Non-Verbal Oral Motor Motor Exercises
with Children; Efficacy & Practice Issues

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What are Non-Verbal Oral Motor Exercises?

- “Nonspeech activities that involve sensory stimulation or manipulation of oral structures intended to influence the physiological mechanism to improve function of those structures” (McCauley & Strand, 2008).

- “...designates a variety of oral, lingual, and mandibular movements that range from articulator ‘wags’ or ‘push-ups’ to activities that include blowing bubbles or on horns” (Forrest, 2002).
Why are Non-Verbal Oral Motor Exercises used?

- Principles of motor learning suggest that when learning new complex motor tasks (i.e. speech) it is easiest to learn when it is broken down into smaller units.
- Build strength
  - Increase tone of oral-facial musculature
- Provides the child with an opportunity to create neural pathways relating movements with sensory perception.
- Speech develops from earlier occurring behaviors (i.e. sucking, chewing).

(Forrest, 2002)
Why Research Efficacy & Practice Issues?

There is little clinical and theoretical evidence that using oral motor exercises alone improves speech sound production (Lof, 2003).
Breaking Complex Motor Tasks into Smaller Units

• Articulation therapy typically stresses the production of individual speech sounds; although some researchers suggest that training should be done in larger units. (Lof, 2003).

• Fractioning a behavior that is composed of interrelated parts is not likely to provide relevant information (sensory-motor correspondences) for the appropriate development of neural substrates (Forrest, 2002).
Strengthening Oral/Facial Musculature

- Children with Phonological/articulatory disorders should not exhibit muscle weakness (Forrest, 2002).
- Very little strength is needed for speech (Forrest, 2002; as cited in Lof, 2003).
- “Weight training to build muscles (e.g., the biceps) involves building strength and mass” (Love, 2000; as cited in Lof, 2003).
- “Training specificity requires that exercises closely match the targeted functional outcome” (Clark, 2009).
Task Specificity

• Love (2000) stated that speech movement control and nonspeech movement control was mediated at different levels in the nervous system.

• “The view, often called the “common effector perspective,” suggests that when the same effectors (structures) are used for different activities they are necessarily controlled by a common set of control principles” (Bunton, 2008).
Sensorimotor Development

• “...investigations of individuals with neurological disorders (e.g., cerebral palsy) suggest that sensory motor deficits affect motor learning” (Forrest, 2002).

• Sound play and stimulability training may deem to be more effective in creating sensorimotor connections.
Earlier Occurring Behaviors Leads to Speech Development

Why this may be true...
The Frame/Content Theory of Evolution of Speech Production

(Wilson et al., 2008, p. 263)
Earlier Occurring Behaviors Leads to Speech Development

Why this may be false...

• Wilson et al. (2008) argue that if chewing and sucking are precursors to speech then motor control may be expected to completely developed for those behaviors before speech.

• “...at relatively early stages of speech production, muscle activation patterns for speech are distinct from chewing but similar to speech muscle activation patterns seen in adults” (Forrest, 2002, p. 21).
Summary of Findings

• No credible evidence to support non-verbal oral motor exercises as therapies for developmental speech sound disorders (Ruscello, 2008).

• A general goal for the PAD population should be stimulating more mature vocalizations and attaching these to meaning which can be used to communicate with others (David & Velleman, 2009).

• MORE RESEARCH IS NEEDED; ALTHOUGH THE CONSENSUS IS...Non-Verbal Oral Motor Exercises are not sufficient for speech development.
References