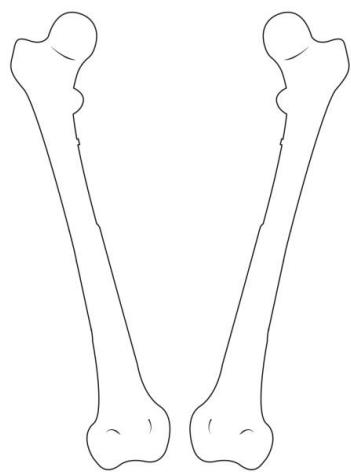




There are exceptions
for any relationship.
Feet can be small; or
big for a person's
height and throw off
the relationship
calculations



Estimating Height using the length of large bones



humerus
Femur
radius
ulna
Tibia
Fibula



Bone length for American Caucasian males.

Factor × bone length	plus	Accuracy
Height (cm) = 2.89 × humerus	+ 78.10 cm	± 4.57
Height (cm) = 3.79 × radius	+ 79.42 cm	± 4.66
Height (cm) = 3.76 × ulna	+ 75.55 cm	± 4.72
Height (cm) = 2.32 × femur	+ 65.53 cm	± 3.94
Height (cm) = 2.60 × fibula	+ 75.50 cm	± 3.86
Height (cm) = 1.82 × (humerus + radius)	+ 67.97 cm	± 4.31
Height (cm) = 1.78 × (humerus + ulna)	+ 66.98 cm	± 4.37
Height (cm) = 1.31 × (femur + fibula)	+ 63.05 cm	± 3.62

Bone length for American Caucasian females.

Factor × bone length	plus	Accuracy
Stature (cm) = 3.36 × humerus	+ 57.97 cm	± 4.45
Stature (cm) = 4.74 × radius	+ 54.93 cm	± 4.24
Stature (cm) = 4.27 × ulna	+ 57.76 cm	± 4.30
Stature (cm) = 2.47 × femur	+ 54.10 cm	± 3.72
Stature (cm) = 2.93 × fibula	+ 59.61 cm	± 3.57

Bone length for Caucasians, both sexes.

Factor × bone length	plus	Accuracy
Stature = 4.74 × humerus	+ 15.26 cm	± 4.94
Stature = 4.03 × radius	+ 69.96 cm	± 4.98
Stature = 4.65 × ulna	+ 47.96 cm	± 4.96
Stature = 3.10 × femur	+ 28.82 cm	± 3.85
Stature = 3.02 × tibia	+ 58.94 cm	± 4.11
Stature = 3.78 × fibula	+ 30.15 cm	± 4.06

Bone length for African-American and African males.

Factor × bone length	plus	Accuracy
Height (cm) = 2.88 × humerus	+ 75.48 cm	± 4.23
Height (cm) = 3.32 × radius	+ 85.43 cm	± 4.57
Height (cm) = 3.20 × ulna	+ 82.77 cm	± 4.74
Height (cm) = 2.10 × femur	+ 72.22 cm	± 3.91
Height (cm) = 2.34 × fibula	+ 80.07 cm	± 4.02
Height (cm) = 1.66 × (humerus + radius)	+ 73.08 cm	± 4.18
Height (cm) = 1.65 × (humerus + ulna)	+ 70.67 cm	± 4.23
Height (cm) = 1.20 × (femur + fibula)	+ 67.77 cm	± 3.63

Bone length for African-American and African females.

Factor × bone length	plus	Accuracy
Stature = 3.08 × humerus	+ 64.67 cm	± 4.25
Stature = 3.67 × radius	+ 71.79 cm	± 4.59a
Stature = 3.31 × ulna	+ 75.38 cm	± 4.83
Stature = 2.28 × femur	+ 59.76 cm	± 3.41
Stature = 2.49 × fibula	+ 70.90 cm	± 3.80

Bone length for All ethnic groups or, if ethnicity is unknown, both sexes.

Factor × bone length	plus	Accuracy
Stature = 4.62 × humerus	+ 19.00 cm	± 4.89
Stature = 3.78 × radius	+ 74.70 cm	± 5.01
Stature = 4.61 × ulna	+ 46.83 cm	± 4.97
Stature = 2.71 × femur	+ 45.86 cm	± 4.49
Stature = 3.01 × femur	+ 32.52 cm	± 3.96
Stature = 3.29 × tibia	+ 47.34 cm	± 4.15
Stature = 3.59 × fibula	+ 36.31 cm	± 4.10

A femur measuring 40.0 cm belonging to an African American male is found.
Estimate the height.

$$2.10 \times 40.0\text{cm} + 72.22\text{cm} \pm 3.91$$

$$156.22\text{ cm} \pm 3.91\text{cm}$$

$$152.31\text{cm} \xrightarrow{\hspace{2cm}} 160.13\text{ cm}$$

Humerus of a Caucasian female is found. It is 31.3cm long. What height range are we looking for?

$$3.36 \times 31.3\text{cm} + 57.97\text{cm} \pm 4.45\text{cm}$$
$$163.14\text{cm} \pm 4.45\text{cm}$$

$$158.69\text{cm} \leftarrow \rightarrow 167.59\text{cm}$$

