



Don't let "junk science" ruin your low-impact, rear-ender case

Identifying and countering the defense's "junk science" testimony are key to winning over a jury.



de Saint Phalle

BY WILLIAM VEEN
AND EUSTACE DE SAINT PHALLE

In low-speed automobile collision cases which cause neck, back or whiplash injuries, defense counsel will often present evidence that the forces involved in your automobile accident are no different from those of a person sneezing or jumping off of a chair. These are often referred to as "activities of daily living." The argument goes: If you cannot get injured from a sneeze or jumping off of a chair, how can this accident have caused the plaintiff's injuries? The defense expert will then present a number of charts and diagrams that purport to show your automobile collision could not have caused the injuries in question.

These types of comparisons should not be permitted in court, since they are both misleading and bad science. Any testimony, opinions, literature or demonstrative evidence must be the subject of a motion in limine. The grounds for a motion are that there is no substantial similarity between the motion and force that occurred during the motor vehicle collision at issue and motion and/or force measured in testing of activities of daily living. Further, there is no substantial similarity in the population of individuals tested regarding activities of daily living and the plaintiff's circumstances in the incident in question. Finally, evidence of the "daily living" experiments is intended by defendants' expert to mislead the jury into thinking that daily living activities have similar forces on the body to the forces that occurred in the auto collision, which of course they do not.



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The biomechanical expert

This evidence is most often presented through the opinions of a biomechanical expert. The types of cases where one traditionally sees this testimony is in low-speed auto collision cases (under 20 m.p.h.)¹ When defendant believes it can establish that the G-forces on the person during the incident are low, defense counsel will often employ a biomechanist to offer opinions generally denying the incident could cause the injury to plaintiff's neck or back. The testimony provided by the defense expert will often be along the lines of "It's not really that fast. When we compare the G-force to the neck or back in this collision to various household activities, such as sneezing which is 3 g, coughing 3.5 g, running 4 g, hopping off a step 8 g, we can see that the forces involved are insufficient to cause injury." The defense expert will likely have a chart that is intended to be given to the jury that makes these comparisons.²

The defense expert will cite a number of articles from biomechanical literature that will be used to try to justify the opinions and the comparisons. The primary study offered most frequently is by Murray Allen, M.D. (1994) entitled "Acceleration Perturbations of Daily Living – A Comparison to Whiplash."³

The comparisons are not valid science or medicine

The opinions and comparisons are not considered valid by the consensus of biomechanical engineers. Generally, this line of logic compares types of body motions and conditions that are dissimilar in critical ways. The attempt to make the comparison is



misleading, because it does not take into account the entire mechanical movement of the body during an auto collision.

The situations are dissimilar, and there is no valid science to support comparisons, or to dismiss claims of injury on the basis of these comparisons.

Plaintiff's expert must have reviewed the articles cited by defense counsel and be able to explain that the forces in daily living do not produce comparable force vectors to the incident in question, since the mechanism of injury is different; and the injured person's ability to perceive the event and to react is different. The expert must be able to establish that it is not a valid comparison.

In addition, the plaintiff's expert should be able to explain that the bio-engineering community has sharply criticized both the logic and methodology of the daily living activity comparison. A literature review regarding whiplash science by Michael D. Freeman, D.C., Ph.D. and Arthur Croft, D.C. specifically criticizes Allen's 1994 article.⁴ The authors note that, by its design, the study could not yield information about whiplash injuries because the experiments did not study whiplash or similar mechanics of injury to whiplash. The authors also note that peak acceleration of the head and neck during whiplash was of considerably longer duration (70 milliseconds) than daily activities such as plopping in a chair (1 millisecond), yielding considerably greater effects on the person. The vector direction of the force was also not comparable, as it moved in a diagonal direction, rather than the horizontal shear experienced in an auto collision. The authors concluded "there is currently no epidemiologic or scientific basis" for asserting "whiplash trauma is comparable with common activities of daily living."⁵

Given the scientific and methodological problems with comparing whiplash injuries with everyday activities, it is not reasonable to admit these studies as evidence or foundation for opinions. These comparisons have no epidemio-

\$500,000 settlement in low-impact collision

Herrera v. The Bombay Company

Case number: RG 06273441, Alameda County

Plaintiff Atty: Eustace de Saint Phalle, The Veen Firm, San Francisco

Facts: Plaintiff, a dental school student, was rear-ended at low speed (5-10 mph) while waiting to make a left turn in June 2004. Defendant driver was driving a vehicle that had been loaned to him by his employer. Approximately two years earlier, Plaintiff had been in an auto accident that resulted in lumbar and cervical disc bulges.

Per Pltff: That the June 2004 rear-end collision made his previous injury worse. Plaintiff had an increase in pain and an MRI showed cervical disc bulge increase. Plaintiff claimed exacerbation of his previous cervical injury; that he now needed spine surgery and would have a limitation of his future-earning capacity as an endodontist.

Per Deft: Defendants claimed that there was no property damage to either vehicle and that impact was too low to cause injury; that any changes to Plaintiff's spine that may have existed in the subsequent MRIs was the natural progression of his previous injury from his first accident and that this was corroborated by a letter written by Plaintiff to an adjuster one month before the June 2004 accident in which he described his levels of pain and disability from the first accident.

Specials: Future medicals \$150,000 and future lost income \$300,000

Offers: CCP 998 demand of \$900,000; CCP Section 998 offer of \$200,000.

logical basis and should be labeled as "junk science."

Experiments measuring forces of everyday activities

Through the defense expert, defendant will seek to introduce the improper opinions and comparisons to "activities of daily living." The foundation for these opinions will be the results of experimental testing on forces encountered by persons doing normal daily activities. The proponent of any experimental evidence bears the burden of proof that the evidence rests on adequate foundation.⁶ The preliminary fact necessary to support the relevancy of experimental evidence is that the experiment was conducted under the same or similar conditions as those existing when the accident took place.⁷ Tests and studies of accidents that are not similar to the subject incident are irrelevant and inadmissible.

Here, the experiments on daily living are not neck, back or whiplash studies. There can be no foundational showing by the defendant that daily living activities and automobile collisions are comparable injury-producing situations, such that a comparison of G forces can produce valid inferences. Further, there are serious problems with these comparisons, as have been pointed out by texts published in the biomechanical literature.⁸

Evidence Code section 801(b) states that an expert's opinion must be based on matters "that [are] of a type that reasonably may be relied upon by an expert in forming an opinion upon the subject." With regard to expert testimony using novel scientific techniques, California law follows *People v. Kelly*⁹, which holds that experts are precluded from relying on new scientific techniques that have not gained general acceptance in the particu-



lar field in which the technique is offered (the “Kelly test”). To meet the standard of admissibility of relevant expert opinion under *Kelly*, the party offering the testimony must show a consensus of scientific opinion on the reliability of the test, procedure, or manner of proof involved.¹⁰

Upon objection, the burden of proof to show a new scientific technique or principle has gained acceptance is on the party offering the scientific technique or principle. In determining whether a principle is generally accepted, the views held by a typical cross-section of the scientific community, including those who oppose the technique or principle, must be taken into consideration.¹¹

As demonstrated by the article by Freeman and Croft, the bioengineering community has not accepted these comparisons and is in fact sharply critical of this logic. Freeman’s article notes that the experiments on daily living do not study neck, back and whiplash injuries, and cannot yield information about an injury producing event. If there is a controversy in the field regarding a new scientific technique or principle, such that there is no consensus accepting the principle, it does not pass the *Kelly* test of general acceptance in the field.

In determining whether a scientific technique is accepted in the relevant scientific community, California courts may look to published out-of-state decisions.¹² In *Schultz v. Wells*,¹³ a rear-end collision case in Colorado, the defendant’s expert testified the accident resulted in a delta-V of 4.5 m.p.h., resulting in about 12 g of horizontal force to plaintiff’s head. The trial court excluded defense expert’s evidence of horizontal G-forces that occur during daily human activities. The trial court found that the list of allegedly representative G-forces did not take into account the entire mechanical movement of the body during a car collision. The Court of Appeal affirmed.

The need for medical testimony

It is often the case that defendant will try to introduce studies of forces in

“everyday activities,” with no corroborating medical opinion testimony that such studies are relevant to the cause of the plaintiff’s injuries. Medical causation is the subject of medical expert testimony, and persons who are not medical experts cannot offer opinions regarding the cause of any medical condition.¹⁴ In the absence of medical expert opinion that a given study is relevant to causation in a given case, that study is not relevant and should be excluded.¹⁵ Further, a biomechanist who is not a medical doctor is not qualified to offer either medical causation opinion or opinions about allegedly relevant experiments.¹⁶ The biomechanist should not be permitted to offer speculation – and encourage the jury to speculate – that plaintiff’s specific injuries after an auto accident are somehow related to a study of people “plopping into a chair.”

It is important to cross-examine the defense biomechanist and medical experts to determine whether any defense medical expert actually relies on the biomechanist’s “everyday activities” studies. If the defense medical expert does not, then the studies can be opposed on the ground that they are irrelevant because they lack foundation in medical opinion testimony.

Misleading the jury

Defendants will offer charts or diagrams of the forces encountered in various activities of daily living and attempt to show them to the jury. Plaintiff should argue that there is no foundation for introducing evidence of the daily living tests, which do not relate to neck, back or whiplash injuries and are not endorsed as valid by the biomechanical or medical communities. These are likely to be confusing and misleading to the jury, and should be excluded for this additional reason under Evidence Code section 352.

Defendants will attempt to make a direct comparison between the activities of daily living and the forces in an auto collision. The potential for the jurors to be misled by these comparisons is a serious danger for the plaintiff. It would be

misleading for the jury to hear opinions and see charts that are irrelevant and not based on accepted science. Thus, this evidence, testimony, and opinions should be precluded as not substantially similar and misleading.

Eustace de Saint Phalle is an attorney with the Veen Firm, P.C., in San Francisco. He focuses his practice on civil litigation in a variety of areas, including industrial accidents, product liability, exceptions to workers’ compensation, premises liability, professional malpractice, medical malpractice, auto accidents, maritime accidents, as well as business disputes and copyright violations.

William Veen founded The Veen Firm as a sole practitioner in 1975, gradually developing it into a firm of talented attorneys and staff who represent severely-injured workers and consumers. He is a member of the American Board of Trial Advocates and he was honored as the Trial Lawyer of the Year by the San Francisco Trial Lawyers Association in 2003.

The authors are happy to provide sample motions in limine and other helpful materials to plaintiffs’ attorneys upon request. They may be contacted at (415) 673-4800.

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Endnotes

¹ The same arguments and counter arguments apply in other fall or impact cases where defense counsel attempts to argue that the forces involved in the incident that caused the injury are low.

² The listed activities do not involve the same type of motion to the neck, since they do not replicate and are not substantially similar to the motion of the human body in an auto collision.

³ Allen, M.E. M.D. et al. (1994) “Perturbations of Daily Living – A Comparison to Whiplash.” *SPINE* 19(11) 1285-1290.

⁴ Freeman, Michael DC, PhD et al. (1999) “A Review and Methodologic Critique of the Literature Refuting Whiplash Syndrome.” *SPINE* 24:1 pp. 86-98.

⁵ Freeman, et al., *ibid*.

⁶ *People v. Bradford* (1997) 15 Cal.4th 1229.

⁷ *People v. Dellinger* (1984) 163 Cal.App.3d 284, 304; *DiRosario v. Havens* (1987) 196 Cal.App.3d 1224, 1231.



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⁸ See, e.g., Croft, A., and Freeman, M. (2005) "Correlating crash severity with injury risk, injury severity, and long-term symptoms in low velocity motor vehicle collisions." *Medical Science Monitor*, 11(10): 316-321; Davis, C. (2000) "Injury Threshold: Whiplash-Associated Disorders - Review of the Literature." *J. Manipulative. & Physiol. Ther.* 23(6): 420-427. Author Charles Davis concludes that, since individuals have highly specific and variable reactions to neck trauma, it is impossible to determine a threshold of force or speed that is necessary to cause whiplash injury.

⁹ *People v. Kelly*, *supra*, 17 Cal.3d 24, 30; *see also Frye v. U.S.* (DC Cir. 1923) 293 F. 1013, 1014; *Cooley v. Sup. Ct.* (2002) 29 Cal.4th 228, 242 fn. 3 [noting that since *Frye* had been overturned, and federal courts now follow *Daubert*, the rule in California should be called the "Kelly test"].

¹⁰ See, e.g., *People v. Leahy* (1994) 8 Cal.4th 587, 612 [scientific opinion that does not utilize generally accepted techniques is not relevant opinion and should be excluded].

¹¹ *People v. Kelly*, *supra*, 17 Cal.3d at 37.

¹² (*People v. Allen* (1999) 72 Cal.App.4th 1093, 1099; *People v. Shirley* (1982) 31 Cal.3d 18, 54.) As the study of biomechanics and accident reconstruction is not confined to California, it is reasonable to look to other jurisdiction's rulings on which techniques are generally accepted in the field. "There is no reason why only California cases suffice for this purpose." (*Allen*, *ibid.*)

¹³ *Schultz v. Wells* (Colo. App. 2000) 13 P.3d 846.

¹⁴ *Salasguera v. Wyeth Laboratories, Inc.* (1990) 222 Cal.App.3d 379, 385; *Truman v. Vargas* (1969) 275

Cal.App.2d 976; *Pacific Employers Ins. Co. v. Industrial Acc. Comm.* (1941) 47 Cal.App.2d 494. In general, plaintiff's counsel should be vigilant about preventing the defense biomechanist from offering improper, unqualified medical causation opinion. For a sample out-of-state case, see *Smesler v. Norfolk Southern Ry. Co.* (1999) 105 F.3d 299 at 305 [holding biomechanists are "qualified to determine what injury causation forces are in general and can tell how a hypothetical person's body will respond to those forces, but are not qualified to render medical opinions regarding the precise cause of a specific injury."]

¹⁵ See *Davis v. Maute* (Delaware 2001) 770 A.2d 36.

¹⁶ *People v. Kelly*, *supra*, 17 Cal.3d at 30 (evidence of scientific tests are not admissible unless offered by competent expert testimony in the particular field).

