



Physical Anthropology Section - 2012

H42 A Bone to Pick: Obtaining Modern Human Skeletons for Education and Training

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After attending this presentation, attendees will understand that some whole body donor programs associated with medical schools in the United States have the ability to prepare human skeletons for use in education and training at forensic science programs.

This presentation will impact the forensic science community by increasing awareness of resources available for obtaining and using modern human skeletons for education and training in forensic science and forensic anthropology. This presentation will also inform the forensic community that skeletonization services are beneficial to body donation programs because they allow for the use of donors that may otherwise be excluded. Some exclusionary factors include obesity, disease, and surgical history.

Thousands of people each year become donors to whole body donation programs throughout the United States. For example, the Body Donation Program at the University of California, Davis School of Medicine receives an average of 125 whole body donors per year. Whole body donors are primarily used to teach human anatomy to medical, undergraduate, and allied health students. To complement anatomy education, medical students are often given a “bone box” to learn human osteology. This holistic approach aims to provide students with a robust understanding of all the systems that comprise the human body. In contrast, education in forensic science and forensic anthropology is often limited by access to skeletal material. Many available skeletal collections do not contain modern human skeletons or many educational institutions simply do not have access to human skeletons. At best, students in these situations are limited to learn from casts of modern human bone.

Resources exist whereby forensic science and forensic anthropology programs can obtain access to modern human skeletons. Forensic science institutions interested in obtaining human skeletons for education can contact their local medical school and ask if they conduct skeletonization services. The process of preparing the skeletons is relatively straightforward. After a donor is selected for skeletonization the soft tissue is removed manually. Skeletons are often placed in a dermestid beetle colony to remove the remaining soft tissue. Oils and fats are then removed using acetone baths. The skeleton is placed in a water bath to clean out residual beetle artifacts and to remove traces of acetone. Lastly, skeletons are air dried at room temperature. Skeletons can be whitened at the request of the end user using hydrogen peroxide. For forensic applications, they are rarely bleached; exposure to the natural color of bone is beneficial.

At present, relatively few whole body donor programs are asked to conduct skeletonization services. For example, the University of California, Davis School of Medicine Body Donation Program has prepared 12 skeletons since 2003. The relative lack of interest in skeletonization services may be due to the idea that many forensic science programs are not aware of the possibilities that exist for obtaining modern human skeletons. Questions regarding the ethical use of whole bodies for science may further reduce the use of human remains by forensic researchers.

Regardless, the lack of interest is certainly not due to the unavailability of human specimens. A more likely explanation is that forensic science programs are unaware of where to request skeletonization services. Furthermore, skeletonization services can benefit body donation programs because they allow a use for donors that may be otherwise unsuitable for medical research or medical education. Medical research and medical education typically require specific characteristics such as average height/weight, no previous surgery, or a narrow age range. In contrast, forensic science education and training benefits from skeletal variation because it accurately represents the skeletal material discovered at crime scenes.

To conclude, the acquisition of skeletons from whole body programs has several benefits. For the forensic science and forensic anthropology programs it provides opportunities to educate and train using modern human skeletons that accurately represent what practitioners will encounter at a crime scene. Skeletonization services are beneficial to whole body donor programs because they allow for the use of donors that are potentially unsuitable for medical research and medical education.

Anthropology, Body Donation, Skeletonization