

Introduction to Forensic Anthropology

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Key concepts, methods, and applications for the analysis of human remains in legal contexts.

1. What Is Forensic Anthropology?

Aspect	Description
Definition	The application of skeletal biology and osteology to the identification of deceased individuals and the reconstruction of events surrounding death.
Primary Goals	1. Establish biological profile (age, sex, ancestry, stature). 2. Determine cause and manner of death when possible. 3. Identify trauma (perimortem vs. postmortem).
Typical Settings	Crime scenes, mass graves, disaster sites, archaeological excavations with legal relevance, and museum collections (comparative reference).

2. The Forensic Anthropology Workflow

1. Scene Assessment

- Observe context, document the position of remains, collect associated artifacts (clothing, personal effects).
- Photograph and map the site (scale, compass, grid).

2. Recovery & Transport

- Use **field recovery kits** (trowels, brushes, gloves, bags).
- Label each bundle with unique ID, location, and orientation.

3. Laboratory Examination

- **Cleaning** (soft brushes, water, mild detergent).
- **Inventory**: count bones, note completeness, record missing elements.

4. Biological Profile Construction

- **Sex** ? Pelvic morphology, cranial features, metric discriminant functions.

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- **Age** ? Dental eruption, epiphyseal fusion, pubic symphysis, auricular surface, sternal rib ends.
- **Ancestry** ? Cranial metric and non-metric traits (nasal aperture, orbital shape, zygomatic arch).
- **Stature** ? Long-bone length regression equations (population-specific).

5. Trauma & Pathology Assessment

- Differentiate **antemortem**, **perimortem**, and **postmortem** damage (color, fracture pattern, healing).
- Record pathological lesions (osteomyelitis, arthritis) that may aid identification.

6. Taphonomic Evaluation

- Study decomposition, burial environment, animal activity, and weathering to estimate **postmortem interval (PMI)**.

7. Report & Testimony

- Write a concise, evidence-based report.
- Prepare for courtroom testimony (clear language, visual aids, chain-of-custody documentation).

3. Biological Profile Details

3.1 Sex Estimation

Method	Skeleton Part	Accuracy (modern populations)
Pelvic morphology (greater sciatic notch, subpubic angle)	Pelvis	95-99%
Cranial traits (nuchal crest, mastoid process)	Skull	80-90%
Metric discriminant functions	Multiple bones	85-95%

3.2 Age Estimation

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Age Range

Preferred Indicators

Infancy (0-2yr)

Dental eruption, long bone length

Childhood (2-12yr)

Epiphyseal fusion, dental development

Adolescence (13-20yr)

Fusion of iliac crest, ischial tuberosity, clavicle

Adult (20-50yr)

Pubic symphysis, auricular surface, sternal rib ends

****Older Adult (>50)**