

Current research regarding the effective use of Palatometry for clients who are deaf or hard of hearing.

Palatometry provides visual feedback for tongue-to-palate contact in production of both sounds in isolation and in connected speech. This information is precise and accurate (Martin, Hirson, Herman, Thomas, & Pring, 2007). **Deaf clients, who rely on visual information to communicate, have benefitted from this information in achieving accurate tongue-to-palate contact for the production of speech sounds.** The rest of this document provides a review of the most recently published research pertaining to the use of palatometry in the remediation of articulation for individuals who are deaf or hard of hearing.

Schmidt, A. (2007). Evaluating a new clinical palatometry system. *Advances in Speech-Language Pathology*, 9(1), 73-81.

Schmidt (2007) describes the use of palatometry in the treatment of a 7 year old male with profound sensorineural hearing loss on the left ear and moderate sensorineural hearing loss in the right ear. Prior to the use of palatometry, and through traditional articulation therapy, he was able to achieve accurate phoneme production for all speech sounds except the stridents. This participant was seen for 28 sessions using palatometry and lasting 30 minutes each. These sessions occurred over a six month period, in which the primary focus was in utilizing the visual display and pairing it with recognition of kinesthetic feedback to achieve consistency of production for the /s/ sound. **“He was able to visualize for himself the position and consistency of his productions, making him a more active participant in treatment.”** (Schmidt, 2007, p. 77) His production of /s/ in the initial position increased from 20% to 100%, in the medial position it improved from 65% to 100% and from 40% to 100% in the final position. This skill generalized to the production of the other distorted stridents and was found to be consistent at the word, phrase and conversation levels.

Martin, K., Hirson, A., Herman, R., Thomas, J., & Pring, T. (2007). The efficacy of speech intervention using electropalatography with an 18-year old deaf client: A single case study. *Advances in Speech-Language Pathology*, 9(1), 46-56.

Martin, Hirson, Herman, Thomas, and Pring (2003) describe the use of palatometry in treatment of an 18-year old male adult with profound sensori-neural hearing loss. Following years of traditional articulation therapy and prior to the use of palatometry, he was able to produce all of the English consonants in the initial position of words with the exception of the alveolar

plosives /t/ and /d/ and the voiced and voiceless dental fricatives (th-sound). Treatment consisted of six bi-weekly sessions lasting one hour, and focused on using the visual display to accurately produce /t/ in isolation, syllables, words, phrases and sentences. Significant improvement in the target sound was observed immediately following treatment, and further significant changes were observed 1 month following treatment. Additionally, a more global perceptual improvement was observed in his intelligibility at the sentence level. An unexpected outcome involved his voice quality moving from a more pharyngeal resonance typical in speakers who are deaf, to a more typical sounding resonance. While this was not the primary focus of the study, it may suggest a secondary benefit of using the visual feedback afforded by the palatometer. This is due to the fact that **it promotes the ability to bring the “...tongue forward more consistently and reducing contact in the velar region.”** (p. 53)

Panteleimidou, V., Herman, R., & Thomas, J. (2003). Efficacy of speech intervention using electropalatography with a cochlear implant user. *Clinical Linguistics & Phonetics*, 17(4/5), 1.

Panteleimidou, Herman and Thomas (2003) present the results of using palatometry in treatment for a 8;9 (year; month) old female with profound sensori-neural hearing loss who received a cochlear implant at age 3. The primary target sound for intervention was the voiced and voiceless velar stop /k/ and /g/. Prior to treatment she received 18 months of articulation therapy targeting velar consonants without the use of palatometry. She showed little improvement during this time. The twelve treatments using palatometry occurred twice a week and lasted for 45 minutes each. This participant demonstrated significant improvement in accurate productions of the /k/ and /g/ sounds for both trained and untrained words, and this improvement was maintained 5 weeks post-treatment. Specifically, the palatometer revealed her pre-treatment productions of the velar stops made very little tongue contact with the palate in the velar region, and auditorily were perceived to be more similar to uvular fricatives. Post-treatment, the tongue-to-palate contact patterns were more typical and perceived auditorily to be more correct. The visual nature of the feedback offered through palatometry **“offers the client important visual feedback for instantaneous monitoring of tongue contacts...[it] encourages an active role in the discovery of the relationship between tongue movements and the resulting sound heard and appears to be inherently motivating for the subjects.”** (p. 390)