Influence of emotional expression, loudness, and gender on the acoustic parameters of vibrato in classical singers

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Objectives: Vibrato is considered one of the most essential characteristics of the classical singing voice. Vibrato can be acoustically described by the rate, extent, onset, and regularity. The aim of this study was to determine the influence of emotional expression on acoustic parameters of vibrato in classically trained singers. Study Design: A prospective cohort study was performed. Methods: Thirty healthy classical singers were recruited for this study, 29 singers met inclusion criteria. Inclusion criteria for this study were as follow: 1) no history of vocal pathology in the past year, 2) to have at least 5 years of classical singing training. Each subject was asked to sing the phrase "I Love You," while expressing four different emotions (tenderness, anger, happiness, and sadness) and without emotion (neutral state). The musical tonality of the phrase was adapted to each singer's vocal classification. Subjects were also recorded at three levels of loudness (pianissimo, mezzo fort