

## Anthropological Analyses

Tools for anthropological analyses to use directly while working in human remains. Allowing the acquisition of basic data like age, sex, and pathologies to use in an anthropological and archaeological context.

Regarding the [model](#) this is connected to burial as a **stratigraphic unit** (E18 physical object) and **human remains** (E20 biological object).

For some aspects entering data is already possible but a better user interface is desirable. For other data new ways of entering are required e.g. for sex and age estimation.

## Model

This information will be mapped within CIDOC CRM model. **E18 (physical thing)-> P2 (has type) -> E55 (Type)**

- E18 = stratigraphic unit
- E55 = Types provided like **value types** which can't be edited containing all features (e.g. Glabella). The selection (e.g. Female) will than be written to the link description

## Human remains interface

[#1352](#)

## Tool - Age estimation

[#1660](#)

- Value type: Absolute Age
- Description field

## Methods for fetuses/neonates

## Methods for children

- Ubelaker 1978 - Dentition  
(
  - 5 months in utero +/- 2 months
  - 7 months in utero +/- 2 months
  - Birth +/- 2 months
  - 6 months +/- 3 months
  - 9 months +/- 3 months
  - 1 year +/- 4 months
  - 1.5 years +/- 6 months
  - 2 years +/- 8 months
  - 3 years +/- 1 year
  - 4 years +/- 1 year
  - 5 years +/- 1.5 years
  - 6 years +/- 2 years
  - 7 years +/- 2 years
  - 8 years +/- 2 years
  - 9 years +/- 3 years
  - 10 years +/- 2.5 years
  - 11 years +/- 2.5 years
  - 12 years +/- 2.5 years
  - 15 years +/- 3 years
  - 21 years
  - 35 years
- Stloukal und Hanáková 1978 - Length of Diaphyses  
(
  - Right side/Left side
    - Humerus

- 78-97mm (88.1mm) -> 0.5 years
  - 89-106mm (97.9mm) -> 1 years
  - 98-118mm (108.6mm) -> 1.5 years
  - 106-129mm (117.5mm) -> 2 years
  - 113-138mm (124.9mm) -> 2.5 years
  - 120-147mm (133.5mm) -> 3 years
  - 128-159mm (142.7mm) -> 4 years
  - 136-170mm (152.4mm) -> 5 years
  - 147-181mm (163.8mm) -> 6 years
  - 157-192mm (174.8mm) -> 7 years
  - 169-201mm (184.6mm) -> 8 years
  - 178-210mm (194.3mm) -> 9 years
  - 186-218mm (203.9mm) -> 10 years
  - 196-224mm (211.9mm) -> 11 years
  - 202-234mm (219.9mm) -> 12 years
  - 211-247mm (231.2mm) -> 13 years
  - 220-257mm (240.8mm) -> 14 years
- Radius
    - 63-75mm (69.7mm) -> 0.5 years
    - 68-85mm (76.8mm) -> 1 years
    - 75-90mm (84.1mm) -> 1.5 years
    - 80-96mm (89.8mm) -> 2 years
    - 86-103mm (95.1mm) -> 2.5 years
    - 93-110mm (101.6mm) -> 3 years
    - 98-120mm (108.3mm) -> 4 years
    - 105-130mm (116.0mm) -> 5 years
    - 114-140mm (125.1mm) -> 6 years
    - 121-152mm (133.5mm) -> 7 years
    - 130-160mm (141.9mm) -> 8 years
    - 139-163mm (149.2mm) -> 9 years
    - 149-168mm (156.9mm) -> 10 years
    - 156-175mm (163.3mm) -> 11 years
    - 160-179mm (168.8mm) -> 12 years
    - 165-188mm (175.7mm) -> 13 years
    - 166-200mm (182.5mm) -> 14 years
- Femur
    - 95-122mm (108.1mm) -> 0.5 years
    - 109-135mm (122.0mm) -> 1 years
    - 122-152mm (137.5mm) -> 1.5 years
    - 135-166mm (149.6mm) -> 2 years
    - 143-182mm (160.9mm) -> 2.5 years
    - 156-196mm (174.1mm) -> 3 years
    - 169-213mm (188.3mm) -> 4 years
    - 183-230mm (203.2mm) -> 5 years
    - 198-246mm (211.1mm) -> 6 years
    - 214-263mm (238.1mm) -> 7 years
    - 228-278mm (253.0mm) -> 8 years
    - 241-290mm (266.5mm) -> 9 years
    - 254-305mm (281.2mm) -> 10 years
    - 265-323mm (292.5mm) -> 11 years
    - 279-337mm (302.9mm) -> 12 years
    - 286-358mm (319.0mm) -> 13 years
    - 296-382mm (333.3mm) -> 14 years
- Tibia
    - 84-93mm (88.8mm) -> 0.5 years
    - 93-105mm (99.2mm) -> 1 years
    - 102-120mm (111.4mm) -> 1.5 years
    - 109-131mm (121.1mm) -> 2 years
    - 117-144mm (131.7mm) -> 2.5 years
    - 127-156mm (142.2mm) -> 3 years
    - 136-171mm (151.9mm) -> 4 years
    - 146-184mm (164.1mm) -> 5 years
    - 158-201mm (177.1mm) -> 6 years
    - 168-216mm (188.9mm) -> 7 years
    - 180-227mm (202.0mm) -> 8 years
    - 191-235mm (213.6mm) -> 9 years
    - 202-246mm (224.3mm) -> 10 years

- 212-259mm (235.1mm) -> 11 years
- 218-268mm (244.4mm) -> 12 years
- 227-283mm (256.1mm) -> 13 years
- 235-301mm (269.8mm) -> 14 years

## Methods for grown-ups

- Lovejoy 1985 - Abrasion of Teeth  
(Claude O. Lovejoy, Dental Wear in the Libben Population: It's Functional Pattern and Role in the Determination of Adult Skeletal Age at Death. American Journal of Physical Anthropology 68, 1985, 47-56)
  - Maxilla:
    - A -> 12-18 years
    - B1 -> 16-20 years
    - B2 -> 16-20 years
    - C -> 18-22 years
    - D -> 20-24 years
    - E -> 24-30 years
    - F -> 30-35 years
    - G -> 35-40 years
    - H -> 40-50 years
  - Mandible:
    - A -> 12-18 years
    - B1 -> 16-20 years
    - B2 -> 16-20 years
    - C -> 18-22 years
    - D -> 20-24 years
    - E -> 24-30 years
    - F -> 30-35 years
    - G -> 35-40 years
    - H -> 40-45 years
    - I -> 45-55 years
- Miles 1963 - Abrasion of Teeth  
(Albert E. W. Miles, The dentition in the assessment of individual age in skeletal material. In: Don R. Brothwell (Hrsg.), Dental Anthropology, Oxford 1963, 191-209)
  - Maxilla
    - 17-25 years
    - 25-35 years
    - 33-45 years
    - 45 years and older
  - Mandible
    - 17-25 years
    - 25-35 years
    - 33-45 years
    - 45 years and older
- Todd 1920 - Pubic Symphysis  
(Thomas W. Todd, Age changes in the pubic bone. I. The male white pubic. American Journal of Physical Anthropology 3, 1920, 285-334)
  - Right pubic symphysis
    - I -> 18-19 years
    - II -> 20-21 years
    - III -> 22-24 years
    - IV -> 25-26 years
    - V -> 27-30 years
    - VI -> 30-35 years
    - VII -> 35-39 years
    - VIII -> 39-44 years
    - IX -> 44-50 years
    - X -> 50 years and older
  - Left pubic symphysis
    - I -> 18-19 years
    - II -> 20-21 years
    - III -> 22-24 years
    - IV -> 25-26 years
    - V -> 27-30 years

- VI -> 30-35 years
  - VII -> 35-39 years
  - VIII -> 39-44 years
  - IX -> 44-50 years
  - X -> 50 years and older
- Szilvássy 1977 - Sternum  
(Johann Szilvássy, Altersdiagnose am Skelett. In: Rainer Knußmann (Hrsg.), Anthropologie. Handbuch der vergleichenden Biologie des Menschen. Band I: Wesen und Methoden der Anthropologie, Stuttgart and New York 1988, 421-443)
    - right clavicle
      - I -> 18-20 years
      - II -> 21-25 years
      - III -> 26-30 years
    - left clavicle
      - I -> 18-20 years
      - II -> 21-25 years
      - III -> 26-30 years
- Schaefer et al. 2009 - Fusion of Os sacrum  
(Maureen Schaefer, Sue Black and Louise Scheuer, Juvenile Osteology: A Laboratory and Field Manual, Amsterdam, Boston, Heidelberg, London 2008)
    - Female
      - Auricular surface
        - Open -> 20 years or younger
        - Partly fused -> 15-21 years
        - Fused -> 17 years or older
      - S1 to S2 Body
        - Open -> 27 years or younger
        - Partly fused -> 14-30 years or older
        - Fused -> 21 years or older
      - S1 to S2 Alae
        - Open -> 19 years or younger
        - Partly fused -> 11-26 years
        - Fused -> 14 years or older
      - S2 to S5 Body
        - Open -> 20 years or younger
        - Partly fused -> 12-26 years
        - Fused -> 19 years or older
      - S2 to S5 Alae
        - Open -> 14 years or younger
        - Partly fused -> 10-19 years
        - Fused -> 13 years or older
    - Male
      - Auricular surface
        - Open -> 21 years or younger
        - Partly fused -> 17-21 years
        - Fused -> 18 years or older
      - S1 to S2 Body
        - Open -> 27 years or younger
        - Partly fused -> 19-30 years or older
        - Fused -> 25 years or older
      - S1 to S2 Alae
        - Open -> 20 years or younger
        - Partly fused -> 16-27 years
        - Fused -> 19 years or older
      - S2 to S5 Body
        - Open -> 20 years or younger
        - Partly fused -> 16-28 years
        - Fused -> 20 years or older
      - S2 to S5 Alae
        - Open -> 16 years or younger
        - Partly fused -> 16-21 years
        - Fused -> 16 years or older

## To do

- Define age groups that will have their own "Skelettmännchen"
- Obliteration of Skull Bones
- Pubic Symphysis Nemeskeri

## **Bone Inventory**

#4173

For the (graphical) anthropological interface the following bones and bone parts have to be recorded (import ID of bones already entered as types in brackets):

See: [Bone inventory](#)

### **Teeth**

### **Pathologies/Non metric traits**

### **Vertebrae**

### **Joints**