

[Cite as *Miller v. Bike Athletic Co.* (1998), 80 Ohio St.3d 607.]

Evidence — Focus of trial court in determining whether an expert's testimony is admissible under Evid.R. 702(C) — Conditions of an accident need not be duplicated in an out-of-court experiment, when.

1. A trial court's role in determining whether an expert's testimony is admissible under Evid.R. 702(C) focuses on whether the opinion is based upon scientifically valid principles, not whether the expert's conclusions are correct or whether the testimony satisfies the proponent's burden of proof at trial.
2. When an out-of-court experiment is not represented to be a reenactment of the accident and deals with one aspect or principle directly related to the cause or result of the occurrence, the conditions of the accident need not be duplicated.

(No. 96-1030 — Submitted September 9, 1997 — Decided January 7, 1998.)

APPEAL from the Court of Appeals for Belmont County, No. 94-B-52.

On September 7, 1990, John Patrick Miller, plaintiff-appellant, was seriously injured while playing football for St. John's Central Catholic High School in Bellaire, Ohio. Attempting to make a tackle, Miller collided head-on with another player who was running toward him at full speed. Miller sustained a comminuted fracture of the vertebral body of C5, with severe spinal cord injury, and was rendered quadriplegic.

Miller filed this lawsuit against defendants-appellees, Bike Athletic Company, Ace Cleaners & Reconditioners of Athletic Equipment, Inc., Athletic Helmet, Inc., the Catholic Diocese of Steubenville, St. John's Central Catholic High School, and Frank E. Vingia, the football coach at the high school. In his

complaint, Miller alleged, *inter alia*, that the Bike air helmet he was wearing was negligently designed, manufactured, and sold by Bike Athletic Company; that Ace Reconditioners negligently reconditioned the helmet and failed to instruct him on the use of the helmet; that Athletic Helmet, Inc. negligently designed and/or reconditioned the helmet; and that the remaining defendants-appellees negligently instructed him on the proper fit and use of the helmet and negligently failed to properly inflate the helmet liners. Miller further alleged that such negligence proximately caused him to sustain his severe injuries. Claudia Ullom, Miller's mother, filed a loss-of-consortium claim.

Following extensive discovery, appellees filed motions for summary judgment. Appellees challenged primarily the expert opinion of James Lafferty, a mechanical and biomedical engineer retained by appellants, who believed that Miller's injury could have been prevented if the helmet had been properly inflated. Appellees also questioned the procedures Dr. Lafferty used to have the helmet tested.

The trial court granted summary judgment for appellees and held that Lafferty's opinion and that of two other experts who relied upon his opinion were inadmissible. The court reasoned that since Lafferty's opinion was premised on an out-of-court experiment which was dissimilar to conditions on the playing field, his opinion could not be considered, as it would confuse and mislead a jury. The court instead relied upon Dr. Joseph Maroon, an expert for appellee Bike Athletic Company, whose opinion was that no football helmet is currently designed to prevent the type of injury Miller sustained to his neck.

The court of appeals affirmed on similar grounds. It found that the trial court was warranted in striking Lafferty's expert opinion, that the experiment on the helmet was inadmissible, and that the other experts' opinions presented by

appellants were also inadmissible. Upon review of the evidence, the court concluded that the type of injury Miller sustained is a risk of playing football and cannot be avoided even with proper headgear.

The cause is now before this court upon the allowance of a discretionary appeal.

Lancione, Davis & Lloyd Law Office Co., L.P.A., and Richard L. Lancione; Tarasi & Associates, P.C., Louis M. Tarasi, Jr., and Elizabeth T. Stevenson, for appellants.

Davis & White and Phillip M. Davis, for appellee Bike Athletic Company.

Kinder, Harper, Hazlett & Hinzey and Gregory W. Hinzey; Thorp, Reed & Armstrong and Randolph T. Struk; Scharf Law Office and Ron Scharf, for appellee Bike Athletic Company and Athletic Helmet, Inc.

Thomas, Fregiato, Myser, Hanson & Davies and Rodney D. Hanson, for appellee ACE Cleaners & Reconditioners of Athletic Equipment, Inc.

Sommer, Liberati, Shaheen & Hoffman, Keith A. Sommer and David K. Liberati, for appellees Catholic Diocese of Steubenville and/or the Diocese of Steubenville Catholic Charities, d.b.a. St. John's Central Catholic High School and St. John's Catholic Church of Bellaire, Ohio, and Frank E. Vingia.

FRANCIS E. SWEENEY, SR., J. In determining whether the trial court was warranted in granting appellees' motions for summary judgment, we must consider whether the court properly excluded the scientific testimony of appellants' expert witnesses.

I. Expert Testimony of Dr. Lafferty

At the core of this determination is whether the testimony of James Lafferty was admissible and whether the test he based his opinion upon was reliable.

Appellants retained James Lafferty, a consulting engineer in the areas of mechanical and biomedical engineering, to provide them with an opinion on whether the helmet was a cause of Miller's injuries. The helmet, which was manufactured in 1981, had been reconditioned by appellee Ace Cleaners & Reconditioners of Athletic Equipment, Inc. prior to being used by appellant. The helmet is designed with an energy-absorbing liner consisting of two bladders, an upper and lower bladder. The lower bladder is to be inflated before the player puts on the helmet. The upper bladder is then inflated through a valve at the top of the helmet. When Lafferty examined the helmet, he found that the valve opening at the top of the helmet had been sealed shut and that the helmet had "zero gauge pressure" in the lower bladder. Although he did not know if there had been any leakage since the accident, Lafferty inflated the lower bladder and rechecked the pressure ten days later. At that time, he found no significant air leakage. Lafferty believed that the lining had not been properly inflated at the time Miller was injured.

Lafferty took the helmet to Capitol Varsity Athletic Equipment, Inc. to test it in accordance with standards established by the National Operating Committee on Standards for Athletic Equipment ("NOCSAE"). The purpose of such testing is to determine the helmet's shock-absorption properties under various conditions. The NOCSAE standard is a head-protection standard; however, in Lafferty's opinion, the test can also be used to determine whether a helmet can prevent injuries to the neck. In the NOCSAE test, the helmet is mounted on a head form and then dropped from varying heights, with the head form aligned so that impact can occur at the sides, back, top, and front. The "severity index" is then calculated

from measurements of acceleration to determine the helmet's concussion tolerance. If a helmet has a severity index of higher than fifteen hundred, the helmet fails the test.

With Lafferty observing, an employee at Capitol Varsity Athletic Company conducted two partial tests on the helmet in question, dropping it from a height of sixty inches, with impact to the top of the helmet only, since that is where Lafferty believed the point of impact was. First, the helmet was tested with no air added in the lower bladder, which resulted in a severity index of six hundred twenty-four. Next, the lower bladder was inflated to a pressure of 3.5 pounds per square inch, which resulted in a severity index of four hundred seventeen. Lafferty stated that although the helmet passed the test in both instances, the critical fact was that the failure to inflate the lower bladder decreased the energy-absorbing capability by about fifty percent. In conjunction with this finding, Lafferty then noted that the threshold for compressive fracture of the C5 body is about one thousand pounds of force and that the force sustained by Miller's spine was at the threshold level (otherwise, he would have sustained additional fractures at other locations on the spine). Lafferty concluded that a fifty-percent increase in the energy absorbing capability of the helmet would have attenuated the forces to below the threshold level. Had the helmet been properly inflated, the helmet would have sufficiently absorbed the force of the impact, and the injury would have been avoided.

In deciding whether Lafferty's testimony was proper, we begin our analysis with a consideration of Evid.R. 702, which governs the admissibility of expert testimony. It provides:

“A witness may testify as an expert if all of the following apply:

“(A) The witness’ testimony either relates to matters beyond the knowledge or experience possessed by lay persons or dispels a misconception common among lay persons;

“(B) The witness is qualified as an expert by specialized knowledge, skill, experience, training, or education regarding the subject matter of the testimony;

“(C) The witness’ testimony is based on reliable scientific, technical, or other specialized information. To the extent that the testimony reports the result of a procedure, test, or experiment, the testimony is reliable only if all of the following apply:

“(1) The theory upon which the procedure, test, or experiment is based is objectively verifiable or is validly derived from widely accepted knowledge, facts, or principles;

“(2) The design of the procedure, test, or experiment reliably implements the theory;

“(3) The particular procedure, test, or experiment was conducted in a way that will yield an accurate result.”

There is no question that Dr. Lafferty is a qualified expert who testified about a subject beyond the knowledge of lay persons. Evid.R. 702(A) and (B). Thus, at issue in this case is whether Lafferty’s testimony complied with the requirements of Evid.R. 702(C), *i.e.*, whether his opinion was reliable. In making this determination, our inquiry focuses on whether the principles and methods Lafferty employed to reach his opinion are reliable, not whether his conclusions are correct. See Staff Notes to Evid.R. 702. Additionally, to be admissible, the expert testimony must assist the trier of fact in determining a fact issue or understanding the evidence. *Id.*; *State v. Boston* (1989), 46 Ohio St.3d 108, 118,

545 N.E.2d 1220, 1231; *State v. Bidinost* (1994), 71 Ohio St.3d 449, 454, 644 N.E.2d 318, 323.

In *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993), 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469, the United States Supreme Court discussed the question of when expert scientific testimony is relevant and reliable. In *Daubert*, the court was faced with the issue of whether certain scientific evidence was admissible in a birth defects case. The trial court, in excluding the expert testimony, relied upon *Frye v. United States* (D.C.App.1923), 293 F. 1013, which held that an expert's opinion is inadmissible unless it has gained "general acceptance" in the relevant scientific community. *Id.* at 1014. The *Daubert* court expressly rejected this argument and reversed the granting of summary judgment. Instead, it held, under Fed.R.Evid. 702, that expert scientific testimony is admissible if it is reliable and relevant to the task at hand. *Id.* at 589, 113 S.Ct. at 2795, 125 L.Ed.2d at 480. To determine reliability, the *Daubert* court stated that a court must assess whether the reasoning or methodology underlying the testimony is scientifically valid. *Id.* at 592-293, 113 S.Ct. at 2796, 125 L.Ed.2d at 482. In evaluating the reliability of scientific evidence, several factors are to be considered: (1) whether the theory or technique has been tested, (2) whether it has been subjected to peer review, (3) whether there is a known or potential rate of error, and (4) whether the methodology has gained general acceptance. *Id.* at 593-594, 113 S.Ct. at 2797, 125 L.Ed.2d at 482-483. Although these factors may aid in determining reliability, the inquiry is flexible. *Id.* at 594, 113 S.Ct. at 2797, 125 L.Ed.2d at 483-484. The focus is "solely on principles and methodology, not on the conclusions that they generate." *Id.* at 595, 113 S.Ct. at 2797, 125 L.Ed.2d at 484.

Appellees challenge Lafferty's theory (that a football helmet can protect the neck) on several grounds. First, appellees argue that the NOCSAE standard tests the potential for head injuries only. Thus, they state that Lafferty's theory is not predicated upon any recognized scientific test method for evaluation of potential injury to the neck.

Contrary to appellees' position, we find that appellants presented sufficient evidence to support Lafferty's theory and his use of the NOCSAE test. In their brief in opposition to appellees' summary judgment motions, appellants attached several documents, which were admitted into evidence, to support Dr. Lafferty's opinion that injuries to the neck can be avoided with proper headgear and that the NOCSAE test applies to head and neck protection. For instance, according to a publication printed by NOCSAE, that organization initially recognized that safe helmets could result in fewer head *and neck* injuries. In fact, in 1973, when the NOCSAE test standard was first published, NOCSAE acknowledged that the procedure for testing football helmets had been developed "[i]n an effort to minimize head *and neck* type injuries in football." (Emphasis added.) A Bike publication describing its AirPower helmet also recognized that a proper helmet can help avoid trauma to the spinal cord and neck. This publication states: "What's the basic reason for wearing a football helmet? When you get right down to it, the primary purpose of a football helmet is to protect the football player's brain from the damaging effects of external blows to his skull. * * * In certain other cases *the impact trauma to the head may transmit sufficient force to the neck that damage to the spinal cord occurs.*" (Emphasis added.) Although the NOCSAE and the manufacturer removed references to the neck from later documents, the early publications support Dr. Lafferty's opinions and can be considered by the trier of fact along with the new material.

Appellees also argue that the NOCSAE test results are unreliable and have no relevance because Lafferty used another person to conduct the test and because Lafferty had poor recordkeeping skills. Whether Lafferty conducted the test himself is immaterial; appellants presented evidence that the test was conducted in a facility designed and equipped to conduct such tests. The technician's credibility can be challenged at trial. Lafferty's opinion, as well as the test protocol he used to conduct the NOCSAE test, is also an issue subject to attack upon cross-examination.

Appellees further argue that the lower courts properly excluded Lafferty's opinion, since his theory has not gained any acceptance in the scientific community and has not been subject to peer review. We flatly reject these arguments. Lafferty testified, in direct opposition to appellees' expert, that there were publications supporting his theory that, properly used, a helmet can prevent the type of injury suffered by appellant. These conflicting views bring the issue of credibility into play. However, even if Lafferty's opinion has neither gained general acceptance by the scientific community nor has been the subject of peer review, these are not prerequisites to admissibility under *Daubert, supra*. See, also, *Arnold v. Riddell, Inc.* (D.Kan.1995), 882 F.Supp. 979, 990.¹ Rather, they are just factors for a court to consider in determining reliability. Again, the *Daubert* court recognized that while peer review may be helpful, it is not absolutely necessary for an opinion to be admissible. In fact, the court stated: "Publication (which is but one element of peer review) is not a *sine qua non* of admissibility; it does not necessarily correlate with reliability." *Id.*, 509 U.S. at 593, 113 S.Ct. at 2797, 125 L.Ed.2d at 483.

Appellees further attack Lafferty's theory by arguing that the underlying premise, that the helmet lining was deflated at the time appellant was injured, was

never supported by any evidence. Once again, there was conflicting evidence on this point. Lafferty's premise, that the helmet lining was deflated, was supported by two Ace employees who stated, by affidavit, that when helmets with inflatable liners left Ace, there was no air in the liners. There was also evidence that the outer valve of the helmet had been sealed shut, which could prevent inflation. In contrast, appellees presented evidence that when the school received helmets reconditioned by Ace, they came to the school properly inflated. This evidentiary conflict should not be resolved by summary judgment; instead, it proves that genuine issues of material fact remain at issue.

Likewise, the fact that appellees' experts provide opinions that are diametrically opposed to Dr. Lafferty's does not support the exclusion of Lafferty's opinion. In reviewing a summary judgment motion, a trial court should not reject one expert opinion for another simply because it believes one theory over the other. As stated by one court, "In analyzing the admissibility of expert testimony, it is important for trial courts to keep in mind the separate functions of judge and jury, and the intent of *Daubert* to * * * make it easier to present legitimate conflicting views of experts for the jury's consideration." *Joiner v. Gen. Elec. Co.* (C.A.11, 1996), 78 F.3d 524, 530. Thus, a trial court's role in determining whether an expert's testimony is admissible under Evid.R. 702(C) focuses on whether the opinion is based upon scientifically valid principles, not whether the expert's conclusions are correct or whether the testimony satisfies the proponent's burden of proof at trial. *Id.*; *Ambrosini v. Labarraque* (C.A.D.C.1996), 101 F.3d 129, 135.

Furthermore, the reliability requirement of *Daubert* should not be used to exclude all evidence of questionable reliability, nor should a court exclude such evidence simply because the evidence is confusing. *In re Paoli RR. Yard PCB*

Litigation (C.A.3, 1994), 35 F.3d 717, 744. Instead, there must be something that makes the scientific technique particularly overwhelming to laypersons for the court to exclude such evidence. *Id.* at 746. Thus, the “ultimate touchstone is helpfulness to the trier of fact, and with regard to reliability, helpfulness turns on whether the expert’s ‘technique or principle [is] sufficiently reliable so that it will aid the jury in reaching accurate results.’ ” *DeLuca v. Merrell Dow Pharmaceuticals, Inc.* (C.A.3, 1990), 911 F.2d 941, 956, quoting 3 Weinstein’s *Evidence* (1988) 702-35, Section 702[03].

We find that appellants presented sufficient evidence to support the reliability of their expert’s theory under Evid.R. 702. Dr. Lafferty’s theory is not so complicated that it would overwhelm a jury. We find that his testimony could aid the trier of fact in determining whether the football helmet was a cause of injury to appellant’s neck. The trier of fact will then have the opportunity to weigh the expert opinion of Dr. Lafferty against those of appellees’ experts.

The question remains, however, whether the opinion of Dr. Lafferty can still be excluded because the NOCSAE testing procedures did not duplicate the conditions on the night of the accident. The trial court relied upon *St. Paul Fire & Marine Ins. Co. v. Baltimore & Ohio RR. Co.* (1935), 129 Ohio St. 401, 2 O.O. 396, 195 N.E. 861, to exclude Dr. Lafferty’s opinion on these grounds. We must determine whether this was an abuse of discretion.

In *St. Paul*, a lumber company was destroyed by fire. Its insurers brought suit against a railroad company, alleging that cinders from its trains started the fire. The railroad company conducted laboratory experiments to help prove that its trains did not cause the fire. The results of the experiment were admitted into evidence, and the jury returned a defense verdict. The court of appeals and this court affirmed. We held that the experiments were admissible. We stated that

“[e]vidence of experiments performed out of court, tending to prove or disprove a contention in issue, is admissible if there is a substantial similarity between conditions existing when the experiments are made and those existing at the time of the occurrence in dispute; dissimilarities, when not so marked as to confuse the jury, go to the weight rather than the admissibility of the evidence.” *Id.* at paragraph one of the syllabus.

The trial court focused on the above language to exclude Dr. Lafferty’s opinion and the test he used to base his opinion upon. The court of appeals agreed. However, we believe that the lower courts were incorrect in holding that the NOCSAE test was inadmissible because the test did not duplicate conditions on the playing field at the time appellant was injured. Appellants never intended to use the test for that purpose. Instead, the NOCSAE test was being used to analyze whether the football helmet was able to perform adequately under conditions of use. The test was not relied upon to replicate the playing conditions or the way in which appellant was injured.

In *Leichtamer v. Am. Motors Corp.* (1981), 67 Ohio St.2d 456, 21 O.O.3d 285, 424 N.E.2d 568, a similar argument was made but rejected by this court. That case involved products liability claims stemming from a pitchover of a Jeep. Plaintiffs alleged that the sheet metal supporting the roll bar was too thin and collapsed when the jeep pitched over, causing them to sustain injuries. The trial court admitted an experiment conducted by plaintiffs’ expert witness. Although we found that the trial court did not abuse its discretion in admitting this expert testimony, we made several observations. We stated: “Though the experiment was performed under somewhat dissimilar conditions than the mishap, the experiment was offered to demonstrate the weakness of the sheet metal under stress. It was not offered to recreate the accident.” *Id.* at 473, 21 O.O.3d at 296,

424 N.E.2d at 580. Therefore, we stated that the experiment was not so misleading that it should be excluded. Additionally, we recognized that “with the help of cross-examination, the jury could recognize the dissimilarity between the experiment and the mishap. The dissimilarity, then, goes to the weight, not the admissibility of the evidence.” *Id.* at 473, 21 O.O.3d at 296, 424 N.E.2d at 580.

We are also persuaded by the rationale set forth by the Illinois court in *Galindo v. Riddell, Inc.* (1982), 107 Ill.App.3d 139, 62 Ill.Dec. 849, 437 N.E.2d 376, which involved an action against a different football helmet manufacturer. The court stated, “In general, experiments are incompetent as evidence unless the essential conditions of the experiment are shown to be the same as those existing at the time of the accident. However, when an [out-of-court] experiment is not represented to be a reenactment of the accident and it deals with one aspect or principle directly related to the cause or result of the occurrence, the exact conditions of the accident need not be duplicated.” *Id.* at 144, 62 Ill.Dec. at 854, 437 N.E.2d at 381.

Under the facts presented here, it is virtually impossible to recreate the conditions under which appellant sustained his injuries. Quite obviously, if we were to hold that a test or experiment must exactly recreate the conditions present at the time an injury was sustained, a plaintiff would rarely be able to overcome an opponent’s motion for summary judgment. We are unwilling to require such proof. Instead, we agree with the rationale from the *Leichtamer* and *Galindo* decisions. Any dissimilarity between the NOCSAE test and the conditions on the football field at the time appellant was injured goes to the weight of the evidence, not to its admissibility.

While a determination as to the admissibility of expert testimony is a matter generally within the discretion of the trial judge and will not be disturbed absent

an abuse of discretion, *Calderon v. Sharkey* (1982), 70 Ohio St.2d 218, 24 O.O.3d 322, 436 N.E.2d 1008, that discretion is not unlimited. Here, since Dr. Lafferty's opinions met the requirements of Evid.R. 702 and since the out-of-court test was reliable and admissible, the trial court abused its discretion in excluding Dr. Lafferty's expert opinion.

II. Expert Opinions of Additional Witnesses

The trial court relied on *Zelenka v. Indus. Comm.* (1956), 165 Ohio St. 587, 60 O.O. 524, 138 N.E.2d 667, to exclude the testimony of two of appellants' other expert witnesses on the ground that their opinions were based solely upon the opinion of Dr. Lafferty. *Zelenka* held that "[a]n expert witness may not express his opinion based upon evidence which he has heard or read on the assumption that the facts supported thereby are true, where such evidence is voluminous, complicated or conflicting or consists of the opinions, inferences and conclusions of other witnesses." *Id.* at syllabus.

In this case, the trial court found that the opinions of Dr. Richard P. Borkowski and Dr. Melvin H. Rudov were inadmissible. Dr. Borkowski, a sports safety expert with thirty-four years of experience as a physical education teacher, football coach, and athletic administrator, offered his opinion on the issue of safety and whether various appellees followed basic safety precautions in regard to the proper use of the football helmet. In his affidavit, Borkowski stated that appellees failed to properly fit appellant with the helmet, failed to properly instruct him how his helmet should be fit, and failed to warn him of the need to properly inflate and maintain the appropriate pressure in the helmet's air liners. Borkowski concluded that these failures were a proximate cause of appellant's injuries. Melvin Rudov, a forensic psychologist and human factors engineer, also testified

on whether the helmet was properly sized for appellant and appropriately fitted by appellees.

Borkowski's and Rudov's above opinions were limited to their areas of expertise (sports safety and human factors). We find that the trial court erroneously relied upon *Zelenka* as a basis for excluding these witnesses. Evid.R. 703 and 705 provide that an expert's opinion may be based on facts or data perceived by him or admitted into evidence. See *State v. Solomon* (1991), 59 Ohio St.3d 124, 570 N.E.2d 1118. Here, Borkowski and Rudov based their opinions on the evidence presented, that there was no air in the liners when appellant was injured.² Under these circumstances, the trial court abused its discretion in excluding these expert opinions.

III. Conclusion

In order for summary judgment to be granted, it must be demonstrated that there is no issue as to any material fact, that the moving party is entitled to judgment as a matter of law, and that reasonable minds can come to but one conclusion, and that conclusion is adverse to the nonmoving party. *Temple v. Wean United, Inc.* (1977), 50 Ohio St.2d 317, 327, 4 O.O.3d 466, 472, 364 N.E.2d 267, 274. In seeking summary judgment, the moving party bears the burden of demonstrating that there remain no genuine issues of fact. *Mitseff v. Wheeler* (1988), 38 Ohio St.3d 112, 115, 526 N.E.2d 798, 801. Furthermore, the evidence must be construed in the light most favorable to the nonmoving party. Civ.R. 56(C).

In this case, we have found that the trial court improperly excluded appellants' expert opinions. Since these opinions are in direct conflict with those opinions expressed by appellees' experts, there remain genuine issues of material

fact on the liability issues presented.³ Therefore, we conclude that the trial court abused its discretion in granting appellees' motions for summary judgment.

Accordingly, we reverse the judgment of the court of appeals and remand the cause to the trial court for further proceedings.

*Judgment reversed
and cause remanded.*

RESNICK and PFEIFER, JJ., concur.

DOUGLAS, J., concurs in the syllabus and judgment.

MOYER, C.J., COOK and LUNDBERG STRATTON, JJ., dissent.

FOOTNOTES:

1. This court has consistently rejected *Frye's* "general acceptance" test. *State v. Williams* (1983), 4 Ohio St.3d 53, 4 OBR 144, 446 N.E.2d 444 (admissibility of voice analysis); *State v. Pierce* (1992), 64 Ohio St.3d 490, 495-497, 597 N.E.2d 107, 112 (admissibility of DNA evidence), and we do not intend to adopt it now.
2. Moreover, we have previously questioned the validity of *Zelenka* in *Seley v. G.D. Searle & Co.* (1981), 67 Ohio St.2d 192, 206, 21 O.O.3d 121, 129-130, 423 N.E.2d 831, 841-842.
3. We express no opinion on the argument of Athletic Helmet, Inc. that it cannot be held liable as a successor corporation, since the lower courts did not address this issue.

COOK, J., dissenting. Because the lead opinion does not give proper deference to the trial judge's role as gatekeeper in admitting or excluding expert testimony under Evidence Rules 104 and 702, I respectfully dissent.

Evid.R. 104(A) requires trial judges to determine preliminary questions concerning the admissibility of evidence. One such question is whether proffered

expert testimony is reliable enough to assist rather than confuse the trier of fact in making its ultimate determination. Evid.R. 702 Staff Note (July 1, 1994 Amendment); see, also, Evid.R. 403. Although the Ohio rule is no longer identical to Fed.R.Evid. 702, both rules, as a prerequisite to admissibility, require an expert to ground his or her conclusions in reliable methods and principles. Evid.R. 702(C); *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993), 509 U.S. 579, 589-590, 113 S.Ct. 2786, 2795, 125 L.Ed.2d 469, 480-481.

Ohio Evid.R. 702(C) expressly requires that an expert witness's testimony be based on "reliable scientific, technical, or other specialized information." Moreover, "[a]s to evidence regarding a 'test, procedure or experiment,' reliability must be shown both as to the test generally (that is, the underlying theory and the implementation of the theory), Evid.R. 702(C)(1) & (2), and as to the specific application. Evid.R. 702(C)(3). See [*State v.*] *Bresson* [(1990), 51 Ohio St.3d 123, 554 N.E.2d 1330]; [*State v.*] *Williams* [(1983), 4 Ohio St.3d 53, 4 OBR 144, 446 N.E.2d 444]. See, generally, 1 P. Giannelli and E. Imwinkelried, *Scientific Evidence* 1-2 (2d ed. 1993)." Staff Note to July 1, 1994 Amendment of Evid.R. 702. Because of the similar focuses of Fed.R.Evid. 702 and Ohio Evid.R. 702, the Staff Note to the 1994 Amendment suggests that the United States Supreme Court's decision in *Daubert, supra*, may be particularly instructive to this court's future development of the reliability standard.

In *Daubert*, the United States Supreme Court ruled that although Fed.R.Evid. 702 displaced the test for admissibility first announced in *Frye v. United States* (D.C.App.1923), 293 F. 1013, 1014 (requiring that expert testimony based on a scientific technique is admissible only if that technique is generally accepted as reliable in the scientific community), it did not remove all limits to the admissibility of purportedly scientific testimony. *Daubert, supra*, 509 U.S. at 589,

113 S.Ct. at 2794-2795, 125 L.Ed.2d at 480. Instead, the trial court retains its role as gatekeeper by making a preliminary assessment of whether the reasoning or methodology underlying the proposed expert testimony is reliable and whether such reasoning or methodology is properly applied to the facts in issue. *Id.* at 589-590, 113 S.Ct. at 2794-2795, 125 L.Ed.2d at 480-481.

The need for the trial court to screen unreliable or ill-fitting expert testimony is well stated in the following *Daubert* passage:

“[T]here are important differences between the quest for truth in the courtroom and the quest for truth in a laboratory. Scientific conclusions are subject to perpetual revision. Law, on the other hand, must resolve disputes finally and quickly. The scientific project is advanced by broad and wide-ranging consideration of a multitude of hypotheses, for those that are incorrect will eventually be shown to be so, and that in itself is an advance. Conjectures that are probably wrong are of little use, however, in the project of reaching a quick, final, and binding legal judgment — often of great consequence — about a particular set of events in the past. We recognize that, in practice, a gatekeeping role for the judge, no matter how flexible, inevitably on occasion will prevent the jury from learning of authentic insights and innovations. That, nevertheless, is the balance that is struck by Rules of Evidence designed not for the exhaustive search of cosmic understanding but for a particularized resolution of legal disputes.” *Daubert, supra*, 509 U.S. at 596-597, 113 S.Ct. at 2798-2799, 125 L.Ed.2d at 485.

Because Lafferty’s testimony fails to establish a reliable scientific basis for his conclusions, I believe that it was properly excluded under Evid.R. 104 and Evid.R. 702. Although conceding that the NOCSAE tests that he performed on the helmet are held out by the NOCSAE solely as a standard for determining a helmet’s capacity to protect against head injury,⁴ Lafferty nevertheless uses the

test to arrive at specific conclusions regarding the helmet's capacity to attenuate force transmitted to the neck from a collision at different inflation levels of its inner air bladder. Lafferty derives his energy-absorption calculations solely from the NOCSAE Severity Index, supporting the calculations with his observation that the NOCSAE test corresponds one to one as a measure of force. Lafferty's general observations, however, do not have sufficient grounding in scientific methodology to meet the evidentiary burden imposed by Evid.R. 702(C).

Lafferty states that inquiries into both the head and neck protection capacity of a helmet at different levels of inflation involve the change in a helmet's capability to absorb energy. Lafferty, however, explains no scientific testing or theory to support his broader assumption that any attenuation of the force transmitted to the head from impact will cause a proportional attenuation of force to the C5 vertebra in an axial loading situation. Accordingly, there is no scientific evidence to validate Lafferty's conclusion that the fifty percent difference in severity index values between Miller's helmet with an uninflated inner bladder and the bladder inflated to 3.5 psi would translate into a corresponding attenuation of force to Miller's C5 vertebra.

Without the fifty percent attenuation value, the rest of Lafferty's vaguely supported theory of causation would be of little help to a jury. In his report, Lafferty cites a Society of Automotive Engineers study⁵ to support a theory that if the force involved in Miller's accident had been *significantly*⁶ above the threshold level of injury, Miller would have suffered more extensive damage to his cervical spine. Without attempting to determine the *actual* force transmitted to Miller's C5 vertebra as a result of the collision or Miller's *actual* injury threshold, Lafferty relies on the fifty percent attenuation factor to conclude that, if inflated, the Bike helmet would have mitigated the force transmitted to Miller's C5 vertebra below

the injury threshold. In order to make this leap, Lafferty has to reason that the fifty percent attenuation factor is so substantial that it would result in mitigation of force greater than any possible difference between the force that it would take to cause the threshold injury and any amount of force that, while above the threshold level, would not be enough to result in greater damage to the cervical spine.

Considering only the adequately grounded scientific methods and principles underlying Lafferty's conclusions, there remain two loosely quantified values that Lafferty uses in concert to calculate that an inflated helmet would have protected Miller from injury. Accordingly, the calculation and its resulting conclusion that Miller's injury would have been avoided if his helmet had been inflated properly are based more on conjecture than any scientific principle to which Evid.R. 702 relates.

I believe that Judge Posner, while writing for the Seventh Circuit Court of Appeals, aptly delineated the proper gatekeeping role of trial judges in admitting or excluding scientific evidence on grounds of reliability in *Rosen v. Ciba-Geigy Corp.* (C.A.7, 1996), 78 F.3d 316, 318-319:

“[A trial judge] asked to admit scientific evidence must determine whether the evidence is genuinely scientific, as distinct from being unscientific speculation offered by a genuine scientist. * * *

“* * * The object * * * [is] to make sure that when scientists testify in court they adhere to the same standards of intellectual rigor that are demanded in their professional work. * * * If they do, their evidence (provided of course that it is relevant to some issue in the case) is admissible even if the particular methods they have used in arriving at their opinion are not yet accepted as canonical in their branch of the scientific community. If they do not, their evidence is inadmissible no matter how imposing their credentials. * * *

“* * *

“[T]he courtroom is not the place for scientific guesswork, even of the inspired sort. Law lags science; it does not lead it.”

Because the evidence demonstrates that the trial court did not err in excluding Lafferty’s expert testimony and, without that testimony, Miller did not produce sufficient evidence of causation to withstand summary judgment, I would affirm the court of appeals.

MOYER, C.J., and LUNDBERG STRATTON, J., concur in the foregoing dissenting opinion.

FOOTNOTES:

4. The lead opinion relies on language from the NOCSAE test standard printed in 1973 as support that the NOCSAE helmet test *is* a method for evaluating potential neck injury. Although the preface of that standard discloses NOCSAE’s initial *belief* that helmets meeting the minimum requirements of the test would reduce head and neck injuries, even that early publication expressed the severity index *solely* as predictor of head injury. Moreover, in later publications, NOCSAE removed all reference to the helmet’s ability to protect a player’s neck, citing rule changes and the teaching of proper tackling technique as the most effective means of reducing neck injuries. No NOCSAE document contained in the record provides even an inference that the severity index provides a value that measures the force transmitted to the cervical spine from impact.

5. Lafferty cites G.S. Nusholtz, D.F. Huelke, et al., Cervical Spine Injury Mechanisms, Paper No. 831616, Society of Automotive Engineers, 1983, solely in support of his theory that Miller received a threshold injury. Accordingly, I have limited my review of that paper to verify Lafferty’s support for that theory. Nevertheless, I note that, as a conclusion of that paper, Nusholtz and Huelke

observed that “in terms of damage response time history for subjects with similar initial conditions (impact velocity, padding and contact surface geometry), free-fall tests do not seem to be significantly different from pendulum impacts in which a mass of 56 kg is used.” In the earlier pendulum impact tests, Nusholtz concluded that “[e]nergy absorbing materials were effective methods of reducing peak impact force but did not necessarily reduce the amount of energy transferred to the head, neck, and torso or the damage produced.”

6. At one point in his deposition testimony, Lafferty defined a “significant” reduction in force to equal fifty percent.