

FEATURES

DIARY OF A CONCUSSION

It's hard to understand a brain injury until you have one

By [Elizabeth Lopatto](#) | [@mslopatto](#) | Sep 27, 2017, 9:30am EDT

Illustrations by Alex Castro

I opened my eyes to see a clear blue sky and two men leaning over me to put a brace around my neck. I don't know if I was already on the stretcher or if I was still on the pavement, but there are plenty of things I don't remember. As I would later find out, I had a brain injury.

Was I badly hurt, I asked. I felt as though someone had smashed a two-by-four across the entire left half of my face. The two men on either side of me carefully lifted my upper body to finish with the brace, giving me a view of my legs. I wiggled my left toes, which were more obliging than my lips. It couldn't be that bad, I decided. My spinal cord still worked.

The man on my right — either an EMT or a paramedic; I had no way of knowing — asked if I knew where I was. Was I... outside the Whole Foods? Did I know what happened, he asked. No. Wait... when the bronze car turned left in front of me, cutting me off, I hit the brakes on my bike. It didn't matter, I remembered realizing. I wouldn't stop in time. The next thing I remembered was the sky. I had been unconscious for about 15 minutes.

"She's confused," the guy on my right said to the guy on my left. I had hit my head, the maybe-paramedic told me. I had a concussion. It was a good thing I was wearing my bike helmet. I think

***MY SKULL FELT LIKE IT WAS
TRYING TO EXIT MY BODY
THROUGH THE SKIN***

he said it then, but he might have said it later, in the ambulance, when he was removing my helmet. In any event, I was going to the hospital instead of my yoga class.

I spent the hours after the crash immobilized and braced, while things I didn't fully understand happened around me. Like most writers, I am a control freak. And like most editors, I am accustomed to telling people what to do. On any kind of normal day, this situation would have filled me with anxiety or fury, possibly both. I had the energy for neither. I was having trouble making memories and also frequently losing consciousness.

I was vaguely aware of being removed from the ambulance and sent into the emergency room. Then, a lot of people stood around me to lift me from one stretcher into another, a surprisingly gentle operation. Later, a woman was asking me where I hurt, and I gestured to the left side of my head. My skull felt like it was trying to exit my body through the skin, pulsing routinely against the flesh of the left side of my face and my forehead. I'll call this The Headache, and it was worse than any other headache I have ever felt. The fentanyl the doctors gave me didn't stop The Headache, but it did succeed in making me care a lot less about it.

I noticed someone moving above me, and asked her what was happening. I was about to get a CT scan, she told me. She is the first person whose appearance I

remember, even in part. She had Shirley Temple curls. I'm not sure what her face looked like, but I remember I liked her hair. I was a science journalist and had written about CT scans but I'd never had one before, I told her. So this was exciting.

But as they moved me into the scanner, I wondered: *was* I a science journalist? I had spoken without thinking. My entire life before the ambulance felt dim and far off. I might as well have been born on the pavement, with the neck brace half on.

I had reported on concussions, actually — particularly during the period when they were a negotiating point for the National Football League. At *Bloomberg News*, my previous employer, I'd written about the controversial new diagnosis, chronic traumatic encephalopathy, or CTE, after Junior Seau's suicide. CTE, which can only be truly diagnosed after death, causes symptoms like memory loss, depression, and confusion. (Scientists are now trying to find ways to make the diagnosis in living people.) Multiple concussions also raise the risk of dementia, with or without CTE. CTE isn't limited to football, of course — soccer players, boxers, professional wrestlers, and others who participate in contact sports are at risk — but the NFL has been at the cutting edge of the research.

American football has provided a frontline for discussing multiple hits to the head, and what they do to human brains. On September 21, Aaron Hernandez — a former tight end for the New England Patriots who was serving a jail sentence for murder when he killed himself — was posthumously diagnosed with CTE. His family's lawyer, in announcing the findings, said it was the most severe case the experts had seen in a 27-year-old.

"It's scary to think that my brain could be deteriorating," wrote Warren Sapp, a hall-of-famer. Ed Cunningham, a former NFL offensive lineman, quit his job as a color commentator for ESPN and ABC, telling *The New York Times*, "I don't currently think the game is safe for the brain. And, oh, by the way, I've had teammates who have killed themselves. Dave Duerson put a shotgun to his chest so we could study his brain." (Duerson, who played with Cunningham in 1992 and 1993, killed himself in

2011 and was diagnosed posthumously with CTE.)

**"DAVE DUERSON PUT A SHOTGUN
TO HIS CHEST SO WE COULD
STUDY HIS BRAIN."**

Former players have agitated for research on what multiple concussions do to the human brain. John Urschel, a 26-year-old offensive lineman for the Baltimore Ravens, was so concerned

about his mind, he retired in July after three seasons so he could focus on his PhD work in mathematics at MIT. Urschel's conversion to full-time PhD student came on the heels of a study published in the *Journal of the American Medical Association* of donated NFL players' brains: 99 percent of the NFL players' brains had signs of damage. Now, there's some selection bias there — healthy retired players' families are probably less likely to donate their brains — but the study did find that the longer someone played, the more likely it was their brain showed signs of CTE. The study's authors cautioned against using it as an estimation of CTE prevalence, or as a way of estimating risk.

The science on CTE is still in its infancy. Another study, published earlier in July in *JAMA Neurology*, found that high school football players who played in the 1950s died with normal brains. CTE is real, and a real problem — but we don't know how widespread it is, or exactly what it means. What I quickly realized, as I lay in the ER, is that reporting on multiple concussions hadn't exactly prepared me for a single one.

It was comforting that I knew what a concussion was. I'd written about the cumulative effects. I'd edited pieces about how football helmets protected players from some kinds of brain injuries but not others. I'd described symptoms of concussions. During my recovery, I began to understand the poverty of those descriptions. CTE is terrifying, but concussions *themselves* are bad enough.

A concussion, according the US Centers for Disease Control and Prevention, is any kind of bump or jolt to the brain that results in a change in mental status. I knew they were the most common kind of brain injury, and often associated with athletic activity. I also knew they were mild traumatic brain injuries. The CDC has estimated that the number of annual concussions due to sports and other activities was as high as 3.8

million yearly. (Not every concussion results in a visit to the ER.) That, of course, doesn't account for concussions sustained in car crashes, another common cause.

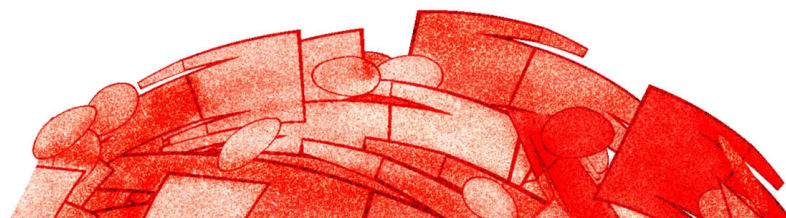
What happens in any concussion — including mine — is a recognizable set of symptoms: confusion, fatigue, difficulty remembering new information, nausea, dizziness, mood changes, and sensitivity to light and sound. The number of concussions receiving medical care has been on

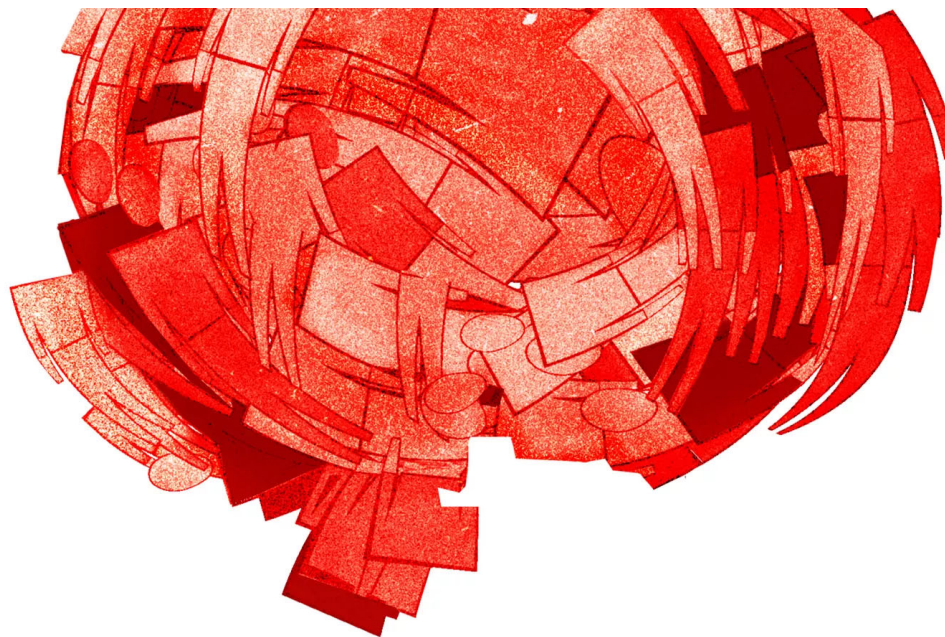
THE FORCE OF THE IMPACT WITH THE SKULL CAN CAUSE THE BRAIN TO TWIST OR EVEN REBOUND AGAINST THE OTHER SIDE OF THE SKULL

the rise in the last few decades, in part because people are more familiar with the idea of brain injuries. Some of that increase is probably also due to the increasing athleticism of sports like football: as athletes get bigger and stronger, they're more able to generate the kind of force that causes a concussion.

You don't even need to be hit on the head to have one. Your brain is a gelatinous mass, floating in a pool of cerebrospinal fluid inside your skull. A concussion occurs when the brain hits the skull, *even if the person's head doesn't collide with an object*. Whiplash alone can generate a concussion. After all, it doesn't take much to deform Jell-O. The force of the impact with the skull can cause the brain to twist or even rebound against the *other* side of the skull.

The result is chaos, says John Leddy, a concussion expert at the University of Buffalo. Brain cells stretch and twist, blood vessels become leaky, and the chemicals that the brain uses to communicate dump at random into the spaces between brain cells. The electrical activity of the brain is dampened. There's a period of diminished activity from brain cells, as well as reduced blood flow in the brain, according to research on the concussion cascade.





It's a little hard to say specifically what happens in living brains, because brains are generally encased by skulls. Also, post-concussion chaos isn't visible on an MRI or a CT, the two most common ways to image the brain. Scientists have tried to figure out what's going on by creating windows into animals' brains by removing part of the skull, but that tends to be traumatic in its own right. There are some methods of observing concussed brains used by researchers, but they're not widely available.

While some scientists are pursuing blood biomarkers or eye scans as a way of diagnosing a concussion, the best way of determining whether a person has a concussion or not is still a checklist of symptoms. This is reflected in the NFL concussion protocol, which goes into effect for any player displaying one of seven symptoms: loss of consciousness, slowness getting up, balance problems, a blank look, disorientation, clutching the head, and visual facial injury. Any of those symptoms will get a player immediately removed from the field, to undergo examination by an independent neurologist. (Whether this protocol works, however, remains something of an open question.)

The checklists work because concussions have predictable symptoms. Anything that requires cooperation across larger areas of the brain, like balance, is going to be more affected by a concussion, Leddy says. A loss of balance is a classic symptom of concussion. That's because the parts of your brain that help orient your body in space

are spread throughout the Jell-O; your eyes, ears, muscles and joints all contribute signals, which are processed through the cerebellum, cerebral cortex, and brainstem. Vision is similarly vulnerable, since the control of the eye is spread throughout the brain as well. “Those are the physical signs on examination that I look for in everybody who I see with a concussion,” Leddy says. “How their eyes are working and what their balance's like.”

Another common symptom of any brain injury, including concussion, is impaired memory. I experienced two kinds. The first was for events that occurred before my brain injury, called retrograde amnesia. I remember realizing I would crash, but don't remember the impact. The other kind, anterograde amnesia, is for events after the brain injury. This form is probably due to the chaos that was taking place inside my skull.

"THAT'S 12 MINUTES I HAVE NO RECOLLECTION OF."

Lost memory is one of concussion's hallmarks, says William Mullally, the associate chief of clinical neurology at Brigham and Women's Hospital, and

an instructor at Harvard Medical School. He's not just familiar with concussions in the clinical sense, either: between his hobbies of karate and boxing, he's had a few himself. In one boxing match, he remembers going out, and then the next thing he remembers was using his opponent to pull himself up. The fight was three rounds, and each round was three minutes with a minute in between to pause. “So that's 12 minutes I have no recollection of,” he tells me. Apparently, he came back from having been knocked out, determined to finish the match.

The lost memories are probably the result of difficulty in the seahorse-shaped sections of the brain, called the hippocampus, Mullally tells me. These structures — there are two in a normal brain — are very sensitive to a lack of blood flow and changes in electrical activity. Without functioning hippocampi, it's impossible to encode short-term memories, Mullally says. And so he and I have gaps in our memory — he while boxing, and me, in the ER — where we were perfectly awake. Blackouts.

W

hen my memory started again, I was in a small room. A nurse was trying to make me comfortable. I was ravenously hungry, and requested food. She nodded and left, pulling the door most of the way closed behind her. I

located my phone — under the blankets with me, I discovered — and began informing people that I had inconvenienced them.

Where was my food? Suddenly, the hunger turned to nausea. I began looking for a call button, a way of alerting someone that I required a bucket. I couldn't find it, and puked resignedly onto the floor. But even that didn't alarm me much.

Mood changes are common with concussion, and mine started the moment I woke up. Yes, I was confused; I was also, maybe more accurately, *bemused*. All I needed to do was lie in bed and let people examine me. It was a lot like floating on an inner tube down a river: I remained still and the scenery changed. I mostly felt cheerful and upbeat, even though I didn't really understand what was going on; I had at no point experienced any fear at all.

But now the people were gone, and I was alone in the room. After making a few phone calls — I wasn't coherent company, but I still wanted to chat — I took a selfie. It was the first time I'd managed to get a look at my face: the left side was swollen, my lips were busted and bloody. My chin was scraped, as was my nose. My left eye was at half-mast, but overall, it was fine. Besides, my eyebrows and hair looked great.

It wasn't until my boyfriend arrived that I really began to understand I was seriously injured. Immediately after getting a good look at me, he seated himself quickly on the floor and put his head between his knees. My face, I understood, was so disturbing that he had nearly fainted.

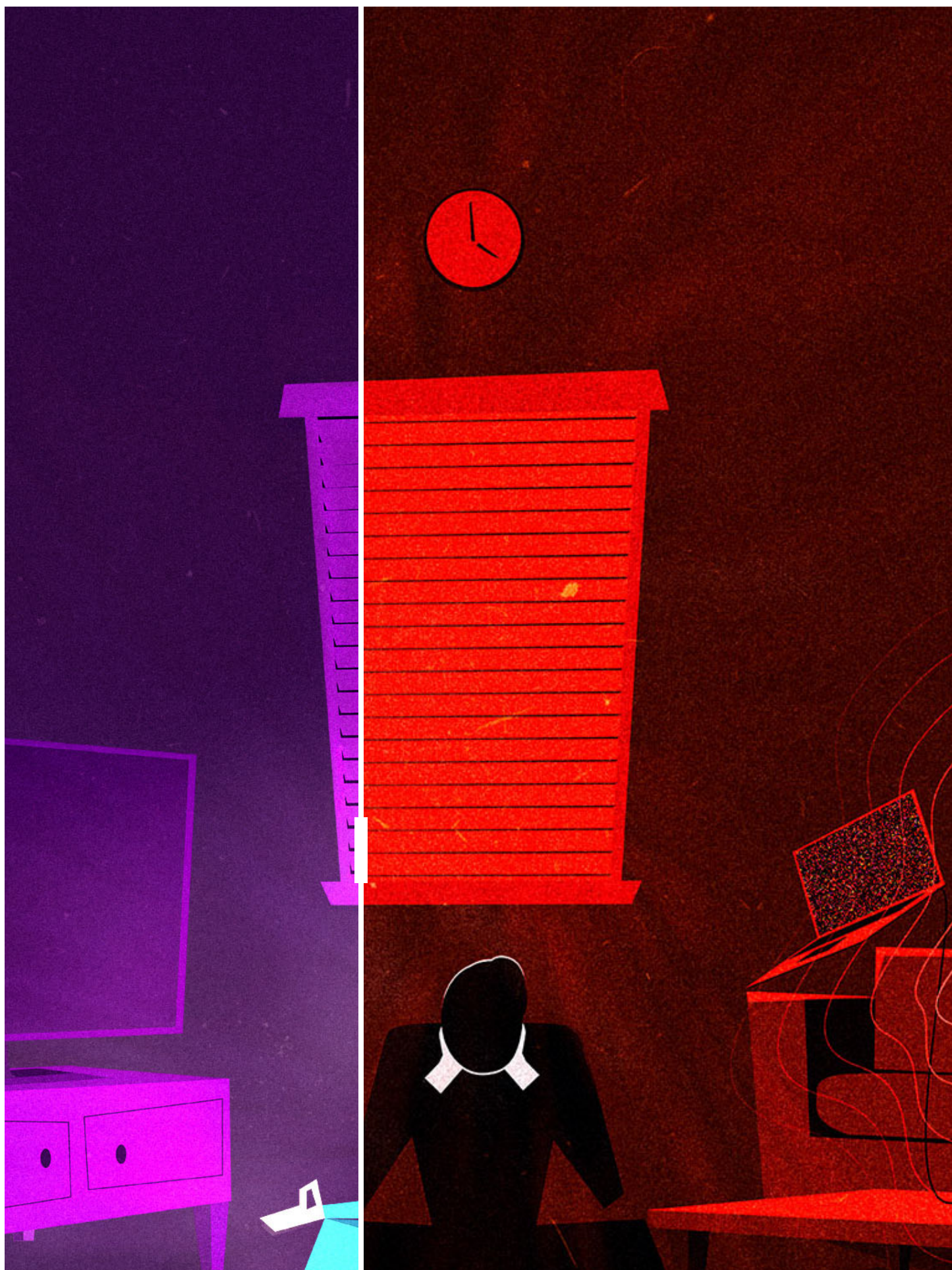
**YES, I WAS CONFUSED; I WAS
ALSO, MAYBE MORE ACCURATELY,
BEMUSED**

After Andrew had recovered from the shock, I made the first catalog of my injuries. My face hurt, of course, but so did my left shoulder, hip, and knee. (All would later produce technicolor bruises.) I had chipped a tooth. That was it. The most damage

was on my face. I must have landed directly on my head.

When I stood up for the first time since the crash, I discovered standing made The Headache worse. I began to shuffle toward the restroom under a nurse's supervision. The bathroom couldn't have been more than 20 feet away, but it still took me quite some time to reach it. I had only the vaguest sense of where my limbs were and whether my feet were aligned correctly with the floor. My body had become a clumsy mecha suit, and I was trapped inside, trying to operate what felt like a large hunk of metal.

Things happened quickly after I demonstrated I could walk under my own power: a doctor came in to summarize what they'd found (concussion, nothing more serious) and give me prohibitions: no TV, no alcohol, no reading, no internet. Then, I was discharged. We went home in a cab big enough to hold the two of us and my totaled bike. I figured my recovery would take a week. I was wrong.



alarmed people pretty much every time I mentioned my concussion. Never mind that the actual injury was not scary to me — it scared everyone around me.

The brain lives pretty close in our imaginations to the self. It's one of the reasons some people locate the self *specifically as the brain*, which is probably why people cryogenically freeze their heads. It's there in the hopes of a "brain transplant" from that preposterous Italian surgeon. This belief is probably why brain injuries scare people.

And so we have come to a scary phrase: "personality change." I had one. They're common with brain injuries, including concussion.

Personality is a major part of how we understand ourselves; in fact, we use it as a reference for famous people, like a television personality. To have your personality altered by brain trauma seems to upset people more than having it altered by, for instance, emotional trauma. I don't know why this is! But everyone's personality changes over the course of a lifetime, usually gradually — and that's not just true of Americans, either. Perhaps it's the suddenness of the personality change that frightens people, or perhaps it raises scary questions about identity.

I'm a pessimist, the person who is useful in the worst-case scenario because they are the only one who *planned* for the worst-case scenario. Or rather, I was a pessimist before I hit my head; I am slowly returning to it now. But I spent about a month after the crash incapable of doing anything other than looking on the bright side.

I still *felt* like myself, but it was kind of like my personality was a set of piano keys and someone had sliced off all the notes you'd ordinarily play with your left hand. I could go on playing with both hands, but only the top half of the keyboard was available. While I was in the ER, it occurred to me: what if I am stuck like this forever? I considered it, and then decided, "Well, I'd have to quit my job, which is a shame because I like it. But there would probably be another job I could do. Anyway it's a concussion and I'm going to recover." Then I felt satisfied and closed my eyes for a nap.

If I thought I was my brain, probably I would have found the injury more

IT WAS KIND OF LIKE MY

upsetting. But I didn't and don't believe that; my *self* is an interaction between my body and my brain. In Oliver Sacks' *A Leg to Stand On*, Sacks injured his leg skiing and required surgery. After surgery, his leg no longer felt like his own. "I could no longer remember having a leg," he wrote. "I could no longer remember how I had ever walked and climbed." An injury to his body changed his mind. The brain alone, then, can't be the reservoir of self; a brain injury might alter me, but it doesn't annihilate my *self* any more than a broken leg would.

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The mood change did make memory lapses easier to endure, though. I had always been bad with names, but I was noticeably worse: no new names stuck. I often experienced "tip-of-the-tongue syndrome," where I'd know there was a word I specifically wanted but couldn't remember what it was. "Boat farm" meant *marina*, "salad with tomatoes, mozzarella, and basil" got me *caprese*, and "circular reasoning where you say the same thing twice" is *tautological*. It was like a game of Catchphrase where even I didn't know the word people were trying to guess, and I played with whoever was around me until I found the word I was looking for. Viewing it as a game made it less frustrating and a little more fun, so I chose to do that.

I started writing again about two weeks after I hit my head, which is the longest I've gone in my adult life without writing something, anything. That diary entry shows more cross-outs and uncertain spellings than any of the previous ones. As I continued writing, later, the number of cross-outs and bum spellings declined. But it was clear: there was a before, and there was an after.

My personality change — the loopy good mood, the entirely unfounded sense of well-being — isn't something any of the experts I spoke to run into that often. What's more common, and what tends to be listed in the literature on concussion, are two things: anxiety and depression. But the brain-body connection is relevant here, too. Most concussion patients have difficulty with light and noise; they often isolate themselves in dark, quiet rooms in response. In people without concussion, this kind of behavior

creates depression and anxiety. So, did the depression and anxiety come from the brain injury, or the self-imposed isolation afterward?

For a long time, doctors thought that patients needed to rest totally after a concussion until all symptoms were relieved, Leddy says. “For example, you take an adolescent athlete and tell him or her to do nothing for weeks. Well, they're used to doing things, you know, being at school,” he says. “We know that if you take someone like that who doesn't have a concussion and tell them not to do anything, they get symptoms. They get anxious and some get depressed and they get irritable.” That’s why concussion patients are encouraged to get back into activities when they start to feel able to, and to take it gently, he says. “We think that’s a better way for the brain to recover.”

AFTER THE FOURTH CONCUSSION, HE WAS DIAGNOSED WITH AMNESIA

The symptoms can come from other places, too, former NFL player Ben Utecht told me. He’s the author of a book called *Counting My Days While My Mind Slips Away*, written to

preserve his memories. He’s had five documented concussions, he told me, between college football and professional play. Recovery was different every time, though he never experienced chronic headaches. Light sensitivity, though — that he remembers. “The consequences I faced got worse with each concussion I sustained,” he told me. After the fourth concussion, he was diagnosed with amnesia. That recovery process was different because it was more severe.

The biggest changes concussion caused for Utecht were cognitive: he struggled with the skills we rely on to manage time and pay attention, called executive function, and his memory deteriorated. When Utecht joined the Cincinnati Bengals, learning their offensive system was harder. He received his final concussion during training in 2009; after that, he ended his football career. His mood tanked: he was depressed, and anxious, and his patience was nonexistent. “But I had just walked away from a game I had played for 20 years,” he said. “How much of that is just life?”

What improved his mood, he told me, was an intensive brain-training program. (He describes cognitive fitness training as “my miracle story.”) While he’d taken it to boost

his memory, he discovered he was less irritable as his memory improved. Having a hard time remembering his calendar, remembering names, and remembering the right words made things more frustrating. “I think that frustration plays a role in stress, and lack of patience,” Utecht said. “Because nothing else changed in my life but this cognitive training.”

There is no treatment for concussion except for patience and time, but people seem not to believe that. Well-meaning friends suggested I supplement with omega-3 fatty acids and eat extra protein. There is no evidence either make a difference for concussion. Some people recover quickly, taking only days to feel normal. About one in five concussion patients take weeks or months to recover. I was one of those patients. How severe the injury was has little to do with how long it takes to recover; women, younger people, those who’ve had concussions before, and people with other brain disorders are likelier to take longer, according to Leddy’s research.

“I always tell my patients, I don’t have a crystal ball,” says Alicia Sufrinko, a concussion specialist at University of Pittsburgh. “I’m not gonna be able to forecast this.” Some people have stronger systems for balance than others; some have better visual systems. But it’s also impossible to separate the contributions from the environment, she says. Social factors also matter. Loneliness and isolation make recovery harder.

The NFL’s concussion recovery protocol doesn’t have a timeline associated with it, either. Instead it’s a five-step process: rest and recovery first, then some light aerobic activity. After that: strength training. Then football-specific activities, like returning to practice but not doing any parts that would require contact. Throwing and catching are okay, but tackling is out. Then, once an independent neurological consultant approves: full recovery, clearance, playing again.

This recovery system wasn’t in place when Utecht played. “The return-to-play protocol at that time was relatively nonexistent,” he said. “Concussions hadn’t really exploded

on the American sports scene. It was still getting your bell rung, at that point. There was no real knowledge about what concussion truly is.” Nor was there much knowledge about concussions’ long-term effects.

There’s more education now about concussions’ effects, Utecht says. He likes that, and he thinks the NFL’s concussion protocol is an improvement. But there’s no unified program, no way of knowing what to do if your child is concussed, for instance. “It’s still sort of ‘go sit in your room for two days,’” he said. He expects that to change in the next decade.

While I had the luxury of recovering at my own pace, a lot of athletes don’t. Doug Baldwin, a wide receiver for the Seattle Seahawks, told Bill Simmons on *Any Given Wednesday* that some players cheat at the sideline concussion evaluation so they’ll be put back in the game. Why would a player fake out the concussion protocol? Most players will do whatever it takes to play, Utecht said. “How you’re going to create an environment for any athlete to willingly tell their trainers they have a concussion — that’s a whole other matter,” Utecht told me. “It kind of goes against American sports culture. That’s the toughest part, right there.”

There’s also the financial aspect: the NFL doesn’t have guaranteed contracts, so if the athletes don’t play, they don’t get paid. Utecht would know: he had to take the Bengals to arbitration to get the remainder of his 2009 salary.

***I STILL HAD THE HEADACHE, AND
BEING ASLEEP MEANT I DIDN'T
FEEL IT***

I sat in my room for more than two days; I spent most of the first week after the injury asleep. I still had The Headache, and being asleep meant I didn’t feel it; it was my constant companion for a week. But also, every time I woke up, I felt a little better: my balance had improved slightly, for instance, and it was easier for me to think. For the first week after the crash, I kept the shades drawn in my apartment and didn’t turn the lights on until I absolutely had to.

Even for people who feel normal, things aren’t back to normal in the brain, Harvard’s

Mullally tells me. Unusual patterns of blood flow in the brain persist for a month, studies in humans and in animal models show. Gentle cardio exercise — like walking — can help improve it. A concussion patient shouldn't go back to full-steam ahead immediately, but neither should they wait until they are well to begin resuming their lives, he says.

Even after The Headache finally vanished, bright light and loud sounds could trigger smaller, migraine-like ones, so I wore sunglasses every time I left the house. I also carried earplugs with me, just in case. Before the crash, I hadn't noticed how loud everything was; now I was painfully aware. Coffee shops (high ceilings, cement floors, and exposed tile), airports (high ceilings, hard surfaces, intercoms, inconsequential beeping), and public transit (the screeching of a train on the track) all guaranteed headaches. The sensitivity to noise lasted for about three weeks, and it was isolating. I often left the apartment with earplugs in.

The world isn't designed for brain injuries. Basically, Mullally told me, almost everything is brighter and louder than we realize. Our brains filter a lot of stuff out, but my brain couldn't do that filtering.

After a week in bed, I got restless. I started with a half an hour of walking, and when that didn't make me tired, I moved up to an hour. Doing too much, of course, could mean a headache. That was the worst period of my recovery. By the second week, my black eye was gone and my lips weren't busted anymore, but stairs and curbs — anything that required stepping down — were still terrifying. I didn't feel normal but I looked normal. And that meant people treated me like I was normal. Our society really isn't equipped for people with brain injuries, which are real but invisible. Even though I knew my balance wasn't good enough to stand on public transit, I was scared to ask for a seat on a crowded train. An injury no one can see doesn't inspire sympathy.

After a month, I felt confident enough to go back to yoga, where I discovered my balance was still bad; easy one-legged poses I'd considered the base of my practice were gone. I could walk and even bike just fine, but the subtleties of positioning my body in space hadn't returned.

That was also around when I went back to work. I still got tired quickly, and my day often ended earlier than I wanted — usually with a headache. But working helped with my memory, too. Things that had happened to me before the concussion still had a patina of unreality to them, because I couldn't *feel* the memories. I quickly discovered that while the content of my memory was intact, the emotions associated with the memories were gone.

OUR MEMORIES CHANGE EVERY TIME WE PULL THEM FORWARD

Fortunately, memories aren't static. Every time you or I recall a memory, we repaint it in our minds. Our memories change every time we pull

them forward. And so, back at work, I began to recompile memories of my pre-concussion life. After a few weeks, most of my memories again had emotions associated with them.

There were the little victories. The first day I was back at work, I told a writer her story had an unclear antecedent; I was immediately filled with glee that I not only had noticed, but had selected the right word. Something in the familiar process of editing had called them forth — and remembering them was akin to finding an unexpected \$20 bill in an old pair of pants.

There were also little losses. For example, it was apparent, once I was back at work, that my attention span wasn't what it had been. This is actually common in concussion patients, says Sufrinko. It's related to the problems with vision, which makes sense, since attention and vision have a lot to do with each other. Vision steers attention in ways most of us aren't aware of, she says. "If you're daydreaming and you're off in your own little land, and then all of a sudden you realize you're not paying attention, you also realize that visually you're not focused," she says. "People with visual problems lose their attention a lot."

But this distractibility also faded. My balance improved. Finally, the only thing left was fear. For weeks, sound and light gave me headaches. When it stopped, I still avoided music, TV, and movies. I felt actual dread about them. I worried I'd screw up something serious at work if my attention drifted. And steep downhill slopes or uneven

stairs filled me with gut-level terror. It didn't matter that I navigated stairs and slopes as well as I had before. My confidence was gone.

I had learned to avoid certain things, I realized. A month is plenty of time to be conditioned to fear my headache triggers: complex tasks, sound, bright lights, tests of my balance. Was *this* was the anxiety that had been mentioned in the medical literature? But my fears were conditioned; I had learned to fear the headache. That was good news, I figured, since conditioned fear could be extinguished. The trick was to reexpose myself to the things I now feared, starting slowly and gently: Bruce Brubaker's *Glass Piano*. Half a television show. A yoga class. Backpacking for days in a redwood forest on a mostly downhill route. Writing this article.

Structurally, as a writer, I want to put some kind of moral here to send my reader off happy. I actually spent weeks thinking: what is the lesson? As far as I can tell, there is no lesson. Brain injuries happen for no reason, after all. Even when I found it difficult to think straight, I didn't feel much of a loss. In any event, I have bought a new bicycle and a new helmet. I've been riding my bike to yoga class for the last few months, and I have successfully arrived every time.

Correction: *An earlier version of this post misstated John Urschel's position. He is an offensive lineman.*