

Title: Immediate Effects of Velopharyngeal Resistance Training (Continuous Positive Airway Pressure) on Vowel Articulation: Preliminary Acoustic Findings

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Abstract: Continuous positive airway pressure (CPAP) therapy has shown some promise in reducing hypernasality and improving speech intelligibility in patients with a history of cleft palate or neurologic injury. It was hypothesized that increased articulatory demands during a CPAP therapy session may elicit articulatory-acoustic adjustments. Twelve healthy young adults participated in the study. Participants were randomly assigned into two groups: experimental (E) with exercise and control (C) without exercise. The E group received 10 individual sessions; during each session, the participants were involved in speech activities while receiving randomized air pressure from the CPAP device through the nasal cavities. The C group received one individual session, during which no exercise was performed. The first and the second formant frequencies (F1 and F2) were monitored from the participants' speech samples (CV syllables with plosives followed by vowels, /ɑ, i/) that were recorded immediately before (PRE) and after (POST) each individual session. Preliminary results showed that F1 illustrated the most consistent pattern of changes, in which the E group demonstrated F1 increases for /ɑ/ and F1 decreases for /i/, suggesting vowel space expansion along the vertical dimension, following individual sessions.