



**THE EVOLUTION OF SPEECH  
PATHOLOGY &  
FOUNDATIONS OF  
ARTICULATION THERAPY**

*Robyn Merkel-Walsh, MA, CCC-SLP, COM®*

**MARSHALLA**  
SPEECH & LANGUAGE

**THE ORAL MOTOR INSTITUTE**  
FOR THE SCIENCE  
OF  
ORAL MOTOR  
TREATMENT

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**INTRODUCTION**

**MARSHALLA**  
SPEECH & LANGUAGE

**THE ORAL MOTOR INSTITUTE**  
FOR THE SCIENCE  
OF  
ORAL MOTOR  
TREATMENT

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## OUR FOUNDER PAM MARSHALLA

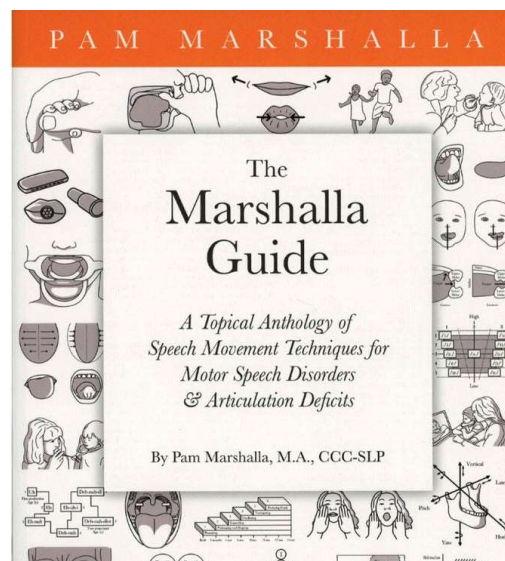
Pam founded the Oral Motor Institute in 2007. She was a strong advocate of correct oral placement and how to achieve it which explains why her techniques were so successful.



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### OMI MISSION STATEMENT

The Oral Motor Institute’s Mission is to support the specialty of oral-motor based therapy approaches that enhance the development of the orofacial complex and the functions of respiration, sleep, feeding, swallowing and speech.

The OMI

- **Educates** the multi-disciplinary team that assesses and treats oral motor dysfunction throughout the lifespan.
- **Advocates** for an increased scientific understanding of oral motor assessment and treatment.
- **Supports** the integrity of oral motor sciences by providing access to research.
- **Endorses** public safety through assessment and treatment of oral motor disorders within licensure guidelines and professional scope of practice.



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## THE OMI'S VISION

The OMIs' vision is to inspire others to accept, embrace, respect, and advocate for the existing and evolving evidence-based practices, which supports the validity of oral motor assessment and therapy.



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## THE OMI'S AREAS OF FOCUS

### Ethics

We endorse public safety through assessment and treatment of oral motor disorders within licensure guidelines and professional scope of practice.

### Education

We educate the multi-disciplinary team that assesses and treats oral motor dysfunction throughout the lifespan.

### Evidence

Supports the integrity of oral motor sciences by providing access to research.

### Advocacy

Advocates for an increased scientific understanding of oral motor assessment and treatment.



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## OMI BOARD OF DIRECTORS

- Robyn Merkel-Walsh, Chair
- Kaitlyn Shrum, Social Media Director
- Mary Billings, Secretary



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## OMI BOARD OF DIRECTORS

- Barbara Taylor, Treasurer
- Jill Rabin



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### ROBYN MERKEL-WALSH FINANCIAL DISCLOSURES

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Board of Ed

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TalkTools

Owner,  
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& Vocology

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The Breathe  
Institute

Adjunct,  
Brescia  
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### NON-FINANCIAL DISCLOSURES

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2023-2025

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IAOM, ICAPm  
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S&L

AMBASSADOR  
OF TBI

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LEARNER OBJECTIVES

1	2	3
Licensed professionals will define elocution.	Licensed professionals will list at least 2 rules of intelligible speech.	Licensed professionals will describe the difference between a NSOME and a phonetic placement technique.

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**PART 1 :**  
TRADITIONAL AND  
MOTOR SPEECH

**MARSHALLA**  
SPEECH & LANGUAGE

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"SPEECH IS MOVEMENT"

STETSON, 1928

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DEFINING DEFECTIVE SPEECH

"Speech is defective when it deviates so far from the speech of other people that it calls attention to itself, interferes with communication, or causes its possessor to be maladjusted to his environment. All speech deviations are not, of course, speech defects." (Van Riper, 1939, p. 51).

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## HENCE, THE PROFESSION OF SPEECH IMPROVEMENT!

Elocutionists

Speech correctionists

Speech-language specialists

Speech clinicians

Speech therapists



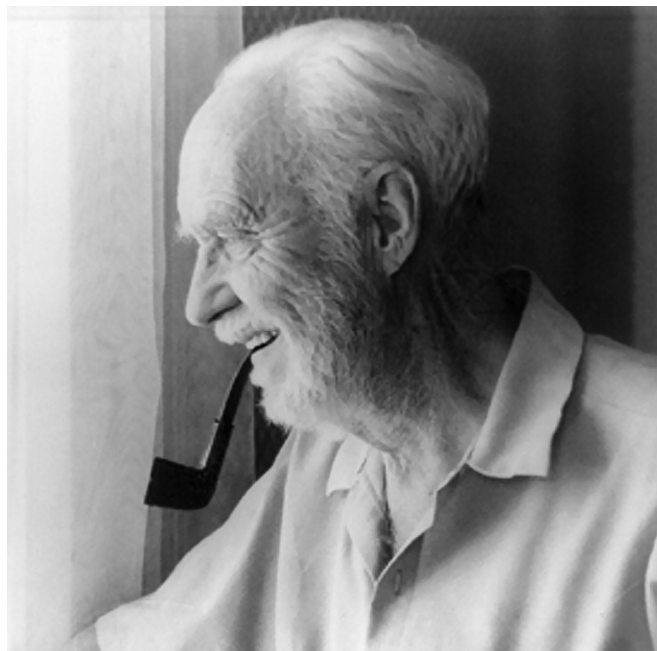
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### el·o·cu·tion

/elə'kyoʊSH(ə)n/

Noun

"the skill of clear and expressive speech, especially of distinct pronunciation and articulation."



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## SEVEN ERAS OF SPEECH IMPROVEMENT

1	Greece and Rome	500 BC-AD 01	<ul style="list-style-type: none"> <li>Pondering the nature of speech and its deficits</li> <li>First remediation practices</li> <li>Elocution defined</li> </ul>
2	Pre-Renaissance	AD 01-1300	<ul style="list-style-type: none"> <li>Speech instruction to deaf by monks</li> <li>Reports of good speech following glossectomy</li> <li>First reports of oral surgery</li> </ul>
3	European Renaissance	1300-1699	<ul style="list-style-type: none"> <li>Study of anatomy begins</li> <li>Good speech is necessary to self growth and financial success</li> </ul>
4	Elocution	1669-1888	<ul style="list-style-type: none"> <li>English phonetics described</li> <li>VP surgery</li> <li>Elocution and anatomy merge</li> <li>Reading, writing and speaking standards defined</li> </ul>

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## SEVEN ERAS OF SPEECH IMPROVEMENT

5	Phonetic Placement	1888-1939	<ul style="list-style-type: none"> <li>International Phonetic Alphabet (IPA)</li> <li>Vowel quadrilateral (VQ)</li> <li>Remediation based on IPA and VQ</li> </ul>
6	Traditional Articulation	1939-1968	<ul style="list-style-type: none"> <li>Van Riper defines speech impairment</li> <li>Therapy progresses from isolated phoneme to conversation</li> <li>Multiple methods described</li> <li>Therapy described as elocution on-going diagnosis</li> </ul>
7	Modern Therapy	1968-present	<ul style="list-style-type: none"> <li>Phonology introduced</li> <li>Motor speech therapy established</li> <li>Dysphagia, feeding therapy and orofacial myology introduced</li> <li>Research on speech movements advances</li> </ul>

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## THE ELOCUTIONIST'S TENANTS

- Expressive speech was a way to demonstrate intelligence
- The educated should acquire good speech
- Good speech gained respect
- Diction impressed people more than wealth
- Good speech was a "gift from God"
- Universal principles of speech should be taught



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## MODERN TIMES

- SLPs can agree that intelligibility improves when attention is paid to enunciation, pronunciation and prosody
- SLPs now work on a whole-body approach (NDT, Craniosacral, OMT, etc.)
- SLPs treat neuromuscular and structural disorders
- Balance and posture impact oral motor, speech and swallowing
- Orofacial movement is critical for expression, deglutition and communication



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## MODERN TIMES

Shriberg, L. D. (2010). "Childhood speech sound disorders: from post-behaviorism to the post-genomic era," in *speech sound disorders in children*, eds R. Paul, and P. Flipsen (San Diego, CA: Plural Publishing), 1–34.



### 7 types of SSDs:

- Speech delay-genetic
- Speech delay- otitis media
- Speech delay- developmental/psychological;
- Speech delay-apraxia
- Speech delay-dysarthria
- Speech errors-siblants
- Speech errors-rhotics

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NAMASIVAYAM AK, LI-HAN LY, MOORE JG, WONG W AND VAN LIESHOUT P (2025) THE ARTICULATORY BASIS OF PHONOLOGICAL ERROR PATTERNS IN CHILDHOOD SPEECH SOUND DISORDERS. *FRONT. HUM. NEUROSCI.* 19:1635096. DOI: 10.3389/FNHUM.2025.1635096

**The study found moderate associations between limitations in articulatory (jaw, labial-facial, lingual) control and certain phonological error patterns (e.g. cluster reduction, final consonant deletion, stopping, atypical errors) in children with speech sound disorders.**

**Gliding (i.e. substitution of /r/ or /l/ by /w/ or /j/) showed a negative relationship with speech motor errors. It was more common in older and milder cases, suggesting gliding might reflect a compensatory or developmental stage rather than a pure simplification error.**

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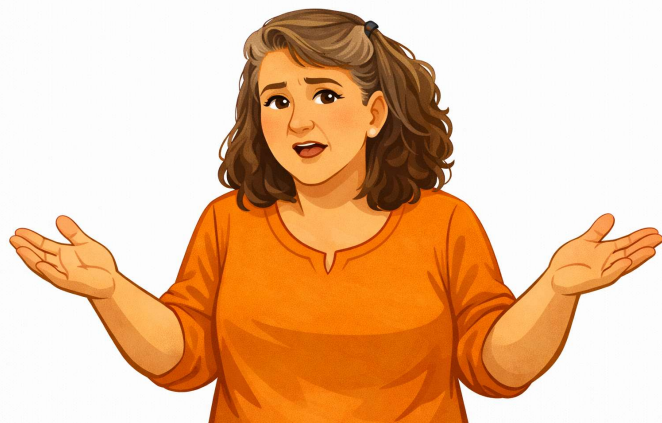
NAMASIVAYAM AK, LI-HAN LY, MOORE JG, WONG W AND VAN LIESHOUT P (2025) THE ARTICULATORY BASIS OF PHONOLOGICAL ERROR PATTERNS IN CHILDHOOD SPEECH SOUND DISORDERS. *FRONT. HUM. NEUROSCI.* 19:1635096. DOI: 10.3389/FNHUM.2025.1635096

- The results challenge models that attribute phonological errors only to cognitive/linguistic deficits; instead, they support the idea that articulatory and neuromotor development plays a significant role in shaping phonological patterns.
- The findings are consistent with theories such as Articulatory Phonology, which posit that phonological units emerge from gestural articulatory control, and that speech errors reflect limits or perturbations in motor-gestural systems.
- The authors argue for the integration of motor-speech assessments into clinical evaluation of speech sound disorders, and interventions consider motor/articulatory constraints to better tailor therapy.

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We have known for quite some time as SMEs in motor speech, that just because patterns occur does not negate organic etiology of SSDs (muscle, motor & structure).

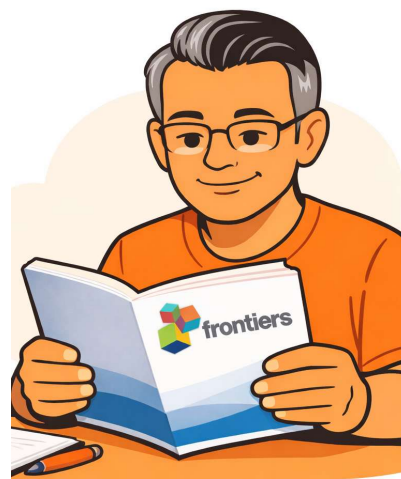
Pam Marshalla



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## 2<sup>ND</sup> STUDY

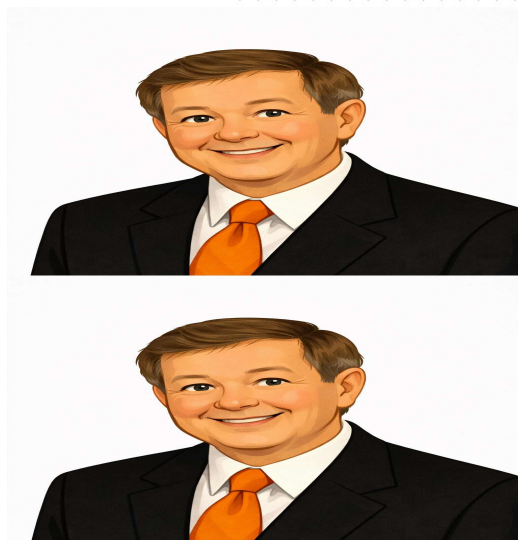
Namasivayam, A. K., Kent, R., Preston, J. L., Ben, Hagedorn, C., Ignatius, McAllister, A., Wang, J., Hustad, K., Ménard, L., Bahar, N., Moore, J. G., Petrosov, J., & Pascal van Lieshout. (2025). Reevaluating the classification of pediatric speech sound disorders: a ground truthing perspective. *Frontiers in Human Neuroscience*, 19. <https://doi.org/10.3389/fnhum.2025.1700505>



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WITH ONE  
OF THE  
OMI'S  
FAVORITES

**DR. RAYMOND KENT**



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## KEY POINTS

Despite technological advancements of the 21st century, critical diagnostic assessments of pediatric SSDs continue to rely heavily on human senses (primarily auditory-perceptual), the interpretation of which is inherently subjective and impressionistic, to ascertain the nature, etiology, and classification of these disorders.

Evidence from instrumental studies supports a speech-motor rather than purely cognitive-linguistic basis for many pediatric SSDs, revealing significant inadequacies in current clinical practices.

This restricted interpretation risks obscuring broader motoric contributions to pediatric SSDs, such as adaptive jaw compensation, undifferentiated tongue movements, and covert speech motor contrasts, which may not fit neatly within those clinical categories. Persistent use of these outdated terms perpetuates classification models that no longer withstand empirical scrutiny. The evidence is here. The data is clear. The question is no longer whether we should shift, but why we have not already.



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- In 2010, Bahr & Rosenfeld Johnson’s paper was not taken seriously enough because it was written by two clinicians who did not have instrumentation devices; however, Namasivayam et al. (2025) were able to take this concept to new heights...validating what some of us have known in the field for 50+ years....
- **SPEECH IS MOTOR and STRUCTURE + MUSCLE FUNCTION MATTER.**

Sara Rosenfeld-Johnson




WE TOLD YOU SO!

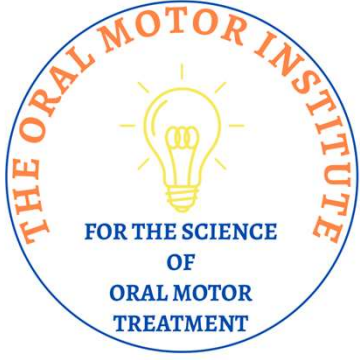


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**MARSHALLA**  
SPEECH & LANGUAGE



**PART 2 :**  
BASIC ELEMENTS OF  
THERAPY

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**MOVEMENTS**

create the

**PHONEMES**

that are used in


**PHONOLOGICAL PATTERNS**


to express


**LANGUAGE**

for use in

**CONVERSATION AND LITERACY**







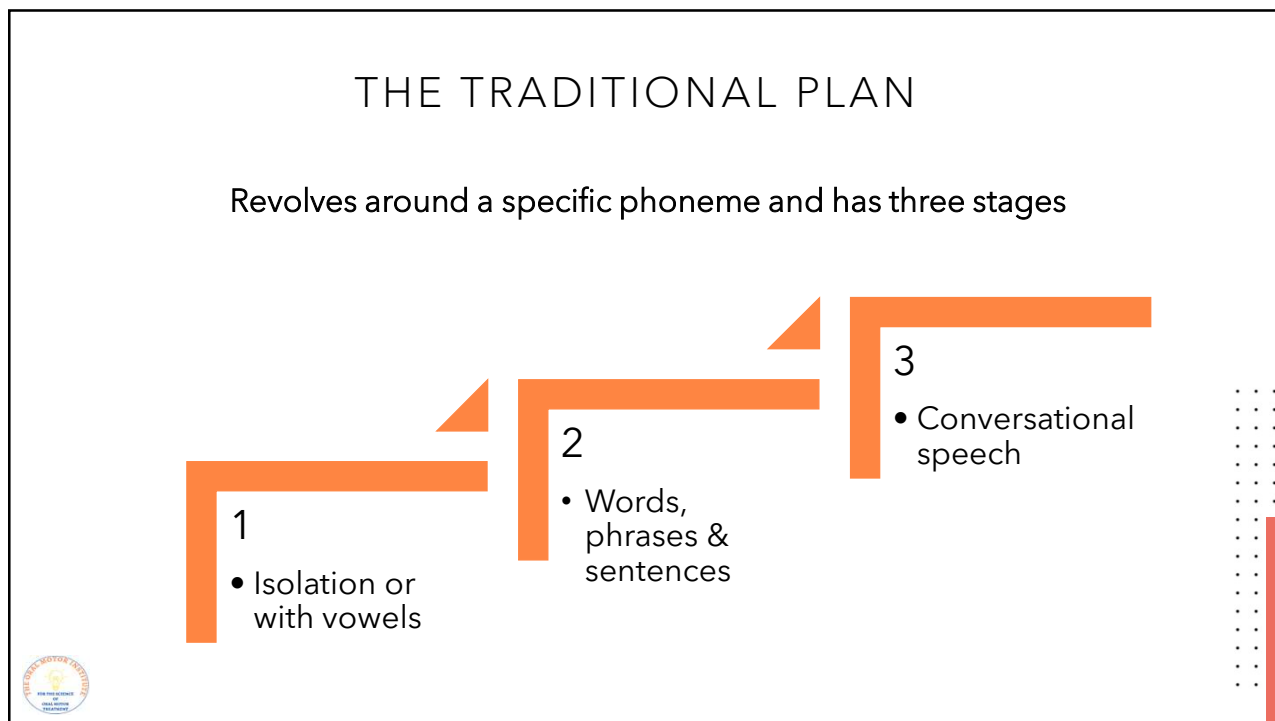
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### BASIC ELEMENTS OF THERAPY

Help	Eliminate	Use	Teach	Practice	Incorporate	Habituate
Help the client learn there is an error in pronunciation	Eliminate the cause of the disorder (when possible)	Use ear training to teach the client to isolate, recognize, identify and discriminate the target	Teach the client to produce the target through various methods	Practice the new sound to strengthen it (help client bring the sound production under his own control)	Incorporate the new sound into familiar words and transition to normal speech	Habituate the new sound and establish carryover

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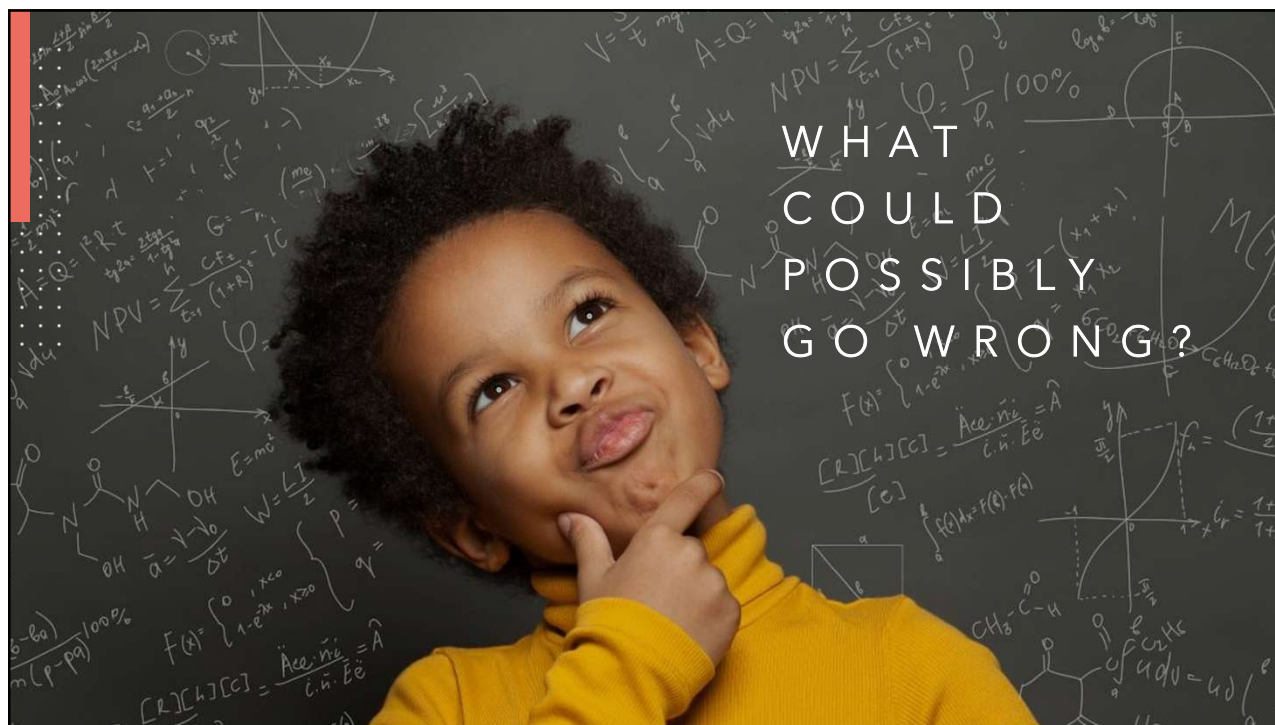


## STIMULATION/IMITATION METHOD

- One phoneme vs. multiple phoneme approach (McCabe & Bradley, 1975)
- Auditory & visual models
- Stimulus - response (Carrell, 1968)
- Start with imitation (Berntal & Bankson, 2004, p. 300)
- If it will work, it will work immediately based on stimulability
- Van Riper pointed out "it should work in all but a few cases"



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- · · Preceded traditional methods
- · · Emerged after IPA in 1888
- · · Anatomy focused
- · · Verbal descriptions (open your mouth)
- · · Physical manipulations (use of tools and physical prompts)
- · · Van Riper insisted on this method if imitation is not possible (1978)
- · · "USE EVERY TOOL POSSIBLE"

## THE PHONETIC PLACEMENT METHOD

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- · ·
- · ·
- · ·

3 KEYS TO SUCCESS

---

Therapist clearly understands movement

---

Therapist uses a vivid vocabulary of descriptors

---

**Therapists requires knowledge on how to use tools correctly, and manipulate oral structures**

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## TRANSLATION TO MODERN TIMES

Oral Placement Therapy (Bahr & Rosenfeld-Johnson, 2010)

“Oral Motor Technique” criticism

Gestural cues (DTTC, PROMPT)

Palatometry, and other modern measures (IOPI, ultrasound)

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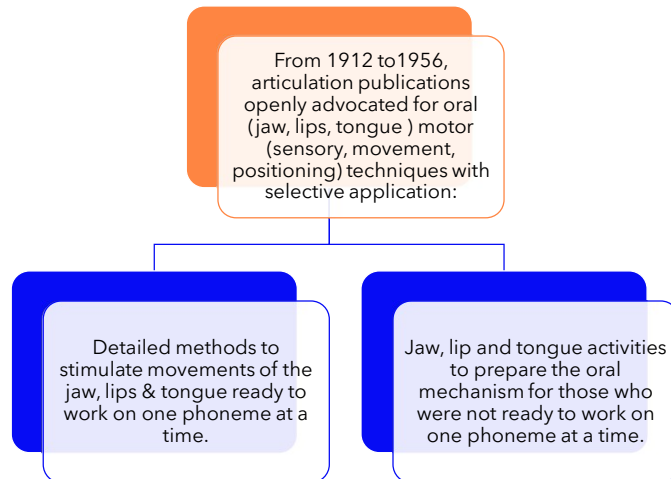
**MARSHALLA, P. (2008).** Oral motor treatment vs. non-speech oral motor exercises. *Official Monographs of The Oral Motor Institute*, 2(2). Retrieved April 16, 2025, from <https://www.oralmotorinstitute.org/v2n2-marshalla/>

- 1912-2007
- 84 pieces of literature
- 92.54% discussed, described or recommended facilitation techniques for lips, jaw & tongue
- 100s of techniques were found
- All levels of education were represented across multiple settings
- Wilson was the first to use the term oral motor in 1977 at a conference, the proceedings were in print in 1978

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**MARSHALLA, P.** (2008). Oral motor treatment vs. non-speech oral motor exercises. *Official Monographs of The Oral Motor Institute*, 2(2). Retrieved April 16, 2025, from <https://www.oralmotorinstitute.org/v2n2-marshalla/>



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Becker, R., & Sylvan, L. (2021). Coupling articulatory placement strategies with phonemic awareness instruction to support emergent literacy skills in preschool children: A collaborative approach. *Language, Speech, and Hearing Services in Schools*, 52(2), 661–674. [https://doi.org/10.1044/2020\\_lshss-20-00095](https://doi.org/10.1044/2020_lshss-20-00095)

- This pilot study involved a bidirectional collaboration between a speech-language pathologist and a teacher by providing articulatory placement strategies to link accurate speech production with early phonemic awareness activities in the context of a private early childhood center.
- Seventeen children ( $N = 17$ ) participated in the study, with ages ranging from 55 to 65 months.
- The results suggest there may be a **benefit to using articulatory placement strategies with phonemic awareness activities** directly in the preschool classroom in collaboration with teachers.

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**KENT R. D.** (2024). The feel of speech: multisystem and polymodal somatosensation in speech production. *Journal of Speech, Language, and Hearing Research: JSLHR*, 67(5), 1424–1460. [HTTPS://DOI.ORG/10.1044/2024\\_JSLHR-23-00575](https://doi.org/10.1044/2024_JSLHR-23-00575)

“The current understanding of speech somatosensation rests primarily on the two pillars of psychophysics and neuroscience. The confluence of polymodal afferent streams supports the development, maintenance, and refinement of speech production. Receptors are both canonical and noncanonical, with the latter occurring especially in the muscles innervated by the facial nerve. Somatosensory representation in the cortex is disproportionately large and provides for sensory interactions. Speech somatosensory function is robust over the lifespan, with possible declines in advanced aging. The understanding of somatosensation in speech disorders is largely disconnected from research and theory on speech production. **A speech somatoscape is proposed as the generalized, system-wide sensation of speech production, with implications for speech development, speech motor control, and speech disorders.**”

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#oralmotorisnotnew  
#oralmotorisebp

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## THE SOUND MODIFICATION METHOD

Help the client modify the movements of another sound already known



Another phonemes (/b/  
to teach /p/)



A non-speech sound  
(panting to teach /h/)



A biological noise  
(coughing to teach /k/)



An infant pr-vocalization  
(raspberries to teach /s/)



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## THE SUCCESSIVE APPROXIMATION METHOD

Aka progressive approximations or shaping

Start with the error sound, change one tiny feature at a time

Bell (1906) advocated to use this method with the deaf

Reshaping the mouth

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THE BABBLING METHOD

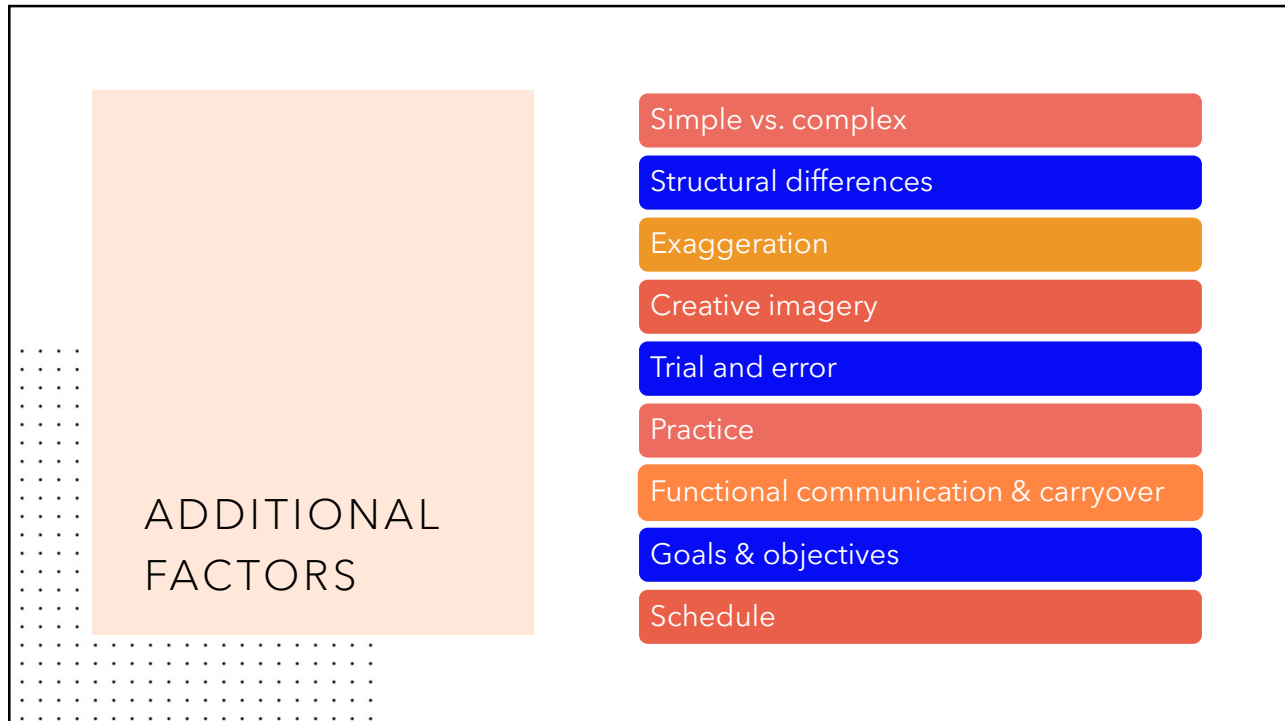
- Mild to moderate articulation errors
- Natural speaking process
- Client falls upon the sound
- Babble in unison in a relaxed manner
- Hodgepodge of vocalizations

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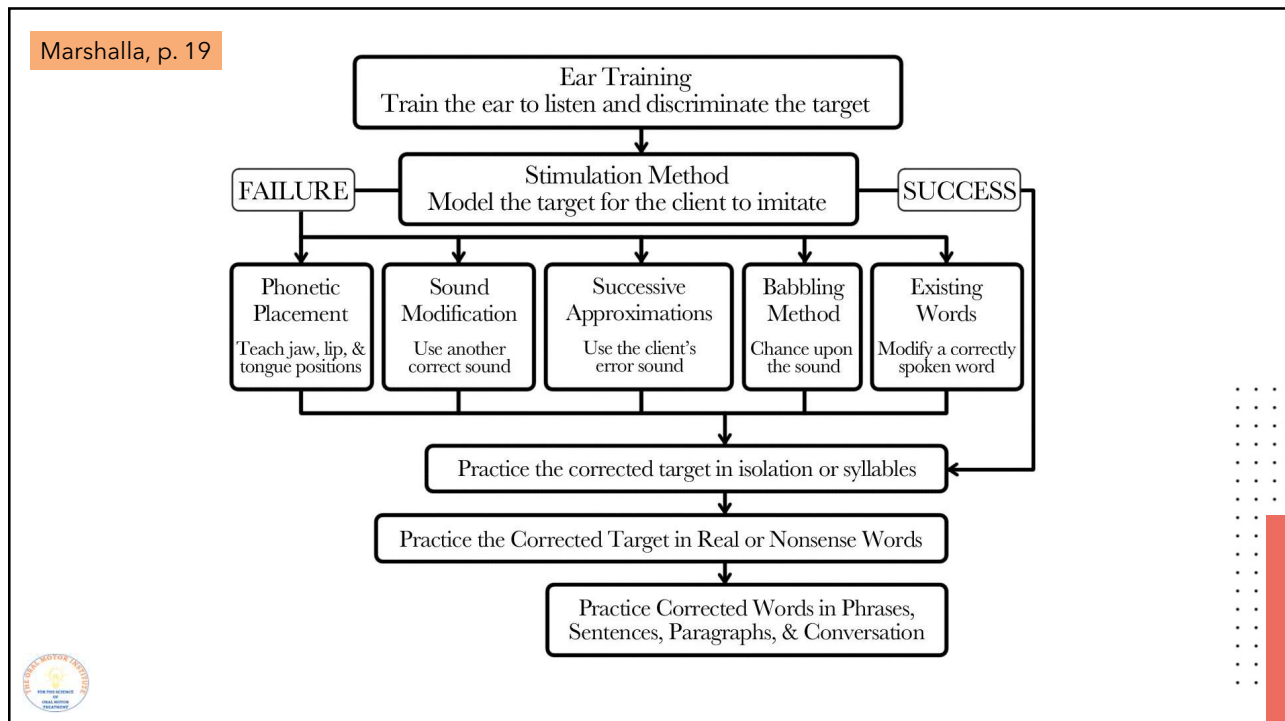
USING CORRECT PHONEMES IN EXISTING WORDS

- Find words that the error sound is correct (Van Riper, 1954, p.245)
- Diversify the sound
- Paired stimuli (Weston & Irwin, 1971 & 1975) (pair correct word with new words)
- Abstracting a correct syllable (church >chur>teacher)
- Pairing correct and incorrect words

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**MARSHALLA**  
SPEECH & LANGUAGE

**PART 3 :**  
STAGES OF THERAPY

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STAGES OF ARTICULATION THERAPY

Level	Stage	Position	Phoneme examples
1	isolation	isolation	/s/- "ssssssss"

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## STAGES OF ARTICULATION THERAPY

Level	Stage	Position	Phoneme examples
2	syllables	initial	CV-sah, see, soo, so
		final	VC-ahs, ees, oos
		medial	VCV-ah-sah, ee-see
		sequence	CVCV- sah-sah, see-see

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## STAGES OF ARTICULATION THERAPY

Level	Stage	Position	Phoneme examples
3	Words	initial	CV-See, sue, so
			CVC- seed, soap, soup
			COMPLEX-seven, cereal, Sacramento
		final	VC-ace, ice, is
			CVC-bus, kiss, mass
			COMPLEX-curious, playfulness
		medial	Kissing, fussing, guessing

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**STAGES OF ARTICULATION THERAPY**

Level	Stage	Position	Phoneme examples
4	phrases	initial	See the car, so what
		final	On the bus, give a kiss
		medial	Hissing cat, guessing game

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**STAGES OF ARTICULATION THERAPY**

Level	Stage	Position	Phoneme Examples
5	Sentences	initial	1 phoneme- Sue got up at 8.
			2 phoneme- Sue got up at 7.
			3 phonemes- Sue and Sam got up at 7.
		final	1 phoneme- I got on the bus.
			2 phoneme- Don't make a mess on the bus.
			3 phonemes- This bus is a big mess.
		medial	1 phoneme- I found a hissing cat.
			2 phoneme- They were hissing and fussing.
			3 phonemes- I guess he could be hissing and fussing.

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## STAGES OF ARTICULATION THERAPY

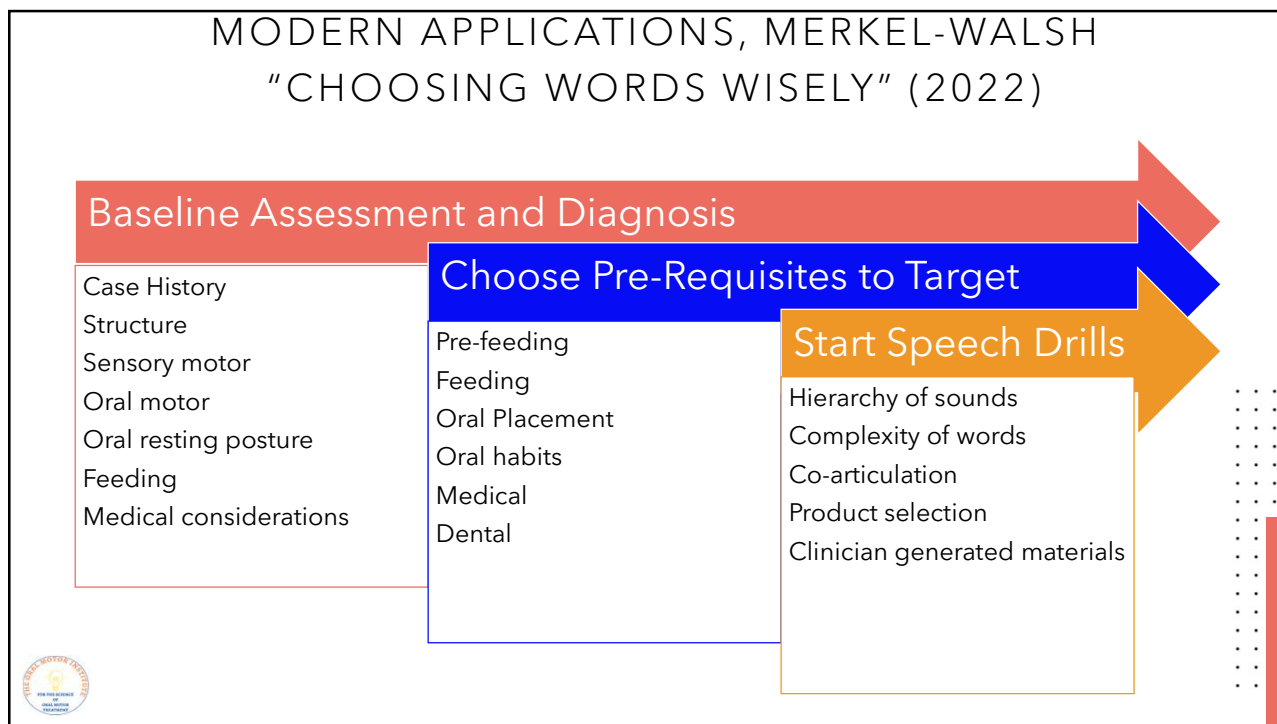
Level	Stage	Position	Phoneme examples
6	paragraphs	Simple-tightly controlled	<i>Sue will come over tonight. I hope so, anyway. We are going to plan her party. Sue said I could help.</i>
		More difficult-more loosely controlled	<i>Sue will come over at seven tonight. Yes! I hope so, anyway. We are going to plan a special party for Sam. Sam turns 12 on the 17<sup>th</sup> of December. Sam is so cool. He's Sue's best friend!</i>
		Very difficult-completely uncontrolled	<i>My favorite dinosaur is a stegosaurus. The stegosaurus walks on all 4 legs and has a horny collar. 16 stegosaurus skeletons were situated in the Soussan plain south of Soussy, France.</i>

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## STAGES OF ARTICULATION THERAPY

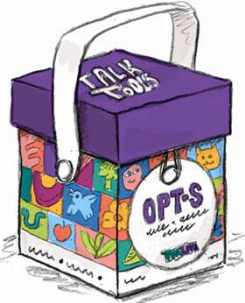
Level	Stage	Position	Phoneme examples
7	conversation	Structured, within the therapy room	Talk about phoneme and relevance to child's life.
		Unstructured within the therapy room, tightly controlled	Talk about 1 word that has the target phoneme. For example, soup. Focus on saying soup throughout the conversation and only focus on that word.
		Unstructured within the therapy room, loosely controlled phonetic environment	Talk about anything. Focus on saying every /s/ word correctly. This is the bridge to conversations outside the therapy room.
		Outside, somewhat structured	Send the client on an errand. Assign conversations outside of the therapy room. The listener and client report results.

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OPT-S  
MERKEL-WALSH &  
ROSENFELD-  
JOHNSON

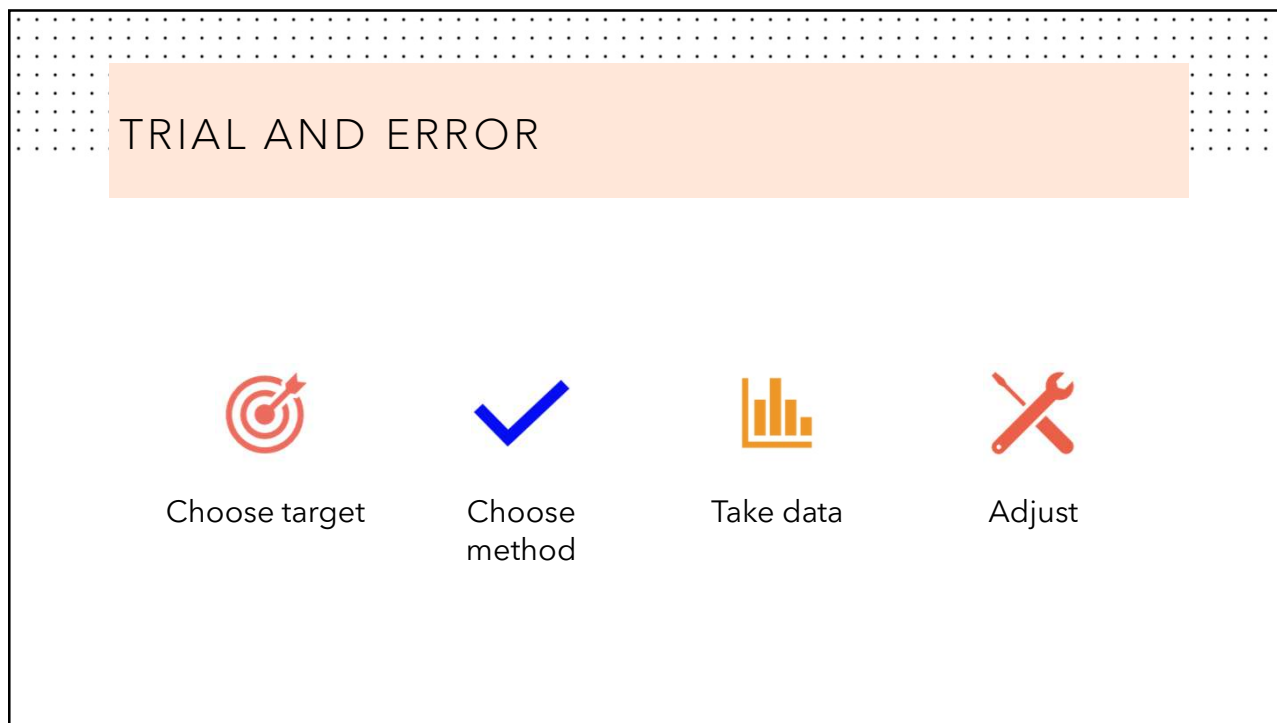


- Identifies jaw stability and grading between consonants and vowels
- Targets early developing phonemes b-p-m-w-t-d-n-h-k-g
- Analyzes these place shifts and organizes words into easy-moderate and difficult
- Provides suggested OPT techniques in case the client cannot produce the words
- Avoids conflicting sounds (think caterpillar for targeting /p/)

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## MODERN PHILOSOPHY

Out-of-date?

Old-fashioned?

Unsophisticated?

Non-EBP?



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## EVIDENCE STARTS IN THE CLINIC

- Never out of date !
- Not random or haphazard
- EBP has to prove itself with each client
- Without trial-and-error therapy becomes rigid
- Logic and deductive reasoning

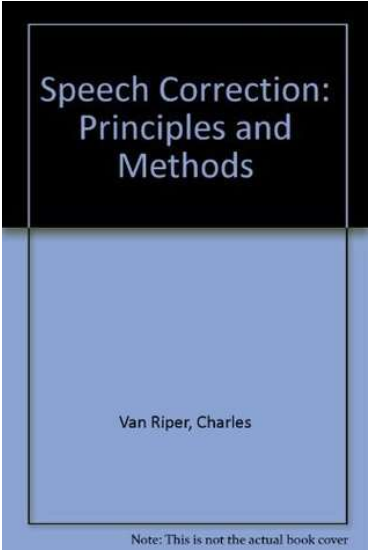


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VAN RIPER, 1978, P. 187

“Whichever approach is used, and there are times when we must try one and then another-the person must go through a process of varying his utterance.”



Note: This is not the actual book cover

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PRACTICE

w - l - j - r

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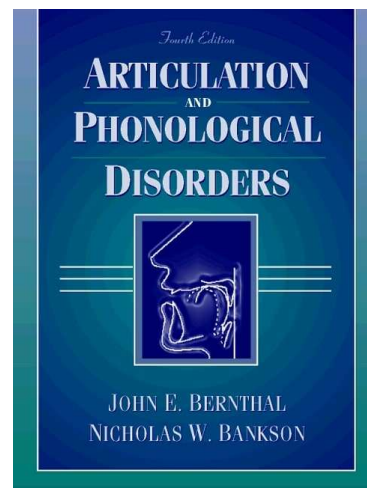
## PRACTICE DEFINED

"perform an activity or exercise a skill repeatedly or regularly in order to improve or maintain one's proficiency" (Jewell & Abate, 2001, p. 1339)

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BERNTHAL & BANKSON,  
2004, P. 295

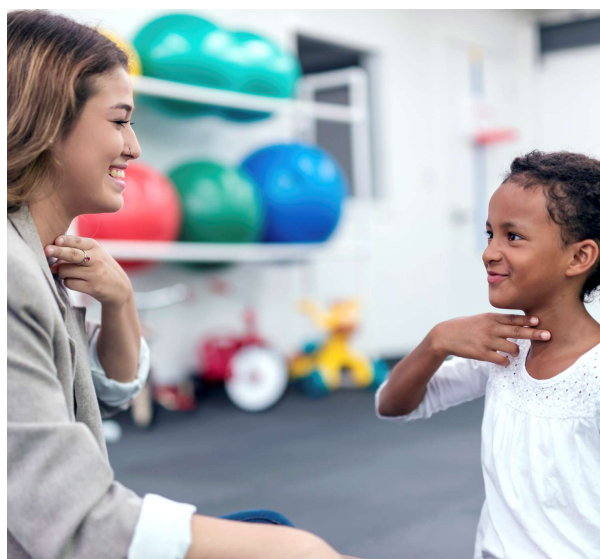
" Practice is the key variable  
thought necessary for mastery  
of any skilled motor behavior..."



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## PRACTICE MAKES PERFECT?

- Practice is not a way to create new speech movements
- Practice is to habituate phonemes, improve muscle strength and endurance for performance
- Practice improves muscle memory
- Practice makes new oral movements automatic
- Used to improve grading, dissociation and direction of movements for phonemes



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## PRACTICE

- Use percentages for data
- Rest periods /breaks
- Negative practice ?
- Practice in functional settings (stage 7)
- Dialects are acceptable since IPA



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MODERN CONCEPTS

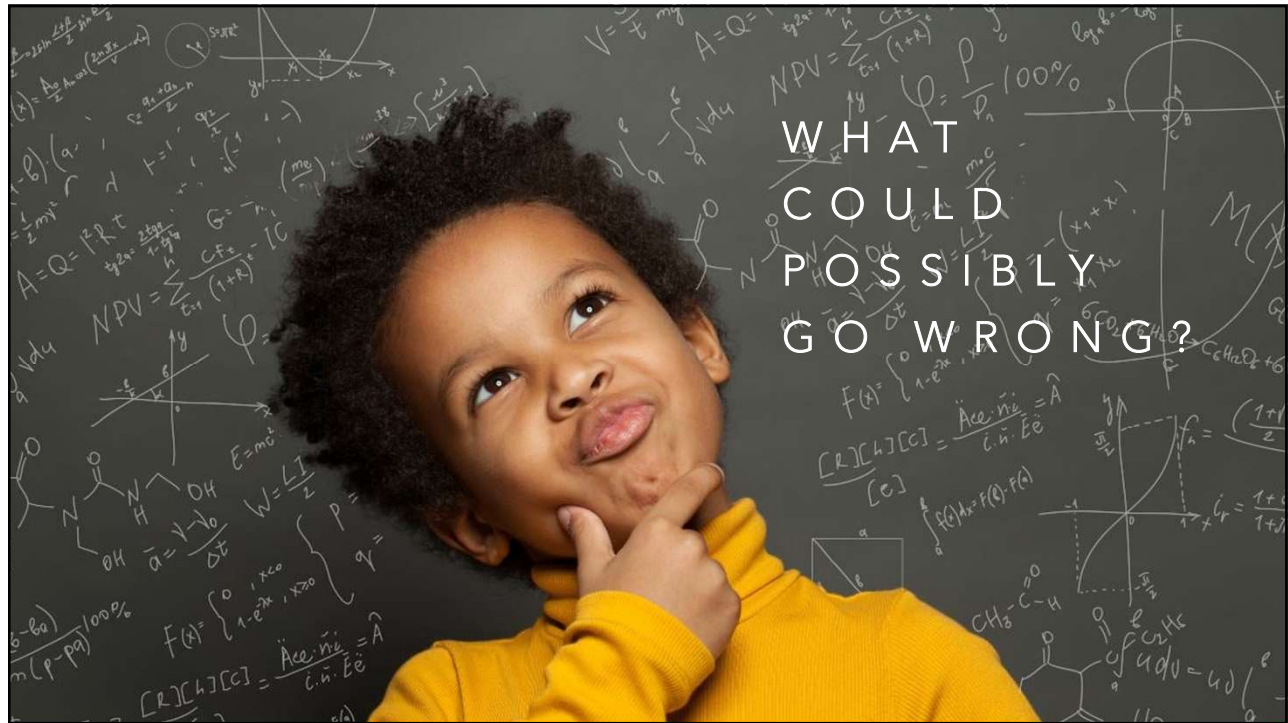
- Data tracking apps
- In class support
- 5-10-minute sessions
- Teletherapy
- RTI programs
- Articulation apps
- Instagram and TikTok "wars"

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**PART 4 :**  
WHEN TRADITIONAL  
THERAPY FAILS

**MARSHALLA**  
SPEECH & LANGUAGE

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WHAT  
COULD  
POSSIBLY  
GO WRONG?

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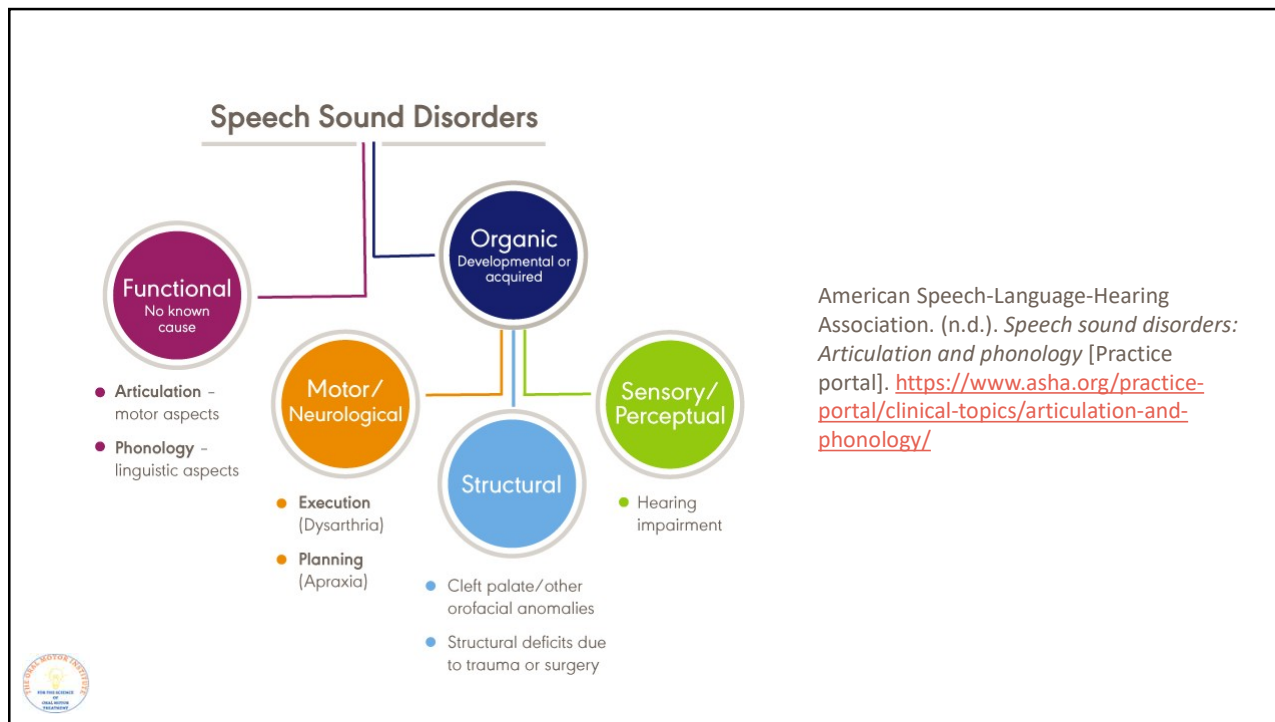
## FOLLOWING THE TRADITIONAL MODEL

- Wait until the child is 5-8 years old
- Base it on variations of developmental norms
- Assess the acoustics of the phonemes and generate a score
- Use the score to determine eligibility
- Choose from what is considered an evidence-based therapy approach
- Test for stimulability and start there
- Teach to listen for sound and then produce the sound



78

78



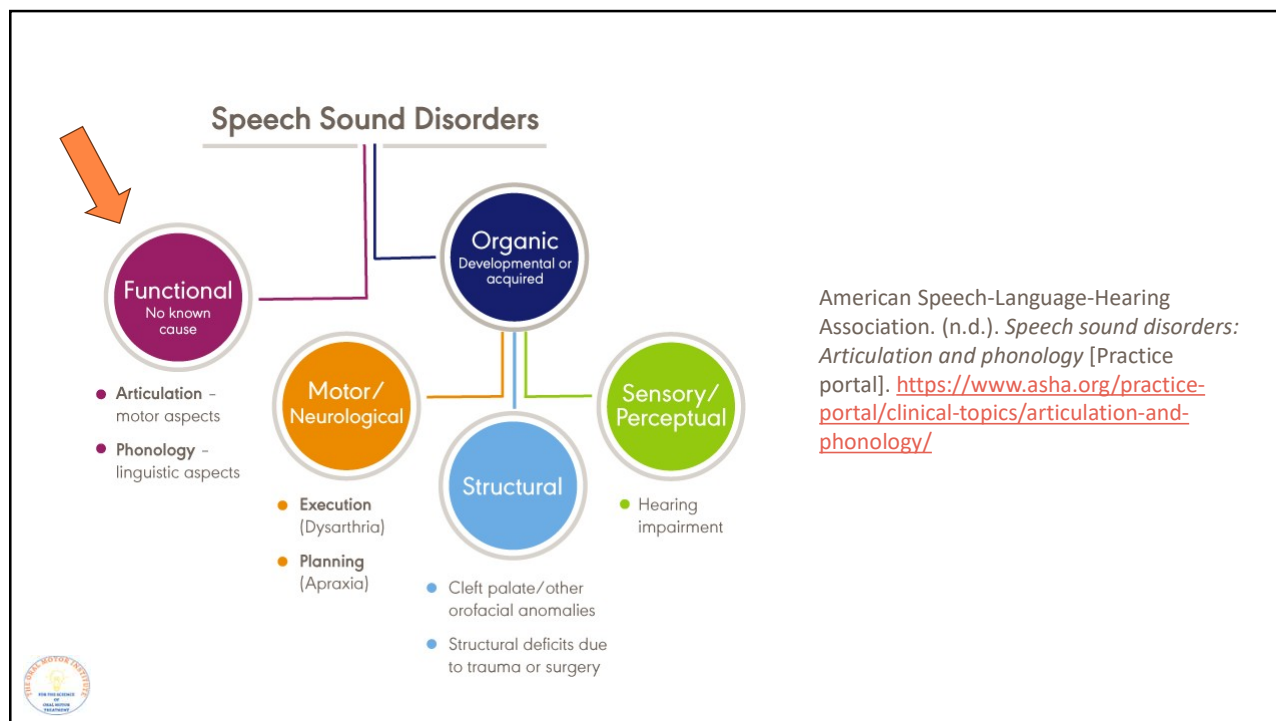
79

## ASHA

Speech sound disorders (SSDs) refer to any difficulty or a combination of difficulties with perception, motor production, or phonological representation of speech sounds and speech segments, including phonotactic rules governing permissible speech sound sequences in a language. Not all language(s) share the same speech sounds as mainstream American English. For children who use more than one language or dialect, the rules of one linguistic system may transfer and influence speech production in another. These influences do not indicate an SSD.

SSDs can be organic or idiopathic in nature. Organic SSDs result from motor/neurological disorders (e.g., childhood apraxia of speech, dysarthria), structural abnormalities (e.g., cleft lip/palate, other structural deficits or anomalies), and sensory/perceptual disorders (e.g., hearing loss). Idiopathic SSDs have no known cause.

80



81

**Bahr, D., Rosenfeld-Johnson, S. (2010).** Treatment of children with speech oral placement disorders (OPDS): a paradigm emerges. *Communication Disorders Quarterly*, XX(X), 108.

Epidemiological research was used to develop the Speech Disorders Classification System (SDCS). The SDCS is an important speech diagnostic paradigm in the field of speech-language pathology. This paradigm could be expanded and refined to also address treatment while meeting the standards of evidence-based practice. The article assists that process by initiating a clinical exchange of ideas on the topic of speech treatment. It explores: (a) the treatment of children with speech oral placement disorders (OPD; a new term suggested by the authors), (b) the various types of speech oral placement therapy (OPT) used to treat OPD, (c) the relationships of OPT to current motor learning theories and oral motor treatment, as well as (c) the critical need for appropriately designed, systematic research on OPT.

82



**Bahr, D., Rosenfeld-Johnson, S. (2010).** Treatment of children with speech oral placement disorders (OPDS): a paradigm emerges. *Communication Disorders Quarterly*, XX(X), 108.

Suggested definition: Children with OPD cannot imitate targeted speech sounds using auditory and visual stimuli (i.e., "Look, listen, and say what I say"). They also cannot follow specific instructions to produce targeted speech sounds (e.g., "Put your lips together and say m").

83

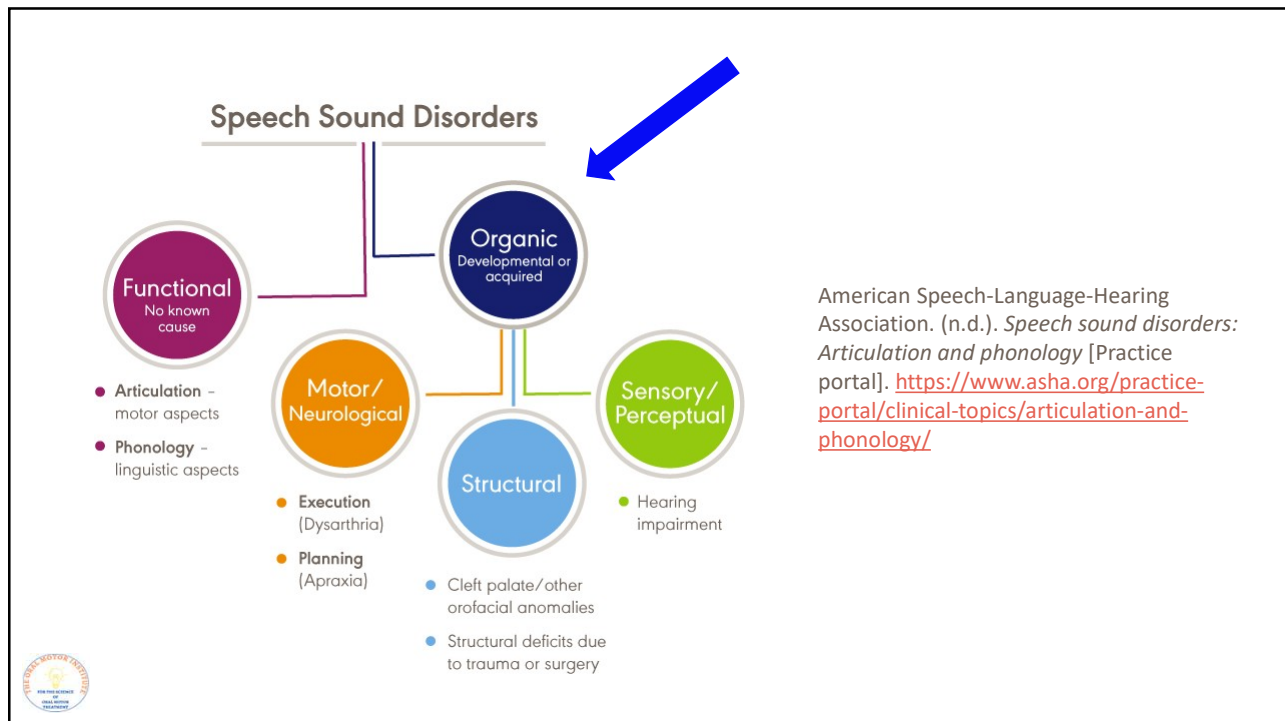
**Bahr, D., Rosenfeld-Johnson, S. (2010).** Treatment of children with speech oral placement disorders (OPDS): a paradigm emerges. *Communication Disorders Quarterly*, XX(X), 108.

Oral placement disorder does not apply to children with speech delay who can imitate targeted speech sounds using auditory-visual stimuli and can follow specific verbal instructions to produce targeted speech sounds. Yet, some speech-language pathologists (SLPs) use methods developed for these children to treat children with OPDs.

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## OPD

- \_\_\_\_\_ Cleft palate
- \_\_\_\_\_ Neurological conditions
- \_\_\_\_\_ Birth injury (CP, HIE)
- \_\_\_\_\_ Orofacial Myofunctional Disorders
- \_\_\_\_\_ Acquired Apraxia of Speech/Childhood Apraxia of Speech
- \_\_\_\_\_ Dystonia
- \_\_\_\_\_ Hearing Loss
- \_\_\_\_\_ Dysarthria
- \_\_\_\_\_ Ankyloglossia /TOTs

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Structural	Muscle-based	Motor-Based
<p><b>Specific phoneme errors that can be associated with TOTs</b></p> <p><b>Distorted productions of /s, z/ often with an interdental lisp.</b></p> <p><b>Abnormal lingual dental articulatory placement for /t, d, l, n, ʃ, ʒ, ʒ, ʒ/</b></p> <p><b>Lateral lisp</b></p> <p><b>Upper lip insufficiency from malocclusion</b></p> <p><b>Hypernasality</b></p> <p><b>Phonetic/Oral Placement errors</b></p> <p><b>Restrictive phonemic inventory, glottal stops in (cleft palate)</b></p>	<p><b>Imprecise consonants</b></p> <p><b>Distorted vowels</b></p> <p><b>Irregular articulatory breakdown</b></p> <p><b>Articulatory blurring</b></p> <p><b>Resonance issues</b></p> <p><b>Voice issues</b></p> <p><b>Consistent /predictable speech sound errors</b></p> <p><b>Phonatory weaknesses</b></p> <p><b>Rate issues (too slow or too fast)</b></p>	<p><b>Erratic errors</b></p> <p><b>Slow rate</b></p> <p><b>Dysfluencies</b></p> <p><b>Higher consonant errors than vowels</b></p> <p><b>Co-articulation difficulties</b></p> <p><b>Voicing errors</b></p> <p><b>Schwa additions</b></p> <p><b>Groping</b></p> <p><b>Syllable segregation</b></p>


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## WHAT WOULD VAN RIPER SAY?


Van Riper said.....  
 "Anything that can be done to  
 eliminate the cause of defective  
 articulation has first priority"  
 (Carrell, 1968).



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## HOW TRADITIONAL THERAPY FAILS: HEARING LOSS

Help	Eliminate	Use	Teach	Practice	Incorporate	Habituate
Help the client learn there is an error in pronunciation 	Eliminate the cause of the disorder (when possible) 	Use ear training to teach the client to isolate, recognize, identify and discriminate the target 	Teach the client to produce the target through various methods	Practice the new sound to strengthen it (help client bring the sound production under his own control)	Incorporate the new sound into familiar words and transition to normal speech	Habituate the new sound and establish carryover



90



## HOW TRADITIONAL THERAPY FAILS: OMD

Help	Eliminate	Use	Teach	Practice	Incorporate	Habituate
Help the client learn there is an error in pronunciation	Eliminate the cause of the disorder (when possible)  	Use ear training to teach the client to isolate, recognize, identify and discriminate the target	Teach the client to produce the target through various methods  	Practice the new sound to strengthen it (help client bring the sound production under his own control)	Incorporate the new sound into familiar words and transition to normal speech	Habituate the new sound and establish carryover

91

## HOW TRADITIONAL THERAPY FAILS: CAS

Help	Eliminate	Use	Teach	Practice	Incorporate	Habituate
Help the client learn there is an error in pronunciation	Eliminate the cause of the disorder (when possible)  	Use ear training to teach the client to isolate, recognize, identify and discriminate the target	Teach the client to produce the target through various methods  	Practice the new sound to strengthen it (help client bring the sound production under his own control)	Incorporate the new sound into familiar words and transition to normal speech	Habituate the new sound and establish carryover

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### IDEAL SCENARIOS


Structural	Muscle-Based	Motor-Based
Resolution of oral restrictions	Adequate muscle strength for speech	Gross motor intervention
Patent nasal airway	Ideal posture and alignment	Fine Motor Intervention
Orthodontia	Sensory regulation	Total Communication (AAC/ASL/PECS)
Palatal expansion	Resolution of low jaw posture/high jaw tension	Immediate rehabilitation (CVA, TBI)
Cleft repair	Self monitoring of oral secretions	Medical intervention (ALS, MS, Parkinson's)
Proper oral resting posture	Nasal breathing	
Oral Habit elimination	Improvement in oral motor / pre-feeding development	
Proper Swallowing		
TMD resolution		
Good sleep		

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## TRADITIONAL ARTICULATION FAILS

When the patient cannot...

- produce the sound in isolation
- imitate phonetic placements
- coarticulate
- dissociate the articulators
- stabilize or grade the jaw
- maintain proper oral resting posture (starting line)
- make articulatory contacts



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## TRADITIONAL ARTICULATION FAILS

When the patient does not...

- have adequate muscle strength or endurance
- have adequate range of motion
- breathe through the nose
- have adequate breath support
- hear the error sounds
- access their sensory-motor feedback loop



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## SOLUTIONS

Bahr & Rosenfeld-Johnson (2010)

The following sequence is seen in many forms of OPT (Bahr, 2001, in press; Crary, 1993, p. 224; Hayden, 2004, 2006; Marshalla, 2004, 2007; Meek, 1994; Rosenfeld-Johnson, 1999, 2009; Young & Hawk, 1955):

1. Facilitate speech movement with assistance of a therapy tool (e.g., bite block) and/or other tactile-proprioceptive facilitation technique (i.e., manipulation of oral structure by therapist);
2. facilitate speech movement without therapy tool and/or other tactile-proprioceptive technique; and
3. immediately transition movement into speech with and without therapy tool and/or other tactile/proprioceptive facilitation technique.

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## MERKEL-WALSH, ASHA CONNECT (2016) A MODERN LOOK AT VAN RIPER'S PHONETIC PLACEMENT APPROACH

Although the term OPD is new, the concepts surrounding the term have been discussed by several authors and clinicians (Bahr, 2001; DeThorn et al, 2009; Hammer, 2007; Hayden, 2004, 2006; Kaufman, 2005; Marshalla, 2004; Meek, 1994; Ridley, 2008; Rosenfeld-Johnson, 1999, 2009; Strand, Stoeckel, & Baas, 2006).

Gregory Lof's research has even stated that the methods used in Van Riper's Phonetic Placement Approach, are not in fact considered NSOME (Lof, 2009.)

This is why it is important to explore current clinical techniques to determine what activities are considered unrelated to speech production, as opposed to those activities that in fact are an extension of Phonetic Placement Therapy (Marshalla, 2007.)

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## TALKTOOLS®

# A MODERN LOOK AT VAN RIPER'S PHONETIC PLACEMENT APPROACH

### ROBYN MERKEL-WALSH, M.A., CCC-SLP

**ABSTRACT**

Presentation explores 1) traditional versus phonological therapy, 2) the sensory-motor system as it relates to speech, 3) the importance of tactile and proprioception in articulation therapy, 4) shaping placement of the articulators to improve speech clarity.

**LEARNER OUTCOMES**

1. Participants will be able to differentiate phonological versus traditional articulation therapy.
2. Participants will be able to define the three stages of Van Riper's Phonetic Placement Approach.
3. Participants will be able to use at least three oral placement cues in order to facilitate speech movements.

**DISCUSSION**

Two widely used models of articulation therapy include the traditional and phonological models (Baker, 2006). While studies suggest that the phonological model may prove more positive results than the traditional model (Klein, 1996), Van Riper's Phonetic Placement Approach (PPA) may be more useful for individuals who are not able to achieve placement cues (Van Riper, 1978). In 1998, Van Riper stated:

*Every available device should be used to make the student understand clearly the positions of the tongue, jaw, and lips to be assumed.*

Placement cues are based on the more traditional models of therapy, and rely on the concept that an individual can copy the motor plan suggested by the therapist, such as "place your tongue tip to the spot." Therapists, however, often struggle with a population of individuals who do not respond well to "look at me and say what I say," and those who require a tactile-kinesthetic approach to treatment (Bahr & Rosenfeld-Johnson, 2010). Individuals with dysarthria, dyspraxia and/or apraxia disorders may make slow progress, or no progress at all, without the assistance of tactile cues. Even though therapists have heard the debate on oral motor therapy (Bowen, 2006; Lof, 2006; Lof, 2007; Lof, 2008), clinicians are still widely using the techniques because they yield positive treatment outcomes (Bahr, 2006).

Clinicians who represent the Board of Directors for the Oral Motor Institute,

There has been question, and ongoing confusion, as to what is a NSOME, versus what is an oral placement technique (OPT) (Bahr & Rosenfeld-Johnson, 2010). Oral Placement Therapy (OPT) is a tactile teaching technique used for children and adults with Oral Placement Disorders (e.g., dysarthria), who cannot learn standard speech sound production using auditory and visual teaching methods alone. OPT facilitates the pre-requisite skills on muscle control to develop dissociation and grading in the muscles of the abdomen, vulva, jaw, lips and tongue for clients who cannot approximate the standard speech sounds using the instructions. If the client can produce standard speech using adequate placement and duration using only auditory and visual cues, OPT would not be included in that client's program plan.

Gregory Lof's research has even stated that the methods used in Van Riper's Phonetic Placement Approach are not in fact considered NSOME (Lof, 2009). This is why it is important to explore current clinical techniques to determine what activities are considered unrelated to speech production, as opposed to those activities that in fact are an extension of Phonetic Placement Therapy (Marshalla, 2007).

**OPT IS A MODERN EXTENSION OF PHONETIC PLACEMENT THERAPY (Van Riper, 1954) and The Feedback Model (Meek, 1973).**

It is based on a very common sequence (Bahr, 2001; Green, Moore & Baily, 2006; Marshalla, 2007; Young and Hawk, 1995):

1. Facilitate speech movement with the assistance of a therapy tool (e.g., tongue depressor or a tactile-kinesthetic facilitation technique (e.g., PROMPT® facial cue) or every available device (Marshalla, 2012).
2. Facilitate speech movement without the therapy tool and/or tactile-kinesthetic technique (cue fading).
3. Immediately transition movement into speech with and without therapy tools and/or tactile-kinesthetic techniques.

(Marshalla, 2012)

(Marshalla, 2012)

**PHONETIC PLACEMENT THERAPY TOOLS**

**MODERN ORAL PLACEMENT THERAPY TOOLS**

**REFERENCES**

Bahr, M. (2001). *Oral Placement Therapy: A tactile teaching technique for children and adults with Oral Placement Disorders*. Unpublished manuscript, University of North Carolina at Chapel Hill.

Bahr, M., & Rosenfeld-Johnson, J. (2010). *Oral Placement Therapy: A tactile teaching technique for children and adults with Oral Placement Disorders*. Unpublished manuscript, University of North Carolina at Chapel Hill.

Bowen, L. (2006). *Oral Motor Therapy: A Review of the Literature*. *Journal of Speech, Language, and Hearing Disorders*, 11(1), 1-10.

Green, D., Moore, B., & Baily, M. (2006). *Oral Placement Therapy: A tactile teaching technique for children and adults with Oral Placement Disorders*. Unpublished manuscript, University of North Carolina at Chapel Hill.

Hammer, M. (2007). *Oral Placement Therapy: A tactile teaching technique for children and adults with Oral Placement Disorders*. Unpublished manuscript, University of North Carolina at Chapel Hill.

Hayden, J. (2004, 2006). *Oral Placement Therapy: A tactile teaching technique for children and adults with Oral Placement Disorders*. Unpublished manuscript, University of North Carolina at Chapel Hill.

Kaufman, J. (2005). *Oral Placement Therapy: A tactile teaching technique for children and adults with Oral Placement Disorders*. Unpublished manuscript, University of North Carolina at Chapel Hill.

Marshalla, R. (2004, 2007, 2012). *Oral Placement Therapy: A tactile teaching technique for children and adults with Oral Placement Disorders*. Unpublished manuscript, University of North Carolina at Chapel Hill.

Meek, R. (1973). *Oral Placement Therapy: A tactile teaching technique for children and adults with Oral Placement Disorders*. Unpublished manuscript, University of North Carolina at Chapel Hill.

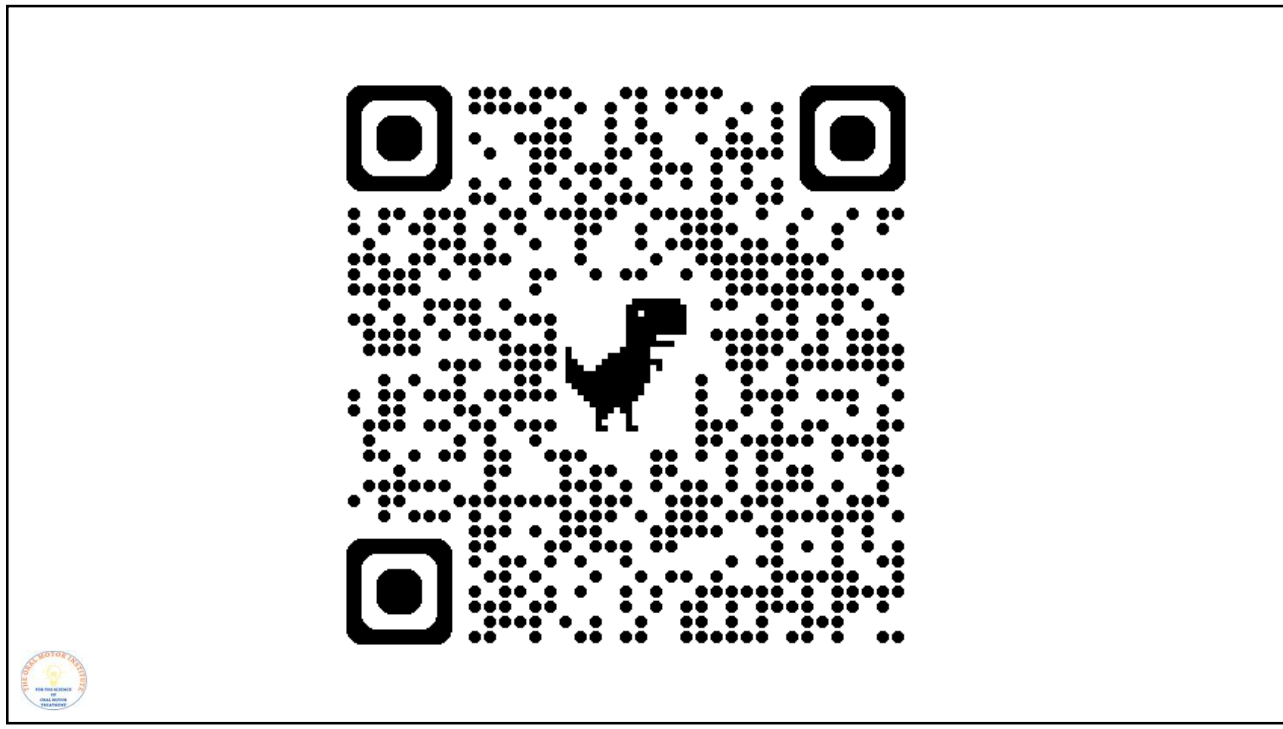
Young, J., & Hawk, L. (1995). *Oral Placement Therapy: A tactile teaching technique for children and adults with Oral Placement Disorders*. Unpublished manuscript, University of North Carolina at Chapel Hill.

Merkel-Walsh, 2023 98

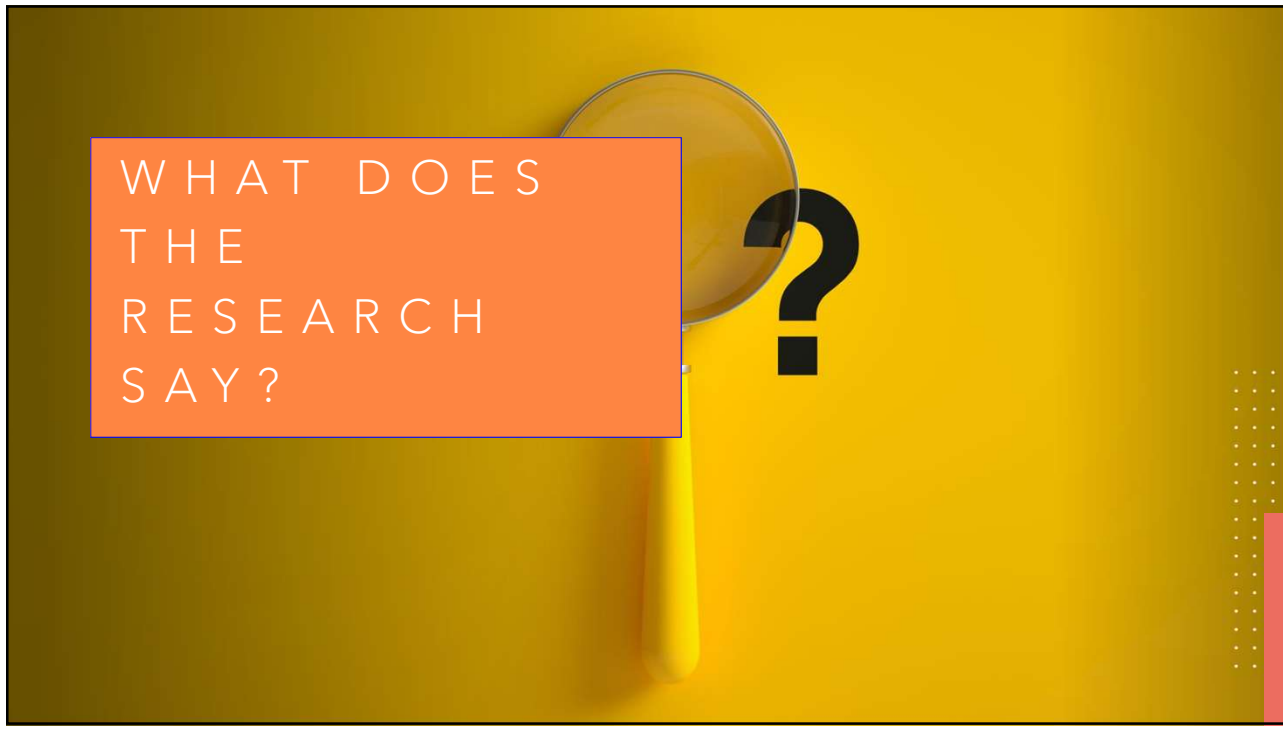
98

Robyn Merkel-Walsh

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100



McCauley, R. J., Strand, E., Lof, G. L., Schooling, T., & Frymark, T. (2009). Evidence-based systematic review: effects of nonspeech oral motor exercises on speech. *American Journal of Speech-Language Pathology*, 18(4), 343-360. [https://doi.org/10.1044/1058-0360\(2009/09-0006\)](https://doi.org/10.1044/1058-0360(2009/09-0006))

"Insufficient evidence to support or refute the use of OMEs to produce effects on speech was found in the research literature. Discussion is largely confined to a consideration of the need for more well-designed studies using well-described participant groups and alternative bases for evidence-based practice."



101

Kent R. D. (2015). Nonspeech oral movements and oral motor disorders: a narrative review. *American Journal of Speech-Language Pathology*, 24(4), 763-789. [https://doi.org/10.1044/2015\\_ajslp-14-0179](https://doi.org/10.1044/2015_ajslp-14-0179)

Actually, "speech production involves more than 100 muscles located in the trunk, neck, and head." But the issue is that "rather little attention has been given to the interplay with motor control, although motor performance is intrinsic to the task [of speech]."

Nonspeech movements have a broad spectrum of clinical applications, including developmental speech and language disorders, motor speech disorders, feeding and swallowing difficulties, obstructive sleep apnea syndrome, trismus, and tardive stereotypies.

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# 01

**Oral motor performance also appears to be a predictor of verbal fluency in individuals with autism.**

# 02

**Among the therapeutic components that a SLP might address are efforts to increase awareness of the muscles and postures of the orofacial system and to improve muscle strength and coordination (ASHA,2011).**

# 03

**Although research on clinical outcomes from orofacial myology is not extensive, promising reports have been published on speech production in cerebral palsy (Ray, 2001).**

Kent R. D. (2015). Nonspeech oral movements and oral motor disorders: A narrative review. *American Journal of Speech-Language Pathology*, 24(4), 763-789. [https://doi.org/10.1044/2015\\_ajslp-14-0179](https://doi.org/10.1044/2015_ajslp-14-0179)

Pennington, L., Parker, N. K., Kelly, H., & Miller, N. (2016). Speech therapy for children with dysarthria acquired before three years of age. *The Cochrane Database Of Systematic Reviews*, 7(7), cd006937. <https://doi.org/10.1002/14651858.cd006937.pub3>

**This review found no evidence from randomised trials of the effectiveness of speech and language therapy interventions to improve the speech of children with early acquired dysarthria.** Rigorous, fully powered randomised controlled trials are needed to investigate if the positive changes in children's speech observed in phase I and phase II studies are generalisable to the population of children with early acquired dysarthria served by speech and language therapy services. Research should examine change in children's speech production and intelligibility. It must also investigate children's participation in social and educational activities, and their quality of life, as well as the cost and acceptability of interventions.

Dysarthria



Woo, S. T., Ha, J. W., & Na, S. (2025). Design of a personalized oral-motor exercise device for speech impairment rehabilitation. *Frontiers in Bioengineering and Biotechnology*, 13, 1543259. <https://doi.org/10.3389/fbioe.2025.1543259>

**Introduction:** Dysarthria is a speech disorder that stems from impaired muscle control due to lesions in the articulatory system, necessitating targeted rehabilitation exercises to strengthen affected muscles. Current devices used for rehabilitation often fail to accurately assess exercise execution, which limits their effectiveness. **Methods:** This study introduces a novel oral-motor rehabilitation device designed to overcome these limitations. The device features flexible sensors and a signal processing module that provides real-time feedback on training intensity. It is integrated with a mobile application that enables users to monitor their tongue's range of motion and track their progress through a calibration process that uses a simple moving average filter. A preliminary study was conducted with five healthy adult male subjects to verify the device's basic operational characteristics. **Results:** The effectiveness of the device in improving muscle function and regulating training intensity was evaluated using the Iowa Oral Performance Instrument. **The results showed promising outcomes in enhancing articulation and oral-motor skills, indicating that the device could effectively contribute to dysarthria rehabilitation.** **Discussion:** By addressing the gaps in current rehabilitation practices for dysarthria, the proposed device offers a comprehensive and personalized approach to oral-motor therapy. Its ability to provide immediate feedback and track progress can significantly enhance the rehabilitation process, potentially leading to better outcomes for patients with dysarthria.

Dysarthria



105

Kummer A. W. (2011). Speech therapy for errors secondary to cleft palate and velopharyngeal dysfunction. *Seminars In Speech and Language*, 32(2), 191-198. <https://doi.org/10.1055/s-0031-1277721>

Individuals with a history of cleft lip/palate or velopharyngeal dysfunction may demonstrate any combination of speech sound errors, hypernasality, and nasal emission. Speech sound distortion can also occur due to other structural anomalies, including malocclusion. Whenever there are structural anomalies, speech can be affected by obligatory distortions or compensatory errors. Obligatory distortions (including hypernasality due to velopharyngeal insufficiency) are caused by abnormal structure and not by abnormal function. Therefore, surgery or other forms of physical management are needed for correction. In contrast, speech therapy is indicated for compensatory articulation productions where articulation placement is changed in response to the abnormal structure. **Speech therapy is much more effective if it is done after normalization of the structure.** When speech therapy is appropriate, the techniques involve methods to change articulation placement using standard articulation therapy principles. Oral-motor exercises, including the use of blowing and sucking, are never indicated to improve velopharyngeal function. The purpose of this article is to provide information regarding when speech therapy is appropriate for individuals with a history of cleft palate or other structural anomalies and when physical management is needed. In addition, some specific therapy techniques are offered for the elimination of common compensatory articulation productions.

Cleft palate

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Namasivayam, A. K., Huynh, A., Granata, F., Law, V., & Van Lieshout, P. (2021). PROMPT intervention for children with severe speech motor delay: a randomized control trial. *Pediatric Research*, 89(3), 613-621. <https://doi.org/10.1038/s41390-020-0924-4>

Currently, there is limited information on the intervention efficacy for children with SMD. We report on the findings of a phase III intervention efficacy study on children with SMD using an RCT design. **PROMPT intervention is a clinically effective intervention approach for children with SMD.** Results of the study will be fundamental to the delivery of effective services for this population. These findings may facilitate the development of an evidence-based care pathway for children with severe speech sound disorders.

Motor

107

Baxter, R., & Merkel-Walsh, R. (2025). Cerebral palsy and ankyloglossia: improved sleep, speech, swallowing, and breathing after tongue-tie release: A case series. *Special Care In Dentistry : Official Publication of The American Association of Hospital Dentists, The Academy of Dentistry for the Handicapped, and The American Society for Geriatric Dentistry*, 45(3), e70046. <https://doi.org/10.1111/scd.70046>

Tongue Tie

Undiagnosed oral restrictions may impair mobility and development in children with CP. Addressing these restrictions may improve speech, swallowing, and other critical functions. Proper assessment of oral restrictions in children with CP or other comorbidities is essential to optimize therapeutic outcomes and enhance quality of life. This case series highlights the importance of considering oral restrictions in children with special healthcare needs and the ongoing need for further research.



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Lathrop-Marshall, H., Keyser, M. M. B., Jhingree, S., Giduz, N., Bocklage, C., Couldwell, S., Edwards, H., Glesener, T., Moss, K., Frazier-bowers, S., Phillips, C., Turvey, T., Blakey, G., White, R., Mielke, J., Zajac, D., & Jacox, L. A. (2022). Orthognathic speech pathology: impacts of class III malocclusion on speech. *European Journal of Orthodontics*, 44(3), 340-351. <https://doi.org/10.1093/ejo/cjab067>

- **Results:** A majority of Class III subjects exhibit speech distortions. A significant increase in the centroid frequency (M1) and spectral spread (M2) was seen in several consonants of Class III subjects compared to controls. Using regression analysis, correlations between Class III skeletal severity (assessed by cephalometric measures) and spectral distortion were found for /t/ and /k/ phones.
- **Conclusions:** Class III DFD patients have a higher prevalence of articulation errors and significant spectral distortions in consonants relative to controls. This is the first demonstration that severity of malocclusion is quantitatively correlated with the degree of speech distortion for consonants, suggesting causation. These findings offer insight into the complex relationship between craniofacial structures and speech distortions.

Malocclusion

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**MARSHALLA**  
SPEECH & LANGUAGE

**THE ORAL MOTOR INSTITUTE**  
FOR THE SCIENCE  
OF  
ORAL MOTOR  
TREATMENT

**PART 5:**  
THE RULES OF  
SPEECH  
INTELLIGIBILITY

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THE RULES OF INTELLIGIBILITY FROM THE ELOCUTIONIST ERA SET THE STAGE FOR SLPS



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RULES OF SPEECH INTELLIGIBILITY- GENERAL

- Speak up, speak out and speak clearly
- Rate should not be rushed
- Speech should be purposeful
- Speech should not contain omissions (elision)
- A speaker should watch the listener for interest



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## RULES OF SPEECH INTELLIGIBILITY- BREATH, VOICE & RESONANCE

- Breath support was first and foremost
- Diaphragmatic breathing was taught
- Oral and nasal resonance was balanced
- Volume was strong and vigorous
- Breathiness was frowned upon



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## BREATH, VOICE & RESONANCE-MODERN

- Power-source-filter theories
- Resonance tools such as kazoo and spirometer
- Vocology principles
- SOVTs
- OMT and patent nasal airway



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## RULES OF SPEECH INTELLIGIBILITY-PROSODY

- Suprasegmentals were stressed
- Tone with prosodic patterns
- Emotions were imperative
- Pitch was varied to reflect emotions
- A proper accent was stressed on specific syllables



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## PROSODY- MODERN TIMES



- Voice coaching
- Vocology
- Accent acquisition
- Accent reduction
- Theater
- Dialects more acceptable
- Social skills
- Vocal hygiene

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## RULES OF SPEECH INTELLIGIBILITY-PHONOLOGY

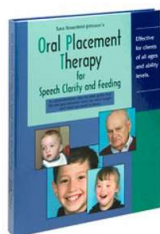
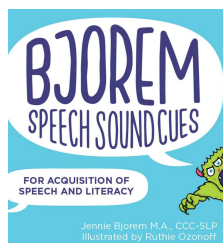
- Articulation was distinct and deliberate
- All sounds were produced from initial to final sounds
- Exact enunciation was achieved by exaggerated, precise movements
- Consonants were to be clear, crisp, concise and correct
- Vowels should be oral



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## PHONEMES & PHONOLOGY MODERN TIMES

- Traditional methods
- Oral Placement Therapy
- Motor Speech (DTTC, PROMPT)
- Bjorem
- Systematic programs (Kaufman K-SLP®, Moving Across Syllables, OPT-S)
- Play based sound development (Cari Ebert)

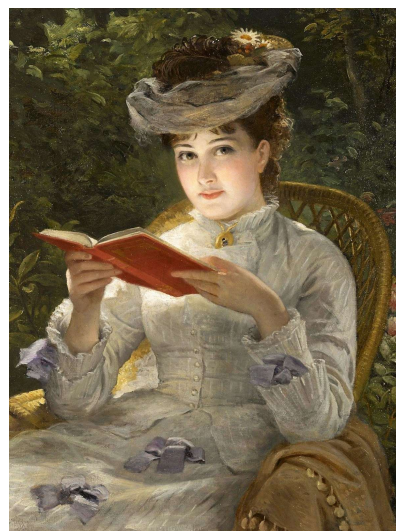


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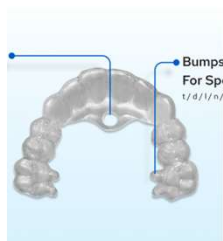
## RULES OF SPEECH INTELLIGIBILITY-ORAL CONTROL

- Upper and lower teeth were slightly apart
- The jaw was to remain stable
- Lips retracted
- Tongue remained intraorally
- The lips moved slightly but the tongue moved with vigor
- Vowels were articulated near the lips



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## ORAL CONTROL-MODERN TIMES



- Speech Buddies
- TalkTools®
- Myofunctional supplies (Myo-bands, Spot Pal)
- Precise phonetic placements
- Visual perception of articulation not just acoustic (Moore Motor Speech)
- Remediation before compensation (Merkel-Walsh)

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MORE FROM CHAPTER 2

Body position	Head orientation	Eyes	Mouth
Lips	Nostrils	Eyebrows	Arms
Hands	Fingers	Legs and Feet	

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## BODY POSITION

- Body is erect to express courage, steadiness and resolution
- The body is held stiff to denote pride, haughtiness and dignity
- The body stoops forward to indicate condescension, compassion or humility
- The body bends forward for respect, reverence or salutation
- The body is prostrated (down on the ground) to denote moral degradation, utmost humility or self-loathing

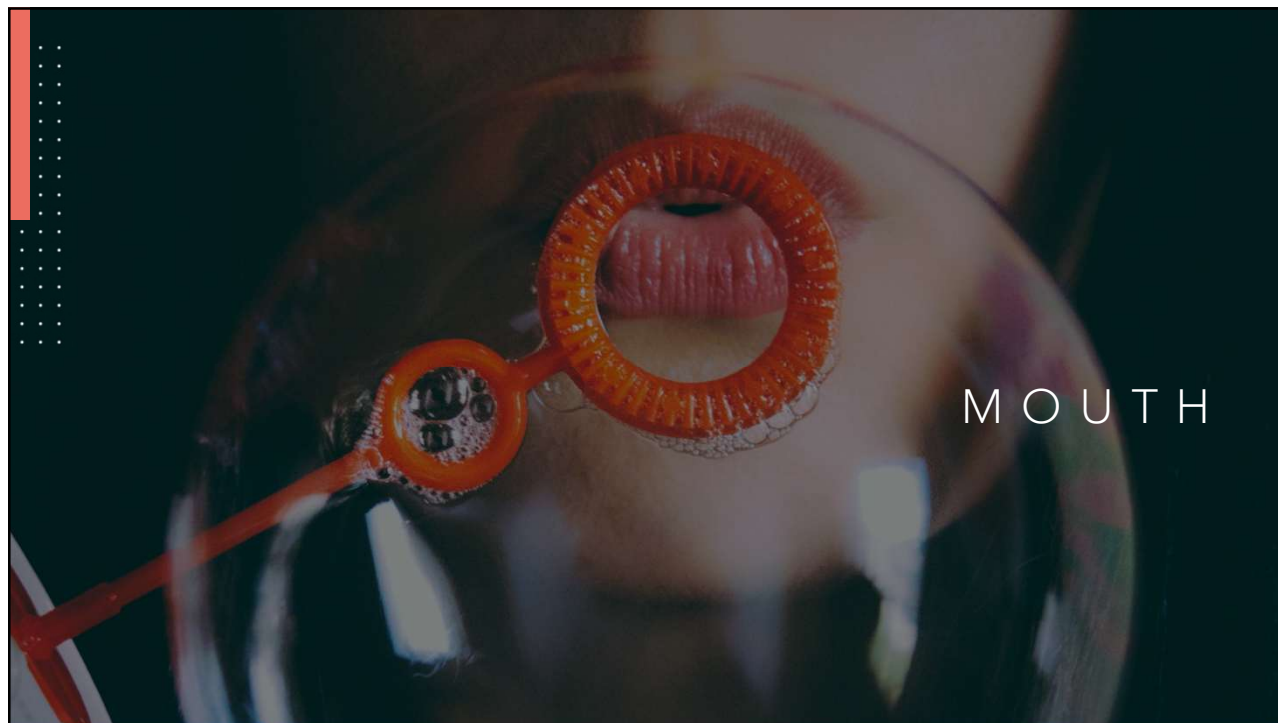
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erect	courage	Crouched	Fear
Thrown back	Prode, conceit	Hangs forward	Humility
Protruded	Curiosity	One side	Laziness, lethargy
Rolls	Anger	Averted	Dislike
Shakes	Denial/disbelief	Jerked back	Invitation
Nods forward	Assent	Tosses back	Dissent
Sits to one side	Boasting/threatening	Inclines	bashfulness

## HEAD ORIENTATION

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Mouth	Lips
<ul style="list-style-type: none"> <li>• Open in fear, wonder, listening or desire</li> <li>• Shut in apathy, pride, boldness and sullenness</li> <li>• Drops in sadness and depression</li> <li>• Teeth gnash in anger</li> <li>• Tongue is protruded in lower intelligence</li> </ul>	<ul style="list-style-type: none"> <li>• Drawn back in delight</li> <li>• Depressed in sadness and pain</li> <li>• Curl up at the corners in contempt</li> <li>• Loose and sprawling in mental emptiness</li> <li>• Muscular and mobile in intellectuality</li> <li>• Firm in decision and energy</li> <li>• Pouted in boasting</li> <li>• Relaxed in weakness</li> <li>• Compressed in agony</li> <li>• Bitten in vexation (annoyed)</li> </ul>

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## OTHER BODY PARTS



Eyebrows	Nostrils	Hands
<ul style="list-style-type: none"> <li>• Lifted in surprise</li> <li>• Depressed in despair</li> <li>• Knitted in sorrow</li> <li>• Droop in weakness</li> </ul>	<ul style="list-style-type: none"> <li>• Relaxed in calmness</li> <li>• Expand in violent passage</li> <li>• Quiver in excitement</li> <li>• Twitch in disgust</li> </ul>	<ul style="list-style-type: none"> <li>• Open in graceful calmness</li> <li>• Raised in supplication</li> <li>• Clenched in anger</li> <li>• Wrung in anguish</li> </ul>



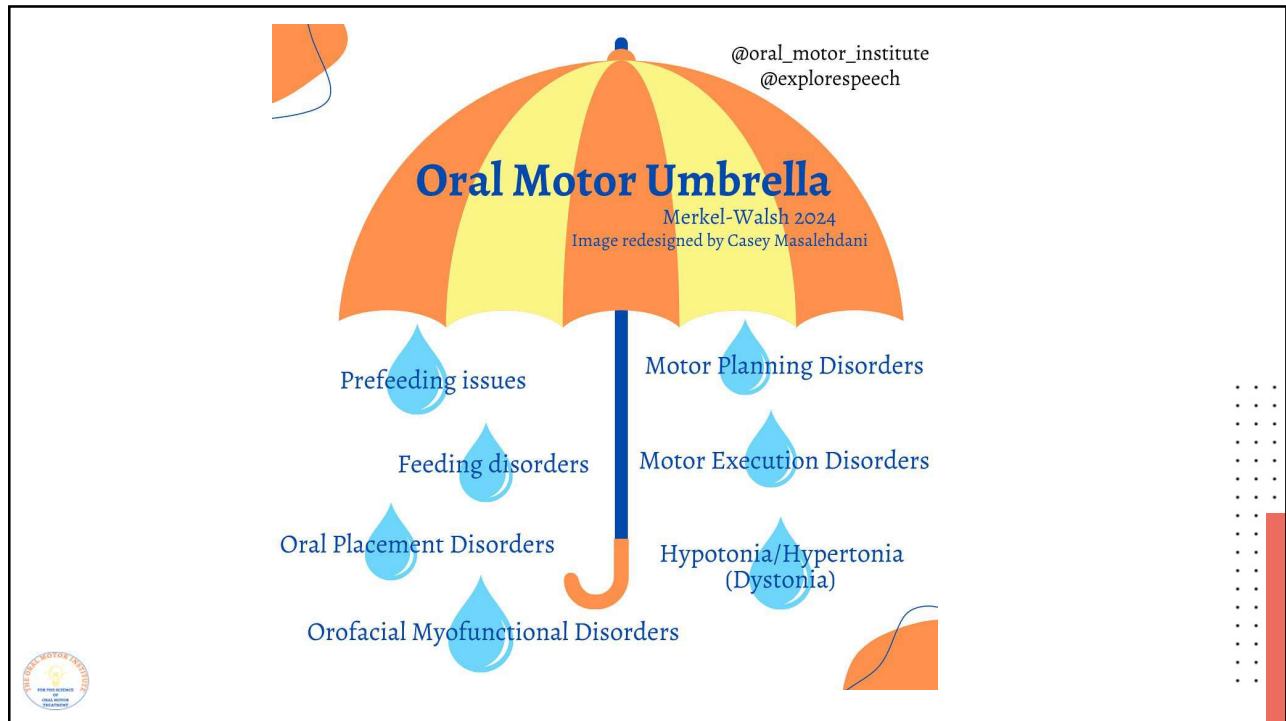
126



**PART 6 :**  
MODERN SPEECH  
PATHOLOGY

**MARSHALLA**  
SPEECH & LANGUAGE

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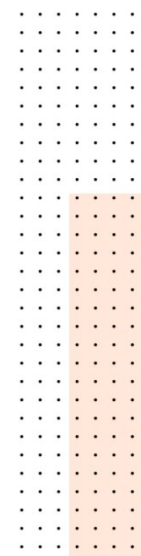


128



Namasivayam, A. K., Coleman, D., O'dwyer, A., & Van Lieshout, P. (2020). Speech sound disorders in children: an articulatory phonology perspective. *Frontiers in Psychology, 10*, 2998. <https://doi.org/10.3389/fpsyg.2019.02998>

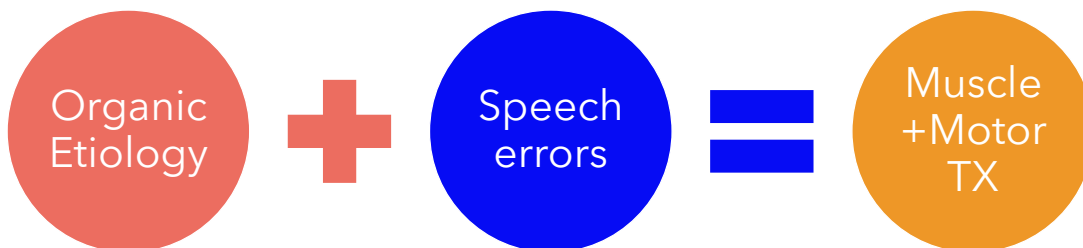
“Speech Sound Disorders (SSDs) is a generic term used to describe a range of difficulties producing speech sounds in children (McLeod and Baker, 2017). The foundations of clinical assessment, classification and intervention for children with SSD have been heavily influenced by psycholinguistic theory and procedures, which largely posit a firm boundary between phonological processes and phonetics/articulation (Shriberg, 2010). Thus, in many current SSD classification systems the complex relationships between the etiology (distal), processing deficits (proximal) and the behavioral levels (speech symptoms) is under-specified (Terband et al., 2019a).”



129

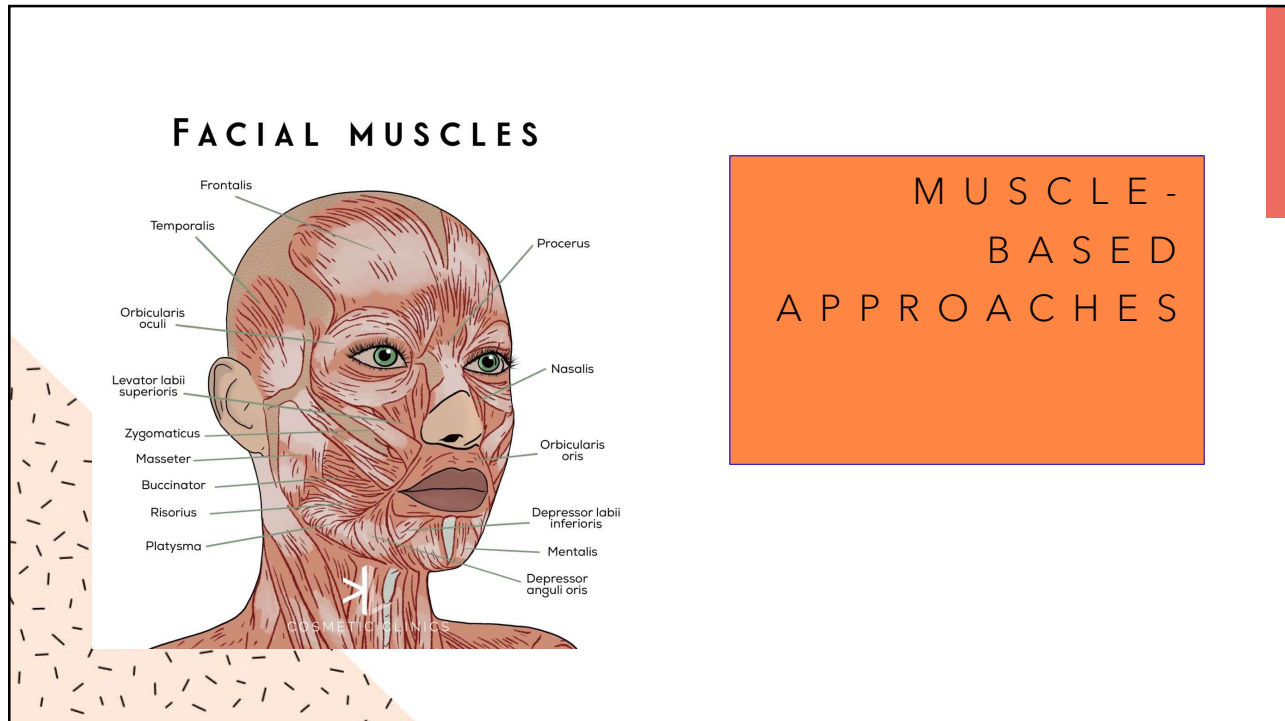
129

NOT FUNCTIONAL!

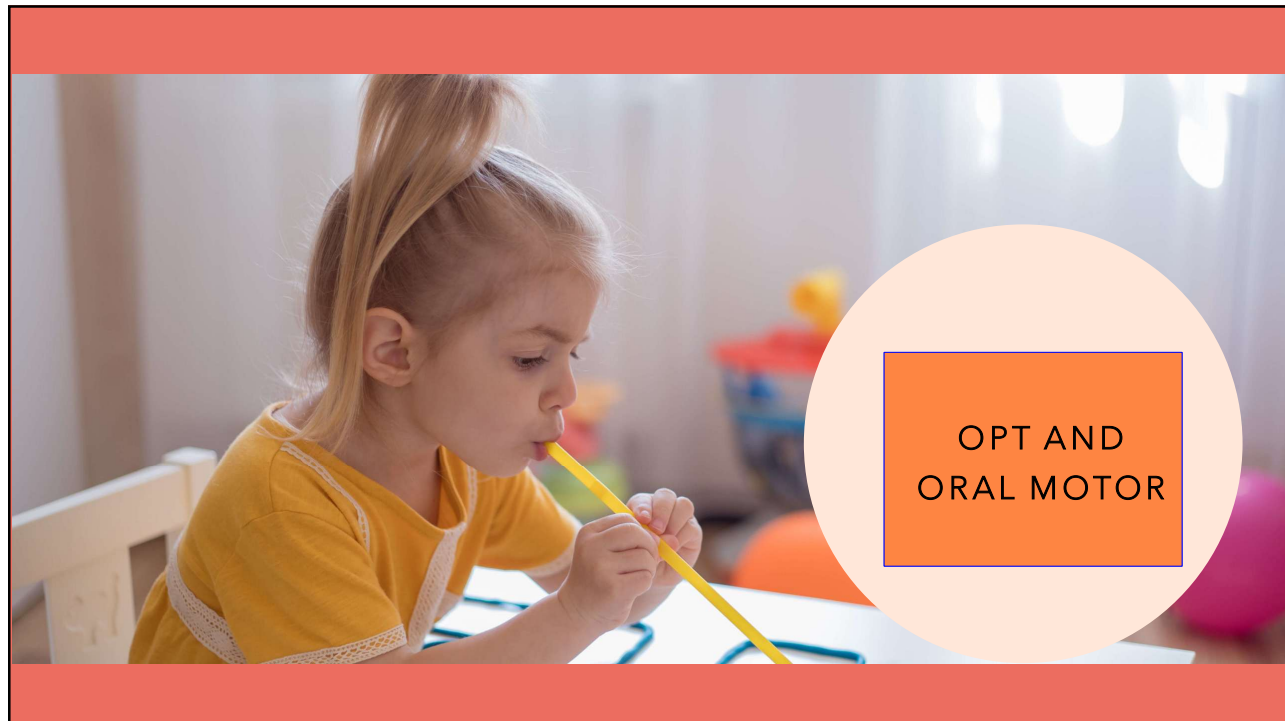


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BECKMAN  
ORAL MOTOR  
SENSORY  
MOTOR  
APPROACH TO  
FEEDING  
(OVERLAND)

- Same muscles different nerves
- Early feeding skills translate to oral placements for speech
- First 3 years of life the underlying oral motor placement skills develop for speech
- Examples: lip closure lip rounding, tongue retraction, tongue tip elevation

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RESPIRATION IS A BASIC MUSCLE FUNCTION OF SPEECH

- Respiration requires muscle effort
- Efficiency depends on muscle control
- Respiration is power/force behind speech
- Respiration provides the energy for speech
- Breathing is work
- Even quiet breathing is muscle work of the diaphragm and external intercostals

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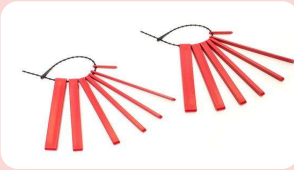




**CONSIDER ALL THE SUBSYSTEMS OF SPEECH**

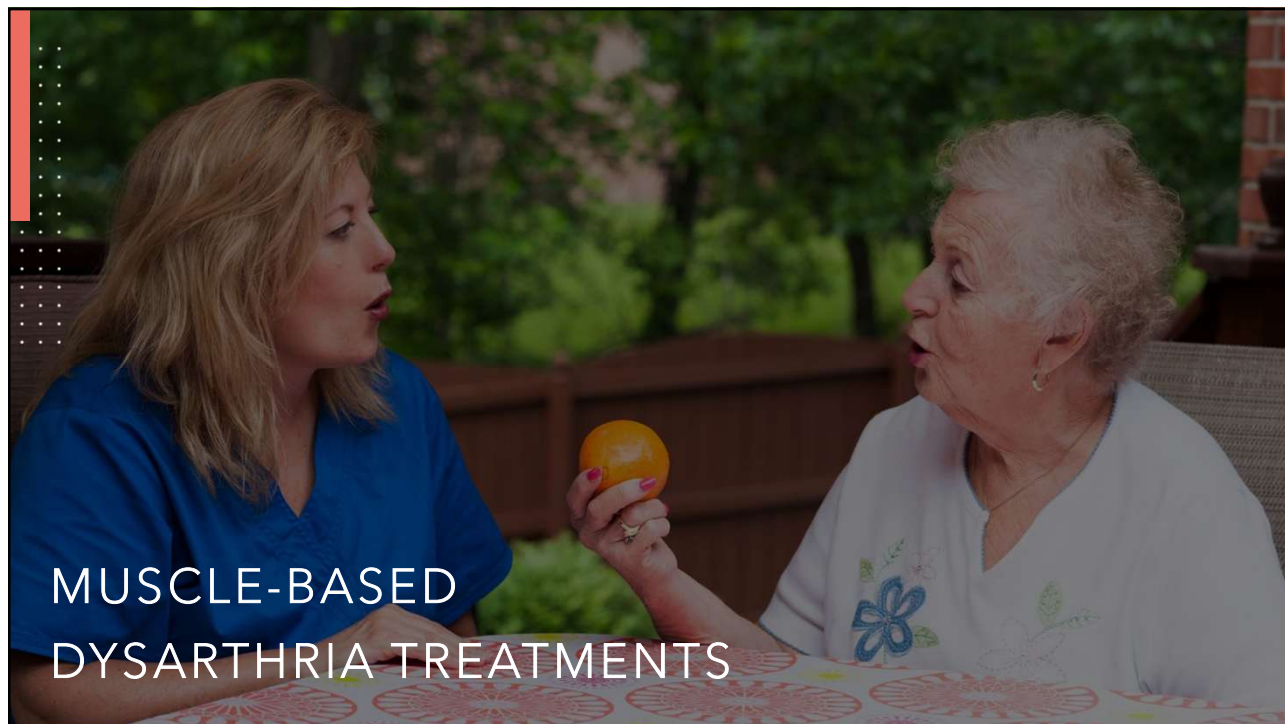
lungs	larynx	pharynx	jaw
cheeks	lips	tongue	nasal cavity/sinus

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**MUSCLE-BASED APPROACHES-OPT  
ROSENFELD-JOHNSON**

		
<p>Jaw- stability and grading: Jaw Closure Tubes, Bite Blocks, Bite Tubes, Jaw Exerciser</p>	<p>Lips- closure and rounding: Horns, straws, lip press, bubbles</p>	<p>Tongue-retraction and elevation: Sensi®, Lateral/Elevation tools, horns, bubbles</p>

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## DYSARTHRIA ASHA PRACTICE PORTAL (ADULTS)

- **Dysarthria** refers to a group of neurogenic speech disorders characterized by “abnormalities in the strength, speed, range, steadiness, tone, or accuracy of movements required for breathing, phonatory, resonatory, articulatory, or prosodic aspects of speech production” (Duffy, 2020, p. 3).
- These changes are due to one or more sensorimotor problems, including weakness or paralysis; incoordination; involuntary movements; or excessive, reduced, or variable muscle tone (Duffy, 2020). Dysarthria can adversely affect intelligibility of speech and/or naturalness of speech. Dysarthria may also co-occur with other neurogenic language, cognitive, and swallowing disorders.

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# CAUSES OF DYSARTHRIA

- Amyotrophic lateral sclerosis (ALS) (Lou Gehrig's disease)
- Brain injury
- Brain tumors
- Cerebral palsy
- Guillain-Barre syndrome
- Huntington's disease
- Lyme disease
- Medications
- Multiple sclerosis
- Muscular dystrophy
- Myasthenia gravis
- Parkinson's disease
- Stroke
- Wilson's disease



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# TYPES OF DYSARTHRIA

(MULTIPLE SOURCES TO FOLLOW)

- Spastic- upper motor neuron, bilateral (stroke, infection, TBI)
- Hypokinetic - Parkinson's type (pausing voluntary movements)
- Hyperkinetic- basal ganglia (involuntary movements)
- Ataxic- cerebellar
- Dyskinetic - central or peripheral nervous system
- Dystonic- involuntary movements (Wilson's Disease)
- Flaccid- associated with bilateral disorders of the upper motor neuron system
- Mixed



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## SIGNS AND SYMPTOMS DYSARTHRIAS

Muscle wasting

Abnormal muscle tone at rest

Fasciculations

Tremor

Weakness

Involuntary movements

Abnormal reflexes



[https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589943481&section=Signs\\_and\\_Symptoms](https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589943481&section=Signs_and_Symptoms)

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## SPEECH CHARACTERISTICS

Respiration	Phonation (Laryngeal)	Articulation	Resonance (Velopharyngeal)	Prosody
Short phrases Reduced loudness Monoloudness Excessive loudness variation Loudness decay Forced expiration/inspiration	Pitch level (too low/too high) Monopitch Pitch breaks Aberrant voice quality (roughness, breathiness, strain; or harsh, hoarse, strain) Diplophonia Vocal flutter Voice tremor Voice stoppages Audible inhalation/inhalatory stridor	Imprecise consonants Distorted vowels Irregular articulatory breakdown Articulatory blurring	Hypernasality Denasality or hyponasality (oral resonance on nasal consonants) Audible nasal emission/nasal snort	Aberrant rate (too fast/too slow/accelerating/variable) Short rushes of speech Reduced stress Excessive and equal stress Prolonged intervals Inappropriate silences



[https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589943481&section=Signs\\_and\\_Symptoms](https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589943481&section=Signs_and_Symptoms)

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# DYSARTHRIA -ADULTS

Respiration: (the individual blows into a pressure threshold device with enough effort to overcome a preset threshold)

Phonation: Lee Silverman Voice Treatment

Articulation: Phonetic placement techniques (note OPT!)

Resonance: Prosthetic management or resistance training during speech

Prosody: Improving intonation by signaling stress with loudness, pitch, or duration

American Speech-Language-Hearing Association. (n.d.). *Dysarthria in Adults*. Retrieved 7/18/23, from [https://www.asha.org/](#)

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## EXAMPLES

Respiration	
Increase resistance	Horn Hierarchy, balloon
↓	
Articulation	
Phonetic placement	Vibrating Tool
↓	
Resonance	
Prosthetics/resistance	Nose clips & nose flute

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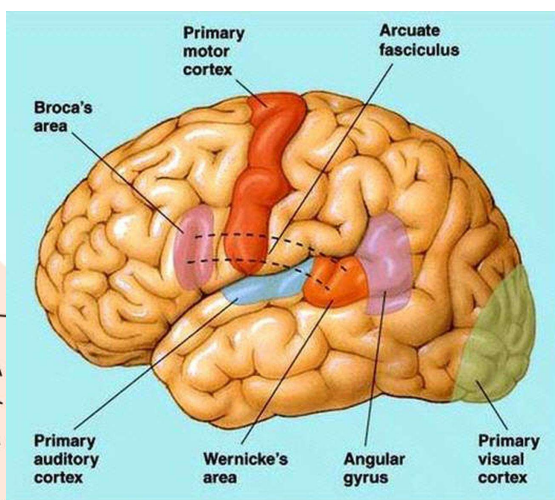
Potter, N., Nievergelt, Y., & Vandam, M. (2019). Tongue strength in children with and without speech sound disorders. *AJSLP*, 28 (2):612-622.

**Results /Conclusion**

- For all groups, tongue strength increased rapidly from 3 to 6.5 years of age and then continued to increase with age at a slower rate until 17 years of age. Children with SD's tongue strength did not differ from their typically developing (TD) peers. Children and adolescents with MSDs had decreased tongue strength compared to children with typical development or SD. Tongue strength was not related to severity of speech sound disorders in SD or MSD.
- Weak tongue strength does not appear to contribute to speech errors in children with speech sound delays but does appear to be related to speech sound disorders that are neurologic in origin (developmental MSD).

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MOTOR -  
BASED  
APPROACHES

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## APRAXIA KIDS DEFINITION



Childhood Apraxia of Speech (CAS) is a motor speech disorder that first becomes apparent as a young child is learning speech. For reasons not yet fully understood, children with apraxia of speech have great difficulty planning and producing the precise, highly refined and specific series of movements of the tongue, lips, jaw and palate that are necessary for intelligible speech.

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## SYMPTOMS

(See Luzzini-Seigel (2017) and Strand (2017) for summaries of CAS characteristics that help discriminate CAS from other speech sound disorders and that represent expert consensus.)

<https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935338&section=Overview>

---

Inconsistent errors on consonants and vowels in repeated productions of syllables or words.

---

Lengthened and disrupted coarticulatory transitions between sounds and syllables.

---

Inappropriate prosody, especially in the realization of lexical or phrasal stress.

---

articulatory groping—articulatory searching prior to phonating;

---

consonant distortions;

---

difficulty with smooth, accurate movement transitions from one sound to the next;

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SYMPTOMS CONT.

articulatory groping—articulatory searching prior to phonating;

---

consonant distortions;

---

difficulty with smooth, accurate movement transitions from one sound to the next;

---

increasing difficulty with longer or more complex syllable and word shapes;

---

schwa additions/insertions—insertion of schwa between consonants or at the end of words;

---

slower than typical rate of speech

---

syllable segregation—pauses between sounds, syllables, or words that affect smooth transitions;

---

voicing errors—voiceless sounds produced as their voiced cognates; and

---

vowel errors—vowel distortions or substitutions.

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## "MODERN" CONCEPT

- Speech Motor Delay (SMD) is a recently proposed childhood motor speech disorder characterized by imprecise and unstable speech, prosody, and voice that does not meet criteria for either Childhood Dysarthria or Childhood Apraxia of Speech.
- Phenotype findings indicated that SMD is characterized by across-the-board delays in the spatiotemporal precision and stability of speech, prosody, and voice production. Persistence findings indicated that although most participants normalized early SMD by 6 years of age, SMD persisted until at least late adolescence in 21.4% of participants. Findings are interpreted to support the construct validity of SMD and the potential for research using additional assessment modalities to explicate its genomic and neuromotor causal pathways.

Shriberg, L. D., Campbell, T. F., Mabie, H. L., & McGlothlin, J. H. (2019). Initial studies of the phenotype and persistence of speech motor delay (SMD). *Clinical linguistics & phonetics*, 33(8), 737–756.  
<https://doi.org/10.1080/02699206.2019.1595733>

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## TREATMENT-ASHA

- **Motor programming approaches**—use motor learning principles, including the need for many repetitions of speech movements to help the child acquire skills to accurately, consistently, and automatically make sounds and sequences of sounds.
- **Linguistic approaches**—focus on CAS as a language learning disorder; these approaches teach children how to make speech sounds and the rules for when speech sounds and sound sequences are used in a language.
- **Combination approaches**—use both motor programming and linguistic approaches.
- **Rhythmic (prosodic) approaches**, such as melodic intonation therapy (MIT; Albert, Sparks, & Helm, 1973; Helfrich-Miller, 1984, 1994)—use intonation patterns (melody, rhythm, and stress) to improve functional speech production.



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## TREATMENT APPROACHES

DTTC

Kaufman

PROMPT

ReST

NDP3

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## ASHA, CAS

Dynamic Temporal and Tactile Cueing (DTTC) is an integral stimulation ("look, listen, do what I do") method that uses a **cueing hierarchy (auditory, visual, and tactile)** and systematically decreases supports as the child achieves success at each level of the cueing hierarchy (Strand & Debertine, 2000; Strand et al., 2006). Movement gestures are shaped, beginning with **direct imitation**, moving to simultaneous production with tactile or gestural cues if direct imitation was unsuccessful, and then fading the simultaneous cue and again moving to direct imitation. The key element of this approach is that the clinician is constantly adding or fading auditory, visual, and tactile cues as needed after each practice trial. It is suggested for very young children with severe CAS.



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## ASHA, CAS

Nuffield Dyspraxia Program( NDP3®) is a motor skills learning approach that emphasizes motor programming skills and focuses on speech output. It is described as a "**bottom-up**" approach in which the aim is to "**build**" accurate speech from core units of single speech sounds (phonemes) and simple syllables. New motor programs are established using cues and feedback and through frequent practice and repetitive sequencing exercises. Phonological skills are incorporated into the treatment approach through the use of minimal word pairs (Williams & Stephens, 2010).





## ASHA, CAS

**Rapid Syllable Transitions (ReST)** is a method that involves **repetition of varied sequences of real or nonsense syllables to train motor planning flexibility** (Velleman, 2003; Velleman & Strand, 1994). It uses intensive practice in producing multisyllabic, phonotactically permissible pseudo-words to improve accuracy of speech sound production, rapid and fluent transitioning from one sound or syllable to the next, and control of syllable stress within words. **Pseudo-words are used** to allow the development and practice of new speech patterns without interference from existing error speech patterns (McCabe et al., 2014; McCabe, Murray, Thomas, & Evans, 2017; Murray, McCabe, & Ballard, 2015; Thomas, McCabe, & Ballard, 2014; Thomas, McCabe, Ballard, & Lincoln, 2016).



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### WHAT ABOUT NONVERBAL CHILDREN?

**Renee Roy-Hill, TSHA 2019**

- DTTC- what is there are not enough speech sounds or syllables to imitate?
- ReST-What if child cannot sustain sitting for the scripted time?
- ReST- What if they do not have consistent vowels and consonants required ?
- NDP3®- What if the child cannot respond to visual and auditory cues?

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**PROMPT RESEARCH WITH CAS (CHILDHOOD APRAXIA OF SPEECH)**

Dale, P., & Hayden, D. (2013). Treating speech subsystems in CAS with tactual input: The PROMPT approach. *American Journal of Speech Language Pathology*, 4, 644-661.

Kadis, D. S., Goshulak, D., Namasivayam, A., Pukonen, M., Kroll, R., De Nil, L. F. & Lerch, J. P. (2014). Cortical thickness in children receiving intensive therapy for idiopathic apraxia of speech. *Brain Topography*, 27(2), 240-247.

Namasivayam, A. K., Huynh, A., Granata, F., Law, V., & van Lieshout, P. (2021). PROMPT intervention for children with severe speech motor delay: a randomized control trial. *Pediatric Research*, 89(3), 613-621. <https://doi.org/10.1038/s41390-020-0924-4>

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**POSITIVE CLINICAL DATA**

- Kaufman Cards- KSLP 1 & 2
- Carrie Ebert "Silly Sounds"
- Renee Roy-Hill Apraxia Kit



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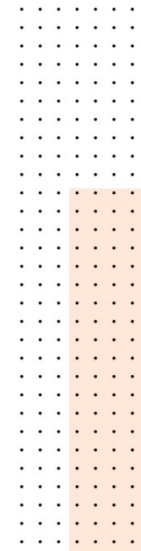
158



## CLINICAL EBP-RENEE ROY-HILL, (2019) TSHA

**Kaufman KSLP ?** Treating Childhood Apraxia of Speech With the Kaufman Speech to Language Protocol: A Phase I Pilot Study. Gomez, McCabe, Jakielski, & Purcell(2018)

**Roy-Hill Apraxia Kit ?** "Research-Based Treatment Approaches for Childhood Apraxia of Speech". (Caruso & Ellesseff- 2019) New Jersey Speech Language and Hearing Association Stated regarding the TalkTools® Apraxia Kit: "has no studies to test the efficacy of the program or tools"; yet program is based on OPT which is an extension of Phonetic Placement Therapy (Van Riper, 1954) and the Feedback Model (Mysak, 1971) and based on a common sequence (Young and Hawk 1955)



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## EBP

Namasivayam, A. K., Shin, H., Nisenbaum, R., Pukonen, M., & van Lieshout, P. (2023). Predictors of Functional Communication Outcomes in Children With Idiopathic Motor Speech Disorders. *Journal of Speech, Language, and Hearing Research : JSLHR*, 1-16. Advance online publication. [https://doi.org/10.1044/2023\\_JSLHR-23-00070](https://doi.org/10.1044/2023_JSLHR-23-00070)

"Overall, 65% of participants demonstrated minimal clinically important difference changes in the functional communication outcomes. Kaufman Speech Praxis Test rating scale was significantly associated with higher odds of noticeable change in functional communication outcomes in children. There is some evidence that delivering the intervention for 2 times per week for 10 weeks provides benefit."

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Namasivayam, A. K., Cheung, K., Atputhajeyam, B., Petrosov, J., Branham, M., Grover, V., & Van lieshout, P. (2024). Effectiveness of the Kaufman speech to language protocol for children with childhood apraxia of speech and comorbidities when delivered in a dyadic and group format. *American Journal of Speech-Language Pathology*, 33(6), 2904-2920. [https://doi.org/10.1044/2024\\_ajslp-24-00098](https://doi.org/10.1044/2024_ajslp-24-00098)

"The study provides preliminary support for the effectiveness of the K-SLP program when delivered in dyads to children with CAS with comorbidities. The study replicates earlier findings and reaffirms the positive outcomes of K-SLP for children with CAS."



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## ACQUIRED APRAXIA OF SPEECH-ASHA (AOS)

- **Apraxia of speech (AOS)** is a "neurologic speech disorder that reflects an impaired capacity to plan or program sensorimotor commands necessary for directing movements that result in phonetically and prosodically normal speech" (Duffy, 2013, p. 4). AOS has also been referred to in the clinical literature as **verbal apraxia** or **dyspraxia**. For the purpose of this page, AOS will refer to acquired apraxia of speech.
- AOS frequently co-occurs with dysarthria and/or aphasia and sometimes with limb apraxia, oral apraxia, apraxia of gait, and apraxia of swallowing. AOS does not involve muscle weakness, paralysis, spasticity, or involuntary movements typically associated with dysarthria, or language comprehension or production deficits that characterize aphasia.



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## ACQUIRED APRAXIA OF SPEECH-ASHA

The salient features of AOS that have gained broad consensus for differential diagnosis (Ballard, Tourville, & Robin, 2014; Duffy, 2013; McNeil et al., 2009) include

- reduced overall speech rate;
- phoneme distortions and distorted substitutions, additions, or complications;
- syllable segregation with extended intra- and inter-segmental durations; and
- equal stress across adjacent syllables.

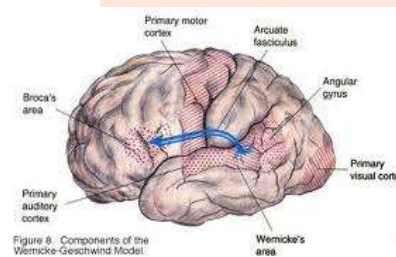


Figure 8 Components of the Wernicke-Geschwind Model.

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## SPEECH CHARACTERISTICS OF AOS

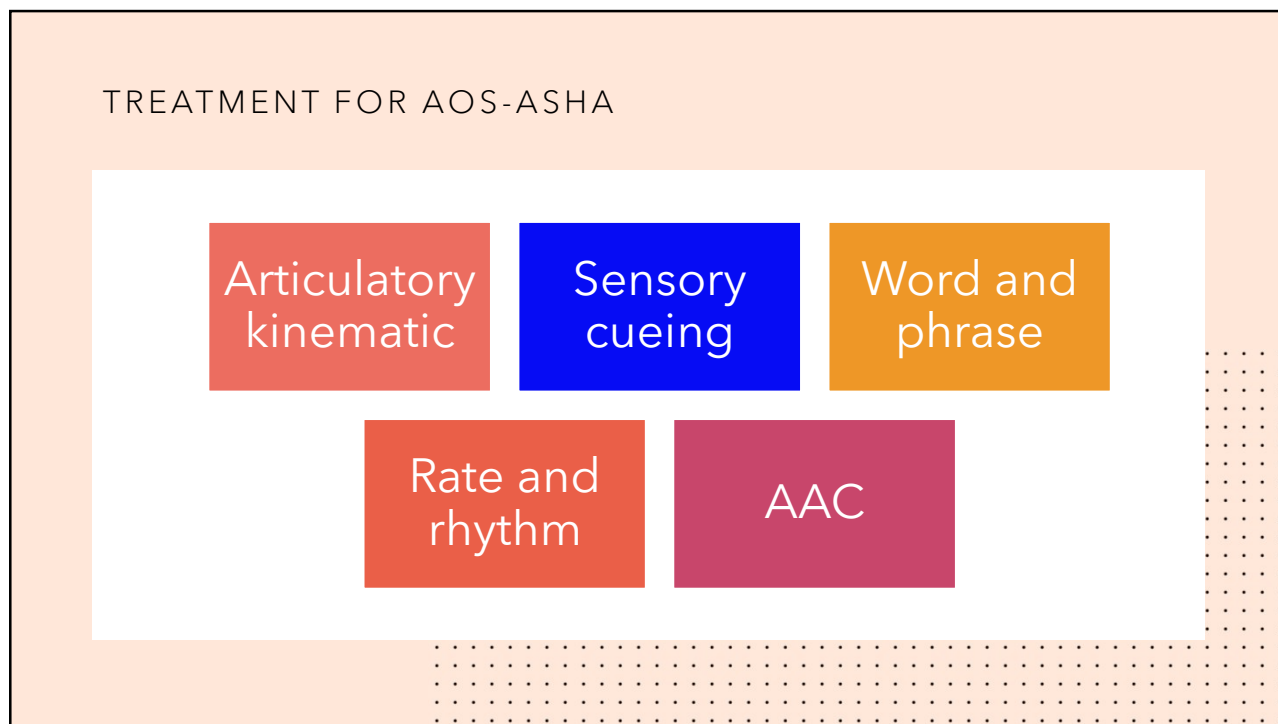
Articulation	Rate and Prosody	Fluency
<ul style="list-style-type: none"> <li>• Consonant errors greater than vowel errors</li> <li>• Voicing errors (blurred distinctions between boundaries of voiced-voiceless consonants)</li> <li>• Prolonged phonemes</li> <li>• Telescoping of syllables (e.g., "disaur" instead of "dinosaur")</li> </ul>	<ul style="list-style-type: none"> <li>• Slow overall rate, regardless of accuracy of productions</li> <li>• Alternative motion rates (AMRs) that may be characterized by place or manner errors</li> <li>• Poorly sequenced sequential motor rates (SMRs)</li> </ul>	<ul style="list-style-type: none"> <li>• Disrupted fluency with attempts at self-correction</li> <li>• Difficulty initiating articulatory sequences—may be accompanied by audible or silent groping behaviors marking false starts and restarts</li> <li>• Sound and syllable repetitions</li> </ul>



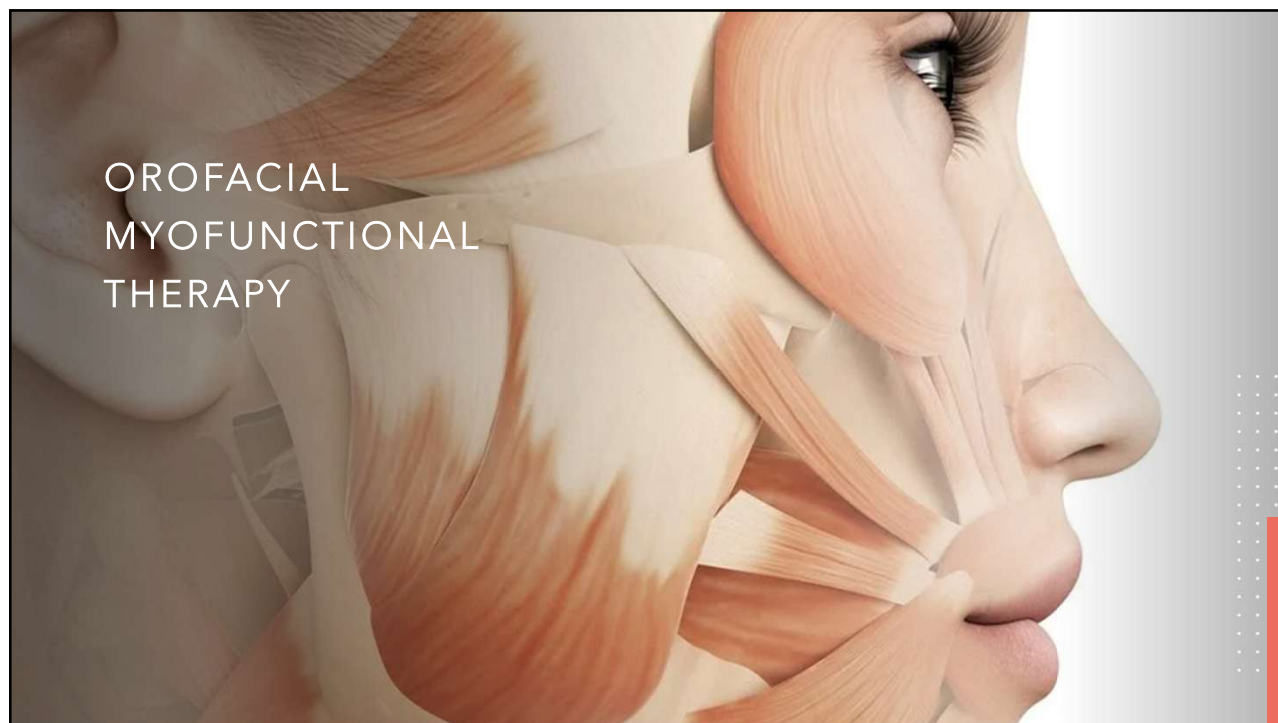
[https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589942115&section=Signs\\_and\\_Symptoms](https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589942115&section=Signs_and_Symptoms)

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## OROFACIAL MYOFUNCTIONAL DISORDERS (MERKEL-WALSH, 2020)

According to the definition by the International Association of Orofacial Myology (IAOM), an OMD includes one or more of the following: *abnormal labial-lingual rest posture, bruxism (teeth grinding), poor nasal breathing, tongue protrusion while swallowing, poor mastication and bolus management, atypical oral placement for speech, lip incompetency and/or digit habits and sucking habits (such as nail biting)*. These conditions can co-occur with speech misarticulations. In these instances, the articulation disorder is not developmental or phonological in nature, but rather a result of poor oral placement and inappropriate muscle development. OMD may reflect the interplay of functional behaviors, physical/structural variables, genetic, and environmental factors. (Billings et al., 2018, p. 1; Doshi & Bhad-Patil, 2011; Hanson & Mason, 2003).

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[D'Onofrio \(2019\)](#) went on to define that an OMD includes "dysfunction of the lips, jaw, tongue, and/or oropharynx that interferes with normal growth, development, or function of other oral structures, the consequence of a sequence of events or lack of intervention at critical periods that result in malocclusion and suboptimal facial development" (p. 1).

Both definitions point to the fact that 1) OMDs occur across the lifespan; 2) OMDs are the nexus of function and structure; 3) the diagnosis considers the interaction of how atypical movement patterns result in structural changes; 4) and how structural anomalies impact functional skills.

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CITATION

Merkel-Walsh R. Orofacial myofunctional therapy with children ages 0-4 and individuals with special needs. *International Journal of Orofacial Myology and Myofunctional Therapy*. 2020; 46(1):22-36.  
<https://doi.org/10.52010/ijom.2020.46.1.3>

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DIFFERENTIATION FROM DYSARTHRIA

---

OMDs are the nexus of form and function

---

OMDs are treated by multiple professionals due to the impact on airway, feeding/swallowing, structure and speech

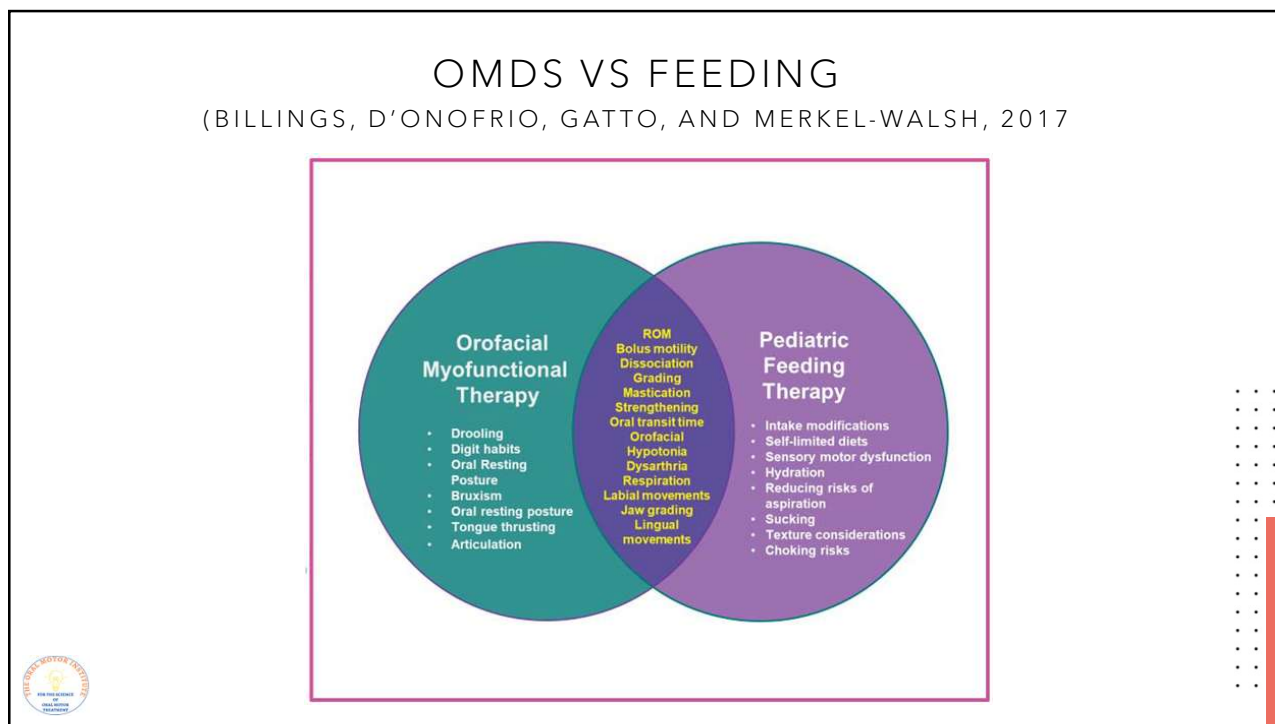
---

A person with an OMD may have normal tone and an intact neurological system

---

OMDs can occur from birth without neurological infarction

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- ### OROFACIAL MYOFUNCTIONAL DISORDERS
- Atypical Facial Angles
  - Dental Malocclusion
  - Tethered Oral Tissues
  - Noxious Oral Habits
  - Tongue Thrusting
  - Muscle Imbalance
  - Poor Oral Resting Posture
  - Airway Issues
  - Sleep Disordered Breathing/Apnea/Upper Airway Resistance
- Merkel-Walsh 2023

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## SPEECH SOUND ERRORS OF STRUCTURE

<b>Bilabials</b>	Buccal or Labial TOTs, upper lip insufficiency, overjet, open bite, cleft lip
<b>Velars</b>	Lingual Tots, cleft palate
<b>Lingual Alveolars</b>	Lingual TOTs, tongue thrust , dental malocclusion, high vaulted palate, oral resting posture issues, noxious habits, cleft palate
<b>Palatals</b>	Buccal/Labial/Lingual TOTs, tongue thrusting, dental malocclusion, high vaulted palate, cleft lip, cleft palate
<b>Dentals</b>	Labial TOTs, cleft lip
<b>Lingual Dentals</b>	Lingual Tots, anterior dental issues such as open bite

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## OROFACIAL MYOFUNCTIONAL THERAPY (OMT)

- Establish Patent Nasal Airway
- Resistance Exercises
- Eliminate Non-nutritive sucking
- Modify handling of a bolus
- Improve Oral Rest Posture
- Improve Articulatory Placements



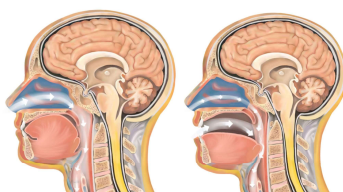
American Speech-Language-Hearing Association. (n.d.). *Orofacial Myofunctional Disorders*. (Practice Portal). Retrieved January 31, 2025, from [www.asha.org/Practice-Portal/Clinical-Topics/Orofacial-Myofunctional-Disorders/](http://www.asha.org/Practice-Portal/Clinical-Topics/Orofacial-Myofunctional-Disorders/).

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## ESTABLISHING A PATENT NASAL AIRWAY



### SLPs can:

- Practice oral vs. nasal breathing
- Use tools such as horns and bubbles to differentiate oral vs. nasal airflow.
- Use tools like a spirometer, seascape and a nasometer to compare oral vs. nasal.
- Encourage proper nasal hygiene before bed and throughout the day.
- Use kinesio taping method when trained properly.
- Use a mirror to create "node clouds".
- Teach a nose flute.
- Use a breather device.
- Volitionally help patients/students practice nasal breathing while playing games, coloring, reading, using a tablet and watching TV.

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## Resistance Exercises

ASHA describes as: *Exercises to improve tongue, lip, and jaw differentiation include oral tactile stimulation and tongue movements without assistance from the jaw, such as tongue tip to alveolar ridge or tongue clicks against the palate (Meyer, 2000). Isotonic and isometric exercises target the lips and tongue, in order to teach closed mouth resting posture and nasal breathing. (OMD Practice Portal, retrieved 1/18/20)*

Merkel-Walsh, 2023 176

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### EXAMPLES OF RESISTANCE

Pushing	tongue laterally against a tongue depressor
Holding	a weighted tongue depressor between the lips
Using	horns with increasing resistance
Using	lips to hold a button with an isometric pull

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## ELIMINATING NOXIOUS HABITS

**Diane Bahr** *Nobody Taught Me (or My Mother) THAT!*

"With regard to pacifier use, there was a study of almost 500 children in the year 2000 that demonstrated a connection between long-term pacifier use and middle ear problems. So, in my book I recommend guidelines for pacifier use based on this study. In my opinion, pacifier use is most appropriate for calming babies from birth to 5 or 6-months of age. A child should also be given the opportunity to self-calm with his or her own hands during this time. A calm child doesn't need a pacifier, thumb-sucking, or finger/digit sucking. When a child overuses a pacifier, it limits the child's opportunities for communication (e.g., the development of facial expression, cooing, babbling, etc.) in addition to other appropriate mouth experiences."

**Lori Overland** *A Sensory-Motor Approach to Feeding (course and book with Merkel-Walsh)*

"Children start to develop a psychological attachment with the pacifier at around 4-6 months of age. By this time teething, mouthing and munch chewing develop so it is time to take away the pacifier or redirect thumb-sucking with safe teething toys."

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**ASHA OMD Portal:** "The American Academy of Pediatric Dentistry (2014) suggested dentists offer parents and caregivers guidance to help their children stop sucking habits by the age of 3 years or younger. "

([https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589943975&section=Treatment#Eliminate\\_Nonnutritive\\_Sucking](https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589943975&section=Treatment#Eliminate_Nonnutritive_Sucking))

**American Academy of Dentistry:** "If a child does not stop on his or her own, parents should discourage the habit after age 4 years. However, excessive pressure to stop can do more harm than good."

([https://www.ada.org/~media/ADA/Publications/Files/patient\\_77.pdf?la=en](https://www.ada.org/~media/ADA/Publications/Files/patient_77.pdf?la=en))

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## MERKEL-WALSH

Chronic non-nutritive sucking habits (NNSH) and/or oral habits are associated with increased chances of having malocclusions (Sadoun et al., 2024; Ling et al., 2018); therefore, early attention to cessation of NNSH is essential to mitigate their long-term impact. While the American Dental Association and some researchers recommend habit elimination as late as 3-4 years of age (del Conte Zardetto et al., 2002; de Sousa et al., 2014; Poyak, 2006), more recent discussions suggest that by understanding NNSH, **early intervention is best practice for mitigating structural impact (Maloney & Leith).**

The American Academy of Family Physicians (AAFP) and the American Academy of Pediatrics (AAP) recommend reducing or stopping pacifier use in the second six months of life to reduce the risk of otitis media (middle ear infections) (Sexton & Natale, 2009). Early oral motor specialists also discuss risk factors of early OMDs. when pacifiers are used past the first six to twelve months of life (Bahr, 2010; Overland & Merkel Walsh, 2013).

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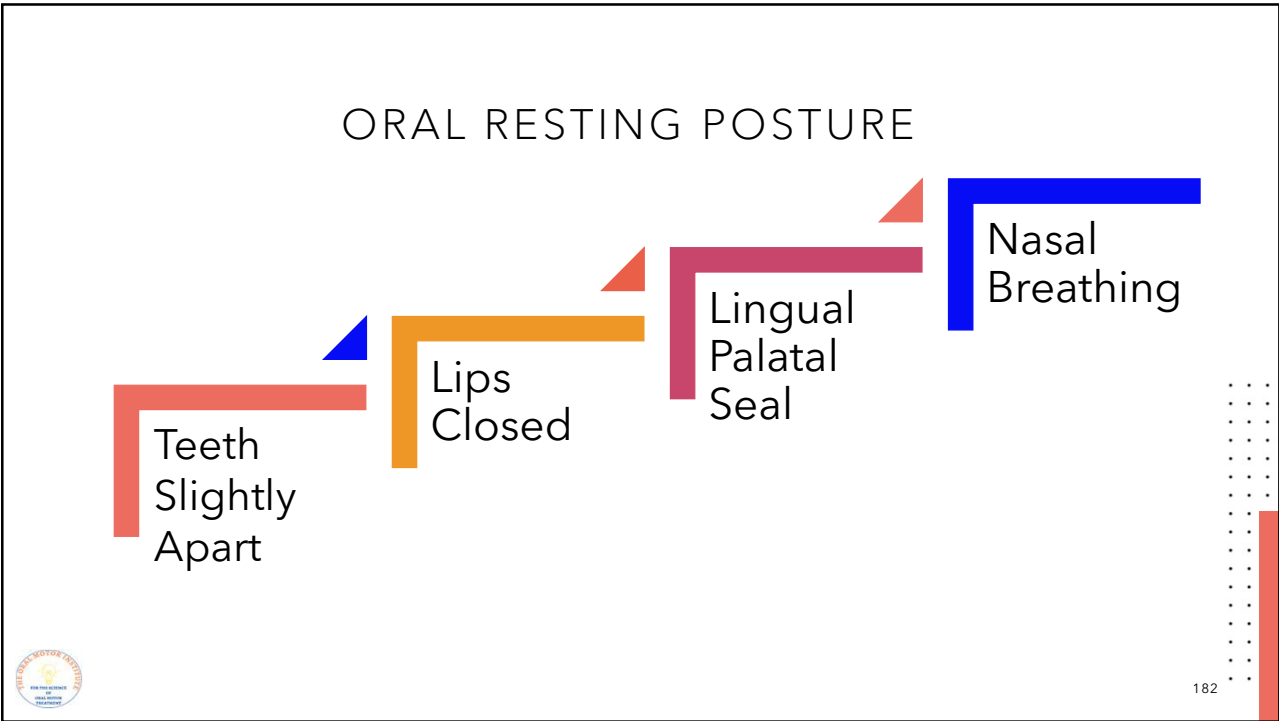
## ASHA PRACTICE PORTAL

An incorrect oral rest posture of the tongue and lips can result in the tongue initiating speech productions from an abnormal rest position. In such situations, correcting the OMD can positively impact the correction of speech production errors.

When an OMD is related to an abnormal lingual or labial or mouth open behavior pattern that coexists with speech production errors, the articulation errors can be expected to be corrected more easily once the behavior pattern has been corrected in therapy.

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## ORAL PHASE OF SWALLOWING-ASHA

People with known OMDs may also demonstrate oral phase dysphagia, which may require intervention. Clients and patients might have feeding difficulties due to TMD, such as pain with chewing certain foods. SLPs work closely with dentists and other health professionals with TMD expertise, on an interprofessional team, to address the client's or patient's needs.

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## FEEDING/SWALLOWING

- During the initiation phase of a client's swallow, watch for the presence of an abnormal forward or interdental protrusion of the tongue tip known as a "tongue thrust". Tongue thrusting is persistence of an infantile swallow pattern past the expected age (6 months) and/or protrusion of the tongue tip past the lower lip. Extraoral tongue protrusion is abnormal, as the tongue remains inside the oral cavity during swallowing even in infancy (Overland & Merkel-Walsh, 2013; Shah et al., 2021).
- Tongue thrusting may be a sign of an OMD or other underlying diagnosis (e.g., airway incompetence or ankyloglossia). Impaired chewing and anterior bolus loss are additional swallowing problems that may be associated with OMDs (Ray, 2006). Merkel-Walsh (2020) added multiple feeding and swallowing deficits which stem from OMDs including but not limited to aerophagia, gagging/vomiting, poor bolus collection and picky eating habits.

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## SPEECH

### ASHA "Improve Speech Sound Articulatory Placement"

OMDs related to an **abnormal lingual or labial pattern**, or a "mouth open" behavior pattern, can coexist with speech sound errors. An incorrect oral resting posture of the tongue and lips can result in the tongue initiating speech productions from an abnormal resting position. In such situations, correcting resting posture or open mouth behavior may positively impact the correction of the speech sound errors. SLPs exercise caution before using OMT as a standalone approach to address speech sound errors and may need to consider combining OMT and articulation interventions to address speech sound errors (Merkel-Walsh et al., 2025).

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Merkel-Walsh, R., Carey, D., Burnside, A., Grime, D., Turkich, D., Tseng, R. J., & Smart, S. (2025). Effectiveness of orofacial myofunctional therapy for speech sound disorders in children: A systematic review. *International Journal of Orofacial Myology and Myofunctional Therapy*, 51(1), 4. <https://doi.org/10.3390/ijom51010004>

"This review found no conclusive evidence supporting the use of OMT as a standalone treatment for the effective remediation of SSDs. This is attributed to significant variability in speech outcomes, small sample sizes, limited comparison groups, diverse participant diagnoses, and inconsistent methodologies and treatment protocols, yielding mixed results. In addition, while the term OMT was used in the papers to designate treatment methodology, an analysis of the exercise descriptions revealed that some reported OMT exercises were non-speech oral motor exercises (NSOMEs) and oral motor therapies. Overall, many of the techniques utilized across studies did not provide speech-like movements in their therapeutic interventions based on their description. Finally, traditional articulation therapy, including speech drills to work on articulation disorders, was not included in many of the included studies. SLPs using OMT as a modality would typically combine this with articulation practice to treat the SSD. This study highlights the need for robust future studies including prospective cohort studies to compare OMT, combined OMT and articulation therapy, and articulation therapy alone to provide clearer guidance for future clinical practice."



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**EBP: /S/ AND MYOFUNCTIONAL  
COSTA ET AL. 2013**

The subjects with phonological disorder showed between one and four alerted phonemes, the subjects with a phonetic deviation showed one altered phoneme, but the subjects with a phonetic-phonological deviation had five to six altered phones/phonemes, respectively. The cases of phonological and phonetic deviation had proper speech. One of the subjects with a phonetic-phonological deviation had proper speech, and the other showed an altered phone.

**Myofunctional therapy was efficient in cases of phonetic and/or phonological deviations.**

<https://www.scielo.br/j/rcefac/a/GT76fmkRDgHsZVLXq7r3Bqr/?format=pdf&lang=en>

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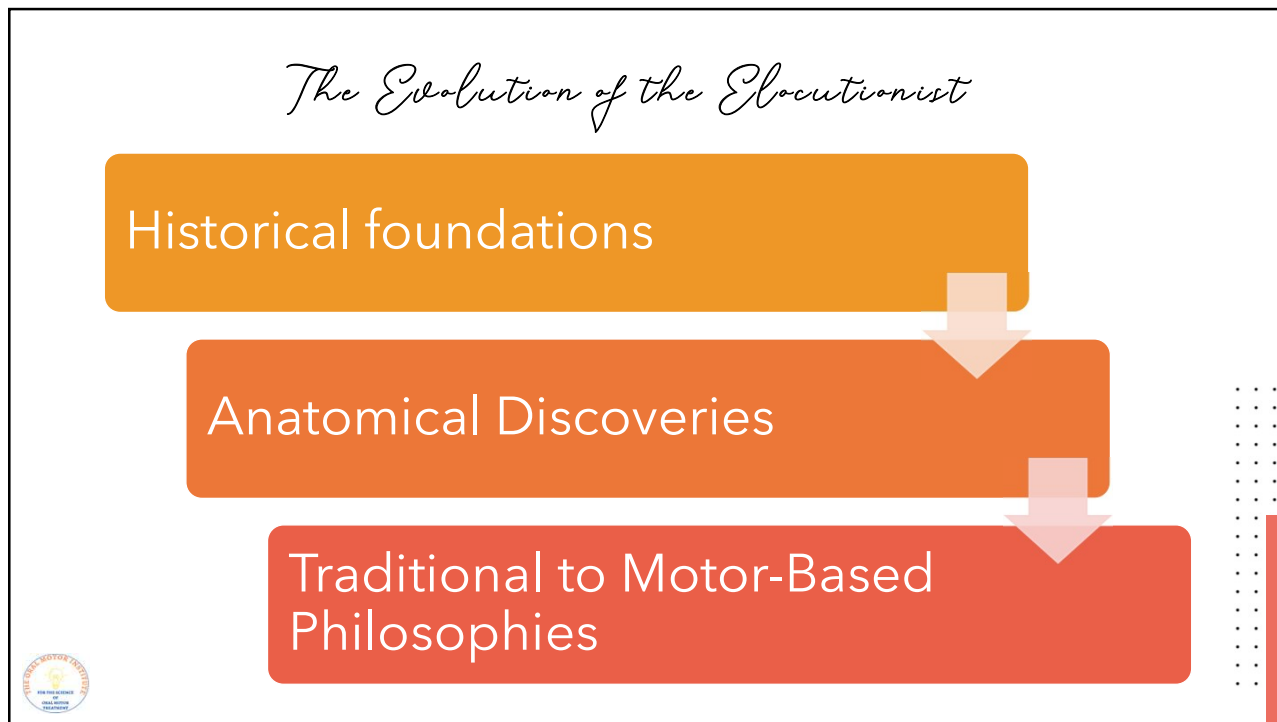
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**SUMMARY  
CONCLUSIONS  
Q & A**

**MARSHALLA**  
SPEECH & LANGUAGE

**THE ORAL MOTOR INSTITUTE**  
FOR THE SCIENCE  
OF  
ORAL MOTOR  
TREATMENT

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What started as a form of diction training, evolved to a focus of clear pronunciation. Early on, elocutionists knew that facial and body postures and movements were important for communication.

With that transformation, it became clear that structural anomalies, muscular dysfunction and motor skills could be underlying factors that impacted speech clarity, changing the way in which we evaluate and treat speech sound disorders.

*Robyn Merkel-Walsh*  
 Board Chair  
 Oral Motor Institute

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**JOIN THE OMI!**

The Oral Motor Institute's Mission is to support the specialty of oral -motor based therapy approaches that enhance the development of the orofacial complex and the functions of respiration, sleep, feeding, swallowing and speech.

[www.oralmotorinstitute.org](http://www.oralmotorinstitute.org)



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