2027 ABFA Analyst Competencies & Reading List

This document contains sources suitable for helping examinees prepare to demonstrate proficiency of the ABFA Analyst Competencies. Each section of this list (Topics 1-16) provides the Analyst Competencies, followed by recommended preparation materials (*References).* In general, entire books are used for "general knowledge questions" while specific chapters or articles may be used for questions that are more specific to that publication. Examinees are responsible for demonstrating proficiency of the Analyst Competencies, as well as key findings and conclusions from the articles listed. Questions related to the conclusions of specific articles will typically provide the reference author and date.

Each Reference is provided only once but may address competencies in multiple topic areas. Exam questions are not limited to the topic in which the reference is listed and examinees should use the listed competencies after each reference as a guide as to how it may be used on the exam. For example, references listed in Section 2 (*Bioprofile*) may also have an exam question related to competencies in Section 1 (*Anatomy*) or Section 11 (*Statistics*). For documents listed in Section 14 (*Professional Standards, Laboratory Operations, & Accreditation*), examinees are expected to be knowledgeable about the content of each document and be able to apply them to their relevant topic areas (e.g., age estimation, forensic significance, processing), regardless of what competencies are listed. The Historical References at the end of this document are useful for understanding the development and application of recent methods, but exam questions will not come directly from these sources.

In some sections, multiple reference books are provided for the same competency (e.g., juvenile development, osteology, non-human bone identification) to provide options for studying based on availability and preference. General knowledge questions will not be specific to these broad references, and other books, including older and newer editions, may provide similar information. It is not expected that examinees will read every reference book in its entirety, nor will doing so guarantee that an individual is adequately prepared to take the Analyst Exam.

Because the ABFA Exam Development Committee (EDC) strives to maintain a balance between assessing the competencies required of board-certified practitioners and generating a manageable reading list for examinees, the reading list is not an exhaustive list of forensic anthropology literature that may be useful in preparing for the exam. Depending on your specific education, training, and experience, you may choose to spend more or less time on each of the references. Competencies will be tested via multiple choice, fill-in-the-blank, and short-answer questions, as well as hands-on tasks, that evaluate the examinee's core forensic anthropology knowledge and their ability to perform common tasks/job responsibilities. Ultimately, each examinee should assess their current knowledge, skills, and abilities relevant to each competency and focus their efforts according to those needs.

General Reference Books for Forensic Anthropology

The following books provide broad overviews of topics within the field of forensic anthropology. In many cases, chapters of these books describe and/or summarize specific references from the reading list, which examinees may find useful. Any examination material that comes from these books would be considered general, foundational knowledge in the discipline. Some of these books have specific chapters listed in “References” in Topics 1-16 from which specific exam questions were derived.

Blau, S., & Ubelaker, D. H. (Eds.). (2016). Handbook of Forensic Anthropology and Archaeology (2nd ed.). Routledge.

Boyd, C. C., & Boyd, D. C. (Eds.). (2018). Forensic Anthropology: Theoretical Framework and Scientific Basis. Wiley.

Christensen, A. M., Passalacqua, N. V., & Bartelink, E. J. (2019). Forensic Anthropology: Current Methods and Practice (2nd ed.). Academic Press.

DiGangi, E. A., & Moore, M. K. (Eds.). (2013). Research Methods in Human Skeletal Biology. Academic Press.

Dirkmaat, D. C. (Ed.). (2012). A Companion to Forensic Anthropology. Wiley-Blackwell.

Langley, N. R., & Tersigni-Tarrant, M. T. (Eds.). (2017). Forensic Anthropology: A Comprehensive Introduction (2nd ed.). CRC Press.

1. Anatomy (gross anatomy, human osteology, comparative osteology, skeletal biology, histology)

A1.1	Differentiate between osseous and non-osseous material
A1.2	Know bone composition and basic biomechanical properties of bone
A1.3	Identify and side elements and teeth (complete and fragmentary, fetal through adult age)
A1.4	List differences among and be able to interpret tooth numbering systems
A1.5	Be familiar with landmark definitions and identify locations (landmarks, muscle attachments, protuberances, etc.)
A1.6	Collect osteometric data (take measurements)
A1.7	Differentiate human and nonhuman remains (complete and fragmentary)
A1.8	Describe skeletal growth and development (endochondral vs. intramembranous, epiphyseal union, dental development and eruption)
A1.9	Recognize histological features in bone
A1.10	Explain the processes of modeling/remodeling, including the cell types involved in these processes
A1.11	Describe the microscopic structure of bone and the function and cellular precursors of bone cells (osteoblasts, osteocytes, and osteoclasts)
A1.12	Explain bone histology sampling procedures (e.g. sampling sites)
A1.13	Summarize the development of skeletal ossification centers and epiphyses, including timing, sequence, and sexual dimorphism

References

Adams, B., & Crabtree, P. (2012). Comparative Osteology: A Laboratory and Field Guide of Common North American Animals. Academic Press. [A1.7, A6.1]

Baker, B. J., Dupras, T. L., & Tocheri, M. W. (2005). The Osteology of Infants and Children. Texas A&M University Press. [A1.3, A1.8, A1.13]

Crowder, C., & Stout, S. (Eds.). (2012). Bone Histology: An Anthropological Perspective. CRC Press. [A1.1, A1.2, A1.7, A1.9, A1.10, A1.11, A1.12]

Cunningham, C., Scheuer, L., & Black, S. (2016). Developmental Juvenile Osteology (2nd ed.). Academic Press.[A1.3, A1.8, A1.13]

France, D. L. (2008). Human and Nonhuman Bone Identification: A Color Atlas. CRC Press. [A1.7, A6.1]

France, D. L. (2017). Comparative Bone Identification: Human Subadult to Nonhuman. CRC Press. [A1.3, A1.7, A6.1]

Langley, N. R., Jantz, L. M., Ousley, S. D., Jantz, R. L., & Milner, G. (2016). Data Collection Procedures for Forensic Skeletal Material 2.0. University of Tennessee and Lincoln Memorial University. [A1.5, A1.6, A2.1]

Plemons, A. M., Kamnikar, K. R., Goots, A. G., & Biggs, J. A. (2023). Landmark and measurement-based data assistant (LAMbDA): A pedagogical tool for cranial landmark data collection. Forensic Anthropology, 6(2), 92–98. https://locatelambda.org/ [A1.5, A1.6]

Scheuer, L., & Black, S. (2004). The Juvenile Skeleton. Elsevier Press. [A1.3, A1.8, A1.13]

Schaefer, M., Black, S., & Scheuer, L. (2009). Juvenile Osteology: A Laboratory and Field Manual. Academic Press. [A1.3, A1.8, A1.13]

White, T. D., Black, M. T., & Folkens, P. A. (2012). Human Osteology (3rd ed.). Academic Press. [A1.1, A1.2, A1.3, A1.4, A1.5, A1.6]

2. Bioprofile

A2.1	Score, measure, and record metric and morphoscopic/morphological variables according to accepted and defined procedures for estimating bioprofile parameters
A2.2	Use software programs relevant to bioprofile analyses

NOTE: Examinees are expected to be able to score, measure, and record variables according to each of the below references marked with the A2.1 competency. Examinees will only be asked questions regarding the use of the software programs specifically listed below and marked with the A2.2 competency (e.g., data entry, software options, and output).

References

AlQahtani, S. J., Hector, M. P., & Liversidge, H. M. (2010). Brief communication: The London atlas of human tooth development and eruption. American Journal of Physical Anthropology, 142(3), 481–490. [A2.1]

AlQahtani, S. J. (2009). Atlas of human tooth development and eruption. Queen Mary and Westfield College, London. (PDF available at: https://www.qmul.ac.uk/dentistry/atlas/) [A2.1]

Auerbach, B. M. (2011). Methods for estimating missing human skeletal element osteometric dimensions employed in the revised Fully technique for estimating stature. American Journal of Physical Anthropology, 145(1), 67–80. [A2.1]

Berg, G. E., & Kenyhercz, M. W. (2017). Introducing human mandible identification [(hu)MANid]: A free, web-based GUI to classify human mandibles. Journal of Forensic Sciences, 62(6), 1592–1598. [A2.1]

Brůžek, J., Santos, F., Dutailly, B., Murail, P., & Cunha, E. (2017). Validation and reliability of the sex estimation of the human os coxae using freely available DSP2 software for bioarchaeology and forensic anthropology. American Journal of Physical Anthropology, 164(2), 440–449. [A2.1]

Hartnett, K. M. (2010). Analysis of age-at-death estimation using data from a new, modern autopsy sample—Part I: Pubic bone. Journal of Forensic Sciences, 55(5), 1145–1151. [A2.1]

Hartnett, K. M. (2010). Analysis of age-at-death estimation using data from a new, modern autopsy sample—Part II: Sternal end of the fourth rib. Journal of Forensic Sciences, 55(5), 1152–1156. [A2.1]

Hefner, J. T. (2009). Cranial nonmetric variation and estimating ancestry. Journal of Forensic Sciences, 54(5), 985–995. [A2.1]

Hefner, J. T. (2018). The macromorphoscopic databank. American Journal of Physical Anthropology, 166(4), 994–1004. [A2.1]

Hefner, J. T., & Linde, K. C. (2018). Atlas of Human Cranial Macromorphoscopic Traits. Academic Press. [A2.1]

Hefner, J. T., Ousley, S., & Richardson, R. (2024). MaMD Analytical 1.0: A computer program for macromorphoscopic trait analysis. Forensic Anthropology, 7(2–3), 119–140. [A2.1]

Jantz, R. L., & Ousley, S. D. (2005). FORDISC 3: Computerized Forensic Discriminant Functions. Version 3.1. The University of Tennessee. [Including the program itself and the included Help Guide] [A1.5, A1.6; A2.1, A2.2]

- Fordisc 3.1 Help File Available At: https://www.statsmachine.net/software/Fordisc/support/Help/Fordisc3_Help.pdf

Jantz, R. L., Jantz, L. M., & Ousley, S. D. (2020). Measuring the tibia: Trotter's error revisited. Journal of Forensic Sciences, 65(6), 2094–2097. [A2.1]

Klales, A. R., & Cole, S. J. (2018). MorphoPASSE: The Morphological Pelvis and Skull Sex Estimation Database Manual (Version 1.0). Washburn University. [Including the program: https://www.morphopasse.com/program.html] [A2.1, A2.2]

Klales, A. R. (2020). MorphoPASSE: Morphological pelvis and skull sex estimation program. In A. R. Klales (Ed.), Sex Estimation of the Human Skeleton: History, Methods, and Emerging Techniques (pp. 271–278). Academic Press. [A2.1, A2.2]

Langley-Shirley, N., & Jantz, R. L. (2010). A Bayesian approach to age estimation in modern Americans from the clavicle. Journal of Forensic Sciences, 55(3), 571–583. [A2.1]

Lewis, C. J., & Garvin, H. M. (2016). Reliability of the Walker cranial nonmetric method and implications for sex estimation. Journal of Forensic Sciences, 61(3), 743–751. [A2.1]

Osborne, D. L., Simmons, T. L., & Nawrocki, S. P. (2004). Reconsidering the auricular surface as an indicator of age at death. Journal of Forensic Sciences, 49(5), 905–911. [A2.1]

Ousley, S. D., & Jantz, R. L. (2012). Fordisc 3 and statistical methods for estimating sex and ancestry. In D. C. Dirkmaat (Ed.), A Companion to Forensic Anthropology (pp. 311–329). Wiley-Blackwell. [A2.1, A2.2, A11.1, A11.2]

Raxter, M. H., Auerbach, B. M., & Ruff, C. B. (2006). Revision of the Fully technique for estimating statures. American Journal of Physical Anthropology, 130(3), 374–384. [A2.1]

Scott, G. R., & Irish, J. D. (2017). Human Tooth Crown and Root Morphology: The Arizona State University Dental Anthropology System. Cambridge University Press. [A2.1]

Scott, G. R., Pilloud, M. A., Navega, D., d'Oliveira Coelho, J., Cunha, E., & Irish, J. D. (2018). rASUDAS: A new web-based application for estimating ancestry from tooth morphology. Forensic Anthropology, 1(1), 18–31. [A2.1]

Scott, G. R., Navega, D. S., d'Oliveira Coelho, J., Vlemincq-Mendieta, T., Kenessey, D., & Irish, J. D. (2025). rASUDAS2: A new iteration of the application for assessing the population affinity of individuals by tooth crown and root morphology. Forensic Anthropology, 8(1), 1–9. [A2.1]

Shirley, N. R., & Jantz, R. L. (2011). Spheno-occipital synchondrosis fusion in modern Americans. Journal of Forensic Sciences, 56(3), 580–585. [A2.1]

Spradley, M. K., & Jantz, R. L. (2011). Sex estimation in forensic anthropology: Skull versus postcranial elements. Journal of Forensic Sciences, 56(2), 289–296. [A2.1]

Turner, C. G., II, Nichol, C. R., & Scott, G. R. (1991). Scoring procedures for key morphological traits of the permanent dentition: The Arizona State University Dental Anthropology System. In M. A. Kelley & C. S. Larsen (Eds.), Advances in Dental Anthropology (pp. 13–31). Wiley-Liss. [A2.1]

Programs: While other biological profile estimation methods may have associated programs or GUIs, for exam purposes, examinees are expected to be able to use the following: [A2.2]

- Fordisc 3.1: https://fac.utk.edu/research/fordisc-3-1-personal-computer-forensic-discriminant-functions/
    - NOTE: Access to Fordisc 3.1 is not required for exam preparation. Examination questions will be based on information that can be acquired through the references listed above (i.e., Fordisc Help File, Ousley & Jantz (2012)).

- MorphoPASSE: https://www.morphopasse.com/program.html

3. Trauma

A3.1	Describe classic characteristics of major classes of skeletal trauma
A3.2	Describe characteristics of skeletal trauma timing
A3.3	Recognize typical fracture patterns related to trauma classes
A3.4	Recognize typical fracture and burn patterns related to thermal alteration
A3.5	Differentiate traumatic changes to bone from normal skeletal variants, taphonomic and pathological changes, including common sources of pseudotrauma

References

Berryman, H. E. (2019). A systematic approach to the interpretation of gunshot wound trauma to the cranium. Forensic Science International, 301, 306–317. [A3.1, A3.3]

Berryman, H. E., Berryman, J. F., & Saul, T. B. (2018). Bone trauma analysis in a forensic setting: Theoretical basis and a practical approach for evaluation. In C. C. Boyd & D. C. Boyd (Eds.), Forensic Anthropology: Theoretical Framework and Scientific Basis (pp. 213–234). Wiley. [A3.1, A3.3]

Boyd, D. C. (2018). The anatomical basis for fracture repair: Recognition of the healing continuum and its forensic applications to investigations of pediatric and elderly abuse. In C. C. Boyd & D. C. Boyd (Eds.), Forensic Anthropology: Theoretical Framework and Scientific Basis (pp. 149–200). Wiley. [A3.2]

Christensen, A. M., Smith, V. A., Ramos, V., Shegogue, C., & Whitworth, M. (2012). Primary and secondary skeletal blast trauma. Journal of Forensic Sciences, 57(1), 6–11. [A3.3]

Fleischman, J. M., Soto Martinez, M. E., Wiersema, J. M., & Pinto, D. C. (2021). The role of the forensic anthropologist in the pediatric autopsy: Interpretations, contributions, and challenges. WIREs Forensic Science, 3(1), e1389. [A3.1, A3.2, A3.3, A3.5]

Glassman, D. M., & Crow, R. M. (1996). Standardization model for describing the extent of burn injury to human remains. Journal of Forensic Sciences, 41(1), 152–154. [A3.4]

Hart, G. O. (2005). Fracture pattern interpretation in the skull: Differentiating blunt force from ballistics trauma using concentric fractures. Journal of Forensic Sciences, 50(6), 1276–1281. [A3.1, A3.3]

Herrmann, N. P., & Bennett, J. L. (1999). The differentiation of traumatic and heat-related fractures in burned bone. Journal of Forensic Sciences, 44(3), 461–469. [A3.1, A3.3]

L'Abbé, E. N., Symes, S. A., Raymond, D. E., & Ubelaker, D. H. (2019). The Rorschach butterfly, understanding bone biomechanics prior to using nomenclature in bone trauma interpretations. Forensic Science International, 299, 187–194. [A3.1, A3.4]

L'Abbé, E. N., Symes, S. A., Stull, K. E., La Croix, M., & Pokines, J. T. (2022). Taphonomy and the timing of bone fractures in trauma analysis. In J. T. Pokines, E. N. L'Abbé, & S. A. Symes (Eds.), Manual of Forensic Taphonomy (2nd ed., pp. 473–497). CRC Press. [A3.5]

Love, J. C., & Symes, S. A. (2004). Understanding rib fracture patterns: Incomplete and buckle fractures. Journal of Forensic Sciences, 49(6), 1153–1158. [A3.1, A3.3]

Love, J. C. (2019). Sharp force trauma analysis in bone and cartilage: A literature review. Forensic Science International, 299, 119–127. [A3.1, A3.3]

Love, J. C., Derrick, S. M., & Wiersema, J. M. (2011). Skeletal Atlas of Child Abuse. Humana Press. [A3.2, A3.3, A3.5]

Pope, E. J., & Smith, O. C. (2004). Identification of traumatic injury in burned cranial bone: An experimental approach. Journal of Forensic Sciences, 49(3), 431–440. [A3.3, A3.5]

Quatrehomme, G., & Alunni, V. (2019). The link between traumatic injury in soft and hard tissue. Forensic Science International, 301, 118–128. [A3.1, A3.3]

Sorg, M. H. (2019). Differentiating trauma from taphonomic alterations. Forensic Science International, 302, 109893. [A3.5]

Symes, S. A., Chapman, E. N., Rainwater, C. W., Cabo, L. L., & Myster, S. M. T. (2010). Knife and Saw Toolmark Analysis in Bone: A Manual Designed for the Examination of Criminal Mutilation and Dismemberment [Executive Summary, Document No. 232864]. National Institute of Justice, Grant 2005-I-J-CX-K106. Available at: https://nij.ojp.gov/library/publications/knife-and-saw-toolmark-analysis-bone-manual-designed-examination-criminal-0 [A3.1, A3.3]

Symes, S. A., Rainwater, C. W., Chapman, E. N., Gipson, D. R., & Piper, A. I. (2015). Patterned thermal destruction in a forensic setting. In C. W. Schmidt & S. A. Symes (Eds.), The Analysis of Burned Human Remains (2nd ed., pp. 17–59). Academic Press. [A3.1, A3.2, A3.3, A3.4, A3.5]

Veenstra, A., Kerkhoff, W., Oostra, R.-J., & Galtés, I. (2022). Gunshot trauma in human long bones: Towards practical diagnostic guidance for forensic anthropologists. Forensic Science, Medicine, and Pathology, 18(3), 359–367. Erratum in: Forensic Science, Medicine, and Pathology, 18(3), 368. [A3.1, A3.3]

Wedel, V. L., & Galloway, A. (Eds.). (2014). Broken Bones: Anthropological Analysis of Blunt Force Trauma (2nd ed.). Charles C Thomas. [A3.1, A3.2, A3.3, A3.5]

4. Pathological Conditions and Anomalies

A4.1	Describe classic characteristics of common pathological conditions affecting bone
A4.2	Describe classic characteristics of common anatomical variants and skeletal anomalies

References

Barnes, E. (2012). Atlas of Developmental Field Anomalies of the Human Skeleton: A Paleopathology Perspective. Wiley-Blackwell. [A4.1, A4.2]

Buikstra, J. E. (Ed.). (2019). Ortner's Identification of Pathological Conditions in Human Skeletal Remains (3rd ed.). Academic Press. [A4.1] [Earlier versions of Ortner contain similar information.]

Mann, R. W., & Hunt, D. R. (2019). Non-metric traits and anatomical variants that can mimic trauma in the human skeleton. Forensic Science International, 301, 202–224. [A3.5, A4.1, A4.2]

Mann, R. W., & Hunt, D. R. (2012). Photographic Regional Atlas of Bone Disease: A Guide to Pathologic and Normal Variation in the Human Skeleton (3rd ed.). Charles C Thomas. [A4.1, A4.2]

Mann, R. W., Hunt, D. R., & Lozanoff, S. (2016). Photographic Regional Atlas of Non-Metric Traits and Anatomical Variants in the Human Skeleton. Charles C Thomas. [A4.1, A4.2]

Ortner, D. J. (2012). Differential diagnosis and issues in disease classification. In A. L. Grauer (Ed.), A Companion to Paleopathology (pp. 250–267). Wiley-Blackwell. [A4.1, A4.2]

5. Taphonomy and the Postmortem Interval

A5.1	Describe general characteristics of taphonomic features (e.g., scavenging, weathering, alterations resulting from coffin burial, trophy preparation, anatomical preparation)
A5.2	Describe the stages of soft tissue decomposition and bone diagenesis and how variables (scavenging, environmental, climatic, etc.) affect the rate of decomposition and estimation of postmortem interval

References

Haglund, W. D., & Sorg, M. H. (Eds.). (1997). Forensic Taphonomy: The Postmortem Fate of Human Remains. CRC Press. [A5.1, A5.2]

Megyesi, M. S., Nawrocki, S. P., & Haskell, N. H. (2005). Using accumulated degree-days to estimate the postmortem interval from decomposed human remains. Journal of Forensic Sciences, 50(3), 618–626. [A5.2]

Moffatt, C., Simmons, T., & Lynch-Aird, J. (2016). An improved equation for TBS and ADD: Establishing a reliable postmortem interval framework for casework and experimental studies. Journal of Forensic Sciences, 61(S1), S201–S207. [A5.2]

Pokines, J. T., L'Abbé, E. N., & Symes, S. A. (Eds.). (2022). Manual of Forensic Taphonomy (2nd ed.). CRC Press. [A5.1, A5.2]

Ubelaker, D. H., & Zarenko, K. M. (2011). Adipocere: What is known after over two centuries of research. Forensic Science International, 208(1–3), 167–172. [A5.1, A5.2]

Wescott, D. J. (2018). Recent advances in forensic anthropology: Decomposition research. Forensic Sciences Research, 3(4), 278–293. [A5.2]

Weisensee, K. E., & Atwell, M. M. (2025). Human decomposition and time since death: Persistent challenges and future directions of postmortem interval estimation in forensic anthropology. American Journal of Biological Anthropology, 186(S78), e70011. [A5.2]

6. Forensic or Medicolegal Significance

A6.1	Determine medicolegal significance of remains based on basic anatomy/physical characteristics.
A6.2	Recognize the importance of context for in situ remains

References

Christensen, A. M., Passalacqua, N. V., & Bartelink, E. J. (2019). Medicolegal significance. In Forensic Anthropology: Current Methods and Practice (2nd ed., pp. 115–144). Academic Press. [A6.1, A6.2]

Pokines, J. T. (2018). Differential diagnosis of the taphonomic histories of common types of forensic osseous remains. Journal of Forensic Identification, 68(1), 87–145. [A5.1, A6.1, A6.2]

Pokines, J. T., Zinni, D. P., & Crowley, K. (2016). Taphonomic patterning of cemetery remains received at the Office of the Chief Medical Examiner, Boston, Massachusetts. Journal of Forensic Sciences, 61(S1), S71–S81. [A5.1, A6.1, A6.2]

Yucha, J. M., Klales, A. R., Bartelink, E. J., & Pokines, J. T. (2022). Contemporary cultural alterations to bone: Anatomical, ritual, and trophy. In J. T. Pokines, E. N. L'Abbé, & S. A. Symes (Eds.), Manual of Forensic Taphonomy (2nd ed., pp. 251–294). CRC Press. [A6.1]

7. Field Recovery

A7.1	Describe common search methods (line search, etc.) and explain/justify the selection of a particular search method given common scene/environmental conditions
A7.2	Describe the appropriate tools, equipment, software, and techniques to document remains at a scene
A7.3	Define common archaeological terms, principles and excavation techniques

References

Brown, T. E., & Christensen, A. M. (2018). Using an alternate light source (ALS) to search for surface deposited skeletal remains. Forensic Anthropology, 1(1), 68–73. [A7.1]

Dirkmaat, D. C., & Cabo, L. L. (2016). Forensic archaeology and forensic taphonomy: Basic considerations on how to properly process and interpret the outdoor forensic scene. Academic Forensic Pathology, 6(3), 439–454. Erratum in: Academic Forensic Pathology, 7(4), 667–704. [A7.1, A7.2]

Dirkmaat, D. C., & Adovasio, J. M. (1997). The role of archaeology in the recovery and interpretation of human remains from an outdoor forensic setting. In W. D. Haglund & M. H. Sorg (Eds.), Forensic Taphonomy: The Postmortem Fate of Human Remains (pp. 39–64). CRC Press. [A7.1, A7.2, A7.3]

Dupras, T. L., Schultz, J. J., Wheeler, S. M., & Williams, L. J. (2012). Forensic Recovery of Human Remains: Archaeological Approaches (2nd ed.). CRC Press. [A7.1, A7.2, A7.3]

Hochrein, M. J. (2012). Crime scene perspective: Collecting evidence in the context of the criminal incident. In D. C. Dirkmaat (Ed.), A Companion to Forensic Anthropology (pp. 101–112). Wiley-Blackwell. [A7.1, A7.2, A7.3]

Holland, T. D., & Connell, S. V. (2016). The search for and detection of human remains. In S. Blau & D. H. Ubelaker (Eds.), Handbook of Forensic Anthropology and Archaeology (2nd ed., pp. 167–180). Routledge. [A7.1, A7.2, A7.3]

Listi, G. A., Manhein, M. H., & Leitner, M. (2007). Use of the Global Positioning System in the field recovery of scattered human remains. Journal of Forensic Sciences, 52(1), 11–15. [A7.2]

Renfrew, C., & Bahn, P. (2019). Archaeology: Theory, Methods and Practice (6th ed.). Thames & Hudson. [Note: Terminology and theoretical principles only - other editions contain similar information for this exam]. [A7.3]

8. Processing

A8.1	Describe appropriate methods to process remains for skeletal analysis

References

Armelli, K., Christensen, E. R., Isaac, C., & Cornelison, J. (2022). Steam kettle skeletal preparation: An efficient method for processing human remains. Forensic Anthropology, 5(1), 73–77. [A8.1]

Couse, T., & Connor, M. (2015). A comparison of maceration techniques for use in forensic skeletal preparations. Journal of Forensic Investigation, 3(1), 6. [A8.1]

Dunn, R., Spiros, M., Passalacqua, N. V., & Hefner, J. (2023). Maceration techniques for human fetal and perinatal bone. Forensic Anthropology, 6(3), 166–173. [A8.1]

Fenton, T. W., Birkby, W. H., & Cornelison, J. (2003). A fast and safe non-bleaching method for forensic skeletal preparation. Journal of Forensic Sciences, 48(2), 274–276. [A8.1]

Lee, E. J., Luedtke, J. G., Allison, J. L., Arber, C. E., Merriwether, D. A., & Steadman, D. W. (2010). The effects of different maceration techniques on nuclear DNA amplification using human bone. Journal of Forensic Sciences, 55(4), 1032–1038. [A8.1, A10.9]

Sanger Ciarleglio, J. E., Perez, K. M., Motola, H. L., & DiGangi, E. A. (2020). Recommendations for maintaining a Dermestid beetle colony (Dermestes maculatus) for processing human remains. Journal of Forensic Sciences, 65(5), 1698–1703. [A8.1]

Simonsen, K. P., Rasmussen, A. R., Mathisen, P., Petersen, H., & Borup, F. (2011). A fast preparation of skeletal materials using enzyme maceration. Journal of Forensic Sciences, 56(2), 480–484. [A8.1]

9. MNI and Commingled Assemblages

A9.1	Sort commingled remains
A9.2	Determine the minimum number of individuals following best practices in the discipline

References

Byrd, J. E., & Adams, B. J. (2016). Analysis of commingled human remains. In S. Blau & D. H. Ubelaker (Eds.), Handbook of Forensic Anthropology and Archaeology (2nd ed., pp. 226–242). Routledge. [A9.1, A9.2]

Konigsberg, L. W., & Adams, B. J. (2014). Estimating the number of individuals represented by commingled human remains: A critical evaluation of methods. In B. J. Adams & J. E. Byrd (Eds.), Commingled Human Remains: Methods in Recovery, Analysis, and Identification (pp. 193–220). Academic Press. [A9.1, A9.2]

Palmiotto, A., Brown, C. A., & LeGarde, C. B. (2019). Estimating the number of individuals in a large commingled assemblage. Forensic Anthropology, 2(2), 129–138. [A9.2]

Palmiotto, A., Maijanen, H., LeGarde, C. B., & Ingvoldstad, M. (2024). Advances in commingled human remains analysis between 2014 and 2023. Journal of Forensic Sciences, 69(5), 1604–1619. [A9.1, A9.2]

10. Personal Identification

A10.1	Identify features useful for personal ID (e.g. frontal sinus, sternotomy wires, dental fillings and implants) on radiologic images and/or skeletal remains
A10.2	Define radiologic imaging terminology (e.g. radiolucency, radiopacity, radiodensity, etc.)
A10.3	Differentiate hard and soft tissues on imaging
A10.4	Identify skeletal landmarks and features on imaging
A10.5	Describe basic uses of isotopic testing
A10.6	List the most suitable elements for isotopic analyses
A10.7	Identify gross and radiographic characteristics indicative of osseous healing (i.e., sclerosis, new bone formation)
A10.8	Utilize appropriate identification terminology (i.e. “consistent with”, “exclusion”)
A10.9	Discuss the factors influencing the recovery of DNA from soft and skeletal tissue
A10.10	List the sampling priority of tissues (blood, muscle, tooth/bone) for DNA testing to obtain appropriate samples for DNA extraction

References

Fleischman, J. M. (2015). Radiographic identification using midline medical sternotomy wires. Journal of Forensic Sciences, 60(S1), S3–S10. [A10.1]

Hatch, G. M., Dedouit, F., Christensen, A. M., Thali, M. J., & Ruder, T. D. (2014). RADid: A pictorial review of radiologic identification using postmortem CT. Journal of Forensic Radiology and Imaging, 2(2), 52–59. [A10.1]

Latham, K. E., & Miller, J. J. (2019). DNA recovery and analysis from skeletal material in modern forensic contexts. Forensic Sciences Research, 4(1), 51–59. [A10.9, A10.10]

Latham, K. E., Bartelink, E. J., & Finnegan, M. (Eds.). (2017). New Perspectives in Forensic Human Skeletal Identification. Academic Press. [A1.12, A2.1, A2.2, A10.1, A10.2, A10.5, A10.6, A11.1, A11.2]

Meier-Augenstein, W. (2018). Stable Isotope Forensics: Methods and Forensic Applications of Stable Isotope Analysis (2nd ed.). Wiley. [A10.5, A10.6]

Ouellette, H., & Tétreault, P. (2008). Clinical Radiology Made Ridiculously Simple. MedMaster. [A10.1, A10.2, A10.3, A10.4]

Ubelaker, D. H., & Francescutti, C. (2020). The role of stable isotope analysis in forensic anthropology. In R. C. Parra, S. C. Zapico, & D. H. Ubelaker (Eds.), Forensic Science and

Humanitarian Action: Interacting with the Dead and the Living (pp. 273–284). Wiley. [A10.5, A10.6]

Ubelaker, D. H., Shamlou, A., & Kunkle, A. (2019). Contributions of forensic anthropology to positive scientific identification: A critical review. Forensic Sciences Research, 4(1), 45–50. [A10.1, A10.8]

Viero, A., Obertová, Z., Cappella, A., Messina, C., Sconfienza, L. M., Sardanelli, F., Tritella, S., Montisci, M., Gregori, D., Tagliaro, F., & Cattaneo, C. (2021). The problem of dating fractures: A retrospective observational study of radiologic features of fracture healing in adults. Forensic Science International, 329, 111058. [A10.7]

Wilson, R. J., Bethard, J. D., & DiGangi, E. A. (2011). The use of orthopedic surgical devices for forensic identification. Journal of Forensic Sciences, 56(2), 460–469. [A10.1]

11. Statistics

A11.1	Understand foundational concepts in statistics, including standard terminology (e.g., range, interval, standard deviation, mean), types of data (e.g., ordinal, continuous), and basic analyses (e.g., univariate vs. multivariate, discriminant function analysis, linear regression, etc.).
A11.2	Report appropriate statistical information with method results (e.g., intervals, accuracy, probability, confidence level, a priori).

References

Christensen, A. M., Crowder, C. M., Ousley, S. D., & Houck, M. M. (2014). Error and its meaning in forensic science. Journal of Forensic Sciences, 59(1), 123–126. [A11.1, A11.2]

Getz, S. M. (2020). The use of transition analysis in skeletal age estimation. WIREs Forensic Science, 2(6), e1378. [A11.1]

Obertová, Z., Stewart, A., & Cattaneo, C. (Eds.). (2020). Statistics and Probability in Forensic Anthropology. Academic Press. [A11.1, A11.2]

12. Documentation (Basic Forensic Science)

A12.1	Compile appropriate data and observations in bench notes
A12.2	Explain the function of bench notes in forensic casework
A12.3	Photo-document skeletal evidence.

References

Houck, M. M., & Siegel, J. A. (2009). Fundamentals of Forensic Science (2nd ed.). Academic Press. [A12.1, A12.2, A12.3]

Zephro, L., & Galloway, A. (2019). Report writing and case documentation in forensic anthropology. In L. C. Fulginiti, K. Hartnett-McCann, & A. Galloway (Eds.), Forensic Anthropology and the United States Judicial System (pp. 145–164). Wiley. [A12.1, A12.2, A13.2]

Zephro, L., & Galloway, A. (2019). Skull shots: Forensic photography for anthropologists. In L. C. Fulginiti, K. Hartnett-McCann, & A. Galloway (Eds.), Forensic Anthropology and the United States Judicial System (pp. 165–180). Wiley. [A12.3]

13. Evidence Handling (Basic Forensic Science)

A13.1	Explain the importance of the chain of custody
A13.2	Describe appropriate chain of custody procedures

References

Badiye, A., Kapoor, N., & Menezes, R. G. (2023). Chain of custody. In StatPearls. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK551677/ [A13.2]

Christensen, A. M., & Crowder, C. M. (2009). Evidentiary standards for forensic anthropology. Journal of Forensic Sciences, 54(6), 1211–1216. [A13.1, A13.2, A15.1]

Galloway, A., Birkby, W. H., Kahana, T., & Fulginiti, L. (1990). Physical anthropology and the law: Legal responsibilities of forensic anthropologists. Yearbook of Physical Anthropology, 33(S11), 39–57. [A13.1, A13.2]

14. Professional Standards, Laboratory Operations, & Accreditation

A14.1	Explain professional standards and guidelines for best practices in Forensic Anthropology, including ANSI/ASB published Standards and Best Practices Recommendations, OSAC-proposed documents.

NOTE: Examinees are responsible for the content in the published ASB standards and best practices, and proposed standards and best practices on the NIST OSAC Registry, **as of 6 months prior to the exam date**. The list below contains the documents available at the time of finalizing this reading list; however, be aware that these documents may change throughout the year (e.g., an OSAC proposed standard posted at the time of the reading list release could be removed from the Registry once an ASB standard further developed from that draft is published). Additionally, while the documents in this section are listed with competency A14.1, examinees are expected to be knowledgeable about the content and be able to apply it to relevant topic areas, regardless of whether a secondary competency is listed.

References

NIST OSAC Document Registry: https://www.nist.gov/osac/registry [A14.1]

- OSAC 2024-S-0016 Standard for Case File Management and Reporting in Forensic Anthropology (https://www.nist.gov/osac/standards-library/osac-2024-s-0016). NOTE: ASB is currently revising this document for official publication; this proposed standard can be used as a reference until then.

AAFS Standards Board (ASB): https://www.aafs.org/search/standards [A14.1]

- ANSI/ASB Std. 045, 1st Ed. (2019). Standard for Stature Estimation in Forensic Anthropology.
- ANSI/ASB Std. 090, 1st Ed. (2019). Standard for Sex Estimation in Forensic Anthropology.
- ANSI/ASB Std. 132, 1st Ed. (2023). Standard for Population Affinity Estimation in Forensic Anthropology.
- ANSI/ASB Std. 133, 1st Ed. (2024). Standard for Age Estimation in Forensic Anthropology.
- ANSI/ASB Std. 134, 1st Ed. (2021). Standard for Analyzing Pathological Conditions and Anomalies in Forensic Anthropology.
- ANSI/ASB Std. 135, 1st Ed. (2023). Standard for Scene Detection and Processing in Forensic Anthropology.
- ANSI/ASB Std. 146, 1st Ed. (2021). Standard for Resolving Commingled Remains in Forensic Anthropology.
- ANSI/ASB Std. 147, 1st Ed. (2024). Standard for Analyzing Skeletal Trauma in Forensic Anthropology.
- ANSI/ASB Std. 148, 1st Ed. (2024). Standard for Personal Identification in Forensic Anthropology.
- ANSI/ASB Std. 149, 1st Ed. (2024). Standard for Taphonomic Observations in Support of the Postmortem Interval.
- ANSI/ASB Std. 150, 1st Ed. (2021). Standard for Determination of Medicolegal Significance from Skeletal Remains in Forensic Anthropology.

- ANSI/ASB BPR 008, 1st Ed. (2021). Mass Fatality Scene Processing: Best Practice Recommendations for the Medicolegal Authority. From the Mass Fatality Management and Disaster Victim Identification (MFM-DVI) Consensus Body.
- ANSI/ASB BPR 010, 1st Ed. (2018). Forensic Anthropology in Disaster Victim Identification: Best Practice Recommendations for the Medicolegal Authority. From the Mass Fatality Management and Disaster Victim Identification (MFM-DVI) Consensus Body.
- ANSI/ASB BPR 089, 1st Ed. (2020). Best Practice Recommendation for Facial Approximation in Forensic Anthropology.
- ANSI/ASB Technical Report 214, 1st Ed. (2026). Forensic Anthropology: Terms and Definitions.

ASTM International Forensic Science Standards (listed below) are available at no cost to practitioners. To access the recommended standards below, examinees need to create an ASTM account or login to an existing account here: https://www.nist.gov/osac/astm-launch-code [A14.1]

- ASTM International E1492-25. Standard Practice for Receiving, Documenting, Storing, and Retrieving Evidence in a Forensic Science Laboratory.
- ASTM International E1459-24. Standard Guide for Physical Evidence Labeling and Related Documentation.
- ASTM International E860-22. Standard Practice for Examining and Preparing Items That Are or May Become Involved in Criminal or Civil Litigation.

Scientific Working Group for Forensic Anthropology (SWGANTH): https://www.nist.gov/osac/subcommittees/forensic-anthropology [A14.1]

- Statistical Methods, Revision 0. (2012). https://www.nist.gov/osac/subcommittees/forensic-anthropology
- Scientific Working Group for Forensic Anthropology (SWGANTH): Code of Ethics and Conduct, Revision 1. (2013). https://www.nist.gov/osac/subcommittees/forensic-anthropology

Dror, I. E., & Pierce, M. L. (2020). ISO standards addressing issues of bias and impartiality in forensic work. Journal of Forensic Sciences, 65(3), 800–808. [A14.1]

Fleischman, J. M., Pierce, M. L., & Crowder, C. M. (2019). Transparency in forensic anthropology through the implementation of quality assurance practices. In L. C. Fulginiti, K. Hartnett-McCann, & A. Galloway (Eds.), Forensic Anthropology and the United States Judicial System (pp. 71–88). Wiley. [A14.1]

Fleischman, J. M., Vollner, J. M., Adams, B., Crowder, C. M., Pinto, D., Soto Martinez, M., Rainwater, C., Vogelsberg, C., & Wiersema, J. (2024). The evolving role of forensic anthropologists in medical examiner offices. Forensic Anthropology, 7(4), 282–289. [A14.1]

Roberts, L. G., Dabbs, G. R., & Spencer, J. R. (2016). An update on the hazards and risks of forensic anthropology, part I: Human remains. Journal of Forensic Sciences, 61(S1), S5–S13. [A14.1]

Walsh-Haney, H. A., Freas, L. E., & Warren, M. W. (2008). The working forensic anthropology laboratory. In M. W. Warren, H. A. Walsh-Haney, & L. E. Freas (Eds.), The Forensic Anthropology Laboratory (pp. 195–212). CRC Press. [A14.1]

15. Legal Issues, including Expert Testimony & Courtroom Procedures

A15.1	Summarize landmark court decisions and relevant Federal Rules of Evidence, including how they impact expert witness testimony, evidentiary standards for admissibility, and forensic anthropology practice.

References

Brady v. Maryland, 373 U.S. 83 (1963); https://scholar.google.com/scholar_case?case=9550433126269674519&hl=en&as_sdt=6,44&as_vis=1 [A15.1]

Bullcoming v. New Mexico, 564 U.S. 647 (2011) https://supreme.justia.com/cases/federal/us/564/647/ [A15.1]

Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993) https://supreme.justia.com/cases/federal/us/509/579/case.pdf [A15.1]

Federal Rules of Evidence (Rule 702: Testimony by Expert Witnesses, revised 2011); Rule 702. Testimony by Expert Witnesses | Federal Rules of Evidence | LII / Legal Information Institute. https://www.law.cornell.edu/rules/fre/rule_702 [A15.1]

Federal Rules of Evidence (Rule 703: Bases of an Expert); Rule 703. Bases of an Expert | Federal Rules of Evidence | LII / Legal Information Institute https://www.law.cornell.edu/rules/fre/rule_703 [A15.1]

Federal Rules of Evidence (Rule 705: Disclosing the Facts or Data Underlying an Expert); Rule 705. Disclosing the Facts or Data Underlying an Expert | Federal Rules of Evidence | LII / Legal Information Institute. https://www.law.cornell.edu/rules/fre/rule_705 [A15.1]

Frye v. United States, 293 F. 1013 (D.C. Cir 1923) https://wiki.harvard.edu/confluence/display/GNME/Frye+v.+United+States [A15.1]

General Electric Co. v. Joiner, 522 U.S. 136 (1997); https://scholar.google.com/scholar_case?case=8141182863837122295 [A15.1]

Grivas, C. R., & Komar, D. A. (2008). Kumho, Daubert, and the nature of scientific inquiry: Implications for forensic anthropology. Journal of Forensic Sciences, 53(4), 771–776. [A15.1]

Holland, T., & Crowder, C. (2019). “Somewhere in this twilight”: The circumstances leading to the National Academy of Sciences' report. In L. C. Fulginiti, K. Hartnett-McCann, & A. Galloway (Eds.), Forensic Anthropology and the United States Judicial System (pp. 19–40). Wiley. [A15.1]

Lesciotto, K. M. (2015). The impact of Daubert on the admissibility of forensic anthropology expert testimony. Journal of Forensic Sciences, 60(3), 549–555. [A15.1]

Lesciotto, K. M., & Christensen, A. M. (2024). The over-citation of Daubert in forensic anthropology. Journal of Forensic Sciences, 69(1), 9–17. [A15.1]

Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999)
https://supreme.justia.com/cases/federal/us/526/137/case.pdf [A15.1]

Love, J. C., & Fulginiti, L. C. (2019). Confrontation: Where forensic science meets the sixth amendment. In L. C. Fulginiti, K. Hartnett-McCann, & A. Galloway (Eds.), Forensic Anthropology and the United States Judicial System (pp. 1–18). Wiley. [A15.1]

Martin, D. G., & Fulginiti, L. C. (2019). The United States justice system and forensic anthropology: Preparing for court. In L. C. Fulginiti, K. Hartnett-McCann, & A. Galloway (Eds.), Forensic Anthropology and the United States Judicial System (pp. 141–165). Wiley. [A15.1]

Melendez-Diaz v. Massachusetts, 557 U.S. 305 (2009);
https://scholar.google.com/scholar_case?case=15349793107974146661&q=Melendez-Diaz+v.+Massachusetts&hl=en&as_sdt=2006 [A15.1]

National Research Council. (2009). Strengthening forensic science in the United States: A path forward. National Academies Press.

16. Ethics

A16.1	Describe how to handle human remains according to ethical standards/protocols
A16.2	Describe actions that demonstrate respect for decedent and family privacy and confidentiality
A16.3	Navigate simple ethical questions (appropriate use of photos, HIPAA, ABFA Code of Ethics)
A16.4	Demonstrate an understanding of the ABFA Code of Ethics and Conduct

References

AAFS Bylaws: Article II. CODE OF ETHICS AND CONDUCT, Revision: 03/06/2024. https://www.aafs.org/sites/default/files/media/documents/MASTER%20BYLAWS_3.6.24.pdf [A16.4]

ABFA Code of Ethics and Conduct. https://www.theabfa.org/code-of-ethics-and-conduct [A16.3; A16.4]

Márquez-Grant, N., Passalacqua, N. V., Pilloud, M. A., Lester, N., Decker, S., & Ford, J. (2019). Ethical concerns in forensic anthropology. In K. Squires, D. Errickson, & N. Márquez-Grant (Eds.), Ethical Approaches to Human Remains: A Global Challenge in Bioarchaeology and Forensic Anthropology (pp. 347–366). Springer International Publishing. [A16.1, A16.2]

Passalacqua, N. V., & Pilloud, M. A. (2018). Ethics and Professionalism in Forensic Anthropology. Academic Press. [A16.1, A16.2, A16.3]

Texas Code of Professional Responsibility for Forensic Analysts and Crime Laboratory Managers. 37 Tex. Admin. Code § 651.219. https://texas-sos.appianportalsgov.com/rules-and-meetings?$locale=en_US&interface=VIEW_TAC_SUMMARY&queryAsDate=08%2F03%2F2026&recordId=228716 [Note: This document was written by the Texas Forensic Science Commission for multiple forensic science disciplines, but it succinctly lists professional expectations of forensic anthropology practitioners. Also available at: https://www.law.cornell.edu/regulations/texas/37-Tex-Admin-Code-SS-651-219]

National Commission on Forensic Science. National Code of Ethics and Professional Responsibility for the Forensic Sciences. https://www.justice.gov/ncfs/file/788576/dl

Historical References

These references are important work preceding more recent methods. Examinees should be familiar with these but will not be asked specific questions about the articles or methods contained within.

Barnes, E. (1994). Developmental Defects of the Axial Skeleton in Paleopathology. University Press of Colorado.

Berg, G. E. (2008). Pubic bone age estimation in adult women. Journal of Forensic Sciences, 53(3), 569–577.

Behrensmeyer, A. K. (1978). Taphonomic and ecologic information from bone weathering. Paleobiology, 4(2), 150–162.

Brogdon, B. G. (Ed.). (1998). Forensic Radiology. CRC Press.

Brooks, S., & Suchey, J. M. (1990). Skeletal age determination based on the os pubis: A comparison of the Acsádi-Nemeskéri and Suchey-Brooks methods. Human Evolution, 5(3), 227–238.

Buikstra, J. E., & Ubelaker, D. H. (Eds.). (1994). Standards for Data Collection from Human Skeletal Remains. Arkansas Archeological Survey Research Series No. 44. Arkansas Archeological Survey.

Fazekas, I. G., & Kósa, F. (1978). Forensic Fetal Osteology. Akadémiai Kiadó.

Fully, G. (1956). Une nouvelle méthode de détermination de la taille. Annales de Médecine Légale et de Criminologie, 36, 266–273.

İşcan, M. Y., Loth, S. R., & Wright, R. K. (1984). Age estimation from the rib by phase analysis: White males. Journal of Forensic Sciences, 29(4), 1094–1104.

İşcan, M. Y., Loth, S. R., & Wright, R. K. (1985). Age estimation from the rib by phase analysis: White females. Journal of Forensic Sciences, 30(3), 853–863.

İşcan, M. Y., Loth, S. R., & Wright, R. K. (1987). Racial variation in the sternal extremity of the rib and its effect on age determination. Journal of Forensic Sciences, 32(2), 452–466.

Jantz, R. L., Hunt, D. R., & Meadows, L. (1995). The measure and mismeasure of the tibia: Implications for stature estimation. Journal of Forensic Sciences, 40(5), 758–761.

Klales, A. R., Ousley, S. D., & Vollner, J. M. (2012). A revised method of sexing the human innominate using Phenice's nonmetric traits and statistical methods. American Journal of Physical Anthropology, 149(1), 104–114.

Lovejoy, C. O., Meindl, R. S., Pryzbeck, T. R., & Mensforth, R. P. (1985). Chronological metamorphosis of the auricular surface of the ilium: A new method for the determination of adult skeletal age at death. American Journal of Physical Anthropology, 68(1), 15–28.

McKern, T. W., & Stewart, T. D. (1957). Skeletal Age Changes in Young American Males. Quartermaster Research and Development Command Technical Report EP-45.

Moorrees, C. F. A., Fanning, E. A., & Hunt, E. E., Jr. (1963). Age variation of formation stages for ten permanent teeth. Journal of Dental Research, 42(6), 1490–1502.

Phenice, T. W. (1969). A newly developed visual method of sexing the os pubis. American Journal of Physical Anthropology, 30(2), 297–301.

Todd, T. W. (1920). Age changes in the pubic bone I: The male white pubis. American Journal of Physical Anthropology, 3(3), 285–334.

Trotter, M., & Gleser, G. C. (1952). Estimation of stature from long bones of American Whites and Negroes. American Journal of Physical Anthropology, 10(4), 463–514.

Walker, P. L. (2008). Sexing skulls using discriminant function analysis of visually assessed traits. American Journal of Physical Anthropology, 136(1), 39–50.