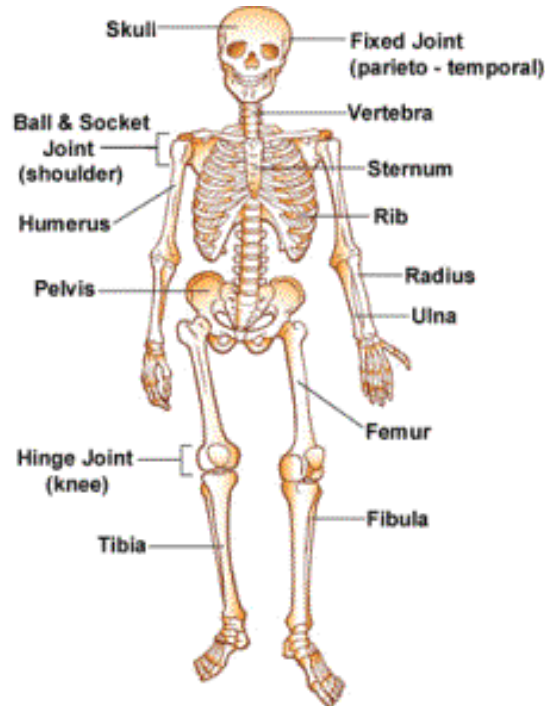


Title of Lab: Forensic Anthropology Lab
(From: GVL)

Purpose(s) of Lab: Learn how skeletal remains can help describe an unknown individual.

Materials: Calculator, tape measure, and a partner – preferably someone notably taller or shorter than you.



Human skeletal system.

Source: http://ww4.fsusd.k12.ca.us/education/eetWeb/Mary/WebquestBones_files/image002.gif

Procedure:

- A. Complete Table 1 in the data section by using the tape measure to measure and record the length following the bones for you and your partner.
Refer to diagram of the skeletal system above as needed.
You will have to convert to centimeters.
To do this, use a calculator use the formula $2.54 \text{ cm} = 1 \text{ inch}$ or go to http://www.manuelsweb.com/ft_in_cm.htm for an online conversion calculator.
- B. Use the formulas provided in the calculations section to calculate the estimated height of an individual based on bone length. *Show your work in the calculations section!*
- C. Complete Tables 2 and 3 in the data section by measuring the *actual* height of you and your partner.

Data:

Table 1: Bone Length Measurements

| | Yourself (inches) | Yourself (cm) | Partner (inches) | Partner (cm) |
|--------------------------|------------------------------|--------------------------|-----------------------------|-------------------------|
| Length of humerus | | | | |
| Length of ulna | | | | |
| Length of femur | | | | |
| Length of tibia | | | | |

Table 2: Estimated vs Actual Height for Yourself

| | Estimated Height | Actual Height | Difference |
|----------------|-------------------------|----------------------|-------------------|
| Humerus | | | |
| Ulna | | | |
| Femur | | | |
| Tibia | | | |

Table 3: Estimated vs Actual Height for Your Partner

| | Estimated Height | Actual Height | Difference |
|----------------|-------------------------|----------------------|-------------------|
| Humerus | | | |
| Ulna | | | |
| Femur | | | |
| Tibia | | | |

Calculations:

| Estimating Height from Bone Length Formulas | Accuracy |
|--|-----------------------|
| $4.62 \times \text{humerus (cm)} + 19.00 \text{ cm}$ | $\pm 4.89 \text{ cm}$ |
| $4.61 \times \text{ulna (cm)} + 46.83 \text{ cm}$ | $\pm 4.97 \text{ cm}$ |
| $3.01 \times \text{femur (cm)} + 32.52 \text{ cm}$ | $\pm 3.96 \text{ cm}$ |
| $3.29 \times \text{tibia (cm)} + 36.31 \text{ cm}$ | $\pm 4.15 \text{ cm}$ |

Be sure to show your work in the space provided below!!!

Conclusion: How can skeletal remain help identify an unknown victim?

Questions:

1. Which bone(s) provided the most accurate estimation of height?
2. Which bone(s) provided the least accurate estimation of height?

3. What other factors would a forensic anthropologist have to consider when using bones to estimate the height of an individual from skeletal remains?
 4. A mass grave has been found to contain the following bones:
 - Adult pelvis with a subpubic angle of 80 degrees.
 - Left femur = 49 cm
 - Skull with a wide nasal cavity
 - Right femur = 49.1 cm
 - Skull with primary (baby) teeth but no 1st or 2nd molars yet
 - Left femur 46.7 cm
 - Left femur 16.4 cm
- A) How many individuals' remains are in the mass grave?
 - B) How did you determine the number of individuals?
 - C) What is the estimated height of each individual? Can you determine the gender of any of the individuals? If so, what is the gender and how do you know? Can you determine the age of any of the individuals? If so, what is the age and how do you know?
 - D) Can you determine the race of any of the individuals?