Making Sense:
Understanding and Preparing a Successful Riding Experience for People with Sensory Processing Disorder

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Objectives

- Describe “what is sensory processing” and Sensory Processing Disorder.
- Name the 6 basic subtypes of sensory processing disorder.
- Understand the basic senses of the body and how SPD may affect participation in EAA.
- Understand how to adapt the EAA experience in order to improve participation in EAA.
- Know how to adapt equipment and provide items that will assist each participant with SPD for a positive EAA experience.
- Describe methods for preparing a participant with SPD for the EAA environment.
What is Sensation?

• Merriam-Webster Dictionary defines sensation as:
  –  *a*: a mental process (as seeing, hearing, or smelling) resulting from the immediate external stimulation of a sense organ often as distinguished from a conscious awareness of the *sensory process*.
  
  –  *b*: awareness (as of heat or pain) due to stimulation of a sense organ
  
  –  *c*: a state of consciousness due to internal bodily changes <a *sensation* of hunger>
  
  –  *d*: an indefinite bodily feeling <a *sensation* of buoyancy>

(Obtained From: [www.meriam-webster.com/dictionary/sensation](http://www.meriam-webster.com/dictionary/sensation))
The 8 Basic Senses

1) Touch – Tactile
2) Hearing – Auditory
3) Sight – Visual
4) Taste – Gustatory
5) Smell – Olfactory
6) Body in Space – Proprioception
7) Movement and Balance – Vestibular
8) Hunger/Thirst/Internal sensation – Interoception
“You can think of sensations as ‘food for the brain’; they provide the knowledge needed to direct the body and mind. But without well-organized sensory processes, sensations cannot be digested and nourish the brain.”

~A. Jean Ayers, Sensory Integration and the Child, Pg. 6
What is Sensory Processing?
(A.K.A Sensory Integration)

Receiving sensory information, processing the information and responding “appropriately” to sensory stimuli.

– Is an unconscious and automatic process
– Is an Organized and Organizing process
– Provides ability to ignore “unimportant information” and “attend to pertinent information.”
– Requires interaction and communication between the different senses.
“Sensations tell the brain what the body is doing...The brain tells the body what to do.”

~A. Jean Ayers, Sensory Integration and the Child, Pg. 5.
What systems are involved in these examples of sensory processing?

• Playing catch with a partner

• Sitting and listening to this seminar.

• Using a horsehair brush while grooming a horse.

• Sitting on a walking horse with two side walkers, who are giving you instructions, while the horse is lead through a cone weaving activity.
When Sensory Processing Goes Wrong: *Sensory Processing Disorder*

- Sensory Processing Disorder is any combination of the following:
  - Failure to appropriately take in sensations
  - Failure to appropriately process (e.g. send information to the brain) sensations
  - Creation of inappropriate responses to sensory information
  - Absence of a response to sensory information
SPD Patterns and Subtypes

“Horse of Many Colors” – LemonLimeAdventures.com
Patterns and Subtypes of SPD

Sensory Processing Disorder (SPD)

- Sensory Modulation Disorder (SMD)
  - SOR
  - SUR
  - SC

- Sensory-Based Motor Disorder (SBMD)
  - Dyspraxia
  - Postural Disorder

- Sensory Discrimination Disorder (SDD)
  - Visual
  - Auditory
  - Tactile
  - Taste/Smell
  - Position/Mvmt
  - Interoception

SOR = Sensory Over-Responsivity
SUR = Sensory Under-Responsivity
SC = Sensory Craving

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Miller LI et al., 2012

Obtained From: The Star Center - spdstar.org
Sensory Modulation Disorder: Sub-Types

• **Sensory Over Responsive**
  – "More Sensitive" than most people
  – Sensations are over-whelming = excessive response
  – May respond with “Fight or Flight Response” or use avoidance

• **Sensory Under Responsive**
  – “Less Sensitive” than most people
  – passive, quiet or unresponsive to their environment.
  – clumsy and uncoordinated
  – May not respond to temperatures and pain responses

• **Sensory Craving**
  – Insatiable need for sensory input
  – “Always on the go”
  – May need to interact with “everything in their environment”
  – The jumping, crashing, bouncing, running, bumping child

Adapted From: The Star Center - spdstar.org
Sensory Based Motor Disorder: Sub-Types

• Postural Disorder
  – Difficulty sitting up, standing for longer periods of time.
  – Will affect ability to reach, twist, cross midline, etc.

• Dyspraxia
  – Praxis = Motor Planning
  – Difficulty performing new motor skills
  – May require “more practice” than peers
  – Often struggle to plan out steps to accomplish a task.
  – Appear clumsy and “hard on things,”
Sensory Discrimination Disorder

• May occur in one, two, all, or any combination of the senses.

• Difficulty in understanding differences and qualities of sensations in the environment.

  – Examples:
    • Visual – difficulty in telling the letter “E” and “F” apart
    • Auditory – difficulty telling the difference between “hat” and “pat”
    • Tactile – difficulty feeling the difference between shapes (with eyes closed) – such as a circle from a square
    • Vestibular or Proprioceptive – difficulty understanding positional terms (front, back, side, etc).
Why does it all matter?

Sensory Processing is required for...

Originated from: Williams and Shellenberger, 1996.
Importance of Sensory Integration
Making Sense of it all....

Let’s dive in to each of the 8 senses!
Interoception -

• *Sensations related to internal needs of the body systems.*

  “I’m Hungry.”
  “I’m Thirsty.”
  “I need to go to the bathroom!”
Interoception

• May need to use the restroom frequently or may have accidents while riding OR every session needs to use the rest room after 15 minutes on the horse.

• May become easily dehydrated during sessions – unaware of thirst

• May be unaware of need to eat/hunger or when too full.

• May not notice changes in body heat – easily overheated
INTEROCEPTION Adaptations for the Arena

• Have a restroom break BEFORE mounting

• In hot weather help by providing water breaks
  – Model good choices by drinking water; offer water to horses

• May get comments during lesson about being hungry
  (especially after school time, early evening/dinner time)

• If possible, Schedule lessons when not excessively hot/cold to prevent complaints about temperature and overheating
The 8 Senses

Tactile – the touch sense

• Over-Responsive: (A.K.A – Tactile Defensive)
  – Upset by various textures
  – Difficulty with Side walker contact (too heavy-too light)
  – Difficulty tolerating closeness to others (i.e. drill team or Hand over Hand activities)

• Under-Responsive
  – Safety concerns (e.g. lack of pain reactions)
  – May not
    • feel differences between objects
    • notice when touched
    • detect temperature differences

• Sensory Craving
  – May want to touch everything
  – Seeking out inappropriate touching/texture experiences
  – May need MORE textures to increase learning/attention/etc.
  – Will attempt to engage with textures with as much of body as possible.
Tactile Adaptations for Arena Success

• **Over-responsive**
  – Educate sidewalkers on how much if any to touch
  – Always ask before touching (you and volunteers)
  – Often firm touch better tolerated than light
  – Textures of equipment
    • Get input from participant/parent about what textures they can/can’t tolerate and start there
    • Adapt reins, brushes, pads, saddles to accommodate various textures (fabric, vinyl, leather, fleece, toys, stuffed animals)
    • Provide riding gloves
Tactile Adaptations-2

• Under-responsive
  – Safety: ask caregiver/parent how this person expresses pain/being uncomfortable
  – May have difficulty holding on to reins
    • Choose a texture for reins that makes it easier to hold
    • Add knots, balls, handles or other objects to reins to give additional hold and texture input
  – Choose items to increase their tactile awareness
    – “Bean can” or other tactile games
Tactile Craving

- Provide many varied textures to give input and help attention/focus
- SUPERVISION
  - They should be touching only what is approved
  - Rules about who/how much touching is allowed
- Encourage appropriate touching—tack, brushes, horse, tactile toys
- Provide textures to touch while riding
The 8 Senses

Auditory – the hearing sense

• **Over-Responsive**
  – Covers ears with loud noises
  – Cries for unknown reasons or avoids new environments
  – Difficulty attending to instructions

• **Under-Responsive**
  – May not consistently respond to name or other sounds
  – May interrupt conversations of others
  – May struggle to modulate volume and tone of voice

• **Sensory Craving**
  – Plays loudly or makes excessive noises with mouth
  – Seeks loud sounds and environments
  – Enjoys loud television and music
Auditory Adaptations for Arena Success

• **Over-responsive**
  – Schedule lesson for quieter time of day
  – Consider a smaller group
  – Educate sidewalkers to limit talking; choose one to be the primary communicator
  – Add background music to over-ride other noises
  – Consider ear plugs if severe (with parental approval)

• **Under-responsive**
  – Add music as a background or part of a game
  – Play games where listening is part of the game
  – Have participants repeat instructions back to you
  – Use multiple teaching techniques to give information
Craving Auditory Input

- Monitor talking during the lesson and try to keep it focused on the lesson activity
- Add music to the lesson
  - General background music playing softly
  - Musical games
- Teach the rider how loud voices/noise affects the horse
The 8 Senses

Visual – the seeing sense

• **Over-Responsive:**
  – Blinks or squints in bright lights
  – May seek out dark spaces/hide outs
  – Rubs eyes frequently or complains of eyes hurting

• **Under-Responsive:**
  – May not notice items around them – bumping, tripping, or clumsy
  – Difficulty following visual instructions, maps, or writing directions
  – May have difficulty with finding objects in a group or in messy areas

• **Sensory Craving:**
  – May seek out bright lights or fast moving activities
  – May enjoy spinning or flapping hands at eyes
  – May have difficulty with eye contact during social interactions
Visual Adaptations for Arena Success

• **Over-Responsive**
  – Arena lights may be “too bright”
    • Sunglasses?
    • Schedule time of lesson to accommodate brightness

• **Under-Responsive/ Seekers**
  – Teach to all senses not just visual
  – Add color, lights to give more input
Does your arena look like.....

• This:

• Or this:
Gustatory – the tasting sense

• **Over-Responsive:**
  – The overly picky eater
    • May eat only certain flavors, colors, or textures of foods.
    – May have strong gag reflex (gags on many foods)
    – Difficulty with brushing teeth or playing games involved with mouth

• **Under-Responsive:**
  – May not notice foods on face/mouth
  – Appears unaware of textures, flavors, or differences in foods
  – May not gag before choking

• **Sensory Craving:**
  – May lick/chew/mouth nonfood objects
  – May crave strong flavors or one particular type of flavor (i.e. hot, sour, spicy, sweet)
  – May overstuff mouth when eating
Taste in the Arena??

• Riders that are seekers may mouth or “taste” any object available
  – Helmet straps, reins, brushes, toys
  – Lick the horse
  – Dirt or sand “pika”
  – Hands, clothing, etc

• Provide supervision to prevent ingestion of items

• Provide “chewy” during riding to prevent other items in mouth and give input
Olfactory – the smelling sense

• Over-Responsive:
  – May gag or avoid scents and smells
  – May avoid areas with strong smells or particularly upsetting scents.

• Under-Responsive:
  – May not notice smells or scents
  – May not notice smells that are alerting (i.e. smoke)

• Sensory Craving:
  – May smell hands or objects excessively
  – May attempt to smell people, animals, and objects
Olfactory Considerations for the Arena

• Over-Responsive
  – May have difficulty entering/working in the arena/barn due to the many odors present
  – Extreme Over-Responsiveness may lead to gagging

• Under-Responsive
  – Provide various scents and opportunities to experience many different scents

• Seekers
  – May sniff everything—supervision to keep behavior appropriate
    • The horse, tack, brushes
    • You, the volunteers
    • Sand/footing, manure
The 8 Senses

Proprioception – the body awareness sense

- **Over-Responsive:**
  - May avoid “heavy work” or dislike movement activities
  - May have rigid or tense muscles or posturing
  - May avoid team sports or become upset in crowds/busy environments

- **Under-Responsive:**
  - Always “too hard on things”
  - May stomp or be “heavy handed” and “heavy footed”
  - May struggle to learn new motor activities

- **Sensory Craving:**
  - Jumping, crashing, bouncing and pushing constantly
  - Enjoys tight clothing, being wrapped up tightly.
  - May grind teeth
Proprioception in the Arena

- **Over-Responsive/Under-Responsive**
  - Give opportunities to practice first
    - Grooming, rein board
  - Walking up the ramp or block may be challenging
  - Choose Pre-Ride activities that give proprioception input (more about this in a few slides)
  - Give extra time/practice for learning new motor skills
    - Mounting, rein use, leg use
Proprioceptive Craving

• Provide opportunities for input
  – Use of compression clothing
  – Heavy work activities
    • Carry saddle/tack
    • Carry and help set up arena equipment
    • Grooming
    • 2-point at walk and trot

• Supervision to
  Maximize safety!
Vestibular – the movement sense

- **Over-Responsive:**
  - Dislikes fast moving activities
  - May dislike laying back or changing positions
  - May become dizzy easily
  - Fearful during fast or new movements
  - Gets car sick or motion sickness easily
  - Mounting/dismounting may be a problem

- **Under-Responsive:**
  - May struggle with games like Simon Says
  - Does not notice heights to dangerous extent
  - May not have “protective response”
  - Does not get dizzy

- **Sensory Craving:**
  - Constantly seeks fast movements (i.e. trotting, spinning, skiing, roller coasters, etc.)
  - Seeks out opportunities to be tossed into the air, spun around, or hung upside down.
  - Swings to excess
Vestibular Considerations in the Arena

• The horse provides vestibular input to all mounted participants as it moves
  – Each horse moves in 3-dimensions: forward-back, side to side and rotational
  – Knowing our horses and choosing one with appropriate movement can add or decrease vestibular input to participants
    • Smooth moving, slower horse for Over-Responsive
    • Bouncier, choppier with movement in 2+ planes and quicker step for Under-Responsive and Seekers

• Tack and Equipment choices
  • Bareback pad or surcingle for Under-Responsive or Seekers
  • Deeper seat saddle with stirrups for Over-Responsive
Vestibular Activities

• Movement! Speed=more vestibular input
  – Grade speed (and input) to give more or less
    • Trotting at several times throughout the lesson vs walk only
• How you move is as important as the movement
  – Weaving, turns, circles, figure 8, serpentes, hills
  – Add vestibular games: barrel race, pole bending, keyhole at any speed for more input
  – Keep movement straight, slow and short distance for less input
• Position on the horse
  – Forward facing
  – Backward facing
  – 2-point position
  – Side saddle
Safety Considerations for Vestibular Input

• Many riders that “seek” or crave vestibular input can be very impulsive
  – They don’t consider that running up to a horse can be dangerous
  – Hanging off the side of a trotting horse is “fun”!
  – Jumping off at unplanned times give LOTS of input!

• SUPERVISION!!
Application of Learning

PREPARING FOR THE MOUNTED EXPERIENCE WITH SPD
Hold Your Horses—what comes before the horse???
Pre-ride activities to aid focus and attention

- The horse is ideal in providing vestibular, proprioceptive and other sensory input BUT...
  - Sometimes that is not enough—what can we add?
- Pre-ride sensory activities can give additional input and help the participant center and focus before the lesson
  - Help set up the arena (Proprioception, Tactile, Visual)
    - Rider designed trail pattern
  - Carry tack and equipment to the horse (Proprioception, Tactile)
  - Grooming (Proprioception, Tactile, Visual, Olfactory)
  - Carry buckets for water; push the wheelbarrow (Proprioception)
  - Sensory Gym-exercises to give input
Proprioception is King!
Get Moving
Want to learn more?
THANK YOU!

Q&A

You have Questions

We have Answers