Incorporating Movement to Comprehensively Treat Preschoolers with ASD

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Improving Complex Motor Coordination and Perception of Tactile (Touch) Stimuli, presented in Partnership with Thieme Publishers

Kelly Vess, MA, CCC-SLP

Moderated by:
Amy Natho, MS, CCC-SLP, CEU Administrator, SpeechPathology.com

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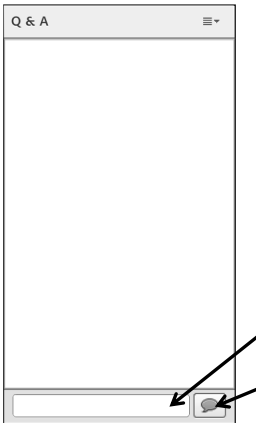

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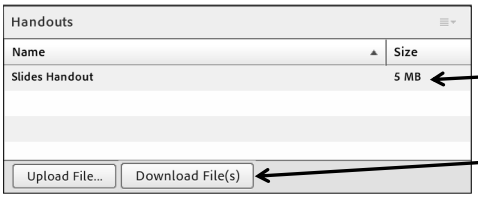

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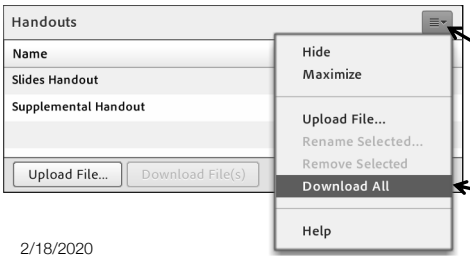

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Improving Complex Motor Coordination and Perception of Tactile (Touch) Stimuli, presented in Partnership with Thieme Publishers

By Kelly Vess, MA, CCC-SLP

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Presenter Kelly Vess, MA, CCC-SLP, has 16 years of experience specializing in preschool age intervention. She researches and develops evidence-based assessment and treatment practices that focus on optimizing therapeutic gains within realistic caseload and time demands.

Kelly Vess is also a clinical instructor for Wayne State and Eastern Michigan universities. In collaboration with Wayne State University, she develops and directs evidence-based intervention programs for diverse populations of preschoolers in speech, language, and literacy intervention.

Kelly Vess is the author of Speech Sound Disorders: Comprehensive Evaluation and Treatment with Thieme Publishers. Video clips and excerpts from this book will be shared to clearly illustrate evidence-based practices. This book contains over 120 best practice clips of assessment and therapy with interactive evaluation forms for the reader to further our current practices.

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Financial Disclosure:

Kelly Vess is a full-time employee of Barnes Early Childhood Center and author of Speech Sound Disorders: Comprehensive Evaluation and Treatment for Thieme Publishers in which she receives royalties for book sales. Kelly Vess also received an honorarium for this presentation.

Contributors: Joseph Evens, MA, OTRL, Dianne Stall, MEd, OTRL, Dr. Jordan Kondrat, PT, DPT, Dr. Julia Smith, PhD, Dorothy Heitjan, MEd, CCC-SLP, Heather Dean, CMT, Behavioral Specialist Susan Lucchese, social worker Edward Trainor, and WSU Clinical Director Karen O'Leary, CCC-SLP.

Intervention: Movement activities were developed by Wayne State University SLP graduate students Katelyn Adams, Holly Flynn, and Torey McNally alongside author Kelly Vess.

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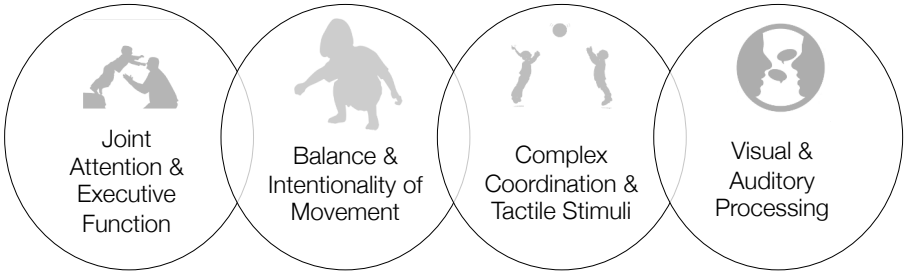
Four Session Webinar Outline



1. Incorporating Movement Activities to Improve Joint Attention and Executive Function
2. Targeting Balance and Increasing Intentionality of Motor Movements
3. Improving Complex Motor Coordination and Perception of Tactile (Touch) Stimuli
4. Strengthening Visual Motor and Auditory Processing Skills

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Series Goals:

1. Participants will be able to identify evidence-based practices that comprehensively treat preschoolers with Autism Spectrum Disorder by addressing motor skill development within therapy sessions.
2. Participants will be able to name task-oriented movement activities to improve motor skills, joint attention, and executive function skills within therapy sessions.

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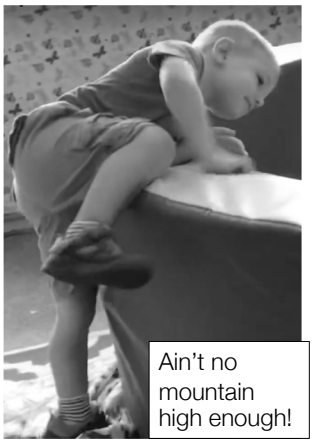
Session 3:

Part 1 Improving Complex Motor Coordination

Part 1: Improving Complex Motor Coordination



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Learning Outcomes

After this course, participants will be able to:

- Identify fundamental movement skills and strategies in order to improve these skills at graduated levels of independence and complexity.
- Identify difficulties in symmetry, coordination, and postural sway across sagittal, transverse, and coronal anatomical planes, and describe strategies to effectively improve upon them.
- List tactile perception challenges often present in children with ASD and methods to improve tactile perception.

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Impact of Motor Difficulties on Global Development

Children with ASD are more likely to present with…

- Motor impairment, which correlates to an increased severity level of ASD symptomology and an increased intellectual disability.
- Reduced fundamental movement skills and practical living motor skills, which are correlated to reduced social skills.
- Poorer balance, object manipulation skills, and locomotion skills, which directly impact ability to play with peers.
- Higher levels of postural sway, asymmetry in movements, and poorer coordination across sagittal, transverse, coronal anatomical planes.

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Impact of Motor Difficulties on Global Development

Children with ASD are more likely to present with…

- Poor motor imitation and gestural imitation.
- Poorer motor coordination, often referred to as dyspraxia.
- Longer times to react to stimuli and execute movement.

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Terminology to better communicate with your physical and occupational therapist colleagues.

Fundamental Motor Skills

Three Categories of Fundamental Motor Skills:

- **Stability (Balance) skills:** Gross motor skills involving balance and weight transfer (e.g., balancing on a beam, twisting, turning, squatting and bending).
- **Locomotor skills:** Physical action that propels an individual from one place to another in forward, backward, sideways, or upwards motion (e.g., walking, side shuffling, climbing, jumping, hopping, running).
- **Manipulative (Object/Ball) skills:** Handle objects with speed and control with the use of hand and body coordination to execute a task (e.g., throwing, catching, kicking, striking, trapping, dribbling, overhand throwing, and underhand rolling).

Q3, Q4, Q5 16

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Fundamental Skill Development by Age

Age in Years	Stability Skills	Locomotor Skills	Manipulative Skills
1 Year	backs into chairs, stands independently, falls frequently	taking first steps, walks backwards, beginning to run	throws a ball into the box, pushes large toys, grasps and releases objects
2 Years	stands on tip toes, squats, begins to hop on one foot	moves up & down slide, jumps from bottom step, walks downstairs with same foot leading	begins to pedal a simple tricycle, builds towers, catches large ball with chest
3 Years	walks on a wide balance beam, balances on one foot for a few seconds, hops on one foot	climbs ladders & jungle gyms, alternates feet on stairs, jumps	kicks a static ball, carries toys while walking, begins to roll a ball underarm

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Fundamental Skill Development by Age

Age in Years	Stability Skills	Locomotor Skills	Manipulative Skills
4 Years	walks part way on a narrow balance beam, rides with a scooter on one foot, hops repeatedly on one foot	gallops, skips with only the lead foot, jumps down from an elevated surface	throws a ball 12 feet, kicks a large rolling ball, constructs 3 dimensional blocks designs such as a bridge
5 Years	walks an entire narrow balance beam, limbs swinging when inverted, stands on one foot	runs through an obstacle course, skips with good balance, jumps forward	throws a ball and hits the target, hits a ball with a bat, plays organized games such as kickball
6 Years	balances on skates, skateboards, rides a two wheel bike	runs with speed and endurance, jumps, hops, skips interchangeably	throws ball at long distances, catches ball accurately, use bilateral coordination to build complex structures

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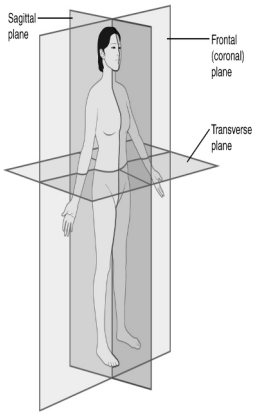
Movements Across Planes: Coronal, Sagittal & Transverse

Plane	Coordinating Distinct Movements
Coronal (Frontal) Plane	prone on hands and knees while reaching up; prone position up on your elbow while drawing on a vertical board; lying prone on a swiss ball reaching down (gravity assisted) and up (anti-gravity); in seated position on a ball, back lifting and lowering for protective equilibrium
Midsagittal Plane	stringing beads, cutting paper, pouring into a cup, side shuffle, scooting on standing scooter, twisting off a lid, manipulating small toys like legos, putting toothpaste on a toothbrush, crossing monkey bars, climbing stairs, buttoning, zipping, cutting on object with force (other hand stabilizing the object)
Transverse Plane	throwing a ball, shooting a basket, swinging on swing, climbing a slide, swinging a bat, walking on a balance beam, under arm rolling a ball, trampoline with hand grip bar, building a sand castle at the beach, riding a bike, wheel barrow walk



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Terminology to better communicate with your physical and occupational therapist colleagues.

In examining movement across planes, ask…

- Are there asymmetries in movements across planes?
- Can the child perform distinct movements across planes?
- Are there compensations across planes for weakness or coordination difficulties?

Type of coordination across planes:

- **Symmetrical Coordination:** Both hands and/or feet are performing the same motion (e.g., jumping, clapping).
- **Reciprocal Coordination:** Both sides of the body are performing the same motion *reciprocally,* (e.g., crawling, walking, climbing).
- **Asymmetrical Coordination:** Both sides are working together, but performing separate tasks with one side leading and the other supporting (e.g., cutting paper, tying shoes).

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Video 3.1. Zoologist Ida Illustrating Fundamental Movement Skills

Domain	Example Behavior Illustrating Fundament Movement Skills, Planes of Movement, and Executive Function
Stability Skill	
Locomotor Skill	
Manipulative Skill	
Coronal Plane Movement	
Midsagittal Plane Movement	
Transverse Plane	
Postural Control	

Source: Digital clip from Speech Sound Disorders: Comprehensive Evaluation and Treatment with Thieme Publishers.

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Video 3.1. Zoologist Ida Fully Invested

Source: Digital clip from Speech Sound Disorders: Comprehensive Evaluation and Treatment with Thieme Publishers.

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Further Reflection of Zoologist Ida in Video 3.1.

What therapist actions or activities supported Ida's engagement?

Areas Engaged	Therapist's Actions or Activity that Encouraged Engagement of the….
Mind: Challenging Skills with Scaffolding	
Heart: Engagement & Motor Imitation	
Body: Task-Oriented, Challenging Motor Skill	

What fundamental movement skill presented a challenge for Ida in this digital clip?

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Session 3: Perceiving Tactile Stimuli

Part 2: Improving Tactile Perception

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Impact of Sensory Processing Differences on Global Development

Children with ASD are more likely to present with…

- Tactile perception difficulties, which is estimated to be prevalent in 70% of children with ASD.
- Hypersensitivity in an increased sensitivity or aversion in perceiving tactile input.
- Atypical sensory processing differences, which are linked to challenges in joint attention, increased restricted/repetitive behaviors (RRBs), social competence, social participation, anxiety disorders, behavioral challenges, cognitive impairment, sleep disturbances, gastrointestinal issues, and food over-selectivity.

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Terminology to better communicate with your physical and occupational therapist colleagues.

Somatosensory System

Somatosensory System: Includes processing multiple types of sensation such as light touch, pain, pressure, temperature, and proprioception. The somatosensory system is lumped into three different pathways or "modalities" in the spinal cord and have different targets in the brain.

Three modalities of the Somatosensory System:

- **Discriminative Touch:** Includes touch, pressure, and vibration perception. It enables us to "read" raised letters with our fingertips or describe the shape and texture of an object without seeing it.
- **Pain and Temperature:** Includes the sensations pain, temperature, itch and tickle responses.
- **Proprioception:** Includes receptors for what happens below the body's surface: muscular stretch, joint position, tendon tension, etc. This modality primarily targets the cerebellum which needs minute-by-minute feedback on what the muscles are doing in space.

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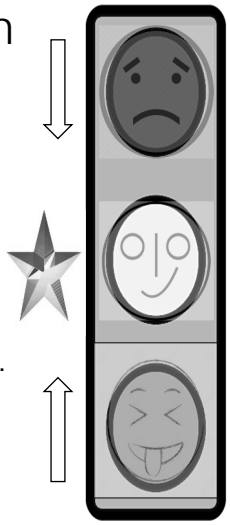
Terminology to better communicate with your physical and occupational therapist colleagues.

Continuum of Tactile Perception



Hypo-responsivity: Sensory registration problems with failure or slow response to sensory information. Compensatory strategy is to crave intense sensory input, often referred to as "sensory-seeking" behaviors.

Optimal Arousal and Orientation: Optimal registration of sensory input.

Hyper-responsivity: Over-responsiveness to ordinary sensory input with defensive reactions. Compensatory strategy is often referred to as "sensory avoiding" behaviors.

- **Tactile Defensiveness:** Tendency to overreact to ordinary touch sensations.
- **Gravitational Insecurity:** Insecure relationship to gravity results in desire for their feet to stay on the ground. Avoid stairs, balance beams, height, uneven surfaces, biking, skating, swinging, and being picked up.

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Terminology to better communicate with your physical and occupational therapist colleagues.

Tactile Perception: Strategies to Improve Tactile Perception*

Within the context of educationally rich, task-oriented intervention, have children with ASD engage in:

- **Self-care activities** in manipulating materials to develop self-efficacy in caring for self (e.g., bathing, preparing food, washing items, dressing).
- **Tactile Discrimination** activities by being exposed to a variety of material to manipulate in an engaging, goal-directed manner (e.g., sand, shaving cream, rice, beans, water, paint, feathers, play dough, slime, snow)
- **Fundamental Movement Skill Activities** with environmental challenges such as balance, height of surfaces, stability, texture, transitions.

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Terminology to better communicate with your physical and occupational therapist colleagues.

Tactile Perception: Strategies to Improve Tactile Perception* (continued)

- **Complex Movements** across Sagittal, Transverse, and Coronal planes of increased complexity (e.g., reaching up from the stomach on a scooter to put a coconut on a tree to challenge the coronal plane).
- **Linguistically Rich Activities** that provide descriptive vocabulary to teach tactile concepts saliently through sense exploration.

Note: Systematic review indicates some efficacy of these strategies; however, research base regarding sensory interventions remains limited at this time.

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Tactile Perception: Strategies to Improve Tactile Perception*

Within the context of educationally rich, task-oriented intervention, have children with ASD engage in:

- **Strengthening Activities:** Use weight bearing (e.g., wheel barrow, crab crawl) anti-gravity movements, heavy pushing/pulling to increase the body's awareness of environmental stimuli.
- **Deep Pressure:** Deep pressure acts as a calming or focusing agent to increase activity in the parasympathetic division and lower activity in the sympathetic division of the Autonomic Nervous System.

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Tactile Perception: Strategies to Improve Tactile Perception* (continued)

- **Deep Breathing:** Breathing acts as a calming or focusing agent to increase activity in the parasympathetic division and lower activity in the sympathetic division of the Autonomic Nervous System.
- **Vestibular Activities**: Improve proprioception by incorporating challenging balance and coordination activities with altered speed of motion.

**Note: Systematic review indicates some efficacy of these strategies; however, research base regarding sensory interventions remains limited at this time.*

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Video 3.2. Chef Davey Examining Quality of Sundae Ingredients

Motor Skill	Behavioral Example from Digital Clip
Locomotor Skill	
Manipulative Skill	
Stability Skill	
Sagittal Plane Motion	
Transverse Plane Motion	
4-Step Process to Improve Executive Function	

Source: Digital clip from Speech Sound Disorders: Comprehensive Evaluation and Treatment with Thieme

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Video 3.2. Chef Davey: Struggling Artist

Source: Digital clip from Speech Sound Disorders: Comprehensive Evaluation and Treatment with Thieme Publishers.

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Further Reflection of Chef Davey in Video 3.2.

What actions or activities supported Davey's engagement?

Areas Engaged	**Therapist's Actions or Activity that Encouraged Engagement of the….**
Mind: Challenging Skills with Scaffolding	
Heart: Engagement & Motor Imitation	
Body: Task-Oriented, Challenging Motor Skill	

When did Davey make the most vocalizations in this digital clip?

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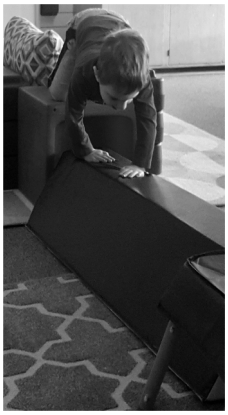
Takeaway Tip to Improve Complex Motor Coordination Tomorrow:



Create a movement activity that challenges children to use distinct movements across transverse, sagittal, and coronal planes.

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Questions?

Video 1.
Zookeeper Ida

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Video 2.
Chef Davey

For more information: kellyvessslp.com

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