

# Skeleton examination: a bone results

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During a young couple's early morning run last week in the park, the joggers found a human skull. Upon police officers arriving, they investigated and analyzed the scene thoroughly. Subsequently, the investigators unearthed two whole human skeletons.

## **Summary of Findings**

### **Sex Determination:**

Firstly, some evidence that led to the determination of the sex of Skeleton A was the shape of the pelvis. In the examined skeleton there was a heart shaped pelvis that showed the sacrum and the coccyx. It is proven that these characteristics are present in males, while females have circular and wide pelvises. Women have wide pelvises because it aids in delivering offspring safely and successfully. Some additional evidence that supports sex determination is the shape of the eye orbit in the skull. Skeleton A had square shaped eye orbits. These traits are present in males but not females because females have a more rounded shape. Lastly, the final supporting evidence is the epicondylar width of the humerus. The observed epicondylar width in the skeleton was 64.9mm. The average male's humeral epicondylar width is 63.9mm which is very close to the skeleton's data. In addition, a females humeral epicondylar width is around 56.8mm on average. When all of this qualitative and quantitative data is conjoined then it is apparent that Skeleton A's sex determination is a male because of the shapes of the pelvis and eye orbit and also because of the epicondylar width of the humerus.

### **Race Determination:**

Evidence of the skeleton's race includes the presence and sharpness of the nasal silling ridge on the skull. In Skeleton A, there is a sharp ridged nasal

silling present. It is known that the Caucasoid race has a sharp ridge while the Mongoloid race has a rounded ridge and the Negroid race has no ridge. Next, the other evidence is the amount of space under the femur curvature. The observed skeleton's femur allows for fingers to fit under the curvature, which is consistent with the White race, while the Black race does not allow for finger to fit under the femoral curvature. Finally, the last evidence is the orbital opening's shape of Skeleton A. It was examined that the skeleton had rounded and somewhat square orbital openings shapes. This describes the known data of the White race. The Asian race has a rounded, circular shape and the Black race has a rectangular shape. Thus, the determined race is White because of the sharpness of the nasal ridge, the space under the femoral curvature, and the shape of the orbital openings.

### **Height Determination:**

It was concluded that the minimum height of Skeleton A was 5'3". To get this number the femur was utilized and the male Caucasian regression formula was used because, prior to determining the height, the race and gender were determined as a White male. The regression formula was (minimum value=  $161.58\text{cm} / 2.54 = 63.61\text{in} = 5\text{ft } 3\text{in}$ ). The maximum height was determined to be 5'6". The humerus was used and the male Caucasian regression formula was chosen because the race and gender were already predetermined. The regression formula was (maximum value=  $170.82\text{cm} / 2.54 = 67.25\text{in} = 5\text{ft } 6\text{in}$ ). So, the final height range is from 5'3" to 5'6".

## **Age Determination:**

To start, the first piece of evidence for age is the pelvis bones being ossified and having no episeal lines. This is apparent in Skeleton A. It is proven that the ilium, ischium, and pubis bones fully ossify and have no evidence of episeal lines in the ages of 20 to 25. The second piece of evidence to support the skeleton's age determination is the condyloids joining fully with the femur. The condyloids first join the shaft when the individual is around 20 years old. The third piece of evidence is the pelvis having the upper epiphysis unite fully. When a person is of age 20, the upper epiphysis unites with the shaft. All in all, Skeleton A's determined age was ranging from 20 years of age to 25 years of age.

## **Inconsistent Data:**

Instances of inconsistencies that did not support determinations is the skeleton's rounded, V-shaped mandible which supports the female sex and not the male. Also, the skeleton's nasal index was .69. This data fits the Black race's category of the nasal index being  $>.53$ .

## **Further Analysis**

Facial reconstruction is the process of rebuilding the facial structure of someone who is unidentified from their skeletal remains through anatomy, anthropology, osteology, etc. Therefore, the forensic scientists can use it to recreate the face of Skeleton A through skull examinations. Then, those examinations and the recreated face will be compared to medical records and pictures of possible identities. Another type of analysis is the analyzing of the teeth and their shape and what medically has been performed on

them. This can support the age and specific identity of the skeleton. It can be used by examining the available teeth and comparing them to dental and x-ray records of the final possible identities. The last example type of analysis is the examination for previous injuries such as a femoral fracture.

It can be used by comparing x-ray and medical records of the identities to the skeleton's evidence of past injuries. So, anything from a greenstick fracture to a comminuted fracture could help determine the identity.

## **Conclusion**

Through examining the skeleton thoroughly it was concluded that it was a Caucasian male. In addition, Skeleton A is ranging from the age 20 to 25. Finally, it is 5'3" to 5'6" tall.