

"Collision! Is the Damage to your Car Proportional to the Damage to Your Neck?"



Vehicular Damage is not Associated with Tissue Injury or Recovery.

One of the paradoxes involved with motor vehicle collisions is the relationship between vehicular damage and injuries sustained in the collision. We would expect that people in vehicles with substantial damage are likely to have sustained severe injuries, and therefore will recover slower. On the contrary, minimal impact collisions would imply less bodily damage and quicker recovery. This is not supported by the research literature. In fact, high levels of published evidence consistently show that vehicular and crash factors are not associated with worse recovery¹. In fact, patient-related factors are more closely associated with a longer recovery¹.

Why is this so?

There are two factors to consider. At first glance and intuitively, it seems that great collision forces would result in greater tissue injury and necessitate a longer recovery time. However, modern vehicles are constructed very differently to those in past decades. They are constructed of materials that absorb impact and readily crush, thereby dissipating forces over a larger time period, and thus reducing the load on the vehicle occupants. Hence, significant damage (and costs) may occur to the modern vehicle as a result of these safety features, which in turn help protect the occupant and minimize injuries. Secondly, minor impact collisions without substantial damage have been shown to result in injuries that do not recover in a timely manner. This was demonstrated in a review paper in 2005, whereby the authors concluded that 'property damage is neither a valid predictor of acute injury risk nor of symptom duration'.² Other factors are more likely to predict long-term outcomes.

Which Factors are Associated with Poor Recovery?

The most common factor associated with a longer recovery period is initial high pain levels, with other factors such as presence of headache, low back pain, prior neck injury and restricted neck mobility all associated with longer recovery periods¹.

What Does this Mean for My Recovery?

The majority of people recover in a timely manner (6-12 weeks) following a motor vehicle collision with a mix of education, manual and exercise therapy³. If you are at risk of a longer recovery, physiotherapists can determine this through use of a clinical prediction rule⁴. This will help direct early and appropriate care with the most suitable health care provider to reduce higher levels of pain and disability. This may involve specific medications, psychological counseling or occasionally injections.



Summary

In summary, there is compelling and emergent evidence suggesting that patient-related factors are associated with longer recovery, rather than vehicular factors. Health care providers familiar with this literature can provide evidence-based treatment to optimize recovery.

References

1. Walton DM, Macdermid JC, Giorgianni AA, Mascarenhas JC, West SC, Zammit CA. Risk factors for persistent problems following acute whiplash injury: update of a systematic review and meta-analysis. *The Journal of orthopaedic and sports physical therapy*. 2013;43(2):31-43.
2. Croft AC, Freeman MD. Correlating crash severity with injury risk, injury severity, and long-term symptoms in low velocity motor vehicle collisions. *Medical Science Monitor*. 2005;11(10):RA316-321.
3. Carroll LJ, Holm LW, Hogg-Johnson S, et al. Course and prognostic factors for neck pain in whiplash-associated disorders (WAD): results of the Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders. *Spine*. 2008;33(4 Suppl):S83-92.
4. Ritchie C, Hendrikz J, Jull G, Elliott J, Sterling M. External validation of a clinical prediction rule to predict full recovery and ongoing moderate/severe disability following acute whiplash injury. *The Journal of orthopaedic and sports physical therapy*. 2015;45(4):242-250.

Written By:



***Ashley Smith - Clinical Specialist in Musculoskeletal Physiotherapy
PT, GradDipManip (PT), PhD***

Ashley has returned to clinical practice in Calgary following completion of his PhD and 3-year Postdoctoral Research Fellow studies at RECOVER Injury Research Centre within The University of Queensland, Australia. His research studies focus on the processes underlying central pain mechanisms for those individuals injured in road traffic collisions, and how these processes can be modulated, especially with exercise or physical activity. Ashley has been an invited speaker at several international conferences to discuss his peer-reviewed publications on whiplash, the cervical spine and pain mechanisms.

Ashley has an extensive history as a physiotherapy clinician, with over 25 years of experience, primarily providing consultations for individuals with persistent musculoskeletal pain following motor vehicle trauma. He achieved the designation of Clinical Specialist in Musculoskeletal Physiotherapy (Canada) in 2011 and was admitted as a Fellow in the Canadian Academy of Manipulative Physiotherapy in 2001.

Ashley has a strong preference for guiding patients towards evidence-based care that will significantly improve pain and function that is meaningful for each individual. He believes collaboration with other healthcare professionals is essential to assisting patient's gaining the care they require.