Ellsworth's Dagan Berenyi (right) collides with the Waterville goalie in a Class B regional soccer semifinal on Oct. 31, 2015. The collision resulted in a concussion that took Berenyi out of sports for the rest of his senior year. PHOTO BY TAYLOR VORTHERMS

Part 1: Invisible, incapacitating concussions are sidelining high school athletes

July 19, 2016 by Taylor Vortherms on Baseball, Basketball, Cheering, Football, Other Sports, Soccer, Softball, Sports, Swimming, Wrestling

Part 1 of 2 Parts

ELLSWORTH — On Nov. 1, 2015, Dagan Berenyi woke up in his bed, dressed in his Ellsworth High School soccer uniform. The 17-year-old ran his hands through his hair and felt the buzzed outline of a Mohawk — a playoff tradition for his team.

But Berenyi didn't remember the haircut. He didn't remember the game.

His questions kept coming. Why was his 23-year-old sister, who no longer lived at home, sleeping next to him? What had shattered his cell phone's screen? Was it even still October?

"I was freaked out," says Berenyi, now 18. "It was scary because you remember everything now in context of what happened last."

Berenyi would later learn that his family had been taking shifts watching him throughout the night, and that he had broken his phone three days earlier. He would learn that his soccer team beat Waterville High School the day before to advance to the Northern Maine championship.

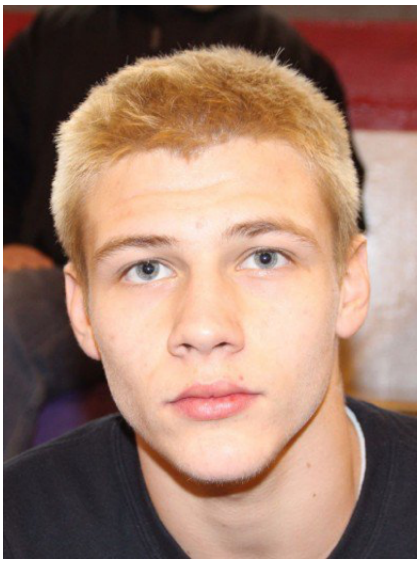
He couldn't remember any of it because he had suffered a concussion in that game.

In the wake of recent controversy surrounding concussions in the National Football League, concern about sports-related brain trauma is on the rise. The American Academy of Pediatrics estimates that more than a million children and teenagers in the United States suffer concussions every year. While Hancock County schools and coaches are taking steps to improve sports safety, athletes are still struggling to cope with an injury that can be debilitating while not evident to the rest of the world.

"It's definitely up and down as far as getting better, but also emotions-wise," Berenyi says. "You're not trying to be sappy or anything, but I've definitely felt ways that I've never felt before."

Berenyi's concussion left him without a week's worth of memories — some of which have since returned, if in vague form. On May 10 — seven and a half months after his concussion — he has pieced together most of what happened in the days leading up

to the Class B regional final. But he can remember only flashes of the Saturday his concussion occurred, such as eating breakfast with the team at Denny's and jogging onto the field to music.



Dagan Berenyi, 18, suffered a concussion in a soccer game on Oct. 31, 2015, that took him out of sports for the rest of his senior year at Ellsworth High School. PHOTO BY JF BURNS

With 10 minutes left in the game, Berenyi and Waterville's goalie collided in the air while charging for the ball. They both crashed to the ground. Berenyi didn't get up.

A study published in the June 20 edition of the journal *Pediatrics* estimates that between 1.1 and 1.9 million children ages 18 and younger suffer sports-related concussions annually in the United States. But without a national system for tracking all concussions, there is no precise scope of the problem.

Dr. Bruce Hamilton-Dick, an orthopedic surgeon at Maine Coast Memorial Hospital in Ellsworth, says concussions occur when the brain, which floats in a fluid medium, rapidly decelerates and smacks against the inside of the skull. The impact causes the "stretching of neurons." While the neurons' metabolic needs increase, the blood flow to the brain decreases in reaction to the damage.

"So now you have this paradox," Hamilton-Dick says. "The brain cells are in need of extra energy at a time when they can't get it because the blood supply to the brain goes down."

The cells — which can control functions such as memory, vision, speech or mood — become impaired or nonfunctioning.

Berenyi can relay what happened after the collision only secondhand. He was told he got "really angry" on the sidelines. He couldn't remember he was at a soccer game or that he scored two

goals.

On the way to the hospital, Berenyi asked what day it was "probably a hundred times." Passengers repeated that it was Oct. 31, to which Berenyi would reply after a long pause, "Oh, it's Halloween?"

"Have you seen '50 First Dates?'" Berenyi asks, referring to the romantic comedy starring Drew Barrymore as a victim of short-term memory loss. "I was Ten Second Tom."

Berenyi laughs. You wouldn't know from his upbeat demeanor that the concussion took the star athlete out of sports for the rest of his senior year. A 2015 state champion in the 145-pound weight class, Berenyi missed wrestling season, complicating his goal to compete in college in the fall.

Dr. Bruce Hamilton-Dick, an orthopedic surgeon at Maine Coast Memorial Hospital, talks about concussions. PHOTO BY STEVE FULLER

"Honestly, I'm pretty good at talking about it right now, but it hasn't always been like this," Berenyi says. "It takes away everything you're good at because you can't really do anything. You question, what do I do, what am I, who am I?"

Beckett Slayton, a senior at George Stevens Academy in Blue Hill, can relate. A starting forward for the basketball team this past winter, Slayton scored 14 points to help George Stevens win its first Class C state championship in more than a decade. It was Slayton's first season on the squad after he suffered a concussion

two months into high school that sidelined him for the next year and a half.

“That was incredibly difficult for me because that’s kind of who I was going into school,” Slayton says. “I was really looking forward to sports.”

As Hamilton-Dick says is typical with long-term head injuries, Slayton’s story doesn’t revolve around one major blow. Slayton suffered his first concussion in seventh grade in a basketball game when he slid into a cement wall trying to keep the ball inbounds. He returned to playing sports two months later, but continued to feel that familiar “jarring” sensation. Anything from taking a hit in football to pump faking a shot in basketball could trigger it.

Slayton entered high school in 2013 and made the soccer team that fall. He can’t pin his concussion on one incident, but thinks the repetitive head balls may have exacerbated an existing problem.

Hamilton-Dick says there is an association between the number of concussions suffered and how long they last. Studies have shown those who have had more than five concussions recover at a much slower rate, also known as post-concussion syndrome.

“There are a number of people who have been knocked unconscious in a really horrific injury and, a week later, they’re totally asymptomatic,” Hamilton-Dick says. “Then, there are people who just kind of get bumped, and they go into this death spiral.

“It’s not about the violence of the hit.”

One head ball does stick out in Slayton’s mind. During a tournament, Slayton says he misjudged a ball and caught it on the side of his face, triggering “this weird deja vu.” He estimates the sensation lasted about 45 seconds before he regained awareness. He played four more games that day.

Oct. 26, 2013, is the day Slayton calls “the beginning of the end.” At the team’s next practice, a defender tried to clear the ball, and he

cleared it into Slayton's head.

"That's the genesis for not sending somebody back into a game who has had a bell-ringer," Hamilton-Dick says. "We now know that you cannot diagnose a concussion based on its initial presentation. You diagnose a concussion's severity based on the longevity of symptoms."

Dr. Sheena Whittaker, an MCMH pediatrician who works with athletes suffering from concussions, says the way schools deal with head injuries has "changed drastically in the last five years."

"At first, we didn't pay any attention to concussions," Whittaker says. "Everybody went right back out to play, so their brain injuries worsened."

In 2012, a Maine state law required that all school boards develop concussion management policies by mid-2014. The law mandated training for coaches, athletic administrators and other school personnel in the identification and management of concussions. It also prohibited concussed students from returning to the sport or classroom until cleared by a healthcare professional.

Sports are also evolving — even the one most commonly associated with concussions.

Ellsworth football coach Duane Crawford says tackling in football has "changed tremendously" since the 1970s, when he played for Mount Desert Island High School. Players were taught to put their helmet on their opponent's jersey numbers and drive through the ball.

Crawford can think of one teammate who may have suffered a concussion, though no one knew to call it that at the time.

"I'm thinking, 'Why didn't we get concussions back then?'" Crawford says. "Maybe some of us did, and we didn't know it. Now, we take the head out of everything that we possibly can."

Crawford is taking that a step further than the Heads Up program — a national initiative rolled out in 2013 by the Indianapolis-based nonprofit, USA Football, to teach players to keep their heads

Ellsworth football coach Duane Crawford teaches his players rugby-style tackling at a practice on June 28. The technique is meant to protect the players' heads and reduce the risk of concussions. PHOTO BY TAYLOR VORTHERMS

and eyes up when tackling. This summer, Crawford is teaching his squad rugby-style tackling, which removes the head from the equation.

On June 28, Crawford's players lined up facing each other for tackling drills. They were not wearing helmets — a tactic Crawford hopes will discourage reckless hits.

"Helmets don't stop concussions," Hamilton-Dick says. "All helmets do is diffuse the force so you don't crack your head open."

At the coach's signal, players took turns tackling each other in slow motion. They led with their shoulder, wrapped up at the thighs and spun to the ground with their teammate. Crawford adopted the idea from the Seattle Seahawks, whose coach Pete Carroll released an instructional video on YouTube to promote the techniques.

"As coaches, we understand that we need to do a really good job of protecting our players," Crawford says. "There are definitely

parents out there who don't want their kids to play football. They're afraid they're going to get hurt."

Hamilton-Dick says CTE, or chronic traumatic encephalopathy, is the question on everybody's mind.

Hamilton-Dick links the 2015 movie "Concussion" to some of the recent "hysteria" surrounding CTE. The film, based on a true story, stars Will Smith as Dr. Bennet Omalu — a Nigerian forensic pathologist who discovered CTE while conducting autopsies on professional football players in the early 2000s.

Hamilton-Dick says CTE — a progressive degenerative disease — and concussions are "two distinctly different things."

"Divorce the issues of CTE and concussions," Hamilton-Dick says. "CTE is an endpoint. You don't have one concussion and have CTE."

But no one can say exactly when CTE does occur. Hamilton-Dick says that, because the subjects of these autopsies have been almost exclusively professional athletes, the prevalence of CTE in the general population remains unknown.

"Football, soccer and hockey were all part of these people's lives growing up," Hamilton-Dick says. "So it becomes even harder to quantify."

Beckett Slayton never lost consciousness or forgot where he was, as Dagan Berenyi did. But more than two years later, Slayton still suffers frequent and severe headaches. He is still not cleared to play contact sports such as football or hockey.

"I wish I did have a better story because then it would validate me being out," Slayton says, noting that he regularly heard the phrase, "Suck it up," from both students and adults during his involuntary hiatus from sports. "The seriousness of the hit, how nasty the hit looks, is irrelevant to the damage it does to the brain."

Next week: Measuring damage at the cellular level is complicated. So is finding the right approach to recovering from a concussion. Athletes going through the process often feel isolated from their

peers, which can lead to secondary issues such as anxiety and depression.

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