) 668-8255

Web site: [www.aota.org](http://www.aota.org)

*A Parents Guide to Understanding Sensory Integration*, (1991). Published by Sensory Integration International, 1402 Cravens Ave. Torrance, CA 90501-2701

*Combining Neuro-developmental and Sensory Integrative Principles: An Approach to Pediatric Therapy* (1995) by Blanche, Erna I., M.A., OTR, Botticelli, M.S., PT, Hallway, Mary K., OTR. Tucson: Therapy Skill Builders.