B93   Forensic Gait Analysis: The State of the Science and a Case Study

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Learning Overview: After attending this presentation, attendees will understand the current scientific foundations and limitations of utilizing forensic gait analysis to link a suspect to a criminal based on how they walk (their gait).

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing insight and knowledge into the relatively new, emerging field of forensic gait analysis, which has been used in more than 100 criminal cases in the United Kingdom and is now being increasingly used in the United States.

Forensic gait analysis allows investigators to link (or unlink) suspects to criminals by how they walk (their gait)—evidence that in the past has often been overlooked. With increasing frequency, perpetrators are captured on surveillance video and, at times, even with their faces obscured or hidden; their gait may link the image to a suspect.

In the United Kingdom, forensic scientists in conjunction with government officials are finalizing a Forensic Gait Analysis Code of Practice setting forth guidelines on how forensic gait analysis should (and should not) be utilized. The Code defines forensic gait analysis as "… the analysis, comparison, and evaluation of features of gait to assist the investigation of crime."[1]

Discussion will include how gait analysis was used to show that a person charged with murder walked differently than the perpetrator and will include a co-authored paper on the use of gait as evidence with an analysis of criticisms of the science.[2]

Recent research has established the repeatability and reproducibility of forensic gait analysis using a specific methodology in addition to other factors that may affect the accuracy of forensic gait analysis.[3,4] As a result, this presentation will emphasize the limitations of forensic gait analysis and also its strengths by showing examples from a case study in which an armed robber was linked to a suspect.

Precautions and appropriate qualifications of persons who endeavor to become specialists in forensic gait analysis will be reviewed, in addition to discussing steps experts can employ to reduce bias and increase accuracy during the analysis process.

With video surveillance increasing and devices that enable recording of crimes becoming more widespread, the need for forensic gait analysis will likely grow, and, with biometric advances, the possible future of forensic gait analysis—a mix of technology and expert analysis—will be suggested.

Reference(s):

[1]   Forensic Science Regulator. *Forensic gait analysis: draft code of practice.* 2018.
[2]   Nirenberg M, Vernon W, Birch I. A review of the historical use and criticisms of gait analysis evidence. *Science & Justice.* 2018 Jul 1;58(4):292-8.
[3]   Birch I., Birch M., Rutler L., et al. The repeatability and reproducibility of the Sheffield Features of Gait Tool. *Science & Justice* (2019).
[4]   Vernon W., DiMaggio J.A. 2017. Forensic gait analysis. In *Forensic Podiatr* 2nd Edition (pp. 153-179). CRC Press, 2017.

Forensic Gait Analysis, Gait, Video Comparison