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## **Testifying on the Subject of Permanent Injury From MVC: Whose Domain?**

By Arthur Croft, DC, MS, MPH, FACO

### **Florida**

In the case of Melisa Schwey Mattek, appellant, vs. Sheryl B. White, appellee (no. 96-2533, District Court of Appeal of Florida, Fourth District, July 2, 1997), a motorist was found by the jury to have suffered no permanent injury in a motor vehicle crash, and was appealing the judgment on the basis of the defense expert testimony given at trial. This was a rear-end crash in which the plaintiff suffered two herniated cervical discs. The defense hired a physicist with a PhD who was presented as an expert in accident reconstruction and biomechanics. He testified that the vehicle striking the plaintiff was traveling at no more than 7 mph, and further opined, over objection, that no one could be hurt in a crash of less than 12 mph; therefore, the plaintiff could not have suffered a permanent injury.

The appeals court held that the physicist was not qualified to give expert opinion regarding the probability of a motorist suffering permanent injury. The defense conceded that the physicist was not qualified to testify about matters requiring medical training, but argued the physicist's testimony was harmless, in light of the fact that the defense's expert medical examiner testified that there was no permanent injury. The appeals court did not buy the defense lawyer's casual dismissal, however, and found the error in admitting the testimony of a physicist could not be considered harmless. The court believed the physicist's testimony might well have been the most persuasive factor for the jury. The judges' reproachful comment to the trial lawyer was telling: "As an aside, we would add that when a trial lawyer leads a judge into an obvious error like this one, cries of harmless error, on appeal, are likely to fall on deaf ears. We therefore reverse [the lower court's decision] and remand for a new trial."

This case is instructive on a number of levels. I know of two California experts in who call themselves biomechanists. Both testify frequently as experts, usually for the defense; both have PhDs. Curiously, in both cases, the PhDs are in anatomy - not biomechanics. Clearly, both must have educated themselves on biomechanics to one degree or another, but it seems arguably misleading, if not somewhat deceptive, to provide a mismatching title and degree together. Certainly, opposing counsel should object to their testimony with a motion in limine [a motion made by counsel requesting that information which might be prejudicial not be allowed to be heard in a case]. At the very least, their qualifications pertaining to issues of crash mechanics; occupant kinematics; physiology and traumatology; and spinal biomechanics (i.e., their knowledge beyond the assumed understanding of human anatomy) should be defined.

In the Florida case, it is not made clear what the physicist's actual training was in, but assuming it was physics, one wonders how much of his training involved human spinal biomechanics. The likely answer is none. One also wonders about his training in accident reconstruction. If not by motion *in limine*, the plaintiff should have conducted a *voir dire* [a preliminary examination made in court of a witness or juror to determine his competency or interest in a matter] of the expert in front of the judge, in an attempt to limit or strike completely the physicist's testimony. (It is not clear whether he did that, or whether he filed any such motion; however, a lack of understanding of reconstruction and crash mechanics issues make such motions and the *voir dire* fairly weak.)

Here is yet another important ruling that excludes nonphysicians from testifying about what essentially are medical conditions. Medical conditions should be the exclusive domain of licensed health care providers, be they DC, MD, DO or DDS, and this appeals court decision supports that notion.

The Florida case now has the opportunity for a new trial, but this requires a lot more work and expense with a still uncertain outcome. Consider two alternative outcomes for the original trial:

1. The plaintiff attorney, with the help, perhaps, of an expert in crash mechanics, traumatology, etc., constructs a poignant and compelling motion *in limine* to limit or exclude the physicist's testimony.
2. At a pre-trial *voir dire* in front of the judge (again, having been briefed by his own expert on the fundamentally important issues), the plaintiff lawyer convinces the judge that the opposing expert's testimony should either be limited to the domain of physics or crash reconstruction, in which he can comment about crash speeds, but not the risk for injury, or he is struck altogether. The trial might have gone favorably for the plaintiff, obviating the need for appeal and retrial.

## **Arizona**

Some years ago, an Arizona attorney went through one of my seminars and listened to my comments about what these reconstructionists and biomechanists should principally be limited to in their testimony.

Specifically, I pointed out that the existing crash test literature (such as that of McConnell, et al., Szabo et al., and even myself) does not - in contravention with what many defense experts believe and usually testify to - establish credible population risk profiles. (Note that the prevailing, but faulty notion today, based on these crash studies, is that crashes below a change of velocity [ $\Delta V$ ] of 5 mph are generally safe.)

Some time later, in a case in which Dr. [Whit] McConnell himself was brought in to act as the defense expert, this Arizona lawyer brought in a statistician to explain to the judge how the testing of a small number of volunteers, under controlled laboratory conditions, could not be used to scientifically establish a crash-velocity-based risk level for injury that could be extrapolated to the universe of potential real-world occupants - and to his client, in particular. I think, quite rightfully, the judge limited Dr. McConnell's testimony to crash metrics (acceleration,  $\Delta V$ , etc.) and did not allow him to opine as to whether injury was likely. (See *Yorston v. Baily*, Maricopa County Superior Court case no. CV 95-17659: Note that Whit McConnell has an MD, but did not examine the patient and was testifying in this case as a crash test researcher and accident reconstructionist.) Since most jurors won't make much out of  $\Delta V$  or the car's acceleration by themselves, this effectively hamstrung the high-powered defense. This ruling has subsequently been influential in courtrooms in New York.

## **Colorado**

Similarly, a recent Colorado Supreme Court ruling upheld the decision of a lower court to limit defense expert testimony on the basis of this assumed risk of injury based solely on calculated crash speed. The defense appealed and lost. (*No. 99CA0688, Sherri L. Schultz, Plaintiff, Appellee, vs. Nancy M. Wells, Defendant, Appellant, Aug 17, 2000, Appeal from the District Court of Boulder County, No. 97CV1709.*) Referring to the lower court's ruling, the Supreme Court stated: "The court ruled that evidence indicating there is a threshold force level below which a person probably could not be injured in a rear-end automobile accident collision is inadmissible under both the test articulated in *Frye v. United States*, 293 F. 1013 (D.C., cir. 1993), and the Colorado Rules of Evidence."

The lower court's initial ruling followed theoretical, epidemiological and statistical arguments outlined in our earlier paper (Freeman MD, Croft AC, Rossignol AM, Weaver DS, Reiser M: A review and methodologic critique of the literature refuting whiplash syndrome. *Spine* 24[1]:86-96, 1999) and was subjected to - and lost - a *Frye* challenge in the lower court. *Frye* and its legal cousin, *Daubert* [*v. Merrell Dow Pharmaceuticals*, 1993, applied in non-*Frye* states] are essentially tests of scientific evidence judges can use to determine whether testimony based on various scientific methods is admissible. Questions under such challenges consider whether the test/machine/method has a known error rate, whether it has been validated in scientific studies, and whether it is generally accepted in the scientific community from which it comes. Using *Frye* or *Daubert*, judges can act as gatekeepers of scientific evidence and testimony, and experts should know how to stand up to such a challenge. Lawyers, for their part, must know how to mount such a challenge, and that requires a good understanding of the expert's methodologies. (Mark Reiser, my coauthor in the *Spine* paper, incidentally, was the statistical expert in the Arizona case mentioned above.) But I digress ... back to the Florida case.

### **Florida Revisited**

Let's now consider the actual substance of the physicist's testimony. The crash, in this case, was reputed to be under 7 mph and injuries, he claimed, are not possible at crashes of under 12 mph. Because I have only read this appeal, I don't know the details of the case. However, I assume the expert is referring to closing velocities, rather than delta V, since the balance of biomedical and scientific engineering literature endorses the risk for injury in crashes exceeding 5 mph delta V, which would typically occur in crashes in which closing speeds were 8-10 mph. Then again, one wonders whether the plaintiff lawyer or his experts were aware of this literature. Citing it would have potentially hamstrung the defense physicist, since his testimony placed the crash metrics within a risk envelope that is accepted, even by the majority of the defense expert community. Moreover, I know of no literature that would support the relatively inane comment that no one could be injured below a 12 mph crash.

After many dozens of crash tests over the past years, I can state with some conviction that in a well-aligned rear impact between two like-sized vehicles, the risk for injury to the subject in the target vehicle - particularly when other risk factors are present (such as head-turned position; nonawareness of an impending crash; age over 40 years; female gender; pre-existing neck condition or prior neck injury, etc.) - is hardly negligible. We have never exceeded a 10-mph closing velocity in this type of crash with human subjects, because our experience is that even healthy males are likely to be injured above these crash speeds.

Also consider this: According to a report from the Florida Department of Highway Safety and Motor Vehicles (Fred Dickinson, Executive Director, dated July 11, 2000, signed by Millia J. Seay and notarized), in 1999 there were 67,602 low-speed crashes (defined in the report as ones in which no vehicle was traveling at more than 10 mph). From these crashes, there were 55,973 reported injuries and, remarkably, 528 fatalities reported. This would hardly support the expert's opinions.

Once again, the plaintiff may have been blindsided by this spurious testimony, and was unable to effectively cross-examine the expert. Unfortunately, this is all too common, and one of the reasons plaintiff lawyers have become increasingly resistant to trying "low-speed" cases. This is, after all, a specialized knowledge not taught in chiropractic, medical or law schools. Plaintiffs who go to trial facing accident reconstructionists or biomechanical experts (or physicists) without a suitable expert capable of countering that testimony or acting in rebuttal will, in my experience, frequently lose the case. Sadly, this only serves to fortify their nihilistic attitude. Because plaintiff lawyers are loath to invest in such experts, it behooves treating physicians engaged in these personal-injury cases to familiarize themselves with the science of crash traumatology, biomechanics, occupant kinematics and the principles of crash reconstruction.

### **"Training"**

Not long ago, I was shown a series of Allstate training videos. Developed to "train" claims adjustors in the fine art of claims review for allegations of injury caused by low-speed crashes, they are nothing more than company policy foisted on its employees, veiled in a pseudoscientific soup of obviously contrived "crash" footage and actors playing the parts of engineers and patients. The host is an actor who wears a pocket protector, a short-sleeve white shirt and tie, and a sleuth-type hat - indicating he is a qualified engineer who will get to the bottom of this controversy. Viewers are treated to a scene of a crash in which the family car of the "Elwood Nicely family of Anywhere, USA," is struck from the rear at such a low speed that the target vehicle merely nudges forward three inches. Then, they all claim to have various pains and symptoms - again, actors portraying a thinly disguised malingering profile; even the family dog is wearing a cervical collar!

After the crash, we see Elwood getting out of the car (which is, of course, undamaged) holding his neck. "Most people believe in ethics and fair play," says the engineer host, "but, occasionally, **strange forces** take over, and a simple bump from behind is grounds for winning the lottery. Injuries are magically found where none exist..." The subtext of this, of course, is that injuries can't occur in these collisions, and that when

there is no structural vehicle damage, the crash would have been as trivial as that depicted in the video. (Throughout the entire tape series, there is little, if any, credible endorsement that at least some individuals might actually be injured.)

In another scene, we see a close-up of our brave engineer host sitting in a car. He tells us he is about to be hit from the rear, and then the front, at low speed. The impact is almost negligible, and the car moves only a few inches in each case. The engineer has almost no head motion in either collision, yet he tells viewers these were 3-4 mph delta V crashes. Not surprisingly, the bullet vehicle is never present in the frame. Again, from my experience in crash testing, this imagery would be laughable, if not for the deceptive influence it has on claims people watching it who have no reason to doubt its veracity. In a true 3-4 mph delta V, however, the roll-out is usually several feet before the subject can apply the brakes, and the occupant kinematics is substantial. In a later segment, the engineer coughs, sneezes and shakes his body, reassuring the audience that these are the equivalent forces to low-speed crashes.

The general take-home message to viewers is that most of these low-speed crashes, in which there is not a great deal of property damage, should be viewed skeptically when injuries are claimed, and that every case should be subjected to review by the company's auto crash reconstructionist or biomechanist. That is why we see an increase in this kind of defense.

I don't doubt other insurers have similar "training" programs designed to mold the opinions of their claims people. So, when those claims people write letters to doctors stating, "We have reviewed this claim and have determined that, on the basis of the type of the crash and the lack of property damage, injury would not have been possible," and refuse to cover any medical charges, it is likely that, in many cases, they are quite sincere in their convictions. Here's an example of a letter written to the patient of one of my students just last month:

Dear Mr. \_\_\_:

We have completed our investigation of the above captioned patient. We have completed a Low-Impact Bio-Mechanics Analysis of the claims. We have found that the 1995 Honda Accord EX experienced an average acceleration of less than 3 g's for a duration of less than 100 msec in this impact. A growing body of biomechanical evidence suggests that vehicle acceleration below 3.0 g's poses virtually no risk of injury to occupants. Normal daily activities are routinely and repeatedly experienced with no pattern of injury: 3.5 g's coughing; 8.1 g's hopping off of a step; and 10.1 g's "plopping" into a chair.

Therefore, there will be no voluntary payment forthcoming regarding your alleged injuries sustained in the above referenced claim.

Yours truly,

Claims Adjustor

I would be interested to know who was on the team that investigated this crash, what their qualifications were, what methods they used, and what their calculations were. Second, the letter alludes to a "growing body of biomechanical literature" that simply does not exist as described (outside the context of a bluff), and this should be challenged. I would simply ask for references. Finally, the "chair-plopping" and other daily activities alludes to a classic piece of junk science by Allen, et al. [Acceleration perturbations of daily living. A comparison to 'whiplash.' *Spine* 1994 Jun 1;19[11]:1285-90.] The popularity of junk science among the defense community tends to be inversely proportional to its scientific merit. Perhaps that is not surprising, since precious little literature tends to support the notion that injuries are unlikely in low-speed crashes. Nevertheless, we specifically outlined the limits and flaws of this chair-plopping misadventure in the *Spine* paper mentioned previously, although its popularity is unshakable.

In summary, although the Florida case was successfully appealed, this is not the only way, or even the best way, of countering opposing testimony from experts espousing dubious theories, questionable philosophy, ungrounded opinions, or possessing inadequate qualifications. Testimony concerning the risk for developing injury in a given crash, in my opinion, is not the domain of an auto crash reconstructionist. I was trained as an auto crash recon-structionist at Northwestern University's Traffic Institute (NUTI - where Whit McConnell was also trained), which is reputedly the top training center in the world for this type of thing. We were taught very little by way of occupant kinematics; even less on the subject of biomechanics; and

virtually nothing about the plethora of soft tissue injuries and their clinical outcomes that can result. A biomechanist trained in human biomechanics and crash traumatology might be allowed to opine as to the risk for initial injury, but is probably not qualified to testify as to the risk or reasons for long-term impairment.

Both lawyers and experts should be familiar with these and other rulings and decisions, because they are useful in the preparation of motions *in limine* to limit or exclude opposing experts' testimony. Judges are often influenced by the rulings of other judges, and proactive action is always a preferable strategy to simply hoping for a second bite at the apple through an appeals court overturn.

Whit McConnell and his colleagues at Biodynamics Research Corporation in San Antonio are perhaps the largest group of experts providing testimony in personal injury litigation in the U.S. today. Most have MDs, many have additional MS or PhD degrees, and many have been through the NUTI reconstruction program. I am aware of two published crash test studies conducted by them (1993 and 1995). Beyond that, I don't know how much actual research they do in comparison to expert testimony. However, in my opinion, physicians who regularly treat plaintiffs injured in low-speed crashes should similarly avail themselves of this specialized knowledge of crash reconstruction, occupant kinematics, risk factor analysis, and the biomechanics of low-speed crashes, so they can serve the important forensic role of expert counterbalance, and provide meaningful, truthful, logical, unbiased and scientifically valid testimony. It does not require a PhD or master's degree.

*Arthur Croft, DC, MS, MPH, FACO, FACFE*  
*Director, Spine Research Institute of San Diego*  
*San Diego, California*  
info@srisd.com

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Click [here](#) for more information about Arthur Croft, DC, MS, MPH, FACO.



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