

## **Abstract**

Processes of biological changes of organism over time distinctly manifest themselves in a face morphology. The present study age changes are observed as shape and size changes of transversal dates of surface 3D virtual models of faces of 443 women and men (22–88 years old) divided into six age groups in decade. Differences in faces among each age group with respect to the sex were investigated and a sexual dimorphism and its gradual progress with the age using methods of geometric morphometrics (coherent point drift – dense correspondence algorithm, principal component analysis, per vertex t-test, shell-to-shell deviation).

A significant difference among age categories was observed both in shape as well as in form of the face. The faces of women and men were becoming wider with age and convexity was decreasing at the same time. A decline of the whole forehead and of the profile of the men's nose was observed, whereas the women's forehead was getting bevel due to the decline of the top part and a profile of the nose wasn't changed with the age. On contrary, the men's chin was unvarying with the age, while the women's chin was sliding out forward. There was observed a distinct decline in the front part of an upper jaw with the both sex. It was found out that after the seventh life decade the face gets older in a different way than in the previous decade. A significant difference was present between gender in each age groups both in a shape as well as in a form and it came to its decrease owing to the shape changes, not size ones, mainly in the area of forehead, nose, lower eyelid and upper lip. In a front part of the chin there was no sex dimorphism there.

In the present study there was found out that the trend of ageing process of men and women is the same however, some face structures with men and women get older in different life decades. Then it was found out, that to the decrease of the sex dimorphism, it comes due to morphological shape changes of the face both with women and men, where size changes of the face don't participate in the decrease of the sex dimorphism.

## **Key word:**

Human face, ageing, sex dimorphism, morphology, geometric morphometrics, shape and size