D39 Shooting Incident Analysis: Critical Case Studies

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After attending this presentation, attendees will better understand the elements within an analysis and reconstruction of shooting incidents.

This presentation will impact the forensic science community by providing new data from original research on shooting incident analysis and reconstruction.

A central element in any analysis of a shooting incident is the realization that all shootings involve time and motion: from visual perceptions, decision process, neural transmission, to muscle movement during the "squeeze" of the trigger, bullet travel, and gross defensive or offensive movements of the shooter and person being shot. Along with this understanding, the analysis and reconstruction of shooting incidents often requires consideration of several forensic and human performance components including wound ballistics, psycho-neurological factors, bullet flight dynamics, terminal ballistics, gunshot residue characteristics, firearms operation, and other associated areas of knowledge such as bloodstain interpretation. The integration of the data from these areas can be extremely useful in any forensic examination of a shooting incident – particularly when multiple shots are involved.

Of these dynamic elements pertaining to shooting incidents, the movement of persons involved in the shooting incident is often of extreme significance in the analysis of the incident and the legal determination (homicide, self-defense, etc) that is always produced after a shooting incident. The location of entry wounds and the associated wound paths within the body are often utilized as indicators of a victim's body orientation and stance when the bullet(s) struck. While this data is highly useful, its value can only be validated when the data from these elements are integrated into the dynamics of the shooting incident.

Over several years, this study covers numerous research projects to address these issues. The results of the research and the significance of the results when applied to the analysis of shooting incidents are presented within this presentation. The research presented in this presentation is the result of forensic analyses and reconstruction of shooting incidents performed for criminal and civil litigation. Many of the findings presented have been used during court testimony and found to be relevant to the understanding of significant issues relating to the position, orientation, and location of persons involved in shooting incidents.

Case reviews of actual shooting incidents have established that in many shooting incident analyses, the movements of shooters – and particularly – the person(s) being shot are inappropriately ignored. Research on the actual movements of participants in shooting incidents was performed and the results demonstrate that a consideration of body movements during the incident can provide significant data directly useful in the analysis, reconstruction of shooting incidents, and in the legal determination (adjudication) of the incident.

Shooting cases reviewed and presented in this presentation include one in which a (police officer) shooter's description of the incident was described as "inconsistent with the physical evidence" by an expert witness biomechanical engineer. This opinion was based on the expert's attempt to analyze the incident without consideration for the movement of the shooter and person being shot. In another shooting case, a key element was the integration of dynamic movement of a suspect and the repositioning that occurred with the suspect's clothing during movement.

Additional examples of shooting victims are presented on video with detailed analyses of the various movements that occur and their potential significance in shooting incident analysis.

Shooting Analysis, Shooting Reconstruction, Shooting Incidents

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