

Sacroiliac joint connects pelvic girdle and resists the pressure of the trunk. Surrounding structures are also subjects to selective pressure of birth adaptations. The aim of this study was to verify the shape and size sexual dimorphism of the auricular surface of modern human. The basis of this work was the only published geometric-morphometric study of this structure (Anastasiou and Chamberlain, 2013). We also analyzed evolutionary changes in the size of the auricular surface related to the increase in the body weight in hominins. The basis of this part of the thesis is to verify a rectangular method of computation of the auricular area, which simplifies its shape and was applied to the fossil material (Reed and Churchill, 2013).

We used casts of the auricular surface from human hip bone of 97 modern people from osteological collections of Spitalfields and Coimbra, which have documentation about sex and age, and 8 casts of fossil hominins. Auricular surface was photographed and analyzed by methods of geometric morphometrics (sliding semilandmarks). From the marked area the precise surface size was computed. The success rate of sex classification was tested by a technique of support vector machine with crossvalidations.

The shape and size sexual dimorphism of the auricular surface was confirmed. In women, the shape of the auricular surface is wider than in men but the main intersexual differences are in the size. Sex prediction according to shape achieved a success rate only 64,6%; according to form it was 82,3%. Auricular surface does not show great shape differences which would reflect birth adaptations.

On average, the rectangular method underestimates the real values only by less than 2%. However in the analysis of single cases the error can be much larger. Our study confirms that mainly gracile australopithecines had relatively small auricular surface compared to the body weight but *H. ergaster* is still on the same level. In contrast, neandertals and human from Kabwe (E 719) are much nearer to average values of anatomically modern human.