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Why Nonspeech Oral Motor Exercises are Not Effective for Changing Speech Sound Production

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Moderated by:
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Why Nonspeech Oral Motor Exercises (NSOME) Are Not Effective for Changing Speech Sound Productions

SpeechPathology.Com Presentation

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Science and Pseudoscience

- **Science Defined:** Information that is developed through research and other empirically based activities (Finn, Bothe, & Bramlett, 2005). A philosophical doctrine that specifies criteria and standards for describing, explaining, and deciding what stands as real knowledge or truth; It is a quest for knowledge, supported by evidence, and an attempt to discover and explain regularities in events (Lum, 2002).
- **Pseudoscience Defined:** A pretend or spurious science; a collection of related beliefs about the world mistakenly regarded as being based on scientific method or as having the status that scientific truths now have (Finn, Bothe, & Bramlett, 2005). A methodology, belief, or practice that is claimed to be scientific, or that is made to appear to be scientific, but which does not adhere to appropriate scientific methodologies, lacks supporting evidence or plausibility, or otherwise lacks scientific status (Wikipedia, 2017).
- **How You Know Something is Pseudoscience** (Finn, Bothe, & Bramlett, 2005): ①Disconfirming evidence is ignored and practice continues even though the evidence is clear. Once we have evidence against a procedure, then it cannot be ignored in clinical practice. Must be careful of Confirmation Bias, where we pay more attention to things that fit with our beliefs than things that might challenge them. No matter what the evidence shows, many people will not give up on their prior beliefs. ②When the approach is disconnected from well-established scientific models, theories, or paradigms. If theories are ignored, re-interpreted/misinterpreted, or manipulated in some way, then it is probably pseudoscience. ③When new terms are invented or the meanings are redefined in nonstandard ways. ④The only “evidence” is anecdotal, supported with statements from personal experience. A case study does NOT establish a cause/effect relationship and anecdotes and stories are NOT science. ⑤Inadequate evidence is accepted. Many proponents of some treatments provide insufficient evidence of their benefits. ⑥The printed materials are not peer-reviewed. Have the claims undergone independent, unbiased critical scrutiny? Or are the results presented directly to the public (e.g., at a conference, CEU event, self-published website/books)? Is there pseudo peer review? ⑦Grandiose outcomes are proclaimed. If it is too good to be true, it probably is not true! One therapeutic technique cannot possibly work for all different types of disorders.
- **Markers of Good Science:** ①It makes claims that can be tested and verified; ②It has been published in a peer-reviewed journal (beware...there are some dodgy journals out there that seem credible, but aren't); ③It is based on theories that are accepted by many experts in the field; ④It is backed up by experiments that have generated enough data to convince other experts of its legitimacy; ⑤Its proponents are secure enough to accept areas of doubt and need for further investigation; ⑥It does not fly in the face of the broad existing body of scientific knowledge; ⑦The authors have a bona fide high level of scientific qualification to conduct the studies and present the data.

- **Possible Reasons Fad Therapies Exist** (Lilienfeld, Marshall, Todd & Shane, 2015): ① Desperation that makes people do things not typically done. ② Poor sources of information (e.g., web-based information and presentation at CEU events, instead of peer-reviewed research, often holds more weight). ③ Seductive appear where we get seduced into the wild possibilities of a technique that can give unprecedented success. ④ Savior effect where we have a desire to rescue people. ⑤ Naïve realism where we place uncritical trust in our perceptions, erroneously thinking “seeing is believing.” ⑥ Personal experience where what we experience can be more convincing than scientific evidence. ⑦ Confirmation bias where we seek evidence consistent with our beliefs and neglect or selectively reinterpret evidence that does not. ⑧ Cognitive dissonance because it is difficult to admit errors once committed to a stance and we always want to “save face.” ⑨ Money (people often times are making unbelievable amounts of profit on a promoted procedure).

Nonspeech Oral Motor Movements Defined

- NSOMs are motor acts performed by various parts of the speech musculature to accomplish specific movement or postural goals that are not sufficient in themselves to have phonetic identity (Kent, 2015).

Nonspeech Oral Motor Exercises (NSOME) Defined

- Any technique that does not require the child to produce a speech sound but is used to influence the development of speaking abilities (Lof & Watson, 2008).
- A collection of nonspeech methods and procedures that claim to influence tongue, lip, and jaw resting postures, increase strength, improve muscle tone, facilitate range of motion, and develop muscle control (Ruscello, 2008).
- Oral-motor exercises (OMEs) are nonspeech activities that involve sensory stimulation to or actions of the lips, jaw, tongue, soft palate, larynx, and respiratory muscles which are intended to influence the physiologic underpinnings of the oropharyngeal mechanism and thus improve its functions. They include active muscle exercise, muscle stretching, passive exercise, and sensory stimulation (McCauley, Strand, Lof, et al., 2009).

Do SLPs use NSOME? What Kind?

- 85% of SLPs in the USA use NSOME to change speech sound productions (Lof & Watson, 2008); 85% of Canadian SLPs use NSOME (Hodge et al., 2005); 79% in Kentucky (Cima et al., 2009); 81% in South Carolina (Lemmon et al., 2010); 46% in Minnesota (Louma & Collins, 2012); 91% in India (Thomas & Kaipa, 2015).
- 87% of SLPs learned about using NSOME through nonpeer-reviewed CEU events (Lof & Watson, 2008). Only 25% of University professors who teach speech sound disorders courses advocate for the use of NSOME (Watson & Lof, 2005; 2009).
- **Most frequently used exercises** (in rank order): Blowing; Tongue push-ups; Pucker-smile; Tongue wags; Big smile; Tongue-to-nose-to-chin; Cheek puffing; Blowing kisses; Tongue curling (Lof & Watson, 2008).
- **Reported benefits** (in rank order): Tongue elevation; Awareness of articulators; Tongue strength; Lip strength; Lateral tongue movements; Jaw stabilization; Lip/tongue protrusion; Drooling control; VP competence; Sucking ability (Lof & Watson, 2008).
- **These exercises are used for children with** (in rank order): Dysarthria; Apraxia of speech (CAS); Structural anomalies; Down syndrome; Enrollment in early intervention; “Late talker” diagnosis; Phonological impairment; Hearing impairment; Functional misarticulations (Lof & Watson, 2008).

Logical Reasons to Question Using NSOME

- **Some logical questions about NSOME:**★There is evidence that shows that NSOME do not work. Why is it being ignored? ★There is NO evidence that shows that NSOME do work. Why is this being ignored? ★Why are the materials and procedures used in NSOME not submitted for peer-review scrutiny? ★Why are the materials and procedures promoted only in self-published materials and on proprietary websites? ★Why do these websites have a section for “testimonials” but not for “research”? ★How could one procedure work to remediate so many disparate types of problems?★What are the monetary benefits to the promoters of NSOME?

Theoretical Reasons to Question Using NSOME #1: Part-Whole Training and Transfer

- **Basic questions:** ① Does training on a smaller portion of the articulatory gesture transfer over to the whole gesture? ② Is it more efficient and better for learning by first training just part of the movement and not the whole movement?
- Tasks that comprise highly organized or integrated movements (such as speaking) will not be enhanced by learning the constituent parts of the movement alone; training on just the parts of these well-organized behaviors can actually diminish learning. Highly organized tasks require learning the information processing demands, as well as learning time-sharing and other inter-component skills (Kleim & Jones, 2008; Wightman & Lintern, 1985).
- *“Fractionating a behavior that is composed of interrelated parts is not likely to provide relevant information for the appropriate development of neural substrates”* (Forrest, 2002).
- Some clinician-researchers believe that it can be more effective to “Train the Whole” (Ingram & Ingram, 2001) and to use “Whole-Word Phonology and Templates” (Velleman & Vihman, 2002) rather than breaking up the gesture into small parts.

Theoretical Reasons to Question Using NSOME #2: Strengthening the Articulatory Structures

- **Basic questions:** ① Is strength necessary for speaking? If so, how much? ② Are the articulators actually strengthened by using NSOME? ③ How do SLPs objectively document weakness of articulators and objectively document supposed increases in strength after NSOME? ④ Do children with speech sound disorders have weak articulators?
- **Articulatory strength needs are VERY low** for speech and the speaking strength needs do not come anywhere close to maximum strength abilities of the articulators. For example, lip muscle force for speaking is only about 10-20% of the maximal capabilities for lip force, and the jaw uses only about 11-15% of the available amount of force that can be produced (see also Bunton & Weismer, 1994).
- *“...only a fraction of maximum tongue force is used in speech production, and such strength tasks are not representative of the tongue's role during typical speaking. As a result, caution should be taken when directly associating tongue strength to speech...”* (Wenke et al., 2006).
- **Agility** and fine articulatory movements, rather than strong articulators, are required for the ballistic movements of speaking. NSOME encourage gross and exaggerated ranges of motion, not small, coordinated movements that are required for talking.
- **Speakers need agility and fine articulatory movements.** Motor **SKILL** training induces motor map reorganization, whereas **strength** training does not (Remple et al., 2001; Jensen et al. 2005). Exercise alone (as opposed to **skill** training) will not alter motor map organization (Kleim et al., 2002).
- **NSOME may not actually increase articulator strength.** To strengthen muscle, the exercise must be done with multiple repetitions, against resistance, until failure...and then done again and again. Most NSOME do not follow this basic strength-training paradigm so there are probably no actual strength gains occurring due to these exercises.
- **Articulators can be strengthened** (e.g., the tongue for oral phase of swallowing or the VP complex) but these strengthened articulators will not help with the production of speech. Clark et al. (2003; 2008; 2009; 2013) and Robbins et al. (2005) have demonstrated ways to increase oral strength.
- **Lip strengthening exercises** did not lead to improved function for speech, eating, drinking, mobility, or saliva control and was not maintained over time (Sjögreena, Tuliniusb, Kiliaridisc, & Lohmanderd, 2010).
- **Measurements of strength are usually highly subjective** (e.g., feeling the force of the tongue pushing against a tongue depressor or against the cheek or just “observing” weakness) (Solomon & Monson, 2004), so clinicians cannot initially verify that strength is actually diminished and then they cannot report increased strength following NSOME.

- “To assess tongue strength, clinicians commonly hold a tongue depressor beyond the lips and the patient pushes the tongue against the depressor. Strength is rated perceptually, often with a 3-5 point equal-appearing interval scale or with binary judgments of “normal” or “weak” (Solomon & Monson, 2004).
- **Only objective measures** (e.g., tongue force transducers, Iowa Oral Performance Instrument [IOPI]) can corroborate statements of strength needs and improvement. Without such objective measurements, testimonials of articulator strength gains must be considered suspect.
- Clark et al. (2003) found that SLP and their student clinicians were poor evaluators of strength when using subjective vs. objective measures.
- **Preschool children with speech sound disorders may actually have STRONGER tongues** than their typically developing peers (Sudbery et al., 2006).
- **Tongue strengthening exercises** “...may be superfluous to the correction of tongue thrusting or associate frontal lispings” (Dworkin & Culatta, 1980).
- **Tone vs. Strength.** Muscle tone is the amount of resistance a muscle group exhibits in response to passive stretch. Muscle tone refers to the resilience or elasticity of the muscle at rest. Muscle tone is not a visual characteristic but rather a physiologic response to change in muscle fiber length. “Low tone” indicates less contraction of the fibers than typical. Observing low tone does not automatically mean that the child has weakness. Working on strengthening probably will not influence tone (Clark, 2005; 2010; 2013).

Theoretical Reasons to Question Using NSOME #3: Relevancy of NSOME to Speech

- **Relevancy is the only way to get changes in the neural system;** the context in which a skill is learned is crucial. In order to obtain transfer from one skill to another, the learned skills must be relevant to the other skills.
- “...**muscle fibers are selectively recruited to perform specific tasks**, so static non-speech tasks do not account for the precise and coordinated activity needed during speech” (Hodge & Wellman, 1999).
- **For sensory motor stimulation to improve articulation**, the stimulation must be done with relevant behaviors, with a defined end goal, using integration of skills. “*The PURPOSE of a motor behavior has a profound influence on the manner in which the relevant neural topography is marshaled and controlled*” (Weismer, 1996; 2006).
- **Most NSOME dis-integrate the highly integrated task of speaking** (e.g., practicing tongue elevation to the alveolar ridge with the desire that this isolated task will improve production of the lingual-alveolar sound /s/). For example, a motor task (e.g., shooting a free throw using a basketball) must be learned in the context of the actual performance goal. By analogy, no one would teach a ballplayer to *pretend* to hold a ball and then *pretend* to throw it toward a non-existent hoop with the eventual hope of improving free throwing ability. Breaking down basketball shooting or the speaking task into smaller, unrelated chunks that are irrelevant to the actual performance is not effective.
- Another non-speaking example would be the illogical finger pounding on a tabletop to simulate playing on a piano. Learning and improving piano playing must be practiced on a piano, not on a tabletop. Likewise, learning and improving speaking ability must be practiced in the context of speaking. To improve speaking, children must practice speaking, rather than using tasks that only superficially appear to be like speaking.
- Because isolated movements of the tongue, lips and other articulators are not the actual gestures used for the production of any sounds in English, their value for improving production of speech sounds is doubtful. That is, no speech sound requires the tongue tip to be elevated toward the nose; no sound is produced by puffing out the cheeks; no sound is produced in the same way as blowing is produced. Oral movements that are irrelevant to speech movements will not be effective as speech therapy techniques.

Theoretical Reasons to Question Using NSOME #4: Task Specificity

- **The same structures used for speaking and other “mouth tasks”** (e.g., feeding, swallowing, sucking, breathing, etc.) function in different ways depending on the task and each task is mediated by different parts

of the brain. The organization of movements within the nervous system is not the same for speech and nonspeech gestures. Although identical structures are used, these structures function differently for speech and for nonspeech activities.

- 60% of SLPs believe speech develops from early oral motor behaviors such as sucking and chewing (Lof & Watson, 2008). However, chewing and babbling have been shown to have no relation; early mouth movements are not precursors to speech (Moore & Ruark, 1996).
- **Weismer (2006):** The control of motor behavior is task (speaking) specific, not effector (muscle or organ) specific. There is strong evidence against the “shared control” for speech and nonspeech. *“Motor control processes are tied to the unique goals, sources of information (e.g., feedback), and characteristics of varying motor acts, even when those share the same effectors and some neural tissue.”*
- **Some examples of task specificity:** Babbling and early nonspeech oral behaviors are not related (e.g., Moore & Ruark, 1996); Patients can have dysphagia with and without speech problems (i.e., “double dissociations;” Ziegler, 2003; Green & Wang, 2003; Martin, 1991); It is well documented that the VP mechanism can be strengthened, however, reduction of speech nasality does not occur (e.g., Kuehn & Moon, 1994); Breathing for speech is different than breathing at rest or during other activities (e.g., Moore, Caulfield, & Green, 2001; Hoit, 1995). See Weismer (2006) for summary of 11 studies that show that speech and nonspeech are different for a wide variety of structures, including facial muscles, jaw motion, jaw operating space, jaw coordination, lingual movement, lip motions, levator veli palatini, and mandibular control.
- **Research has shown** that non-speech movements activate different parts of the brain than does speech movements (Bonilha et al., 2006; Ludlow et al., 2008; Schulz et al., 1999; Yee et al., 2007). This shows that the neural basis of motor control is different for speech and non-speech oral movements.
- **Bunton (2008) and Wilson, Green, Yunusova, and Moore (2008)** provide examples and concepts dealing with the importance of task specificity.
- **Clark (2005), Kent (2015), and Maas (2016)** provide research reviews of the use of nonspeech movements and related concepts for oral motor disorders.
- **Other recent research:** Staiger et al. (2017): *The findings can be interpreted as reflecting major differences in task demands and underlying control mechanisms. The validity of diagnostic indices for speech obtained from speech-like or nonspeech tasks must thus be called into question.* Staiger et al. (2017): *The data on oral motor performance rates show that speech tasks and oral motor tasks, such as rapid syllable repetition or repetitive single articulator movements, measure separate traits.*

Theoretical Reasons to Question Using NSOME #5: Warm-Up/Awareness/Metamouth

- **Warm-up has a physiological purpose** during muscle exercise: to increase blood circulation so muscle viscosity drops, thus allowing for smoother and more elastic muscle contractions (Safran, Seaber, & Garrett, 1989).
- **Warm-up of muscles** may be appropriate (Pollock et al., 1998) when a person is about to initiate an exercise regimen that will maximally tax the system (e.g., distance running or weight training). However, muscle warm-up is not required for tasks that are below the maximum (e.g., walking or lifting a spoon-to-mouth). Because speaking does not require anywhere near the oral muscular maximum (see explanations above), warm-up is not necessary.
- If clinicians are not using the term warm-up to identify a physiological task to “wake up the mouth,” then perhaps they believe that they are providing some form of “metamouth” knowledge about the articulators’ movement and placement.
- **Awareness and its role in therapy** is always questioned. It is well known that young children have difficulty with various metaphonological awareness tasks (Kamhi & Catts, 2005). For articulation awareness, Klein, Lederer and Cortese (1991) reported that children age 5 and 6 years had very little consciousness of how speech sounds were made; 7 year olds were not very proficient with this either. According to Koegel, Koegel, and Ingham (1986), some children older than 7 years were successful during a metalinguistic speech

intervention program, but only when they have the “...cognitive maturity required to understand the concept of a sound...”

- **It appears that young children cannot take advantage of the non-speech mouth cues** provided during NSOME that can be transferred to speaking tasks. More research is needed to determine the minimum cognitive, linguistic, and motor abilities of children that are necessary for such “meta” skills. Also see Munson, Edwards, and Beckman (2005).

Childhood Apraxia of Speech (CAS) and NSOME

- **Children with CAS have adequate oral structure movements for nonspeech activities** but not for volitional speech (Caruso & Strand, 1999), so this would preclude the use of NSOME because non-speech is not the problem (McCauley & Strand, 2008).
- **There is no muscle weakness for children with CAS**, so there is no need to do strengthening exercises. If there is weakness, then the correct diagnosis is dysarthria, not apraxia.
- *“The focus of intervention for the child diagnosed with CAS is on improving the planning, sequencing, and coordination of muscle movements for speech. **Isolated exercises designed to “strengthen” the oral muscles will not help. CAS is a disorder of speech coordination, not strength.**”* (ASHA Technical Report on Childhood Apraxia of Speech, 2007).

Cleft Lip/Palate and NSOME

- The VP mechanism can be strengthened through exercise (many studies have demonstrated this since the 1960s), but added strength will not improve speech productions (Peterson-Falzone et al., 2006).
- *“Blowing exercises, sucking, swallowing, gagging, and cheek puffing have been suggested as useful in improving or strengthening velopharyngeal closure and speech. However, multi-view videofluoroscopy has shown that velopharyngeal movements of these nonspeech functions differ from velopharyngeal movements for speech in the same speaker. Improving velopharyngeal motion for these tasks does not result in improved resonance or speech. These procedures simply do not work and the premises and rationales behind them are scientifically unsound.”* (Golding-Kushner, 2001).
- **Ruscello (2008)** evaluates the use of NSOME and craniofacial anomalies in his article.
- **Don’t Blow This Therapy Session!** See Lof and Ruscello (2013) for a historical review of blowing exercises.

NSOME for Non-Motor Speech Disorders?

- Some may believe that motor exercises can help children with motor production speech problems, such as functional misarticulators (phonetic/articulatory problems) or children with structural problems; however the evidence does not support this.
- **It makes no sense** that motor exercises could help improve the speech of children who have non-motor problems, such as phonological problems, for example children in Early Intervention diagnosed as late talkers.
- It is puzzling why clinicians would use a motor approach for non-motor speech disorders; therapy must target the system that is impacting the speech problem.

NSOME for Children with Dysarthria?

- **NSOME are frequently used for acquired dysarthria**, but their use is influenced by “folklore” and not by evidence of effectiveness (Mackenzie et al., 2010). Following guidance from adults with acquired dysarthria, *“...strengthening exercises are probably only appropriate for a small number of patients”* (Duffy, 2013).
- *“...weakness is not directly related to intelligibility...”* for patients with ALS (Duffy, 2013).
- **Solomon et al. (2016)** found that the presence of orofacial muscle weakness in adults with dysarthrias has a tenuous link between orofacial strength and speech production disorders.
- **Perry et al. (2017)** demonstrated that some forms of exercise might help a patient with a full-face transplant with straw drinking and facial expression.
- Based on the adult acquired dysarthria literature, it appears that NSOME are not recommended as a technique that can improve speech productions (Hodge, 2002; Duffy, 2013; Yorkston, et al., 2010).

Evidence Against the Use of NSOME

- **Evidence-Based Systematic Review: Effects of Nonspeech Oral Motor Exercises on Speech** (McCauley, Strand, Lof, et al., 2009). Purpose was to conduct evidence-based systematic review on NSOME. Only 8 peer-reviewed articles met rigorous criteria for inclusion. *“Insufficient evidence to support or refute the used of OMEs to produce effects on speech was found...”*.
- **There are studies refuting the effectiveness of NSOME** that are not in peer-reviewed journals; most of these studies were reported at ASHA Conventions. Of the 11 studies available, 10 showed that NSOME were NOT effective as a treatment approach. See Lass and Pannbacker (2008) and Ruscello (2008) for a review of these and other studies. Many references to studies are listed in the reference list: Christensen & Hanson (1981); Gommerman & Hodge (1995); Colone & Forrest (2000); Occhino & McCane (2001); Abrahamsen & Flack (2002); Bush et al. (2004); Roehrig et al. (2004); Guisti & Casella (2005); Hayes (2006); Forrest & Iuzzini (2008); Fields & Polmanteer (2002).
- **Lee and Gibbon** (2016) conducted another systematic review and found no evidence for NSOME as being effective. Also see Lau and Lee (2013).

Combining Treatment Approaches

- **Many SLPs use a combination of treatment approaches** so it is difficult to “tease apart” which approach is providing therapeutic benefit. Additionally, whenever intervention approaches are combined, it is unknown if and how they actually work in conjunction with each other to enhance performance.
- There is much evidence that the NSOME portion of combined treatments is irrelevant to speech improvements. If irrelevant, then why do this at all?
- NSOME probably do not harm the child when used in combination with traditional therapy approaches (however, Hayes [2006] found that some children may be negatively affected by a combination approach).
- It seems reasonable that if there is no speech improvement using combined approaches, then clinicians should eliminate the approach that is not effective (i.e., NSOME) so as to not waste valuable therapy time with an ineffectual technique.

In Conclusion

- **Potential reasons why NSOME continue to be used** (Lof, 2015): ①The procedures can be followed in a step-by-step “cookbook” fashion. ② The exercises are tangible with the appearance that something therapeutic is being done. ③There is a lack of understanding the theoretical literature addressing the dissimilarities of speech-nonspeech movements. ④The techniques can be easily written out to produce handouts. ⑤There are a wide variety of techniques and tools available for purchase that are attractively packaged. ⑥Many practicing clinicians do not read peer-reviewed articles but instead rely on unscientific writings. ⑦SLPs attend non-peer reviewed CEU activities that encourage their use; ⑧Parents and therapists on multidisciplinary teams encourage using NSOME; ⑨Frequently, other clinicians persuade their colleagues to use these techniques.
- **If clinicians want speech to improve**, they must work on speech, and not on things that only LOOK like they are working on speech.
- **Phonetic placement cues** that have been used in traditional speech therapy are NOT the same as NSOME.
- **NSOME are a procedure not a goal.** The goal of speech therapy is NOT to produce a tongue wag, to have strong articulators, to puff out the cheeks, to blow “harder” horns, etc. Rather, the goal is to produce intelligible speech.
- **We have been burned before.** In the 1990s many SLPs inappropriately embraced Facilitated Communication (FC) as a treatment approach because they thought they observed that it worked. Once it was tested using scientific methodology, it was found to not work. Unfortunately, FC is coming back into practice. Pseudoscientific methodologies can persuade clinicians to provide the wrong treatment (Lof, 2011).

- **Following the guidelines of Evidence-Based Practice**, evidence needs to guide treatment decisions. Parents need to be informed that NSOME have not been shown to be effective and their use must be considered only experimental (Lof, 2001; Sacket et al., 1996).

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Parent-Friendly Information about Nonspeech Oral Motor Exercises

Poster presented at the 2011 ASHA Convention, San Diego, CA

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INTRODUCTION

Nonspeech oral motor exercises (NSOME) are techniques that do not involve speech production but are used to influence speaking abilities. These often include blowing bubbles and horns, tongue pushes/wags/curling, pucker/smile movements and other mouth gymnastics¹⁸. Although often used by many SLPs, the legitimate professional literature refutes the appropriateness of NSOME for intervention to change speech sound productions^{18, 24}.

Parents may request NSOME be used because:¹⁵ •Their child's previous SLP used NSOME, •NSOME objectives may already be on the child's IEP, •They have read testimonial information on the internet encouraging NSOME, •There is a proliferation of attractively packaged NSOME products available for purchase, •Other professionals (e.g., OT, PT) recommend their use, •These exercises provide something concrete for parents to do with their children under the guise of "therapy."

PARENTS COMMENTS/QUESTIONS	POSSIBLE RESPONSE
<i>The SLP has my child practicing sticking her tongue in and out and side-to-side before working on speech. Is this a good idea?</i>	These nonspeech movements will not help with speech because the parts of the brain that control movements for speech are different from the parts that control nonspeech movements. It's a brain thing! ^{3, 6, 10, 25, 27}
<i>My child has a repaired cleft lip/palate. To me it makes sense that blowing must be a good way to get his speech to not come out his nose.</i>	For over 50 years it has been proven that blowing exercises will not prevent speech from coming out the nose. It is surprising that this technique is still being used! ^{7, 22}
<i>The SLP working with my child says that exercises "warm up" their mouths. What's wrong with that?</i>	Because limited strength is needed to speak, warm-up is not necessary. While a few simple mouth movements may provide some focus on the mouth area, they should only be a very minor part of therapy. ^{5, 24}
<i>I have been told that many kids are diagnosed with Childhood Apraxia of Speech. Aren't these kinds of exercises necessary to help their speech improve?</i>	Children with CAS need therapy devoted to making speech, not movements that barely mimic speech (because of how the brain organizes information). Children with CAS have "Apraxia of <u>Speech</u> " so speech is what needs to be worked on, not nonspeech tasks. ^{1, 16}
<i>On the internet, I've read information provided by experts who say these exercises work and are necessary to help children learn to speak. It is all over the web, so it must be legitimate.</i>	You must use caution about believing information found on websites. <u>Research</u> shows that a technique works, not opinions, testimonials, and "expert" advice. While these statements may be interesting, they do not prove that the exercises work. Special care should be taken if you are encouraged to buy a product. ¹⁷
<i>The last SLP my child had said oral motor exercises will help develop necessary speech awareness. Don't children need to become aware of their mouth movements in order to improve speech?</i>	Research has shown that young children have little awareness of mouth movements. Children need to learn how different mouth movements affect speech, not mouth movements that are not speech. ^{13, 14}
<i>My child can move his tongue up and down quickly, so why can't he make "tongue tip" sounds such as "l" or "t"?</i>	The tongue can make many different kinds of movements; however, tongue movements for speech are controlled by a

	different part of the brain than movements that don't involve speech. ^{2, 3, 26}
Won't working on chewing and swallowing help my child speak better? Doesn't she need to become good at these nonspeech movements before we can work on actually making her talk?	Chewing and swallowing are unrelated to speaking. Even though the tongue, lips and other parts of the mouth are used for speech and nonspeech movements, nonspeech movements do not influence how she talks. ^{8, 9, 20, 21}
PTs and OTs often use exercises to improve motor skills. Isn't speech also a motor skill?	Yes, but speech is much more than just a motor skill because it involves communication. Speech is different from other motor tasks. Speech is special because it involves language. Speech motor tasks are organized in the brain in a unique way. ^{11, 12}
It was recommended that my child receive muscle-based therapy because he has "low muscle tone". So that must mean his muscles are weak.	Muscle tone and muscle strength are different. Tone refers to the elasticity of muscles at rest. Just because your child has low muscle tone does not necessarily mean that she has weak muscles. Working on strengthening will not have an effect on tone. ³
My child has something called a "phonological" problem. Why not mouth exercises for this?	Phonological issues are a problem with the language aspects of talking and do not involve simple mouth movements. Your child needs to learn the "rules" of speech/language, and these rules are not learned by mouth movements. Therapy must be done in meaningful communication contexts. ^{18, 19, 24}
We have fun doing these exercises at home. What can it hurt to do them?	Although these exercises probably won't harm your child, focused talking time is too valuable to be wasted. Work at home should be based on practicing valuable skills that will improve speaking. ^{18, 19, 24}
According to the occupational therapist, my child has speech problems because her mouth is not strong enough. So isn't strengthening the mouth important?	<u>Very little</u> strength is needed to produce speech; agility and coordination are needed, but little strength. Also, it is surprisingly difficult to accurately determine strength. Therefore, any statements about weakness are questionable. ^{4, 23}
My child is blowing horns in therapy and has progressed from one horn to the next. That is progress, right?	It is progress in horn blowing but not in speech. Blowing and speaking are completely different from each other and doing one well will not have an impact on the other. ^{25, 26}

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