

2016 WL 462960

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United States District Court,
D. Colorado.

Miriam White, Plaintiff,

v.

Deere & Company, John Deere Limited,
and John Does 1-5, Defendants.

Civil Action No. 13-cv-02173-PAB-NYW

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Signed February 8, 2016

Attorneys and Law Firms

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[Jacqueline Ventre Roeder](#), [Charles L. Casteel](#), [Jordan Lee Lipp](#), Davis Graham & Stubbs, LLP, Denver, CO, for Defendants.

ORDER

[PHILIP A. BRIMMER](#), United States District Judge

*1 This matter is before the Court on defendants' Motion to Exclude Randall Benson's Opinions Derived from [Neuroimaging](#) [Docket No. 103].

I. BACKGROUND

This is a products liability action that arises out of an accident that occurred on August 17, 2011 while plaintiff Miriam White was operating her Deere Model 4600 compact utility tractor and Model 460 loader. Ms. White claims that she suffered facial [injuries and traumatic brain injury](#) ("TBI") as a result of a hay bale falling onto her head while she was operating the tractor. Docket No. 103 at 1. Ms. White alleges that her tractor had design defects that created an unreasonable risk of injury from falling hay bales and that her injuries resulted from these defects. Docket No. 150 at 2-3.

Ms. White has designated Randall Benson, a board-certified neurologist, as a medical expert. Docket No. 103 at 1. Dr. Benson opines that Ms. White suffered a [traumatic](#)

[brain injury](#) as a result of the August 17, 2011 incident. Docket No. 116-3 at 18. He bases his opinion, in part, on results derived from a [Magnetic Resonance Imaging](#) ("MRI") sequence called [diffusion tensor imaging](#) ("DTI"). *Id.* at 20-21. Defendants move to exclude Dr. Benson's DTI findings on two grounds. First, defendants argue that Dr. Benson's DTI findings are unreliable. Docket No. 103 at 3. Second, defendants argue that Dr. Benson's DTI findings will not assist the trier of fact to determine whether Ms. White's alleged [brain injuries](#) were caused by the August 17, 2011 accident. *Id.* at 4.

II. FEDERAL RULE OF EVIDENCE 702

[Rule 702 of the Federal Rules of Evidence](#) provides that:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise 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](#). As the rule makes clear, while required, it is not sufficient that an expert be qualified based upon knowledge, skill, experience, training, or education to give opinions in a particular subject area. Rather, the Court must "perform[] a two-step analysis." [103 Investors I, L.P. v. Square D Co.](#), 470 F.3d 985, 990 (10th Cir. 2006). After determining whether the expert is qualified, the specific proffered opinions must be assessed for reliability. *See id.*; [Fed. R. Evid. 702](#) (requiring that the testimony be "based on sufficient facts or data," be the "product of reliable principles and methods," and reflect a reliable application of "the principles and methods to the facts of the case").

[Rule 702](#) imposes on the district court a "gatekeeper function to 'ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable.'" [United States v. Gabaldon](#), 389 F.3d 1090, 1098 (10th Cir. 2004) (quoting [Daubert v. Merrell Dow Pharmaceuticals, Inc.](#), 509 U.S. 579,

589 (1993)). To perform that function, the Court must “assess the reasoning and methodology underlying the expert’s opinion, and determine whether it is both scientifically valid and applicable to a particular set of facts.” *Dodge v. Cotter Corp.*, 328 F.3d 1212, 1221 (10th Cir. 2003) (citing *Daubert*, 509 U.S. at 592-93). Where an expert relies on experience, the expert “ ‘must explain how that experience leads to the conclusion reached, why that experience is a sufficient basis for the opinion, and how that experience is reliably applied to the facts.’ ” *United States v. Medina-Copete*, 757 F.3d 1092, 1104 (10th Cir. 2014) (quoting Fed. R. Evid. 702, advisory committee notes).

*2 Although it is not always a straightforward exercise to disaggregate an expert’s method and conclusion, when the conclusion simply does not follow from the data, a district court is free to determine that an impermissible analytical gap exists between premises and conclusion. *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997). In examining an expert’s method, however, the inquiry should not be aimed at the “exhaustive search for cosmic understanding but for the particularized resolution of legal disputes.” *Daubert*, 509 U.S. at 597. It is the specific relationship between an expert’s method, the proffered conclusions, and the particular factual circumstances of the dispute that renders testimony both reliable and relevant.

In addition to the expert having appropriate qualifications and methods, the proponent of the expert’s opinions must demonstrate that the process by which the expert derived his or her opinions is reliable. *United States v. Crabbe*, 556 F. Supp. 2d 1217, 1220 (D. Colo. 2008). When assessing reliability, “the court may consider several nondispositive factors: (1) whether the proffered theory can and has been tested; (2) whether the theory has been subject to peer review; (3) the known or potential rate of error; and (4) the general acceptance of a methodology in the relevant scientific community.” *103 Investors I*, 470 F.3d at 990 (citing *Daubert*, 509 U.S. at 593-94). These considerations are not exhaustive. Rather, “the trial judge must have considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable.” *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999). Ultimately, the test requires that the expert “employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Id.*

While plaintiff, as the proponent of the challenged testimony, has the burden of establishing admissibility, the proffer is

tested against the standard of reliability, not correctness; she need only prove that “the witness has sufficient expertise to choose and apply a methodology, that the methodology applied was reliable, that sufficient facts and data as required by the methodology were used and that the methodology was otherwise reliably applied.” *Crabbe*, 556 F. Supp. 2d at 1221.

Once the standard of reliability “is met, the court will still consider other non-exclusive factors to determine whether the testimony will assist the trier of fact: (1) whether the testimony is relevant; (2) whether it is within the juror’s common knowledge and experience; and (3) whether it will usurp the juror’s role of evaluating a witness[] credibility.” *United States v. Rodriguez-Felix*, 450 F.3d 1117, 1123 (10th Cir. 2006).

In sum, assuming an objection is properly made, expert testimony must be excluded if the expert is unqualified to render an opinion of the type proffered, if the opinion is unreliable, if the opinion will not assist the trier of fact, or if the opinion is irrelevant to a material issue in the case.

III. ANALYSIS

Defendants do not challenge Dr. Benson’s qualifications, the application of MRI techniques other than DTI,¹ or the four sources of data other than DTI on which Dr. Benson bases his conclusions. Defendants’ challenge focuses squarely on Dr. Benson’s use of DTI and his opinions based on DTI. The Court’s Practice Standards regarding Rule 702 objections require that the party seeking to exclude an opinion of an opposing expert identify the opinion sought to be excluded. See Practice Standards (Civil Cases), Judge Philip A. Brimmer, § III.G. The only specific opinion that defendants identify in their motion is Dr. Benson’s fifth piece of evidence regarding brain imaging, including DTI. Docket No. 103 at 2. The Court therefore assumes that the opinion defendants seek to exclude is that finding in Dr. Benson’s report that states as follows: “DTI voxel-wise analysis revealed a large number of white matter tracts with abnormally reduced FA.” Docket No. 116-3 at 20. Dr. Benson also refers to these findings later in his report in support of his conclusion that the DTI “reveals axonal injury predominantly in bilateral frontal lobes.” *Id.* at 21-22.

A. Reliability of DTI for Identifying a TBI

*3 Defendants argue Dr. Benson should be precluded from presenting his opinions based on DTI because DTI is unreliable as a means for diagnosing individual patient

injuries. Docket No. 103 at 3. Defendants cite a November 2014 research paper by Wintermark et al. that finds DTI to be suitable only for research and concludes that there is insufficient evidence to support its routine clinical use at the individual patient level. Docket No. 103 at 3-4; Docket No. 103-1 at 76.

Plaintiff responds that the non-exclusive *Daubert* reliability factors establish that Dr. Benson's opinions based on DTI are admissible. Docket No. 116 at 11-14. While the Wintermark article may undermine the weight of Dr. Benson's DTI findings, plaintiff cites articles that support DTI's reliability. *See, e.g.*, Docket No. 116-1 at 7, ¶ 10; Docket No. 116-6. The articles cited by plaintiff appear to support the conclusion that DTI is a generally accepted diagnostic measure for TBI. One peer-reviewed article cited by plaintiff reviews the last decade of research conducted on DTI and finds that “[a] unifying theme can be deduced from this large body of research: DTI is an extremely useful and robust tool for the detection of TBI-related brain abnormalities. The overwhelming consensus of these studies is that low white matter FA [fractional anisotropy] is characteristic of TBI.” M.B. Hulkower et al., *A Decade of DTI in Traumatic Brain Injury: 10 Years and 100 Articles Later*, 34 AM J NEURORADIOL 2064, 2071 (2013). This article also found “an overwhelming consensus that imaging abnormalities detected with DTI are associated with important clinical outcomes. This further validates DTI as a meaningful measure of clinically important brain injury.” *Id.* Another peer-reviewed article cited by plaintiff states that the “overwhelming consensus of a substantial body of scientific inquiry supports DTI for detecting pathology in [mild TBI (“mTBI”)] patients,” Docket No. 116-6 at 4, and directly challenges the criticisms of DTI proffered by defendants' expert, Dr. Hal Wortzel. *Id.* at 2 (“The misleading and often entirely unsubstantiated opinions and positions of Wortzel, Tsiouris, and Filippi (2014), in opposition to diffusion tensor imaging (DTI) as a useful measure in mTBI, are at odds with the clear consensus of the scientific literature regarding [mTBI], its clinical assessment, and its natural history.”). The Court notes that the November 2014 research paper cited by defendants acknowledges that “there is evidence from group analyses that DTI can identify TBI-associated changes in the brain across a range of injury severity, from mild to severe TBI. Evidence also suggests that DTI has the sensitivity necessary to detect acute and chronic TBI-associated changes in the brain, some of which correlate with injury outcomes.” Docket No. 103-1 at 78. Thus, the Court finds that defendants have not shown that the November 2014 research paper, or other evidence, establishes that DTI is an

unreliable technology to detect mild TBI-associated changes in the brain.

In his affidavit, Dr. Benson discusses some of the testing that he has conducted “to demonstrate the clinical validity and reliability of DTI in TBI” as part of his work with the U.S. Army Telemedicine and Advanced Technology Research Command at a “Diffusion MRI TBI Roadmap Development Workshop.” Docket No. 116-1 at 11-12, ¶ 18. As part of his research for his presentation at that workshop, Dr. Benson found “excellent correlation between DTI and injury severity” and “repeatability of DTI for a single mTBI case scanned in two different cities.” *Id.* Dr. Benson also notes that “[o]ther speakers presented data showing the correlations of DTI with neurocognitive outcome and experience using DTI on Iraq war veterans.” *Id.* Dr. Benson states the known rate of error for DTI analysis is .4%, Docket No. 116-1 at 14, ¶ 28; however, he provides no support for this rate.

*4 Application of the four non-dispositive *103 Investors* factors supports plaintiff's argument that DTI is a reliable methodology. *See 103 Investors I*, 470 F.3d at 990 (citing *Daubert*, 509 U.S. at 593-94). Regarding whether DTI can be and has been tested, Dr. Benson's affidavit discusses the testing he has conducted to confirm DTI results. Docket No. 116-1 at 11-12, ¶ 18. The publications and workshops cited by Dr. Benson support the conclusion that DTI has been subjected to peer review and is generally accepted in the medical community as a tool for detecting TBI. *Id.* at 10-12, ¶¶ 16, 18. While plaintiff has not supported her argument that DTI has a known error rate, no single *103 Investors* factor is dispositive. *See 103 Investors I*, 470 F.3d at 990 (citing *Daubert*, 509 U.S. at 593-94). The Court notes that DTI findings have been admitted by multiple courts. *Andrew v. Patterson Motor Freight, Inc.*, 2014 WL 5449732, at *8 (W.D. La. Oct. 23, 2014) (“In sum, the evidence submitted shows DTI has been tested and has a low error rate; DTI has been subject to peer review and publication; and DTI is a generally accepted method for detecting TBI.”) (citation omitted); *Ruppel v. Kucanin*, 2011 WL 2470621, at *6 (N.D. Ind. June 20, 2011) (finding DTI to be a reliable method); *Booth v. KIT, Inc.*, 2009 WL 4544743, at *3 (D.N.M. Mar. 23, 2009) (denying motion to exclude expert testimony regarding findings from DTI). Accordingly, the Court finds that plaintiff has carried its burden of showing that DTI is a reliable technology and that Dr. Benson applied a reliable methodology in arriving at his challenged opinion.

B. “Fit” of Dr. Benson's DTI Findings

Defendants argue that Dr. Benson's opinions derived from DTI do not "fit" this case. Docket No. 103 at 4; *see Bitler v. A.O. Smith Corp.*, 400 F.3d 1227, 1234 (10th Cir. 2004) ("A trial court must look at the logical relationship between the evidence proffered and the material issue that the evidence is supposed to support to determine if it advances the purpose of aiding the trier of fact. Even if an expert's proffered evidence is scientifically valid and follows appropriately reliable methodologies, it might not have sufficient bearing on the issue at hand to warrant a determination that it has relevant 'fit.' ") (citing *Daubert*, 509 U.S. at 591). Defendants assert that Dr. Benson's DTI findings show that plaintiff has only one or two white matter lesions and that Dr. Benson has not adequately addressed other possible causes for such findings in light of Ms. White's medical history, specifically, her injuries after being kned in the head by a horse. Docket No. 103 at 5-6. On June 10, 2012, Ms. White was hit on the left side of her face by a horse's knee. Docket No. 81-3 at 6. After emergency medical services arrived and evaluated Ms. White, they determined that she should be transferred to the Medical Center of the Rockies. *Id.* There, Chris Cribari, M.D., noted that Ms. White was admitted with a diagnosis of a concussion and that the EMTs said she was repeating herself, had [retrograde amnesia](#), and was slow to respond. *Id.* Defendants claim that these are signs of [brain trauma](#) that Dr. Benson ignores. Docket No. 103 at 5. Defendants also argue that Dr. Benson does not "adequately consider or explain why the white matter lesions are so definitively attributable to the 2011 incident and not to [p]laintiff's psychiatric issues." *Id.* at 6. The Court notes that both the June 10, 2012 incident and plaintiff's psychiatric history are mentioned in Dr. Benson's report. *See* Docket No. 81-3 at 6, 8. Defendants also argue that "a fact-finder needs to determine ...whether [p]laintiff's alleged [brain injury](#) was caused by the 2011 incident at issue in this case" and claim that Dr. Benson's DTI findings are not relevant to the issue of causation. Docket No. 103 at 5.

In support of his conclusion that "[i]t is probable that [Ms. White's] permanent cognitive, emotional, and physical symptoms...are the direct result of the 8/17/11 injury and not the subsequent injury of 6/10/12," Dr. Benson relied on five sources of data: (1) the available biomechanical information regarding the August 17, 2011 injury event; (2) Ms. White's symptoms following the August 17, 2011 injury event; (3) findings from a neurobehavioral examination; (4)

findings from a [neuropsychological assessment](#); and (5) Ms. White's [neuroimaging](#). Docket No. 81-3 at 18-20. Thus, DTI is not the only source of information Dr. Benson uses to diagnose TBI. The [neuroimaging](#) he relies upon consists of FLAIR, SWI, and Gradient Echo imaging in addition to DTI. *Id.* at 20. Dr. Benson pairs the [neuroimaging](#) results with the [neuropsychological assessment](#), which notes impaired processing speed and working memory and delayed verbal memory, coding, and symbol search, to determine the presence of brain damage. *Id.* at 21. The reasons Dr. Benson articulates for identifying the August 17, 2011 incident as the source of plaintiff's traumatic [brain injury](#) are not based on DTI, and Dr. Benson readily admits that "[n]o standalone imaging technique allows for unequivocal determination of etiology absent clinical information." Docket No. 116-1 at 6. Dr. Benson compares the imaging findings to the other data sources and states that the "imaging findings match the biomechanics, chronic symptoms, neurobehavioral and neuropsychological findings." Docket No. 116-1 at 9. Applying the differential diagnosis procedure, Dr. Benson asserts that Ms. White's "injury/accident of 8/17/11 was the much more significant injury and rendered her vulnerable to the more mild[] concussion of 6/10/12." Docket No. 116-4 at 6. He also states that the "injury of 6/10/12, while inducing a [mild concussion](#), does not explain her clinical deficits that began when her head was crushed under the weight of a heavy hay bale on 8/7/11." *Id.*

*5 The Court finds that defendants present no basis to exclude Dr. Benson's causation opinions on the grounds of the alleged unreliability or irrelevance of DTI for identifying a TBI suffered by Ms. White.

IV. CONCLUSION

For the foregoing reasons it is

ORDERED that defendants' Motion to Exclude Randall Benson's Opinions Derived from [Neuroimaging](#) [Docket No. 103] is **DENIED**.

All Citations

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Footnotes

- 1 In their reply, defendants appear to broaden their argument to include Dr. Benson's conclusions drawn from Susceptibility Weighted Imaging (SWI) and Fluid Attenuated Inversion Recovery (FLAIR) imaging. Docket No. 130 at 3. Defendants admit that SWI and FLAIR are “methodologically sound.” *Id.* A party generally may not raise an issue for the first time in a reply brief. See *Ulibarri v. City & Cty. of Denver*, No. 07-cv-01814-WDM-MJW, 2011 WL 1336388, at *2 (D. Colo. April 6, 2011) (citing *Hill v. Kemp*, 478 F.3d 1236, 1250 (10th Cir. 2007)); *LNV Corporation v. Hook*, No. 14-cv-00955-RM-CBS, 2015 WL 5679723, at *3 (D. Colo. Sept. 25, 2015) (citing *Conroy v. Vilsack*, 707 F.3d 1163, 1179 n.6 (10th Cir. 2013)). Accordingly, the Court will not consider defendants' arguments related to SWI and FLAIR imaging.

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