UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ALABAMA
SOUTHERN DIVISION

JAMES JOHNSON, JR., and ERICKA JOHNSON,	}	
Plaintiffs,	}	**Case No.: 2:18-cv-01835-MHH**
v.	}	
ABF FREIGHT SYSTEM, INC. and MARK EUGENE MASSINGILL,	}	
Defendants.	}	

MEMORANDUM OPINION AND ORDER

The parties in this case are preparing for trial. Pursuant to Rule 702 of the Federal Rules of Evidence, plaintiffs James and Ericka Johnson have asked the Court to bar the defendants' accident reconstruction expert, Dr. Lars Reinhart, from testifying at trial. (Docs. 67, 73, 76).

This case concerns a collision between Mr. Johnson's 18-wheel tractor-tanker truck and an 18-wheel tractor-trailer truck. Defendant Mark Massingill, driving the

tractor-trailer truck for defendant ABF Freight System, Inc., turned left at an intersection and tried to squeeze his trailer past the right side of Mr. Johnson's tanker while Mr. Johnson was stopped at a railroad crossing, waiting for a train to pass. Mr. Massingill missed and struck the right rear side of the tanker. Mr. Johnson already has established accident causation as a matter of law. (Doc. 57). At trial, he must prove injury causation and damages.

Mr. Massingill and ABF rely on an accident reconstruction performed by Dr. Reinhart to demonstrate that the collision between Mr. Johnson's tanker and Mr. Massingill's trailer could not have produced the severe injuries Mr. Johnson attributes to the accident. According to Dr. Reinhart, ABF hired him as an accident reconstruction expert to testify as "to the injury mechanisms and injury causation involved in this accident based upon a biomechanical assessment of the accident scenario." (Doc. 77-6, p. 1). Mr. Johnson challenges Dr. Reinhart's qualification to offer his opinions, (Doc. 67); the reliability of the methodology that Dr. Reinhart used to reach his opinions, (Doc. 76); and the ability of Dr. Reinhart's opinions to help a jury understand the injury causation issues in this case, (Doc. 73).

Under Rule 702, an expert may be qualified "by knowledge, skill, experience, training, or education," and an expert may testify at trial and offer an expert opinion if:

> (a) The expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
> (b) the testimony is based on sufficient facts or data;
> (c) the testimony is the product of reliable principles and methods; and
> (d) the expert has reliably applied the principles and methods to the facts of the case.

FED. R. EVID. 702. The United States Court of Appeals for the Eleventh Circuit requires district courts to use a "rigorous three-part inquiry" when considering the admissibility of expert testimony under Rule 702. A district court must determine whether:

> (1) the expert is qualified to testify competently regarding the matters he intends to address; (2) the methodology by which the expert reaches his conclusions is sufficiently reliable as determined by the sort of inquiry mandated in *Daubert*; and (3) the testimony assists the trier of fact, through the application of scientific, technical, or specialized expertise, to understand the evidence or to determine a fact in issue.

United States v. Frazier, 387 F.3d 1244, 1260 (11th Cir. 2004) (*en banc*) (quoting *City of Tuscaloosa v. Harcros Chems., Inc.*, 158 F.3d 548, 562 (11th Cir. 1998)). The party offering testimony from an expert must demonstrate that the anticipated testimony is admissible under Rule 702. *Frazier*, 387 F.3d at 1260. In this opinion, the Court, exercising the gatekeeping function conferred on district courts by the United States Supreme Court in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509

U.S. 579 (1993), considers whether Rule 702 precludes the defendants from calling Dr. Reinhart as a witness at trial and asking Dr. Reinhart to offer his opinions concerning injury causation.

Dr. Reinhart's Qualifications

Dr. Reinhart's opinion concerns the biomechanics of the movement of Mr. Johnson's body in the cabin of his tractor when the ABF tractor collided with his tanker. Mr. Johnson argues that because Dr. Reinhart is not a biomechanical engineer, he is not qualified to testify about biomechanics and injury causation. (Doc. 74, p. 2). "Biomechanics . . . is the application of mechanical principles to living organisms, such as humans . . . ." Bernardo Innocenti, *Biomechanics: A Fundamental Tool with a Long History (And Even Longer Future!)*, MUSCLE, LIGAMENTS AND TENDONS JOURNAL, 2017 Oct-Dec; 7(4): 491–92, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5908324/. Mr. Johnson acknowledges that Dr. Reinhart is a mechanical engineer and an emergency room physician but argues that because Dr. Reinhart is not a biomechanical engineer, he is not qualified to offer an opinion about the movements that caused his (Mr. Johnson's) injuries or the extent of those injuries.

Dr. Reinhart does not have to have a degree in biomechanical engineering to qualify as an expert in this case. (Doc. 74, p. 2).[1] "While scientific training or education may provide possible means to qualify, experience in a field may offer another path to expert status. In fact, the plain language of Rule 702 makes this clear: expert status may be based on 'knowledge, skill, experience, training, or education.'" *Frazier*, 387 F.3d at 1260–61 (emphasis and internal citations omitted). Dr. Reinhart is qualified by education, training, and experience to offer his accident reconstruction opinion.

Dr. Reinhart holds a Bachelor of Science in mechanical engineering from the University of Texas at Austin, and he received his Medical Doctorate from the University of Texas – Southwestern Medical School in 1996. In 1999, he completed his residency in emergency medicine at the University of Virginia Medical Center. (Doc. 77-6, p. 1). He has completed coursework and is fully accredited by the Accreditation Commission for Traffic Accident Reconstruction (ACTAR). (Doc. 90-1, p. 3). ACTAR "is recognized . . . as an independent accrediting organization for those who work in the field of Accident Investigation and Reconstruction." ACTAR, ABOUT ACCREDITATION, https://actar.org/accreditation/about (last visited

[1] As a practical matter, degrees in biomechanical engineering are not readily available. *See* Loren Peck, Note, *How Sound is the Science? Applying Daubert to Biomechanical Experts' Injury Causation Opinions*, 73 WASH. & LEE. L. REV. 1063, 1077–78 (2016) ("While some schools, including Stanford University, offer a biomechanical engineering program, most schools do not. Apparently, there is no single route to obtaining biomechanical expertise.").

Dec. 7, 2020). The ACTAR accreditation exam covers the following topics: Airborne, Kinetic Energy, Momentum, Time and Distance, Tire Evidence, Change in Velocity (D*v*), Principal Direction of Force, Lamp Examination, Scene Examination, Scene Measurements, Tire Mark Evaluation, and Vehicle Evidence. The practical portion of the exam "requires the candidate complete an accident reconstruction analysis based on problem data provided by ACTAR." ACTAR, THE ACTAR EXAMINATION EXPLAINED, https://actar.org/accreditation/exam (last visited Dec. 7, 2020).

Dr. Reinhart has extensive experience in accident reconstruction. He has worked as an accident reconstructionist since 2013. (Doc. 90-1, p. 2). He estimates that he has "reviewed over 650 cases in which injuries were claimed and in which [he] applied biomechanical analyses and ICA methodology." (Doc. 90-1, p. 3). In doing so, he has used his "engineering and medical training and applied engineering principles in understanding the effects of forces and accelerations when applied to the human body." (Doc. 90-1, p. 3).

Based on his education, experience, and training, the Court concludes that Dr. Reinhart is qualified to offer opinions based on principles of biomechanical engineering. For the reasons discussed during the December 2, 2020 hearing in this matter (Doc. 114), the Court finds that Dr. Reinhart, as an emergency room physician, is not qualified to interpret images of Mr. Johnson's spine and offer his

opinion that the radiological findings "were consistent with preexisting degenerative changes and not indicative of any acute traumatic injury as a result of the subject collision." (Doc. 114, pp. 24–25). Dr. Reinhart does not have a background in radiology or in orthopedics that would qualify him to offer opinions about preexisting degenerative conditions in Mr. Johnson's spine.

The Reliability of Dr. Reinhart's Accident Reconstruction Opinion

Mr. Johnson argues that Dr. Reinhart's "opinions regarding injury mechanisms rely on faulty and incomplete facts and data, do not articulate his methodology, and are applied in an outcome-oriented way." (Doc. 77, p. 6). Mr. Johnson's concerns about Dr. Reinhart's data are fair. As Mr. Johnson points out, Dr. Reinhart did not visit the accident scene (so he did not take measurements at the accident scene), did not inspect Mr. Johnson's vehicle, did not review "black box" data from Mr. Massingill's vehicle, did not conduct witness interviews, does not have Mr. Massingill's actual speed at the time of the accident, and does not know the weight of Mr. Johnson's trailer at the time of the accident. (Doc. 77, pp. 6–7).

Though Mr. Johnson correctly points to gaps in Dr. Reinhart's data, his criticism of Dr. Reinhart's methodology is not accurate. In an affidavit, Dr. Reinhart has explained that he conducted an Injury Causation Analysis of the crash. (Doc. 90-1, p. 4). ICA "is the examination of an event in order to understand its nature

and to determine its essential features, including the causation of injuries." (Doc. 90-1, p. 4). ICA uses a five-step "process analysis" in which "each subsequent step builds upon its predecessor." (Doc. 90-1, p. 7). The five steps are: analysis of event, analysis of human kinematics, analysis of biomechanics, determination of injury potential, and validation through medical analysis. (Doc. 90-1, p. 7). The ICA approach "relies on supporting research using various recognized research methods, such as: experimental method; correlational method; time-series design; single-subject experimental design; case histories; multi-method approach; survey method; and statistical methods." (Doc. 90-1, p. 8). According to Dr. Reinhart, "[t]he methodology of ICA was formalized shortly after World War II," and "ICA [has] emerged as a . . . specialized activity that is used daily in the evaluation of any vehicle impact or collision." (Doc. 90-1, p. 11).[2]

Under Eleventh Circuit precedent, the distinction between method and data establishes the boundary between a district court's gatekeeping function and a jury's factfinding function. A court must address flaws in methodology; a jury must address flaws in data. Ordinarily, when an expert uses "a method that, in the abstract, is reliable," but the expert inputs inaccurate or improper data, a district court should admit the evidence, and the party challenging the result of the expert's analysis

[2] *See In re Air Crash at Lexington, August 27, 2006*, 2009 WL 1918270, at *3 (E.D. Ky. July 2, 2009) (explaining that ICA "is relied up by the FAA, NTSB and NASA.").

should identify errors to a jury through cross-examination. *Quiet Tech. DC-8, Inc. v. Hurel-Dubois UK Ltd.*, 326 F.3d 1333, 1345 (11th Cir. 2003) ("The identification of such flaws in generally reliable scientific evidence is precisely the role of cross-examination."). "Normally, failure to include variables will affect the analysis' probativeness, not its admissibility." *Quiet Tech.*, 326 F.3d at 1346 (quoting *Bazemore v. Friday*, 478 U.S. 385, 400 (1986)). A district court should intercede and exclude expert evidence when an expert's flawed methodology makes his opinion "facially authoritative but substantively unsound." *Quiet Tech.*, 326 F.3d at 1346. In the latter scenario, cross-examination will not suffice to correct an invalid opinion.

Here, vigorous cross-examination will expose flaws in Dr. Reinhart's data and in the terminology that Dr. Reinhart uses to describe the accident. As Mr. Johnson points out, Dr. Reinhart interchangeably uses the phrases "rear-end" and "side-swipe" to describe the accident. Though the diagrams on which Dr. Reinhart relied in formulating his opinions unambiguously depict an angled collision at the right rear corner of Mr. Johnson's tanker (Doc. 74-5, p. 3) that could have involved "two types of impacts," (Doc. 74-3, p. 122), Dr. Reinhart stated in his written report that the "principle direction of force (PDOF)" within Mr. Johnson's tractor during the collision was "directed from six o'clock," (Doc. 74-5, p. 22), and Dr. Reinhart testified that studies about rear-end collisions would be applicable to Mr. Johnson's

collision. (Doc. 74-3, pp. 23-24). Dr. Reinhart is not concerned that the studies on which he relies in formulating his opinion do not involve tractor-trailer trucks because, in Dr. Reinhart's opinion, all vehicles will "respond in similar means and fashion." (Doc. 74-3, p. 26). This overlooks the fact that, unlike a passenger car, Mr. Johnson's tractor was connected to his tanker by a kingpin that allows a tanker to articulate from the tractor. (Doc. 74-5). These criticisms of Dr. Reinhart's analysis are simple and logical and can be identified and highlighted through cross-examination at trial.

Under *Quiet Tech*, because the the ICA methodology appears scientifically sound and because Mr. Johnson can vigorously cross-examine Dr. Reinhart on inconsistencies, erroneous assumptions, and potential flaws in data inputs, the Court cannot exclude Dr. Reinhart's opinions based on Mr. Johnson's reliability argument. *See Daubert*, 509 U.S. at 596 ("Vigorous cross-examination [and] presentation of contrary evidence . . . are the traditional and appropriate means of attacking shaky but admissible evidence.").

Helpfulness

Finally, Mr. Johnson argues that the Court should exclude Dr. Reinhart's testimony because Dr. Reinhart's opinions, "based on experience at amusement parks," are "nothing more than general types of statements you would expect

lawyers to make in closing arguments—they are opinions based on lay experience, not expert experience." (Doc. 74, p. 9). But as Mr. Johnson notes, Dr. Reinhart's "testimony involving accident reconstruction, biomechanics, and quantifying force are not within the experience of laypersons . . . ." (Doc. 74, p. 9). If jurors find that Dr. Reinhart's data and assumptions are credible, then his opinions will "help the trier of fact to understand the evidence or to determine a fact in issue." FED. R. EVID. 702(a).

The helpfulness requirement turns on:

> the common sense inquiry [of] whether the untrained layman would be qualified to determine intelligently and to the best possible degree the particular issue without enlightenment from those having a specialized understanding of the subject involved in the dispute.

See FED. R. EVID. 702, Advisory Committee Notes (citations omitted). "By this requirement, expert testimony is admissible if it concerns matters that are beyond the understanding of the average lay person. Proffered expert testimony generally will not help the trier of fact when it offers nothing more than what lawyers for the parties can argue in closing arguments." *Frazier*, 387 F.3d at 1262–63 (internal quotations and citations omitted). As Mr. Johnson acknowledges, most laypeople do not have experience in or knowledge about accident reconstruction or biomechanics, and most laypeople are not capable of quantifying force.

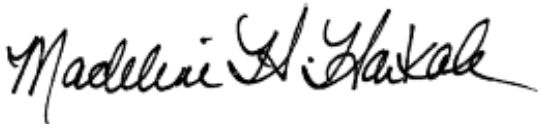
Therefore, if jurors accept the data, studies, and assumptions on which Dr. Reinhart's accident reconstruction rests, then his opinions concerning the movement

of Mr. Johnson's body in his tractor during the collision will help jurors decide whether the collision caused movement that could produce the injuries that Mr. Johnson attributes to the collision.

Conclusion

For the reasons stated above and during the December 2, 2020 hearing in this matter, the Court will not exclude Dr. Reinhart's opinions regarding biomechanics and accident reconstruction, but the Court will exclude Dr. Reinhart's opinion concerning medical causation. The Court directs the Clerk to please term Docs. 67, 73, and 76.

DONE and **ORDERED** this December 11, 2020.



MADELINE HUGHES HAIKALA
UNITED STATES DISTRICT JUDGE