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The effect of maxillary dental arch and singing style

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ABSTRACT

In classical singing techniques, it is common to manipulate the vocal tract to channel airflow to increase voice quality and volume. Although these practices are intentional, fixed physiological aspects of a singer's vocal instrument also play an extremely impactful role in determining voice quality. In the present study, the relationship between the dimensions of the maxillary dental arch and voice quality were examined in professional singers. The dimensions of the palate were measured from the maxillary dental casts of fourteen female singers. Audio recordings were made for the same participants while singing. The dimensions of the palate were measured from maxillary dental casts. From the recordings, two parameters were calculated: (1) the Singing Power Ratio and (2) A_2 A_1 ratio. Higher SPR values indicate a stronger ring in the voice, typical of operatic singing style, while higher A_2 A_1 ratio values are associated with the belting singing style. Singers with larger frontal palate depth, smaller posterior palate depth, larger frontal palate width, and smaller posterior palate width seem to be more suitable for an operatic singing style. Singers who had larger overall depth and width of the palate measurements produced an increased second harmonic, typical of the belting style.

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