



LEADERSPROJECT

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Cleft Palate Speech and Feeding Course

Trainers may use these Binder Spine Labels when making Trainer and Trainee course binders

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|---|----------------|
| Cleft Palate Speech and Feeding Course | Trainer |
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| Cleft Palate Speech and Feeding Course | Trainee |
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Assessment Materials

Cleft Palate Speech and
Feeding Course



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Diagnostic Evaluation and Interview for Cleft Palate

1. *Present Concern* (parent's concern, who referred, why, been evaluated before? Treatment before (how long, how many times/individual, goals in therapy?)
2. *Sound system* (which sounds child uses, do you/others understand him/her, leave out sounds sounds/hard to produce sounds)
3. *Resonance* (child sound hyper or hypo nasal?)
4. *Language* (Understands language? How communicates words/gestures/intonation? Combines words?)
Most advanced communications? How does he compare to peers his own age or his siblings when they were his/her age?
5. *Medical History* (pregnancy?, surgeries?, hearing test?, ear infections?, medical issues?)
6. *Developmental History* (speech and motor milestones)
7. *Feeding Skills* (difficulty sucking, chewing, weight gain)
8. *Voice* (raspy, hoarse)
9. *Speech Sample*
 - a. *Single sound assessment* – easily allows to see patterns
 - b. *Syllable Repetition* – isolate phoneme, determine if phoneme specific nasal air emission
 - c. *Sentence Repetition* – test contains each phoneme, including high pressure, voiced/voiceless phonemes, differentiate sentences containing oral vs. nasal sounds.
 - d. *Connected Speech* (alphabet, numbers)- hypernasality and hyponasality and nasal emission more apparent since taxing the velopharyngeal system, allows to see overall speech. Intelligibility, influence of context, and consistency of sound errors
 - e. *Stimulability testing*- identify strategies which facilitate correct production, identify sounds that are easily modified.



Speech Sound Assessment and Stimulability

Have the patient repeat the single sound, then a word from the sentence, then the sentence.

| Correct | Incorrect |
|---------|-----------|
| m | |
| n | |
| ng | |

Nasal Sounds – These sounds are not likely to be affected

/m/- My mommy may moo or *Mom 'n; Amy are home**.....

/n/- Nell saw a robin in the nest or *Anna knew no one**.....

/ng/- The bell is ringing or *We are hanging on**

Low Pressure Sounds- These sounds are not likely to be

| | |
|---|--|
| l | |
| w | |
| r | |
| h | |

/l/- Lisa gave Julia a lollipop or *Laura will wear a lily.**

/w/- Wilma won the war. or *We were away.**

/r/- The farmer plants all year round or *Ray will arrive early.**

/h/ *Hurry ahead Harry.**

High Pressure Sounds- These sounds are likely to be affected

| | |
|----|--|
| p | |
| b | |
| t | |
| d | |
| k | |
| g | |
| s | |
| z | |
| sh | |
| ch | |
| f | |
| v | |

/p/- Pippin and Popeye play in the pool or *Puppy will pull a rope.**

/b/- Bobby and Bibi buy a banana or *Buy baby a bib.**

/t/- Take Teddy to town or *Your turtle ate a hat.**

/d/- Daddy mended a door or *Do it today for Daddy.**

/k/- Ken and Karen cook a cake or *A cookie or a cake.**

/g/- Go get the wagon for the girl or *Give Aggie a hug.**

/s/- Sissy sees some suns or *Sissy saw Sally race.**
/z/- Zorro the Zebra was in the zoo or *Zoey has roses.**
/sh/- Shy Shelly washes a shoe *She washed a dish.**
/ch/- Chelsea eats cheeries and cheese. or *Watch a choo choo.**
/f/- The muffin fell on the family farm or *A fly fell off a leaf.**
/v/- Never drive the van in the valley or *I love every view.**

**All italicized sentences are from the Americleft sentences by Judith Trost-Cardamone (2012)*

Step-by-Step Analysis to Determine What Sounds are Stimulable: This Leads to a Determination of What Sounds to Work on in Therapy

1. Write a list of the sounds produced incorrectly.
2. Look for these sounds in "Ways to Stimulate Sounds". Do not give up immediately but keep trying. Don't just say "good job" or "try again" but say "almost", "better" or very specific "that was better but I still see air coming out your nose" or "next time remember where your tongue is supposed to be, right behind the teeth (or wherever).
3. Of the incorrect sounds found in question number one, write only the sounds that were stimulable.
4. From the list of stimulable sounds, write the order of these sounds according to the child's normal development (using the "Order of Development").
5. Choose the first sound on this list to work in therapy (do not work with more than 2-3 sounds at a time).
6. Work on discrimination: Where is the sound produced first by adult making the sound as the child does and correctly (glottal stop vs bilabial plosive) and then whether the child can identify when he/she makes the sound with correct placement or not.
7. Once you have chosen the sounds that you will teach, teach how to produce the sound in a syllable.
8. Once it easy to produce the sound in a syllable, teach how to produce the sound at the beginning of a word.
9. Once the child can say those words, have he/she say them in a sentence.
10. Once they can say those words in a sentence, work with that sound in conversation.
11. Once you have completed the steps for the word-initial sounds, think of words containing the same sound in the middle and proceed to steps 6-9.
12. If that sound also exists at the end of the word, after completing step # 9, repeat steps 6-9 again.

Ways to Stimulate Sounds

/p/: Make the person say "p" this way:

- Can the child discriminate the sound of correct production, e.g., a glottal stop for a “p” vs a bilabial voiceless stop for “p”
- Use drawings; teach what they have to do with their lips to produce this sound.
- Use a mirror to see his lips together.
- Use mirror to see fogging of mirror if air comes through nose. (Only when mirror is cooler than air)
- Have the child feel the air from the mouth with hand.
- Have child move a cotton ball or paper ball on the hand right outside the mouth saying /p/.
- Use / b / to help make the / p / (Quieter).
- Place your fingers on your lips for them to see that your lips have to be together.
- Use "h" softly and have them put their lips together to make /p/ at the beginning of a word and then insert the sound it into the word "hhhhh pa" (especially for glottal stops)
- Use /m/ to make the /p/. Can close the nostrils so child feels air coming through mouth and gradually let go of the nostrils.

| | | |
|---------------|------------------|----|
| Observations: | <u>Improved?</u> | No |
| | Yes | |

/b/: Make the person say "b" this way:

- Use drawings; teach what they have to do with their lips to produce this sound.
- Use a mirror to see his lips together.
- Use mirror to see fogging of mirror if air comes through nose. (Only when mirror is cooler than air)
- Have the child feel the air from the mouth with hand.
- Put a tissue in front of child’s mouth to see it move when saying /b/.
- Use / p / to help make the / b / (Louder/Stronger).
- Place your fingers on your lips for them to see that your lips have to be together.
- Use "h" softly and have them put their lips together to make /b/ at the beginning of a word and then insert the sound it into the word "hhhhh ba" (especially for glottal stops).
- Use /m/ to make the /b/. Can close the nostrils so child feels air coming through mouth and gradually let go of the nostrils (especially for glottal stops).

| | | |
|---------------|------------------|----|
| Observations: | <u>Improved?</u> | No |
| | Yes | |

/t/: Make the person say "t" this way:

- Use drawings; teach what they need to do with their tongue to make this sound: the tongue has to touch the back of their front teeth. Can use a spoon or tongue depressor to “tickle” behind teeth where sound is made.
- Use a mirror to see where tongue goes and that lips are apart.
- Use mirror to see fogging of mirror if air comes through nose. (Only when mirror is cooler than air)
- Have the child feel the air from the mouth with hand.
- Put a tissue in front of child’s mouth to see it move when saying /t/.
- Use "h" softly and have them put their lips together to make /t/ at the beginning of a word and then insert the sound it into the word "hhhhh ta" (especially for glottal stops).
- Use /n/ to make the /t/.
- Can close the nostrils so child feels air coming through mouth and gradually let go of the nostrils (especially for glottal stops).
- Like the /n/ sound, it is produced the same way (and /n/ will be easier for them because it is nasal), have them pretend to make an “n” when in fact they are saying /t/.
- Use less force for /t/ than for /d/.

| | | |
|---------------|-----------|----|
| Observations: | Improved? | |
| | Yes | No |

/d/: Make the person say "d" this way:

- Use drawings; teach what they need to do with their tongue to make this sound: the tongue has to touch the back of their front teeth.
- Can use a spoon or tongue depressor to “tickle” behind teeth where sound is made.
- Use a mirror to see where tongue goes and that lips are apart.
- Use mirror to see fogging of mirror if air comes through nose. (Only when mirror is cooler than air)
- Use less force for /t/ than for /d/.
- Have the child feel the air from the mouth with hand.
- Put a tissue in front of child’s mouth to see it move when saying /t/.
- Use "h" softly and have them put their lips together to make /t/ at the beginning of a word and then insert the sound it into the word "hhhhh da" (especially for glottal stops).
- Use /n/ to make the /d/. Can close the nostrils so child feels air coming through mouth and gradually let go of the nostrils (especially for glottal stops).
- Like the /n/ sound, it is produced the same way (and /n/ will be easier for them because it is nasal), have them pretend to make an “n” when in fact they are saying /d/ (especially for glottal stops).

| | | |
|---------------|-----------|----|
| Observations: | Improved? | |
| | Yes | No |

/g/: Make a person say "g" this way:

- Use drawings; teach that the back of the tongue has to "jump".
- Have them cough to feel the sound.
- Have them lean their head back while producing the sound.
- Have them gargle while producing the sound and gradually eliminate the water in your mouth.
- Use more force to /g/ than for /k/.
- Have the child feel the air from the mouth with hand.
- Put a tissue in front of child's mouth to see it move when saying /g/.
- Use "h" softly and have them put their lips together to make /g/ at the beginning of a word and then insert the sound it into the word "hhhhh "gee" (especially for glottal stops).
- Use /ng/ to make the /g/. Can close the nostrils so child feels air coming through mouth and gradually let go of the nostrils (especially for glottal stops).
- Like the /ng/ sound, it is produced the same way (and /ng/ will be easier for them because it is nasal), have them pretend to make an "n" when in fact they are saying /g/ (especially for glottal stops).

| | | |
|---------------|-----------|----|
| Observations: | Improved? | |
| | Yes | No |

/k/ Make the person say "k" this way:

- Use drawings; teach that the back of the tongue has to "jump".
- Have them cough to feel the sound.
- Have them lean their head back while producing the sound.
- Have them gargle while producing the sound and gradually have them eliminate the water in their mouth.
- Use less force to /k/ than for /g/.
- Have the child feel the air from the mouth with hand.
- Put a tissue in front of child's mouth to see it move when saying /k/.
- Use "h" softly and have them put their lips together to make /k/ at the beginning of a word and then insert the sound it into the word "hhhhh kee" (especially for glottal stops).
- Use /ng/ to make the /k/. Can close the nostrils so child feels air coming through mouth and gradually let go of the nostrils (especially for glottal stops).
- Like the /ng/ sound, it is produced the same way (and /ng/ will be easier for them because it is nasal), have them pretend to make an "n" when in fact they are saying /k/ (especially for glottal stops).

| | | |
|---------------|-----------|----|
| Observations: | Improved? | |
| | Yes | No |

/s/: Make the person say "s" this way:

- Use drawings; teach that the tongue has to touch the back of their upper or lower teeth.
- Use tactile cues by running the finger along the child's arm to feel the continuation of air.
- Continue producing /t/ to end up producing an /s/ (i.e. tttssss). Can use tactile cues by tapping on child's arm when making the tttt but then move to one continuous motion for the ssssss.
- Use hhhhh---ssss (put teeth together while saying hhhhh), or sh-sh-sh---ssss (bring back lips to a smile) or th-th-th (unvoiced) ---sss (pulling back tongue into mouth).
- Try making the "s" with the tongue behind the bottom teeth.
- Use mirror to see fogging of mirror if air comes through nose. (Only when mirror is cooler than air)
- Use less force for /s/ than for /z/.
- Have the child feel the air from the mouth with hand.
- Put a tissue in front of child's mouth to see it move when saying /s/.

| | | |
|---------------|-----------|----|
| Observations: | Improved? | |
| | Yes | No |

/z/: Make the person say "z" this way:

- Use drawings; teach that the tongue has to touch the back of their upper or lower teeth.
- Use tactile cues by running the finger along the child's arm to feel the continuation of air.
- Use hhhhh---zzzz (put teeth together while saying hhhhh), or sh-sh-sh---zzz (bring back lips to a smile) or th-th-th (unvoiced) ---zzz (pulling back tongue into mouth).
- Try making the "z" with the tongue behind the bottom teeth.
- Use mirror to see fogging of mirror if air comes through nose. (Only when mirror is cooler than air)
- Use more force for /z/ than for /s/.
- Put a tissue in front of child's mouth to see it move when saying /z/.

| | | |
|---------------|-----------|----|
| Observations: | Improved? | |
| | Yes | No |

/f/: Make the person say "f" this way:

- Have them gently bite their lower lip and make the "h" sound.
- Have them facilitate the production of sound with a soft "h".
- Use mirror to show placement of teeth on tongue

| | | |
|---------------|-----------|----|
| Observations: | Improved? | |
| | Yes | No |

The Order of Normal Sound Development

Recommended ages of acquisition (years; months) for phonemes and clusters, based generally on 90% levels of acquisition

| High Pressure Sounds | Females | Males |
|----------------------|---------|---------|
| /p/ | 3;0 | 3;0 |
| /b/ | 3;0 | 3;0 |
| /t/ | 4;0 | 3;6 |
| /d/ | 3;0 | 3;6 |
| /k/ | 3;6 | 3;6 |
| /g/ | 3;6 | 4;0 |
| /f/ /f-/ | 3;6 | 3;6 |
| /-f/ | 5;6 | 5;6 |
| /v/ | 5;6 | 5;6 |
| /θ/ | 6;0 | 8;0 |
| /ð-/ | 4;6 | 7;0 |
| /s/ | 7;0-9;0 | 7;0-9;0 |
| /z/ | 7;0-9;0 | 7;0-9;0 |
| /ʃ/ | 6;0 | 7;0 |
| /tʃ/ | 6;0 | 7;0 |
| /dʒ/ | 6;0 | 7;0 |

Smit, A. B, Hand, L, Freilinger, J. J., Bernthal, J. E., & Bird, A. (1990). The Iowa Articulation Norms Project and its Nebraska replication. *Journal of Speech and Hearing Disorders*, 55, 779-798.



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Treatment Materials

Cleft Palate Speech and
Feeding Course

What to do *Before* the Cleft Palate is Repaired to Improve Speech Outcomes *After* Surgery

Where possible cleft palates are generally closed for the first time when the baby is between 9 and 14 months old. Sometimes it takes longer when the baby is not healthy or big enough, or the family is waiting for a surgery. Here are strategies parents and professionals can do before the cleft palate is repaired to make sure the baby has correct articulation placement—that is so the speech sounds are created with the correct tongue and lip placement.

The point of all these strategies is to ensure that the child’s speech is the best it can be once the cleft palate is closed in surgery. Babies and children with open cleft palates cannot make certain sounds, including the b, p, t, d, k, g, and s. The goal is for the child to have correct placement of the sounds so that once the cleft palate is closed, the child will have good placement for speech. If they have good placement before surgery, the child will likely need much less speech therapy after the palate is closed.

1. ***Reinforce babbling using sounds the baby can make correctly:*** Even with an open cleft palate, the baby can make the m, n, and ng sounds and the w, l, y sounds, and the vowels. So we use those sounds and play back and forth with the baby using those sounds. E.g. If the baby babbles with sounds that are not part of language, such as glottal stops or sounds made at back of the throat, smile and babble back with the sounds the baby can make like “nanananana” or yi yi ya ya yee” or “nane nane nane” or “wa wa woo woo woo”. Eventually, the baby will respond with the sounds the parent makes.
2. ***Reinforce language:*** Use language to have fun with your baby as you would with any other child. They are not more delicate than any other child. Sometimes children with cleft palate need more communication interactions with the parents to make sure that their language develops well.
3. ***Use functional vocabulary:*** words that have the sounds the child can make like mommy, me, my, more, man, mine, no, nana, ear, hair, eye, arm, knee. on, in, moon, ring, new, moon, noon, moo, meow, wow, wow wow (dog bark), roar (lion or truck sound), maa (lamb sound), mini, you, yay, yeah, yoyo, yo, lamb, etc.
 - Fathers will have to wait to hear “Daddy” until after the cleft palate is repaired. A child with a cleft cannot say the D sound but they can make the M sounds. So they can say, “Mommy” but not “Daddy.” The best approach is to call Daddy, “Nanny”. The N and D are made in the same place in the mouth with the tongue. After the cleft is repaired the child will much more easily say “Daddy”. Be patient, fathers (or “Nanny”), and after the surgery you will hear “Daddy.”
4. ***Focus on placement:*** Reinforce the correct placement to make the sound. Like “Cookie” or “NGooNGEE,” or “I want a cookie” “I wanN a NGooNee.” (the NG is like the last sound on “ring” and “sing”). Even for children with a cleft palate who will have to wait a long time for a surgery it is better to help them make the sounds in the correct place because it is easier to understand.



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Cleft Palate Speech Therapy Hierarchy

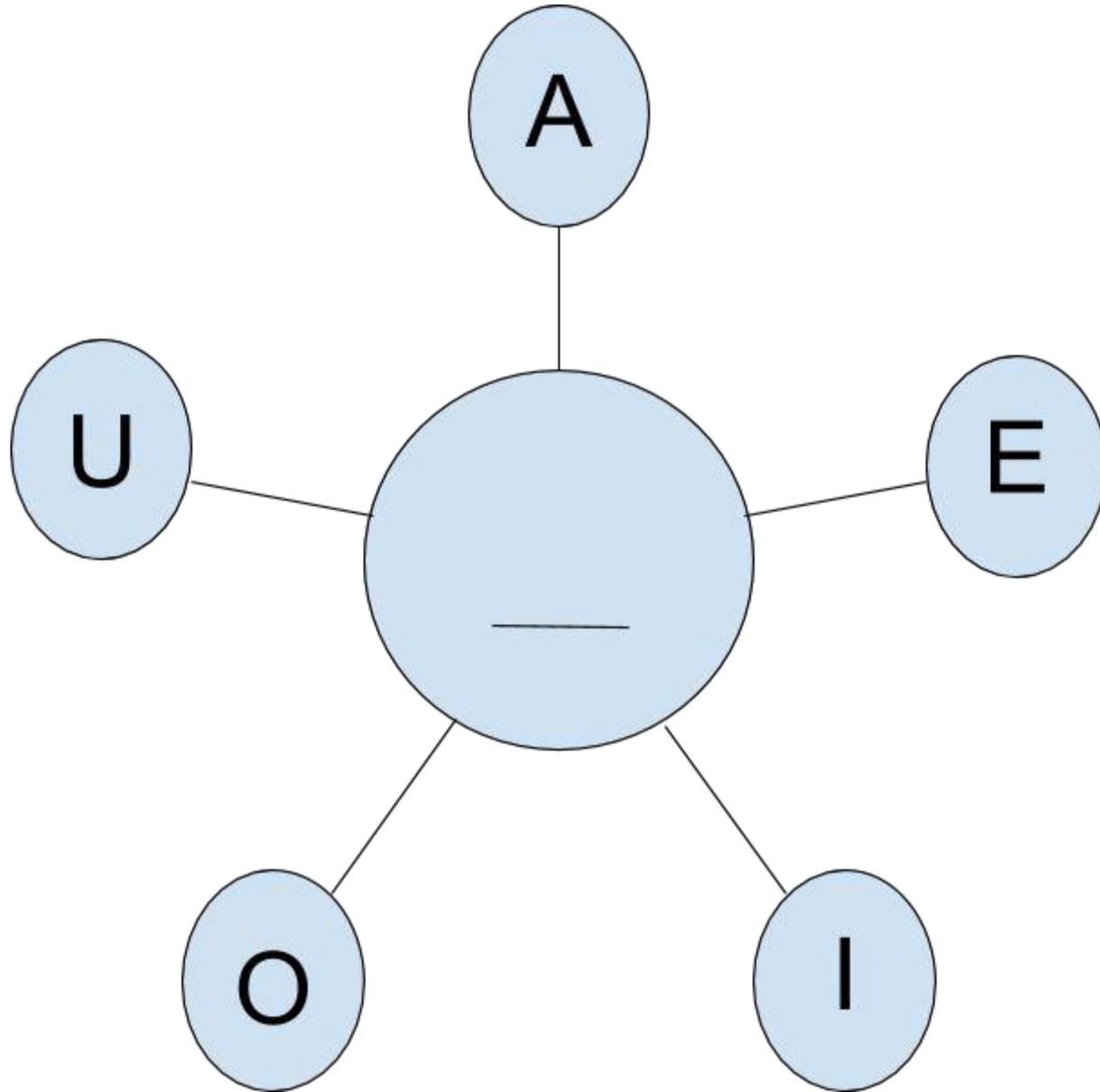
1. **Discrimination.** Begin with discrimination between the correct production and the compensatory production (ex. bilabial plosive “p” production versus a glottal stop)
2. **Single Sounds.** Work on the sound in isolation
3. **Syllables***. Work on the sound in syllables (Acevedo spoke: consonant vowel- CV, VCV, VC). E.g., CV-pa, pa, pa, pa, then pa, pe, pi, po, pu, then VC ap, ap, ap, then ap, ep, ip, op, up, then VCV-apa, epe, ipi, opo, upu/.
4. **Words**.** Target the sound in words*
 - a. Begin with the sound in initial position (first sound in a word)
 - b. Then the sound in the final position (last sound in a word)
 - c. Then the sound in the medial position (middle sound in a word)
5. **Phrases and sentences**.** Target the sound in short phrases and then sentences
6. **Conversation.** Target the sound in conversation
7. Begin hierarchy again with the next sound on the patient’s therapy plan

*See the Acevedo Spoke video on LEADERSproject.org to learn speech therapy strategies when the child is at the syllable stage

**Use the cleft palate speech therapy books on LEADERSproject.org. These books each focus on particular high-pressure oral sounds and eliminate others that are challenging to those with cleft palate speech

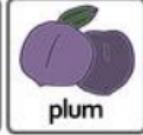
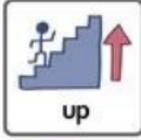
NB: Voiceless cognate is generally targeted before the voiced sound of the same manner and place. E.g., target P (voiceless) before B (voiced)

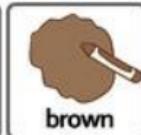
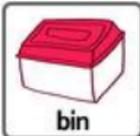
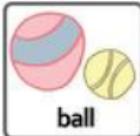
NB: The client must be able to produce with 100% accuracy at one stage on the hierarchy before moving to the next stage.

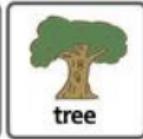
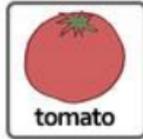
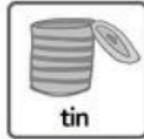
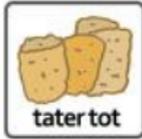
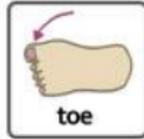
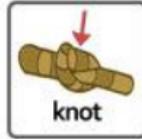
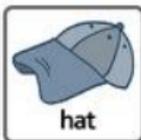
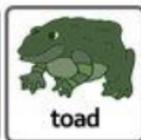
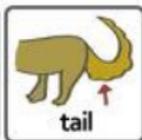


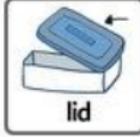
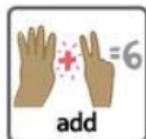


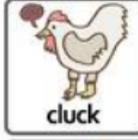
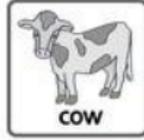
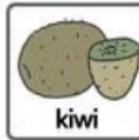
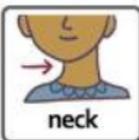


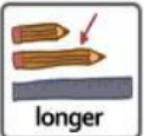


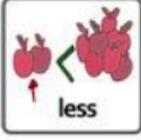
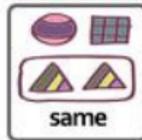
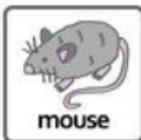
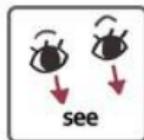




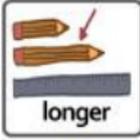














LEADERSPROJECT

Resources

Cleft Palate Speech and
Feeding Course



FEEDING BABIES WITH CLEFT PALATE



- 1. Always feed your baby in an upright position, whether it is from the breast or bottle.**
- 2. Burp your baby every 5 minutes.**
- 3. Keep your baby upright or seated for 20 – 30 minutes after each meal.**
- 4. Your baby should drink 2 oz. of milk for every half kilogram of weight.** For example, if the baby weighs 4 kilograms, s/he should drink 16 oz. daily.
- 5. Feed your baby in small and frequent doses.** Limit feeding time to 30 minutes.
- 6. Position the nipple in the baby's mouth where there is no cleft or hole.** A pacifier will help the baby develop skills needed for feeding before his or her surgery.
- 7. After the meal clean your baby's mouth and nose with a soft, damp cloth.**
- 8. Pay attention to stress signs.** Signs can be strong actions such as coughing or choking during the meal or kicking out and widely stretching the arms and legs. Stress signs can also be less obvious, like difficulty breathing or changes in the breathing pattern while drinking, fingers widely stretched out, or bringing the fingers to the mouth. If your baby shows some stress signs during the meal, give him some time until he looks like he is ready to start again. If your baby shows stress signs during every meal, bring him to the doctor.
- 9. Try to use a softer nipple and bottle, so you can control the flow of liquid.** You can boil both items to make them softer. If your baby still has difficulty sucking milk from the bottle, you can cut the hole of the nipple into a small X. Be careful not to let the X or hole rip over time, causing it to get too large.



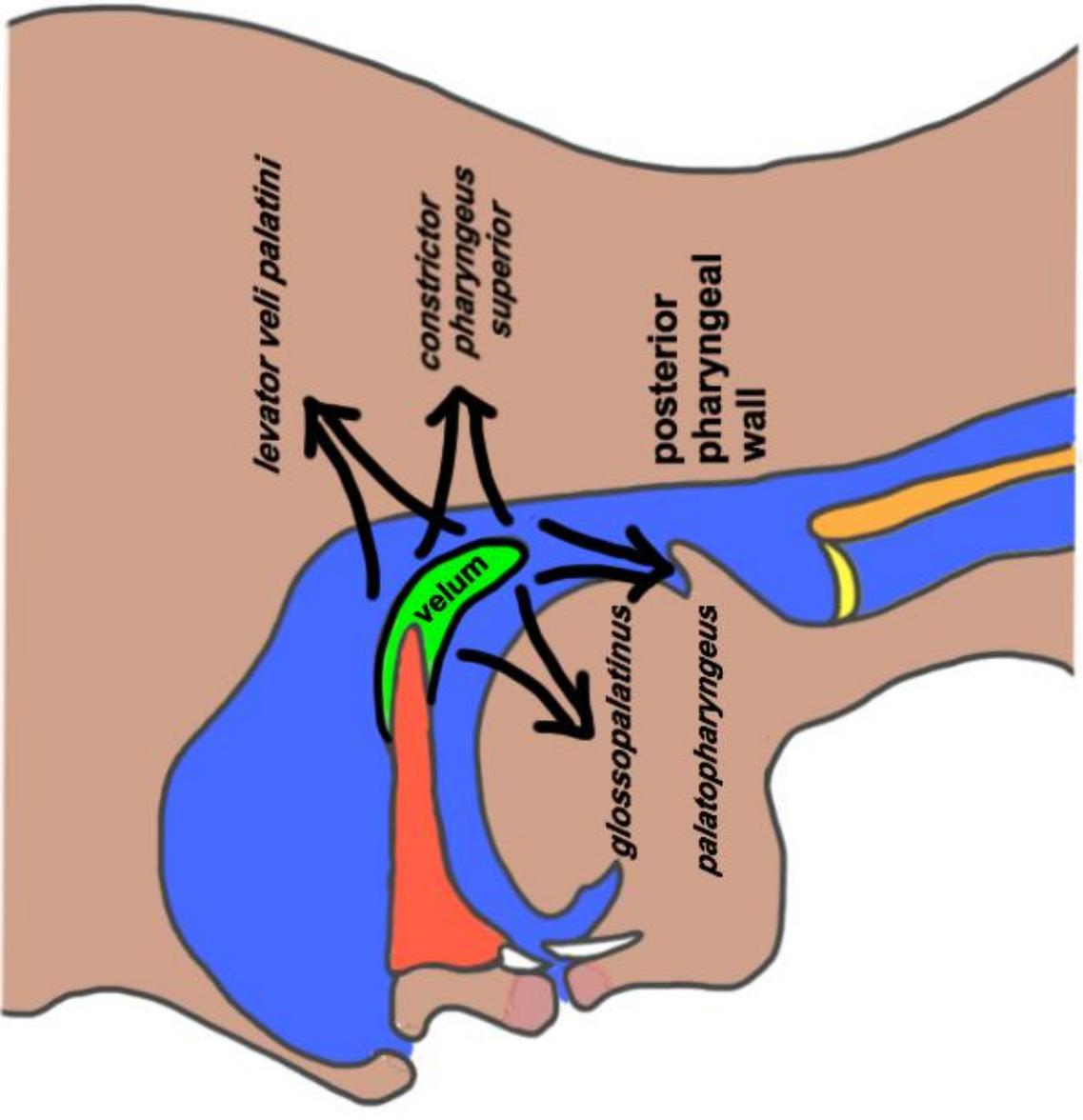
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Designed by Tina Yeung, Graduate Clinician; 2013

PROGRAM IN SPEECH-LANGUAGE PATHOLOGY
TEACHERS COLLEGE, COLUMBIA UNIVERSITY



Reasons Why Non-Speech Oral Motor Exercises Should Not Be Used for Speech Sound Disorders

2007 ASHA Convention Presentation, Boston, MA



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Introduction

Non-Speech Oral Motor Exercises (NS-OME) 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, 2004; 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 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. OMEs may include active muscle exercise, muscle stretching, passive exercise, and sensory stimulation (ASHA's National Center for Evidence-Based Practice in Communication Disorders, 2007).*

Do SLPs use NS-OME? Nationwide survey of 537 SLPs by Lof & Watson (2004; 2008)

- 85% use NS-OME to change speech sound productions.
- Hodge, Salonka, & Kollias (2005): Nationwide survey of 535 SLPs in Canada found that 85% use NS-OME to change speech sound productions, the same result as in the USA!
- Clinicians report being "*Very Familiar*" with the research that has examined the efficacy of NS-OME and the theoretical basis for using them.
- 61% of the clinicians agree with this statement: "*The literature I have read strongly encourages the use of NS-OME.*"
- 87% of the clinicians learned to use NS-OME from non peer-reviewed CEU offerings, workshops, and in-services.
- **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.

- **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.
- **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 Mis-articulations.

Evidence-Based Practice

- **Defined:** The conscientious, explicit, and unbiased use of current best research results in making decisions about the care of individual clients (Sackett et al., 1996). Treatment decisions should be administered in practice only when there is a justified (evidence-based) expectation of benefit.
- **No Child Left Behind** places an emphasis on scientifically-based methods, calling on clinicians to use scientific, research-based interventions.
- **2006 IDEA Part B Regulations:** “*Special education and related services...must now be based on peer-reviewed research to the extent practicable.*”
- **The goal** is to use the literature in a savvy process that draws on a number of different factors in which evidence plays a key role.
- **Dollaghan (2004; 2007)** reminds clinicians that when using the EBP paradigm, valid and reliable evidence needs to be given more credence than intuition, anecdote and expert authority. Evidence must come from works that are independent and peer-reviewed.
- **Opinions** and clinician's own clinical experiences can be useful, but they can also be biased and even wrong!
- **Therapist Bias:** Halo effect and Rosenthal effect (see Damico, 1988).
- **Instead of “Clinician’s Experience,”** we need to think more along the lines of “practice-based evidence.” That is, using clinical data that has been reliably and validly gathered using scientifically sound methodologies.

Logic

Clinical experience cautions: Finn, Bothe, and Bramlett (2005) provided criteria for distinguishing science from pseudoscience:

- (1) Treatments remain unchanged even with evidence against its effectiveness because disconfirming evidence is ignored; (2) Anecdotal evidence and personal experience are given extraordinary credence; (3) Inadequate evidence is accepted; (4) Legitimate peer review is avoided; (5) Grandiose outcomes are proclaimed.

Many claims are made about NS-OME effectiveness in catalogs selling therapy materials, non-peer reviewed publications, CEU events, etc. But evidence of effectiveness is not provided.

- **Some claims of effectiveness are outrageous** and are actually illogical when carefully examined.

Theory

Part-Whole Training and Transfer

- **Basic questions:** Does training on a smaller portion of the articulatory gesture transfer over to the whole gesture? Is it more efficient with better 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.
- *“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.

Strengthening the Articulatory Structures

- **Basic questions:** Is strength necessary for speaking? If so, how much? Are the articulators actually strengthened by using NS-OME? How do SLPs objectively document weakness of articulators and also objectively document supposed increases in strength after NS-OME?
- **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, Goozee, Murdoch, & LaPointe, 2006).
- **Agility** and fine articulatory movements, rather than strong articulators, are required for the ballistic movements of speaking. NS-OME encourage gross and exaggerated ranges of motion, not small, coordinated movements that are required for talking.
- **NS-OME 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 NS-OME 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.
- **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), so clinicians cannot initially verify that strength is actually diminished and then they cannot report increased strength following NS-OME.
- **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.

- *“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).*
- **See Chi-Fishman and Pfaizer (2003)** for information on tongue anatomy, physiology, and strengthening principles.
- **Preschool children with speech sound disorders may actually have STRONGER tongues** than their typically developing peers (Sudbery et al.; 2006).

Relevancy of NS-OME 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, 2006).*
- **Most NS-OME 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.

Task Specificity

- **Three related concepts:** ①same structures but different functions, ②task specificity, ③domain specific.
- **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.

- **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); 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). 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.
- **An fMRI study** demonstrated that non-speech movements activated different parts of the brain than did speech movements (Bonilha et al., 2006). This showed that the neural basis of motor control in normal subjects is different for speech and non-speech oral movements.

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, 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, Keogel, 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 NS-OME 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.

Childhood Apraxia of Speech (CAS)

- **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 NS-OME because non-speech is not the problem.
- **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.
- *“Non-speech therapy activities will not improve a child’s (with CAS) speech. Activities that address speech directly are critical for that purpose”* (Velleman, 2003).
- See the quote by Davis & Velleman (2000) below as well as the ASHA Technical Report on Childhood Apraxia of Speech (2007).

Cleft Lip/Palate

- The VP mechanism can be strengthened through exercise (many studies have demonstrated this since the 1960s), but added strength will not improve speech productions.
- *“Blowing exercises, sucking, swallowing, gagging, and cheek puffing have been suggested as useful in improving or strengthening velopharyngeal closure and speech. However, multiview 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 do not result in improved resonance or speech. These procedures simply do not work and the premises and rationales behind them are scientifically unsound.”* (Goldening-Kushner, K., 2001).
- See the quotes by Peterson-Falzone, Trost-Cardamone, Karnell, Hardin-Jones (2006) below.

NS-OME 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 language/phonemic/phonological problems like children in Early Intervention diagnosed as late talkers.

NS-OME for Children with Dysarthria

- Following guidance from adults with acquired dysarthria, *“...strengthening exercises are probably only appropriate for a small number of patients”* (Duffy; 2005).
- *“...weakness is not directly related to intelligibility..” for patients with ALS”* (Duffy; 2005).
- Based on the adult acquired dysarthria literature, it appears that NS-OME are not recommended as a technique that can improve speech productions.

Is PROMPT a NS-OME?

- PROMPT: Prompts for **R**estructuring **O**ral **M**uscular **P**honetic **T**argets (Hayden, 2006)
- *“A tactually grounded, sensori-motor, cognitive-linguistic assessment and treatment approach for speech production disorders.”*
- ①PROMPT utilizes developmental prerequisites: YES; ②PROMPT uses exercises for jaw, lip, lingual movements: NO, movement only in the context of speech production; ③PROMPT believes in the relationship between nonspeech movements and speech: NO, must always work in the context of speech; ④PROMPT strengthens the articulators: NO, strength is not the issue, rather the neurological system needs to be “triggered” for motor

planning; ⑤PROMPT trains isolated motor movements: NO, it teaches a template of all aspects of the articulation but always uses a speech sound; ⑥PROMPT uses sensory massage, deep tissue pressure, desensitization of the oral-motor system: NO, focus on tactile and proprioceptive sensory input using active touch; ⑦PROMPT uses “tools” or horns, or gadgets: Never; ⑧PROMPT is used for motor “warm-up”: YES, to focus the child on the motor control aspects but is only done briefly and in context of speech.

Evidence

ASHA’s National Center for Evidence-Based Practice in Communication Disorders (NCEP, 2007); purpose was to conduct evidence-based systematic review on NS-OME for speech and swallowing. Only 16 peer-reviewed articles were located that dealt with speech that could be reviewed; NONE of the published articles met the standards of scientific rigor, so no statements about NS-OME effectiveness can be made.

There are a few studies evaluating the effectiveness of NS-OME that are not in peer-reviewed journal; most of these studies were reported at ASHA Conventions. Here are summaries of nine studies that show no benefits to using NS-OME, and the only one study that does show benefits (but it has many methodological flaws).

1. **Christensen & Hanson (1981)**. Ten children aged 5;8 to 6;9 years underwent 14 weeks of treatment, with half of the children receiving only articulation therapy and the other half receiving articulation and neuromuscular facilitation techniques. Both groups made equal speech improvements; the exercises did not help for better speech sound production BUT they were effective in remediating tongue-thrusting (probably due to task specificity).
2. **Gommerman & Hodge (1995)**. Single Subject Design (A-B-C) with a 16-year-old girl with tongue thrust and sibilant distortions. Therapy was baseline (A phase), myofunctional therapy (B phase), then articulation therapy (C phase). Tongue thrust was eliminated with myofunctional therapy but speech did not change until speech therapy was initiated.
3. **Colone & Forrest (2000)**. Monozygotic twin boys age 8;11 years old took part in a motor treatment for Twin 1 and phonological treatment for Twin 2. No improvements with motor training occurred but there were improvements using a phonological approach; when Twin 1 received phonological treatment, there were the same improvements as for Twin 2.
4. **Occhino & McCane (2001)**. Single Subject Design (A-B-C-B-C) with a 5-year-old child. Oral motor exercises alone produced no improvement in the articulation of one of two phonemes and also no improvements in oral motor skills. Oral motor exercises prior to or along with articulation therapy did not have an additive or facilitative effect but productions did improve with articulation therapy.
5. **Abrahamsen & Flack (2002)**. Single Subject Design with a 4-year-old child for 10 hours of individual treatment using blowing, licking, and oral stimulation. There was no evidence of effectiveness in changing speech sound productions after this treatment.
6. **Bush, Steger, Mann-Kahris, & Insalaco (2004)**. Single Subject Design (ABAB Withdrawal) with a 9-year-old boy. OME added to articulation treatment, then removed, then re-added for the sounds /r/,/s/,/z/,/l/. “Oral motor treatment did not improve or reduce treatment's *success*.”
7. **Roehrig, Suiter, & Pierce (2004)**. AB or BA Single Subject Design with six 3;6 to 6;0 year old boys and girls for 15 weeks of therapy: (A) Tradition, production-based therapy twice a week for ½ hour; (B) Passive OME and traditional therapy twice a week for ½ hour. “*The addition of OME to the traditional articulation therapy approach did not add to participant's*

overall progress; improvement following therapy with OME was not different from improvements following articulation therapy alone.”

8. **Guisti & Cascella (2005)**. Single Subject Design using two boys and two girls in first grade. Therapy followed *Easy Does it for Articulation: An Oral Motor Approach* for 15 one-half hour individual treatment sessions. No evidence of effectiveness in changing speech-sound productions.
9. **Hayes et al. (In submission)**. Six 4-year-olds, five boys and one girl who all had “functional misarticulations” were studied in a counterbalanced intervention design where children were randomly assigned to a specific order for an oral motor approach and traditional articulation approach. The traditional treatment resulted in significant speech sound changes but there was no support for oral motor therapy bringing about any changes. There was some evidence that NS-OME actually hindered learning.
1. **Fields & Polmanteer (2002)**. Eight 3- to 6-year-old children were randomly assigned to one of two groups: four children received 10 minutes of oral motor treatment and 10 minutes of speech therapy and four children received 20 minutes of only speech therapy. Fewer errors at the end of 6-weeks of treatment for the children who received the combination of treatments. But there were many methodological and statistical issues that may invalidate this finding, such as: the children in the speech-only group were more severe; there was an unequal gender distribution; and there was no report of what the treated sounds were so there can be no evaluation as to how difficult it was to treat certain sounds.

Combining Treatment Approaches

- Most 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 NS-OME portion of combined treatments is irrelevant to speech improvements (see above).
- NS-OME probably do not harm the child when used in combination with traditional approaches (however, Hayes et al. 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., the NS-OME) so as to not waste valuable therapy time with an ineffectual technique.

In Conclusion

- **If clinicians want speech to improve**, they must work on speech, and not on things that LOOK like they are working on speech.
- **Phonetic placement cues** that have been used in traditional speech therapy are NOT the same as NS-OME.
- **NS-OME is 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, 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. Pseudoscientific methodologies can persuade clinicians to provide the wrong treatment.

- **Speech is special** and unlike other motor movements.
- **Following the guidelines of Evidence-Based Practice**, evidence needs to guide treatment decisions. Parents need to be informed that NS-OME have not been shown to be effective and their use must be considered experimental.
- Just remember: **Same structures but different functions.**

Relevant Quotes

Weismer, G. (2006): *“...oromotor nonverbal tasks are unlikely to contribute to an understanding of normal and disordered speech production.”*

Gerratt et al. (1991): *“Preference for nonspeech maneuvers is surprising since so little research exists on the relations of these measures to speech...”*

Davis & Velleman (2000): *“There is presently no research available to support the efficacy of oral-motor therapy for improvement of speech productions skills. Thus, it is appropriate to work with children with DAS (Developmental Apraxia of Speech) on nonspeech oral-motor skills themselves, but improvement in speech should not be expected as a result.”*

Peterson-Falzone, Trost-Cardamone, Karnell, & Hardin-Jones (2006):

- *“Do not invest time or advise a parent to invest time and money addressing a muscle strength problem that may not (and probably does not) exist. It is very frustrating to see clinicians working on “exercises” to strengthen the lips and tongue tip when bilabial and lingua-alveolar sounds are already evident in babble, or when bilabial and lingual/lingua-alveolar functions are completely intact for feeding and other nonspeech motor behaviors.”*
- *“Having a repaired cleft does not mean a child will lack the muscle strength needed to produce consonant sounds adequately. The presence of a cleft palate (repaired or unrepaired) has no bearing on tongue strength or function (why would it?). The majority of children who demonstrate VPI do so because their palate is too short to achieve VP closure. Muscle strength or lack thereof is not a primary causal factor associated with phonological delays in this population.”*
- *“...blowing should never be used to “strengthen” labial or soft palate musculature; it does not work. Children who appear to improve over time in therapy when using these tools are likely demonstrating improvement related to maturation and to learning correct motor speech patterns. Had therapy focused only on speech sound development, these children probably would have shown progress much sooner.”*

Love, R.J. (2000):

- *“...recently the profession has rejected the concept of a direct correlation between oral movements and speech and eating behavior.”*
- *“...speech movement control was mediated at a different level in the nervous system than was nonspeech movement control.”*
- *“...it is clear that the infantile reflexes involved in chewing and swallowing behavior are mediated at brain-stem levels, not at the cortical level of oral-motor control as is speech.”*
- *“...improvement of infantile chewing and swallowing behavior in no way contributes to the development of neural networks for speech production.”*

- “...oral reflexes and chewing and swallowing behavior are relatively independent of speech production mechanisms.”
- “...recent studies of the development of mandibular action in normal children suggests that motor coordination for speech activities is clearly different than it is for nonspeech activities...”
- “...[there is] doubt that muscle weakness or pathological muscle imbalance of oral and mandibular muscles is critical for speech movements.”

Hodson, B.W. (1997): “...research data supporting efficacy of oral-motor exercises for unintelligible children as a whole are lacking.”

Tyler, A. (2005): “I strongly advise against the use of oral-motor exercises for children with phonological-articulatory disorders...”

National Joint Committee for the Communication Needs of Persons with Severe Disabilities (2006): “There are different types of oral-motor exercises. Typically, oral-motor treatment consists of three types of activities: active exercise, passive exercise, and external stimulation. Active exercise involves strength training and muscle stretching. Passive exercise involves clinician assistance and may involve massage, stroking, or tapping parts of the oral musculature. Clinicians also may use external stimulation, which includes hot and cold application, vibration, or electrical stimulation to the muscles involved in speech and swallowing. At this time, there is limited data-based evidence to support the use of oral-motor activities to help with speech production. Available evidence is based primarily on expert opinion; randomized clinical trials with a randomized control group, the highest level of evidence, have not been conducted. Data are available on the effectiveness of speech (articulatory and phonological) treatment. Thus, use of oral-motor treatment techniques may take time away from treatment approaches that are known to be effective, such as teaching the correct way to position the tongue to produce a correct speech sound. Some researchers suggest that speech and language treatment should be task specific. That means that treatment techniques should be related to the desired outcomes. If improved speech is the goal, it follows that treatment techniques should be speech-specific. Oral-motor treatment techniques are sometimes applied based on the assumption that oral motor problems contribute to speech problems. However, this may not be an accurate assumption, particularly when no muscle weakness is apparent in the oral mechanism.”

Smith (2006): “Infants do not start life with language and motor mappings in place; many years of learning must occur. The speaker must develop a set of maps that include language, motor, and auditory networks.”

ASHA Technical Report on CAS: “...speech requires more flexibility, less stereotyped rhythmicity, finer levels of coordination, and lower levels of strength than other nonspeech oral motor activities such as chewing, blowing, and the like..., the consensus opinion is nonspeech oro-motor therapy is neither necessary nor sufficient for improved speech production.

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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} |
| <i>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?</i> | 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} |
| <i>PTs and OTs often use exercises to improve motor skills. Isn't speech also a motor skill?</i> | 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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Case Studies

For the case studies, you should divide the class into groups of two. This is a role playing exercise. One person in the group will be the “patient with a cleft palate” and the other person will be the “speech therapist”.

Each hypothetical case contains explicit instructions which the “client with cleft palate” must act out. This includes specific information on the client’s errors on high pressure consonants, which strategies will work for the client, and the client’s medical history. The “speech therapist” must evaluate the client and provide speech therapy. At the end of each case, groups should discuss the therapist experience with the client (i.e. What strategies did the “therapist” try? What strategies were successful? What was difficult? How did the “client” react?).

The top portion of each case study contains background information about the “client” for the “speech therapist”. The bottom portion contains instructions for the “client with cleft palate”. It is important that the instructor cut along the dotted line and give each group member their own part for the exercise. Additionally, the “speech therapist” should not see the instructions for the “client”, and the “client” should not tell the “speech therapist” which therapy strategies will work or which errors they are making. The goal is for the “therapist” to figure this information out on their own as they work their way through the hierarchy.

Case Study 1

A five-year-old boy comes into your office. You look through his medical history and notice that he had his first palate repair surgery when he was 3 years old. The parents are not sure whether he will need a second surgery and have come to you for help.

✂ Cut along the dotted line and make sure to give the bottom part to the “client”

You must act like a five-year-old child with a repaired cleft palate. Although the palate was repaired at age 3, you have developed some compensatory errors. You can produce all the nasal sounds, vowels, and low pressure sounds. For the high pressure sounds, follow the instructions below. In therapy, you must only improve your speech when the “clinician” attempts the assigned strategy.

| Sound | Error | Strategies that will improve speech & specific instructions |
|-------|---------------|--|
| P | Glottal stops | <p>You (the child) are able to discriminate the difference between a /p/ sound and a glottal stop.</p> <p>The strategy that improves production of the sound is M → P. The clinician will occlude your nose so you can feel the air coming out of your mouth. No other strategies help you to produce the P sound.</p> <p>In isolation, you can produce 10 trials accurately.</p> <p>In syllables, you can produce CV combinations and begin to produce glottal stops for CVC combinations.</p> <p>The second time, you can produce CVC syllables.</p> <p>At word level, a breakdown will occur once you reach /p/ in word final position.</p> |
| B | Glottal stops | Not stimuable |
| T | Glottal stops | Not stimuable |
| D | Glottal stops | Not stimuable |
| K | Glottal stops | Not stimuable |
| G | Glottal stops | Not stimuable |
| F | Glottal stops | Not stimuable |
| V | Glottal stops | Not stimuable |
| S | Glottal stops | Not stimuable |
| Z | Glottal stops | Not stimuable |

Case Study 2

You are seeing an 8-year-old girl. You know she had her cleft palate repaired when she was 4 years old. The mother tells you that the child has seen other speech pathologists without any success. When you ask about what strategies the previous speech therapist used, the mother describes non-speech oral motor exercises.

✂ Cut along the dotted line and make sure to give the bottom part to the “client”

You must act like an 8-year-old child. Your cleft palate was repaired at age 4. You can produce all the nasal sounds, vowels, and low pressure sounds. For the high pressure sounds, follow the instructions below. In therapy, you must only improve in speech when the “clinician” attempts the assigned strategy.

| Sound | Error | Strategies that will improve speech & specific instructions |
|-------|--------------------------|---|
| P | Normal | |
| B | Normal | |
| T | Mid-dorsum palatal stops | <p>You (the child) are able to discriminate the difference between /t/ sound and a mid-dorsum palatal stop.</p> <p>The strategy that improves production of the sound is using the placement of the /n/ to produce the /t/.</p> <p>You are able to go through the entire hierarchy up to conversation, where it starts to break down.</p> |
| D | Mid-dorsum palatal stops | <p>The strategy that improves production of the sound is when the therapist tells the child to turn their sound on.</p> <p>You go through the hierarchy up to syllables, but not in words.</p> |
| K | Normal | |
| G | Normal | |
| F | Normal | |
| V | Normal | |
| S | Normal | |
| Z | Normal | |

Case Study 3

This is your first session with a 13-year-old adolescent. During the interview, the client informs you he has had two surgeries to repair the palate. The first one was at age three. The second surgery was at age ten, because he continued to have anatomical and physiological problems.

✂ Cut along the dotted line and make sure to give the bottom part to the “client”

You must act like a 13-year-old adolescent with a repaired cleft palate. You had two surgeries to repair the palate. The first one was at age three and the second at age ten, because of anatomical and physiological problems. You can produce all the nasal sounds, vowels, and low pressure sounds. For the high pressure sounds, follow the instructions below. In therapy, you must only improve in speech when the “clinician” attempts the assigned strategy.

| Sound | Error | Strategies that will improve speech & specific instructions |
|-------|-----------------|--|
| P | Normal | |
| B | Normal | |
| T | Normal | |
| D | Normal | |
| K | Normal | |
| G | Normal | |
| F | Normal | |
| V | Normal | |
| S | Nasal emissions | <p>You (the child) are able to discriminate the difference between /s/ sound and a nasal emission.</p> <p>The strategy that improves production of the sound is using a mirror under the nose and seeing it fog up due to nasal emissions.</p> <p>You progress through the hierarchy without a problem until you reach the syllable level. You can only produce the /s/ in Sa and Se. The clinician has to regress one step on the hierarchy. With a second run through of the hierarchy, you go through all the syllables and move to words, where you get about 80% correct.</p> |
| Z | Normal | |

Case Study 4

This is your first session with a 16-year-old adolescent. The client had her palate repaired at 2 years old. She received speech therapy from age 2 to 4 years old. During this time, she was able to eliminate compensatory errors on high pressure sounds such as glottal stops and nasal emissions.

✂ Cut along the dotted line and make sure to give the bottom part to the “client”

You must act like a 16-year-old adolescent with a repaired cleft palate. Your palate was repaired at age 2. You received speech services from age 2 to 4 years old. You can produce all the nasal sounds, vowels, and low pressure sounds. During this time, you eliminated compensatory errors on high pressure sounds such as glottal stops and nasal omissions. For the high pressure sounds, follow the instructions below. In therapy you must only improve in speech with the clinician attempts the assigned strategy.

| Sound | Error | Strategies that will improve speech & specific instructions |
|-------|----------------------|--|
| P | Normal | |
| B | Normal | |
| T | Normal | |
| D | Normal | |
| K | Normal | |
| G | Normal | |
| F | Normal | |
| V | Normal | |
| S | Pharyngeal fricative | <p>You (the child) are able to discriminate the difference between /s/ sound and a pharyngeal fricative.</p> <p>The strategy that improves production of the sound is using SH → S and asking the child to smile.</p> <p>You are able to progress through the hierarchy to conversation.</p> |
| Z | Pharyngeal fricative | <p>The strategy that improves production of the sound is using D → Z and asking the child to turn their motor on.</p> |

Case Study 5

Your client is an adult who had their palate repaired, but did not receive speech services to improve speech.

✂ Cut along the dotted line and make sure to give the bottom part to the “client”

You must act like an adult with a repaired cleft palate. You never received therapy to improve speech. You can produce all the nasal sounds, vowels, and low pressure sounds. For the high pressure sounds, follow the instructions below. In therapy, you must only improve in speech when the “clinician” attempts the assigned strategy.

| Sound | Error | Strategies that will improve speech & specific instructions |
|-------|-----------------|--|
| P | Normal | |
| B | Normal | |
| T | Normal | |
| D | Normal | |
| K | Pharyngeal stop | <p>You (the client) will need some assistance going through the hierarchy.</p> <p>You have difficulty hearing the difference between a real K and a pharyngeal stop.</p> <p>You benefit from clinician showing a profile picture where the sound is being made and where it should be made. After some time (5 tries), you can hear it.</p> <p>The strategy that improves production of the sound is using /ng/ placement for K and G</p> <p>You then move slowly through the hierarchy, making mistakes 10-15% of the time.</p> <p>You only get through CVC syllables.</p> <p>You fall apart in word level.</p> |
| G | Pharyngeal stop | <p>The strategy that improves production of the sound is using /ng/ placement for K and asking client to turn their motor on to get to the G.</p> |
| F | Normal | |
| V | Normal | |
| S | Normal | |
| Z | Normal | |

Case Study 6

You are going to see a five-year-old child with a repaired cleft lip. The child has not obtained a surgery to repair the cleft palate yet. The child's medical team has referred him to see a speech pathologist before he receives his secondary surgery.

✂ Cut along the dotted line and make sure to give the bottom part to the "client"

You must act like a five-year-old child with a cleft palate. Only your cleft lip has been repaired. Your medical team has referred you to see a speech pathologist before your secondary surgery. You can produce all the nasal sounds, vowels, and low pressure sounds. For the high pressure sounds, follow the instructions below. In therapy, you must only improve in speech when the "clinician" attempts the assigned strategy.

| Sound | Error | Strategies that will improve speech & specific instructions |
|-------|------------------|---|
| P | Sounds like /m/ | No change |
| B | Sounds like /m/ | No change |
| T | Glottal stop | <p>The "therapist" should only work on placement of sounds, so the child will have proper placement before surgery.</p> <p>You (the child) have difficulty hearing the difference between a T and a glottal stop.</p> <p>You have some co-articulation. The clinician must identify that and work only on replacing the /n/ sound instead of the /t/ sound. The clinician should not address the problem by working on glottal stop using the soft H strategy. After some time, you can produce the N for the T in syllables and words.</p> |
| D | Glottal stop | <p>The "therapist" should only work on placement of sounds, so D is N while preparing for surgery.</p> <p>You have difficulty hearing the difference between a D and a glottal stop.</p> <p>You have some co-articulation. The clinician must identify that and work only on N and not glottal stop, using the soft H strategies. After some time, you can produce the N for the D in syllables and words.</p> |
| K | Sounds like /ng/ | No change |
| G | Sounds like /ng/ | No change |
| S | Sounds like /n/ | No change |
| Z | Sounds like /n/ | No change |