

## Variations of midfacial soft-tissue thickness between 6 and 18 years for the reconstruction of the profile: a help for facial reconstruction of children

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Facial approximation techniques used in forensic anthropology are based on soft-tissue thickness databases. A potentially relevant application concerns the facial reconstruction of children in cases where only the skull can be recovered. Although several databases concerning facial soft tissues thicknesses already exist [1-3], no study has so far taken into consideration the Italian population. This study aims at providing data concerning facial thickness on the midline in a population of Italian children. Diagnostic cephalometric X-ray films were obtained from 222 healthy Caucasoid children (91 boys and 131 girls), aged between 6 and 18 years. After setting the Frankfurt plane horizontal, 15 measurements were taken at the mid-facial landmarks: supraglabella, glabella, nasion, nasale, subnasale, nasal tip, superior labial sulcus, labrale superius, stomion, labrale inferius, inferior labial sulcus, suprapogonion, pogonion, gnathion, menton. Mean and standard deviation of soft-tissues thickness at each point were calculated. A two-way analysis of variance (ANOVA) was performed to test the modifications of facial parameters with age and sex ( $p < 0.01$ ). The results demonstrated that there is an increase in tissue thickness as individuals grow; in most occasions, males showed thicker soft tissues than females of the same age, especially after the adolescent growth spurt. Facial thicknesses at subnasale, nasal tip, superior labial sulcus, labrale superius, labrale inferius, inferior labial sulcus, suprapogonion, pogonion and gnathion significantly modified with age, whereas the same parameters at subnasale, superior labial sulcus, labrale superius, labrale inferius, stomion and suprapogonion were significantly sexually dimorphic. In addition, a database for soft-tissue thicknesses in children aged between 6 and 18 years was created, which may be of interest in cases of facial approximation of Italian minors.

### References

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### Keywords

Facial anatomy; facial approximation; Geogre reconstruction; soft-tissue thickness.