



## Physical Anthropology Section – 2003

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### H7 The Foot as a Forensic Tool

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The goals of this presentation are to inform the forensic community of the importance of foot related evidence and the ability to use such evidence effectively in criminal cases.

This poster will present information on how the forensic podiatrist uses his or her expertise in the analysis, comparison, and evaluation of barefoot impression and bare footprint evidence.

The team approach is important to the success of any endeavor, especially in law enforcement. The team for footwear/barefoot impressions may include the crime scene specialist, investigator, forensic tracker, footwear examiner, and forensic podiatrist. The forensic anthropologist, who may have some overlapping responsibilities, may also be involved in the case. The podiatrist should take all foot casts, weight bearing or nonweight-bearing, and fabricate the models in dental stone. Laboratory personnel, as needed, can do the photography, inked impressions, etc., but with the assistance/recommendations of the podiatrist, because the needs may vary from case to case. As part of this process, the podiatrist can perform a suspect evaluation to include foot typing, biomechanical evaluation, pathology, and gait evaluation with the fabrication of evidentiary materials, such as a dynamic gait pattern, depending on case needs.

The scene of the crime is a very important area that requires thorough evaluation. Discovery, documentation, and recovery are paramount and although most evidence is properly processed, for some reason, footprint evidence, unless it is quite obvious, is usually not. This is by no means a slight on the job of criminal investigation personnel. However, there are many reasons for this trend, but due to the increase in the number of individuals working specifically in this field and increased education and training in the law-enforcement community, this trend is changing.

The foot is similar in all individuals because of basic physiologic and anatomic factors. Due to inherent differences in body proportions, genetic predispositions, pathologic states, functional or dynamic variances or influences, footwear constraints, environmental factors, occupational influences, and injuries, it is unique to that individual. This uniqueness allows for the ability to identify individuals to being linked to a crime scene or wearing footwear that were either left at that scene or evidence of such.

Foot related evidence includes bare or sock bloody footprints, impressions in a substrate such as dirt, sand, dust, or blood on floors. The foot image is often present on the sock liner of the shoe in both two and three-dimensional forms. The shoe will also show significant traits of the foot that it housed. Since a large percentage of the population has some type of foot problem, pathology present in the foot from a structural standpoint such as a bunion deformity, hammertoe deformity, digital imbalance, Haglund's deformity, and many others will lead to a wear pattern in the shoe. Functional or biomechanical imbalance will lead to other wear patterns that can be observed in the upper shoe or on the outsole. The shoe may also leave impressions in dirt, mud, sand, and blood. The shoe is sometimes left at the scene or discarded nearby and the podiatrist is often asked if the wearer of the shoe can be identified. The shoe print is often discovered and not always conclusively identified.

The poster will show exemplars of the foot that are used for comparisons and proper procedure for obtaining them, and for the footwear pertinent to the case. The foot zones as well as foot identification contours will be presented and their application to the identification process. The morphology of the foot and what can be ascertained regarding a "profile" of the individual who made the bloody footprint, for example, will be shown through various means.

A case study will be presented to show the attendee the protocol and procedures used to come to a valid conclusion utilizing different forms of foot related evidence.

#### **Forensic Podiatry, Barefoot Morphology, Footprint/Impression Evidence**