

THE CrossFit JOURNAL

February 2015

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THE CrossFit JOURNAL

VIRTUOSITY

Virtuosity 4: Reclamation

After years of hip dysfunction, an athlete uses CrossFit to recover athleticism she thought was lost forever.

By Michael Clift

February 2015



Michael Clift

Three years ago, my wife Sarah had surgery to repair a severe labral tear in her left hip. The surgery came after seven years of pain, four visits to family doctors who failed to diagnose this uncommon injury, and one secret admission to herself: She would never again be able to enjoy an active lifestyle.

But life has a way of giving back to those who refuse to accept defeat, and after an accurate diagnosis and a successful surgery, my wife found CrossFit brought her out of the desolation to which she had once resigned herself.

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Rebuilding With CrossFit

In 2004, Sarah injured her hip during an accidental fall. The rarity of her particular injury rendered its diagnosis challenging, and for the next seven years she suffered. As the injury worsened, she lost the ability run and jump, and after years of compensation, she could no longer even walk without a limp. She was forced to give up many of the activities that she had grown to love, including many we had enjoyed together throughout our marriage.

After successful surgery, Sarah began a long and grueling recovery process. After almost a year of rehabilitation and physical therapy, she joined a CrossFit gym for the first time. Though she could barely do an air squat, Sarah refused to quit. Just a few weeks later, she set her first post-surgery PR in the back squat. While she racked only 75 lb. after that rep, she removed far more weight from her shoulders than one could see on the barbell. For the first time, she realized full recovery was attainable and CrossFit could deliver her to that end.

That was two years ago. In the time that has passed, I have watched Sarah build not only her physical strength but also confidence in her ability to succeed in all aspects of life. Her progress and attitude have been inspiring and infectious as we train in our basement gym.

CrossFit has given us so much more than just a few numbers on the whiteboard. It has enabled our return to an active lifestyle that had been so elusive for seven years. We can once again run, hike, bike and ski together. Perhaps more importantly, CrossFit has shown us how to approach challenges in our personal and professional lives. We never give up, no matter how long the odds or difficult the circumstances. PRs can happen in and out of the gym.

Success, no matter how light the dose, is powerful, addictive and contagious. Every day, in boxes and garages around the world, CrossFit athletes watch a person accomplish something that was once considered impossible. Whether it's a 75-lb. back squat or a 300-lb. snatch, achieving at the highest limit of one's potential may well be the only thing in CrossFit that remains constant and invariable.



Submission Guidelines

To be considered for publication, authors must satisfy the following:

1. Articles must be original, unpublished works. Authors of selected submissions will be supplied with legal documents to be filled out prior to publication.
2. Articles must be submitted in Word documents attached to an email. Documents should not contain bolding, italics or other formatting. Please submit in Arial font.
3. Articles can be 500 words maximum.
4. Each article must be accompanied by at least one high-resolution photograph to illustrate the story. The photo can feature the coach, the affiliate, the community—anything that illustrates the article. Photo guidelines are as follows:

- A. Photos must be original and owned by the person submitting. Photos taken by others may be submitted provided the owner has given permission.
- B. Photos must be in focus, well lit and free of watermarks. Minimum file size is 1 MB. Please review your camera's settings to ensure you are shooting high-resolution images. Cell-phone photos and thumbnails are not accepted.
- C. Photos must be attached to the email as JPEG files. Do not embed files in Word documents. Photo file names should list both the name of the subject and the name of the photographer in this format: SubjectName-PhotographerName.jpg. Examples: JohnSmith-JaneDoe.jpg or CrossFitAnyTown-JimJohnson.jpg.

Virtuosity@crossfit.com is open for submissions. Tell us why you train where you train, and do it uncommonly well.

THE CrossFit JOURNAL

Eschewing the Fat

Many trainers avoid addressing the topic of nutrition with clients. Top CrossFit coaches think that's a mistake and explain how and why they broach the subject with athletes.

By **Andréa Maria Cecil**

February 2015



Dave Re / CrossFit Journal

Alyssa Guenther thought her coach was crazy.

A vegetarian of four years at the time, Guenther often felt sick—upset stomach, headaches, general lethargy.

"I was feeling the downward slope," she recently explained.

1 of 7



DaveRe / CrossFit Journal

In the CrossFit's Theoretical Hierarchy of Development, nutrition is the foundation of athletic performance. Every other component—metabolic conditioning, gymnastics, weightlifting and throwing, and sport—relies on that foundation.

Still, when CrossFit Roots owner Nicole Christensen asked Guenther about her diet and suggested she consider adding meat—specifically via a Paleo challenge—she was met with skepticism.

"I was kind of like, 'Ugh. Yikes. I'm going to get sick,'" Guenther remembered. "I felt like being a vegetarian (was) part of my personal identity. I felt like it was going to be changing a lot. It definitely gave me pause for a while."

But Christensen was thoughtful about her approach.

"It's important to first find out why the person is eating the way they are. Are they eating vegetarian because of religious or moral reasons in regards to animals, or do they want to be lean and think that eating a vegetarian diet will get them there? If it's the latter, it's an easy point to start a discussion," she said.

Christensen knew Guenther's goals included being a lean and strong CrossFit athlete. Armed with information and support, Christensen felt Guenther could start to consider making the switch.

She was right. And Guenther added meat back into her diet.

"I'll do almost anything that you tell me if eventually it's going to help me be healthier and fitter," she explained.

Christensen—a member of CrossFit's Level 1 and Level 2 seminar staffs—said she started with the goal and worked backward.

CrossFit coaches often ignore nutrition or deem it too sensitive a topic to broach. Therein lies the mistake, Christensen said.

"I posed the question as, 'If you could be leaner and stronger and better at CrossFit by eating meat, would you consider it?'"

Nutrition is the base of CrossFit Inc. Founder and CEO Greg Glassman's Theoretical Hierarchy of Development pyramid. Yet, CrossFit coaches often ignore nutrition or deem it too sensitive a topic to broach. Therein lies the mistake, Christensen said.

"A lot of affiliates are doing their members a disservice (by) selling them CrossFit as a stand-alone thing and not giving their athletes, as a starting point, (education about nutrition)."

CrossFit coaches must go beyond only concerning themselves with how much an athlete can deadlift, said Maggie Tincher (formerly Dabe), of CrossFit Fairfax and CrossFit Reston in Virginia.

"We wouldn't be actually giving them all the services that we can," explained Tincher, a member of CrossFit's Level 1 Seminar Staff. Coaches must help clients understand that "whatever they eat affects their performance, and if they want to become better athletes, they need to change the eating habits."

Politics, Religion and Nutrition

In October 2002, Glassman explained the pyramid in the CrossFit Journal article "What Is Fitness? Less than two years later, in May 2004, the Journal published "CFJ Issue 21: Zone Meal Plans." It included an explanation of the Zone Diet, as well as sample meals. The article, reproduced in its entirety, became a key part of the "CrossFit Level 1 Training Guide."

"It's easier to change people's religion than it is their nutrition."

—Ben Bergeron

"Finely tuned, a good diet will increase energy, sense of well being and acumen, while simultaneously flensing fat and packing on muscle. When properly composed the right diet can nudge every important quantifiable marker for health in the right direction," Glassman wrote. "Diet is critical to optimizing human function."



Agust Sigurjonsson / CrossFit Journal

In addition to coaching physical performance, CrossFit coaches have a responsibility to educate clients about nutrition as well.

So why the trepidation to address it?

"Everyone is an expert on nutrition because everyone's been eating since they were babies," explained Ben Bergeron, owner of CrossFit New England in Massachusetts and a former member of CrossFit's Level 1 Seminar Staff.

Nutrition is woven into tradition, heritage, culture, even religion.

"It's really ingrained in people," he continued. "It's easier to change people's religion than it is their nutrition."

At CrossFit Fairfax and CrossFit Reston, the boxes' diverse membership means trainers must be cognizant of foreign customs and, therefore, different ways of eating. Athletes at those boxes are from Asia, the Middle East and South America, to name a few regions.

And over the years talking about nutrition has gotten intense, Tincher said.

"We've had clients come to the office just crying (about whatever issues they have with food.)"

Austin Malleolo—a four-time CrossFit Games competitor, Level 1 and Level 2 seminar staff member and head coach at Reebok CrossFit One in Massachusetts—said he understands why nutrition can be a touchy subject.

"Eating is a social thing, and it's tied to fun, it's tied to letting loose, it's tied to excitement. I think that's why it's so hard," said Malleolo, who in October 2014 opened his own affiliate, CrossFit One Nation.

Malleolo likened changing someone's eating habits to trying to convince a 30-year powerlifter to do CrossFit. It's an uphill battle.

"I think it's one of the most difficult things to do consistently and get change," he said, "because you have no control over what people do outside the gym."



Brian Sullivan/CrossFit Journal

CrossFit Roots owner Nicole Christensen said coaches have to be invested in their clients' nutrition if they want to see them succeed.

The Approach

Once a person walks through the doors, the goal is simply to get him or her to focus on CrossFit for the first few weeks, Tincher said.

"Once I establish a relationship with them, then I start asking them questions about their nutrition."

She continued: "If that client doesn't have any type of connection, if they don't feel like you care, they won't be sharing the way that they eat."

Getting athletes to make significant changes to their diet requires care and consideration, Christensen said.

"You expect a lot of your athletes, but you have to be reasonable that this style of eating is a complete shift for them."

"You expect a lot of your athletes, but you have to be reasonable that this style of eating is a complete shift for them."

—Nicole Christensen

Christensen added: "You have to really care about their success because it really is a 24/7 thing."

The nutrition challenges at CrossFit Roots, for example, involve groups of athletes being assigned to the affiliate's coaches. Those athletes must keep a food log and may email, text or call the coaches regardless of the time—day or night.

"It's exhausting, I'm not gonna lie," said Christensen in early November 2014, shortly after her affiliate started a nutrition challenge. "I've been looking at food logs every day."

Most CrossFit Roots members who participate in the recurring nutrition challenges—which last anywhere from four weeks to eight—continue eating in the same fashion

once the challenge ends. Any affiliate owner will tell you that's an impressive success rate.

"Maybe one out of 40 people will just fail," Christensen said.

At the get-go, coaches email participants a 17-page packet that outlines the challenge's rules, information about which foods and beverages are off limits, as well as sample meals.

But before all that, new members receive an introduction to nutrition via CrossFit Roots' Foundations Course. After both the fifth and sixth classes—out of nine—coaches email reading material explaining how people get fat, the importance of quality of food and the CrossFit Inc.-recommended Zone Diet. In the final 15 minutes of each of those Foundations classes, coaches discuss CrossFit Roots' approach to nutrition.

"About 50 percent of our intro session is on nutrition," Christensen explained. "We don't talk about hormones or the body's response to food. We go one level higher as a start point."

Sometimes, the affiliate's blog will focus on nutrition and coaches will informally chat with athletes about the post during warm-up. Also, members can always sign up for a month to work with a coach on their nutrition.

"If you really want them to make a change, you have to care enough," Christensen emphasized.

At Reebok CrossFit One, coaches bring up the topic of nutrition once a month and ask members if they're interested in sitting down with a coach for further discussion. If they're agreeable, athletes meet individually with a coach and bring a five-day food log so they can discuss what would be best going forward, Malleolo explained.

Contrary to CrossFit Fairfax, CrossFit Reston and CrossFit Roots, where regular nutrition challenges draw upward of 50 participants, similar efforts were not met with similar outcomes at Reebok CrossFit One. The affiliate has gone so far as to track triglyceride levels before and after a nutrition challenge, but most members simply didn't stick with that way of eating, Malleolo said.

"It doesn't become an impetus to a life challenge. It just becomes a challenge," he said. "I want to be able to see a life challenge."



Once solid nutrition is in place, athletes find more success in the gym.

Malleolo said he also wants such challenges to inspire people.

"But the reality is people who are inspired by (nutrition) challenges are going to seek me out. They will be the ones raising their hand and saying, 'I want to sit with coach and talk about nutrition.'"

In other words: They must be ready to change.

"You'll come to me when you're ready," Malleolo said.

Still, he expressed frustration at the number of athletes who simply don't care about nutrition. Out of Reebok CrossFit One's 500 members, roughly 10 religiously follow the Zone Diet, and more than 50 regularly eat whole foods.

"I have a hard time giving people everything I have (who) don't care. If you come up to me, I will give you everything I have," he said. "I'm also not going to drag you by your ear into the gym."

Measurable, Observable, Repeatable

After her conversation with Christensen, Guenther, the vegetarian, started the six-week Paleo challenge—with meat—at CrossFit Roots. Four weeks in, she applied the Zone Diet to her regimen. The difference was profound.

"I just started noticing my energy levels changing, my body composition changing, hitting a lot of PRs at the gym really, really fast," she said. "I started feeling better than I really ever had."

Guenther lost about 2 percent body fat, gained 2 lb. of lean muscle mass and improved her front squat by a whopping 50 lb.

"My legs took a different shape, my waist got so much smaller, the bloat was just gone, my stomach felt so much flatter and smaller," Guenther continued.

And, best of all, she shed her standard feeling that she was going to crash during the workout.

Guenther went from thinking Christensen was crazy to singing her praises.

"If you're going to ask someone to potentially make a life change when it comes to nutrition, then you better be doing it or have done it yourself."

—Austin Malleolo

"She's such a good teacher and such a good example."

For her part, Christensen credited her affiliate's attention to detail as the reason so many CrossFit Roots members find nutritional success long after a challenge has ended.

"I think the leading reason is the thoroughness of the accountability and the example of the coaches," she said.

Being a good example is key, Malleolo said.



Dave Re / CrossFit Journal

Head coach at CrossFit Reebok One, Austin Malleolo said an athlete has to be ready to make a change in his or her nutrition in order to be truly successful.

Dave Re / CrossFit Journal



Athletes will thrive in CrossFit if they pair hard training with great nutrition. Trying to fuel top performance with a poor diet is a recipe for failure.

"If you're going to ask someone to potentially make a life change when it comes to nutrition, then you better be doing it or have done it yourself. It's the demonstration of the program. I live what I ask people to do. And my coaches do as well," he said.

"I can tell you exactly what you're going to feel like two weeks into the Zone. You're gonna feel like shit—not because it's bad for you but because your body's changing."

Malleolo emphasized: "You have to do it. You have to actually do it."

Then it becomes easier to explain how athletes will thrive in CrossFit if they pair it with weighing and measuring their food, he said. One without the other misses an important component.

"It's the same as constantly varied functional movement—at low intensity. No. You need all three variables," Malleolo said. "When you do it, cool shit happens. It works."



About the Author

Andréa Maria Cecil is a CrossFit Journal staff writer and editor.

MIKE WARKENTIN

THE END OF TOLERANCE

CrossFit questions the leadership of the fitness and exercise-science communities.



THE **CrossFit** JOURNAL

All photos: Dave Re/CrossFit Journal

“Consume the maximal amount that can be tolerated.”

The line seems innocuous at first, just a recommendation in a [1996 position stand](#) on hydration published by the American College of Sports Medicine (ACSM).

But if you read it a few times, the words don't sit well.

Their imprecision alone seems enough to disqualify them from a publication titled *Medicine & Science in Sports & Exercise*, the ACSM's “flagship monthly journal.” Far from scientific, the words sound more like the kind of thing you'd hear a bad personal trainer tell a client at a water fountain between sets.

Consider this farcical, tragic and extreme application of drinking to tolerance: On Jan. 12, 2007, a radio station in California asked listeners to consume the maximum amount of water they could tolerate without urinating. At KDND 107.9, participants in the Hold Your Wee for a Wii contest were first given 8-oz. bottles of water to drink every 15 minutes. The bottles increased in size as participants dropped out. The winner would receive a video-game console.

Later in the day, participant Jennifer Strange, 28, died of water intoxication, also known as hyponatremia, after speaking to a co-worker about the extreme pain she was experiencing.

Prior to the 1970s, hyponatremia was almost unheard of. And while not common today, it is not nearly as rare as it should be. It occurs when a person consumes so much fluid that the body's sodium becomes diluted, causing swelling of the cells and intercranial pressure. It's a painful condition that can result in everything from seizures to death.

You can perhaps blame Strange's death on a foolish contest, but athletes have also died following questionable hydration guidelines. Updated by the ACSM in 2007, the guidelines [are still woefully inadequate](#). Misinformation and bad science persist, and people still suffer.

Last August, Zyrees Oliver, 17, died in Georgia after consuming 2 gallons of water and an equal amount of Gatorade after cramping up in football practice. According to [news reports](#), Oliver believed the cramps were related to dehydration. Sadly, [researchers don't know what exactly causes muscle cramps](#), so Oliver's fluid intake was probably as pointless as it was injurious.

Also in August 2014, football player Walker Wilbanks, 17, died of hyponatremia in Mississippi. In August 2008, 17-year-old football player Patrick Allen died of hyponatremia in California. And there are others.



Some members of the exercise-science community have simply ignored the fact that current hydration guidelines don't stand up to scrutiny.



Expert Tim Noakes has suggested over-hydration issues could be eliminated simply by telling athletes to drink to thirst.

So why do people drink too much? Stupid contests are one answer. But another answer is that authorities in the medicine and exercise-science communities have told people to drink “the maximal amount that can be tolerated” in the interests of safety and athletic performance. Athletes have also been told to drink before they’re thirsty, and to consume sports drinks to maintain sodium levels. Interestingly, the authorities producing these guidelines are sponsored by Gatorade and the Gatorade Sports Science Institute.

Cases of exercise-associated hyponatremic encephalopathy—EAHE, or brain swelling related to over-hydration—have been seen [when people are told to drink when they aren’t thirsty](#), according to Tim Noakes and D.B. Speedy. Noakes is also the author of “Waterlogged: The Serious Problem of Overhydration in Endurance Sports.” For example, in the ‘90s the U.S. Army

instituted hydration guidelines for personnel, and incidences of EAHE increased, prompting reduction of the intake requirements in 1998. After the change, rates of EAHE fell.

It doesn’t take a genius to see an obvious question: If Noakes says EAHE can be prevented “simply by always drinking to thirst,” shouldn’t we be concerned when athletes still follow other guidelines based on questionable science?

If the answer is yes, shouldn’t we be horrified when athletes die?

Why Does This Matter to You?

Intelligent human beings will ask why hydration guidelines are so confusing or erroneous as to put athletes at risk.

Trainers concerned with athletic performance will want to know exactly how to keep athletes safe and help them perform optimally.

Science-minded individuals will wonder what research supports current hydration recommendations when the British Medical Journal in 2012 launched a “[shock and awe assault](#)” on the demonstrably questionable science behind the sports-drink industry.

Health-care professionals will take notice of Mitchell H. Rosner and Justin Kirven’s contention that [dangerous conditions are actually caused by established guidelines](#): “EAH can be viewed as an iatrogenic condition because of the prevailing view that exercising athletes should drink as much fluid as tolerable during a race.”

All this matters to CrossFit trainers because they make a living on precision: Clients are getting fitter or they are not, based on the numbers on the whiteboard. These trainers should be concerned that the American College of Sports Medicine (which is actually neither a college nor a medical body) allows questionable hydration guidelines to exist, and they should be concerned by a lack of precision equivalent to that of the National Strength and Conditioning Association (NSCA), a leading sports-science organization that can’t decide how humans should squat and has never defined “fitness.”

The NSCA’s lack of precision was on full display in an article recently published in the organization’s [Journal of Strength and Conditioning Research](#), and CrossFit Inc. has taken [legal action](#) to prove supposed injury rates at CrossFit 614 in Ohio were either reported in error or falsified entirely.

Also of concern is the fact that both the NSCA and ACSM support legislation that would require licensure of personal trainers. This licensure would essentially give control of all personal training to whatever body is named in the legislation, meaning CrossFit trainers could be forced to pass NSCA or ACSM tests before they can teach a squat—a movement the NSCA has failed to define with any accuracy, as demonstrated on [The Russells blog](#) by Lon Kilgore, Ph.D.

These issues matter to licensed CrossFit trainers and affiliates because those who claim to lead and seek to regulate our industry have not demonstrated they are fit to do so.

This article is but an introduction, a 10,000-foot view of an industry that has been characterized by imprecision, poor science and corporate sponsorship for far too long. Readers are encouraged to start exploring these topics by clicking the embedded

links, reading the articles listed in the sidebar (below) and by doing their own research. Start asking questions and looking for answers; we’re doing the same thing, and our journalists are digging into the issues already. Over the next months, expect to see a number of CrossFit Journal articles on these topics.

Also expect to see reports out of the [2015 CrossFit Conference on Exercise-Associated Hyponatremia](#), to be held Feb. 20 in Carlsbad, California. The world’s top hydration experts will be in attendance, and they’ll be explaining exactly how lives can be saved by preventing over-hydration. They’ll be presenting hard science and building a new foundation to replace the one that’s washed away when real experts examine the [unsupported claims of the sports-science industry](#).

CrossFit Founder and CEO Greg Glassman has tasked the CrossFit Journal, its staff and its contributors with unraveling the whole issue and presenting it to the community, and CrossFit Inc. is mobilizing as a whole to protect its affiliates and trainers from vague guidelines, bad science and oversight by organizations with more respect for corporate interests than fact-based research.

As Glassman said on the [CrossFit Message Board](#) Feb. 19, 2014, “It’s time to drive Big Soda out of fitness and by extension, the health sciences.”

About the Author

Mike Warkentin is the managing editor of the CrossFit Journal and the founder of [CrossFit 204](#).

Additional Reading

[The ACSM Let Gatorade Distort Science](#)

[The NSCA to CrossFit—Why Should We Know if What We Publish Is True?](#)

[The NSCA’s William Kraemer Vs. CrossFit Part 4](#)

[Intro to Personal Training Licensure](#)

[Waterlogged: The Serious Problem of Overhydration in Endurance Sports](#) by Tim Noakes.



Courtesy of Grant Anderson

BRIDGE OVER TROUBLES' SLAUGHTERS

BY BRITTNEY SALINE

Artist Karl Porter talks about how graffiti and CrossFit are healing wounds in the flashpoint city of Derry in Northern Ireland.



In Derry, one of Porter's murals sits beneath Irish Republican Army (IRA) and Bogside Republican Youth (BRY) graffiti on the shingles above.

It was well past 1 a.m., and darkness blanketed the city of Derry, Northern Ireland. The streets were barren save for two teenage boys and their paint.

Silence hung heavy in the back alleys of the bad side of town, interrupted only by a sound like static slicing the air.

Cloaked in a thick, black hoodie, Karl Porter held a small, pressurized can in his left hand. He gave it three sharp shakes and aimed for a wall, deftly directing the soft aerosol spray into the graceful shape of an E.

Neither boy noticed the car's approach until four masked men erupted from within. The vehicle was unmarked.

"That's when we realized we couldn't really run," Porter recalled.

The men were members of one of Northern Ireland's paramilitary organizations, vigilante enforcers of order on the hunt for two gunmen in dark-colored sweatshirts. Presumably nationalist, they would settle for catching unionists defiling their territory with political graffiti.

Thankfully, Porter was just tagging the wall with his graffiti name, Easi, the I a modification for the harder-to-draw Y. He had earned the nickname for his casual approach to his job as a gas-station attendant.

"I was quite lazy," Porter, now 28, described his heavysset

16-year-old self. "When I was at work, one of the girls said, 'You're too easy. I'll call you Easy from now on.' The name stuck."

Because Porter's art neither defaced any political murals nor posed political threat, the men left the "graffers" to their painting unscathed. It wasn't the pair's first encounter with masked men in the night, but it was "the scariest one we've had," Porter said.

More than a decade after the end of The Troubles, the 30-year period of Irish civil unrest responsible for the deaths of more than 3,600 people and thousands more injuries, wounds still run deep in Northern Ireland, a part of the Province of Ulster. Bomb scares, shootings and threats of paramilitary violence are

still commonplace between the western Cityside and eastern Waterside communities of Derry (officially Londonderry), a city divided by the River Foyle and social malaise.

"There's a lot of fear," said Porter, who attended Catholic school in his youth but describes himself today as an apolitical and non-religious free thinker. "People live in fear and they don't realize it."



Porter grew up in Shantallow, a Cityside public-housing estate only miles from the mainly Protestant area of Waterside.



In Bogside, colors overhead clearly indicate who is welcome and who is not.

History of Hostility

The Troubles are said to have officially begun Oct. 5, 1968, with a civil-rights march supported by the Northern Ireland Civil Rights Association. But the root of unrest reaches back to the 1300s, when English barons had seized nearly all Irish land.

King Henry VIII of England declared himself King of Ireland in 1541. His attempts to establish Protestantism in Ireland were ultimately realized in 1690, when the Protestant William of Orange defeated the Catholic James II to claim the throne in the Battle of the Boyne. The event is still commemorated in modern Northern Ireland with marches and fanfare every July 12, Orangemen's Day.

For more than two centuries, Irish Protestants and Catholics disagreed over how Ireland should be governed. Protestant unionists favored British rule while Catholic nationalists fought for an independent Ireland.

Though the 1920 Government of Ireland Act granted each side its wish, giving the southern Republic of Ireland its sovereignty and keeping six predominantly unionist counties in the north as part of the United Kingdom, it was far from a fairy-tale ending. Catholics and Protestants in Northern Ireland lived segregated lives, and unionist gerrymandering, discriminatory hiring practices and laws governing voting rights prompted Catholics to campaign for equal civil rights in the 1960s.

Despite a 1968 ban against marches issued by William Craig, Northern Ireland's minister for home affairs, protesters marched in Derry anyway on the night that started The Troubles. The police force of Northern Ireland, the Royal Ulster Constabulary (RUC), was deployed to disband the march, and the use of what has been described as excessive force—including batons and water cannons—was broadcast around the world.

Catholics answered violence with violence, rioting against the RUC and the British soldiers deployed to Northern Ireland to reinforce the police. In 1969, after what many Catholics deemed an insubstantial response by the Irish Republic Army (IRA), the IRA was split into two factions: the Official IRA, who believed in an Ireland united by peaceful measures, and the Provisional IRA, who would not hesitate to use violence to achieve their ends.

For the next three decades, blood was spilled on both sides.

For the next three decades, blood was spilled on both sides. After the Provisional IRA launched an attack against British troops in 1970, British soldiers retaliated in a gun battle against both IRA factions. On Jan. 30, 1972, known thereafter as Bloody

Sunday, 13 civilians were killed when the British Army opened fire on a Catholic civil-rights rally in Derry. Six months later, the Provisional IRA (known by this time simply as the IRA) detonated more than 20 car bombs in Belfast, killing nine people and injuring 130 more on July 21, Bloody Friday.

Meanwhile, paramilitary forces dealt vigilante justice with kneecappings, beatings and bombings, and civilians—many living in neighborhoods bordered by barbed-wire fences and guarded by masked guerilla fighters—were caught in the crossfire.

The IRA and the British Army (and paramilitary groups on each side) exchanged blows for the next two decades. Hope for a peaceful resolution dawned with the signing of the 1998 Belfast (or Good Friday) Agreement, which outlined plans for nationalist and unionist power-sharing in the Northern Ireland Assembly, as well as proposals for paramilitary decommissioning and the release of paramilitary prisoners.

Still, it would not be until 2005 that violence subsided with the end of the IRA's armed campaign, as the IRA pledged to pursue its aim of a united Ireland through peaceful measures. However, tension remains to this day, with towering "peace walls" dividing the Catholic and Protestant populaces of Derry.

Such was the world Porter was born into.

City of Flags

Porter grew up on the edge of Shantallow, a Cityside public-housing estate dubbed "Shanty" by locals. Rows of condensed, terraced houses sat circled by two roads that merged to greet a Catholic chapel.

Though the modest home he shared with his single mother and elder brother was just a few miles from the mainly Protestant Waterside, Porter rarely ventured across the river.

"I couldn't really go across," he said. "I was always at risk."

Paramilitary groups, still active even after the IRA laid down its weapons in 2005, unofficially policed neighborhoods in both communities. They would give young vandals three warnings before contacting their parents. The message would contain a time and place for the parents to bring their children to be shot in the knees.

"Which means they'll survive," Porter said. "They might have to walk with a limp ... but the parents were actually taking their kids there because they knew that if they didn't take the punishment, they'd maybe get killed in the future."

Color showed Porter where he was welcome and not.

Curbstones painted orange, white and green—to match the flag of the Republic of Ireland—were Catholic ground. Corners doused in red, white and blue and streetlights festooned with Union Jack flags marked territory claimed by Protestants.

“It’s like a dog peeing on lampposts,” Porter said. “It’s all about identity. You stay where you know you’ll be safe.”

Graffiti along the city streets was limited to political murals and slogans or the initials of paramilitary groups. But on a summer bus trip to Belgium with an educational program, teenage Porter witnessed something he had never seen before: art on the walls lining the motorways. It was bright, brazen and full of life.

“My eyes would get sore trying to focus on something because it was going so fast,” he said. “Purples, yellows, blues and pinks ... they were all mixed together. It was cool to see that there’s not just five colors in the spectrum.”

“Why the fuck should I not be allowed to walk in my own city?”
—Karl Porter

It’s not as though people in Derry lacked passion. But to tag walls and warehouses in a still-hot post-Troubles zone meant taking a risk, according to Kenneth Bush, Ph.D., former professor at the University of Ulster.

“Indeed, there is a very different, and more dangerous, set of rules for the graffiti game in Northern Ireland,” he wrote in his study, “The Politics of Post-Conflict Space: The Mysterious Case of Missing Graffiti in ‘Post-Troubles’ Northern Ireland.” “Within the narrow space that graffers see themselves working, there is a two-fold risk: of being mistaken for an armed dissident by police, and injured; or of being identified as a graffer by the armed dissidents and disciplined for anti-social behavior.”

But seeing something other than political propaganda emblazoned on the walls in Belgium made Porter question the limitations he felt in his hometown.

As his gaze lingered over the familiar flags and murals that divided his home, he puzzled over a single question:

“Why the fuck should I not be allowed to walk in my own city?”



In Protestant neighborhoods, the colors of the Union Jack are prominent, declaring allegiance to the loyalist cause.

Courtesy of Karl Porter



Graham McFadden stands in front of a Porter mural inside CrossFit Derry. The mural is decidedly apolitical to help McFadden welcome all athletes to his facility.



Porter first tried CrossFit in 2013 at CrossFit Tampere in Finland, where he traded painting for training.

The Writing on the Walls

Despite the risk, Porter decided to become a graffiti writer.

While his friends partied and drank late into the night, Porter drew. He doodled in diaries, tracing bowls of fruit and filling the pages with rows of his least-favorite letters: A, R, P, T and Y.

“You work on weaknesses, just like in CrossFit,” he said.

The local supply store wouldn’t sell spray paint to a 16-year-old, so he stole a small stash to get himself started. He practiced beneath bridges and scrawled over abandoned warehouses on the 5-mile trek home from work each night.

At first, Porter painted only his name. As he improved, he mimicked popular cartoon figures such as Marvin the Martian and “Simpsons” characters, recruiting a friend from school to paint by his side.

“It was good to have a lookout, someone who could check behind you,” he said. “It was almost like a stealth mission.”

Spending his wages on gas, Porter often drove four hours to Dublin to tag more territory. The goal was to get his name on as many surfaces as possible; to tag a train would be the most-esteemed feat. He was caught several times but never charged.

Graffiti was his passion, a release from the tension of living in a sociopolitical minefield, but it remained only a hobby until 2010. While Porter was at university in Scotland, a friend offered his name to a Derry arts organization looking for a muralist to lead a workshop with area youth. Though Porter’s modus operandi had always been to paint anonymously, he took a break from obscurity and his studies to offer his expertise.

“If I have the ability to help change things for the better through arts, then it’s my responsibility as a human being to see that through,” he said.

The relationship flourished, and Porter was soon booked with commissions ranging from garden walls to storefront murals.

In March of 2012, he received a commission that would change his life: painting a CrossFit affiliate.

Painting to Pull-Ups

CrossFit Derry, owned by Graham McFadden, affiliated in January 2012. With his space located on the eastern edge of Cityside, McFadden wanted CrossFit Derry to feel like home to athletes on either side of the river.

“With so many political murals in our country, I wanted something that both sides of the community could identify with,” he said.

The project was the first in a series of affiliate commissions that would eventually lead Porter to wield barbells himself. But he

was taken aback when he first visited the gym and saw its virgin pull-up rigs still polished and clean.

“It was weird because there were no machines,” Porter recalled.

The first step was to present preliminary sketches to McFadden.

“You want to design something that makes them feel different and unique,” Porter explained. “It’s almost like an identity, not for the CrossFit (affiliate) itself but for the CrossFitters.”

McFadden’s only directive was to write the affiliate’s name and to use purple and yellow, hues chosen for what he described as their positive vibe.

“I wanted the box to feel welcoming,” McFadden said. “Karl understood my vision of acceptance, and I gave him free reign of the murals.”

Donning his earphones to blast Sigur Rós or laboring in silence,



Before CrossFit, Porter was about 60 lb. heavier than he is today.

Porter lost himself in his art, dressing the white cinder-block walls in rich purples, yellows, greens and blues. Abstract shapes reached out from a vast blue-and-white target to form the word “Cross,” with the word “Fit” in fiery orange beneath.

“It’s a kind of meditative state,” he said. “You can draw through your problems. ... If you make a mistake, you can just spray over it. It’s forgiven.”

He worked between four and 12 hours per day for nearly a week, sometimes in the small hours of the night to avoid the distraction of curious onlookers.

As he painted, his thoughts drifted to his own physique.

Though his father had been a champion bodybuilder, Porter never learned much about fitness from him. Divorced from Porter’s mother when Karl was a young child, his father rarely took time from his schedule of training and partying to be with his son.

“I always asked him to show me things (about bodybuilding) ...

but he always did his own thing,” Porter said.

Though Porter had played rugby in college, the post-match beers added a few layers to his 5-foot-8 frame. By the time he stepped foot in CrossFit Derry, he weighed an uncomfortable 252 lb.

“I had heard about (CrossFit) before but never had the chance to try it,” he said. “I was in need to lose weight and get active.”

It would be a year before schedule and circumstance permitted him to try CrossFit. After completing murals at CrossFit Derry and subsequently at CrossFit Aberdeen in Scotland, he joined CrossFit Tampere while studying abroad in Finland in March 2013, trading painting for training.

His first workout was 50 reps each of wall-ball shots, box jumps, sit-ups, push-ups and air squats. As he struggled to advance through the box jumps, a crowd gathered around him, shouting in Finnish and pumping their arms.

Porter was sold.



Now an experienced CrossFit athlete, Porter sees a link between his art and the art of lifting.

“It was the only time I ever felt like I’ve done some work,” he said. “And I got this kind of underdog vibe from CrossFit. I wouldn’t be keen on anything mainstream.”

He was drawn to the technical aspects of CrossFit, likening training the Olympic lifts to mastering straight lines and smooth curves on the wall.

He was drawn to the technical aspects of CrossFit, likening training the Olympic lifts to mastering straight lines and smooth curves on the wall.

“It’s just like spray painting,” Porter said. “You practice and practice, doing lines and lines, like a clean. You go from the ground to the knees, the knees to the hips, and get your elbows under.”

For the next year, Porter’s studies and commissions took him across Northern Ireland and Scotland. Training out of both CrossFit Aberdeen and CrossFit Derry, he lost more than 60 lb. in less than a year.

His newfound fitness, he said, was good for more than just a better Fran time. He also credits CrossFit with making him a more agile artist.

“One of the main reasons I wanted to get fit was to be a more active graffiti writer, meaning more legal and illegal work,” he said. “I could not climb a wall at 250 lb.”

Community on the Walls

Beneath the mural Porter had painted more than a year prior at CrossFit Derry, rows of athletes worked the floor last September, chalk dust and sweat settling in their wake.

Across the room, the shouts of Cityside and Waterside dwellers rivaled the screech of the speakers. Far from the partisan



At CrossFit Derry, political lines are blurred by the simple title “athlete.”



Perhaps one day “peace walls” will be a thing of the past, and unionists and nationalists will repair relationships damaged by hundreds of years of discord.

shouting of The Troubles, these calls were only recognizable as the screams of CrossFit athletes, some of whom had come from as far away as Belfast to throw down.

“Over here, it’s like a political minefield,” Porter said. “People almost look for a political agenda in what you say so they can pick holes. But with CrossFit it’s, ‘Get it done, have fun, and go home.’ There’s not even any questions asked.”

McFadden had reservations when opening CrossFit Derry. Nearly three years later, none remain.

“Making the decision to affiliate in one of the most controversial-named towns in Northern Ireland was difficult,” he said. “But putting CrossFit at the forefront, I believe, has certainly changed things. We have people from both sides of the community training together.”

For some Derry athletes, joining the affiliate marked the first time they had truly integrated with people from outside their comfortable bubble of the politically homogenous. According to Porter, CrossFit provides the ideal environment for neutralizing tension.

“People who do CrossFit can’t be too sensitive. ... You’re gonna rip your hands open, and there’s gonna be piss and blood everywhere,” he said.

“CrossFit has created a family without religion and without prejudice.”
—Graham McFadden

Porter doesn’t even always know to which party or religion many of his fellow athletes belong. He’s too busy cheering them on to worry about what which flag flies on their corners.

“When someone else hits a personal best, you’re more chuffed that they beat themselves,” Porter said. “Especially in Northern Ireland, you’re psychologically breaking down these characteristics and traits you find in certain communities. It’s not about your race or your background or religion.”

McFadden agreed, citing Porter’s mural as a symbol of his affiliate’s integration.

“CrossFit has created a family without religion and without prejudice,” he said. “They don’t see religion in the box. They see CrossFit and their community on the walls.”

Color of the Future

As the next generation steps forward in Northern Ireland with horizons broadened by education and distance from the turmoil of the past, the sociopolitical climate in Derry is becoming more temperate. In 2011, the pedestrian Peace Bridge was built over the River Foyle to link the Cityside and Waterside communities, a symbol of reconciliation and celebration.

Today, Porter uses graffiti to counteract the cycle of discrimination and violence.

Through his company, Urban Vizualz, he works with people with physical and mental disabilities, troubled teens, and prison inmates, teaching the history of graffiti writing and the basic techniques of muralism.

When the inmates are released, Porter provides them with free space on Urban Vizualz’s property walls for sanctioned mural practice. The goal, he said, is not to promote vandalism but to teach them social skills and give them an outlet for expression.

“The youth offenders have no guidance and no leadership qualities, and I can see a direct correlation with the inmates we’re working with,” Porter said. “I can see that link, and that’s what I’m trying to stop.”

CrossFit, he said, has served as a model for the kind of inclusive environment he hopes to build for his students.

“I want to cross all boundaries and barriers through my art ... and create bonds between people from different cultural backgrounds through graffiti or muralism,” Porter said. “I feel that CrossFit also does this in some kind of metaphorical sense. I think the likes of CrossFit just kind of builds that confidence and openness to work with others ... it’s something I’ve tried to instill in my workshops.”

Meanwhile, he continues to paint, designing murals for CrossFit affiliates across the U.K. that embody the physical, mental and emotional character of CrossFit.

“I am a firm believer in the underdog, and the whole culture and ethos of CrossFit fits that mentality perfectly,” Porter said. “It’s different and very exciting, just like graffiti and a little like me.” ■

About the Author

Brittney Saline contributes to the CrossFit Journal and CrossFit Games website. She trains at [CrossFit St. Paul](#).

THE CrossFit JOURNAL

Confronting the Drinking Problem

What if almost everything you know about hydration and sports is wrong?

By Hilary Achauer

February 2015



Melissa Lin/CrossFit Journal

“Thirst is going to save you from dehydration and hyponatremia.” —Dr. Tamara Hew-Butler

Dr. Tamara Hew-Butler, a devoted marathon runner and sports-medicine podiatrist, was working in the medical tent at the 2000 Houston Marathon in Houston, Texas.

“It was hot that day,” Hew-Butler said, “and all these runners came (into the tent) and collapsed.”

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Hew-Butler and her colleagues knew exactly what to do. Assuming dehydration, the medical aides started IVs for the collapsed runners.

Then something strange happened.

Instead of getting better, many of the runners got sicker. The medical workers continued to administer intravenous fluids.

“We were giving more IVs until four runners had seizures. They were taken to the hospital and were in comas for a week. They almost died,” Hew-Butler said.

The runners all suffered from exercise-associated hyponatremia (EAH). Hyponatremia occurs when sodium levels in the blood fall below 135 milliequivalents per liter (mEq/L; in international units, this is expressed as millimoles per liter, or mmol/L). A normal blood-sodium range is between 135 and 145 mEq/L (mmol/L).

Hyponatremia can cause mild symptoms such as irritability and fatigue or more extreme symptoms including nausea, vomiting, seizures and comas. Brain swelling—exercise-associated hyponatremic encephalopathy (EAHE)—can cause death.

“Back then, we didn’t know what (hyponatremia) was or what caused it,” Hew-Butler said.

“I was a big part of that running community, and so that hit me really hard. I wanted to find out why these runners almost died,” she said.

“I wanted to find out why these runners almost died.”

—Dr. Tamara Hew-Butler

Most of the current hydration guidelines—including pre-hydration and drinking 8 oz. of fluids every 20 minutes while exercising—are not only unnecessary but can also be life threatening for some people. In its [official](#)



Courtesy of Tamara Hew-Butler

Dr. Tamara Hew-Butler

[position paper on exercise and fluid replacement](#), the American College of Sports Medicine (ACSM) recommends pre-hydrating. It also suggests athletes consume beverages containing electrolytes and carbohydrates, saying they “provide benefits over water alone under certain circumstances.”

In “Waterlogged: The Serious Problem of Overhydration in Endurance Sports,” Dr. Tim Noakes examined the problem in detail over 429 pages. He graphed over 1,600 cases of EAH and EAHE from 1981 to 2009, including a dozen fatalities. Noakes believes these conditions are entirely preventable. The solution: Athletes should drink only to thirst. But instead athletes followed hydration guidelines that either put them in the hospital or the grave.

For example, in 1998, Kelly Barrett, a 43-year-old pediatric dentist and mother of three young children, died of EAHE after drinking too much during the 1998 Chicago Marathon. Upon death, her blood-sodium concentration was 121 mEq/L. Hilary Bellamy, a 35-year-old mother of two, collapsed at the 20.5-mile mark of the 2002 Marine



Courtesy of Sandra Fowkes Godek

Sandra Fowkes Godek, Ph.D.

Corps Marathon in Washington, D.C. She later died of EAHE; her blood-sodium concentration was 123 mEq/L.

The endurance community is not the only group that's suffered losses.

In August 2008, Patrick Allen, a football player on the Bakersfield Christian High School team in California, died of EAHE caused by drinking too much water, according to the autopsy. In August 2014, two high-school football players, Zyrees Oliver and Walker Wilbanks, consumed excessive amounts of fluid—including Gatorade—and both died from EAHE.

Their deaths—and others—inspired CrossFit to take action.

On Feb. 20, 2015, CrossFit is hosting [The 2015 CrossFit Conference on Exercise-Associated Hyponatremia, organized by the HEAT Institute](#). The world's foremost researchers on hydration and hyponatremia will gather in Carlsbad, California, to set the record straight on hydration and hopefully save lives.

What Is Exercise-Associated Hyponatremia?

Sandra Fowkes Godek, Ph.D., is the director of the Heat Illness Evaluation Avoidance and Treatment (HEAT) Institute at West Chester University in Pennsylvania, which provides athletes with independent and unbiased information about thermoregulation and fluid and electrolyte balance.

Fowkes Godek started working with the Philadelphia Eagles football team 12 years ago, following them and studying their sweat rates, sweat-sodium concentrations and blood-electrolyte levels.

"When the two young men died this past August of hyponatremia, I pay very close attention to those things. It's my area of research," Fowkes Godek said.

"The thing in football players—I don't know if this was a compounding factor in the boys that died—is that they typically a lot of times do have low blood-sodium levels simply because (of) consecutive days of sweating," she said.

It's possible Oliver and Wilbanks depleted their sodium after consecutive days of practice and started out the day at 135 mEq/L (the low end of normal). It wouldn't take much for them to dilute their blood sodium to dangerous levels and become hyponatremic if they then drank too much liquid, Fowkes Godek said.

Why can drinking too much fluid while exercising dilute the body's blood sodium?

Hew-Butler explained sodium stays outside the cells, while potassium stays inside the cells. Water moves freely between the cells.

"When you have low sodium, or hyponatremia, that drives water inside the cells, and the cells will swell," Hew-Butler said.

This, in turn, can cause the lungs to fill with fluid, possibly leading to pulmonary edema. The worst outcome, however, is swelling in the brain. The brain is encased in a hard skull, so if it swells even 5 percent, the brain stem can get pushed out of the skull.

"And that's how people die," Hew-Butler said.

At the 2000 Houston Marathon, Hew-Butler found out the people who ended up in her medical tent had consumed between 80 and 100 cups of water by the time they reached her.

Hew-Butler found out the people who ended up in her medical tent had consumed between 80 and 100 cups of water by the time they reached her.

They were following well-established hydration guidelines.

"They were told to (drink)! 'You gotta drink, don't get dehydrated!'" Hew-Butler said. "These are like healthy people who just had bad advice."

If drinking too much water can be potentially fatal, why isn't it dangerous to sit at home and drink glass after glass of water? Why aren't sedentary people getting hyponatremia?

During exercise, the body goes into fluid-protection mode because of the possibility of losing fluids through sweat. An antidiuretic hormone called vasopressin helps the body hold onto the extra fluids—which can have disastrous results if the person exercising continues to drink even after his or her thirst is satiated, or if he or she drinks before thirst, as is usually instructed.

As a leader in health and fitness worldwide, CrossFit believes it's important to spread the word about hydration myths and avoid more preventable deaths.

Why We Over-hydrate

In 2002, 28-year-old Cynthia Lucero ran the Boston Marathon to celebrate the completion of her dissertation and to raise money for the Massachusetts chapter of the Leukemia and Lymphoma Society. Lucero's family had traveled to Boston from Ecuador and was waiting for her at the finish line.

She never made it.

By all accounts, Lucero ran well for the first 19 miles. Then, between miles 19 and 20, Lucero started stumbling. A friend jumped onto the course and began running with her.

"Lucero told the friend that she felt dehydrated and rubber-legged," Stephen Smith wrote in the Boston Globe.

"Lucero tumbled to the pavement. When she reached Brigham and Women's, she was comatose," Smith wrote, referring to the Boston hospital.

Lucero died soon after.

She wasn't dehydrated. In fact, Lucero died of hyponatremic encephalopathy.

Lucero died from drinking too much.

"The major risk factor (for EAH) seems to be overhydration or excessive fluid consumption during activity," Dr. Mitchell



Michael Brian/CrossFit Journal

Many athletes have been told to drink before they're thirsty, but doing so can have tragic consequences.

Rosner and Dr. Justin Kirven wrote in “[Exercise-Associated Hyponatremia](#),” published online in 2006 in the *Clinical Journal of the American Society of Nephrology*.

EAH deaths are a relatively recent phenomenon, and they are a result of athletes and trainers following widely accepted guidelines for hydration and avoiding dehydration.

“The rule of thumb is to drink 8 ounces of a sport drink or water possibly every 20 minutes,” sports-medicine expert Dr. Lewis G. Maharam told the popular health website [WebMD](#). “If you are exercising less than 40 minutes, water is fine, but for anything over 40 minutes, you want a sports drink that has sugar or salt in it because this helps you increase the fluid that goes into the body.”

In 2012, Oliver Thring wrote an article in *The Guardian* titled “[Do Sports and Hydration Theory Hold any Water?](#)” In it, Thring references an analysis from the BMJ (formerly the *British Medical Journal*) of the science behind commonly accepted hydration guidelines.

“The BMJ recently published a lengthy analysis of the science behind these claims, and the findings are important. They show how the hydration fanaticism which has gripped the sports industry since the 1980s has been established in large part through studies funded by (GlaxoSmithKline), Coca-Cola and PepsiCo, which owns Gatorade,” Thring wrote.

“It’s (obvious) the water-bottling companies and the sports-drink companies have been largely behind propagating what really are a lot of myths,” Fowkes Godek said.

“Like dehydration causes heat stroke—that’s just a myth. That’s a scare tactic that Gatorade used for many years, particularly in the area where I am, which is athletic trainers. The athletic trainers now still will rank dehydration as one of the main reasons why someone gets exertional heat stroke. It’s not true. I beat my head against the wall so many times. It’s a very minor factor when you look at all the other things that predispose somebody to exertional heat stroke,” Fowkes Godek said.



Michael Brian/CrossFit Journal

Dr. Mitchell Rosner refutes the idea that athletes are already dehydrated by the time they feel thirsty.

Rosner, co-author of “Exercise-Associated Hyponatremia” (cited above), is a nephrologist who is the Henry B. Mulholland professor of medicine and chairman for the Department of Medicine at the University of Virginia. He hopes the Feb. 20 conference will start a broader discussion of water consumption during exercise.

“(At the conference) I’m going to go over the mythology that people need to drink eight glasses of water a day. There’s no data to support that,” he said.

He’d also like to dispel the myth that a person is already dehydrated by the time thirst kicks in.

“Humans have a very sensitive thirst mechanism that has evolved over time to prevent dehydration,” Rosner said.

Rosner doesn’t think the hydration misinformation was started deliberately, but he said he thinks soft-drink companies have perpetuated the myths.

Dehydration is the process of losing body fluid, Fowkes Godek said. It’s not an illness or a worrisome condition.

“Now people think (dehydration) is an illness, which it really isn’t,” Fowkes Godek said. “It’s just the process of going from one state of hydration to another.

“If you start very well hydrated, you can lose 2 to 3 percent of your body weight and still be in a normal range of hydration. You have technically dehydrated, because you’ve lost body fluid, but you can still be in normal hydration.”

How Much to Drink?

If hyponatremia is caused by low blood sodium, why don’t sports drinks with sodium correct the imbalance?

They just aren’t salty enough.

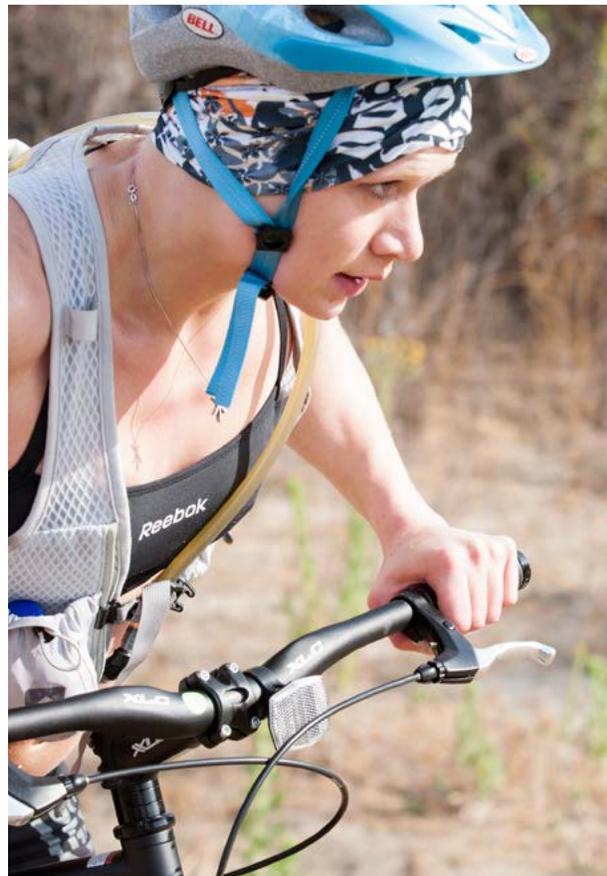
Hyponatremia occurs when the blood-sodium levels are diluted. Adding more fluids, even if they contain sodium, only compounds the problem. For instance, Gatorade’s sodium content is 19 mEq/L, while human blood is around 140 mEq/L. Therefore, Gatorade can do nothing but dilute blood sodium.

“Unless you drank something that was (as salty as normal blood sodium), you would not be maintaining your blood-sodium levels—because you are adding way too much water,” Fowkes Godek said.

“For these big, heavy, salty sweaters (like football players), drinking Gatorade is just like drinking water. The salt that’s in that is irrelevant to putting back what they need, particularly on a chronic basis,” Fowkes Godek explained.

Contrast that statement to this one from “[SSE #88: Hyponatremia in Athletes](#)” from the Gatorade Sports Science Institute:

“The risk of hyponatremia can be reduced by making certain that fluid intake does not exceed sweat loss and by ingesting sodium containing beverages or foods to help replace the sodium lost in sweat.”



Michael Brian/CrossFit Journal

Athletes have been told sports drinks can help replace sodium, but Fowkes Godek says the salt in sports drinks is ultimately “irrelevant” when it comes to maintaining proper levels of sodium in the blood.



Cheryl Boatman/CrossFit Journal

Weight lost during a training session can be safely replaced with fluid, according to Dr. Mitchell Rosner. Replacing more than is lost can put athletes at risk of hyponatremia.

"You would need to drink 30 L of Gatorade to put the salt back, and if you did drink 30 L, you would die from hyponatremia," Fowkes Godek said. "Once you start doing the calculations, you realize that the amount of salt that's in any kind of sport drink is irrelevant. The bottom line from stopping someone from getting EAH is for them not to drink."

To maintain their proper blood-sodium levels, Fowkes Godek gives Philadelphia Eagles players beverages that are five times as salty as Gatorade. On top of that, she gives them salty foods like soups.

Given the confusing and conflicting information, what's an athlete to do?

"We need to make sure that we explain the body's needs and how we should hydrate individually," Fowkes Godek said.

Rosner recommends all habitual exercisers get a sense for how much water they lose during an average training

session. The best way to determine this is to weigh yourself before and after a training session. Any weight lost in that short time period can be attributed to water loss.

"Once you start doing the calculations, you realize that the amount of salt that's in any kind of sport drink is irrelevant. The bottom line from stopping someone from getting EAH is for them not to drink."

—Sandra Fowkes Godek



Courtesy of Mitchell Rosner

Dr. Mitchell Rosner

"If you know you sweat one kilo, then drinking one kilo of water is safe," Rosner said.

The second way to ensure you don't over-hydrate is to drink to thirst. Don't pre-hydrate or drink if you are not thirsty.

"Your body is really well adapted," Hew-Butler said. "For us, thirst is like your real-time calculator for everybody. Thirst is going to save you from dehydration and hyponatremia. It's the best thing that's going to keep you in the middle."

Raising Awareness and Preventing Deaths

The goal of the 2015 CrossFit Conference on Exercise-Associated Hyponatremia is to get the fitness community—especially trainers and coaches—thinking about hydration and the pervasive misinformation surrounding it.

Misinformation appears in health publications, beauty magazines and commercials. Endurance athletes and casual fitness enthusiasts alike are encouraged to drink

fluids before, after and during racing or exercising, all because doing so will supposedly improve performance.

The truth is young men and women are not dying from dehydration on the marathon course or the football field. They are dying from drinking too much.

"Everyone who comes to this conference is passionate about this. They've seen people die. And if you've seen people almost die, it hits you hard," Hew-Butler said.

Rosner said his goal for the conference goes beyond raising awareness.

"No one should ever die from EAH again," Rosner said. "It's completely preventable."



About the Author

Hilary Achauer is a freelance writer and editor specializing in health and wellness content. In addition to writing articles, online content, blogs and newsletters, Hilary writes for the CrossFit Journal. To contact her, visit hilaryachauer.com.

THE CrossFit JOURNAL

3-2-1 ... Snow!

Functional fitness means being ready for the challenges of the real world. With winter upon us, we examine the connection between the barbell and the snow shovel.

By Hilary Achauer

February 2015



Mike Warkentin/CrossFit Journal

My husband and I decided our front lawn needed to go.

Short on money and sense, we grabbed pickaxes and shovels and attacked the mess of dying grass, weeds and dirt in front of our house. We worked for three hours on Saturday and Sunday, finally staggering into the house when our hands wouldn't close around the handle of the shovel.

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Mike Warfentin/CrossFit Journal

When shoveling, apply the lessons from the gym for best results.

Monday came, and both of us reported to our respective CrossFit classes, as usual. By the end of the week, I couldn't sit in a chair for more than an hour before my back started to ache and pain radiated down my leg. My husband had to sit in his office chair with a pillow wedged into his lower back. We had to modify our workouts for weeks before our aching backs returned to normal.

The workout inside the gym wasn't to blame—it was what we had done outside the box that caused our thankfully minor injuries. I've been doing CrossFit for four years and faithfully show up at the gym four days a week. Between CrossFit, surfing and a general do-it-yourself attitude, I'm no stranger to fitness and hard work. Like most CrossFit athletes, I take warm-up, preparation and proper technique seriously inside the gym. Yet I blithely spent two days enduring intense physical work and didn't warm up or think once about my form and body position.

When putting fitness to practical use—like shoveling snow or swinging a sledgehammer—many people throw warm-ups and technique out the window.

What if we put the same amount of care into our yard work as we did our deadlift? How many people actually know the most efficient way to shovel snow and avoid injury when clearing the driveway?

The Warm-up

It may feel a bit silly to warm up before going outside to shovel gravel or snow, but jumping right into a grueling, full-body activity can easily lead to injury.

Blair Morrison, a three-time CrossFit Games competitor who took fifth in 2011, is the man behind [CrossFit Anywhere](#), which has two locations in Sacramento, California. Morrison also owns an adventure-travel company, [AnywhereFit](#), which takes groups of CrossFit athletes around the world for outside-the-gym fitness and exploration.

When asked how to prepare for a few hours of shoveling, Morrison's first piece of advice was simple: "Get help."

After you've assembled the neighbors, Morrison agrees warming up is essential, especially if you have a large amount of snow to move.

The most important thing is to make sure your body is warm and limber before any strenuous activity in the cold.

"If you are shoveling for a long period of time, it's a posterior-chain exercise, so your hamstrings, your glutes and your back are doing most of the work," Morrison said. For warm-up, he recommends doing some good mornings and lunges to get blood to the muscles.

After the good mornings and lunges, do some air squats to further warm up the legs and increase your heart rate and respiration. Next up are torso rotations. Stand with your knees slightly bent, and rotate your upper body side-to-side. Snow shoveling involves upper-body rotation when you

throw the snow to the side. Few CrossFit activities include lateral or rotational movement, so it's important to warm up your body. Twisting your body while holding weight is not recommended, so any good shoveling technique will avoid excessive twisting, especially when holding a snow-filled shovel. However, the nature of shoveling means you will inevitably rotate your body slightly, so it's a good idea to warm up this movement pattern.

The most important thing is to make sure your body is warm and limber before any strenuous activity in the cold. Cold, tight muscles are more likely to get injured, so get the heart rate up before picking up the shovel.

Bracing

Just as you wouldn't lift a barbell without paying attention to your set-up position, it's important to brace yourself and prepare your body for each load on the shovel.

Julien Pineau, owner of StrongFit in Torrance, California, is a strength coach and strongman. He's studied sports and sports applications since an early age, and he has 25 years of weightlifting experience. Pineau trains five-time CrossFit Games competitor Val Voboril.

"I'm a movement specialist," Pineau said. "My whole point is to detect weaknesses and build a better foundation."

Pineau recommends bracing the core before filling the shovel with snow. Few people think about the position of their spine when clearing the sidewalk, and round-back positions are very common. Shoveling without bracing your spine is equivalent to doing 200 round-back kettlebell swings at 20 lb. It's inefficient, and it doesn't feel great. By bracing your midline you're able to save your spine and efficiently transfer force through the shovel. However, it's important to brace correctly.

"Most people think bracing is pushing the stomach out. Most people think core strength is in the abs," Pineau said. According to Pineau, that's not true. He says the obliques are the pillars of strength.

"Whenever you want to brace, you don't want to push your stomach out. That does not stabilize your spine at all. What you want to do is push your obliques out, like sideways," Pineau said.

Isolating the obliques is not easy. To help athletes locate this part of their anatomy, Pineau recommends having them carry a heavy sandbag in a bear-hug hold for about 100 feet.

"Once you do that, your obliques will be sore. That will create a link between your head and your core," he said.

Another way to locate the obliques is the overhead yoke carry.

"If you carry the yoke in an overhead position for 100 feet, it's your obliques that will give up. If you let go of your breathing when it's heavy, you will dump the yoke right away. The obliques stabilize you, and that's where most people hurt their back. You push your stomach forward, and that doesn't help you at all. That's why people hurt themselves on a deadlift," Pineau said.

Similarly, letting your shoulders roll forward puts strain on the upper back. Ensure the thoracic spine is locked in extension, and hinge at the hips rather than the spine.



Julien Pineau

One way to activate your obliques is to carry the yoke overhead. Pictured: Val Voboril.

It's difficult to remember all this after the first few shovels full of snow, but just as it's important to pay attention to your form during a workout, make an effort to brace your core—especially your obliques—before filling the shovel.

Stance and Grip

After stabilizing the obliques, the next point of performance is getting into the correct stance.

Dan Hollingsworth owns Kitsap CrossFit in Poulsbo, Washington. He's been a member of CrossFit's Level 1 Seminar Staff for four years, and he's also on the CrossFit Kids and CrossFit Endurance staffs. He holds a master's degree in physical therapy.

Hollingsworth said the setup for shoveling is the same as the setup for a deadlift or a prowler push.

"(Shoveling is) more about pushing a load," Hollingsworth said. "I prepare myself the way I would do a prowler push:

big breath in, start pushing, and then try to maintain tension in the core while still breathing."

When setting up, Pineau says it's important to make sure the stress is in your glutes, not your lower back. He recommends sticking out your rear and feeling a stretch in the hamstrings and glutes.

"That will put you into the right position," Pineau said. "Do this while you are shoveling. Your lower back should not give up if you do this."

Hollingsworth said the general idea is to minimize how much you are scooping and tossing. If it works with your space, try to get the shovel down and push it as far as you can, and then get it off to the side. This movement is similar to the prowler push and minimizes the amount of twisting and tossing. As mentioned earlier, twisting under load is not ideal. Using your feet to rotate while holding the shovel is easier on the body, especially if you have a lot of snow to clear.

Mike Warkentin/CrossFit Journal



Bracing your midline when shoveling will save your spine and efficiently transfer force through the shovel. Note the braced position on the left and the rounded position common to shoveling on the right.



Mike Warkentin/CrossFit Journal

Using a large snow scoop can help you move a lot of snow without lifting it. The movement is very similar to a sled push.

“The key here is to keep that shovel close to the body,” Hollingsworth said. “You want the best mechanical advantage so you can push without stopping.”

Unlike barbells and plates, the weight and the quality of snow varies considerably. The shoveling strategy has to change if you are dealing with feet of snow rather than inches.

The shoveling strategy has to change if you are dealing with feet of snow rather than inches.

“Pushing multiple feet of snow is not going to be an option,” Hollingsworth said. “Then you are going to have to scoop and toss. . . . The big thing there is to create a long lever. Keep one hand down low, for the scoop part, and one hand up high on the handle for a lever action.”

The bottom hand toward the scoop should be palm up, and the top hand should be palm down. To preserve your grip, don’t squeeze the shovel. It should fit into your palm. Hinging should happen at the hips and knees, not in the spine.

A trick Morrison uses to avoid fatigue on one side is to switch sides.

“Shoveling is a lopsided exercise,” Morrison said. “Most people are comfortable having one foot forward or one hand lower on the shovel, and you can get lopsided soreness. To alleviate that, switch sides.”

At first it will feel like doing a cartwheel on the wrong side—very awkward—but Morrison said it’s relatively easy to adjust.

“You need to force yourself to do it on both sides, especially if you are going to be doing it for an hour,” Morrison said.

Hollingsworth said another factor that plays into shoveling technique is the type of snow.

"Where I live in Washington, it tends to be really wet snow. It's heavy," he said. "You have to take smaller scoops or push smaller amounts of snow. Whereas in Colorado they have dry, powdery snow. There's no load to it whatsoever."

To make the task more entertaining, set goals or challenges for yourself while maintaining good form. You could even set up a timer and make this the workout of the day: shovel driveway for time.

Ready for Anything

The good news about being a CrossFit athlete is the direct connection between the movements in the gym and snow shoveling. If you've been diligent about your workouts, there's no need to prepare for shoveling season or your next date with a pile of gravel.

However, it's essential to approach shoveling snow with the same amount of thought and preparation as a workout—especially if you're clearing a large area.

When the shovel is in your hands, Hollingsworth said to keep in mind the prowler push, deadlift, and clean and jerk.

"It's all about driving with your hips," he said.

With the right technique, shoveling will be easier and you'll be more likely to avoid an injury that will keep you from doing the things you love—things that probably do not include shoveling snow.



About the Author

Hilary Achauer is a freelance writer and editor specializing in health and wellness content. In addition to writing articles, online content, blogs and newsletters, Hilary writes for the CrossFit Journal. To contact her, visit hilaryachauer.com.



Kenny Joseph

With the right technique, you'll be more likely to avoid injury when shoveling, which will mean more time for training.

THE GROUND AND THE FURY

ANDRÉA MARIA CECIL

THE CrossFit JOURNAL

Peter Egyed and CrossFit Fury encourage members to grow their own in pursuit of improved health.



Brandon Brooks leases the land that's home to Fury Farms.

If you know Peter Egyed, you know he tends to go big.

“I will bite off more than I can chew and just figure it out along the way,” he said.

So when the 28-year-old announced his Arizona CrossFit affiliate would begin farming, few people were fazed.

Aimee Berencsi has known Egyed for eight years. Or, as she said, “from the beginning.”

“I didn’t think he could make Fury happen,” she joked while sitting on a stack of wooden plyo boxes in the corner of the 15,000-square-foot facility that is CrossFit Fury.

The affiliate, which Egyed opened in 2008 with 2,600 square feet, has grown to about 500 members. In those six years, the four-time CrossFit Games competitor has introduced various offerings to the Goodyear, Arizona, affiliate, including yoga and ballet classes, to name a couple. And today, the affiliate runs a farm on about an acre of land, which coaches seeded with cabbage, romaine lettuce, golden beets, red beets, onions, two varieties of carrots, as well as parsnips and spinach.

The long-term goal for the farm is to produce those nine types of produce on seven acres of land. Such small farming can make a difference, Egyed said.

People need to know from where their food comes, he added.

“We’re so disconnected from our food and food supply.”

From Gardener to Farmer

When Egyed started writing his October CrossFit Fury newsletter, he wanted to promote home gardening and encourage members to grow their own fruits and vegetables. Likewise, he was seeking a newsletter sponsor—maybe a local organic farmer. So he asked member Brandon Brooks—a farmer who manages 5,000 acres for MK Farms, a US\$12-million-a-year operation—if he knew anyone.

“His eyes lit up,” Egyed remembered.

Brooks had always wanted to get into small-time farming; he just didn’t know how he was going to do it. He already leased seven acres of land from Snyder’s of Hanover, a Pennsylvania-based pretzel and snack-food maker with operations less than half a mile from CrossFit Fury. The two men hatched an idea to grow produce on an acre of Brooks’ land and offer it to the gym’s members via a venture called Fury Farms.

“I brought mainly the market and the labor,” Egyed said.

He added: “Members will actually be farming.”

To get their feet wet, the two men first began offering members produce from Rousseau Farming Co. in November 2014. Brooks’ friend Charlie Montgomery is the chief operating officer there. Montgomery’s wife, Christine, is the liaison between farm and gym. She carefully packs produce boxes and methodically attaches care instructions so folks can get the most out of their kale and leeks.

Egyed sees Fury Farms
as a way to practice what he
preaches about nutrition.

In the first four weeks, Fury Farms sold almost 200 boxes. Introductory pricing for the produce boxes ranged from \$22 for a small box with 10 items to \$30 for a large box with 15 items. Additional items were \$2 each, and local honey went for \$8, \$10 or \$12.

“Our ideal is 100 boxes a week,” Egyed said in early December. “We’ll probably have to have four gyms on board.”

As of mid-December, Fury Farms had two: CrossFit Incendia in Peoria, Arizona, and Free Range CrossFit in Tempe. The first of those was started by two of CrossFit Fury’s former longtime members: Brian Vayda and Lisa Powers-Vayda. Brian was Fury’s very first member. All told, 30 people from the affiliate purchased produce boxes from Fury Farms.

“We see it growing ... as we get the word out there and as people talk about it,” Powers-Vayda said.

She added: “I’d rather support a small business ... than a grocery chain.”

At Free Range CrossFit, only a handful of people bought produce boxes, but owner Matt Lucas said he expected that number to grow.

“I wouldn’t be surprised if we get 15 or 20 on board,” he said.



Coaches and members of CrossFit Fury currently work an acre of land and have plans to expand the farm in the future.



According to Peter Egyed, members of CrossFit Fury are “getting connected to where their food is coming from.”

Andrea Maria Cecil/CrossFit Journal

“It’s nice to know ... the face of who’s actually taking care of and producing the food that you’re going to eat.”

Egyed—formerly an amphetamines user and pack-a-day smoker who spent time in jail before [finding CrossFit in 2007](#)—sees Fury Farms as a way to practice what he preaches about nutrition.

Families in the gym are “getting connected to where their food is coming from.”

“The Four-Year Plan”

But Egyed’s vision doesn’t end at seven acres of farmed land. He wants bigger.

His coaches call it “the four-year plan,” and it entails building a

20,000-square-foot community center on eight to 12 acres of land. That center would not only house CrossFit Fury but also an Olympic-size swimming pool, a 400-m track and rental spaces for “health-minded professionals” such as physical therapists and medical doctors, Egyed said.

“And I was impressed by the farm,” joked Fury coach Kelly McGuire with a laugh.

The community center would include a “show-and-tell garden with operations elsewhere,” Brooks explained. Consumers could shop locally grown beef, produce, cheese, honey and milk, he said.

“We utilize Arizona-made or grown products. Everything in the whole entire store is Arizona,” Brooks continued, speaking as if it already exists.

“If you’re gonna preach it,
you should have an avenue
to give people access.”
—Ryann Roberts

Fury member Ryann Roberts, owner of Arizona Orthopedic Physical Therapy, said the community center would give members “the ability to do everything in one place.”

Roberts started CrossFit in March 2011 and since then has traveled with Egyed as his physical therapist to the Games and other competitions. He also works with most of Fury’s competitive athletes.

“His ideas are great,” Roberts said of Egyed. “If you’re gonna preach it, you should have an avenue to give people access.”

Berencsi echoed those sentiments.

“Especially given that CrossFit is all about community, I love the idea that they can do it all in one place, and it’s the community idea we preach and love so much,” she said.

And if anyone can make it happen, it's Egyed, McGuire said.

"He is not dumb," she explained.

Egyed has so much enthusiasm that "it's easy to embrace his grand ventures," added McGuire, who has known him since he was 21.

"I don't know that everybody could pull it off."

For the Community

Egyed described the community-center plan as "the logical next step."

"I don't want to do multiple locations. I'd rather have one freakin' diamond than a couple of mediocre locations," he said. "I'm a firm believer that if you're not growing, you're dying. If this is something I can do, there's no reason why people can't do this all over the country."

Longtime Fury coach Alfred Rohde conceded the plan is a lofty one but said that's no reason not to forge ahead.

"I don't see why we can't do it. Give me one good reason why we can't."

CrossFit, Rohde noted, is more than exercise.

"I think we want better human beings—not just in the fitness world but in life."

Such a community center wouldn't just benefit Fury members but also the greater Goodyear community, Rohde continued.

"If we really believe in CrossFit, if CrossFit affiliates believe in what they're teaching, why wouldn't you want to expand that? To really be a community leader or have an impact on the community, you have to do that."

He added: "Health is for everyone." ■

About the Author

Andréa Maria Cecil is a CrossFit Journal staff writer and editor.



**If you're starting a farm,
it's a wise labor decision
to use hardworking
CrossFit athletes who love
functional movement.**



D.C. PERSONAL-TRAINER LICENSURE ON HOLD—*FOR NOW*

D.C. CrossFit affiliates weigh in as District's Council re-examines legislation.

BY ANDRÉA MARIA CECIL

The District of Columbia has paused enforcement of its law requiring licensure of so-called “personal fitness trainers” while it hammers out the details of what, exactly, it’s requiring.

The law—most often called the **Omnibus Health Regulation Amendment Act**—makes D.C. the country’s first municipality to require licensure of personal trainers.

First introduced Feb. 28, 2013, the legislation went into effect March 26, 2014. D.C.’s Department of Health oversees its enforcement. But, as Rayna Smith understands it, the agency is “very, very much behind in getting those regulations out.” Smith is committee director for the Council of the District of Columbia’s Committee on Health and Human Services, the committee that will spearhead any changes to the measure.

When it came to the licensure and regulation of athletic trainers and personal fitness trainers, there were “a few issues with some individual entities that wanted changes,” Smith said.

Smith said everything is up for debate, from the process of registering with the mayor’s office and the amount of the required fee to whether the two professions will remain under the purview of the Department of Health’s Physical Therapy Board.

“Nothing is necessarily off limits.”

“So basically they made a law that they don’t understand.”

—Tom Brose

Thus, the council will “double back,” she said, so “everyone gets a fair say in the process, especially if it’s going to regulate their occupation.”

CrossFit DC owner Tom Brose, who has been managing gyms for nearly a decade, had his own analysis: “So basically they made a law that they don’t understand.”



Though legislation governing Washington, D.C., personal trainers went into effect March 26, 2014, enforcement is on hold as a committee tries to sort out various issues with the law.



Tom Brose of CrossFit DC takes issue with the idea that a law would help consumers differentiate between physical therapists and personal trainers.



Critics of fitness licensure contend that government fees ultimately make working out more expensive for consumers, which is a poor result given the current obesity problem in America.

The Fine Print

Personal trainers are among nine total occupations included in the amendment to the Health Occupations Revision Act of 1985. Others are athletic trainers, audiology assistants, dentists and veterinarians. Under the law, those who had already been practicing one of the nine occupations before the measure's effective date "may engage in that practice, regardless of whether that person is licensed" for one year after the law's effective date. However, athletic trainers and personal trainers need not worry because D.C. officials have paused enforcement, Smith said.

The rule defines "personal fitness trainer" as "a person who develops and implements an individualized approach to exercise, including personal training and instruction in physical fitness and conditioning for an individual and a person who performs similar physical fitness training regardless of the designation used."

That definition, too, could be reviewed, Smith said.

As it stands, such a broad definition "could include many fitness professionals who do not consider themselves 'personal

trainers,'" wrote David L. Herbert in the June 2014 issue of *Fitness Trainer* magazine. Herbert is an Ohio lawyer who has helped such organizations as the American College of Sports Medicine (ACSM) and the National Strength and Conditioning Association (NSCA) write published standards and guidelines, and he has also served as their legal counsel.

The law's current language could be interpreted as any "individualized" training, including group classes that scale loads, repetitions and movements to an individual's physical and psychological tolerances.

Jim Bathurst, director at CrossFit Foggy Bottom in D.C., was concerned about the ambiguous terminology.

"It's very loosely defined," he said, "and, again, that's exactly the problem. What I'm worried about, of course, is, ya know, are we gonna get hit with some fines in two or three months because we didn't meet some requirement that we didn't know about?"

There are 23 CrossFit affiliates in D.C., and Bathurst was one of several leaders who knew little or nothing about the Omnibus

Health Regulation Amendment Act.

"I don't think the D.C. Council did a good job in letting the public—and especially the fitness world—know (about) this legislation," Bathurst added.

The Council uses the District of Columbia Register—a weekly government legal bulletin—to publish its intent to act on new legislation, to post public-hearing notices and to inform the public of when it passes a law. The D.C. Register is an online publication issued in PDFs that are typically more than 100 pages, and some of them aren't searchable. The "Omnibus Health Regulation Amendment Act" appeared in **five issues of the Register**:

1. March 8, 2013: This issue was 786 pages, contained the bill's title and stated that Council Chairman Phil Mendelson introduced it "at the request of the Mayor."
2. June 7, 2013: This issue was 460 pages and included a one-page announcement of a public hearing on the bill "to regulate several health professions that are currently

unregulated and to strengthen the oversight of the practice of veterinary medicine by incorporating it as a health profession." There was no mention of "personal fitness trainer."

3. June 14, 2013: This issue was 415 pages and announced a new date and location for the public hearing.
4. Feb. 14, 2014: This issue was 255 pages; 23 of them were dedicated to the entirety of the bill itself, announcing its passage.
5. April 11, 2014: This issue was 166 pages and included a one-page announcement that the bill had become law.

D.C. officials also "have met with, and actively engaged all of the interested Fitness organizations and Facilities," Senora Simpson, chair of the Physical Therapy Board, said in an email.

The board, she continued, also works "very closely" with the American Physical Therapy Association and its local chapter.

"This effort has been afloat for the past 5 years!!"

Like Bathurst, District CrossFit owner Andrew Killion hadn't heard of the law either.

"You learn very quickly in D.C. that there's so many rules and regulations that it's not really worth keeping up with them," he said.

"Welcome to D.C.," he added.

Brose, however, had heard of the law.

"There's a lot of talk in D.C. with the tax on gym memberships. And this (law) came in behind that without anyone realizing exactly what they're doing," he said, referencing D.C.'s 5.75 percent sales tax that in October 2014 was extended to health clubs. Personal-trainer fees are exempt from the sales tax.

"We have a situation where we have bureaucrats and people who are government workers who are going to decide how people are trained, which is crazy."

—Joe Freeman

Joe Freeman, owner of CrossFit Praxis, spent seven years on Capitol Hill before joining the D.C. offices of Virginia Govs. George Allen and Jim Gilmore. Freeman knows a thing or two about the legislative process in the nation's capital.

"It can be really difficult to find out what's going on," he said.

This law, Freeman said, gives reason for D.C. affiliates to organize themselves.

"Here we have a situation where we have bureaucrats and people who are government workers who are going to decide how people are trained, which is crazy."

Freeman continued: "We certainly reserve our right to pursue any option, any legal option we have, which may include suing over it. ... It depends on how the regulations are drawn."

He added with a laugh: "Fortunately, D.C.'s so disorganized, we have time."



A veteran of Capitol Hill, Joe Freeman of CrossFit Praxis thinks it's "crazy" that bureaucrats want to decide how people are trained in gyms.



While licensure was passed in D.C., it has failed everywhere else, from California to Wisconsin to Florida.

A Solution Looking for a Problem

While D.C. is the first U.S. municipality to require licensure of personal trainers, others have been seeking to do the same.

Lawmakers have introduced similar legislation in California, Florida, Georgia, Kentucky, Maryland, Massachusetts, New Jersey, Texas and Wisconsin. All the bills failed for myriad reasons, including death in committee and withdrawal.

In D.C., the law was the brainchild of the Board of Physical Therapy, said Simpson, who also is an assistant professor at Howard University and a physical therapist of 54 years. The board is under the umbrella of the District's Department of Health.

The goals were twofold, Simpson said.

"One was to ensure that the public knew the difference (between a physical therapist and personal trainer) and that 'PT' was not going to be the acronym (for a personal trainer)," she explained.

Simpson continued: "In most cases, the public has no idea (how to tell the difference) between personal fitness trainers, PT or athletic trainers."

The second goal was to provide legal protection to both the consumer and to the trainer should any incidents arise, she said.

"If anything happens, who really has jurisdiction over these people?"

In the Oct. 16, 2013, report from the then-Committee on Health, the body noted that although personal trainers are not required to be licensed in any U.S. jurisdiction, "the Board of Physical Therapy perceives this lack oversight as a failure in light of anecdotal reports of injuries, sexual misconduct, and misrepresentation of titles by persons claiming to be competent in personal training."

It went on to say the measure is an effort to "clarify" the functions of personal trainers, physical therapists and athletic trainers and "provide accountability for consumers" by establishing a "scope of practice" and requiring personal trainers to register with the



Andrew Killion of District CrossFit hadn't heard of the new law but was unsurprised by additional legislation in the nation's capital.

mayor and authorize the mayor to charge a registration fee. And, the report added, the bill "prohibits the usage of titles that would confuse the practice of personal fitness training with the practice of physical therapy or athletic training. It also exempts physical therapists from registering as personal trainers."

Steve Dolge balked at the language.

"Is there a problem with people walking into an office, thinking they're getting personal training and now they're in a physical-therapy office?" the owner of Second Wind CrossFit asked rhetorically.

Brose agreed.

"Is anyone gonna roll in and see 'personal trainer' and say, 'I've got this tendonitis. Can you help me?'"

Consumers are capable of deciding for themselves what good training is, Dolge noted.

"I don't think a lot of people out there are getting hurt by personal

trainers," he said. "At worst, they're not getting results, in which case eventually they'll stop paying."

Simpson said personal-trainer licensure would be "similar to what hairdressers get."

Dolge couldn't reason it.

"I don't know why we need all this regulation. What is it fixing? Besides the fact that the whole process is a jumble of confusion that seems wholly unnecessary to me."

He continued: "This is a solution looking for a problem."

Freeman echoed Dolge's sentiments.

"I don't know how this does anything to improve the fitness industry or to protect the trainer, certainly."

All the interviewed CrossFit trainers also found it peculiar that a group of physical therapists would oversee regulations on personal trainers.

“I travel the country with physical therapists and CrossFit coaches. I think (physical therapists would) be the first (people) to tell you that physical therapy and CrossFit training sound similar but they’re not,” said Killion, a member of the CrossFit Mobility Trainer Course staff.

He went on: “It’s a bit of a reach to assume that that person knows anything about athletic training.”

What’s Next

As of late January, the Council had no timeline as to when it would complete its fine-tuning of the law as it pertains to athletic trainers and personal fitness trainers, said Smith, the committee director.

“We’re going to have to introduce a technical bill to get more people involved in the conversation. A lot of people didn’t get to add their opinions before we moved the bill and it became enacted.”

A technical bill would allow for changes to the Omnibus Health Regulation Amendment Act, as well as public hearings and submitted testimony.

She said she hoped it would be resolved within the first half of the year.

The Council will announce any public hearings at least two weeks prior in the D.C. Register. Those who would like to testify or submit written testimony for the hearing should contact [the committee](#). Hearings are streamed live on <http://dccouncil.us/>.

“The game is on, even if we don’t field the team,” warned Freeman, the affiliate owner who spent a combined 15 years in government and as a lobbyist in the District.

“Things are rarely settled, I’ve learned over the years. You always have new folks coming and folks that can take a look at old issues. It’s not hopeless. We need to establish ourselves as what we know that we are, which is the real deal.” ■

About the Author

Andréa Maria Cecil is a CrossFit Journal staff writer and editor.



Washington, D.C., gym owners and trainers now have a chance to insert themselves into the review process and ensure the legislation doesn’t negatively affect their interests.

THE CrossFit JOURNAL

Periodization: Period or Question Mark?

In Part 1 of this series, Lon Kilgore examines the research behind one of the sacred cows of strength and conditioning.

By Lon Kilgore

February 2015



Mike Warkentin/CrossFit Journal

Many textbooks claim to present best practices, but a closer look reveals some recommendations may not be supported by experimental evidence.

Periodization is king of all exercise-programming methods.

Classical periodization, the English translation of Leonid Matveyev's Soviet model of programming, is the single best model and should be used in all strength-and-conditioning training for all healthy and athletic populations.

1 of 4

So says the National Strength and Conditioning Association (NSCA) and anyone who relies solely on its publications. This bias toward a single training approach can be seen simply by examining the sections in NSCA publications that describe how to program exercise:

“This program design strategy is called periodization” (5).

“The term used to describe the special planning that occurs with athletic training is “Periodization” (3).

If you oppose the belief that training should be periodized for everyone everywhere, then historically the NSCA—and anyone who has bought into its dogma—will automatically brand you as ignorant of “best practices” (an educational buzz term meaning “what we assume everyone else does”).

Periodization is overwhelmingly presented as best practice in all NSCA publications on programming—as superior to all other models of programming. That the NSCA proposes periodization trumps all other training models can be demonstrated in an opinion piece published in its *Journal of Strength and Conditioning Research*:

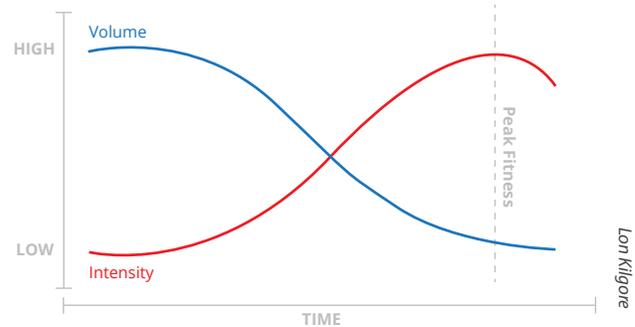
“Although these commercial programs have value, they do not incorporate workouts within a progressive, periodized model; a method that has been well established as an effective means of training athletes for optimal performance” (2).

So if we have the only body of strength-and-conditioning academics and professionals stating we must periodize using a single model, and if there is sure to be professional blowback if we do not, excellent reasons, great logic and a concrete scientific foundation must underpin that position. And we should obviously see superior fitness gains resulting from that position.

Right?

Misrepresentation of a Foundation

The NSCA would like for all strength-and-conditioning professionals and personal trainers to buy its books and use the information inside to train their charges with no questions asked.



The NSCA has for more than 30 years proposed Matveyev’s model of periodization should be applied to all trainees from novice to elite.

The NSCA promotes itself as the “worldwide authority on strength and conditioning.” As such, if a new fitness professional, politician, attorney or member of the general public wanted to find “authoritative” standards or guidelines on strength training, unknowing individuals might end up reading NSCA publications and accepting their contents as irreproachable fact. Even if the individual ended up reading American Council on Exercise (ACE) guidelines, he or she would still be indirectly exposed to NSCA dogma (compare the contents of NSCA and ACE guidance documents on performing exercise).

In “Essentials of Strength Training and Conditioning,” the chapter on periodization is referenced. Via references in text and bibliography, the authors attempted to provide the reader with some reassurance that the words and ideas presented were backed by data from other scientific authors.

In most chapters of academic textbooks, dozens and dozens of citations are intended to demonstrate the content is founded upon previous works. NSCA textbooks are no different from others in this approach. In fact, the average number of citations per chapter in “Essentials” is 88.

Superficially, 88 references seem like a lot. We would expect a core principle such as periodization to have lots of support in the literature. And we might be tempted to equate lots of citations in a paper or chapter with rock-solid support for the concept presented.

This may not be the case, as the number of citations in a chapter can be misleading. In the Periodization chapter

of “Essentials,” 25 citations of previous works can be found. This seems to be quite light if we adopt the idea that more citations are better and we recall periodization is considered a core concept to be understood and employed by all fitness professionals.

It is indeed tempting to read something into those 25 references, as other “Essentials” chapters contain effusive citations. But numbers aren’t everything. If the citations included in a chapter are presenting quality data and directly relevant to the point to be made or concept to be supported, a large number of references aren’t required.

But if we perform a quality and relevance check on the citations at the end of the Periodization chapter in “Essentials,” we find only three truly experimental papers cited in this “authoritative” chapter. Three experiments produced in more than three decades? Surely there has to be a larger evidence base for such a central tenet of a professional organization and world authority. Even more troublesome, none of the three papers exactly tested Matveyev’s model of periodization. Remember that this model is presented as the only periodization method endorsed by and taught in the NSCA text.

One of these papers compared an approximation of classical periodization, Poliquin’s undulating method and linear progression. They found no difference in strength

gain between the three programs. The other two research papers were on the physiology of strength. So, quite bizarrely, the only research reference in the chapter bibliography that specifically evaluated classical periodization did not show that Matveyev’s model was superior to even simply adding weight with every workout (linear progression).

But what about the other 22 papers the NSCA authors used as support for the position that Matveyev’s periodization is king? You can look at them as window dressing, opinion and review pieces that essentially review other opinion and review pieces. There is even a reference to an earlier edition of “Essentials.” They are included for the illusion of supporting evidence derived from experimentation. In the exercise sciences, as in other disciplines, caution in interpretation of publications is warranted because there are many examples of unsubstantiated and poorly evidenced opinion being passed off as viable institutionalized thought (1).

One might think this poor delivery of actual data in support of classical periodization might be an editorial oversight in only one NSCA publication, but this is not the case. In the NSCA’s “Basics of Strength and Conditioning Manual,” the analysis of citations included is even more troubling than that in “Essentials.” There are only five periodization references—none experimentally based—in this chapter on a basic professional skill. Compare that to 24 experimental papers and 16 non-experimental papers on stretching and warming-up in the same chapter.

Justifying flexibility work and pre-exercise activities receives more attention than providing a factual basis of programming concepts in a chapter on program design?

Where Is the Truth?

While the model of programming proposed by Matveyev so many decades ago has proven to be effective in the field, so has the model proposed by Yuri Verkhoshansky and the models forwarded by many other figures in resistance training.

Even the 1982 “Classic” paper on periodization by Mike Stone states it is a “hypothetical model” of programming, not a paper intended to say classical periodization is the only way to program (4).



If NSCA texts and digital presences include no evidence directly supporting classical periodization's effectiveness in the short term, long term or in comparison to other viable models beyond Dr. Stone's forward-thinking paper, how is the average trainer and coach to know the NSCA's adopted model actually works? How would the average trainer or coach be exposed to the rich variety of other effective programming options available to them if the NSCA only delivers classical periodization?

A responsible professional should demand more than opinion if he or she is to adopt a single model of exercise programming to be applied to all athletes from novice to elite. A responsible professional should demand more from a professional society than to ubiquitously adopt and disseminate opinion and conjecture as undisputed fact.

While the general concept of periodization of training does have a small body of evidence supporting it, the literature in the area is a quagmire of opinion pieces and reviews, with a few actual experiments sprinkled amongst them. In Part 2 of this series, the author will tease out the experimental papers and frame them so readers can actually evaluate their merits and come to an objective decision on the place of periodization in exercise programming.



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About the Author

Lon Kilgore graduated from Lincoln University with a B.Sc. in biology and M.Sc. in kinesiology from Kansas State University, and he earned a Ph.D. from the Department of Anatomy and Physiology at Kansas State University's College of Veterinary Medicine. He has competed in weightlifting to the national level since 1972 and coached his first athletes from a garage gym to national-championship event medals in 1974. He has also competed in powerlifting, the first CrossFit Total event, wrestling and rowing. He has worked in the trenches, as a coach or scientific consultant, with athletes from rank novices to professionals and the Olympic elite, and as a collegiate strength coach. He was co-developer of the Basic Barbell Training and Exercise Science specialty seminars for CrossFit (mid-2000s). He was a certifying instructor for USA Weightlifting for more than a decade and a frequent lecturer at events at the U.S. Olympic Training Center. He is a decorated military veteran (sergeant, U.S. Army). His illustration, authorship and co-authorship efforts include the best-selling books "Starting Strength" (first and second editions) and "Practical Programming for Strength Training" (first and second editions), recent releases "Anatomy Without a Scalpel" and "FIT," magazine columns, textbook chapters, and numerous research-journal publications. His professional goal is to provide the best quality, most practical, most accessible and highly affordable educational experiences to fitness professionals through his university work and through his *AnatomyWOD* and *PhysiologyWOD* courses. His students have gone on to become highly notable figures in weightlifting, powerlifting, cycling, fitness and academia.

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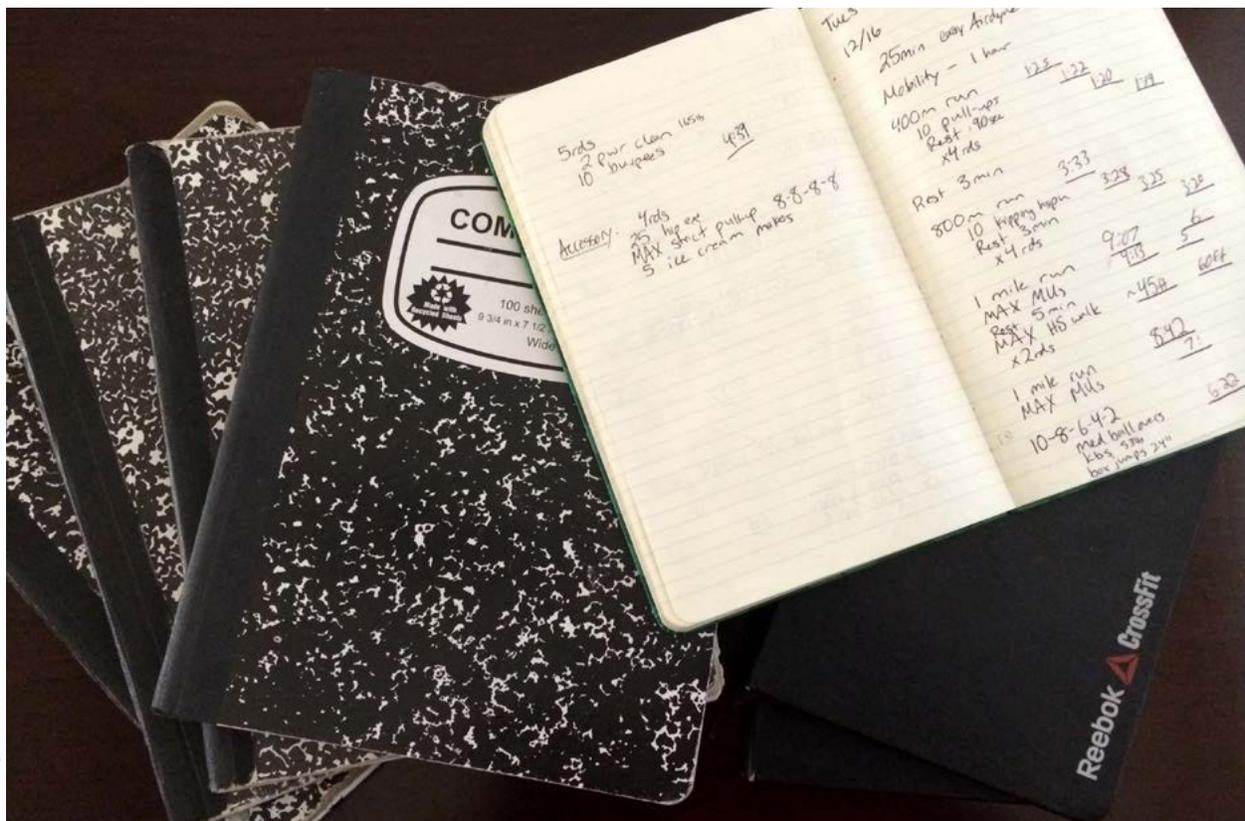
CrossFit JOURNAL

Know Your Numbers

"My Fran time? I know it was under 12 minutes with somewhere between 45 and 95 lb. Does that help?"

By Emily Beers

February 2015



Katie Hogan

It's next to impossible to find a CrossFit coach who hasn't encountered this problem: the client who can't supply a coach with a single number.

He can't tell the coach how much he can deadlift or squat. He can't recall his Helen time or any of his 2014 Reebok

CrossFit Games Open scores. He can't remember if a vague press number was for 1, 3, 5 or 10 reps. He stares blankly when told to do a workout with approximately 50 percent of his 1-rep-max clean and then starts loading his bar by looking at the loads others have selected.

“The methodology that drives CrossFit is entirely empirical.”

—Greg Glassman

By failing to provide any point of reference to the coach, the athlete is preventing the coach from tailoring the workout to the athlete and helping him get the best results possible. Consider an athlete whose 5 x 5 squat workout includes 3 “work sets” that are far too light to produce any improvements in strength. Or consider a conditioning workout that quickly becomes a test of strength when an athlete has supplied vague numbers and a coach wasn't able to scale appropriately.

What's a coach to do? Sit down with the athlete and have an educational heart-to-heart? Buy him a notebook and a pen? Berate him to start using the logbook he's already been given? March him over to the computer and sign him up for an online workout tracker?

CrossFit is observable, measurable and repeatable. In the 2007 CrossFit Journal article [“Understanding CrossFit,”](#) CrossFit Inc. Founder and CEO Greg Glassman explained why data matters.

“The methodology that drives CrossFit is entirely empirical,” Glassman wrote. “We believe that meaningful statements about safety, efficacy, and efficiency, the three most important and interdependent facets of any fitness program, can be supported only by measurable, observable, repeatable facts, i.e., data.”

Most people who get into CrossFit understand this concept, and their desire to improve their fitness naturally leads them to diligently pull out their notebook or phone to log their scores after each workout. Some athletes do

the same with their nutrition, their sleep and even their stress levels. Others still get so caught up in the numbers they can tell you their Open scores going back to 2011.

It's satisfying to see improvement, and keeping track of data can also tell athletes and coaches what's working and what's not, allowing them to make appropriate adjustments.

Katie Hogan, a longtime coach and member of CrossFit's Level 1 Seminar Staff, pointed out measuring progress empirically is something high-level athletes have been doing for a long time.

“In a lot of non-CrossFit gyms, most people don't track their workouts. But looking back to when I was trying to perform my best in college, we wrote everything we did in the weight room. We were very data driven, and we weren't doing CrossFit then,” said Hogan, who played volleyball and competed in shot put and javelin at the University of California, San Diego.



Tracy Nguyen

A desire to improve fitness naturally leads many athletes to diligently log their scores after each workout.

"CrossFit didn't invent tracking workouts, but for a lot of people CrossFit is their first experience with a sophisticated strength-and-conditioning program, so (tracking their progress) is a new idea," she said.

Some people have to be taught, convinced and reminded of the importance of recording their performances and their progress in the gym.

Hogan loves how CrossFit brings the concept of measuring and tracking your fitness to the general population. With that said, some people have to be taught, convinced and reminded of the importance of recording their performances and their progress in the gym.



Courtesy of Erik Preston

At House of CrossFit, former owner Erik Preston created a wall-mounted matrix he used to record his clients' benchmark numbers. In time, they started logging numbers themselves.

While 100 percent compliance might be unrealistic, coaches such as Hogan and fellow Level 1 Seminar Staff member Erik Preston have developed strategies to help their clients understand and even embrace the idea of recording their numbers.

The Culture of Data

Erik Preston is the former owner of House of CrossFit in Carlsbad, California, an affiliate he opened in 2008. He transferred ownership last October to become a full-time member of CrossFit's Seminar Staff. Preston admitted it was difficult at times to get certain clients to understand and comply with his request to record their workouts at House of CrossFit.

"For some (the concept) is a quick transition, and for others it's harder," Preston said. "If you polled any affiliate owner, you would find different species inside each CrossFit box. Some people are religious about tracking all their metrics, including nutrition and sleep and stress."

Preston discovered the transition happened naturally for these athletes.

"First, people see anecdotally how they're improving, and then eventually they start to latch on," he said.

Preston found that one very important aspect of tracking data is found in the culture and programming of each individual box.

"Some gyms might not repeat benchmark workouts as regularly as others, so clients don't really have a metric to compare," he explained.

When Preston ran the show at House of CrossFit, he made it a priority to ensure his athletes repeated benchmark lifts and workouts and tracked their numbers. To help create a data-conscious culture, he initially took on the task himself.

"I had a big matrix placed on the wall, and I recorded all the data for their benchmark lifts," Preston said. "It turned our culture—over time—into one where people would huddle over that matrix on the wall to eventually (record) data on their own."



Many coaches find success when they create a culture where athletes care about their numbers.

While some coaches like using a board to motivate clients, Preston was less concerned with creating a personal-bests culture than he was with creating a milestone culture that highlighted achievements such as mobility improvements, skill acquisition, and first overhead squats and pull-ups.

“This reinforced the fact that mechanics play a huge role (in fitness), too,” Preston said.

Similarly, fellow Level 1 Seminar Staff member Stephane Rochet had success in creating a culture where athletes learned to care about their numbers when he was a strength-and-conditioning coach for seven years at the University of San Diego, where he worked with 500 athletes on 17 teams. Rochet set up a giant leaderboard for his varsity athletes and started tracking their numbers for them—such as their maxes for presses, squats and pull-ups.

“We would also do met-cons, and they would compete against the other people on their team,” Rochet said. “Or sometimes two teams would compete against each other.”

He added: “They responded well to this. It was important to let them know that they should take pride in this stuff and that the things we were measuring correlated to

better performance on the field or the court. And once they saw that, they got into it.”

For Preston, the real beauty of recording performance is how it creates a level of accountability and how it encourages people to work harder than they otherwise would.

“It’s not always what the data brings out. It’s the act of measuring and observing that keeps (people) engaged (and more invested), and it can affect their intensity and their effort in the workout,” he said.

Hard Numbers Vs. the “Suck-O-Meter”

On top of being part of the CrossFit Level 1 Seminar Staff for the last three-and-a-half years, Hogan coaches at CrossFit CSA in Dublin, California. Although she’s careful not to generalize, Hogan has discovered former high-level athletes tend to catch on pretty quickly to the idea of monitoring physical progress with empirical data, whereas people who have never played sports before often have a harder time understanding why data is so important. Some simply find it tedious to write their scores down after every trip to the gym, so they just avoid doing it altogether.

Hogan believes educating these individuals is key. She'll often sit down with them and explain she's not just trying to be a nagging coach; there's a reason behind her requests for data tracking. During these meetings, Hogan always asks her clients about their goals.

“These people identify CrossFit tracking as something for athletes, which is completely false.”

—Katie Hogan

Sometimes they give answers such as, “Oh, I just want to be in shape.”

“Well, what does that mean to you?” Hogan asks in return.

Some want to gain or lose weight. Some want to feel better. Others want to improve numbers their doctors noted, such as cholesterol levels and blood pressure.

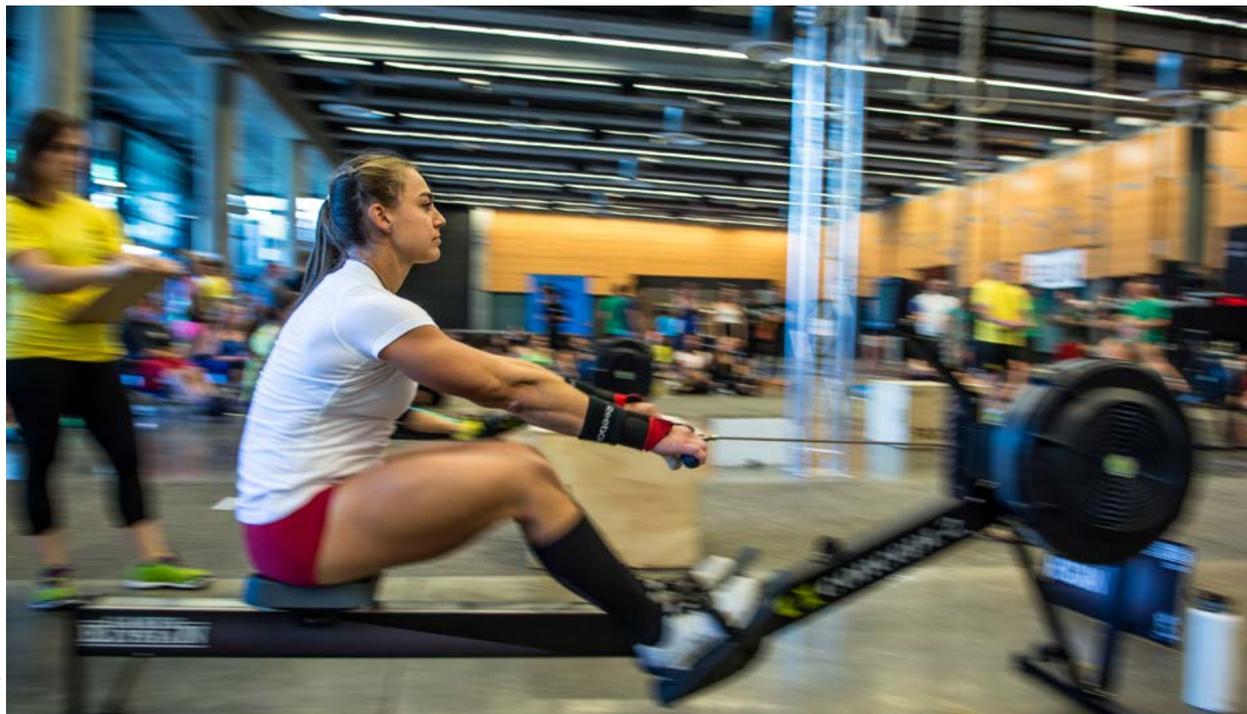
“So what we need to do is attach those goals to numbers,” Hogan tells her clients. “Whatever those goals are, we need to track whatever you're doing and see if we can reach those goals.”

She continues: “Track what we're doing, so when you go into that appointment with your doctor, we have a notebook to look back on, and now we have data so we know what's working and what's not.”

One objection Hogan commonly encounters is the idea that tracking numbers is just for competitors.

“These people identify CrossFit tracking as something for athletes, which is completely false. It's the opposite way to look at it,” she said.

When Hogan encounters these objections, she does her best to convince people they're the exact same as the competitors. Hogan explains how training will enhance the rest of their lives, and keeping track of their progress is an important part of the process.



Henry House

Regardless of an athlete's individual goals, Level 1 Seminar Staff member Katie Hogan firmly believes tracking progress is an important part of success.

"My parents are in their 60s, and they're writing down what they're doing every day. They can whip out their book, and I can see what we need to work on that day," she said.

Despite her efforts, some clients refuse to jump on board. This is where Hogan's tough-love approach begins. As a coach, your instincts might tell you to try harder and give these clients more attention in class, but Hogan does just the opposite.

"It's not worth my time," she said.

To give these clients more attention than other members is like a parent reinforcing bad behavior, she explained. Instead, she uses something she calls the "suck-o-meter." For example, she'll tell a client to lift a weight that's about 70 percent on the suck-o-meter, which is based on an imagined scale on which 100 percent is the maximum discomfort.



Courtesy of Trac Nguyen

Trac Nguyen (left) of CrossFit 101 introduces clients to the gym's tracking system as soon as they walk through the door.

"Everyone else is getting out calculators and notebooks, but if you're going to make up a number every time you come, then that's the best guidance I can give you," she'll tell clients who refuse to provide data.

Of course, Hogan doesn't just abandon these clients. She watches their mechanics closely and helps them adjust when necessary. Generally, though, she's found her admittedly subjective suck-o-meter resonates with clients in a way that gets them close to where they should be in a workout.

"If they're not going to track (numbers), then use the suck-o-meter," she shrugged. "I'm going to work with the people who know what they're going to hit."

Tracking Solutions

There are many ways clients can track their numbers, including online programs, Google documents and old-fashioned notepads. It can be challenging for a coach to know what system works best to maximize compliance.

Trac Nguyen of CrossFit 101 in San Jose, California, had success when he streamlined his gym and pushed one online logging system on his clients. When he launched the system, he instated burpee penalties for ignoring it.

"We had some motivational consequences. If they didn't log, the whole class had to do burpees," Nguyen explained. The burpees were all in good fun, but the consequences produced the desired effect: People started tracking more and more, and now almost all of his members use the software.

Nguyen now starts the process the moment a new client walks through the door for fundamentals. He marches him right over to the computer and shows him how to use the system.

"We spend an entire session where we stand right next to them and let them figure it out," Nguyen said.

He admitted he still has some members who don't use the software. Some of his older members are a bit shy with computers and choose to use a notebook, while a few others use other online tracking services. This doesn't bother Nguyen.

"As long as they have some record to go back to, we're OK with it," he said.

Similarly, Hogan doesn't care what system a client uses as long as he or she is keeping track.

Hogan's gym pushes one tracking program and makes a computer available to clients so they can log their scores the moment they finish a workout. Hogan admitted she signed up for the online program long ago but has never used it.

"I'm a pen-and-paper person," said Hogan, who logs every single workout in a moleskin notebook. She's been doing this for years and is currently working her way through her seventh notebook. She also shares a Google Doc with her coach so he can see her numbers, but it's the notebook that resonates with her.

Hogan understands each athlete needs to find something that works for him or her, be it a glittery pen and a pink notebook, an online document or the newest smart-phone app.

The ultimate goal, of course, is improved fitness.

"It's the same as coaching cues. What coaching cue is the best? The one that works," Hogan said. In her mind, the right method is the one that gets a client to comply.

The bottom line: If 20 athletes in a class know their deadlift PRs and their most recent Elizabeth times, the coach is doing something right. That data will allow the coach to quickly assign the right loads and scale the workout appropriately while avoiding guesswork. The result is a workout perfectly tailored to each athlete—one that will help each achieve his or her goals more quickly. When progress toward those goals is documented, it's great motivation for the athlete to continue training, which helps the affiliate's retention numbers.

The ultimate goal, of course, is improved fitness. That's why athletes decide to do CrossFit in the first place. Because CrossFit will always be based on using measurable results to improve performance over time, smart coaches will find ways to get their athletes to track those results.



About the Author

Emily Beers is a CrossFit Journal contributor and coach at CrossFit Vancouver. She finished 37th at the 2014 Reebok CrossFit Games.



Trac Nguyen

When athletes track their numbers, it takes the guesswork out of coaching and allows coaches to appropriately tailor workouts to the individual.

THE CrossFit JOURNAL

Water Wise

Top scientists bust hydration myths at the 2015 CrossFit Conference on Exercise-Associated Hyponatremia.

By Hilary Achauer

February 2015



CrossFit Founder and CEO Greg Glassman opens the 2015 CrossFit Conference on Exercise-Associated Hyponatremia.

In 1998, Dr. Dale Benjamin Speedy stood in front of Ironman competitors in Auckland, New Zealand, and prepared to make an announcement he knew was going to be unpopular.

As medical director of the race since 1995, Speedy was tasked with protecting the athletes. In 1997, he'd seen athletes collapse and watched some of them fall into comas. With the health of the competitors in mind, Speedy made his race-day announcement:

1 of 7



Dr. Dale Benjamin Speedy and his colleagues succeeded in reducing EAH incidence in triathletes in the late '90s, yet overhydration is still an issue due to misinformation.

He told the athletes he was reducing the number of hydration stations throughout the race, which was made up of a 2.4-mile swim, 112-mile bicycle ride and 26.2-mile run.

"People freaked out," said Speedy, a sports- and exercise-medicine physician. The competitors couldn't figure out why he'd put them at risk of dehydration.

Speedy, however, knew something the athletes and most medical professionals at the time did not: It was more dangerous for the competitors to drink too much water than too little. Speedy had seen it happen.

During the 1997 New Zealand Ironman, the number of cases of exercise-associated hyponatremia (EAH) almost triggered a state of emergency in the region. Athletes were in the hospital, some in comas. According to "Hyponatremia in Ultradistance Triathletes," published by Speedy et al. in 1999 in *Medicine and Science in Sports and Exercise*, 58 of 330 race finishers studied were classified as hyponatremic. Eighteen of those sought medical care, and 11 were severely hyponatremic.

EAH occurs when blood-sodium levels become diluted and fall below 135 milliequivalents per liter (mEq/L). Hyponatremia can cause mild symptoms such as irritability and fatigue or more extreme symptoms including nausea, vomiting, seizures and comas. Brain swelling—exercise-associated hyponatremic encephalopathy (EAHE)—can cause death.

Of note, in 1996, the American College of Sports Medicine introduced the following hydration guidelines in the article "American College of Sports Medicine Position Stand. Exercise and Fluid Replacement": "During exercise, athletes should start drinking early and at regular intervals in an attempt to consume fluids at a rate sufficient to replace all the water lost through sweating (i.e., body weight loss), or consume the maximal amount that can be tolerated."

In 1998, Speedy implemented a simple prevention and education program, which included fewer aid stations and telling workers at those stations not to force liquids on the athletes. The result was a reduction in the percentage of race starters who received medical care

for hyponatremia from 3.8 in 1997 to 0.6 in 1998. Those findings were published by Speedy and company in the 2000 *Clinical Journal of Sports Medicine* article "[Diagnosis and Prevention of Hyponatremia at an Ultradistance Triathlon](#)." More than 15 years after Speedy showed how to reduce the incidence of EAH, people are still dying from a completely preventable condition. In August 2014, two otherwise-healthy 17-year-old high-school football players died from EAH following excessive fluid intake.

On Feb. 20, 2015, scientists and doctors from around the world gathered at the Park Hyatt Aviara resort in Carlsbad, California, for the 2015 CrossFit Conference on Exercise-Associated Hyponatremia, organized by the HEAT Institute. Also in attendance were professional triathletes, athletic trainers, and CrossFit athletes and coaches.

CrossFit Inc. sponsored the conference to share the latest research from top scientists in the field and spread the truth about hydration in hopes of preventing further death and injury.

Fluids and Fallacies

Dr. Mitchell Rosner spoke in the morning and addressed the origins of current hydration guidelines. Rosner is chairman of the department of medicine at the University of Virginia and Henry B. Mulholland Professor of Medicine in the division of nephrology.

Most people have heard it's important to drink, at minimum, eight 8-ounce glasses of water each day. This simple, easy-to-understand guideline is known as "eight by eight."

According to lay literature, the positive effects of drinking glass after glass of water are significant.

In the July 2000 *New York Times* article "[Personal Health; For Lifelong Gains, Just Add Water. Repeat](#)," Jane Brody wrote that drinking water lubricates joints, prevents tissue from sticking and cushions the body from injury.

Rosner said no scientific studies support these claims. The Mayo Clinic agrees, as stated in the article "[Water: How Much Should You Drink Every Day?](#)": "Although the '8 by 8' rule isn't supported by hard evidence, it remains popular because it's easy to remember."

Hydration myths have had a significant impact on behavior.

"There's been a 25 percent increase in water consumption from the late 1970s to the late 1990s," Rosner said.

Drinking glass after glass of water while sedentary generally doesn't have negative health implications. It mostly leads to more trips to the bathroom.

The problem begins when someone drinks excessively while exercising. During exercise, the AVP gene provides instructions for making a hormone called vasopressin, or antidiuretic hormone (ADH). This causes the kidneys to reabsorb more water and make less urine.

The body is exquisitely designed. When it knows it will lose water through sweating, the body holds onto water. When a person drinks excessively while exercising, the body retains the fluid due to the effects of ADH, and if a person keeps drinking, blood sodium can become dangerously diluted, falling well below normal levels of 135-145 mEq/L.



Dr. Mitchell Rosner poked a multitude of holes in "lay literature" recommendations that are not supported by science.



Dr. Jeff Glassman, CrossFit Inc. Chief Scientist, addresses the conference during a lunch lecture.

This interest in hydration in the late 1980s and into the '90s coincided with an explosion in the popularity of marathons. Races such as the Rock 'n' Roll Marathon—which began in 1998 with a record-breaking 18,000 participants—emphasized the fun, all-inclusive aspect of marathon running.

At this time, hydration guidelines were one-size-fits all and didn't take into account body weight or the athlete's pace. For instance, a slower runner would have far more time to drink too much than an elite runner who could finish a marathon in 2 hours, 30 minutes or so.

What academics, physicians and coaches didn't realize is that telling endurance athletes to pre-hydrate and then drink as much fluid as they can tolerate could lead to potentially fatal EAH.

What academics, physicians and coaches didn't realize is that telling endurance athletes to pre-hydrate and then drink as much fluid as they can tolerate could lead to potentially fatal EAH. Even worse, because the condition was almost unknown—Speedy and Dr. Tim Noakes first used the term “EAH” in a paper in 2000—overhydrated athletes were given intravenous fluids by well-meaning aid workers and medical staff, making the condition worse.

Kelly Barrett, a 43-year-old pediatric dentist and mother of three young children, died of EAHE after drinking too much during the 1998 Chicago Marathon. Hilary Bellamy, a 35-year-old mother of two, collapsed at the 20.5-mile mark of the 2002 Marine Corps Marathon in Washington, D.C. She later died of EAHE.

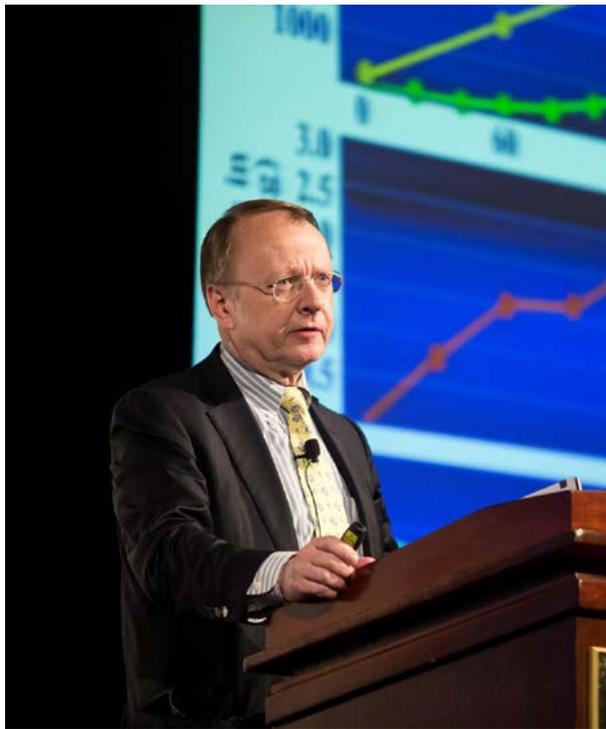
In August 2008, Patrick Allen, a football player on the Bakersfield Christian High School team in California, died of EAHE caused by drinking too much water, according to the autopsy. In August 2014, two high-school football players, Zyrees Oliver of Georgia and Walker Wilbanks of Mississippi, consumed excessive amounts of fluid—including Gatorade—and both died from EAHE.

From the Scientists to the Community

Troy Aguila and Luke Porter read the CrossFit Journal article "[Confronting the Drinking Problem](#)" about the Feb. 20 conference and decided to attend and learn more. The two are in the process of opening a new affiliate, CrossFit VICE in Playa Vista, California.

After listening to the first five speakers address the causes of EAH, Aguila said he was interested in hearing the scientists debunk conventional wisdom about dehydration.

"Water stations (at races) are sales and marketing opportunities," Aguila said. His point was later supported by



Dr. Joseph Verbalis of Georgetown University explained exactly why sodium supplementation cannot prevent EAH.

Dr. William Roberts, a professor in the department of family medicine and community health at the University of Minnesota Medical School. Roberts is also program director at the University of Minnesota St. John's Hospital Family Medicine Residency in St. Paul, Minnesota.

"The amount of water stations is a money issue because of sponsorship," Roberts said.

"At (one) Houston marathon there were 30 water stops. A woman stopped at each and had three cups of water at each. That's 90 cups of water. Her sodium level was 121," Roberts said. She collapsed but luckily survived.

Aguila and Porter said the information they learned would be useful to their future members.

"This can help the general population," Aguila said. "If they are going to compete in things like Spartan races, this can empower us to give them important knowledge."

"It's very logical," Porter said about what the scientists were saying about EAH and overhydration.

"Why is it being suppressed?" he asked.

Josh Everett, who finished third at the inaugural CrossFit Games in 2007 and second in 2008, was also in attendance. He said he was drawn to the conference by the level of the presenters, and he said he would use what he learned when coaching and in his own training.

"I will be smarter about recommendations for athletes competing in longer events, especially when they are doing double days," said Everett, who is a strength-and-conditioning coach for the U.S. Navy.

"For me personally, it makes me feel less bad about not drinking as much water as I should," he said with a laugh.

Just Add Salt?

If EAH is caused by low levels of blood sodium, it seems logical that salt supplements would solve the problem.

Not so, said Dr. Joseph Verbalis, professor of medicine and physiology and chief of the division of endocrinology and metabolism at Georgetown University.

"Sodium supplementation doesn't help maintenance of body osmolality," Verbalis said. (Osmolality is the measure of dissolved particles in a fluid.)

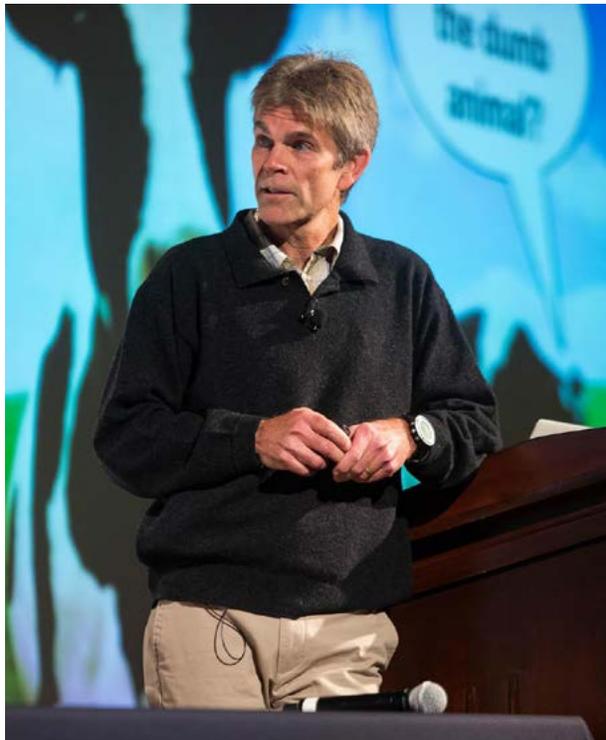
"Whatever is taken in is excreted," he said.

What's more, Verbalis said recent research indicates sodium could stimulate secretion of AVP, which triggers the antidiuretic hormone (ADH).

"This could be a double whammy for EAH," Verbalis said.

Dr. Martin Hoffman is professor of physical medicine and rehabilitation at the University of California, Davis and chief of physical medicine and rehabilitation at the VA Northern California Health Care System. He is also the director of research for the Western States Endurance Run, the world's oldest and most prestigious 100-mile trail race.

Hoffman has been doing EAH research on Western States runners since 2008, and his efforts helped reduce the rate of EAH at the race from 51 percent in 1998 to about



Dr. Martin Hoffman showed sodium supplements can cause excessive thirst, which then leads to over-consumption of liquids and increased risk of EAH.

7 percent now, based on treated athletes. Hoffman and Kristin Stuemple's "Sodium Supplementation and Exercise-Associated Hyponatremia During Prolonged Exercise" showed that while supplemental sodium may reduce the decline in blood-sodium concentration, it will not prevent the development of EAH if overdrinking continues.

Although no science supports the idea that hydration prevents or relieves cramping, the myth persists.

In some cases, sodium supplements can cause excessive thirst, motivating the athlete to overhydrate. Hoffman shared the case of a man who ran 100 miles in 18 hours and took 7,000 mg of supplemental sodium. When he collapsed at the end of the race, his blood sodium was 127 mEq/L, well below the normal range.

"He was thirsty because he was taking so much sodium," Hoffman said.

Many athletes also drink regularly during exercise to avoid muscle cramps, and it's common for coaches and trainers to list dehydration as the cause of cramps. Kevin Miller, Ph.D., an associate professor in the athletic-training program at Central Michigan University, specializes in studying exercise-associated muscle cramping.

The problem Miller found with most of the existing literature surrounding exercise-associated muscle cramps is the inability to separate dehydration from fatigue, making it difficult to determine the cause of the cramping. Miller conducted a study that tested hydrated and mildly dehydrated subjects, inducing cramps with electrical shocks after exercise.

"I found no difference between very hydrated and mildly hydrated individuals as far as cramps," Miller said. He then repeated the experiment with subjects who were even more dehydrated. Again, there was no increased cramping among the dehydrated subjects.



Dr. Tamara Hew-Butler was one of 18 experts who lectured at the conference and helped dispel myths about hydration.

Although no science supports the idea that hydration prevents or relieves cramping, the myth persists. Miller suggested the true source of cramps might actually be muscle exhaustion.

Zyrees Oliver, the 17-year-old football player who died of EAHE in August 2014, complained of cramps during football practice. He drank 4 gallons of fluid: 2 gallons of water and 2 gallons of Gatorade. Oliver later collapsed at home and died in the hospital.

Several of Oliver's relatives attended the Feb. 20 conference, including his mother and his aunt, Dr. Tammy Chavis.

"Are you committed to educating communities across the country?" Chavis asked the scientists and conference attendees.

"It can't stop here," Chavis said about the educating and myth-busting that had gone on that day.

"We have to take it from state to state, across the nation."

Spread the Knowledge

Speedy's lengthy campaign of education and prevention has been a huge success in New Zealand and almost completely eliminated EAH in the country.

"In New Zealand, we've managed to debunk the myth of dehydration," Speedy said.

Not so in the United States. Many well-meaning ER doctors and nurses assume a collapsed athlete is dehydrated and administer more fluids, which makes the condition worse.

But the problem could be stopped before an athlete reaches the ER or aid station. Sports scientists need to put out data-driven information that will replace current myths and prevent future injuries and deaths, and athletes, parents and coaches must be aware of the very real danger of overhydrating during exercise.

Water is essential. However, that doesn't mean it makes sense to flood the body with water if you're not thirsty. The assembled experts at the conference proved that in no uncertain terms over 11 hours of lectures, and they pointed out that the body already has a precise mechanism for determining when it needs water—thirst.

Instead of pre-hydrating, drinking according to a schedule or following one-size-fits-all guidelines such as "eight by eight," athletes are now being instructed to follow a simpler rule that will keep them safe: If you're thirsty, drink. If you're not thirsty, don't drink.



About the Author

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