

PS 8 Using an Oral Exercise Hierarchy to Improve Speech Production

Patricia Lohman-Hawk, Ph.D., CCC-SLP
CSU East Bay, Hayward, CA

CSHA, Annual Convention
April 11, 2008

Abstract:

Oral-motor program implemented with nine year-old male client diagnosed with mild hypotonia. Articulation errors included /r/, /l/, “sh” and “th” following two years of traditional articulation therapy. Client exhibited mild posterior oral hyposensitivity, imprecise lingual movements, weak jaw, and incoordination of breathing-speaking. Diadochokinetic rate three times slower than average. Oral-motor exercises (Rosenfeld-Johnson, 2001) incorporating hierarchy of horns, bite blocks, straws, and lip exercises were completed in 30 sessions. Re-evaluation revealed 50% improvement in diadochokinetic rate, accurate production of initial /l/, "sh," “th” in words, and stimulability for /r/. Improvement attributed to oral-motor activities. Production work addressed after exercises were completed.

Introduction: Using oral-motor exercises to improve speech production is controversial. Advocates such as Boshart (1998), Rosenfeld-Johnson (2001), and Bathel (2006) claim oral-motor exercises improve speech production by increasing strength, endurance and precision of the underlying muscles and systems -- respiration, phonation, and articulation. However, empirical studies which support using a muscle-based therapeutic approach to improve speech production are lacking. Current research contradicts the notion that oral-motor exercises should be used to improve speech production in children with articulation and phonological disorders (Clark, 2003; Forrest, 2002). The conflict may be the result of a misunderstanding regarding articulation and phonological disorders. Children who possess phonological disorders typically possess intact oral-sensory motor systems and benefit from an approach which focuses on remediating patterns of sound errors rather than on individual phonemes (Hodson & Paden, 1991). In contrast, articulation involves the actual movements of the articulators during speech production and is motor-based. Children who cannot produce their phoneme errors or who make little progress in therapy may require remediation of their oral-motor system before progress can be achieved. The underlying assumption of the traditional articulation approach is that clients possess normal oral structure and function (Gilbert & Swiney, 2007). Therefore it is essential to determine whether clients' oral structure, sensation, and function are normal before proceeding with the traditional articulation approach. At present no research study has reported the outcome of using oral-motor exercises with a client who exhibits a motor-based speech disorder to improve articulation skills. The current case study is therefore warranted to compare the outcome of using oral-motor exercises with a client who did not possess normal oral sensation and function. The research question asked was, “What is the efficacy of using an oral-motor therapeutic approach with a client who exhibits a motor-based speech disorder?”

Participant: Client was a nine year old male with average cognitive ability. He attended 4th grade in a private elementary school. He received 2 years of traditional articulation therapy privately prior to evaluation at the CSUEB Speech Clinic. The client was diagnosed with mild hypotonia in upper torso, but did not qualify for public school occupational therapy services.

Assessment: Client exhibited mild hyposensitivity in posterior oral cavity and tongue; imprecise, jerky, uncoordinated lingual movements; Jaw jutting, and limited mouth opening. Diagnosis of mild hypotonia was consistent with OT findings of upper body hypotonia.

Speech: /l/, /r/, "sh" and voiced/voiceless "th" errors. Client was not stimulable for consonantal /r/, vocalic /r/, or final /l/. "Sh" and "th" were inconsistently produced. He exhibited excessive lip rounding/protrusion during production of distorted vocalic /r/. Diadochokinetic syllable rate was approximately three times slower than average (Fletcher, 1978). Papapa: 15 sec (4.0 = avg) for 20 repetitions. Tatata: 11 sec (4.1 = avg) for 20 repetitions. Kakaka: 15 sec (4.6 = avg) for 20 repetitions. Pataka: 25 sec (7.7 = avg) for 10 repetitions.

Fluency: Client exhibited difficulty coordinating breathing and speaking and struggled to initiate speech at times. Disfluencies included hesitations, false starts and revisions. No part-word or secondary behaviors were exhibited, and client appeared to be unconcerned about his disfluencies.

Therapeutic Approach:

Oral-Motor: Sara Rosenfeld-Johnson's tools and hierarchy of exercises (2001) were followed due to findings of decreased oral-motor-sensory functioning. The program consisted of Bite Block Hierarchy to improve jaw stability; Horn Blowing Hierarchy to improve respiration; Straw Drinking Hierarchy to strengthen posterior tongue; Lip Press with pennies to strengthen Mentalis muscle for production of vocalic /r/. Client received 5 months (30 hrs) of speech therapy (2/wk/50 min). Speech production of error phonemes addressed upon completion of exercise program. Client practiced exercises at home daily with parent assistance. SLP re-evaluated progress weekly.

Fluency: Client's fluency problem appeared to be due to his inability to coordinate speaking and breathing, rather than a developmental fluency disorder. Fluency was addressed using the hierarchy of horns and education re: speech production.

Treatment Results: Client was re-evaluated on his 30th session following completion of oral-motor exercise hierarchies. Improvement was noted in the following areas: Diadochokinetic rate improved by 50%. Disfluencies decreased from 24% to 6% during 5 minute spontaneous speech sample, which was within normal limits. Client produced 31/96 words correct (31%) on R-Screening Probe (Boshart, 1998) which tested /r/ in initial position, r-clusters, vocalic /r/, and r-colored vowels in words. No production work was undertaken in therapy prior to re-evaluation. Inconsistent phoneme errors involving "th," "sh" and initial /l/ remediated without formal production work.

Conclusion: Client made significant improvement in diadochokinetic syllable rate and ability to produce vocalic and consonantal /r/, and final /l/ following completion of Sara Rosenfeld-Johnson's hierarchy of oral-motor exercises. Inconsistent error phonemes remediated without being formally addressed in therapy. In this investigation client's improvement may be attributed directly to oral-motor exercises because treatment did not include production tasks. Improved fluency may be attributed to improved coordination of lingual movements (as seen by decreased diadochokinetic rates) and improvement in respiration/phonation (from horn blowing hierarchy and instruction in normal speech production). Once client's oral-motor functioning was normalized, and he was stimulabile for /r/ and final /l/, production work using a traditional articulation approach was undertaken. The client made steady improvement and was dismissed from therapy after 45 additional sessions (2 quarters of treatment).

References:

- Bathel, J. A., (2006, November 27). Oral-motor muscle-based approach to speech therapy. *Advance for Speech-Language Pathologists & Audiologists, 16*, 10-13.
- Boshart, C. A. (1998). *Oral-Motor Analysis and Remediation Techniques*. Temecula, CA: Speech Dynamics, Inc.
- Clark, H. (2003). Neuromuscular treatments for speech and swallowing: A tutorial. *American Journal of Speech-Language Pathology, 23*, 400-415.
- Forrest, K. (2002). Are oral-motor exercises useful in the treatment of phonological/articulatory disorders? *Seminars in Speech and Language, 23*, 15-26.
- Fletcher, S. (1978) *Fletcher Time-by-Count Test of Diadochokinetic Syllable Rate*. Tigard, OR: CC Publications.
- Gilbert, D. W., & Swiney, K. A. (2007). *Sound Strategies for Sound Production*. Austin, TX: PRO-ED.
- Hodson, B. W., & Paden, E. P. (1991). *Targeting Intelligible Speech, (2nd ed.)*. Austin, TX: PRO-ED.
- Rosenfeld-Johnson, S. (2001). *Oral-Motor Exercises for Speech Clarity*. Tucson, AZ: Talk Tools.