ABSTRACT

The identification of skeletal remains represents one of the most critical aspects of biological anthropology. Accurate individual identification is indispensable for forensic anthropology, and high method success and reliability are prerequisites for legal utilisation of results. This doctoral thesis presents an innovative methodology for sex estimation using the exocranial surface of skulls, rigorously tested and validated across diverse populations. The study aimed to develop a method that would achieve high accuracy and reliability, comparable to established techniques using both exocranial and endocranial surfaces. The results confirmed that the new method achieved an impressive 91% accuracy in the French population sample, demonstrating its effectiveness. Further testing on a larger and more diverse dataset revealed the method's high reliability and accuracy, particularly in European populations. Specifically, the method achieved 96% accuracy in the Czech sample and 92% in the Slovak sample, supporting its robustness and applicability in these contexts. The research also explored age-related changes in craniofacial sexual dimorphism, finding a significant reduction in dimorphic areas with increasing age. The proportion of significantly different areas in cranial form decreased by 12%, from 94.8% in younger individuals to 82.6% in older individuals. These findings highlight the dynamic nature of craniofacial morphology over the lifespan. However, the method's applicability across multiple populations showed mixed results. While it was highly reliable for closely related European populations, such as the Czech, Slovak, and French groups, it demonstrated lower accuracy rates for the Egyptian (82%) and Danish (80%) populations.

In conclusion, this doctoral thesis presents detailed results and underscores the potential of the novel sex estimation method, while also highlighting areas for improvement.