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May 2025

Special Newsletter for

Personal Injury

Attorneys

This Month's Question:

Are Whiplash Injuries Suffered at Low Speeds "Real"?

GO MD Review Answer:

In his classic article* W.H. Castro shows that whiplash injury can occur in collisions at speeds found in common carnival bumper car rides. The limit of harmlessness was between 4.8 mph and 9 mph. Here's why: When one motor vehicle strikes another from behind, mechanical forces are transmitted from the striking vehicle to the struck vehicle. These forces are then transmitted to the occupant(s) of the struck vehicle. Immediately after impact (about 150

milliseconds), the cervical spine contorts into an S-shaped curve. In this configuration, the cervical spine, rather than simply being curved to the front in a normal C-shape, as it would normally be at rest, takes on an altered shape:

- The lower part of the cervical spine moves into extension (bent backward).
- The muscles of the cervical spine, under the direction of the nervous system, contract quickly to try to minimize the effects of the impact on the ligaments and discs.

If this stabilization response works efficiently, there is a greater likelihood of protection against whiplash and less potential for whiplash injury. However, if the response is inefficient, whiplash injury is more likely.

Several factors affect the efficiency of the stabilization response during whiplash, some of which are within our capacity to control, others of which are not. These include:

1. Posture at impact
2. Overall physical condition
3. Awareness of the coming impact
4. Gender

How posture at impact affects a whiplash injury

The posture in which a person is sitting at the moment of impact helps determine the efficiency of the stabilization response that will affect the severity of the whiplash injury. Sitting in a correct posture promotes an efficient stabilization response. Sitting in a poor posture, particularly a "slumped" type posture, promotes an inefficient stabilization response.

How overall physical condition affects a whiplash injury

The better-conditioned the body is, the more efficient the stabilization response will be. This particularly relates to the condition of the nervous system, as a well-functioning nervous system is essential to a proper stabilization response.

How awareness of coming impact affects a whiplash injury

Perhaps the most critical factor that affects the efficacy of the stabilization response concerning whiplash is awareness of the impending impact.

Scenario 1: Aware of impending impact. This person is able to prepare the stabilization system to respond quickly and efficiently automatically.

Scenario 2: Unaware of the impending impact. This person cannot prepare the stabilization system, thus slowing the response and decreasing its efficiency. This person is likely to sustain greater whiplash injury than is the person who is aware. This may help explain the findings of some studies that have shown a passenger in a struck vehicle is likely to sustain greater whiplash injury than the driver. The driver is more likely to see the vehicle coming in the rear-view mirror.

How gender affects a whiplash injury

Women, in general, are more frequently and more seriously injured by whiplash than men due to the differences in muscular bulk and the female's smaller bony structures. These factors result in less protection of the cervical spine to the abnormal forces such as those that occur in a whiplash-type of injury.

How other factors affect a whiplash injury

Risk factors influencing the prognosis of a whiplash injury

- Symptoms persisting beyond 6 months. (43% failed to recover on average)

- Significant ligament, disc, nerve, or joint capsule injury.
- Delay in initiating treatment.
- Need to resume treatment for more than one flare-up of pain.
- Occupant age over 65.
- Head restraint more than 2" away from occupant's head.
- Occupant in a small car .
- Alcohol intoxication at the time of the automobile accident .
- Pre-existing x-ray evidence of degenerative changes .
- Prior whiplash injury .
- Prior cervical spine fusion .
- Patient having initial radicular (arm pain, numbness, tingling) symptoms.

A common misconception about whiplash injury

A common misconception about whiplash injury is that if the vehicle does not sustain substantial damage in a low-speed impact, then whiplash injury to the occupant does not occur. In reality, low-impact collisions can produce higher dynamic loading on the occupants because the lack of crushing metal to absorb the forces results in greater force being applied to occupants within the vehicle.

*Castro WH, Schilgen M, Meyer S, Weber M, Peuker C, Wörtler K. Do "whiplash injuries" occur in low-speed rear impacts? Eur Spine J. 1997;6(6):366-375. doi: 10.1007/bf01834062. PMID: 9455663; PMCID: PMC3467723.

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*** Assessment of Case Validity and Value**

- * Determination of Future Medical Care**
- * Assistance with Strategies to Promote Medical Theories & Causation**
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- * Medical Research and Delivery of Medical Journal Articles**
- * Answering Specific Medical Questions**
- * Interpretation of Meaning, or lack thereof, of Medical Reports & Records**
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Best regards,

Joe Schifilliti MD, MJ

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