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Secular trend in general size and shape parameters of head and face of Lithuanian adolescents during 1965–2015 period

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Objectives. There is a lack of research on the secular trend of craniofacial parameters in the 21st century, as most recent studies use 2D or 3D facial image analysis and cannot be compared with previous studies. The aim of this study was to evaluate secular trends in the craniofacial size and shape parameters of Lithuanian adolescents since 1965.

Materials and methods. During 2010–2015, a total of 528 boys and 552 girls aged 10–18 were examined using standard anthropometric methods (Martin-Saller, 1957): head circumference (HC), head length (HL – in sagittal plane), head width (HW), morphological facial height (MorFH), facial width (FW). Cephalic index (CI = HW/HL × 100) and facial index (FI = MorFH / FW × 100) were calculated. Results were compared with similar data from 1965 and 1985 studies that used the same methods and instruments.

Results. During 1965–2015, craniofacial parameters changed as follows: (1) HC increased throughout the period in boys ($p < 0.01$), but not in girls; (2) HL increased in boys ($p < 0.001$) and girls ($p < 0.01$), but only during 1985–2015; (3) HW did not change, comparing 2015 and 1965 data, but in 1985 a decrease was observed ($p < 0.05$); (4) MorFH increased steadily throughout the period ($p < 0.001$); (5) FW has increased significantly, comparing 2015 and 1965, but in 1985 a significant decrease was observed ($p < 0.001$); (6) CI decreased in 1965–1985 ($p < 0.01$), and until 2015 did not change significantly; (7) FI increased during 1965–1985 ($p < 0.001$), and in 2015 decreased again to become very similar to FI in 1965 ($p > 0.05$).

Conclusions. Head width did not change significantly, while head sagittal elongation happened. Hence, the shape of the head changed from brachycephalic to mesocephalic (starting from 1985). The face was narrowest in 1985 (hyperleptoprosopic), and in 2015, it became wider again, even exceeding the facial width in 1965 (mesoprosopic or euryprosopic).