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## **Growth changes in head posture related to craniofacial development.**

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Cross-sectional studies have demonstrated an association between craniocervical angulation and craniofacial morphology. It was the aim of the present study to determine if the growth coordination suggested by this association could be detected in a longitudinal analysis of growth changes in posture and craniofacial morphology. The sample comprised 43 children, 20 girls and 23 boys. Cephalometric radiographs obtained in the natural head position (mirror position) were taken on two occasions. Mean age at the first observation was 9.5 years; mean period of observation was 2.7 years with a range from 1 to 4 years. Forty-one reference points and four fiducial points were digitized on each film. Individual growth changes were determined by computerized structural superimposition of the digitized sets of points. Correlation coefficients were calculated between growth changes in 11 postural and 35 morphologic variables. Correlations of  $r = 0.41-0.55$  ( $P$  less than 0.01) were found between the change in craniocervical angulation and the true growth rotation of the mandible as assessed by the method of structural superimposition. On the average, a reduction of the craniocervical angle was seen in connection with increased forward rotation of the mandible and an increased craniocervical angle was found in conjunction with a less-than-average forward rotation of the mandible. The true mandibular rotation was masked by remodeling of the lower mandibular border. The changes in the conventional measures of head posture--the craniovertical angles--during the observation period showed no associations with the growth changes in craniofacial morphology.

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