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voice production modes and vocal tract shape in South-Siberian
throat-singing

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South-Siberian throat-singing features reinforced harmonics as carrier of sung melodies and enforced phonation modes. Available articulatory studies of throat-singers suggest that throat-singing makes use of three voice production mechanisms which result in two basic voice modes (mid tensed vs. low rough). Thus all three mechanisms share an excessive constriction of the larynx entrance i.e. approximation of the aryepiglottic folds and the epiglottis. The current study comprises acoustic data from 69 male singers. 25 singer were recorded by use of a field setting for acoustic, electroglottographic and subglottal resonance signal acquisition. Perturbation measures show dominance of individual variability over areal (cultural) factors, but strong influence of articulatory reinforcement strategies. The data also provide evidence for a model of reinforcement of harmonics by means of (1) voice source variation (closing phase, excitation strength), i.e. increased subglottal pressure, while air flow remains constant or lowered for the tensed mode; and double cycle modes involving mass bodies of upper laryngeal structures for the low mode; (2) formant merging due to multiple vocal tract constrictions including a coupling of source to the adjacent epilaryngeal tube of $1/6$ vocal-tract length and bandwidth tuning as a result of adjustment of lip radiation.