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Abdel Fatah, Emam, Shirley, Natalie, Jantz, Richard, and Mahfouz, Mohamed
2014 Improving Sex Estimation from Crania Using a Novel Three-dimensional Quantitative method. Journal of Forensic Sciences. 59(3) 590-600.

The focus of this article was to attempt and use a three-dimensional model to estimate the sex of a cranium with greater accuracy. The article gives adequate background on the topic, explaining that sex determines many other aspects of a body including age, height and weight, and ancestors. The sample used was from a donated collection of 222 CT scans of Caucasians with an average age of 64 for males and 66 for females. The problem that the authors examined was the use of external measurements and observations of the cranium to determine sex.

For their study, the authors drew on previous studies done on sex determination of craniums. This prior research allowed the authors to choose what characteristics pertain to each sex. The characterizations of the craniums are subjective and based highly on observation and external measurements. The authors pointed out that because the sample was done on whites, the results should not be applied to other groups. The authors generated 3D models using the computer program atlas. The 3D models were compared with actual models, and a paired t-test was used. The authors concluded that size was the variable with the most variation between male and female craniums. 3D models were said to be beneficial in that they allow for comparisons between thousands of points on a cranium. Further study is argued as necessary in order to better determine sex using the cranium as humans, and their skeletal characteristics, continue to evolve.