

Vehicle Damage versus Injury: Is there a correlation?

Respectfully submitted by Dr. Ronald J. Farabaugh

The short answer to this question is: NO. Vehicle damage is not a reliable indicator or predictor of injury potential. Please examine the research below. To date, there have been no credible studies suggesting that one can predict injury based upon vehicle damage. The entire myth of “No Crash-No Cash” should be abandoned forever as it continues to mislead the public, injured patients, and the courts. The threshold of soft tissue injury is much less than the force required to damage a bumper/vehicle.

Callier, 1981: (Module 4, Section two-Cervical Spine References) “A collision, when the offending car moves at a rate as slow as seven (7) mph can cause severe tissue damage and injury.

McNab, 1982: 3.7 to 5 mph rear-end impact, which subjects the cervical spine to as much as 4.5 G-forces, constitutes the threshold for mild cervical strain injury.

McNab, 1982: “The amount of damage sustained by the car bears little relationship to the force applied.” *The Spine*, Saudners, 1982, p. 648

Ameis 1986, Canadian Family Physician, September, 1986. “Each accident must be analyzed in its own right. Auto speed and damage are not reliable parameters.” *Cervical Whiplash: Considerations in the Rehabilitation of Cervical Myofascial Injury*.

Hirsh, et al 1988: In an 8-mph rear-end collision, a 2 G-force of acceleration of the vehicle may result in a 5G-force acceleration of the occiput and head. “The amount of damage to the automobile may bear little relationship to the forces applied to the cervical spine and to the injury sustained by the cervical spine. *Whiplash Syndrome*, Orthopedic Clinics of North America, October 1988. p. 791.

Navin, Macnab, et al. 1989: “The experimental results indicate that some vehicles can withstand a reasonably high speed impact without significant structural damage. The resulting occupant motions are marked by a lag interval, followed by a potentially dangerous acceleration up to speeds greater than that of the vehicle.” *An Investigation into Vehicle and Occupant Response Subjected to Low-Speed Rear Impacts*. Proceedings of the Multidisciplinary Road Safety Conference VI, June 5-7, 1989, Fredericton, New Brunswick, Canada.

Emori, 1990: “...neck extension becomes almost 60 degrees which is a potential danger limit of whiplash, at collision speed as low as 2.5 km/h.” SAE, Feb, 1990, p.108.

McConnell, et al 1993: The crash tests study concluded that Delta Vs of 5 mph was the probable threshold for cervical injury.

Smith, J. 1993: “The absence or presence of vehicle damage is not a reliable indicator of injury potential in rear impacts. Based upon the principle of conservation of energy, any energy which does not go into damaging the vehicle must be converted into kinetic energy, the source of injuries.” “The Physics, Biomechanics, and Statistics of Automobile Rear Impact Collisions.” *Trial Talk*: 10-14.

“The development of safety or “no-damage” bumpers has been the standard for several decades. They are designed specifically to minimize vehicle damage in low speed rear impact collisions, and there is clear evidence that insurance property losses have decreased dramatically as a result.” However, since the effect of these bumpers is elastic [no vehicle damage] deformation, “the energy is re-released and transferred to the vehicle frame in the form of kinetic energy. Since kinetic energy is the source of injury to vehicle occupants, it is obvious that the bumper standards have the effect of reducing vehicle damage while increasing the probability of personal injury in rear end impacts.”

Ono, et al 1997: at impact speeds of 2.5, 3.7, and 5 mph C5-6 compressive loading and bending movement was found along with sudden extension causing compression in the facet joint, rather than gliding. There was more injurious compression in the facet joints during extension even before the head hits/strikes that seat’s head restraint.

Brault, et al 1998: recent crash testing produced injuries in 29% and 38% in 2.5 and 5 mph, respectively in Delta Vs low speed rear impact collisions.

Significant Facts

- ❑ There is no relevant science that equates injury potential to vehicle damage.
 - 1) No accident reconstructionist can predict an individual’s INJURY THRESHOLD.
 - 2) The presence of an injury is best determined by the examining physician and is based on the CORRELATION between history, examination, x-ray and other diagnostic tests.
- ❑ No MD, DC, DO or other medical professional was ever educated to consult an accident reconstructionist to determine the presence or absence of injury.
- ❑ Strong research exists correlating RISK FACTORS and injury potential.
- ❑ Strong research exists demonstrating that chronic pain is often the result of Low Speed Rear Impact Collisions (LOSRIIC).
- ❑ The “6-8 week natural healing time” is a myth that should forever be abandoned.
- ❑ “No Crash-No Cash” is a concept that should be forever abandoned.

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About Dr. Farabaugh: Dr. Farabaugh has been in practice since 1982. He is certified in LOW SPEED REAR IMPACT CRASH RECONSTRUCTION through the Spine Research Institute of San Diego (SRISD), and holds a subspecialty as a Certified Chiropractic Sports Physician. He is also Past President of the Ohio State Chiropractic Association where he now serves as Treatment Guideline Chairman (2001-2003).