THE GOLDMAN OSTEOMETRIC DATA SET

A GUIDE TO THE MEASUREMENTS

COLUMN HEADING	MEASUREMENT	DESCRIPTION
Inst	Collection housing remains	AMNH – American Museum of Natural History CMNH – Cleveland Museum of Natural History DC – Duckworth Collection IRSN – Institut Royal des Sciences Naturelles de Belgique KSU – Kent State University KU – Kyoto University (Kyodai) MdH – Musee de l'Homme MNdAE – Muzeo Nationale di Antropologia e Etnologia NHM – Natural History Museum (London) NM – Naturhistorisches Museum SfAP – Staatssammlung fur Anthropologie und Palaeoanatomie WOAC – Webb Osteology and Archaeology Collection
ID		Museum accession identifier (these are based on either computerized accession records at collections, or on labels from bone boxes or skeletal remains)
Sex	Male or female, determined from os coxae (occasionally with cranial characteristics)[1]	0 = Male 0? = Probable male 1 = Female 1? = Probable female
Age	Age range based on pubic symphysis and auricular surface (also known age if cadaveric)[2]	Generally: 20-22; 22-25; 25-30; 30-40; 40-50; 50+
NOTE		For most skeletons, site of origin location (most are archaeological site name). If hand-written notes were found with individual skeletons, these are transcribed here.
Location		Modern country of origin or state in case of United States

COLUMN HEADING	MEASUREMENT	DESCRIPTION
Element	Presence/absence of element	0 = present (at least one measurement taken) 1 = absent (no measurements taken)
LHUM	Left humerus	
RHUM	Right humerus	
LRAD	Left radius	
RRAD	Right radius	
LFEM	Left femur	
RFEM	Right femur	
LTIB	Left tibia	
RTIB	Right tibia	
OSCX	Os coxae (left & right)	
Metrics	Osteometric measurements, taken in millimeters for all measurements	ALL MEASUREMENTS ARE TAKEN BILATERALLY WHEN POSSIBLE EXCEPT BI-ILIAC BREADTH (BIB). MEASUREMENT ABBREVIATIONS ARE PREFIXED BY A SIDE DESIGNATOR: L, LEFT; R, RIGHT. All measurements that had to be estimated at the time of observation are highlighted in the data set. If a metric designated by Martin (1928) is comparable, the number is specified in the description.[3]
HML	Humerus Maximum Length	The maximum length of the humerus from the most superior point on the humeral head to the most distal point of the medial projection of the trochlea. In some instances, the greater tubercle projects superior to the most superior point of the humeral head, or the lateral projection of the trochlea is as long as or longer than the medial projection; when this is determined to not result from pathology or trauma, the measurement is taken from the most superior point of the proximal end of the humerus to the most distal point of the trochlea. MARTIN (1928) #1
HEB	Humerus Epicondylar Breadth	The maximum breadth between the most extreme aspect of the medial epicondyle and the lateral epicondyle of the humerus, perpendicular to the axis of the humeral diaphysis. In cases of mild erosion on the condyles, this measurement is estimated and noted in the data set. MARTIN (1928) #2

COLUMN HEADING	MEASUREMENT	DESCRIPTION
HHD	Humerus Head Diameter	The superoinferior length of the humeral head, measured between the margins of the anatomical neck. MARTIN (1928) #10
HMLD	Humerus 50% Diaphyseal Mediolateral Diameter	At the 50% (midpoint) of the diaphysis, as determined from the measurement HML, the mediolateral diameter of the diaphysis. This is taken parallel to the plane between the medial and lateral epicondyles, and perpendicular to the long axis of the humeral diaphysis. MARTIN (1928) #6b
HAPD	Humerus 50% Diaphyseal Anteroposterior Diameter	At the 50% (midpoint) of the diaphysis, as determined from the measurement HML, the anteroposterior diameter of the diaphysis. This is taken perpendicular to the plane between the medial and lateral epicondyles, perpendicular to the HMLD measurement, and perpendicular to the long axis of the humeral diaphysis. MARTIN (1928) #6c
RML	Radius Maximum Length	The maximum length of the radius from the most superior point on the radial head to the most distal aspect of the styloid process. MARTIN (1928) #1
RMLD	Radius 50% Diaphyseal Mediolateral Diameter	At the 50% (midpoint) of the diaphysis, as determined from the measurement RML, the mediolateral diameter of the diaphysis. This is taken perpendicular to the long axis of the radial diaphysis. The measurement includes the interosseous crest; instances where additional ossification of cartilage has added bone to the crest (as might be due to age or trauma) are noted but no visual correction of the measurement is attempted. When taphonomic processes have eroded the crest, no measurement is attempted. MARTIN (1928) #4a
RAPD	Radius 50% Diaphyseal Anteroposterior Diameter	At the 50% (midpoint) of the diaphysis, as determined from the measurement RML, the anteroposterior diameter of the diaphysis. This is taken perpendicular to the RMLD measurement, and perpendicular to the long axis of the radial diaphysis. MARTIN (1928) #5
FML	Femur Maximum Length	Femoral maximum length, from the most superior point on the femoral head to the most inferior aspect of the medial condyle. In instances in which the greater trochanter projects superior to the most superior point of the femoral head, even if not perceptibly due to trauma or pathology, no measurement is attempted. MARTIN (1928) #1

COLUMN HEADING	MEASUREMENT	DESCRIPTION
FBL	Femur Bicondylar Length	Femoral "physiological" length, in which the condyles are placed flat against one end of the osteometric board, so that the inferior aspects of both condyles contact the vertical plane of the board in line with each other. The measurement is taken from this distal aspect of the condyles to the most proximal aspect of the femoral head (e.g., the point yielding the maximum measurement). Femora that are excluded from the FML measurement are likewise excluded from this measurement. MARTIN (1928) #2
FEB	Femur Epicondylar Mediolateral Breadth	The mediolateral breadth of the epicondyles perpendicular to the long axis of the femoral diaphysis. The epicondyles are often mildly eroded in archaeological specimens, and in such instances the measurement is estimated and noted in the data set. MARTIN (1928) #21
FAB	Femur Distal Articular (Bicondylar) Mediolateral Breadth	The mediolateral breadth of the condyles, from the most lateral and posterior projection of the lateral condyle to the most medial and posterior projection of the medial condyle.
FHD	Femur Head Anteroposterior Diameter	The anteroposterior diameter of the femoral head, measured with an orientation perpendicular to the long axis of the femoral diaphysis, with the femur held vertically. MARTIN (1928) #19
FMLD	Femur 50% Diaphyseal Mediolateral Diameter	At the 50% (midpoint) of the diaphysis, as determined from the measurement FML, the mediolateral diameter of the femoral diaphysis. This is taken perpendicular to the long axis of the femoral diaphysis and in the same plane as the horizontal axis through the epicondyles. MARTIN (1928) #7
FAPD	Femur 50% Diaphyseal Anteroposterior Diameter	At the 50% (midpoint) of the diaphysis, as determined from the measurement of FML, the anteroposterior diameter of the femoral diaphysis. This is taken perpendicular to the plane of the FMLD measurement and perpendicular to the long axis of the diaphysis. The linea aspera is included in this measurement. MARTIN (1928) #6
TML	Tibia Maximum Length	The maximum length of the tibia, taken from the most superior point of the intercondylar eminence ("spines") to the most distal aspect of the medial malleolus. The axis of the diaphysis is oriented so that it is parallel to the long axis of the measurement. MARTIN (1928) #2

COLUMN HEADING	MEASUREMENT	DESCRIPTION
TPB	Tibia Plateau Mediolateral (Bicondylar) Breadth	The mediolateral breadth of the tibial plateau, including the medial and lateral cortical projections of the condyles beyond the articular surfaces. This measurement is taken with the axis of the measurement passing through the visually-determined anteroposterior midpoint of the condyles. MARTIN (1928) #3
TMLD	Tibia 50% Diaphyseal Mediolateral Diameter	At the 50% (midpoint) of the diaphysis, as determined from the measurement TML, the mediolateral diameter of the tibial diaphysis. This is taken perpendicular to the long axis of the femoral diaphysis and in the same plane as the horizontal axis through the tibial plateau used in the TPB measurement. The tibial diaphysis is generally triangular in cross-section at the point of this measurement, so the measurement is taken relative to the orientation of the plateau and not diaphyseal shape.
TAPD	Tibia 50% Diaphyseal Anteroposterior Diameter	At the 50% (midpoint) of the diaphysis, as determined from the measurement TML, the anteroposterior diameter of the tibial diaphysis. This dimension is taken perpendicular to the long axis of the femoral diaphysis and perpendicular to the plane of the TMLD measurement. The tibial diaphysis is generally triangular in cross-section at the point of this measurement, so the measurement is taken relative to the orientation of the plateau (as the TMLD measurement is aligned) and not diaphyseal shape.
BIB	Bi-iliac Breadth	This is the transverse (coronal) breadth of the articulated pelvis between the iliac (cristal) tubercles. The pelvis is articulated by matching the sacral auricular surfaces to the corresponding auricular surfaces of the os coxae. The pubic symphyses are articulated as well, and the sacral articulations are adjusted so that the sacrum fits as a keystone between the os coxae. When the pubic bones are broken, the measurement is taken and the lack of the pubic bone is noted in the data set. When only half of the pelvis is measurable, a hemi-pelvic measurement is taken (wherein the measurement is taken from the cristal tubercle to the midpoint of the sacrum, which is placed parallel to the surface of the osteometric board) and this value is doubled. MARTIN (1928) #2

COLUMN HEADING	MEASUREMENT	DESCRIPTION
IBL	Maximum Iliac Blade Length	The length of the iliac blade from the most anterior projection of the anterior superior iliac spine (ASIS) to the most posterior projection of the posterior superior iliac spine (PSIS). Any erosion or breakage of these spines precludes this measurement. MARTIN (1928) #12
AcH	Maximum Acetabular Height	The length of the internal aspect of the acetabulum, on the lunate surface, measured from the most inferior aspect of the lower rim (generally the point closest to the ischial tuberosity) to the opposite side of the acetabulum (generally the point closest to the anterior inferior iliac spine), so this dimension constitutes a diameter. This measurement is taken within the acetabulum, to the external edge of the lunate surface. Note that this measurement does not reflect any anatomical orientation of the acetabulum (e.g., superoinferior or anteroposterior).

[1] **Sex determination followed guidelines from:**

Bruzek, J. 2002. A method for visual determination of sex, using the human hip bone. *American Journal of Physical Anthropology* 117:157-168.

Phenice, T W. 1969. A newly developed visual method of sexing the os pubis. *American Journal of Physical Anthropology* 30:297-301.

[2] **Age determination followed guidelines from:**

Buckberry, J L & A T Chamberlain. 2002. Age estimation from the auricular surface of the ilium: a revised method. *American Journal of Physical Anthropology* 119:231-239.

Lovejoy, C Owen, Richard S Meindl, Robert P Mensforth & Thomas J Barton. 1985. Multifactorial determination of skeletal age at death: A method and blind tests of its accuracy. *American Journal of Physical Anthropology* 68:1-14.

Suchey, J M, D V Wiseley & D Katz. 1986. Evaluation of the Todd and McKern-Stewart methods for aging the male os pubis. In (Katherine J Reichs, editors): *Forensic Osteology: advances in the identification of human remains*. Springfield, IL: Charles C Thomas, pp. 33-67.

[3] **Martin, Rudolf**. 1928. *Lehrbuch der Anthropologie in Systematischer Darstellung mit Besonderer Berücksichtigung der Anthropologischen Methoden für Studierende, Ärtze und Forschungsreisende. Zweiter Band: Kraniologie, Osteologie*. Second Edition. Jena: Gustav Fischer.