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A quantitative assessment of respiratory patterns and their effects on dentofacial development.

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The purpose of this study was to assess the effects of quantitatively determined breathing patterns on dentofacial development in growing children. Forty-nine subjects ranging in age from 10 to 16 years participated in the breathing pattern assessment portion of this project. Oral, nasal, and total airflow were measured at separate times by means of a head-out body plethysmograph technique and the values were compared with the subjects' and parents' subjective perceptions of their breathing modes. These breathing pattern measurements also were compared to nasal airway resistance and nasal power. Temporal variation and cyclic respiration, which may play important roles in quantitative evaluations of childrens' breathing patterns, also were addressed. In addition, objective assessments of possible associations between dentofacial structure and respiration were made on 45 of these children. Most subjects' exhibited was either an oronasal or a completely nasal respiratory pattern. However, significant variation in breathing measures was evident among a number of subjects whose breathing was measured twice on the same day and on different days. No significant correlations were found between objectively measured and subjectively determined impressions of respiratory patterns. In addition, there was no association between nasal airway resistance or nasal power and plethysmograph recordings of percent of mouth breathing. Comparisons of measured breathing modes and dentofacial characteristics revealed a weak tendency among mouth breathers toward a Class II skeletal pattern and retroclination of maxillary and mandibular incisors. In contrast, subjective perception of mouth breathing was associated with increased anterior facial height and greater mandibular plane angles. Nasal power and resistance were not correlated with either dental or skeletal variables. This study presents evidence that determination of respiratory pattern is a complex issue for which methods must be refined and performed longitudinally.

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