

Mild Traumatic Brain Injury in Worker's Compensation:
Antiquated Systemic Failure for America's Injured Workers

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“Everything we do, every thought we've ever had, is produced by the human brain. But exactly how it operates remains one of the biggest unsolved mysteries, and it seems the more we probe its secrets, the more surprises we find.” – Neil deGrasse Tyson

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The organ that named itself, the most vital and intriguing part of being that alters and elevates one to human: the brain. The brain is still a mystery, and the legal field struggles to integrate it adequately. Brain injuries impact thousands of Americans annually, often resulting in legal action in various forms. Traumatic brain injuries (“TBI”) create an intersection of science and law that legislators have failed to properly integrate into the civil legal field beyond sports injuries and motor vehicle accidents. Mild traumatic brain injuries (“mTBI”) comprise 70-90% of treated TBIs, with 1 in 4 being work-related.^[2] Workers’ compensation law has failed to recognize that brain injuries are not solely mental afflictions but physically affect the injured worker. That severity is not the only sign of necessitating care. Considered “the invisible injury” by many, mTBIs are treated reactively, with a heavy influence of historical concerns of malingering and malintent.

This article will discuss the definition of commonalities and complexities of mild TBI, a review of the history of workers’ compensation law relating to mild TBIs, and recommendations for research and improvement of the legal application of work-related mild TBIs explored. A particular focus on Indiana (as a pro-employer state) will be included. This article's primary recommendation is critically necessary reform for workers' compensation systems. There are multiples at the federal and state levels. Comparative to peeling an onion, or a cascade of falling dominoes, the issues causing holes in the worker's compensation system are taken piece by piece. Multiple legal, medical, and research recommendations are offered in response to this article's uncovered issues. A statutory proposal for change is part of this article’s critique and analysis of the workers’ compensation legislation regarding mild traumatic brain injuries.

Further, this article recommends more scientific research on the analysis of such injuries and their lasting effects, a study on frequency and correction of malingering, and how mild traumatic brain injuries can be better represented in other fields of law besides workers’ compensation. This article will not explore the other severities of traumatic brain injuries, as this would make the lens overbroad. More research in this country is on severe TBIs than any other severity.

WHAT IS MILD TRAUMATIC BRAIN INJURY, DEFINITIONALLY AND PRACTICALLY?

The truth is in the context: “A traumatic brain injury (TBI) is the most feared consequence of head trauma.”^[16] A traumatic brain injury is defined by the Centers for Disease Control as “disruption in the normal function of the brain that can be caused by a mechanical, penetrating, or concussive force.”^[17] A TBI can occur in a "closed" or "open" fashion, meaning there is no open or open penetration of the skull. For legal analysis purposes and medical treatment, the brain injury is split into two: The first primary injury is a direct, immediate consequence of the trauma disrupting brain function. The secondary injury is delayed due to biochemical and cellular changes that damage the brain.^[16] Because the brain is enclosed within bone, cerebral edema can exert pressure on the brain, resulting in further damage and the life-threatening possibility of herniation. As a vivid example of how these injuries can occur, studies show that activities of daily living (e.g., hopping off steps, coughing, sneezing, or running) can deliver up to 12 gravitational force equivalents (G-force) without associated brain injury. However, a boxer's punch can deliver over 71 Gs of force to the head.^[16]

In 2018, experts estimated that sixty-nine million people a year experience a traumatic brain injury, with the current number around fifty-five million. The Food and Drug Administration reports that roughly seventy-five percent of all diagnosed TBIs in the United States are categorized as mild.^[7] One out of four of those mTBIs occurs in the workplace.^[2] A primary example of these mild TBIs is concussions. The Centers for Disease Control defines a concussion as “a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging brain cells.”^[7] Although classified as mild, these are incredibly dangerous and require treatment and attention. Many do not consider concussions serious injuries. Concussions propagate many symptoms, including cognitive, physical, emotional, and sleep issues. These symptoms often fade with time, but some experience these symptoms permanently. Some will also develop post-concussion syndrome, which restricts activity and behavior for life. Concussions, like most mTBIs, can be treated chiefly through accommodations, physical rest, education, and slow re-introduction of regular activity. The earlier a concussion is treated, the better, which is the case for most mild traumatic brain injuries. Most diagnosed TBIs are categorized as “mild,” but over half of those patients do not fully recover by six months.^[21] It is

important to note that a majority of mild TBIs do not have lasting severe residual symptoms or issues beyond six months.

While these definitions are relatively simple, there is no agreed-upon definition of a mild TBI. The combined definition by the CDC, the World Health Organization, Veterans' Administration, Department of Defense, and American College of Rehabilitative Medicine is lengthy: "A person has (a) loss of consciousness immediately after a head trauma, and/or (b) amnesia for a period including or just after the trauma, and/or (c) a change in mental status immediately after the head trauma. All factors cannot be accredited to a different cause than the head trauma, like drugs or alcohol, massive blood loss, or sedation. However, loss of consciousness is not a required aspect of a mild traumatic brain injury."^[28] The Glasgow Coma Scale can also be used to define a TBI, which states that a score of 13-15 from the medical provider's analysis is classified as a mild TBI.^[2] The expectation of a mild traumatic brain injury is relatively quick onset of symptoms and resolution in the first month or so.^[13] However, what is expected is not true for every mild TBI patient.

Symptomology of TBIs vary widely but often include dizziness, headache, nausea, sensitivity to light and noise, fatigue, sleep disturbance, irritability, and cognitive difficulty. Mild TBI injuries can still have persistent symptoms for extended periods, which scientific studies attribute to pre-injury psychological makeup, the development of post-traumatic depression, and post-traumatic stress disorder.^[16] Interestingly, a study comparison of work-related versus non-work-related mTBIs found that work-related mTBI patients have increased rates of post-traumatic stress disorder (PTSD).^[2] Because of the complexity of these injuries and the subtlety of mild symptoms, missed diagnoses are frequent and simply a lack of treatment.

A TBI of any severity is often diagnosed by using neuroimaging tests like Computed Axial Tomography (CAT or CT), Magnetic Resonance Imaging (MRI), Electroencephalogram (EEG), or functional imaging like single photon emission computerized tomography (SPECT), and positron emission tomography (PET).^[8] These tests must be applied in conjunction with the patient's symptoms too. The reality is that diagnosis presents significant challenges because of the variance in formatting and guidelines, as outlined above. Another specific method of diagnosis for a mild traumatic brain injury is a neurological examination. A neurological exam will judge motor and sensory skills and test hearing and speech, coordination and balance,

mental status, and changes in mood or behavior, among other abilities.^[25] A neurological exam, however, is not always the best method because, like a neuropsychological examination, if there is not an established baseline before the mTBI, it cannot be sure of the changes. Medical imaging is also used alongside these neuropsychological tests to gauge brain functioning in people who have suffered mTBI.^[25] Administration of testing earlier than three months post-injury helps identify underlying cognitive and psychological issues promptly and allows for early, appropriate intervention in at-risk patients developing persistent residual symptoms.^[2] The treatment of the injury is elaborate, challenging, and varied. A majority of mTBI patients or concussion patients are told to simply rest, drink fluids, and avoid any strenuous activity of any kind for a specific timeframe. This is meant to allow the brain time to recover. However, the National Institute of Neurological Disorders and Stroke (NINDS) and the CDC explain there is no clear timeline on when it is safe to return to normal activity or work.^[7,25]

THE REVOLVING DOOR OF WORKER'S COMPENSATION LAW

Most do not know that workers' compensation as a concept occurred long ago: the earliest note of a system compensating workers for injury was in 1750 BC in the Hammurabi Code. Ancient Greeks and Romans even had calculations: loss of a penis was compensated by length lost, and the value of an ear was based on the surface area.^[14] Not a new concept and not an uncommon occurrence. Every seven seconds, someone is injured at work.^[17] With the regularity and variety of injuries, the system was a solution. Workers' compensation developed in modern American legislation shortly after the Industrial Revolution when American workers began to cry out for more protection. The origin of the push began with writings by impassioned authors in 1906: Upton Sinclair's *The Jungle*, for example, detailed horrors seen by immigrant workers in the Chicago slaughterhouses.^[14] These writings, alongside failed lawsuits, led employees and the public to rake employers over the coals.

Before the federal workers' compensation system developed with the Federal Employees' Compensation Act of 1916, an injury at work could only be legally resolved through the tort system.^[15] American workers faced a high burden for recovery of showing negligence by the employer, and employers suffered from expensive and constant lawsuits.^[2] Workers' compensation law was developed through administrative law, given to administrative law judges and boards to relieve some of the pressure on federal courts. The "no-fault" system design was

intended to benefit all parties involved. However, Gregory Guyton of North Carolina University presents “the modern system of workers' compensation is so complex and arcane it produces considerable grief to those who must deal with it on a daily basis.”^[14]

Workers' compensation is considered administrative law. The Supreme Court through *Crowell v. Benson* confirmed that federal courts had the power to review decisions made by the administrative courts as necessary to verify jurisdiction and proper application.^[9] The Supreme Court gave Congress the power to hear a limited forum of adjudications in *Crowell*. Congress is then able to delegate that same power to agencies to Article III disputes between private parties and administer limited remedies.^[9] Combined with the Federal Employees Compensation Act, there are five federally legislated programs and four administrative offices: the Office of Federal Contract Compliance Programs, Office of Labor Management Standards, Office of Workers' Compensation Programs, and the Wage and Hour Division (all of which report directly to the Secretary of Labor as of 2009); Longshore and Harbor Workers' Compensation Act of 1927; the Black Lung Benefits Reform Act of 1977; and the Division of Energy Employees Occupational Illness Compensation.^[15] The first state workers' compensation law was passed shortly after that in Wisconsin in 1911, and nine other states passed regulations that year. The final state to pass workers' compensation legislation was Mississippi in 1948.^[14] Following the variety of programs, there is also variance in the definition of compensable injury. Once, this was interpreted to mean a sudden industrial accident. However, most states have now added language to include occupational exposures and overuse syndromes. For example, Kentucky currently defines injury as “any work-related harmful change in the human condition.”^[14]

Known as “The Great Compromise” or “The Grand Bargain” by many familiar with the field, the trade-off was statutory protections for injured workers with medical care, wage loss, disability rates, and permanent impairment values. Employers were guaranteed civil liability protection. At the federal level, workers' compensation ran ahead of the states. Even so, the states were left to open discretion. From 1906 to today, no federal mandates for state-based workers' compensation exist, no federal standards for state programs exist, and no oversight of state systems.^[21] There used to be a federal committee overseeing the research and progress of all workers' compensation systems, but it was decommissioned in the early 2000s.^[1] The basic structure of American workers' compensation has remained the same since the beginning of the

20th century.^[14] Depending on the state, an employer can pick to self-insure, acquire private worker's compensation insurance, or opt into a state-funded worker's compensation "insurance" plan. Worker's compensation programs in the states have multiple exemptions for specific illnesses or injuries, especially for workers in "high-hazard" fields.^[1] The American Public Health Association argues that "[s]tates are engaged in a race to the bottom over workers' compensation benefits. As a result, working people are at great risk of falling into poverty from work-related injuries."^[14,16,21,27]

More often than not, the injured worker, their family, and the social security safety net are left to cover the balance employers avoid: roughly the remaining 79% of the overall financial cost.^[1] This can lead to Medicare or Medicaid being called in to cover work injuries or having a now-disabled worker applying for Social Security because of a lack of assistance by the employer. Because of the lack of minimums and oversight, the same injury varies widely from state to state. For example, the loss of an index finger on the national average is worth \$11,343.00; but in Oregon, it is worth \$79,759.00, and in Massachusetts, a miserly \$2,065.00.^[18] For permanently disabling injuries, some states cap the amount of coverage at 450 weeks, while other states allow the benefits to continue for life.^[1]

The other aspect of workers' compensation benefits that are supposed to be provided is permanent impairment compensation. This is typically based upon a percentage rating system of how disabled the worker now is after the injury. When an employer can direct care and choose conservative doctors, these ratings can be conservative or untrue for the worker.^[1, 11] There are also medical providers in the states that exclusively perform workers' compensation treatment, independent examinations, and narrative reports for the employer's side.^[11, 12] The same exists for the plaintiff's side, as the no-fault system still has all the hallmarks of an adversarial system. For medical care and permanency, traumatic brain injuries, whether mild, moderate, or severe, can have permanently disabling symptoms, and they are not considered in most state or federal worker's compensation programs.

MILD TRAUMATIC BRAIN INJURIES IN WORKERS' COMPENSATION LAW

Traumatic brain injuries in general, had a difficult beginning in law. If it was not considered an open-head injury, the law often believed that no harm was done. Harry Blout, an Atlanta Coca-Cola Bottling Company employee, was at work on May 4, 1951, when he slipped

and fell on the freshly mopped floors.^[5] Two coworkers saw Blout struggle to his feet but did not see the fall. Blout finished his shift, went home, and came back to work the next day. Blout died of intracranial hemorrhage a few days later.^[5] Blout's doctor testified on Blout's behalf against his employer for a compensation claim for Blout's estate. Blout told his doctor he "almost busted" his head open. However, the employer's medical expert testified that it was just as likely that Blout had an undiagnosed aneurysm or hemorrhage that could have killed him at any time, not triggered by the fall.^[5] The administrative board was persuaded by the fact that Blout's autopsy did not reveal any outside cuts, openings, or fractures of his skull, so it was unlikely that the fall was the cause of his injuries and, therefore, his death.^[5] Despite Blout's injury being classified today as a severe traumatic brain injury, his family was let down by a system designed with medical misunderstandings to fail.

Lack of understanding of importance still factors into these injuries. Unless labeled as a traumatic brain injury and not the common "concussion," insurance and employers do not take the patient as seriously. For example, a college student in a motor vehicle collision suffered a concussion from smacking her head through her driver's side window. She was provided with three weeks of care, a single MRI scan with no extra filtering or contrast, and chiropractic care. Nine months later, she experiences worse symptoms of memory loss, fatigue, and brain fog than directly after the accident. If the teams who had this student under their care had seen her accident as a traumatic brain injury rather than a concussion, perhaps this student would be back to her usual self as of four months ago.

Today, TBIs of all levels are handled somewhat more appropriately because of improved medical understanding and public exposure to sports brain injuries. The windfall of the National Football League's lawsuits slightly benefited worker's compensation law by recognizing the harm of TBIs. The NFL lawsuits brought concussions and post-concussive syndrome to the forefront, which, as this article explains, are mild traumatic brain injuries. The NFL settlement struck the legal and medical community with massive shock because of the highly publicized massive monetary awards.^[16] But the NFL's settlement was based entirely on severe TBIs from a multitude of concussions or development of Parkinson's Disease; many of the football players whose families qualified for settlement had fatal brain injuries. Dr. Casper of the Journal of Law, Medicine & Ethics explains, "[many of the] debates in traumatic brain injury (TBI) research

often reflect deeper values, preferences, and judgments which in contexts of uncertainty, and particularly in the area of sport become catalysts for controversies that often result in victim-blaming.”^[6]

Statistically, work-related TBIs, especially mild, are at a high and only show sign of growing. TBI accounted for twenty-two percent of all work-related injury fatalities and forty-six percent of work-related fatal falls between 2003 and 2008; Nearly twenty percent of reported work-related injuries involved TBI; and out of all work-related fatalities, 59.5% involved TBI.^[23,25] Studies of work-related TBI demonstrates that men have a higher incidence rate of a TBI than women at work.^[28] For women, the work fields of education and healthcare have the highest traumatic brain injury incident rate. For men, construction, transportation, and manufacturing fields have the highest incident rate.^[28]

In South Carolina, a police officer hit by a truck while attempting to assist a disabled vehicle experienced a severe TBI and fought for a settlement of 1.4 million dollars.^[3] However, this settlement was only possible because the officer was permanently disabled for life due to this accident. The issue was important because South Carolina limits permanently and totally disabled individuals to 500 weeks of payments with exceptions for paralysis and brain injury: “In order to qualify under physical brain injury for lifetime benefits not limited, you must prove that the physical brain injury is permanent and severe.”^[3] South Carolina is not the only state with a law like this one. Requiring a traumatically brain-injured worker to make a case to establish permanent or total disablement after the injury and treatment is difficult. If the brain injury is categorized as severe, this can mean coma or death. If it is not, there can be accusations of faking or recommending more rest which will lead to improvement rather than permanent issues. States do not tend to consider brain injury as an exception to permanency and often do not have mild traumatic brain injury categorized in proper scope.

Returning to the workforce after an mTBI is tough: many workers with TBI never make it to return to work (RTW).^[20] As a gradual RTW plan is a necessary component for all TBIs, it, unfortunately, makes sense as to why it is hard for workers and employers. The Journal of Disability and Rehabilitation performed a study on volunteers who experienced a mild traumatic brain injury and then returned to work, which shows several interesting points. Because the employers and coworkers could not see their disability (again, invisible in comparison to the

coworker with a broken leg), they often forgot that the injured worker was experiencing difficulties or pain. There also was an expectation for the traumatically brain-injured worker to return to their pre-injury level of functioning.^[13] The study also revealed a trend that if the injured worker had a longer, positive, or well-established relationship with their employer, then these injured workers had the most success in their accommodations being met and implementing new expectations of performance. Several of these mild TBI workers were threatened with job loss if they continued to ask for accommodations or assistance.^[13] The Journal of Disability and Rehabilitation recommended a bottom-line requirement: “Further education for employers, healthcare professionals, and those living with mTBI about specific accommodations for workers with mTBI, as well as the recovery trajectory, is necessary.”^[13]

THE SILENT, THE INVISIBLE, AND THE FAKER - MILD TBI DIAGNOSIS AND EVIDENTIARY STRUGGLE

“Much of the damage in TBI, particularly in mild cases, occurs at the microscopic level below the imaging ability of CT or MRI scanning,” explains Dr. Jack Hubbard of the University of Minnesota School of Medicine. “[I]mportant damaging ionic changes, cerebral blood flow alterations, metabolic depression, and axonal injury occur.”^[16] Dr. Hubbard is board-certified in neurology and pain management, and in conjunction with Temple University's law professor Samuel Hodge, gives an excellent example of a concussion (AKA mild TBI) in diagnosis: the result may be a diffuse (traumatic) axonal injury (DAI) caused by microscopic injury to the axons extending from the neurons. The concept is tricky in legal evidence because there needs to be an objective scientific presentation with a demonstrative purpose in many mTBI cases. Scientific research on TBIs shows that long-lasting disability varies. Long-lasting disability occurs in 100 percent of severe TBIs, 66 percent of moderate TBIs, and 10 percent of mild TBIs.^[16] There are other objective medical testing types available for TBI, such as CT (Computed Tomography Scan), MRI (Magnetic resonance imaging), MRS (magnetic resonance spectroscopy), SPECT (single photon emission computed tomography), fMRI (oxygen tracking MRI), or DTI (diffusion tensor imaging).^[27] The issue with these methods is legal acceptance as evidence of the mTBI. Especially if the mild TBI is a limited presentation or there is no record of the same type of scan available from before the injury. These types of scans also do not predict long-term disability or symptoms and cannot show how the injured worker's daily life is affected.

For example, in *Donnellan v. First Student, Inc.*, a worker driving his van to a job site was hit from behind by a school bus, throwing his vehicle into a ditch.^[10] This was a double claim: a personal injury and a worker's compensation claim. Due to his injuries, this worker went through several forms of imaging and treatment and was awarded six million dollars by a jury at his personal injury trial. The critical issue at trial was the SPECT scans and the three medical experts Donnellan asked to testify on his behalf. The defendant claimed that such medical evidence under the *Frye* and *Daubert* evidence tests should not have been admitted, as there was "no data on the known error rate for false-positive scans, that double-blind studies have not been conducted, that it is possible that drug use might skew the results of a scan, and that there is no accepted methodology in using a SPECT scan for diagnostic purposes."^[10] However, SPECT, in 2008, when Donnellan brought his case, had been widely used for over twenty years and was no longer a novel form of medical testing. The trial judge limited the evidence to diagnostic purposes only, and the First District Court of Appeals ruled that the evidence was objective and properly admitted.

Donnellan v. First Student Inc. is one example of how difficult it can be for a brain-injured person to prove their own diagnosis. While like *Butler v. Hartford Accident & Indemnity Co.*, Donnellan's brain injury was moderate to severe rather than mild. *Donnellan* was also a double claim rather than exclusively worker's compensation. Both cases illustrate the difficulty of thoroughly bringing adequate objective evidence with traumatic brain injuries. A mild TBI would be even harder to prove. Experts often give the TBI patient with delayed onset or slow recovery the side-eye.^[12] The Food and Drug Administration and NINDS, are consistently calling for better tools to diagnose mTBIs, like blood tests, eye movement tracking, and brain wave patterns, as well as portable imaging devices.^[8,25] However, these developments are slow, and solutions are urgently needed to help protect injured workers.

The other option for injured workers to present objective medical evidence in their favor is an independent medical examination (IME). This is an examination of records, treatment, and a third-party doctor's personal interview of the injured worker. Frequently, this is a doctor who specializes in internal medicine or general practice or occasionally exclusively performs IMEs. While having an IME can give an injured worker a higher permanent partial impairment rating or recommends more necessary medical care, this is not always the case. Sometimes, an IME

returns an even lower impairment rating, or none at all, or presents the medical opinion that the injury and treatment did not happen at work or was not caused by work at all. On top of this gamble, IMEs are exceptionally expensive. Ranging from \$1,000 to \$15,000 for a specialist's single examination and report, an injured worker likely does not have the capability to take the gamble. A mild TBI independent medical examination can be a higher risk because if there is already a lack of imaging or treatment demonstrating a brain injury, an IME will likely present negatively regarding traumatic brain injury or impairment.

Because of the difficulty with objective medical evidence, the last choice is the injured worker's testimonials about their pain, symptoms, and experiences. An injured worker faces additional difficulty presenting their story: Roger Finderson of Finderson Law and Treasurer of Workers' Injury Law & Advocacy Group explains. "Getting the client to understand their own hurt in such a way as to testify to it." Attorney Finderson expands as even more complicated when a client may be too severely impaired by their brain injury to even speak about it.^[11] This is often presented to a medical professional first, but the variance in guidelines and definitions of mTBI make this challenging to rely on. While the guidelines and treatments for mild TBIs exist, they are used sporadically and incompletely, depending on provider and medical institution.^[2] Better standardization of the care structure for mTBI is necessary to prevent the concerns of malingering and fix the misdiagnosis rates.

However, the misunderstanding of mTBI is exasperated beyond difficulty of incomplete science identification and treatment. There is also a severe limitation on research on mild TBIs in general, and whether the injury is work-related. *Frontiers in Neurology*, the *Journal of Occupational and Environmental Medicine*, the *American Journal of Physical Medicine and Rehabilitation*, *Disability and Rehabilitation Journal*, and the *National Institute of Neurological Disorders and Stroke* all point out in their analyses and research that there are missing statistics and understanding, which the Congressional Research Service echoes. The *JOEM* notes, "few U.S.-based studies have focused on work-related TBI, and no national estimates of the incidence of nonfatal occupational TBI were identified." At the same time, *Psychological Injury and Law* explains "mechanisms and influencing factors on mTBI are 'poorly understood.' Prevalence rates vary between 11% and 82% due to variations in the research in terms of diagnostic criteria, population, and timing of assessments."^[20,27] *Frontiers in Neurology* also explain that litigation

research on TBI is limited. “There is a lack of knowledge about personal compensation amounts after TBI, and reports exploring their relationship with TBI long-term outcomes and needs of patients and families are rare.”^[4] The statistics presented in this article are based off what is available in the United States today, but there is a high likelihood of variance due to the research gaps. The systematic underestimation of the incidence rate of work-related TBI directly hinders surveillance efforts.^[20]

As this article has already begun to dive into, there has yet to be a consensus on mTBIs’ definitions and classifications, prevalence, chronicity, consequences, and outcomes (like post concussive syndrome), best assessment and diagnostic practices, and standing in court.^[27,28] The misconception of malingering can be rectified with structural improvement in the medical field and statutory changes in the legal field.

“BUT THEY COULD BE FAKING!” FLAWED LEGISLATION AND CLASSIFICATION

As mentioned previously, malingering, or faking, has also been a growing concern by states, lawyers, and doctors. Those who suffer from a work-related mTBI have been identified as a population at an increased risk of reporting exaggerated symptoms and cognitive deficits in the setting of ongoing litigation and potential for financial gains.^[2] This is partly due to the complexity of a traumatic brain injury that Roger Finderson pointed out previously. Either the worker is so injured that they cannot address their own pain, disabilities, and harm; or they can because they possess the personal capability or have family support to ask for help, but by so doing make the experts question whether the injured worker is as bad as they report.^[6,11] The lack of research around work-related mild traumatic brain injuries coinciding with the historical misunderstanding collides with contemporary issues. When even lawyers and doctors are unsure about the effects and best treatment of an mTBI, employers find it much harder. As the *Journal of Law, Medicine & Ethics* argues, “[s]tructural competency in brain injury research requires recognizing that these long histories of courtroom battles, cultural concern about fakers, shirkers, and effeminacy, and economic resentments created through the compensability of workplace injuries, place large burdens on TBI patients to prove their own clinical and legal legitimacy.”^[6]

There is additional layers of confusion. No state uses the same classification guide for rating permanent partial impairment or values. The federal programs also use a different

classification for their ratings and value for those ratings. The American Medical Association (AMA) Medical Guides are frequently referenced in several states because of their universality. Nevertheless, there are now seven different editions of the AMA guides, each one rating and adding ratings differently. The AMA guides will also be published online rather than in print, and any changes made to the guides will now be automatic. There are no notices sent for the changes.^[11] The AMA Guide Chapter 13 has always had a ratable section on demonstrable structural brain injury. However, TBI presents a strange physical/mental split for ratings if they do not present with a coexisting disorder such as depression, anxiety, PTSD, or chronic pain. Chapter 14 of the AMA guides covers mental and behavioral disorders: but the main issue with mTBI is that the clinical course is one of improvement.^[11,12] Often, this leads medical providers to extrapolate that when an mTBI patient does not improve, the problem is due to some other injury or illness.

Mild traumatic brain injuries are complex. The mechanisms and influencing factors on mTBI are “poorly understood.”^[27] For a long time, the American Medical Association guides have not separated TBI-lasting disability or physical symptomology out of the psychological section. However, this has finally started in the right direction with the Sixth Edition. The Sixth Edition recognizes add-ons for chronic disabling post-traumatic headaches and has a consolidated ratings table assessing mental status, cognition, highest integrative function, and emotion. However, the AMA guides are trending towards supporting employers more than workers, and not all states require the use of the most recent AMA Guide; just one of them, or none at all. Some states, like Indiana, say “any reasonable method” of determining a permanent impairment rating is allowed under the law. Dr. Tracy Gunter of Indiana University argues that the AMA Guides are misunderstood and misplaced. “The American Medical Association does not put them out, nor do they reflect the views of the majority of physicians. They have authored publications trying to bring some reproducibility to the assessment of permanent impairment because the insurance industry primarily kept asking doctors questions we were not trained to answer.”^[12] The AMA Guides require some training to use and are subject to bias and language interpretation to get to the reproduction of a particular rating. Dr. Gunter also presents that this difficulty produces inaccuracies: “The whole business of permanent ratings is specious from a scientific standpoint and the use of total person percentages presupposes that everyone reacts the same way and that is simply not true.”^[12]

A big concern when it comes to workers' compensation for the employer side is the malingering risk or faking the injury. In cases of TBI, this stems from the massive awards that flash large headlines. The National Council on Compensation Insurance studied these "mega claims," finding that TBIs account for a significant portion: 17% of mega claims between \$3 million and \$5 million, and 30% of mega claims more than \$10 million.^[23] NCCI also found that head injury medical payments associated with TBIs have also increased from 75% to 79% from 2013 to 2018. However, the statistics from employers and medical providers also follow this increase track: almost 20% of workplace injuries result in a TBI.^[17] The Journal of Head Trauma Rehabilitation research also shows that individuals using worker's compensation insurance to treat their TBI have longer rehabilitative stays than those with public or no health insurance.^[19] Contrary to the point these researchers have made, the statistics outside of worker's compensation also are multiplying. In 2014, 2.9 million TBI-related visits to the emergency room occurred, including hospitalizations and deaths. Mild traumatic brain injuries account for approximately 70-90% of all treated TBIs, but this number is likely skewed still because of misdiagnosis or failure to report.^[2]

Dr. Gunter has personal experience with the malingering issue in the neuroscience field. As an expert witness, Dr. Gunter has performed multiple independent medical examinations and has been a treatment provider in workers' compensation. While doctors may not have a general presumption against mTBI, it can often lead providers to look for a "usual course." Because there is not a usual course, it can lead to the medical provider's opinion leaning towards a patient feigning the issue. Every patient is different, and whether the traumatic brain injury is mild or not, the best treatment methods and timeline of recovery are going to be varied. Due to the frustrations and ethical issues discovered within the practice, Dr. Gunter no longer works in-depth with worker's compensation. "The employer frequently wants the treatment provider to become the expert in order to continue paying the claim and that is really ethically problematic."

[12]

Statutes also are falling short of necessary protections. In their "race to the bottom," many states have either rolled back or removed pieces of original workers' compensation guarantees. For example, some states set shorter time limits to file, some do not allow workers to choose their healthcare provider (the employer can assign a provider), and some states now allow

employers to conduct mandatory post-injury drug testing even if no nexus between injury and impairment are present. ^[1] Other states have reduced retaliation protections for filing for workers' compensation. The same workers' compensation legislation in these states are expanding the dangers for workers by allowing selective enforcement of safety policies, excluding specific illnesses or injuries (e.g., repetitive strain injuries), and altering the causation criteria. Hence, workers' claims that may previously have been approved are no longer covered.^[1]

Back Home in Indiana: A State's Eye View of mTBIs

Zooming the lens to state side, Indiana offers a prime example of the underestimation and misunderstanding of mTBIs. Indiana is pro-employer. It has one of the cheapest workers' compensation rates available nationwide. Indiana sits in 48th place of all 50 states at seventy-seven cents per index for purchasing worker's compensation insurance. While this presents an advantage for small businesses, it can be challenging for a larger corporation worker to receive the necessary benefit coverage. As a pro-employer state, Indiana's worker's compensation statutes make it so the employer dictates the medical provider and type of care for the injured worker: directed care. If a worker chooses a different provider or seeks different treatment, the worker's compensation benefits can be suspended.

As a brief run-down of the state system: Indiana benefits cover wage loss, medical care directed by the employer, permanent impairment as dictated by statute, and death benefits if applicable. This can also include permanent total disability if proven, but that is limited to a maximum of five hundred weeks. There is also a maximum compensation cap for an injured worker's benefit recovery, not including medical care. If the injury occurs on or after July 1, 2016, the cap is \$390,000.0 Indiana's workers' compensation system does limit the type of workers covered under the program. Indiana Code section 22-3-2-9 excludes farm/agricultural workers, casual laborers, household employees, and independent contractors from any coverage benefits. There are also some statute-dictated injury schedules under IC section 22-3-3-10, which specify impairment ratings and value for amputation of fingers, loss of vision or hearing, loss of testicles, or amputation of hands or feet. Noticeably, these specifications exclude brain or head injuries. There is a calculation for loss of use, but this also misses the head or brain. IC section 22-3-3-10 (8) states "The total permanent loss of the use of an arm, a hand, a thumb, a finger, a

leg, a foot, a toe, or a phalange shall be considered as the equivalent of the loss by separation of the arm, hand, thumb, finger, leg, foot, toe, or phalange, and compensation shall be paid in the same amount as for the loss by separation (amputation).” Of course, the Indiana code allows for other injuries beyond the specified examples to be compensable as deemed proper by the Worker’s Compensation Board.

Indiana is also a prime example of how traumatic brain injuries are a growing issue, in worker’s compensation and beyond. In 2019, the Indiana State Department of Health created a five-year plan to tackle and improve the rates of traumatic brain injury within the state. The ISDH revealed several vital statistics: In 2016, TBI was listed as the primary cause of death or in combination with other injuries and conditions in 1,239 Hoosier deaths (18.6 per 100,000 Indiana residents); roughly 68% of TBI-related ED visits occurred within rural counties (283.2 per 100,000 Indiana residents); and men were disproportionately burdened by TBI-related deaths, accounting for 76% (28.8 per 100,000 Indiana residents) of TBI deaths.^[22] Indiana’s medical provider plan to improve these statistics comes from resource facilitation. The Rehabilitation Hospital of Indiana is the top source of this resource facilitation, and they join multiple agencies and providers together to provide brain injury support. Interestingly, Indiana does not have a statewide-integrated trauma program: one of six states in the nation that do not have one. Indiana also has a lack of TBI-specialized providers. Physical medicine and rehabilitation (PMR) and rehabilitation-focused neuropsychology (NP) are difficult to get into and rare. Many individuals with TBI do not even have a primary care physician (PCP).^[22]

The ISDH plan includes a TBI Advisory Board comprising thirty healthcare providers, policymakers, and consumers. This Advisory Board tackles specific areas of concern regarding the rate of TBI in the state, like a consumer task force, a state plan committee, and a criminal justice task force. Indiana’s plan to tackle traumatic brain injury misses one area of focus: worker’s compensation. Roger Finderson is one of the top lawyers in Indiana for worker’s compensation as a member of the National College of Workers’ Compensation Lawyers, Workers’ Injury and Advocacy Group, and the American Association of Justice. His view of Indiana’s system is detailed and slightly sarcastic. Roger Finderson does not believe that the system is a success overall. He is skeptical of the tilt towards employers, the allowance of the doctors to use any reasonable method of proof for impairment ratings, and that the legislation is

willing to change or improve.^[11] On how to change the system for the better, Mr. Finderson has several ideas. “They should make an amendment to the statute that addresses a brain injury directly and specifically. Right now, it is almost circumstantial or expected to say it is a whole-body impairment. What is there? No one knows, and everyone must bank on the doctors. Give us the categories for all the TBIs.” Finderson argues.

Finderson also voices a complaint echoed by other Indiana lawyers and doctors: the guidance on calculation for the injuries in Indiana needs to be improved and clarified. Currently, Indiana allows doctors to estimate impairment ratings through “any reasonable method.” The most popular method is using the 5th Edition of the American Medical Association Guides because many doctors have access to it, and it is well established. Finderson explains that the guides do not care about the actual result on the worker, and how the guides handle TBIs is inappropriate. “American Medical Association does not have patients and workers as their overriding focus, despite the guides being the main application to workers comp. They are doing it for nefarious reasons rather than actual assistance. They would have to actually give brain injuries their due.”^[11] Finderson also talked about the WILG Task Force that studies and keeps the AMA Guides on par; they challenge the guides when a line is crossed or the protection for an injured worker significantly drops. However, Finderson also recognizes the necessity of the AMA Guides. While many workers’ compensation attorneys would not recommend the guides, there is no unified voice on what else can be used. A statute dictation for every injury and every rating is practically impossible, and there are no other unified sources.

Following the statistics and the Advisory Board’s track, Indiana needs to provide more waivers for continued medical care for Indiana residents relying on Medicaid and continue to structure the healthcare system to connect more thoroughly. Suppose resource facilitation is the solution for making TBI treatment more practical and accessible. In that case, the state must coordinate a trauma system and linked healthcare programs to be sure individuals can find appointments. All workers must also be included under the program, or a specified exclusion for them to use the tort system to recover. Further, legislation must be improved by covering brain injuries in statutes and confirming that all doctors and jurisdictions must use the same method to determine ratings. Whether this be one of the AMA guide editions or another method, this

agreement will help advance the state's program. Workers need better protection, and this will help attorneys and doctors in the course of practice.

ANCIENT PROBLEM ADDRESSED WITH MODERN SOLUTIONS: RECOMMENDATIONS AND CONCLUSIONS

As this article demonstrates, the mild traumatically brain-injured worker suffers silently in "The Great Compromise," or the failure that is the workers' compensation system, depending on which source is reviewed. Dr. Casper of Clarkson University presented the sentiment eloquently: "[C]ompetency in brain injury research requires recognizing that these long histories of courtroom battles, cultural concern about fakers, shirkers, and effeminacy, and economic resentments created through the compensability of workplace injuries, place large burdens on TBI patients to prove their own clinical and legal legitimacy."^[6] The list of necessary changes is long: (1) The impairment monetary amounts are too low; (2) care is either not received or must be paid for personally in conjunction with lack of treatment structure; (3) they cannot return to work without accommodation; (4) the worker is told they are lying or exaggerating, and (5) the entire system needs more standardization. This must occur to better the legal system, medical treatment, and protection for the injured worker.

Firstly, the permanent impairment amounts can be improved by creating a statutory standard. A presumption rating, based in legislation, is the best method to ensure the injured worker is afforded the best opportunity for recovery. An impairment presumption of 10-29% whole person impairment for a mild TBI, 30-69% for a moderate TBI, and 70-100% for a severe TBI. Any concussion or mild TBI diagnosis would automatically classify at least a 10% whole person permanent impairment rating. This statute presumption is easy to incorporate into all state workers' compensation codes across every state and federal program and can be easily defined regardless of what classification system that program uses. While presumed based on diagnosis, this presumption can be rebutted and argued in favor of an increase or decrease depending on the worker/patient and the level of TBI, lasting symptoms, risk of re-injury, and post-concussive syndrome. In Indiana for example, this would amend IC 22-3-3-10 to include: "A diagnosis of a traumatic brain injury based on the Glasgow Coma Scale or by other certifiable objective medical evidence presumes a whole person impairment value based on severity. For a mild traumatic brain injury, a rating of 10-29% is assumed. For moderate, 30-69% rating. For severe,

70-100% rating. These presumptive ratings are determined by diagnosing licensed physician and can be altered or rebutted by the Indiana Worker's Compensation Board as deemed appropriate based upon the evidence provided."

A medical provider can easily fit their patient's rating based on injury, medical experts can argue an administrative law judge can modify the presumption or lack of, and the percentage or Article III judge in a court of law. However, the main goal is still served as well: the minimum presumption established will allow injured workers to have a higher chance of improved quality of life, returning to work, and make it more fair for the worker in the compromise. The presumption also ensures that an injured worker who is not permanently impaired by mild TBI is not restricted by disablement for future work or benefits.

Secondly, medical care must be appropriately assessed by the medical providers and covered by the employer. To allow medical providers to better treat patients with work-related mTBI, structural standardization is necessary. This would help with examination, outcomes, priorities, and advocate for care from other medical disciplines. ^[2] Based on this article's research, a scientifically recommended form goes on a three-pronged management standard. (1) acute treatment at the time of injury; (2) immediate treatment during the post-traumatic period; and (3) chronic long-term care. ^[2, 16] Dr. Gunter, a medical expert in mild TBI, argues that the best diagnosis format for the improvement of an injured worker is through thorough record review followed by multidisciplinary evaluation over time.^[12] Scientific research also recommends starting with a TBI team of medical providers, led by a physical rehabilitation physiatrist. ^[2, 13, 16] This could be done by having the worker's compensation legislation modified to include a diagnostic structure for TBIs specifically. Making sure that employers have the recognition of a potential head injury and therefore sending workers to the right medical providers to begin the management structure and consistent multi-disciplinary concurrent care. Advocating for concurrent care while having a lead physiatrist, will make sure all three prongs of treatment are carried out thoroughly, optimize the worker's recovery, and expedite a return to work.

Once the proper treatment plan is organized, the employer needs to cover the treatment. As the employer, this assumes either the employer's private worker's compensation insurance, self-insurance, or state-funded insurance, depending on the program. This article does not

advocate for self-insurance by employers for workers' compensation coverage, as it can fall through and lead to bankruptcy. Then injured workers scramble for their own care coverage, and often lack compensation for their injury too. By guaranteeing treatment coverage for mild traumatic brain injury after the standardization of diagnosis and care, the worker will have a higher chance of returning to the workforce and having optimal recovery.

Next, improvement of the workplace accommodations available for injured workers must occur. The accommodations must be made available and flexible for the return-to-work rate to increase. Having formal and informal options, including the gradual return and modified duties, is the best way to make workers feel safe and allow for the best recovery with minimal intrusion into daily work life.^[13] Giving time for employees to go to medical appointments without penalty or with an incentive is an excellent accommodation to foster goodwill. Indiana, for example, the code includes paid average weekly wage time for these appointments for directed care for worker's compensation injuries. Once this is considered a benefit in the system, workers will have more protection and employers will have a more reliable workforce.

Fourth, employers, attorneys, and medical providers must improve the understanding and "benefit of the doubt" development rather than assuming malingering on workers with mild traumatic brain injuries. There is no definitive test to find malingering. While history shows that many do not believe brain-injured patients, the research and understanding of the injury overall is lackluster. mTBIs are common, hard to see, and difficult to prove; it's easy for all parties around to raise an eyebrow at such an injury. Educational public awareness is needed to help the worker, who is struggling internally, be given the benefit of the doubt. The judgment of "faking" cannot and should not be made without reason to show such. This will decrease naturally with increased standards in the workers' compensation systems, and in the medical treatment of mild TBI. However, before the standards are implemented, there must be more research in the field of mTBI. If the injury is better understood alongside statistically showing the occurrence and dangers of the injury, then once again the assumption of malingering will decrease. Whether done through continuing legal education, public seminar, union teaching, or medical provider certifications, improved education on mTBI is necessary. Until then, an effort must be made to recognize that malingering is not common in workers suffering from mTBI.

Lastly, the overall worker's compensation system nationwide needs some change. The Congressional Research Service echoes the American Public Health Association: "How workers' compensation systems designed in the early 20th century can best provide for workers and employers in the changing workplaces of today?"^[21] Four pieces would greatly assist in bettering the no-fault safety net: (1) a national commission, office, or committee to study and assist the workers' compensation system and track changes; (2) minimum standard requirements for state workers' compensation programs; (3) new legislation to protect workers from occupational illnesses; and (4) coordination of Social Security Disability and Medicare benefits with workers' compensation for better integration of benefits and a good split of the social influence spheres. By instituting these changes nationwide, the system will have more accountability, better research and knowledge of function and need, and improved integration with other social systems. This will help alleviate pressures on small business employers and make large-scale employers follow programs more closely.

Traumatic brain injuries, especially mild, are a relatively unknown danger. For the injured worker, it is a minefield of fear, misunderstanding, lack of treatment, and protection failure. It is a beast of uncounted proportion for the medical provider, attorney, and employer. By implementing some or all the recommendations in this article, the antiquated failures of a 19th-century system can be brought into a brighter and safer 21st century.

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