

Sledgehead

Sledding Athletes Are Taking Their Lives. Did Brain-Rattling Rides And High-Speed Crashes Damage Their Brains?



By Matthew Futterman

On May 3, Pavle Jovanovic, a former bobsledder, rigged a chain to a crane he and his brother kept in the shop of their family's metal works in Toms River, N.J. He tied the loose end around his neck and hanged himself.

Jovanovic, an Olympian, was just 43, but already experiencing the shakes and tremors often associated with Parkinson's disease. He was also the third elite North American bobsledder to kill himself since 2013. Adam Wood, whose wife taped his anguished calls as his mental health deteriorated, so there would be a record, died by suicide in 2013 at age 32. The following year, Travis Bell, who competed for the United States in the late 1990s, took his life at age 42.

In addition, [Steven Holcomb](#), who in 2010 piloted the sled known as the Night Train to the first gold medal for the United States in bobsled in 62 years, died alone of an overdose [in 2017](#) after years of depression. He was 37.

Another Olympic medalist, Bill Schuffenhauer, sliced open his wrist in 2016, but was saved by his girlfriend.

In recent years, an increasing number of athletes, current and retired, in sliding sports, especially bobsled and [skeleton — a sister sport in which competitors slide headfirst](#) on a small sled made of metal and carbon fiber — have said they battle chronic headaches, a heightened sensitivity to bright lights and loud noises, forgetfulness and psychological problems.



Neuroscientists are trying to understand the dangers that sliding sports, particularly bobsled and skeleton, pose to the brain. Credit...Doug Mills/The New York Times

Only a few hundred people pursue sliding sports seriously in the United States and Canada at any time, which makes the prevalence of these symptoms and the early deaths, [which are often related to brain injuries](#), stark.

For years, the tight-knit sliding sports community has viewed brain injury as a problem for football and other direct contact sports. But [Jovanovic's deterioration and suicide](#), so soon after Holcomb's death, have forced it to confront difficult questions with uncertain answers.

Brain experts who have studied these athletes say the symptoms most likely stem, at least in part, from years of enduring the [notorious crashes, routine head banging, brain-rattling vibrations and strong gravitational acceleration forces](#) that are common in their sports.

The athletes even have a name for the exhausted fog that even a routine run down the track can leave them in. They call it "[sled head](#)," a term that troubles brain experts because they say it has normalized the classic symptoms associated with concussions and mild traumatic brain injuries familiar to football players and others who participate in high-impact spor

“The concussions from the major crashes get diagnosed,” said Dr. Brian Benson, the chief medical officer for the Canadian Sport Institute in Calgary, Alberta, who has been studying brain trauma in sliding sports for a decade. “The real concern is the concussion-like symptoms they experience because of the high speeds and the forces.” Benson compared it to [shaken baby syndrome, but for adults](#).

The question no one can answer, because accumulated brain injury is so hard to measure in real time, is how much is too much?

“How many times do you have to be hit to have the brain of Junior Seau?” said Dr. Ben Christiansen, a neuropsychologist with the Tanner Clinic in Salt Lake City, who has worked with N.H.L. teams and athletes in sliding sports. “We don’t know.” (Seau, an N.F.L. Hall of Fame linebacker, shot himself in 2012 and was later [found to have had the degenerative brain disease C.T.E.](#))

Wood thought he knew. A rising star in bobsled in Canada in the late 1990s and early 2000s, he experienced dozens of crashes and countless other whacks to the head.

He left the sport for good in 2007. He and his wife, Arysta Bogner-Wood, a fitness model, were a striking couple. They created [one of the early foam rollers](#) and built a successful business. From the outside everything looked perfect, even as mental illness engulfed Wood. Gentle, caring and a deep thinker as a young adult, he became increasingly rash, verbally abused his wife and drove around with a noose in his car.



Adam Wood of Canada, once a promising bobsledder, struggled with mental illness after his career and killed himself in 2013. Credit...Photo provided by Arysta Bogner

In September 2013, after trying to kill himself with an overdose of painkillers and psychotropic medications, he called Arysta from the mental health unit of a Calgary hospital. They decided to tape the conversation, to make a record of his head injuries. In a voice simultaneously self-assured and desperate, Wood talked about as many head injuries as he could remember, the limited treatment he received and the impulsive, occasionally violent, behavior that followed.

“You just don’t even have an idea that you are destroying your life,” Wood said to his wife on the phone.

A few days later, he called her again, this time to say goodbye. He was in Fish Creek Park in Calgary. She told him that he was loved and that they could get him the help he needed. Then she called the police. They found him the next day hanging from a tree. **Just days before Adam Wood took his life, he recounted for his wife the damage bobsledding had inflicted on his body and brain.**

Listen 0:35

‘YOUR HEAD IS INSIDE A JET ENGINE’

Seven years ago, a Canadian skeleton athlete named Alexis Morris began to think how strange it was that athletes in sliding sports so casually threw around the term “sled head.”

“They would say, ‘I got a real sled head today,’” Morris said. Then they would go take another run, and several more the next day. “You get sucked into thinking it’s not a big deal.”

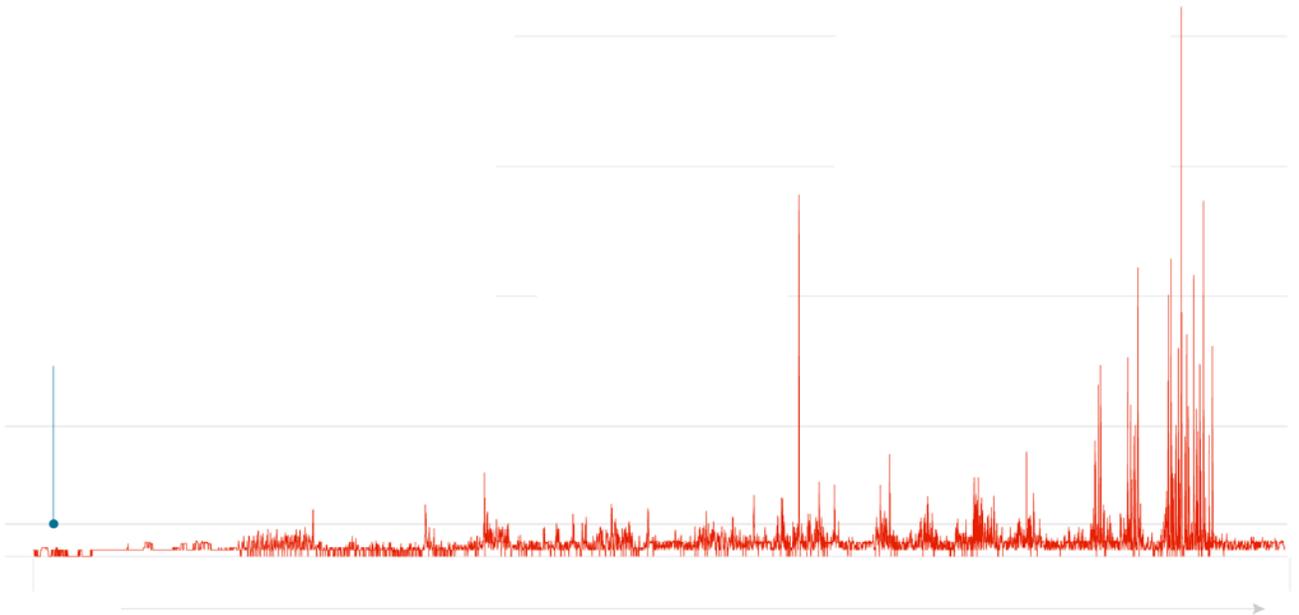
Morris thought it was a big deal, and not just because his wife is also a skeleton athlete. He is an [associate professor of physics at Mount Royal University](#) in Calgary.

“I need my brain,” he said.

On Feb. 22, 2013, Morris attached an accelerometer to his helmet, then launched his body down a 1,500-meter track at the sliding center in Whistler, British Columbia, [which is considered the fastest track in the world](#) and was a venue for the 2010 Winter Olympics.

Measuring a Ride Down the Ice

These are g-force readings from the helmet of Alexis Morris on a skeleton run down the Whistler Olympic track. High g-forces for extended periods can be harmful to the body. Morris experienced extremely high ones, but only for milliseconds.



Tracking g-forces on a skeleton run

84.5 g

High speed and fatigue at the end of the run made it impossible for Morris to keep his head from dragging on the ice in Corners 14, 15 and 16, creating a series of high g-force readings, topping out at 84.5 g.

Source: Alexis Morris, former Canadian skeleton athlete, associate professor of physics at Mt. Royal University in Calgary. Morris used an accelerometer, called a g Force Tracker, on his helmet to measure g-forces 3,000 times a second.

By The New York Times

The run was routine, with speeds of 70 to 80 miles per hour and gravitational acceleration forces, or g-forces, as they are referred to, mostly five to 10 times what a person feels walking down the street. But in many of the twisting corners, the g-forces spiked, as high as 84.5 g in Turn 16, as his neck tired and his helmet ground on the ice, undergoing a series of fierce rattles, if only for a few milliseconds.

“You are in a straightaway, and your head is off the ice, and then the g-force sends your face slamming into the ice,” he said. “It’s a real problem.”

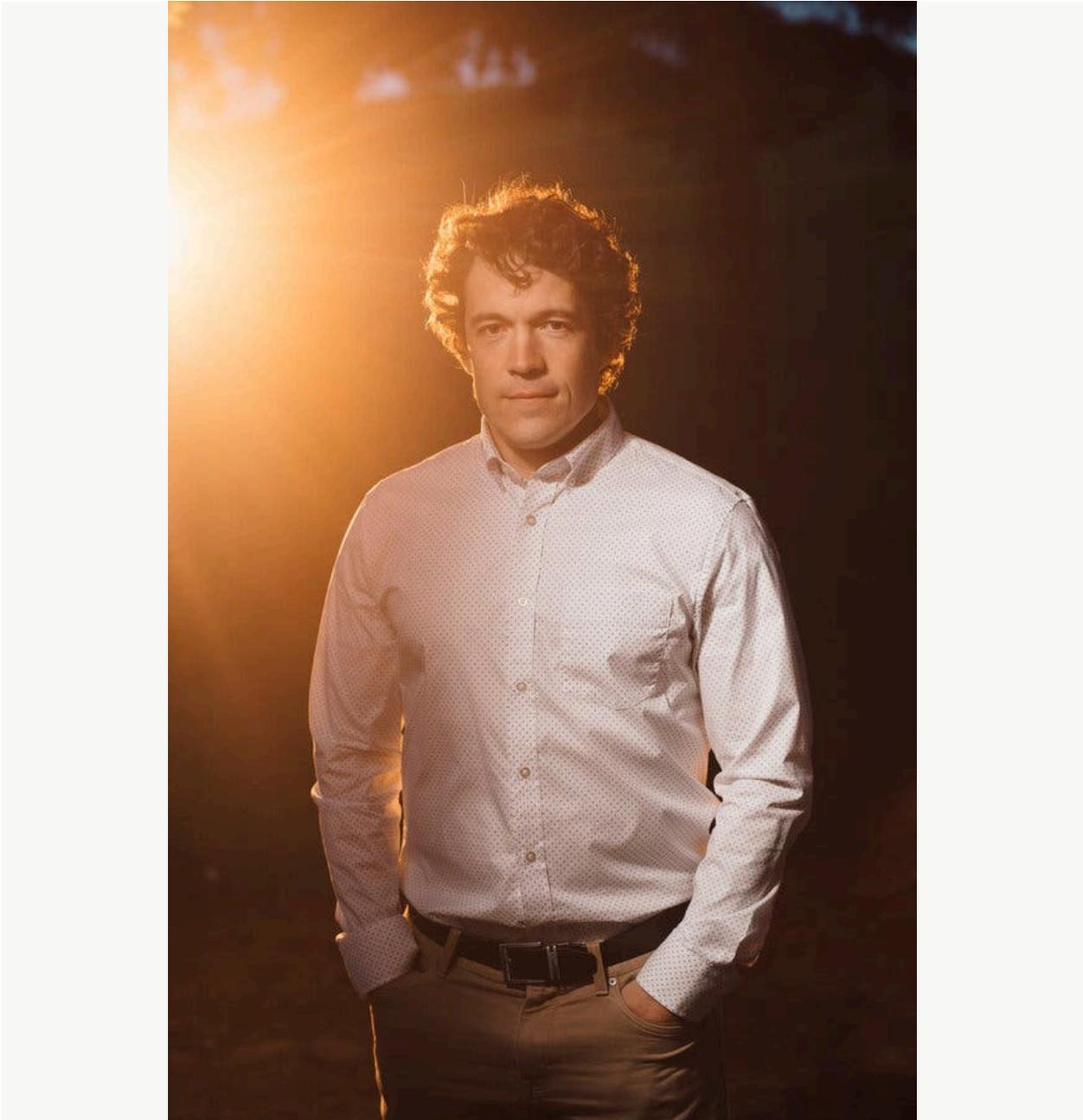
A bobsled run produces similar forces and other dangers.

When the [1,400-pound sleds crash](#), they careen out of control at 80 m.p.h. with two or four people aboard. No one is wearing a seatbelt. Heads slam into walls, into other heads and into the sled itself. Ultimately everyone slides down the rest of the way, often underneath the sled, their helmets grinding along the ice at speeds as fast as 60 m.p.h.

“Your head is inside a jet engine,” Wood told his wife on that phone call from the hospital recounting his crashes. “Your vision is white. You’re getting destroyed.”



A helmet belonging to Alexis Morris, a skeleton athlete, bears scuff marks from hitting the sled. Credit...Amber Bracken for The New York Times
Image



Morris is a physicist who has taken measurements of the force the body endures on the sledding track. Credit...Amber Bracken for The New York Times

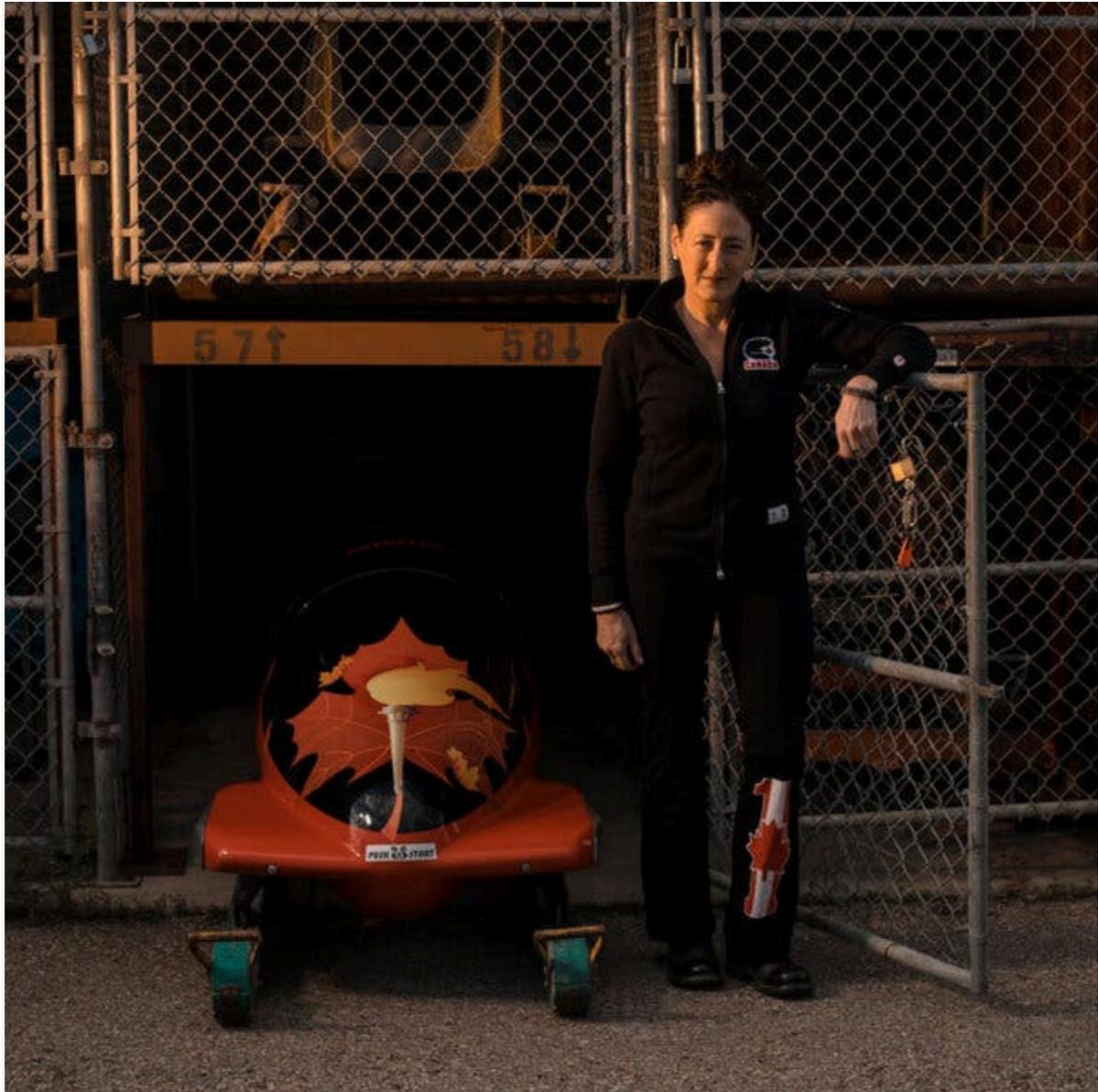
Even on a routine run without a crash, the bobsled whips in and out of the tighter turns, and heads slap hard against its fiberglass side.

[Lugers](#), who slide feet first and reach the highest speeds, experience some of the same forces, but seem to suffer far fewer concussion-like symptoms than bobsled and skeleton athletes do, probably because a support strap often prevents their heads from banging into the ice.

While experts believe sliding sports pose significant dangers to the brain, even the leading neuroscientists readily acknowledge how much they do not know. A team of scientists at Boston University expected Wood's brain [to show signs of C.T.E.](#), but it did not. Neither did Holcomb's, though that may be irrelevant.

“Not every symptom we see in former football players is because of C.T.E., but [they are still the result of repeated impacts to the head](#),” said Dr. Robert Stern, the director of clinical research for Boston University's C.T.E. Center.

[Christina Smith](#), a Canadian bobsledder who competed in the 2002 Olympics, retired from the sport in 2004. For years after retiring, she struggled with depression, moodiness, memory loss and sleep problems. Scans of her brain, measuring its electrical function, revealed damage to the rear and frontal lobes. Neuroscientists said it was most likely the result of micro tears in the brain's white matter.



Christina Smith competed in bobsled for a dozen years and represented Canada in the 2002 Olympics. Scans later showed damage to the rear and frontal lobes of her brain. Credit...Amber Bracken for The New York Times

“It’s not a surprise to me that bobsled and skeleton athletes have a huge amount of repetitive mild brain trauma, and it’s not an incredible leap to say that would lead to these kinds of symptoms and cause incredible disruption of emotional regulation,” Stern said.

Whatever attention leaders of sliding sports have given to brain health has mainly been focused on addressing injuries related to crashes rather than the long-term effects of the training and the competition.

In an email, Aron McGuire, who became the [chief executive of the U.S.A. Bobsled and Skeleton Federation](#) in January, said: “We recognize that there are inherent risks in all sports. We emphasize education and prevention first when it comes to injuries, which includes brain injuries.”

The organization puts active, elite athletes through [cognitive tests](#), as do Germany and Canada, but it ultimately relies on athletes to report their symptoms to team officials, a move that can sideline an athlete for months. A definitive answer on the direct danger sliding sports pose to the brain may always be elusive. Plenty of former athletes in sliding sports are not struggling with long-term symptoms related to brain injuries, and many of those who are also played contacts sports growing up.

All of them have probably heard of [Eugenio Monti of Italy](#), a six-time Olympic medalist in the 1950s and 1960s and perhaps bobsled’s greatest legend. He cost himself silver medals in 1964 when he helped competitors fix their broken sleds, lending one a critical bolt.

In his twilight years, Monti developed Parkinson’s disease. On Dec. 1, 2003, he fired a single gunshot into his head. He was 75.

‘A GUY I WANT IN MY FOXHOLE’



Nick Jovanovic, whose brother, Pavle, hanged himself earlier this year, holding Pavle's Olympic jacket and helmet, which he had just found. "I didn't even know he had this," he said. Credit...September Dawn Bottoms/The New York Times

Pavle Jovanovic, the Olympian who hanged himself in May, was working as a bouncer at a Jersey Shore bar in 1997 when a scout from U.S.A. Bobsled and Skeleton got him to try pushing a sled on a [portable push-track](#) the federation had set up on the boardwalk.

Jovanovic was a 20-year-old linebacker and engineering major at Rutgers. He was 6-foot-2, about 215 pounds, and plenty fast, but it was how he ran, his low turnover, his feet digging into the ground with every step, that made him special. That grinding running style allowed him to transfer his strength and speed into the power necessary to push the massive sled. Within a few years he was among the top push athletes in the world.

He trained relentlessly. He could squat 550 pounds and bench press more than 300. After lifting weights for hours, he would make his brother, Nick, put his car in neutral and steer as he pushed it around the neighborhood. He loved traveling the world.

Hurtling down icy tracks at 80 m.p.h. took some getting used to. Nick Jovanovic once asked Pavle what it felt like. Pavle told him that he sometimes lost consciousness, that the run would end and he could not remember what had happened. The dangerous tracks scared him, especially when the sled hit the walls.



Jovanovic, Steve Mesler and Brock Kreitzburg pushed for Todd Hays on the Americans' top sled at the 2006 Olympic Games in Turin, Italy. Credit...Getty Images

“It’s like you’re in a blender and a tornado at the same time,” Pavle Jovanovic told his brother.

In spring and summer, when they lived and trained in Calgary, Pavle and his teammates spent afternoons [soaking their bodies in the Bow River](#) after training. He had an easy peacefulness outside the gym, and unmatched intensity when it was time to train or compete.

Six weeks before the 2002 Olympics, with his sled favored to win a medal, Jovanovic’s career hit a bump. He [failed a drug test](#) after making a protein shake from a tainted mix. He was suspended for eight months. He appealed, knowing he would most likely lose and be hit with a two-year suspension, but he did it because he felt compelled to make people understand he had not knowingly cheated. His teammates wore hats with his name on them when they won the silver medal in Utah that February. In 2006, the company that made the protein shake paid him \$400,000 to settle a lawsuit he filed against it.

When he returned in 2004, Jovanovic was as strong as ever.



After serving a two-year suspension for doping that many in the antidoping movement today say was unjust, Jovanovic, second from right, once again became one of the world's top push athletes. Credit...Getty Images

“You talk about a guy I want in my foxhole, Pavle was it,” said John Morgan, a former bobsledder and longtime NBC commentator.

His sled, piloted by Todd Hays, excelled on the World Cup circuit. Jovanovic finally made it to the Olympics in Turin, Italy, in 2006. After his sleds finished a disappointing seventh, he decided to try for the 2010 Vancouver Games.

His sleds won five times in the next two seasons, but a foot injury kept him from making the 2010 Olympics. Watching on television, Jovanovic cried as his teammates won the gold medal pushing for Holcomb, his brother said. It hurt, but not nearly as much as what was to come.

‘THE BRAIN IS NOT MEANT TO SHAKE, RATTLE AND ROLL’



In 2010, Steven Holcomb, left, piloted the United States to its first gold medal in bobsled in 62 years. He began bobsledding at 18 and battled depression for much of his adult life. Credit...Chang W. Lee/The New York Times

By 2017, even stars like Holcomb were questioning the safety of the sport.

Holcomb, who had long suffered from depression and sleep problems and struggled to manage his drinking, told friends he was concerned about what nearly 20 years of bobsledding had done to his brain. On May 6, 2017, Katie Uhlaender, his close friend and teammate, [found him dead at 37](#) in his room at the Olympic Training Center in Lake Placid, N.Y. The coroner said the cause was a lethal mix of alcohol and sleep medication.

“A tragic miscalculation,” Holcomb’s mother, Jean Schaefer, said of her son’s death.

Schaefer later found on Holcomb’s computer research he had done on brain health, as well as communications and newsletters he had received from the Parkinson’s Disease Foundation, something that doesn’t surprise Randy Will.

Image



Randy Will, who competed and coached in bobsled and skeleton for more than a decade, said by the end, he saw stars nearly every time his head hit the sled coming out of a turn. Credit...Eve Edelheit for The New York Times
Image



Will's tattoo acknowledges his Olympic career in sledding sports. Credit...Eve Edelheit for The New York Times

Will, 51, competed and coached in bobsled and skeleton for more than a decade, making three Olympic teams. He once wrote suicide notes but got treatment instead. Will struggles with certain motor functions and neurologists have found he has Parkinson's.

Adam Wood's career lasted about half as long as Holcomb's. He started in 1996 as a teenager. On the recorded call with his wife, Arysta, he said that during that first season he crashed on the fourth turn on the Calgary track. He banged his head so many times the rest of the way down he could not lift his arms when he came to a stop

He spoke about crashing as many as 15 more times while competing from 1999 to 2002. He said a crash in St. Moritz, Switzerland, in 2002 launched him from the sled and knocked him unconscious.

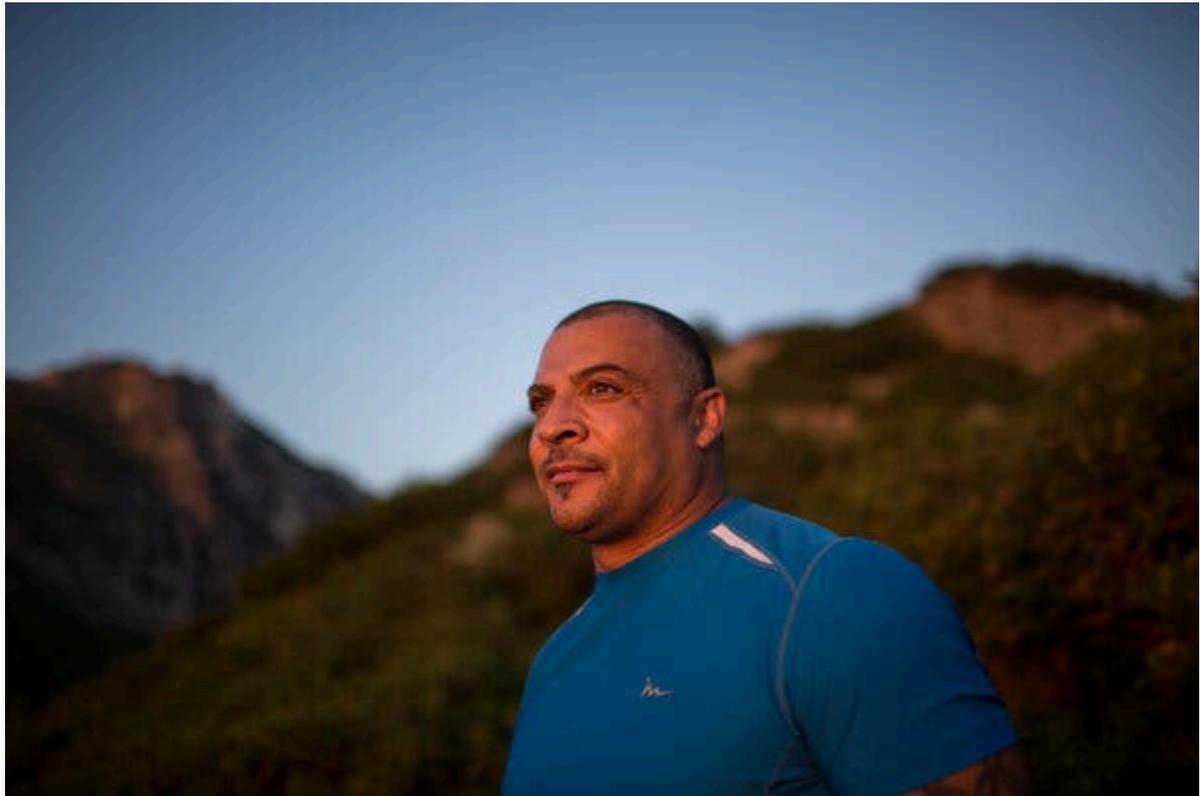
He started college and could not handle entry level math, even though he had managed calculus in high school. A 2007 training trip to Lake Placid left him glassy-eyed and in a fog. That spring, on one of his first dates with his future wife, Arysta, he told her, "I'm not going to live very long."

After a 2013 trip to Australia, New Zealand and Taiwan, Wood couldn't sleep. Arysta would find him writhing on the floor in pain. Psychiatrists treated him with lithium and medications for bipolar disorder.

"The sparkle in his eyes had left him," she said. "It was not Adam anymore."

That summer, Wood told his wife he was having dark thoughts about hurting her. He traveled to Calgary to see a brain injury specialist. While there, he attempted suicide with an overdose. A few days later, after a brief stay at a hospital, he called again from the park.

"I did everything in my power to try to help him," Arysta said.



Bill Schuffenhauer, a three-time Olympian in bobsled, spiraled in retirement, battling addiction and attempting suicide in 2016. Credit...Natalie Behring for The New York Times

The next year, in 2014, Bell, once a rising star, took his life. Two years later, in 2016, Earl Shepherd, whose career overlapped with Bell's, died of an overdose of heroin and fentanyl at 46. That same year, [Schuffenhauer, who became addicted to painkillers and alcohol](#) after his third and final Olympics in Vancouver, attempted suicide.

"The brain just isn't supposed to shake, rattle and roll like that," Schuffenhauer said.

NO MORE ANSWERS



Nick Jovanovic has been struggling to make sense of his brother Pavle's suicide on May 3. Credit...September Dawn Bottoms/The New York Times

Pavle Jovanovic completed his degree from Rutgers in 2010 and began working with his brother in the family metal works, where they did steel framing and also managed artisanal projects.

"The guy could look at a blueprint and do all the calculations for what we needed in his head," Nick Jovanovic said of his brother. No matter how complex the job, in those first years, Pavle could always come up with the answer.

As the years passed though, Pavle Jovanovic became someone Nick didn't recognize. He drank heavily and grew moody. He had never been in trouble with the law before, but the police in his Jersey Shore town received more than a dozen complaints about him,

everything from drinking and harassing customers at restaurants to conflicts with ex-girlfriends.

At work, he began to lose his ability to do the simple mathematical calculations required to cut metal correctly.

On a Saturday afternoon in 2017, Nick Jovanovic stopped by the metal works shop, where Pavle and two employees were working on a railing. Nick told Pavle he wasn't doing it correctly. Pavle grabbed Nick and threw him into a wall, then pounced. Only when he saw his older brother's face bleeding did Pavle snap out of his fury.

He did a series of stints at a mental health center, where he was treated for alcoholism, depression and bipolar disorder.

After his last stint there, in 2018, he seemed to show progress. Last fall, he and his brother went to dinner in Atlantic City. "It was a decent night," Nick Jovanovic said.

But through the winter Pavle began to fade. He got rid of his cellphone and began sleeping on the couch at the metal works. Then, on April 6, Nick Jovanovic noticed his brother shaking under a trailer as he held a welding torch, trying to perform what would be their last job together.

"I kept asking him if he was OK, telling him he could stop and I would finish up," Nick said. "He kept saying, 'Don't worry about it. I got it.'"

Going through his brother's prescriptions after his suicide, Nick Jovanovic found bottles of pills to treat his mental health problems, and one for Benztropine, a drug used to treat the shakes and tremors that people with Parkinson's or on antipsychotic medications often experience.

"I think he knew that things were not going to get better," Nick Jovanovic said. "He didn't have any answers anymore."



Pavle Jovanovic's Olympic jacket and helmet. Credit...September Dawn Bottoms/The New York Times