“They Got Hurt *HOW*?”

"I've got a pretty strange one for you…"

I hear this all the time from my clients. Usually, it’s because an injury is being reported in fairly unusual circumstances. The big question on most people’s minds is *"Did this injury result from this incident?"* The question often includes considerations about whether the injuries pre-existed the incident, whether they were embellished, or whether they could have been mitigated or prevented altogether.

When the damages of a claim arise from personal injuries, a qualified Biomechanist can determine if there is a causal relationship between the claimed injuries and the reported event. They have a unique theoretical and experimental background that enables them to understand fundamental engineering principles as they relate to biological tissues of the body such as bones, ligaments, muscles, and the brain. As a result, Biomechanists are able to understand (and should be able to effectively communicate) the mechanisms of injury and the likelihood of them occurring.

Essentially, a Biomechanist is an engineer (or scientist) that studies the human body instead of machines, buildings, or bridges. As a result, claims involving expertise in injury biomechanics can often be more interesting than the typical types of losses.

When the circumstances of a claim are known and the injuries are seemingly inconsistent with those circumstances, a Biomechanist can quantify the likelihood of a resulting injury. This is a particular skill set not possessed by most engineers and medical doctors. Information on how injuries are sustained can be very useful in determining the actual damages associated with an incident and how to handle the claim. Consider the following four cases, all of which involved unique situations of falling obstacles, where the insurer or claimant benefitted from injury biomechanics expertise.

Case Study 1: Damages reduced due to excessive injury claim

A claimant was shopping at a grocery store and attempted to place an item from the top shelf into a shopping cart when several items fell from the shelf and struck their head, neck, and back. As a result of this incident, a permanent brain injury and soft tissue injuries to the neck and back were reported. Based on the available information and on-site testing, the mass of the items that fell, where they fell from, and the potential severity of the various impacts sustained was calculated. A Biomechanist was able to determine that the forces actually involved in this incident were drastically less than what would be required to cause the claimed injuries. With that knowledge, the defendant’s exposure to damages was significantly reduced.

Case Study 2: Damages stick due to potential for severe injury

A child was returning to school when a piece of ice fell from the roof of the school and struck the child’s head. As a result, a traumatic brain injury was claimed. Several witnesses provided crucial information regarding the incident that helped in assessing the severity of the head impact. With knowledge of the forces required to cause hard and soft tissue injuries to the skull and brain, respectively, it was possible for a

Biomechanist to conclude that the claimed injuries were consistent with the reported circumstances and were not excessive.

Case Study 3: Client alerted to risk of high damages and to set reserves high

A claimant was attending a restaurant when they were struck by an object that had fallen from a nearby shelf. An expert was retained quickly on the file, prior to the claim being issued, to assess the risk of exposure and appropriate future reserve levels for damages. Based on the incident report, the height of the patron, the weight of the object, and its original location before falling, a Biomechanist was able to predict a high likelihood for a significant head injury. As a result, the client was prepared in advance to set appropriate reserves for the anticipated claim.

Case Study 4: Injuries pre-dated incident and were not aggravated by incident

A claimant was shopping at a department store when a small piece of wood trim fell from the wall and contacted the head and shoulder. A brain and soft tissue injury to the neck were claimed as a result of this incident. On-site testing revealed the dimensions and mass of the wood trim, the distance that the wood fell, and the speed at which it fell. With that knowledge, the severity of the impact and the resultant head and neck motions were considered. After finding the impact to be minor in nature and well below accepted injury thresholds, the previous injury history of the claimant was considered. It was discovered that the claimant had been in several motor vehicle collisions before this incident and had sustained various injuries as a result of those collisions. With details of the pre-existing injuries, a Biomechanist was able to assess whether or not the current incident was severe enough to have aggravated those injuries. It was determined that the claimed brain and neck injuries pre-existed the incident and were not worsened as a result of the minor impact.

What if the injury is not in dispute?

A claimed injury is not always questioned because sometimes an injury is clearly the result of a particular incident. However, when there is question as to whether an injury could have been lessened or possibly prevented in an alternate scenario, a qualified Biomechanist can be consulted. Knowledge of what could have happened can be very beneficial to the insurer or claimant.

For instance, many claims arise from head injuries that occur as the result of non-helmeted cyclists being involved in collisions with motor vehicles. If the presence and causation of the injury is clear, the next question should be: *Would a helmet have affected the injury outcome?* Based on details of the collision and the sustained injuries, a Biomechanist can determine whether or not a helmet would have been effective or ineffective in mitigating the claimant's injuries.

Biomechanists often supplement Reconstructionists in accident reconstruction cases. In cases where vehicle evidence may be less than conclusive, an expert in injury biomechanics can provide additional information as to how the observed injury occurred that may allow a conclusion on restraint use to be reached. Additionally, if it is accepted or determined that an occupant was not restrained, the effect that proper restraint may have had on mitigating or preventing injuries should be considered. A qualified Biomechanist can determine how effective restraint usage may or may not be for

occupants of varying sizes and vehicle positions during collisions of varying severity and orientation.

Summary

The above cases are just a few examples of how an expert in Injury Biomechanics can bridge the gap between the medical expert and the traditional engineering expert. In each case, the insurer or claimant benefited from biomechanical expertise and was able to proceed in the action with confidence.

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