

## Just the Facts...

“The amount of damage to the automobile may bear little relationship to the injury sustained by the spine.”

– Hirsh, M.D., Professor of Orthopedic Surgery 1988

On average, the 4th of July holiday has the highest rate of motor vehicle accidents and fatalities of any other day of the year.

According to the National Safety Council, there are more than 12 million motor vehicle accidents annually including more than 20 million vehicles.

The rate of whiplash following a car accident has been calculated in western societies at 7 per 1,000 persons.

The 1990 published works of Hildingson and Toolanen found that of 93 car accident victims, 43% had discomfort sufficient enough to interfere with their capacity to work on an average of 2 years.

A study published in the European Spine Journal found that during the period of time between the first and second years following a motor vehicle accident over 20 percent actually had their symptoms worsen.



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## No Vehicle Damage...

# Does That Mean No Injury?



## Does No Vehicle Damage Mean No Injury?

One of the most frustrating types of auto accidents to prove injury is the one with little or no vehicle damage. However, most times minor collisions result in injury. Here's why...

A common misconception is that the amount of vehicle crash damage is directly related to the degree of occupant injury. When in fact, minor vehicle damage can be the major contributing factor to occupant injury and the injuries can be serious.

### Acceleration and Crush Distance Equal Major Injuries

In an automobile crash, acceleration is inversely related to how long the car moves before it comes to a stop (crush distance). This is mathematically expressed as:

Where:

a = acceleration

V = velocity of impact

s = the crush distance

$$a = \frac{V^2}{2s}$$

Consider the following scenarios:

A car hits a brick wall at 10 mph and crushes the front of the car 5 inches. a is 78.3 m/sec<sup>2</sup>, or 8 Gs of force.

A car hits the wall at the same speed, but because of a different car design, the crush in this instance is only 2 inches. a is 196 m/sec<sup>2</sup>, or 20 Gs of force.



Thus, a collision with the same velocity, but with a crush distance smaller by 2.5 times, will have a resulting G force 2.5 times larger!

No serious visual deformation may occur on a vehicle even though it is subjected to relatively high speeds of impact. The whiplash injury with a great deal of litigation is most likely founded on the reasoning that if there was little vehicle damage, no injury can result. Motor vehicle bodies or bumper-to-bumper chassis offer little or no crushing effect. Thus, relatively high G forces can result in whiplash injury. The use of stiff motor vehicle bodies and chassis will also produce a spiked G force loading to occupants, even if little damage occurs to vehicle body or chassis.

Engineering test collisions consistently show that the peak vehicle G forces in a collision are approximately twice as high as the average G forces, and that peak occupant G forces are about twice as large as peak vehicle forces. Thus, an occupant in a low speed collision with no damage to the vehicle may be at a significantly higher risk of injury than an occupant in a collision with a damaged vehicle.

Source: Robbins MC. Lack of relationship between vehicle damage and occupant injury. SAE 970494.

## Providing the Best Treatment for Patients Involved in Minor Auto Accidents

It can be difficult justifying an auto injury case where there is little or no vehicle damage; however, as the preceding article indicates, minor vehicle damage can relate to or even be the major contributing factor to occupant injury.

By providing your patients with home electrotherapy devices, you are able to manage their discomfort while they are away from your office, not to mention obtain patient referrals with a unique, drug-free method to reduce their pain.

Analgesic Healthcare continues to be the nation's leading provider of electrotherapy devices and is committed to providing you with:

Tools to optimize revenues

Methods to increase patient base

Drug-free pain management for patients

Electrotherapy devices alleviate pain for a number of diagnoses related to auto accidents including:

Whiplash

Herniated Disc

Lumbago

Carpal Tunnel

Nerve Entrapment

TMJ disorder

**Which of your patients would benefit from a home electrotherapy device?**

