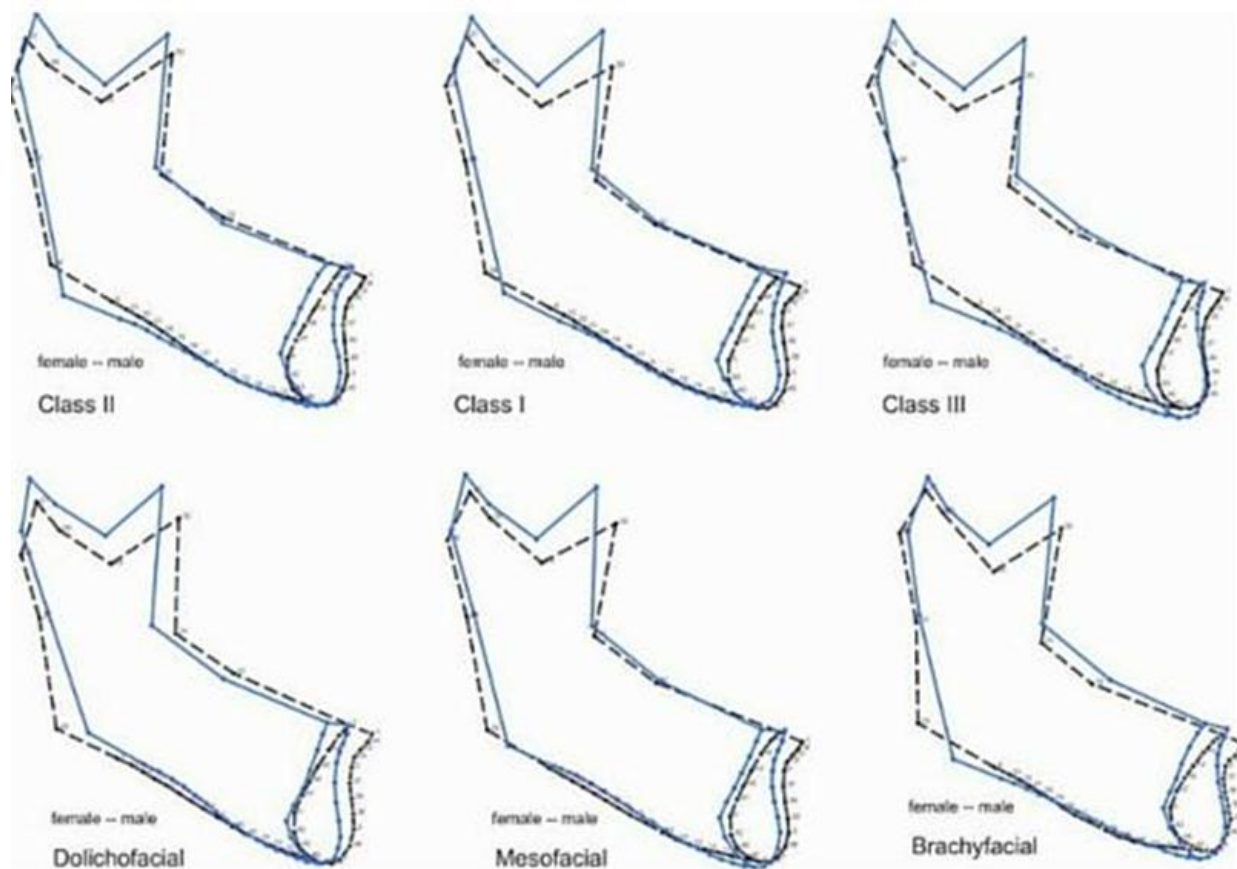


# New data improve techniques for determining whether a jaw bone comes from a man or woman

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New data improve techniques for determining whether a jaw bone comes from a man or woman. Credit: University of Granada

Researchers at UGR and the Spanish National Research Council have discovered that the differences between the jaw bones of males and females are different between meso-, dolico- or braqui-facial patterns—the three types of anthropometric profiles. As a result, before determining the gender of skeletal remains, it is necessary to establish the vertical facial pattern.

Scientists at the University of Granada and the National Museum of Natural Science (of the CSIC) have applied a new, more accurate technique to analyze the [differences](#) in mandible size and shape linked to gender. The new technique will be useful for determining whether a bone comes from a man or a woman.

Their study, published in the *Journal of Comparative Human Biology*, perfects the technique currently used to identify a subject's gender by analyzing the [jaw bone](#). The results are of great importance to the field of biological anthropology and have further implications for paleoanthropology, paleodemographics, forensic science, orthodontics and other disciplines.

The head author of the study, José Antonio Alarcón Pérez of the Department of Stomotology at the University of Granada, says, "The dolico and braqui-facial subjects present specific patterns of sexual dimorphism in the mandible. These differences could be attributed to the different physiological demands and the difference in the size of the nasal cavity between women and men. Men present higher daily energy expenditures, higher air intake from breathing and differences in body composition compared to women."

## **A study of 187 jaw bones**

The UGR and CSIC study analyzed how the differences linked to gender in the size and shape of the jaw bone varied in function of the vertical

and sagittal patterns of the face. Vertical patterns are classified as meso-, braqui- and dolico-facial; sagittal patterns are classified as class I (normal maxillomandibular relationship), class II (mandibular retrognathism versus maxillary prognathism) and class III (mandibular prognathism versus maxillary retrognathism).

In carrying out their study, the authors analyzed the jaw bones of 187 adult subjects (92 men and 95 women) from Granada using lateral telerradiography of the cranium. The size and shape of the jaw bones were studied using specific geometric morphometric techniques.

They found statistically significant differences in the size and shape of the bones between men and women. This [sexual dimorphism](#) can be clearly observed in all the [patterns](#), both vertical and sagittal, that were analyzed. The male jaw bone is bigger across all subgroups.

**More information:** J.A. Alarcón et al. Variation of mandibular sexual dimorphism across human facial patterns, *HOMO - Journal of Comparative Human Biology* (2016). [DOI: 10.1016/j.jchb.2015.11.004](https://doi.org/10.1016/j.jchb.2015.11.004)

Provided by University of Granada

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