



Engineering Sciences Section – 2010

C30 Biomedical/Biomechanical Analysis of Injury/Trauma Reported for Restrained and Un-Restrained Adult and Pediatric Occupants Involved in Vehicular Rollover Crashes: A Nominal and Statistical Approach

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After attending this presentation, attendees will understand the numerous in-depth biomedical analyses of both adults and children involved in rollover crashes illustrate injury causation and related mitigation methods.

This presentation will impact the forensic science community by documenting the importance of a nominal crash-specific biomedical forensic analysis, not simply a reliance on statistical studies, when determining injury causation and related mitigation.

Despite effective improvements in vehicular safety, rollover crashes have continued to pose a significant problem due to their association with high injury trauma rates. As a category, rollover crashes constitute over a third of the trauma-related harm although they represent just over 2% of the crash population. Approximately 84 percent of the harm associated with rollovers occurs to unrestrained occupants.

Numerous in-depth biomedical analyses of both adults and children involved in rollover crashes illustrate injury causation and related mitigation methods. In the majority of cases it was specifically determined that use of the available restraint system would significantly lower the injury risk. In several cases; however, use of the available restraint system did not prevent serious injury/fatality.

This paper documents the importance of a nominal crash-specific biomedical forensic analysis, not simply a reliance on statistical studies, when determining injury causation and related mitigation. This is particularly true with rollover crashes which can be highly variable events with often-erratic parameters.

Rollover, Unbelted, Biomechanical