

## What is the evidence?

- Principles of Motor Learning should drive our therapy (11/6/07 ASHA LEADER, Maas, 2008 article on reference list and CASANA webinar)
  - Repetitive practice
  - Constant vs variable practice
  - Blocked vs random practice
  - Massed vs distributed practice

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## Principles of Motor Learning Motor Performance vs Motor Learning

- In CASANA webinar, Edwin Maas uses creative pancake flip example.
- Constant – same size pan (better for performance)  
Variable – S/M/L pan (better for motor learning)
- Blocked – 25 trials each with each pan size  
Random – no set amount of trials per size
- Knowledge of Results vs Performance [quotes]

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## Principles of Motor Learning Motor Performance vs Motor Learning

- Understand, use, and teach caregivers different types of feedback.
- Knowledge of performance vs. Knowledge of results
- [Video – Ethan, age 2-11 performance feedback]

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### **What is CAS treatment research telling us?**

- Unfortunately not much, but that is changing. Only 4% of all pediatric communication disorder research includes pediatric motor speech disorder research - and that includes dysarthria.
- Most research has been focused on genetics (Fox P2 regulatory gene) and brain imaging.
- Likely are subtypes of CAS. Most children studied with CAS do NOT have Fox P2 gene mutation and brain imaging is non-conclusive.

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### **What is CAS research telling us?**

- High rate of “soft” neurological signs
- ASHA Leader Sept 2015 “Autism a Common Occurrence”
- Children with apraxia perform more poorly on phonological awareness tasks.

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### **What is CAS research telling us?**

- No significant difference in feedback frequency.
- Better improvement with more intensive therapy (but only compared 1x/wk to 2x/wk).
- JSHR, June 2015 study by Nijland, et al showed “an overall delay in development of cognitive functions”, with a “significant deviant development in sequential abilities”.

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**How does therapy for CAS differ from phonological/artic therapy?**

- Foundation in Principles of Motor Learning.
- “Developmental” guidelines don’t dictate sound choice most of the time.
- More attention is paid to movement sequences than to isolated sounds.
- Need to increase multi-sensory cueing.
- Compensatory placements may need to be taught. [tongue-tip sound examples]

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**What does “multi-sensory” mean in my approach?**

- Using any sensory and motor input available to enhance verbal skills. (could also be called multi-modality)
- [Video-Ben, age 3]

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**What does a “multi-sensory” approach include?**

- Touch cues and visual prompts (hand signals from “Easy Does It”; Kaufman cues, cues with cue cards like “The Speech Pathologist’s Handbook for Inclusive School Practices” by Julie Causton)
- PROMPT cues as determined by training
- Aspects of Dynamic Temporal and Tactile Cueing (DTTC) – (1) simultaneous production (2) immediate repetition (3) delayed imitation (4) question prompt
- AAC devices and Sign language

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**What does a “multi-sensory” approach include?**

- Sign language can: (1) be held to the face (2) be paired with visual/touch cues (3) be used later to prompt functors.
- [Videos – Jack, age 9-7 and Graham, 2-10]

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**Don’t abandon sign language...**

- because the child’s fine motor planning and precision are impaired/weak.
- because the child does not like to sign.
- because it is hard to learn.
- because the child starts to talk.
- [Video – Amanda, age 4 with sign usage]

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**What about AAC boards/devices?**

- Certainly all levels from low tech to high tech can be used.
- Incorporate into a multi-sensory session.
- iPad as therapy tool and as a device
- Web resources: AAC Institute; The Center for AAC and Autism, PrAACtical AAC.

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### What does “multi-sensory” help facilitate?

- Helps child to experience sound sequences and suprasegmental features while engaged in motor activity.
- [Video - Connor, age 3]
- Distracts child from the challenge of sound precision/sequencing
- [Video - Sean, age 6-9]

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### If children have minimal speech, how do we get started?

- Build on expressions, vehicle, animal and environmental sounds.
- Consider “Sounds in Motion” cues and “Phonics Songs” on YouTube for home practice, but **caution** on bouncing on sounds for true words.
- [Handout – “The Big Book of Exclamations” by Teri Peterson]
- Teaching “out” with audience participation
- [Video - Shane, age 3-6 with Ned’s Head]

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### How do we facilitate accurate articulatory postures?

- Use “starter positions” such as “mm”, “oo”, “ee” and even “rr”!
- [Video – Dominique, age 5, using starter positions]

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**How do you handle “fossilized” or “frozen form” productions?**

- May need to (1) “fool the system” (2) use “over-practice” (tap word on string to enter kitchen) and/or (3) nonsense words with similar sounds
- [Video – Abby, age 10, using starter positions to break habitualized productions]

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**Does it help to use “catchy” names for sounds?**

- Enhances fun with sounds, but try to incorporate placement/manner cues.
- [handouts - Verbal/Visual Cues and Parent Fill-in for home usage]
- “Friendly Sounds” Demo
- [Video - Andon, age 4-3 part way through Friendly Sound concept introduction and then during play]

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**Do we work on isolated sounds or sound sequences?**

- Focus is on movement sequences.
- Build syllable structures. [Minions say “tada” video on YouTube]
- “sh” demonstration with audience participation

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### What should I consider in selecting speech targets?

- Margaret “Dee” Fish in “Here’s How to Treat CAS” - not just nouns, but verbs and expressions like “send” (a text), “hang out” & “hit me up”. [Deaf community “Internet Slang meets ASL”]
- Teach CONTROL/POWER words beyond “no”.
- Target final **voiceless** consonants. (Use vowel prolongation as an alternative to voicing focus.)

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### What should I consider in selecting speech targets?

- Individualize “I” phrase word choice based on sound repertoire and co-articulation (e.g. “I pick, I need, I see, I choose” in place of “I want”)
- Use child and therapy goal-determined strategies like fun frustration phrases [“Oh milkshake!”]
- Develop a core vocabulary book in early stages.

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### What is a core vocabulary book?

- A “Grandma’s Brag Book” contains photos for functional communication and therapy targets.
- An important tool for children with limited lexicons.
- Enables the child to sense early success.
- Allows parents to feel part of the “team”.
- Has word printed at the top. [Handout]
- [Video Clip - Luke, age 3 and his mother, Sharon]

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### **What should I consider in moving to word combinations?**

- The use of 3 bins/boxes/buckets to help decide “at the moment” which 2 words should be targeted
- First bin -- “well-rehearsed” words
- Second bin -- words child can say with cueing
- Third bin -- future functional words
- Start with bin #1 only - then #1 and 2...
- [Handout]

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### **How do I use “key words” and “key contexts”?**

- Use “key words” or “key contexts” to build automatic responses for more challenging sound sequences.
- Example: /k/ facilitation with 4-year-old

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### **How do you combine these ideas in therapy activities?**

- [Video – Abby, age 10] demonstrating:
  - 1) Structured activity with play embedded
  - 2) “Rule of 3”
  - 3) Individualizing “I” phrase choice
  - 4) Use of “key words” to support targets
  - 5) Decreased use of “please” in practice phrases

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### **What about vowel modification?**

- Challenge not to move quickly through vowels – hold posture for extended proprioceptive feedback.
- In DTTC and “Time to Sing” prolonging vowels.
- [Video – Sam, age 3-11 prolonging vowels in two-syllable word enhancement – “staccato speech”]

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### **Vowel Resources**

- Pam Marshalla “Place Cues” on YouTube.
- Vowel Viz App – has vowel chart
- Book “Vowel Disorders” and “Handbook of Vowel Disorders” by Ball and Gibbon.
- Vowel “warm-up” using “If You See A Kitten” by Jack Butler.
- “Vowel Owls Sorting Set” (SuperDuperInc.com)

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### **How do we incorporate the use of pictures into therapy?**

- Use strategies to sequence pictures for building an airport runway, a road, or a path to obtain a snack!
- Advanced Webinar feedback
- [Video - Jonah, age 4]

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### **What are important family considerations?**

- Ensure parents “observe” therapy session flow in some way! [BIG challenge!]
- Teach parents Speechese. (cognates)
- Make sure home practice is successful.
- Talk about the struggle!! [take a vac]
- Don’t overwhelm parents! [Pledge]

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### **How do we incorporate early literacy skill building into tx?**

- Embed focus on phonological awareness and early literacy skills.
- [Video - Austin, age 4-5]

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### **How do we incorporate early literacy skill building into tx?**

- Use repetitive books with “fill-in-the blank” strategy.
- Solomon/Pereira “Repetitive Books” article in Apraxia-kids.org
- Read SAME book for 6 weeks!
- Article – “What Factors Place Children With Speech Sound Disorders at Risk for Reading Problems?”

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### How do we address the suprasegmental features?

- First of all, address throughout therapy.
- At sound level, try “Sounds in Motion” cues.
- Use music [“Time to Sing” and others]
- Hum tunes into kazoos
- [Video – Sophia, age 4-11]

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### How do we address the suprasegmental features?

- Prolong vowels and exaggerate stress.
- Target increased inflectional range and variation through use of slides, mountain climbing, hand tracing, puppets, character figures, superheroes, etc.
- [Video – Sophia, age 4-11]

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### How do we address the suprasegmental features?

- Use activities like “Build-A-Sentence” for word stress and adapt with frog “clicker”.
- Four different colored phrases – “Who, What, Where, and When”.
- If take out “When”, will allow for yellow to mean “pick any color you need”.
- Reinforce through selection of dinosaurs, figurines, etc for battles, dance contests, etc.

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## How do we address the suprasegmental features?

- [handout - Kathy Jakielski and Megan Young's "Songs, Toys and Games for Suprasegmentals" for loudness, pitch, stress and rate]
- Use apps like Voice Changer (record then play back with "tough guy", "mouse", "slow snail" ...)
- Facilitate enhanced auditory feedback- talk into tubes, echo mics, boxes, water, etc.
- [Video Clip - Cole age 3-6]

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