

Spine Management Report

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Injury Thresholds, Daily Activities and Low Speed Collisions



In a recent paper by Nolet et al, 2021, the authors wrote, "Traffic injury claims after minimal damage crashes make up a substantial portion of civil litigation. A major point of contention in such litigation is injury causation, with claimants most commonly relying on the opinion of a treating clinician to establish the crash as the cause of persisting injury" [pg1]

The authors continue by stating, "Insurer defendants often rely on an engineering or "biomechanical approach" as a basis for denying the causal nexus between the crash and the claimed injuries." [page 1] They continue outlining the process by stating "The approach most commonly utilizes a sequential multi-step process first, the collision

is reconstructed for severity, quantified by the speed change or "delta V" (DV) of the crash. Next, the reconstructed delta V is compared to experimental volunteer crash test studies, and the occupant accelerations from the studies (g forces, or "g's") are assigned to the investigated crash. Finally, the occupant forces attributed to the crash via the first two steps are compared to the forces described in studies of activities of daily living (ADLs), which allows for the conclusion that the risk of injury from the investigated crash was the same as the risk of injury from ADLs. [pg 1]

The study goes on to state, "By design, the defendant's biomechanical causation approach will always result in the same conclusion; that a minimal damage crash was no more likely to cause a medically observed injury than forces encountered when walking or running, sitting down in a chair, head nodding, or by sneezing, etc. The conclusion is at odds with the results of large epidemiologic studies that indicate an injury rate of more than 20% in minimal and no damage crashes, and that such crashes result in several hundred thousand injuries diagnosed in U.S. emergency departments annually." [page 2]

The authors took a scientific approach stating, "In the present study, the validity of the biomechanical approach to assessing minimal damage traffic crash injury causation is evaluated. The evaluation includes the following steps: (1) the literature describing volunteer crash tests conducted in the minimal to no damage range will be reviewed and summarized, allowing for a pooled analysis of occupant acceleration and other recorded metrics; (2) the literature describing ADL accelerations as a means of assessing crash-related injury risk will be reviewed and summarized, allowing for a pooled analysis of occupant acceleration; (3) epidemiologic studies of real world crashes occurring in the delta V range of volunteer crash tests will be reviewed and described; (4) all sources of data will be compared to assess the scientific validity of the use of acceleration as a proxy for injury risk. [page 3]

In conclusion they state, "Our results indicate that there is enormous disparity between the risk of injury from ADLs and minimal damage crashes, and that the former cannot be used as a proxy for the latter. While the upper bound of the peak head accelerations observed for some ADLs overlap with the lower bound of peak head accelerations observed in some no damage rear impact crash tests, the risk of injury from most minimal damage crashes (at least 20%) is thousands of times greater than for any ADL. These results demonstrate that the biomechanical approach utilized in the legal defense of injury claims, in which the injury risk of a minimal damage rear impact crash is deemed comparable to the injury risk of ADLs, is an invalid method for evaluating injury causation. The approach should be discontinued, or in the alternative, ruled inadmissible by courts as its use results in unreliable expert testimony." [pg 15]



REFERENCE:

Nolet, P. S., Nordhoff, L., Kristman, V. L., Croft, A. C., Zeegers, M. P., & Freeman, M. D. (2021). *Is Acceleration a Valid Proxy for Injury Risk in Minimal Damage Traffic Crashes? A Comparative Review of Volunteer, ADL and Real-World Studies*. International Journal of Environmental Research and Public Health, 18(6), 2901.