



Sunday, August 4, 2019

Breakout Session E25 • 10:45-11:45 pm • Grand Ballroom A/B

Proprioceptive Training

Elizabeth Foster, PhD, Cal Poly Pomona University

Presenter Information

Elizabeth (Beth) Foster, PhD is an assistant professor at Cal Poly Pomona in adapted physical education (APE). She is the APE program coordinator and Motor Development Clinic Director at Cal Poly Pomona. She is currently the assistant director for Camp Abilities in Pennsylvania. Dr. Foster has presented research and various application based presentations on vision loss and deafblindness across the US within the field of adapted sports and APE. She completed intervener training at the Minnesota Deafblind Project. Dr. Foster was named the 2012 Pennsylvania State Association for Health, Physical Education, Recreation, and Dance Adapted Physical Education teacher of the year. In addition, Dr. Foster has been involved with various adapted sport organizations and disability organizations promoting physical activities, fitness, and adapted sports for all individuals with disabilities. She has presented internationally and at national conferences on deafblindness and has conducted research projects within the population of CHARGE syndrome.

Presentation Abstract

In addition to auditory and visual information, the proprioception sense also plays an important role in postural stability and feedback to the body on where the body is in space and how to respond to the environment and movement. These senses although typically examined separately are interdependent and intertwined in regards to the information that is provided to the brain. In children with CHARGE syndrome, typically there is an impairment to each of these three sense systems which may cause motor development delay and different motor skills to be exhibited. However, any increase in function and development or recognition of the proprioception sense could potential contribute to an increase in motor development and postural control. Gain a better understand of the proprioception system and the impact it may have on motor skills, balance, and motor control while gaining insight into proprioception training activities that you can implement.

Learning Objectives

- Gain a better understanding of the proprioceptive senses and the body systems associated to this sense.
- Examine proprioceptive activities to increase the deficits of proprioception in individuals with CHARGE syndrome.
- Identify the impact proprioception senses may have on motor skills, balance, and motor control.



Proprioceptive Training

14th International CHARGE Conference
Dallas, TX
Dr. Beth Foster
California State Polytechnic University, Pomona

Session Objectives



- Increase understanding of the proprioception sense
- Understand the important role proprioception has in motor skills, balance, postural stability, feedback to the body on where the body is in space and how to respond to the environment and movement.
- Examine and implement training activities to increase proprioception awareness and accurate movement reactions based on the environment.
- Understand the benefits of increased function and development or recognition of the proprioception to increase motor development and postural control.

Definition of Proprioception

- Integral to nearly all daily life functions
- Sensory perception: intrinsic systems to facilitate movement and control our reactions
- Latin word 'proprius' means "oneself" and the word 'perception' means innate sense on information and coordination
- Broadly: body's conscious awareness of itself and unconscious control



The many Names of Proprioception



- "Kinesthesia" awareness of the movement of the parts of the body by means of sensory organs in the muscles and joints- conscious elements
- "Kinesthetic sense" movement sense
- "Somatosensory" relating to or denoting a sensation (such as pressure, pain, or warmth) which can occur anywhere in the body
- "Sixth Sense" we have many more than 5 senses in our body :)
- "Sensory Integration" register, modulate, and discriminate sensations received through sensory systems to produce purposeful, adaptive responses
- Isn't it just "Vestibular" balance and orientation of head
- "Proprioception" is just the unconscious elements from joints and muscles

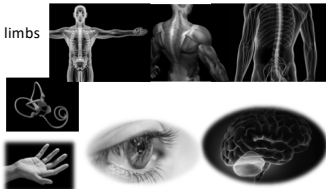
Proprioception Senses



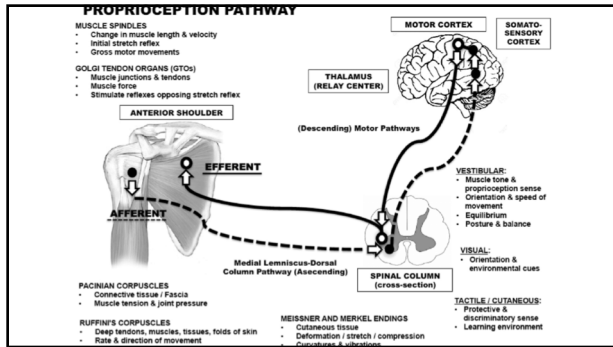
- Ability of our body to make changes on the spot, adjustments
- Brain perceives and coordinates musculoskeletal functions
- Reflexive control of muscle tone and posture
- Sense limb position, each body part at any given point in time
- Sense active and passive motion sense
- Sense of weight or heaviness

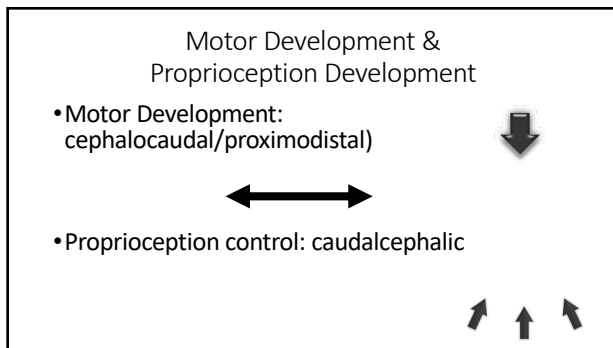
Body Systems that Control Proprioception

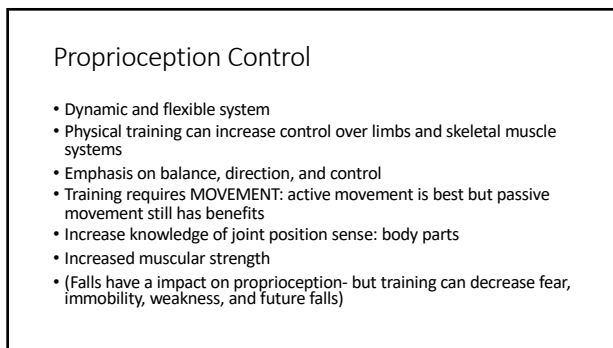
- Biomechanical sensors present in limbs
- Muscle System: muscle receptors
- Skeletal System: joint receptors
- Spinal Systems: nerves
- Vestibular: semi-circular canals
- Visual System
- Brain: cerebellum, motor cortex
- Tactile System: skin



- Balance Control comes from visual, vestibular, & proprioception (muscular system)







Movement Activities to Increase Proprioception

- Various surfaces to explore visually and tactilely are important
- Play activities centered on the manipulation of various body segments/parts
- Increase pelvic stability: tilts forwards, backwards, side to side
- Use feet to manipulate objects
- Vary postural positions
- Reaching out to grab objects (just beyond their reach)
- Stepping and climbing
- Standing on various surfaces
- Manipulate objects: push, pull, grab, catch, throw ...



Training



- Must be conscious, carve out time, keep it consistent & routine
- Engage and interact with your child
- Engagement & Mindfulness (no email, no cellphones): be in the moment
- Make it FUN (for both of you!! Or ALL of you)
- Increase attention when it is FUN
- Easy and inexpensive to implement!



Observation



- Are they over-responsive to a sense?
- Are they under-responsive to a sense?
- Same child can feel differently at different times.
- What didn't bother them yesterday could today.
- Sometimes their reaction seems appropriate, sometimes wildly unpredictable.
- It may be confusing and distressing
- But they can become more aware of their senses, learn strategies to respond appropriately, build tolerance.

Explore the Gift of Senses



- Proprioception is dynamic and flexible
- Learn how to cope and more aware
- Senses play a role in dictating our reaction to the world
- Sensory preferences?
- Hypersensitivity (over-responsiveness)
 - Exhibit fearful responses to touch, textures, noise, crowd, lights, smells
- Hyposensitivity (under-responsiveness)
 - Need to touch everything, does not understand personal space, seeks vibration, make lick, mouth or chew objects, actively seek senses

Sense of Touch/Movement



- Under-respond to sensory input
 - May not notice or respond to stimuli, may seek higher levels of senses, desire rough large movements, tight places, varied body positions with pressure, high pain threshold
- Over-respond to sensory input
 - May feel too easily or too intensely, may avoid or try to minimize, show aversion, gets upset, provides self simulation
- Actively Seek/crave sensory input

Play is Crucial



- Training is Play
- Use a variety of modalities- movement, touch, smell, vision, interactions
- Choice activities that per up or calm down your child
- Restructure their system
- Train their system
 - Hypersensitive: to decrease their sensitivity and increase their tolerance to senses and activities
 - Hyposensitive: increase their awareness by giving them multiple experiences to explore differences

VISION

- Flashlight Game
- Which Cup?
- Treasure Hunt
- Catch and Throw-various balls, use string for tactile tracking
- Stomp Game

TOUCH

- Ice Cube Fun
- Mitten/Sock Cover
- Water Play Games: sponge, dropper, funnel, spray bottle, ping pong balls
- Scarf Games: varied texture, reach, grab, release, pull
- Texture Play: mirror with powder or cornstarch, advance to yogurt, whip cream, pudding
- Buried Treasures: fill container with whip cream, pudding, beans, rice, sand and find objects
- Sock Game: Reach in a grab an object

Proprioception

- Ride On: bounce on lap, tilt side to side, back and forward
- Blanket Ride: Face child, walk backward and pull
- Toads on a Path: Fill socks with beans, rice, sand- try to stand on walk across
- Balance Beam: wood, tape/rope
- We are Rocking: Rock Rock Rock then Still
- Monster Mash Wash: dry with towel- body parts
- Kids on the Lap (Bus): base upon stimuli needed

Proprioception

- Hot Dog/Burrito/Sushi Roll: with couch cushions
- Hammock Swings: each grab a blanket, side to side
- Rope Snake Wiggles
- Animal Movements (with sounds)
- Make Music: banging kitchen items, fill plastic bottles
- Balloon on Rubber band
- Obstacle Course/Fort Building

Schedule a Time, Start your Training Today

- Start with a short period and pick two activities to try
- Keep it positive, Keep it FUN
- Include others to play also, role models, motivation and attention
- Change to child's sensory needs either more or less to meet them at their level then increase or decrease some
- Reinforce language and communication
- Provide Feedback and Confirmation



THANK YOU
THANK YOU
THANK YOU
THANK YOU

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