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The Newsletter of the Trucking Law Committee

10/30/2015 **Volume 18 Issue 3**

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Are You Retaining the Right Expert? The Wrong Answer Could Cost You and Your Client More Than Just Money

by Michael Reda and Michael Harriss

Introduction

It is generally accepted that a biomechanical engineer is qualified to issue an opinion regarding injury-causation forces but is not qualified to issue a medical opinion regarding the precise cause of a plaintiff's injury. This often comes into play in personal injury cases arising from low-impact, motor vehicle accidents. This general rule embodies the idea that doctors are smarter than everyone else, as it captures the irony of a biomechanical expert being unqualified to testify as to causation because his or her expertise is biomechanical rather than medical, while a medical expert is qualified to testify as to causation despite the fact that he or she likely has little-to-no expertise in biomechanical forces.

This article compares-and-contrasts approaches from both Illinois and Missouri to these issues regarding an expert's qualifications to issue certain opinions. Illinois reflects the traditional approach of allowing medical doctors to issue causation opinions without an expertise in biomechanical engineering,while a biomechanical engineer is prohibited from issuing causation opinions because of his or her lack of medical expertise. Conversely, Missouri is less rigid and lacks definitive case law delineating the precise line between proper and improper opinion testimony from biomechanical and biomedical experts. Thus, this article attempts to demonstrate that local law is crucially important in deciding whether to retain a biomechanical engineer, a biomedical engineer, a medical expert, or some combination of the three. Making the wrong decision on this crucial question of which expert to retain could cost you and your client not only money but also the opportunity to introduce crucial opinion testimony if your expert is excluded.

Illinois: The Traditional Approach Separating Bio-Experts from Medical Experts

Before addressing the scope of biomechanical expert opinions in Illinois, it is important to note that Illinois is, without question, a *Frye* state. *See Donaldson v. Cent. Illinois Pub. Serv. Co.*, 767 N.E.2d 314, 323-24 (Ill. 2002) (recognizing that "Illinois law is unequivocal: the exclusive test for the admission of expert testimony is governed by the standard first expressed in *Frye*"), *abrogated on other grounds by In re Commitment of Simons*, 821 N.E.2d 1184 (Ill. 2004). More precisely, Illinois courts utilize the "*Frye* plus reliability" standard to determine the admissibility of novel scientific evidence, like biomechanical and biomedical expert opinions. *See Whiting v. Coultrip*, 755 N.E.2d 494, 498 (Ill. 2001). Under the *Frye* plus reliability standard, courts consider a variety of factors to determine whether such evidence is admissible, including: (1) precisely what evidence is being proffered; (2) whether the proffered testimony will assist the trier of fact to understand the evidence or determine the facts in issue; (3) whether the evidence constitutes "scientific evidence"; (4) if it is scientific evidence, whether the evidence is "novel"; (5) if the evidence is "novel", then whether the evidence meets the *Frye* admissibility standard; and ultimately (6) whether the evidence is reliable. *Id.* at 498-500.

In *Whiting v. Coultrip*, which involved a low-impact accident that occurred in a grocery store parking lot, the defendant retained and attempted to introduce expert opinions from both a biomechanical and a biomedical expert. The trial court had denied the plaintiff's motion for a directed verdict on the issue of negligence after allowing the defendant to introduce opinions from these two experts, and plaintiff raised their admissibility on appeal. *Id.* at 495-96. According

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to the court, the biomechanical engineer testified to the forces experienced by the plaintiff in the accident, and the biomedical engineer, relying on that testimony, opined that the plaintiff's injuries were not consistent with the forces that she experienced in the collision. *Id.* at 498. In determining whether such opinions were admissible, the appellate court applied the multi-factor, "*Frye* plus reliability" standard outlined above. *Id.*

After concluding that the proffered testimony from the experts constituted "scientific" evidence, the court then concluded that the scientific evidence was also "novel." *Id.* at 498-99. The decision that such testimony was "novel" scientific evidence rested primarily on the fact that when *Whiting* was decided in 2001, there was no Illinois case in which a biomedical engineer "was even certified as an expert, let alone permitted to testify that plaintiff's injuries were not consistent with the type of accident sustained", according to the court's research. *Id.* at 499. Notably, since the opinion in *Whiting* was issued—concluding that biomedical expert testimony on this particular subject constitutes "novel" scientific evidence—these authors' research has not identified any subsequent opinions in Illinois addressing whether such testimony remains "novel" nearly fifteen years later.

In any event, because the proffered testimony constituted novel scientific evidence, the evidence had to satisfy the *Frye* admissibility standard, which the court concluded it could not. *Id.* To meet the *Frye* standard, the relevant scientific community had to be first identified, and then it had to be determined whether the scientific method or technique is generally accepted within that community. *Id.* While acknowledging that it was beyond dispute that a scientific community of biomedical engineers existed, the court could not conclude that the scientific methods used by the biomedical expert in this particular instance were generally accepted within that community. *Id.* Although a dissenting judge pointed out that the biomedical expert based his opinions on studies involving actual injuries to individuals involved in automobile accidents that had been conducted since as far back as 1955, *see id.* at 503 (McDade, J., specially concurring in part and dissenting in part), the principal opinion found this foundation insufficient to establish that the expert's methods were generally accepted. *Id.* at 499. With respect to the biomechanical engineer, the court concluded that the use of photographs and repair estimates to determine the gravitational forces experienced by a plaintiff in a low-impact, motor vehicle accident is not a generally accepted method in the field of biomechanical engineering for determining such forces. *Id.*

As a result, the court held that the "novel" scientific testimony of a biomechanical engineer regarding gravitational forces experienced by a plaintiff in an automobile collision and the testimony of a biomedical engineer that a plaintiff's injuries were not consistent with the forces experienced in a collision lacked sufficient foundation in generally-accepted and empirically-tested methods to be admissible. *Id.* at 500. The court did not fully shut the door, though. Instead, it recognized that its decision was not "suggest[ing] that testimony from a biomechanical or biomedical engineer may never be admitted, only that the foundation here was lacking." *Id.* These authors' research, however, has not discovered a published opinion from an Illinois court that has found similar testimony from a biomechanical or biomedical engineer admissible evidence in this context.

To the contrary, a subsequent Illinois appellate court took no issue with concluding that an accident reconstructionist and biomechanical engineer's opinion was improperly admitted because it was rendered as to individuals in general, rather than the particular plaintiff in the lawsuit. *Martin v. Sally*, 792 N.E.2d 516, 522-23 (Ill. App. Ct. 2d Dist. 2003). *Martin* involved the typical low-impact, motor vehicle accident in which the defense admits liability but denies that plaintiff sustained any injuries as a result of the accident. *Id.* at 518. The defendant's expert opined that "the impact or contact between the two vehicles in the accident at issue was not sufficient to aggravate any condition in plaintiff's back that existed prior to the accident, including her protruding disc at the L4–L5 level." *Id.* at 521. Specifically, the expert testified in explanation that:

> "[T]his is a case where the back is cradled and cushioned by the seat back and the foam, and the delta V, that is, the speed of impact and the change in velocity of the [plaintiff's] van, is approximately in the range of a person walking briskly. This is not at all a high speed impact. This is very low."

Id. at 522. On appeal, the court concluded that the trial court had impermissibly allowed the defense expert to testify that the impact between the vehicles was not sufficient to aggravate any pre-existing condition in plaintiff's back. *Id.* at 521-22.

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Of note, though, the court avoided conducting a full *Frye* admissibility analysis; instead, the issue with the expert's opinion, according to the court, was that the opinion concerned "individuals in general" which the court believed "had no relevance to plaintiff" in this case. *Id.* On a related point, the court concluded that it was error to admit the expert's opinion that plaintiff could not have been injured in the accident because the court was not convinced that the expert had considered facts specifically related to the plaintiff herself, such as her age, weight, height, whether she was wearing a seat belt, and how she was seated at the time of the accident. *Id.* at 523. As the court explained, the root cause of the issue with the expert's opinion was that "the focus of his opinion was based on generalities that were not tied to plaintiff specifically." *Id.* Accordingly, the court avoided resting its decision on whether the accident reconstructionist and biomechanical expert was theoretically qualified to issue such an opinion by virtue of not being a medical doctor, but excluded the opinion nonetheless.

On the flip side of this particular issue, Illinois courts have found no error in a court permitting a medical doctor to issue an opinion as to causation, even if it involves testimony regarding the forces applied to a plaintiff as a result of a collision. For example, in a case involving a rear-end, motor vehicle accident, the defendant's expert—a board-certified orthopedic surgeon with some education in biomechanics and physics—opined that, based upon his review of accident photographs, the accident did not involve a 50-mile-per-hour impact as claimed by the plaintiff. *Jackson v. Seib*, 866 N.E.2d 663, 670 (Ill. App. Ct. 5th Dist. 2007). Moreover, the expert testified that it was his opinion that plaintiff's subjective complaints of injury had no causal connection to the accident. *Id.*

In stark contrast to the biomedical and biomechanical expert, whose opinions are subject to the *Frye* plus reliability standard because those opinions are considered "scientific testimony", the court concluded that the *Frye* standard was inapplicable here because the doctor presented his opinion based on his observations and past experience as a doctor." *Id.* at 676. As the court recognized, "Illinois case law is replete with physicians who have testified, based on observation and experience, regarding their opinion of whether a claimant was injured." *Id.* Thus, the principal distinction between a biomedical/biomechanical engineer and a medical doctor, under Illinois law, is that a medical doctor's causation testimony does not constitute "scientific" evidence, while the biomedical/biomechanical engineer's testimony is considered "scientific" evidence. While that distinction might hold water from a theoretical standpoint, common practice suggests that it is a distinction without a difference, as biomedical engineers present their opinions based on their observations and past experiences, just as medical doctors do. Nevertheless, practitioners and clients must note that difference in deciding what kind of expert to retain in an Illinois case.

Missouri: Blurring the Line Between Bio-Experts and Medical Experts

Unlike many other jurisdictions, no Missouri court has delineated the proper scope of a biomechanical or biomedical expert's opinion compared to that of a medical expert. Indeed, a federal court sitting in Missouri recognized in 1997 that it was not aware of any opinion from a Missouri court "distinguishing competent medical testimony from incompetent testimony on the basis of whether the expert has received an M.D." *Spencer v. Knapheide Truck Equip. Co.*, 1997 WL 342235, at *10, n.16 (W.D. Mo. June 17, 1997). In that case, the court concluded that testimony from an expert with a Ph.D. in mechanical engineering was sufficient to establish a genuine issue of material fact regarding the causal relationship between a plaintiff's injury and "his head striking the patrol wagon wall." *Id.* at *10. As Missouri law currently stands, the recognition in 1997 that the line in Missouri between competent and incompetent causation testimony does not hinge on whether the expert has received an M.D. appears to remain true in practice.

Despite the lack of a bright-line rule resting upon whether an expert has the initials "M.D." behind his or her name, Missouri courts typically pay lip service to the general notion that a biomechanical expert is not qualified to issue medical opinions. *See Moore v. Ford Motor Co.*, 332 S.W.3d 749, 769 (Mo. banc 2011). There are numerous instances, however, in which a biomechanical expert has been permitted to testify and issue opinions skirting closer than normal to the realm of medical opinions regarding causation. *See id.*; *Koedding v. Kirkwood Contractors, Inc.*, 851 S.W.2d 122 (Mo. App. E.D. 1993). In *Koedding v. Kirkwood Contractors*, an appellate court held that an expert witness for the defense, who held a doctorate in orthopedic biomechanics, could opine on how the nature of a plaintiff's injury ruled out impact with a steel I-beam located in a river into which plaintiff dove and was injured. 851 S.W.2d 122 (Mo. App. E.D.1993). There, the plaintiff dove off a bridge and into a river, splitting his skull open. *Id.* at 123. The plaintiff claimed that the company that built the bridge had negligently left debris, including a steel I-beam, in the river, which caused his injury. *Id.* at 124. As a

qualified biomechanical expert, the defense expert opined that the plaintiff's injury was not caused by hitting a steel beam. *Id.* Specifically, the biomechanical expert testified that the plaintiff's injuries were not consistent with striking a "rigid I –beam" because the amount of force that such a dive would have generated would have caused substantially greater and different injuries to his skull and vertebra had the diver's head struck rigid steel. *Id.* at 126. Effectively, the biomechanical expert was allowed to issue an opinion as to whether the defendant caused plaintiff's injuries—a subject that Illinois courts have routinely found is outside the purview of a biomechanical expert, as outlined above.

In 2011, the Missouri Supreme Court issued its decision in *Moore v. Ford Motor Co.*, 332 S.W.3d 749 (Mo. banc 2011), which focused on the phrasing used in the questioning of an expert witness and the terms used by the expert in issuing her opinion to determine whether it fell within the realm of biomechanical opinions or medical opinions. The plaintiff in the underlying action was a 300-pound woman who was rear-ended while driving her 2002 Ford Explorer. The driver's seat collapsed backward upon impact, the driver's head and shoulders then hit the back seat, and her T9 vertebra fractured. These injuries rendered the driver a paraplegic, and the injured woman filed a products liability action against Ford Motor Company. *Id.* at 754.

At trial, Ford introduced testimony from its expert witness, Dr. Catherine Corrigan, who has both a Ph.D. in medical engineering and a master's degree in mechanical engineering. *Id.* at 769. She was not, however, a medical doctor. *Id.* On appeal, the plaintiff claimed that Dr. Corrigan issued opinions that she was not qualified to offer because she was not a medical doctor. *Id.* According to the court, Dr. Corrigan issued opinions about "the direction, magnitude and effect of forces acting on a person's body in an accident." *Id.* The Missouri Supreme Court ultimately rejected the plaintiff's argument, and held that Dr. Corrigan was qualified to issue the opinions that she introduced in her trial testimony. Central to the court's holding was the court's conclusion that Dr. Corrigan did not testify as a "medical diagnostician", but rather as a biomechanical engineer. *Id.*

The distinction between the two, however, is a blurred line, once one analyzes the court's reasoning. The court found that testimony regarding "forces", which utilizes "biomechanical engineering terms such as hyperflexion, hyperextension and compression" suggests that the expert is testifying as a biomechanical engineer rather than a medical expert. *Id.* As a result, Dr. Corrigan was qualified, as a biomechanical engineer, to give an expert opinion "about the direction of the forces that would create a T9-T10 dislocation in the area of the body where [plaintiff] sustained her injuries." *Id.* On the other hand, had Dr. Corrigan relied "solely" on "medical terminology" in her testimony, or offered testimony concerning plaintiff's "diagnosis or treatment of injuries", the court's reasoning suggests that Dr. Corrigan would have impermissibly testified as a medical expert. *Id.*

Although the court, in this instance, drew what it considered a fine line between a medical expert and a biomechanical engineering expert based upon the terminology used in the expert's testimony, the terms described by the court, in practice, create a much more blurred line between the two. Indeed, many of us likely consider terms like "hyperflexion", "hyperextension", and "compression" to be medical terms, as our practice has shown that these terms are often used by medical doctors and frequently found in a plaintiff's medical records. The court in *Moore*, however, found those same terms to be "biomechanical engineering terms", which are well within the scope of proper testimony from a biomechanical engineering expert.

Therefore, whether a biomechanical or biomedical expert can issue opinions in Missouri that approach, or potentially enter, the realm of a causation opinion may hinge more on the terms utilized by the expert than the initials following the expert's name. As a result, a biomechanical or biomedical expert testifying in Missouri is likely able to issue more broad-ranging opinions than they otherwise would in many other jurisdictions, including Illinois.

Conclusion

It is crucially important to have an understanding of the local law and its nuances regarding the permissible scope of opinions from not only biomechanical and biomedical experts but also medical experts. If presented with a low-impact, motor vehicle accident, it is worth considering what type of expert will be most appropriate under the circumstances. If the case was pending in Illinois, for example, a medical expert will almost certainly be needed to offer any type of opinion approaching causation between the accident and the plaintiff's injuries. While the medical expert is likely able to issue a causation opinion that relates to certain biomechanical aspects, such as the forces that were applied to plaintiff's body, it may be necessary to retain both a biomechanical expert and a medical

expert to ensure that testimony regarding both issues can be fully introduced at trial. If, on the other hand, the case was in Missouri, it may be worth considering whether a single expert will be able to introduce each of the opinions that you think will be important to your case. As Missouri has approached the issue with less of a fine line than its counterparts in Illinois, there is potential for a more stream-lined—and likely cheaper—approach to expert witnesses in these cases.

In any event, the needs of each particular case will likely drive the decision to retain a biomechanical engineer, a biomedical engineer, a medical expert, or some combination of the three. Fully understanding the nuances of the applicable law to the case, however, is crucial in making the right decision as to which expert to retain. Making the wrong decision on this crucial question could cost you and your client not only money but also the opportunity to introduce important opinion testimony if your expert is excluded.

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