

Sensory Integration

An Approach to Occupational Therapy Intervention

Renee Watling, PhD, OTR/L
Sandra Schefkind, MS, OTR/L

What is Occupational Therapy?

Occupational therapy promotes functional abilities and engagement in daily routines

...the “occupation” of life skills...

What is the work of Occupational Therapists?

Occupational therapists address areas of occupation including:

- ▶ Work
- ▶ Leisure/Play
- ▶ Social Participation
- ▶ Activities of Daily Living
- ▶ Education



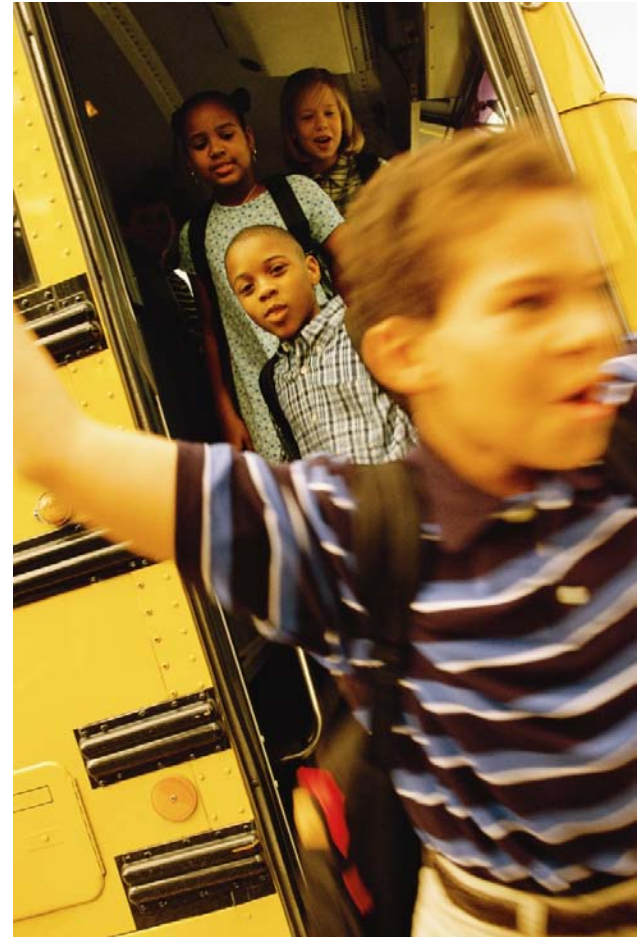
Background Knowledge and Skills

Preparation and Standards include:

- Education including study of human growth and development, psychology, and more
- Graduation from an accredited educational program
- Passage of National Certification Exam
- Adherence to state licensure or credentialing

Where do OTs work?

- Homes
- Schools
- Workplaces
- Community settings
- Clinics
- More



OT: An Emphasis on Function

- ▶ Occupational therapists address components of function including sensory integration.
- ▶ Sensory integration is both a theory and an approach within occupational therapy.



What is Sensory Integration?

“Sensory integration is the process of organizing sensory inputs so that the brain produces a useful body response and also useful perceptions, emotions, and thoughts.”

Ayres, 1979, p. 28

SI and Typical Development

Sensory Integration supports the child's ability to:

- ▶ Organize himself
- ▶ Organize himself in the world around him



The Child Adapts Well

- ▶ Child interacts successfully in his activities during play, work, and education.
- The child's development is enhanced.
- ▶ The child's participation is driven by his interests and abilities.

There Are Many Types of Sensation

* These inputs powerfully influence performance, behavior, and development

- Sight
- Sound
- Taste
- Smell
- * Touch (Tactile)
- * Movement (Vestibular)
- * Pressure (Proprioception)



Sensory Integration

Occupational
therapy helps to
address the
sensory area of
touch



Tactile or Touch System

- ▶ Gives information about texture, touch, pain, and temperature
- ▶ Helps the person make sense of the world and respond appropriately to touch



Sensory Integration of Touch Leads To...

- ▶ Body awareness
- ▶ Hand function
- ▶ Movement and motor planning
- ▶ Activity level
- ▶ Emotional and social development
- ▶ Bonding
- ▶ Fight or flight response
- ▶ Sucking and eating



Used with permission from R. Watling

Sensory Integration

- ▶ Occupational therapy helps to address the movement needs of children.



Vestibular or Movement System

- ▶ The vestibular system “tells us exactly where we are in relationship to gravity, whether we are moving or still, and how fast we are going and in what direction.”

(Ayres, 1979, p. 36)



Used with permission from R. Watling

Sensory Integration of Movement Leads To...

- ▶ Head/neck/eye control
- ▶ Maintaining eye contact
- ▶ Arousal and calming
- ▶ Smooth coordinated movements
- ▶ Good muscle tone
- ▶ Awareness of body in space
- ▶ Posture and balance
- ▶ Organization of behavior



Sensory Integration

- ▶ Occupational therapy helps to address the sense of joint and muscle position.



Used with permission from R. Watling

Proprioceptive or Position Sense System

Proprioception is that “information arising from the body, especially from muscles, joints, ligaments and receptors associated with bones.”

(Ayres, 1972, p.66)



Sensory Integration of Position Sense Leads To...

- Development of body awareness
- Development of muscle tone and coordination
- Motor planning
- Gross and fine motor skill development
- Adjusting effort during movements
- Self-regulation
- Visual perception



Used with permission from R. Watling

What does Good Sensory Integration Look Like?

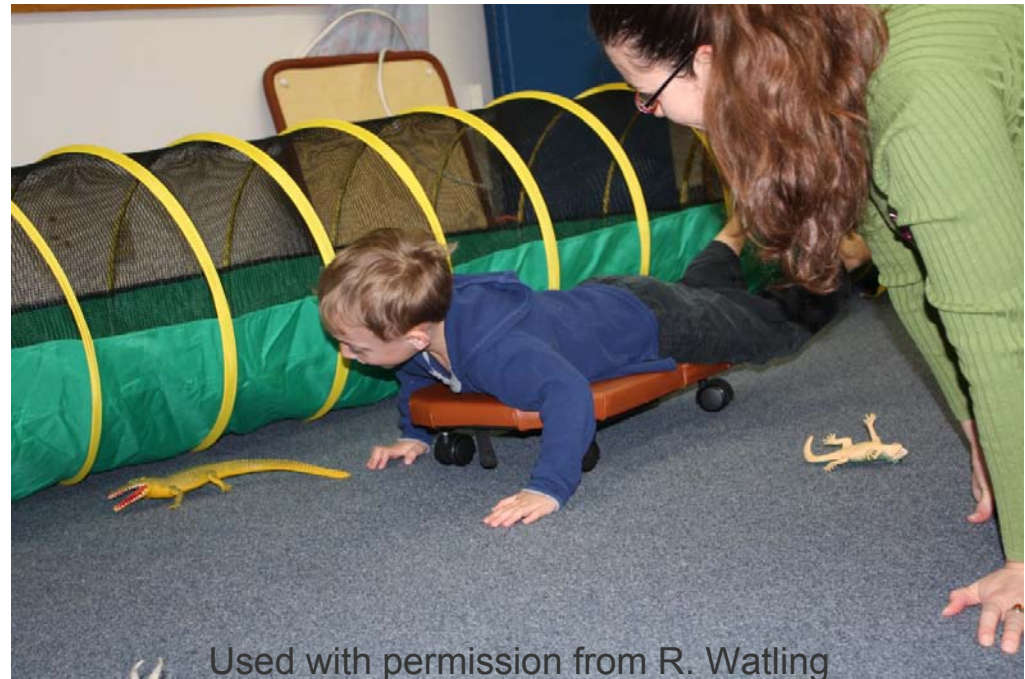
- ▶ Modulation –
 - The child adapts to meet the demands or challenges that he or she faces



Used with permission from R. Watling

What does Good Sensory Integration Look Like?

- ▶ Praxis –
 - In new situations, the child formulates a plan to meet the challenge and executes it.



What Does Good Sensory Integration Look Like?

- ▶ Posture –
 - Ability to change position and move from place to place efficiently and successfully



What Are Some Signs of Poor Sensory Integration?

- ▶ Poor transitions
- ▶ Emotional responses to movement
- ▶ Withdrawal from sensation
- ▶ Poor social behavior
- ▶ Poor emotion regulation
- ▶ Sensory-seeking behaviors
- ▶ Disorganized motor skills
- ▶ Difficulty performing skilled movements
- ▶ Difficulty using tools
- ▶ Low self-esteem

Evidence of Sensory Integration Deficits

- ▶ Sensory integration deficits are estimated to occur in approximately 5% of the general population (Ahn, Miller, Milberger & McIntosh, 2004)
- ▶ Rates are higher in people with diagnostic conditions such as autism, Fragile X, ADHD, and learning disabilities (Baranek et al, 2002)

What Does Intervention Look Like?

It is Active

The child participates
in creating and
executing the
therapeutic
activities

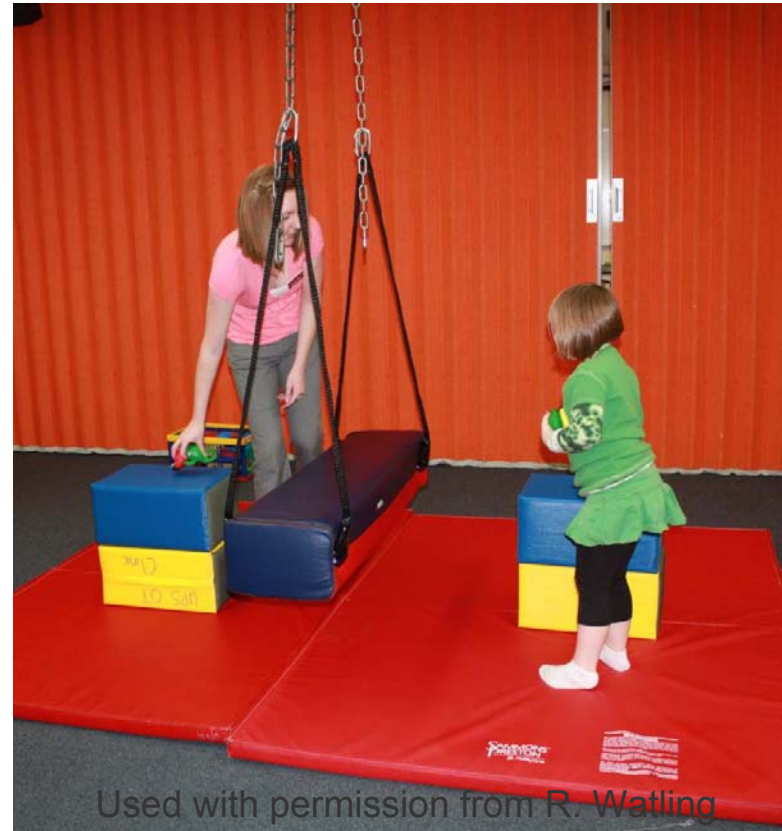


Used with permission from R. Watling

What Does Intervention Look Like?

It is Dynamic

The activities and interactions change in response to the child's behavior and performance



What Does Intervention Look Like?

It is Sensory-rich

Opportunities for a variety of sensory experiences are available



What Does Intervention Look Like?

It is Collaborative

Child learns ability
to share control
over activity choice
and sequence



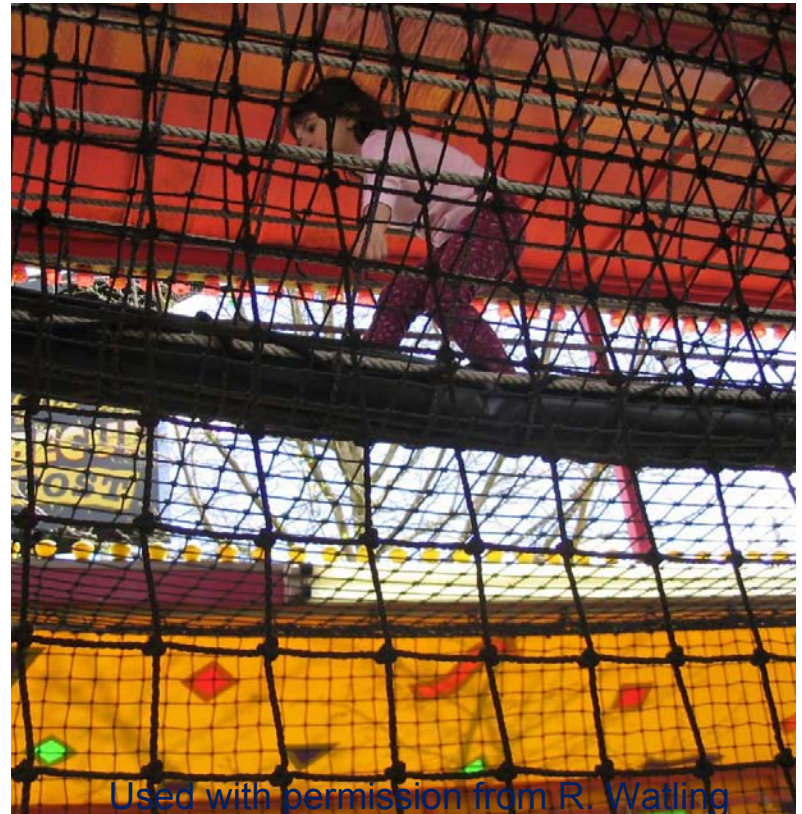
Used with permission from R. Watling

What Does Intervention Look Like?

It is Adaptive

Activities are neither too easy nor too difficult

The child is able to use goal-directed responses that match the demand of the activity



What Does Intervention Look Like?

It is Engaging

Playful activities
build on the child's
motivation and
desires



What Does Intervention Look Like?

It is Rewarding

Activities are structured to allow the child to experience success when responding to a challenge



What Does Intervention Look Like?

It is an Alliance

The child's
emotions, abilities,
and desires are
respected through
safety and trust



Used with permission from R. Watling

Expected Outcomes of Treatment

- ▶ Adaptive responses occur more often
- ▶ Able to perform more complex actions
- ▶ Improved gross and fine motor functioning
- ▶ More engagement in functional activities
- ▶ Improved self-esteem
- ▶ Better coordination
- ▶ More social interaction

Research supports using sensory integration intervention to promote:

- ▶ sensory–motor skills
- ▶ gross motor skills
- ▶ socialization
- ▶ attention
- ▶ reading–related skills
- ▶ behavior regulation
- ▶ participation in active play
- ▶ goal achievement

Evidence of Intervention Effectiveness is Growing

- Selected references:
 - Schaaf, et al., 1987
 - Case-Smith & Miller, 1999
 - Linderman & Stewart, 1999
 - Miller, Coll, & Schoen, 2007
 - Schaaf & Nightlinger, 2007
 - Case-Smith, 2007
 - Watling, 2008
 - May-Benson & Koomar, 2010
 - And more!

Additional References

- ▶ Ayres, A. J. (1972a). *Sensory integration and learning disorders*. Los Angeles: Western Psychological Services.
- ▶ Ayres, A. J. (1979). *Sensory integration and the child*. Los Angeles: Western Psychological Services.
- ▶ Bar-Shalita, T., Vatine, J., & Parush, S. (2008). Sensory modulation disorder: A risk factor for participation in daily life activities. *Developmental medicine & Child Neurology*, 50 932–937.
- ▶ Baranek, G.T., Chin, Y.H., Hess, L.M., Yankee, J.G., Hatton, D.D., & Hoper, S.R. (2002). Sensory processing correlates of occupational performance in children with Fragile X syndrome: Preliminary findings. *American Journal of Occupational Therapy*, 56, 538–546.
- ▶ Blanche, E. & Schaaf, R. (2001). Proprioception: A cornerstone of sensory integration intervention. In S.S. Roley, E. Blanche, & R. Schaaf, (Eds.) *Understanding the nature of sensory integration with diverse populations* (pp. 109–124). San Antonio, TX: Therapy Skill Builders.
- ▶ Bundy, A.C., Lane, S.J., & Murray, E.A. (2002). *Sensory integration: Theory and practice*. (2nd ed.). Philadelphia: F.A.Davis Company.
- ▶ Champagne, T. (2005). Expanding the role of sensory approaches in acute psychiatric settings. *Mental Health Special Interest Section Quarterly*, 28(1), 1–4.
- ▶ Dunn, W., & Bennett, D. (2002). Patterns of sensory processing in children with attention deficit hyperactivity disorder. *Occupational Therapy Journal of Research*, 22, 4–15.
- ▶ Koenig, K. P., & Rudney, S. G. (2010). Performance challenges for children and adolescents with difficulty processing and integrating sensory information: A systematic review. *American Journal of Occupational Therapy*, 64, 434–447.
- ▶ Miller, L. J., Coll, J. R. & Schoen, S. A. (2007). A randomized controlled pilot study of the effectiveness of occupational therapy for children with sensory modulation disorder. *American Journal of Occupational Therapy*, 61, 228–238
- ▶ Miller, L. J., Schoen, S. A., James, K., & Schaaf, R. C. (2007). Lessons learned: A pilot study on occupational therapy effectiveness for children with sensory modulation disorder. *American Journal of Occupational Therapy*, 61, 161–169.
- ▶ Mulligan, S. (1998). Patterns of sensory integration dysfunction: A confirmatory factor analysis. *American Journal of Occupational Therapy*, 52, 819–828.
- ▶ Parham, D., Cohn, E. S., Spitzer, S., Koomar, J. A., Miller, L. J., Burke, J. P., et al. (2007). Fidelity in sensory integration research. *American Journal of Occupational Therapy*, 61, 216–227.
- ▶ Polcyn, P., & Bissell, J. (2005). Flexible models of service using the sensory integration framework in school settings. *Sensory Integration Special Interest Section Quarterly*, 28(1), 1–4.
- ▶ Roley, S. S., Blanche, E. I., & Schaaf, R. C. (2001). *Understanding the nature of sensory integration with diverse populations*. San Antonio, TX: Therapy Skill Builders.
- ▶ Roley, S. S., Bissell, J., & Frolek Clark, G. (2009). Providing occupational therapy using sensory integration theory in school-based practice. *American Journal of Occupational Therapy*, 63(9), 823–842.
- ▶ Schaaf, R.C. & Roley S. S. (2006). *Sensory integration: Applying clinical reasoning to practice with diverse populations*. Austin, TX: F.A.Davis.

For more information contact:
The American Occupational
Therapy Association

www.aota.org

Living Life To Its Fullest™

O C C U P A T I O N A L T H E R A P Y



COPYRIGHT AOTA