

# A Preliminary Osteological Analysis of the University of Missouri Anatomy Osteology Collection

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## Introduction

The University of Missouri Anatomy Osteology Collection consists of 97 human skeletons used extensively for anatomy-based education and research. Despite the size and utility of the collection, no information regarding the demographics of the collection has previously been available. Using standard osteological techniques, a preliminary investigation was initiated to ascertain the sex, age at death, and degree of preservation of each specimen in the collection.

## Materials & Methods

In order to inventory each of the skeletons, specimens were organized by their respective ID number (denoted on each bone). Given the extensive comingling of bones, reunification of all skeletal elements for each specimen to determine the degree of preservation was a substantial component of the project. Sex was assessed for each specimen that had at least an intact cranium or Os Coxa bone using Walker's (2008) human sexual dimorphism system (Figure 2). Age determination was based on Meindl and Lovejoy's (1985) aging system, Brothwell's (1989) tooth-wear pattern, the Suchey-Brooks (1990) pubic symphysis system and Lovejoy's (1985) iliac auricular surface paradigm (Figure 3).

## Results

Results indicate that the collection consists of 56 males and 35 females, with an additional 6 skeletons for which sex could not be accurately determined (Table 1). Specimens in the collection range from late adolescents to individuals in the mid-fifties, with the majority between 26-40 years old at the time of death (Figure 1). Extensive use of the collection has resulted in the widespread comingling of remains, and reattribution of elements to each specimen is ongoing. Still, at the present time, 84 out of 97 skeletons (87%) are at least unilaterally complete excluding carpals and tarsals.

Table 1 | Brief summary of population data.

ID #	Sex	Age	ID #	Sex	Age	ID #	Sex	Age	ID #	Sex	Age	ID #	Sex	Age
1	Female	20 - 30	24	???	???	45	Female	30 - 40	69	Male	25 - 35	92	Female	30 - 50
2	Male	25 - 40	25	Male	20 - 35	46	Male	25 - 35	70	???	???	93	Male	25 - 45
3	Male	30 - 50	27	Female	25 - 35	47	Male	20 - 40	71	Male	17 - 25	94	???	???
4	Female	35 - 45	28	Female	20 - 40	48	Female	25 - 35	72	Male	25 - 55	95	Female	20 - 30
5	Male	35 - 50	29	Male	30 - 50	49	Male	30 - 50	73	Female	20 - 35	96	Male	25 - 35
6	Male	20 - 40	30	Female	20 - 30	50	Male	25 - 35	74	Female	45+	97	Male	35 - 50
8	Male	20 - 50	31	Female	20 - 35	51	Female	30 - 40	75	Female	25 - 50	98	Female	20 - 50
9	Male	Juvenile	32	Male	20 - 30	54	Male	20 - 30	76	Male	25 - 35	99	Female	30 - 50
10	Male	25 - 55	33	Male	30 - 50	55	Male	35 - 40	77	Male	30 - 50	100	Female	30 - 50
11	Male	30 - 50	34	Male	30 - 40	57	Female	30 - 40	78	Male	30 - 40	101	Female	30 - 40
12	Female	30 - 50	35	Male	30 - 50	58	Female	25 - 50	79	Female	20 - 30	102	Female	20 - 40
13	Male	30 - 50	36	Male	20 - 40	59	Male	45 - 55	80	Male	30 - 50	103	Male	30 - 40
14	Male	30 - 40	37	???	20 - 50	60	Female	20 - 40	81	Male	30 - 40	104	Female	20 - 30
15	Female	30 - 50	38	Female	30 - 50	62	Male	20 - 40	82	Male	20 - 30	105	Male	20 - 40
16	Male	35 - 45	39	???	???	63	Female	30 - 50	85	Male	30 - 40	107	Male	25 - 35
17	Male	20 - 35	40	Male	20 - 30	64	Female	30 - 40	86	Female	20 - 40	891	???	???
19	Male	20 - 30	41	Male	20 - 35	65	Male	30 - 40	88	Female	20 - 30	895	Male	25 - 35
21	Male	30 - 40	42	Male	30 - 45	66	Female	20 - 40	89	Male	Juvenile			
22	Male	30 - 50	43	Male	25 - 50	67	Female	35 - 60	90	Female	17 - 24			
23	Male	40 - 50	44	Male	20 - 29	68	Female	20 - 40	91	Male	30 - 40			

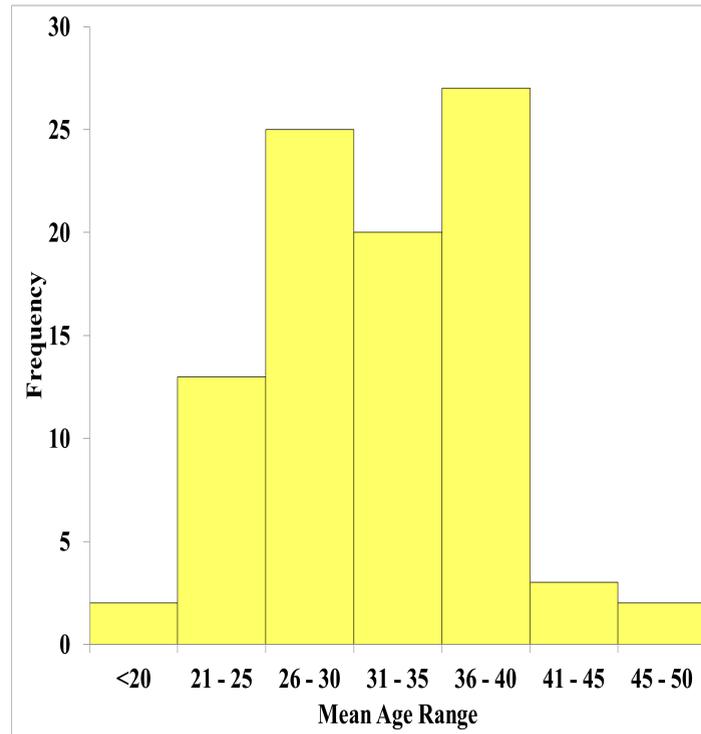


Figure 1 | Histogram of the mean age range of the population.

## Sexing Techniques

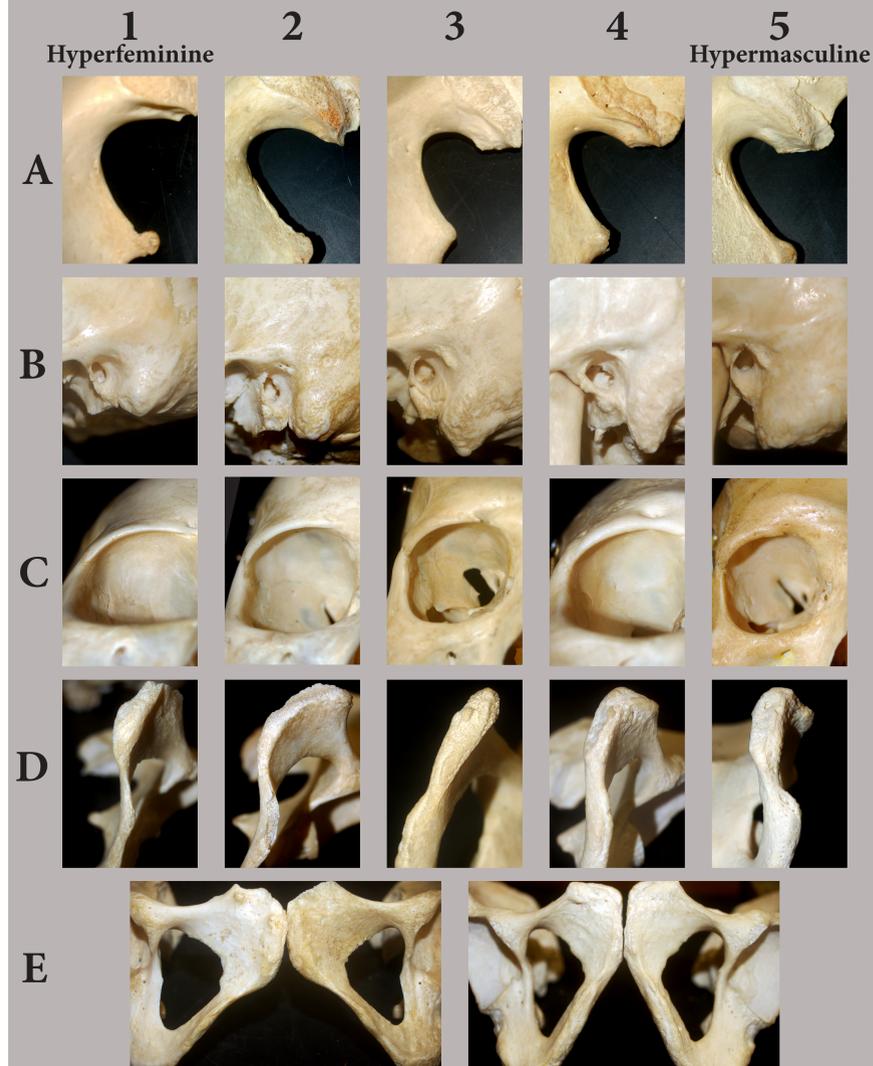


Figure 2 | Walker's sexing system (2005, 2008) involves a scale from 1 (hyperfeminine) to 5 (hypermasculine), represented by columns left to right respectively. In general, more robust features correlate to male specimens. The columns are as follows: (A) Greater Sciatic Notch, (B) Mastoid Process, (C) Supraorbital Margin, (D) Ischiopubic Aspect, (E) Ischiopubic Angle

## Aging Techniques

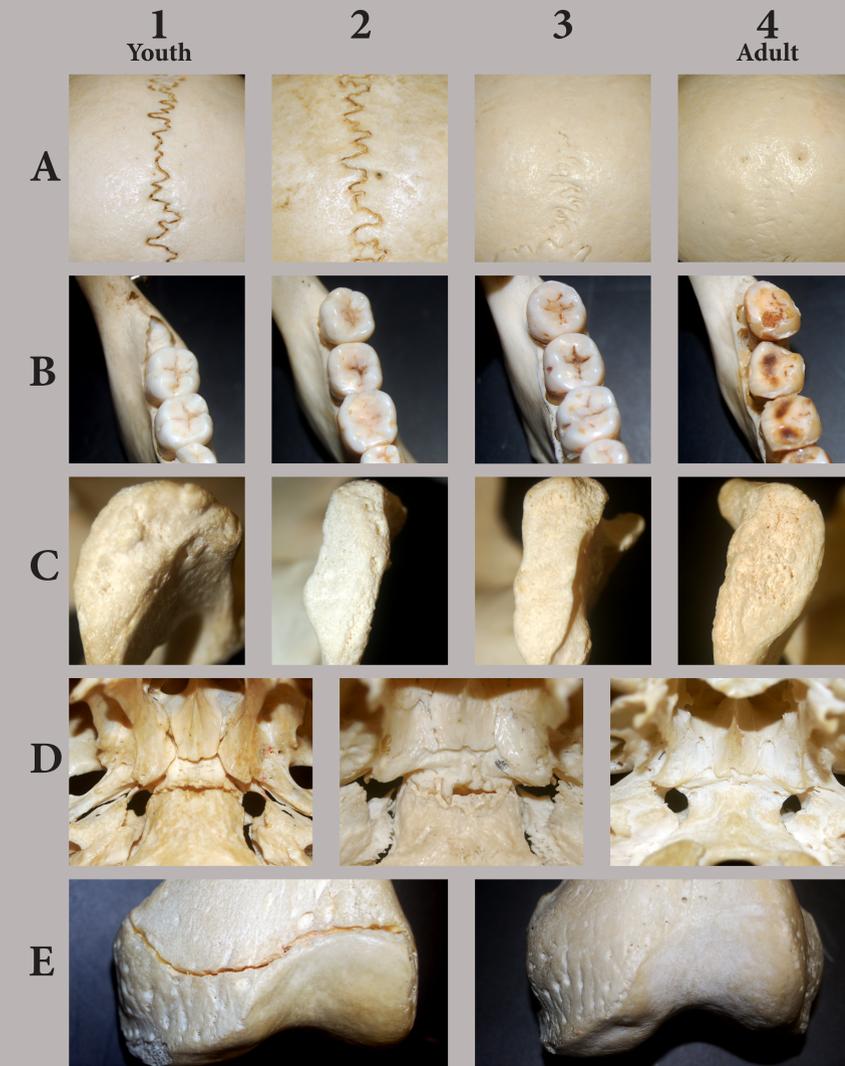


Figure 3 | Examples of age progression across the body. Each row corresponds to a different aging technique. These include techniques by Meindl & Lovejoy (1985), Brothwell (1989), and Suchey & Brooks (1990). The columns are as follows: (A) Cranial Suture Fusion, (B) Tooth Wear Patterns, (C) Symphyseal Surface, (D) Fusion of Occipital Synchondrosis, (E) Epiphyseal Fusion in Left Femur

## Conclusions

The MU Anatomy Osteology Collection is a valuable institutional resource for research and instruction. Though study of the collection is ongoing, important new information regarding the collection's size, completeness, sex and age distributions has been gained through this project. In particular, the relatively low average age at death for the collection is unusual for anatomy-based osteology collections and warrants additional study. Accordingly, further curation of the MU Anatomy Osteology Collection promises to increase its utility for medical and anthropological research.

## References

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