EFFICACY OF NON-SPEECH ORAL MOTOR EXERCISES FOR TREATMENT OF MOTOR SPEECH DISORDERS IN ADULTS

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What are NSOMEs?

- Focus on non-speech movements of the speech mechanisms
- Include: blowing, positioning, icing, sucking, cheek puffing, swallowing and other non-speech activities
  - Lass & Pannbacker, 2008
- Used in adults with acquired speech disorders
  - Used during evaluation to facilitate diagnosis
  - Bunton, 2008
History

- NSOMEs were first introduced in 1937
  - Originally used to treat dysarthria
  - Thought that these could be used to strengthen the organs of speech
  - Exercises would help “gain control” over the speech mechanism
    - Lass & Pannbacker, 2008
Why use NSOMEs in adults?

- **Assumption #1**: Movement characteristics of speech and non-speech oral motor behaviors are similar
  - NOT TRUE!

- **Assumption #2**: “Part-to-whole” training, speech production can be improved by targeting subcomponents
  - NOT TRUE!
    - Lof & Watson, 2008

- **Assumption #3**: Neural anatomical representation for speech and non-speech tasks are the same
  - NOT TRUE!
    - Bunton, 2008
Non-speech and speech: Different GOALS

- Non-speech: the goal of a lingual push-up is just to produce the amount of force needed to complete the movement.

- Speech: the goal is to produce a sound that the listener can interpret.

- Bunton, 2008
Non-speech and speech: Different MUSCLE MOVEMENT

- Electromyography (EMG) has shown that different muscle movement are used in speech and non-speech tasks
  - Differences in jaw movement
  - Lip muscle activity
  - Levator veli palatine

Bunton, 2008
Non-speech and speech: Different LATERALIZATION

- **Primary motor cortex**
  - Speech: increased activation in the left motor strip only
  - Non-speech: bilateral symmetrical activation

- **Cerebellum**
  - Speech: unilateral right-sided activation
  - Non-speech: bilateral activation

  - Bunton, 2008
Neural Plasticity

- “the mechanism by which the brain encodes, learns, or relearns behaviors”
  - Bunton, 2008, p.272

- **Principle of Specificity**: changes in neural function following practice are limited to the specific function that was practiced

- **Principle of Salience**: practice behaviors need to be relevant to the task being trained in order for them to be encoded in the brain
Why are NSOMEs still used?

- Some SLPs are not familiar or do not understand the literature on the effectiveness of NSOMEs
- Rely on their own personal experience and opinions of colleagues to validate the use of NSOMEs
  - There is insufficient evidence from research showing the NSOMEs are effective in improving speech production
    - Lass & Pannbacker, 2008
- Reported decline of exposure to research for SLPs in the clinical fellowship year
  - Lof & Watson, 2008
“The goal of speech therapy is NOT to produce a tongue wag, to have strong articulations, or to puff out the cheeks. Rather, the goal is to improve speech” Lof, 2006

Lass & Pannbacker, 2008
Summary

- It has been shown throughout the research that NSOMEs are not effective in treating motor speech disorders.
- There are differences in the goals, muscle movements and neural lateralization between speech and non-speech tasks.
- Although evidence disproves this treatment, some SLPs still use this approach.
Ethics

- It can be considered unethical for SLPs to use NSOMEs to treat motor speech disorders.
- We are obligated to provide evidence-based practice to our clients; using NSOMEs is providing treatment with little to no evidence proving its effectiveness, and extensive research proving its ineffectiveness.
References

