

**189 P.3d 646 (2008)**

**Debra HALLMARK, as Personal Representative for Carrie Hallmark, Deceased, Appellant,**  
**v.**  
**Adam ELDRIDGE, an Individual; Tradewinds Construction, Inc., a Nevada Corporation; and**  
**Tradewinds Building and Development, Inc., a Nevada Corporation, Respondents.**

No. 46722.

**Supreme Court of Nevada.**

July 24, 2008.

647 \*647 Shreve & Associates and Don F. Shreve, Jr., Las Vegas; Caruso Law Offices and Stephen M. Caruso, Las Vegas, for Appellant.

Bennion Clayson & Marias and S. Don Bennion, Jr., and Janet C. Pancoast, Las Vegas, for Respondents.

Before the Court En Banc.<sup>[1]</sup>

648 \*648 **OPINION**

By the Court, MAUPIN, J.

In this appeal, we consider the extent to which biomechanical engineers may testify concerning damage claims in personal injury matters<sup>[2]</sup> and clarify the standards for appellate review concerning the adequacy of damage awards based upon the erroneous admission of evidence.

We conclude that (1) the district court below abused its discretion when it allowed a physician with an engineering background to testify as a biomechanical expert against a personal injury plaintiff because, among other reasons, the testimony did not assist the jury in understanding the evidence as the testimony was not based on a reliable methodology; (2) prejudice stemming from errors in the admission of evidence bearing upon a damage claim requires reversal when the error substantially affects the rights of the complaining party on appeal; and (3) such an error substantially affects those rights when the appellant establishes, based upon a sufficient appellate record, the reasonable probability of a different result in the absence of the error. We further conclude that the record on appeal sufficiently demonstrates that, but for the error, appellant Carrie **Hallmark**,<sup>[3]</sup> plaintiff in the action below, would probably have obtained a more favorable damage award in the matter below. Accordingly, we reverse and remand the case to the district court with instructions that it grant **Hallmark** a new trial limited to the issue of her damages without the contested evidence.

## **FACTUAL BACKGROUND**

On April 4, 2002, during the course and scope of his employment with respondents Tradewinds Construction, Inc., and Tradewinds Building and Development Company, respondent Adam **Eldridge** (collectively Tradewinds) backed a company truck into the driver's side of Carrie **Hallmark's** vehicle. At the time of impact, **Hallmark** was sitting in the driver's seat and wearing a safety belt. The impact rocked one side of **Hallmark's** vehicle approximately three feet off the ground. As a result of the collision, one of the tires on **Hallmark's** vehicle exploded, and the left side panel of **Hallmark's** car was gouged and scratched. Responding paramedics, however, did not transport **Hallmark** to the hospital for medical care.

Approximately two months after the accident, doctors diagnosed **Hallmark** with a contusion and strain in her left hip. Doctors later examined **Hallmark's** spine and sought magnetic resonance imaging (MRI) studies, which showed a

decrease in height and hydration of the discs in the lumbar region of her spine. Thereafter, a spine specialist examined her and concluded that she had a lumbar strain with radiculopathy. Doctors later concluded that two ruptured lumbar disc herniations had developed.

In the suit to recover damages for **Hallmark's** personal injuries, the parties conducted discovery and identified their respective experts. **Hallmark's** treating physicians opined that the accident had caused her lower back disc injuries.

To refute that contention at trial, Tradewinds presented its own expert testimony. Specifically, over **Hallmark's** objection, the district court allowed a physician, Alfred Bowles II, M.D., who was credentialed as a "biomechanical engineer," to testify that the forces involved in the collision could not have caused **Hallmark's** alleged back injuries. Tradewinds' other medical expert, Robert Fink, M.D., a neurosurgeon, concluded that **Hallmark's** preexisting diabetic neuropathy caused her lower back pain. Dr. Fink based his opinion on his physical examination of **Hallmark** and his review of her medical records. Dr. Fink gave no opinion as to whether the forces involved in the \*649 automobile collision could have caused her lower back injuries.

The jury found Tradewinds 100 percent at fault for the accident and awarded **Hallmark** \$200,000 for past damages and \$20,000 for future damages. **Hallmark** moved for additur or, in the alternative, a new trial limited to the issue of damages, contending that the jury award was clearly insufficient because it barely covered her special damages, and Tradewinds was 100 percent at fault. The district court denied **Hallmark's** motion. This appeal followed.

## ***DISCUSSION***

On appeal, **Hallmark** contends that the district court erred in allowing Tradewinds' biomechanical expert, Dr. Bowles, to testify that the forces involved in the accident could not have caused **Hallmark's** herniated disc and lumbar spinal injuries. **Hallmark** further contends that the district court abused its discretion when it denied her motion for additur or, in the alternative, a new trial limited to the issue of damages. We will discuss these contentions in turn.

### ***Tradewinds' biomechanical expert***

**Hallmark** argues that the district court abused its discretion under NRS 50.275, the Nevada statute concerning the admission of expert testimony, when it allowed Dr. Bowles to testify because his biomechanical opinion was not based upon an adequate factual and scientific foundation. We agree.

Tradewinds designated Dr. Bowles as a biomechanical expert to testify about the physical forces involved in the collision and whether they could have caused **Hallmark's** alleged spinal injuries. His testimony was intended to refute the extent of **Hallmark's** claimed damages.

Before trial, **Hallmark** moved to prevent Dr. Bowles from reconstructing the accident, rendering a biomechanical opinion, and testifying about the reasonableness of **Hallmark's** medical treatment. Tradewinds opposed the motion, relying largely upon Dr. Bowles' professional training and experience.

Dr. Bowles received his medical degree from the Indiana University School of Medicine and a bachelor's degree in mechanical engineering from Purdue University. With respect to his professional work experience, he was employed as (1) a consultant for the Biodynamic Research Corporation in San Antonio, Texas; (2) a flight surgeon in the United States Air Force Reserve; and (3) a practicing physician in emergency and general medicine for Southwest Medical Associates in Rockport, Texas. Additionally, Dr. Bowles is board certified in general surgery, licensed to practice medicine in Texas and Kansas, and has lectured over 20 times and published four articles about "whiplash injuries," airbags, low-velocity collisions, and other biomechanical topics. In the ten years before the trial of this matter, Dr. Bowles had testified approximately 62 times as a biomechanical expert. The record is unclear, however, as to the nature of the injuries involved in those matters and the conclusions reached.

The district court prohibited Dr. Bowles from testifying about accident reconstruction and the reasonableness of

**Hallmark's** medical treatment but, over **Hallmark's** renewed objection at trial, concluded that Tradewinds presented an adequate foundation for him to testify as a biomechanical expert. Dr. Bowles testified that the forces involved in the collision could not have caused the herniation in **Hallmark's** lumbar spine. Instead, Dr. Bowles indicated that **Hallmark's** preexisting diabetes mellitus caused degenerative changes in her back. According to Dr. Bowles, his opinion was founded upon his examination of Tradewinds' truck, **Hallmark's** complaint and Tradewinds' answer, the depositions of **Hallmark** and **Eldridge**, **Hallmark's** medical records, and photographs of **Hallmark's** vehicle. Dr. Bowles, however, conceded that he formed his opinion without knowing the starting positions of the vehicles, the speeds at impact, the length of time that the vehicles were in contact during impact, the distances traveled, or the angle at which the vehicles collided. Dr. Bowles also conceded that his opinion relied on photographs of **Hallmark's** vehicle because he did not physically examine it.

## 650 \*650 ***The relationship between NRS 50.275 and Federal Rule of Evidence 702***

The statute governing the admissibility of expert testimony in Nevada district courts is NRS 50.275,<sup>[4]</sup> which, as we have construed it,<sup>[5]</sup> tracks Federal Rule of Evidence (FRE) 702.<sup>[6]</sup> To date, however, this court has not adopted the United States Supreme Court's interpretation of FRE 702 in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*<sup>[7]</sup> But, as we have stated, *Daubert* and the federal court decisions discussing it may provide persuasive authority in determining whether expert testimony should be admitted in Nevada courts.<sup>[8]</sup>

### ***The admissibility of expert testimony under NRS 50.275***

This court reviews a district court's decision to allow expert testimony for abuse of discretion.<sup>[9]</sup> To testify as an expert witness under NRS 50.275, the witness must satisfy the following three requirements: (1) he or she must be qualified in an area of "scientific, technical or other specialized knowledge" (the qualification requirement); (2) his or her specialized knowledge must "assist the trier of fact to understand the evidence or to determine a fact in issue" (the assistance requirement); and (3) his or her testimony must be limited "to matters within the scope of [his or her specialized] knowledge" (the limited scope requirement).

### ***The qualification requirement of NRS 50.275***

As noted, before a person may testify as an expert under NRS 50.275, the district court must first determine whether he or she is qualified in an area of scientific, technical, or other specialized knowledge.<sup>[10]</sup> In determining whether a person is properly qualified, a district court should consider the following factors: (1) formal schooling and academic degrees,<sup>[11]</sup> (2) 651 licensure,<sup>[12]</sup> (3) employment \*651 experience,<sup>[13]</sup> and (4) practical experience and specialized training.<sup>[14]</sup> We note that these factors are not exhaustive, may be accorded varying weights, and may not be equally applicable in every case.

We conclude that the district court did not abuse its discretion when it determined that Dr. Bowles qualified as an expert under NRS 50.275 because substantial evidence supports its findings. The formal schooling and academic degrees factor is supported because Dr. Bowles holds a bachelors of science degree in mechanical engineering and a doctorate of medicine. The licensure factor is supported because Dr. Bowles is licensed to practice medicine in Texas and Kansas. Dr. Bowles' approximately ten years of surgical experience and his residency in general surgery support the employment and specialized training factors.

Thus, we next examine whether Dr. Bowles' biomechanical testimony satisfied the "assistance" requirement of NRS 50.275.

### ***The assistance requirement of NRS 50.275***

If a person is qualified to testify as an expert under NRS 50.275, the district court must then determine whether his or her

expected testimony will assist the trier of fact in understanding the evidence or determining a fact in issue. An expert's testimony will assist the trier of fact only when it is relevant<sup>[15]</sup> and the product of reliable methodology.<sup>[16]</sup> In determining whether an expert's opinion is based upon reliable methodology, a district court should consider whether the opinion is (1) within a recognized field of expertise;<sup>[17]</sup> (2) testable and has been tested;<sup>[18]</sup> (3) published and subjected to peer review;<sup>[19]</sup> (4) generally accepted \*652 in the scientific community (not always determinative);<sup>[20]</sup> and (5) based more on particularized facts rather than assumption, conjecture, or generalization.<sup>[21]</sup> If the expert formed his or her opinion based upon the results of a technique, experiment, or calculation, then a district court should also consider whether (1) the technique, experiment, or calculation was controlled by known standards;<sup>[22]</sup> (2) the testing conditions were similar to the conditions at the time of the incident;<sup>[23]</sup> (3) the technique, experiment, or calculation had a known error rate;<sup>[24]</sup> and (4) it was developed by the proffered expert for purposes of the present dispute.<sup>[25]</sup> We again note that these factors are not exhaustive, may be accorded varying weights, and may not apply equally in every case.

After reviewing the above factors, we conclude that the district court abused its discretion when it allowed Dr. Bowles to testify because his biomechanical testimony and report did not assist the jury in understanding the evidence or in determining a fact in issue. Trade winds did not offer any evidence that biomechanics was within a recognized field of expertise. Moreover, Trade winds did not introduce any evidence demonstrating that Dr. Bowles' biomechanical opinion was capable of being tested or that it had been tested. Additionally, Tradewinds did not present any evidence that Dr. Bowles' theories had been published or subjected to peer review. While Dr. Bowles had published a variety of articles on biomechanical topics, Tradewinds did not introduce any evidence that those articles were relevant to determining **Hallmark's** specific injuries. Tradewinds also did not offer any evidence showing that these types of opinions were generally accepted in the scientific community. Further, his opinion was highly speculative because he conceded that he formed it without knowing (1) the vehicles' starting positions, (2) their speeds at impact, (3) the length of time that the vehicles were in contact during impact, or \*653 (4) the angle at which the vehicles collided.<sup>[26]</sup>

Additionally, Tradewinds did not introduce any evidence that Dr. Bowles attempted to re-create the collision by performing an experiment, so we cannot address whether his opinion was the product of reliable methodology. Nor was any evidence proffered showing that Dr. Bowles' opinion was formed and controlled by known standards or had a known error rate. Instead, Dr. Bowles simply affirmed that his opinions were supported by "a reasonable degree of medical and biomechanical certainty." In short, Tradewinds offered insufficient foundation for this court to take judicial notice of the scientific basis of Dr. Bowles' conclusions.<sup>[27]</sup>

## **Federal caselaw**

Federal district<sup>[28]</sup> and appellate<sup>[29]</sup> caselaw supports our conclusion that the district court should have excluded Dr. Bowles' biomechanical testimony, which concluded that the forces involved in the accident could not have caused **Hallmark's** alleged lower back injury, because Tradewinds did not demonstrate that his opinion was the product of reliable methodology. In *O'Neill v. Windshire-Copeland Associates*, the United States Court of Appeals for the Fourth Circuit concluded that the district court did not abuse its discretion in excluding the proposed testimony of a professor of biomechanics because his "opinion appear[ed] to be based more on supposition than science."<sup>[30]</sup> Likewise here, Dr. Bowles' opinion was based more on supposition than science because he did not inspect **Hallmark's** vehicle, he could not identify an area or angle of impact, and he did not know the speed of the vehicles at the time of the collision. In *Clark v. Takata Corp.*, the United States Court of Appeals for the Seventh Circuit concluded that the district court had not abused its discretion when it excluded a biomechanical expert's testimony regarding the cause of the plaintiff's injuries because the expert's opinion was not supported by any tests, data, or research.<sup>[31]</sup> Similarly here, Dr. Bowles' conclusion that the collision did not cause **Hallmark's** injuries was not supported by any tests or specific research. Finally, in *Smelser v. Norfolk Southern Railway Co.*, the United States \*654 Court of Appeals for the Sixth Circuit concluded that the district court erred when it admitted the testimony of a biomechanical expert because his opinion was based on unreliable methodology, as it did not consider critical pieces of information and instead relied heavily on assumptions.<sup>[32]</sup>

Analogously, here, Dr. Bowles concluded that the forces involved in the collision did not cause **Hallmark's** back injuries by either assuming or failing to consider critical pieces of information such as the vehicles' starting positions, the vehicles' speeds, the length of time that the vehicles were in contact during impact, and the angle of impact.

While we note that Tradewinds could potentially lay a foundation for Dr. Bowles' testimony, Tradewinds did not establish a sufficient foundation in this case. For instance, Tradewinds did not attempt to elicit Dr. Bowles' opinion concerning whether **Hallmark's** alleged injuries were inconsistent to a reasonable degree of medical certainty with her past medical history. Dr. Bowles did not even physically examine **Hallmark**. In short, Tradewinds improperly attempted to infer a theory of medical causation using engineering principles that lacked a demonstrable methodology and reliable foundation.

The district court allowed Dr. Bowles to testify that (1) the forces involved in the collision could not have caused the intervertebral disc herniation in **Hallmark's** lumbar spine and (2) **Hallmark's** preexisting diabetes caused degenerative changes in her back. The first theory fails for want of an adequate foundation based upon the principles stated above. While Tradewinds could conceivably lay a foundation based upon medical science for the second theory of causation, it was improperly allowed in this case to the extent that it was based upon scientifically unsupported or accepted notions of "biomechanical engineering." We therefore conclude that the district court abused its discretion when it allowed Dr. Bowles' testimony because his testimony did not satisfy the "assistance" requirement of NRS 50.275.<sup>[33]</sup>

### ***The standard of review concerning the erroneous admission of evidence***

Having concluded that the district court abused its discretion in the admission of Dr. Bowles' testimony, we must now determine whether the error compels reversal. While **Hallmark** separately seeks relief from the judgment based upon an argument that the damages were "clearly inadequate," a standard that we utilize to review an attack upon a damage award based solely upon its sufficiency, errors in the admission of evidence are governed by a less restrictive standard of review. We review claims of prejudice concerning errors in the admission of evidence based upon whether the error substantially affected the rights of the appellant.<sup>[34]</sup> This demonstration is made when the appellant demonstrates from the record that, but for the error, a different result "might reasonably have been expected."<sup>[35]</sup>

655 \*655 Applying this standard to the instant matter, we conclude that the erroneous admission of Dr. Bowles' biomechanical testimony substantially affected **Hallmark's** rights. In particular, substantial evidence supports **Hallmark's** claims that she incurred approximately \$200,000 in medical bills resulting from the following medical treatments: intradiscal electrothermal therapy, epidural steroid injections, anterior lumbar interbody fusion surgery through a retroperitoneal approach with the implantation of a Danek titanium cage, a spinal cord stimulator, and physical therapy. While Tradewinds objected to the propriety of some of the medical treatments, Tradewinds does not dispute that **Hallmark** incurred \$151,761.48 in medical expenses. Moreover, the jury concluded that Tradewinds was 100 percent at fault for any injuries proximately caused by the accident.<sup>[36]</sup> Thus, the award of \$200,000 for accrued damages and \$20,000 for future damages was probably inadequate to compensate **Hallmark** for her medical expenses, pain and suffering attributable to her spinal injuries, and the general damages attendant to her recovery from the treatment necessitated thereby. Accordingly, we conclude that a different result might reasonably have been reached concerning the accrued and future damages but for the error in admitting Dr. Bowles' testimony.<sup>[37]</sup>

### ***The motion for additur or a new trial on the issue of damages***

**Hallmark** argues that the district court abused its discretion when it denied her motion for additur or, in the alternative, a new trial limited to the issue of damages, because the \$220,000 award was clearly inadequate given the extent of her spinal injuries. Because we have determined that the error in the admission of evidence compels reversal for a new trial on damages only, we have determined not to reach **Hallmark's** separate contention that the damage award, standing alone, was clearly inadequate.<sup>[38]</sup>

## CONCLUSION

We conclude that the district court abused its discretion when it allowed Tradewinds' biomechanical expert to testify because Tradewinds did not demonstrate that this testimony was based on a reliable methodology and, thus, this testimony did not assist the jury in understanding the source of **Hallmark's** injury. We further conclude that the erroneous admission of this testimony required reversal because the record confirms that, absent the error, she probably would have received a larger damage award.

Accordingly, we reverse the district court's judgment as to the damage award and remand the case to the district court for a new trial limited to the issue of **Hallmark's** damages. The claim on appeal concerning the district court's order denying **Hallmark's** motion for additur or a new trial is therefore moot. We instruct the district court on remand that Dr. Bowles' evidence be excluded from consideration by the jury at the new trial proceedings. We affirm the district court's judgment in all other respects.

We concur: GIBBONS, C.J., HARDESTY, PARRAGUIRRE, DOUGLAS, and CHERRY, JJ.

[1] The Honorable Nancy Saitta, Justice, did not participate in the decision of this matter.

[2] "Biomechanics is the application of engineering principles and methods to the study and solution of problems arising in biology and medicine." 46 Am.Jur. Trials 638-39 (1993). Biomechanical engineers study and evaluate the effect of physical forces on the human body. *Id.* at 639.

[3] Carrie **Hallmark** died after the notice of appeal was filed in this matter. On March 3, 2008, we entered an order substituting Debra **Hallmark**, Carrie **Hallmark's** personal representative, as appellant. Nevertheless, for the purposes of this opinion, we refer to Carrie **Hallmark** as the appellant.

[4] NRS 50.275 states that "[i]f scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by special knowledge, skill, experience, training or education may testify to matters within the scope of such knowledge."

[5] See, e.g., *Dow Chemical Co. v. Mahlum*, 114 Nev. 1468, 1482, 970 P.2d 98, 107-08 (1998), overruled in part on other grounds by *GES, Inc. v. Corbitt*, 117 Nev. 265, 270-71, 21 P.3d 11, 14-15 (2001); *Yamaha Motor Co. v. Arnoult*, 114 Nev. 233, 242, 955 P.2d 661, 667 (1998); *Fernandez v. Admirand*, 108 Nev. 963, 969, 843 P.2d 354, 358 (1992); *Wright v. Las Vegas Hacienda*, 102 Nev. 261, 262-63, 720 P.2d 696, 697 (1986).

[6] FRE 702 states:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

[7] 509 U.S. 579, 589-92, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993); see, e.g., *Dow Chemical Co.*, 114 Nev. at 1482 n. 3, 970 P.2d at 108 n. 3; *Yamaha Motor Co.*, 114 Nev. at 243, 955 P.2d at 667.

[8] See *Dow Chemical Co.*, 114 Nev. at 1482 n. 3, 970 P.2d at 108 n. 3.

[9] *Brown v. Capanna*, 105 Nev. 665, 671, 782 P.2d 1299, 1303 (1989).

[10] See *Fernandez*, 108 Nev. at 969, 843 P.2d at 358 (explaining that a physician must first be qualified as an expert before "he or she may testify to [medical] matters within his or her experience or training").

[11] See, e.g., *Yamaha Motor Co.*, 114 Nev. at 243, 955 P.2d at 668 (concluding that witness was a qualified expert in part because he held "masters and doctoral degrees in industrial engineering with specializations in human factors engineering and ergonomics"); *Wright v. Las Vegas Hacienda*, 102 Nev. 261, 262, 720 P.2d 696, 697 (1986) (concluding that witness was a qualified expert because he held "a bachelor's degree in psychology, and a Ph.D. in psychology with an emphasis on experimental psychology ... [and] [h]is doctorate minor was in systems engineering with an emphasis on human factors engineering").

[12] See, e.g., *Dow Chemical Co.*, 114 Nev. at 1482, 970 P.2d at 108 (concluding that the district court did not abuse its discretion when it

admitted testimony from board-certified medical doctors); Cheyenne Construction v. Hozz, 102 Nev. 308, 311, 720 P.2d 1224, 1226 (1986) (concluding that "it was within the district court's discretion to refuse to qualify appellant's witness as an expert where, among other factors, he was not a licensed engineer"). *But see* Wright, 102 Nev. at 263, 720 P.2d at 697 (concluding that NRS 50.275 does not require a witness to be licensed in a particular field to testify as an expert about matters within that field).

[13] See Yamaha Motor Co., 114 Nev. at 243, 955 P.2d at 668 (concluding that the witness was a qualified expert in part because his work experience included teaching graduate and undergraduate university courses, working as a senior engineer on the Gemini spacecraft, and consulting for various companies on safety issues).

[14] Cheyenne Construction, 102 Nev. at 311, 720 P.2d at 1226 ("Many courts, including this Court, permit witnesses to testify as experts based on the witness' practical experience.").

[15] NRS 48.015; NRS 48.025.

[16] See Warden v. Lischko, 90 Nev. 221, 224, 523 P.2d 6, 8 (1974) (concluding in a criminal post-conviction appeal that a lie detector test had not "received court recognition as possessing the trustworthiness and reliability needed to accord the results the status of competent evidence"), *overruled in part on other grounds by* Means v. State, 120 Nev. 1001, 1012-13, 103 P.3d 25, 32-33 (2004), and Pellegrini v. State, 117 Nev. 860, 885-86, 34 P.3d 519, 536 (2001). *Accord* Rapp v. Singh, 152 F.Supp.2d 694, 699 (E.D.Pa.2001) (concluding that the proponent of expert testimony must show that the expert's opinion is based on reliable methodology).

[17] See Porter v. State, 94 Nev. 142, 147, 576 P.2d 275, 278 (1978) (concluding in a criminal case that the proponent failed to show that a clinical psychologist's testimony about eyewitness identifications was within a recognized field of expertise).

[18] See, e.g., Santillanes v. State, 104 Nev. 699, 703-04, 704 n. 5, 765 P.2d 1147, 1150, 1150 n. 5 (1988) (admitting in a criminal case the results of a blood enzyme identification procedure that had been tested over 1,100 times); Cabrera v. Cordis Corp., 945 F.Supp. 209, 214 (D.Nev.1996) (excluding nephrologist's proffered testimony because there was not "any apparent way to test the validity of his opinions"); Valentine v. Pioneer Chlor Alkali Co., Inc., 921 F.Supp. 666, 671-72 (D.Nev.1996) (concluding that a neurologist's testimony was not the product of reliable methodology in part because his opinion was incapable of being tested). *But cf.* Dow Chemical Co. v. Mahlum, 114 Nev. 1468, 1483-84, 970 P.2d 98, 109 (1998) (concluding that a rheumatologist properly testified as an expert even though his conclusion was based solely on his training and experience and also without addressing whether his conclusion was capable of being tested), *overruled in part on other grounds by* GES, Inc. v. Corbitt, 117 Nev. 265, 270-71, 21 P.3d 11, 14-15 (2001).

[19] See Dow Chemical Co., 114 Nev. at 1482, 970 P.2d at 108 (noting that the expert immunologist had authored "a number of articles about silicone and the immune system"); *accord* Cabrera, 945 F.Supp. at 213-14 (excluding the testimony of an immunologist, a nephrologist, and a chemist in part because their conclusions had not been subjected to peer review); Valentine, 921 F.Supp. at 674-75 ("'[P]eer review' is the process by which scientific claims are evaluated by members of the relevant discipline.... '[P]eer review' ... is the essence of science. One investigator makes her methods and findings public, so that others can attack or support her conclusion by following the same protocols....").

[20] See, e.g., State, Emp. Sec. Dep't v. Holmes, 112 Nev. 275, 282, 914 P.2d 611, 615 (1996) (concluding that radioimmunoassay hair analysis had become an accepted method in the scientific community for detecting illicit drug use); American Elevator Co. v. Briscoe, 93 Nev. 665, 671, 572 P.2d 534, 538 (1977) (concluding that a polygraph examiner did not satisfy the requirements of NRS 50.275 because the basis of his testimony had not achieved "general scientific acceptance").

[21] Porter, 94 Nev. at 147-48, 576 P.2d at 278 (concluding in a criminal case that the district court properly excluded the proffered expert testimony because the expert would have improperly testified about the general unreliability of eyewitness accounts, without specifically addressing the particular witness's perception and recollection); Choat v. McDorman, 86 Nev. 332, 335, 468 P.2d 354, 356 (1970) (concluding that an expert's testimony is inadmissible if it rests more on assumptions than facts); *accord* Valentine, 921 F.Supp. at 672 (concluding that a physician's testimony was unduly speculative and did not reach the level of "scientific knowledge" because he opined that the plaintiffs abnormalities "could have occurred as a result of the toxic event" without knowing of any scientific research that would support his conclusion (quoting witness's testimony)).

[22] See Cabrera, 945 F.Supp. at 212 (explaining that federal courts will consider whether an expert employed a method or technique with known standards in determining whether his or her testimony is based on reliable methodology).

[23] See, e.g., Wrenn v. State, 89 Nev. 71, 73, 506 P.2d 418, 419 (1973) (explaining in a criminal case that "[t]he conditions of the out-of-court experiment should be substantially similar to those prevailing at the time of the incident in issue before opinion testimony based thereon is admissible"); Levine v. Remolif, 80 Nev. 168, 171, 390 P.2d 718, 719-20 (1964) (concluding that the district court properly excluded an expert from testifying about the speed of two vehicles at the moment of impact because he did not examine the vehicles, and his opinion would have been based solely upon photographs of the accident scene, an unscaled diagram that was drawn by a police

officer who was inexperienced in accident reconstruction, and tests performed at the scene months after the accident).

[24] See, e.g., Santillanes v. State, 104 Nev. 699, 703-04, 704 n. 5, 765 P.2d 1147, 1150, 1150 n. 5 (1988) (admitting in a criminal case the results of a blood enzyme identification test into evidence, which had resulted in only two errors in over 1,100 trials); Cabrera, 945 F.Supp. at 212 (explaining that federal courts will consider whether an expert employed a method or technique with a "known or potential rate of error" in determining whether his or her testimony is based on reliable methodology).

[25] Cabrera, 945 F.Supp. at 212.

[26] Finally, we question the relevancy of the pleadings in this case to an expert's conclusions.

[27] This court has not yet judicially noticed the general reliability of biomechanical engineering or its ability to assess the cause of personal injuries in automobile accidents, nor has Tradewinds cited to any other jurisdictions that do so. On the other hand, scientific techniques like accident reconstruction, see, e.g., Fowler v. Bauman, 663 So.2d 438, 440 (La.Ct.App.1995), and scientific devices like radar detectors, see, e.g., Everight v. City of Little Rock, 230 Ark. 695, 326 S.W.2d 796, 797 (1959); People v. Wilson, 97 Ill.App.3d 505, 53 Ill.Dec. 80, 423 N.E.2d 272, 273 (1981); Honeycutt v. Commonwealth, 408 S.W.2d 421, 422 (Ky.1966); People v. Dusing, 5 N.Y.2d 126, 181 N.Y.S.2d 493, 155 N.E.2d 393, 394 (1959), have been judicially recognized. Because of their wide recognition, radar devices generally no longer require expert testimony regarding their underlying scientific principles, methodology, and reliability. See, e.g., State v. Dantonio, 18 N.J. 570, 115 A.2d 35, 39-40 (1955); People v. Magri, 3 N.Y.2d 562, 170 N.Y.S.2d 335, 147 N.E.2d 728, 730 (1958); City of East Cleveland v. Ferrell, 168 Ohio St. 298, 154 N.E.2d 630, 633 (1958). This is not yet the case, however, with biomechanical engineering.

[28] See, e.g., Shaffer v. Amada America, Inc., 335 F.Supp.2d 992, 995 (E.D.Mo.2003) (ruling that a biomechanical expert's proffered testimony was the product of unreliable methodology because it was "not based on sufficient facts and data"); Reali v. Mazda Motor of America, Inc., 106 F.Supp.2d 75, 77, 79-80 (D.Me.2000) (ruling that a biomechanical expert could not testify that a defective car seat caused plaintiff's injury and also could not testify that an alternative headrest would have prevented or lessened the injury because his conclusions were based upon computer simulations and photographs with unreliable assumptions); Dennis v. Pertec Computer Corp., 927 F.Supp. 156, 160-61 (D.N.J.1996) (ruling that a biomechanical expert could not testify that keystroking causes upper extremity disease because his opinion was based upon "unrecorded mental methodology" and there was no supporting scientific evidence).

[29] E.g., O'Neill v. Windshire-Copeland Associates, 372 F.3d 281, 285 (4th Cir.2004); Clark v. Takata Corp., 192 F.3d 750, 757-59 (7th Cir.1999); Smelser v. Norfolk Southern Ry. Co., 105 F.3d 299, 305 (6th Cir.1997), *abrogated on other grounds by* Morales v. American Honda Motor Co., Inc., 151 F.3d 500, 514-15 (6th Cir.1998).

[30] 372 F.3d at 285.

[31] 192 F.3d at 757-59.

[32] 105 F.3d at 305.

[33] In light of this conclusion, we do not need to reach the question of whether his testimony satisfied the "limited scope" requirement of NRS 50.275. We also conclude that Dr. Bowles' experience in giving professional lecture programs, the prior admissions of his testimony in other unknown contexts, and his limited publications were not sufficient on this record to justify admission of the proffered opinions.

[34] See Beattie v. Thomas, 99 Nev. 579, 586, 668 P.2d 268, 273 (1983) (noting that an error in the admission of evidence is prejudicial if the error "so substantially affected [the complaining party's] rights that it could be reasonably assumed that if it were not for the alleged error[], a different result might reasonably have been expected" (quoting El Cortez Hotel, Inc. v. Coburn, 87 Nev. 209, 213, 484 P.2d 1089, 1091 (1971))); Peterson v. Silver Peak, 37 Nev. 117, 138, 140 P. 519, 527 (1914) (concluding that the erroneous admission of testimony is not reversible error unless the appellant demonstrates that the error affected his or her substantial rights "to such an extent that it might reasonably contend and assert that, were it not for the error complained of, a different result might reasonably have been expected"); see also Carver v. El-Sabawi, 121 Nev. 11, 15, 107 P.3d 1283, 1285 (2005), and Truckee-Carson Irr. Dist. v. Wyatt, 84 Nev. 662, 674, 448 P.2d 46, 54 (1968) (utilizing essentially the same standard of review for determining prejudice in cases where a jury instruction contains an error of law).

[35] See Beattie, 99 Nev. at 586, 668 P.2d at 273; Peterson, 37 Nev. at 138, 140 P. at 527.

We note that because we are looking at the district court's action in admitting evidence to the jury, this standard does not intrude on the jury's role to weigh the evidence.

[36] Under NRS 41.141, which governs when comparative negligence bars recovery in a personal injury action, no reduction in the damage award would be assessed in the district court because **Hallmark** was not in any respect culpable with regard to the incident in

question.

[37] Interestingly, **Hallmark** has not in any respect argued the prejudicial effect of Dr. Bowles' testimony. Rather, she makes a separate discrete argument, discussed below, that the district court should have granted additur because the ultimate award was "clearly inadequate."

[38] See *Arnold v. Mt. Wheeler Power*, 101 Nev. 612, 616, 707 P.2d 1137, 1139 (1985) (concluding that a damage award is clearly inadequate when it compensates a plaintiff only for special damages and does not account for the pain and suffering attributable to the loss of an integral part of his body).

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