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## Sensory Diets on Playgrounds

**Prescriptions for  
Parks, Trails and Play**

**Sharpening the Pencil,  
One More Time**

**Making Friends in San Clemente**





# Sensory Diets in Outdoor Play Environments

**D**uring a recent trip to the sunny beaches of San Diego, California I watched my three children closely as they interacted with the salty ocean water and the silky smooth sand. I am constantly amazed at the differences between each of them. Thus their distinct individual interactions with the environment at the beach were no surprise.

*By Chad Kennedy, ASLA  
Associate Landscape  
Architect  
O'Dell Engineering*



The oldest, methodically traveled the beach, fascinated with the textures and colors of the many seashells and with the spongy qualities of the sand as evidenced in the depth of her footprints. The middle child was timid and tiptoed across the sand trying, futile as it was, to avoid as much skin to sand contact as possible. The youngest ran across the sand to the water's edge jumping, tripping, rolling and splashing without reservation, engaging in messy, wet play for hours.

At the core of these different approaches to the beach (play environment) lays the concept of acceptable thresholds for sensory stimuli. Each child had separate and distinct sensory stimulation needs, and each of them found unique methods of meeting them. The middle child was self-regulating his sensory stimulation by minimizing the sensations of sand pressing against his skin. The youngest however was experiencing the other side of the spectrum as his sensory needs at the time were oriented around extremes - fast movements, cold water, and compression sensations.

Occupational therapists are keenly aware of sensory needs and often use the term "sensory diet" to describe a customized plan of sensory inputs or activities ordered in such a way to provide children with opportunities to fulfill or manage their internal stimulation quota (DiMatties & Sammons, 2005). Though not commonly discussed in relation to many children's outdoor play environments, I propose that "sensory diets" whether formal or personally regulated should be a key component of any planned play environment.

## Sensory Defensiveness and Diets

The study of how the senses interact with the environment is known as sensory integration theory and was developed more than forty years ago by A. Jean Ayres, an occupational therapist and educational psychologist (DiMatties & Sammons, 2003). Based on this theory and subsequent research, tendencies of sensory defensiveness have been identified and treatments have been developed. Sensory defensiveness

is described as negative overreactions to environmental stimulus normally considered to be benign and non-irritating. These reactions are actually quite common and it is estimated that up to fifteen percent of the population is affected to one degree or another (Kinnealey, Oliver, Wilbarger).

The term "Sensory Diet" was coined by Patricia Wilbarger, an occupational therapist, who specializes in sensory defensiveness research. The general concept of a sensory diet is that each person, whether young or old, has an innate required level of activity and stimulation in order to be "active, alert and skillful." (Kinnealey, Oliver, Wilbarger). We often think of the senses as separate inputs (sight, touch, smell, sound, taste, vestibular or proprioceptive). In reality however, the senses are integrated systems that overlap and sometimes conflict with each other. In many children, the conflicts are quickly processed and adjusted for. In some cases children have more difficulty processing the complex nature of overlapping senses and coping with them (Eide, 2003). The result is often a display of behaviors reflected in an inability to cope. Recognizing sensory stressors and subsequently discovering strategies to overcome them is essential.

Self-knowledge about sensory processing is empowering as sensory processing preferences can explain an individual's response to particular environments, situations, activities, and people. Furthermore, individuals can establish coping strategies and select activities based on an understanding of sensory processing by creating or pursuing environments that best match those preferences (Champagne and Sayer, 2012).

The premise of a sensory diet is to control sensory inputs to regulate functioning and attention as well as to reduce sensory defense behaviors. The goal is not to instruct a child, but to modify their environment, activities, routines and interaction methods, in order to achieve sensory inputs that help the child self-regulate and adapt their behaviors or compensate for dysfunction (DiMatties & Sammons, 2005). Sensory diets are integrated into a daily schedule spanning all aspects of a child's routine. The adaptation of the term "sensory diet" to the play environment is a bit loose or abstract given that sensory diets are typically a term associated with therapeutic strategies for children with sensory defensiveness. However, it is applicable as every child and adult, whether aware of it or not, is continual-



ly adjusting and negotiating their own form of sensory diet as they change their behaviors based on environmental stimuli (seeking a quiet place to wind down, standing up to stretch, fidgeting during a meeting, etc.)

### Responsiveness to Sensory Stimuli

Play is one method that children use to experience, avoid or create the stimulation they personally need to develop. The graphic below (an adapted version of Dunn's research) illustrates a current theory about how different children react to sensory stimuli during activities such as play. Most children will fall into four basic groups: Children with a high tolerance for sensory stimuli who respond passively (group 1), children with a high tolerance for sensory stimuli who respond actively (group 2), children with a low tolerance for stimuli who respond passively (group 3), and children with a low tolerance for stimuli who respond actively (group 4) (Winnie 1997).

It is important to note that children are all different; preferences for sensory experiences will vary and these experiences may be beneficial or detrimental to the children's development. Preferences will often be manifested through behaviors which are outward expres-

sions of individual needs for specific stimuli (Winnie 1997).

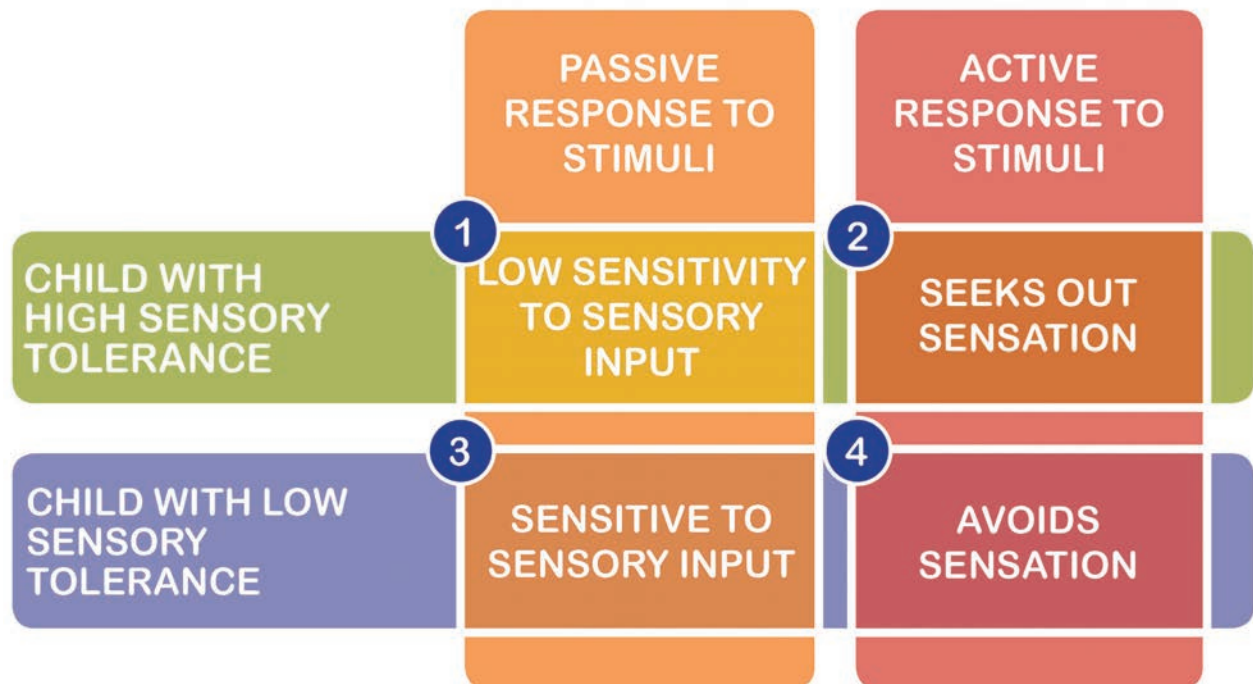
Children in group 1 have high tolerances for sensory stimuli but do not recognize it resulting in non-engaged and complacent behaviors. These children tend not to respond quickly and require physical contact to get their attention (Winnie & Daniels, 2002). Children in group 2 have high tolerances for sensory stimuli and will search for opportunities to increase stimuli in their environment. These children tend to enjoy active play, noisy toys, splashing water, exploring textures, and rhythmic activities (Winnie & Daniels, 2002). Children in group 3 have low tolerances for sensory stimuli and react passively. They have difficulty with concentration as they cannot completely process all the stimulation occurring around them at one time. They tend to become agitated when they get dirty or walk across different surfaces and have trouble sleeping (Dunn & Daniels, 2002). Children in group 4 have low tolerances for sensory stimuli and react with avoidance or repetitive behaviors to combat over stimulation. They tend to avoid noisy toys and instruments, avoid rough play, resist close physical contact and avoid sensory rich surfaces (Dunn & Daniels, 2002).

### Implementation Methods for Sensory Integration into Play Environments

Sensory diets are more effective when families are actively engaged in directing a child's experiences during regular routines when not guided by therapists.<sup>6</sup> Public outdoor spaces cannot feasibly be tailored to every child, however, a thoughtful designer can create spaces replete with intervention opportunities affording children and families the flexibility to create and enact personalized sensory routines outside controlled environments. Public playgrounds are examples of spaces that can be skillfully planned for such use.

Below are a few of many possible concepts that may be considered for play elements to include or methods for providing sensory diet options in public play spaces:

- Add push/pull exercise equipment (vestibular/proprioceptive inputs).
- Add moveable objects to the space, whether natural or manufactured, to provide opportunities for lifting, pushing and pulling (vestibular/proprioceptive inputs).
- Provide elevated and ground level items of interest to promote head movement in different directions (vestibular/proprioceptive inputs)





- Add features with graduating levels of instability (vestibular/proprioceptive inputs)
- Add features with graduating levels of required head orientation (vestibular inputs)
- Provide features that bounce or are springy (vestibular/proprioceptive inputs)
- Add spinning and rocking features of varying heights and speeds (vestibular/proprioceptive inputs)
- Design solid walls for bouncing, pushing and leaning against (vestibular/proprioceptive inputs)
- Include a variety of swings. Bucket swings and disc swings are often preferred because of tendencies to let go of chains when over excited by movement stimuli (vestibular/proprioceptive inputs)
- Hide objects in sand or other digging surfaces (tactile inputs)



- Add water to the play environment (tactile inputs)
- Vary texture on surfaces with similar and differing colors (tactile inputs)
- Supply writing surfaces such as outdoor chalk and marker boards (tactile inputs)
- Add a variety of hand gripping options, not just hooks, to improve hand extension and promote contact with palms (tactile inputs)
- Design ample space on ramps and equipment for conflict free passing (cognitive inputs)
- Provide cozy spaces where children can avoid overstimulation (cognitive inputs)
- Create consistency in colors and organization patterns (cognitive inputs)
- Incorporate spaces designated for simple games such as ball dribbling, ball throwing, jump roping, hopscotch, etc. (bilateral motor coordination)
- Incorporate items with repetitive motion such as twirling, cranking, rolling, etc. (visual, fine motor inputs)
- Provide shaded play areas to avoid behaviors derived from inability to regulate body temperature
- Separate noisy activities from more sedentary activities (auditory inputs)
- Provide appropriate safety rails and barriers to minimize unperceived or perceived risks (insecurity inputs)
- Limit the use of tunnels or confined spaces. When placed appropriately, however, they can provide secure areas for respite (insecurity inputs) (Tecia) (Nackley)

Though the term “sensory diet” is not typically used in common conversation, it is nevertheless a principle each of us experiences. Whether it is evidenced in a child tiptoeing across the sand or by a child emphatically splashing in cold ocean water, the concept is the same; we each have sensory related needs to fulfill. With proper planning of our outdoor play environments, hopefully all children will be able to

find ways to meet those needs, even while at play in public spaces.

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