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Carbo-Load of Crap

T.J. Murphy explains how he ditched his traditional running diet, lost weight, didn't bonk and felt better.

By T.J. Murphy

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On Aug. 9 The New York Times published “Coca-Cola Funds Scientists Who Shift Blame for Obesity Away From Bad Diets.” The report focused on Coca-Cola’s financial support of a group of scientists pledging to fight the obesity crisis by calling for more exercise rather than intake of fewer calories.

1 of 7

"Coke has provided financial and logistical support to a new nonprofit organization called the Global Energy Balance Network, which promotes the argument that weight-conscious Americans are overly fixated on how much they eat and drink while not paying enough attention to exercise," according to the Times.

The article created a backlash that set Coca-Cola in full retreat, and chairman and CEO Muhtar Kent wrote a [Wall Street Journal op-ed piece](#) that stated the company would be more transparent about its funding of research. Kent's piece created an [additional wave of criticism](#).

Although PepsiCo, McDonald's, Kraft Foods and Hershey's were also mentioned in the original New York Times piece as companies who sponsor food-industry research, Gatorade—owned by PepsiCo—did not appear in the article. Interestingly, Gatorade has offered financial support to exercise scientists conducting studies on hydration and carbohydrate intake [for decades](#).

Dr. Tim Noakes, best known in some circles for his research on hydration, is one of those who has in recent years publicly reversed his position and openly attacked soft-drink companies for their support of high-carbohydrate diets. In a January 2015 [Primal Blueprint podcast](#), Noakes blamed high-carb diets for race fields crowded with "fat runners" at recent marathons.

"We have a half-marathon in Cape Town, and we did a study on the field. We found that 30 percent of the runners in the field were insulin resistant and obese," Noakes said.

Also alarming for Noakes was that the runners weren't doing themselves any favors in the race.

"They were literally eating tons of sugar during the race," he said in the podcast.

In a November 2014 [Australian Broadcast Corporation interview](#), Noakes talked about his role in the over-consumption of sugar.

"I spent 33 years of my life telling athletes that they must carbohydrate load, which meant that for the last three days before a marathon, you should eat 700 or 800g of carbohydrate (per day). And I was the first in the world to produce these GUs that people lived their races on. So if



Dr. Tim Noakes said he regrets his role in developing early versions of the high-carb supplements that now fuel the endurance community.

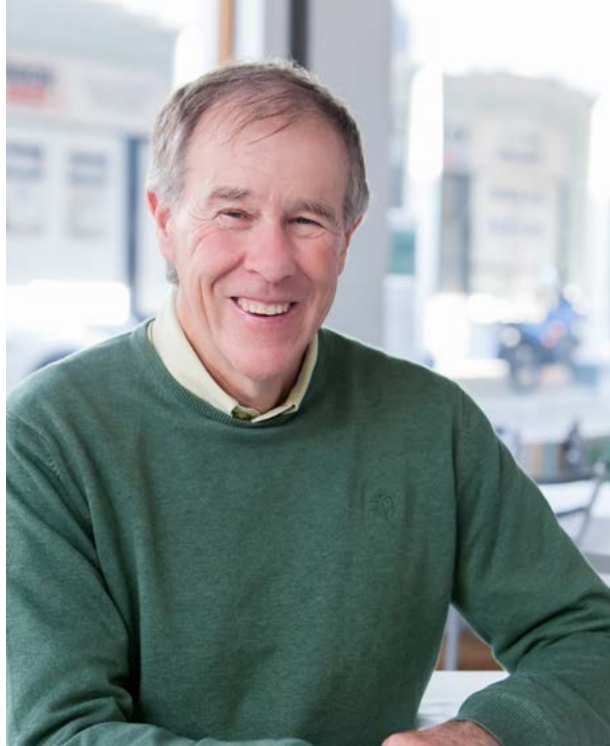
you go to the Ironman, you'll see people taking GUs every half hour or so. So myself and Bruce Fordyce, who's the great South African ultramarathon runner, developed that product and I apologize because that was completely wrong," he said.

"GUs" are small packages of semi-solid energy paste, some with caffeine, that an endurance athlete can consume for an approximately 100-calorie infusion of carbohydrate. Noakes was referring specifically to Leppin FRN Squeezies, which he helped develop in the early 1980s. "FRN" was an initialism representing the inventors: F for Fordyce, and R for Bernard Rose, a South African 2:10 marathoner.

The N stood for Noakes.

Running in the Wrong Direction

"For 30 years I was part of the problem," Noakes told me in a Skype call from his office in Cape Town, South Africa, in April 2015.



Courtesy of Dr. Tim Noakes

“We did research on carbs because that’s what we could afford to do.” —Dr. Tim Noakes

Noakes was talking about the overall trend of sports-science research directed at endurance athletes and carbohydrate. The trend started in the 1960s with the invention of Gatorade and continues today: At an American College of Sports Medicine conference in San Diego, California, this past spring, I sat through several hours of lectures stating a high rate of carbohydrate intake is crucial to athletic performance.

“For 30 years I was part of the problem.”
—Dr. Tim Noakes

In 1969, Noakes, who had a passion for distance running, graduated from the University of Cape Town medical school and set out to be a sports scientist. Coincidentally, the first Gatorade-funded study at an independent

laboratory—Ball State University—was conducted in 1970, with resulting article [“Fluid Ingestion During Distance Running”](#) published in *Archives of Environmental Health: An International Journal*. The study’s lead author, David Costill, had asked Gatorade for US\$800. The company gave him \$8,000, and a symbiotic relationship between sports science and the beverage industry was born.

“We did research on carbs because that’s what we could afford to do,” Noakes told me.

He was earnest about his overall conclusion that a high-carbohydrate diet was essential to running well. Throughout the 1980s and into the 1990s, Noakes either led or contributed to studies on sugar for endurance athletes, such as [“Carbohydrate Ingestion and Muscle Glycogen Depletion During Marathon and Ultramarathon Racing,”](#) published in the *European Journal of Applied Physiology* in 1988.

“Based on the data and evidence we had, it seemed clear that carbohydrates were the key to performance. The evidence was so convincing,” Noakes said.

In 1981, due to Noakes’ influence, the Comrades Marathon—an “ultramarathon”—posted aid stations after every one of the race’s 56 miles. In 1985, Noakes published the first edition of what has long been considered the bible of sports science for distance runners: *“The Lore of Running.”* The book contains hundreds of pages detailing the prevailing research on the physiology and biochemistry of running, with a huge emphasis on how “many exercise scientists around the world have become convinced that the ingestion of a high-carbohydrate diet is the secret to optimum performance during prolonged exercise.”

Noakes reversed his position on the high-carbohydrate diet in early 2011. Even though he was a runner and didn’t drink or smoke, Noakes—in his early 60s at the time—was overweight and diagnosed with Type 2 diabetes. Desperate for an answer, he tried a low-carb diet he had read about in an ad on the Internet. The promise was that he would lose 11 lb. in as few as eight weeks.

“In eight weeks I lost 11 kilograms,” he told me. The 11 kg—or 24 lb.—was more than double the promised amount. Noakes said he shed what felt like 20 years in his health as a runner.

As Noakes described it, he used to be the poster boy for the high-carb diet. Now he's more of an avenger against the soft-drink industry's influence on sports science. Usually with hostile reaction, he talks to other scientists about topics such as insulin resistance, chronic inflammation and how "the science has been completely distorted by the drink industry."

Noakes is also the author of "Waterlogged: The Serious Problem of Overhydration in Endurance Sports," which details how misguided hydration science and advertising have caused athletes to drink when they aren't thirsty, exposing them to the risk of [hyponatremia](#).

A Personal History of Carb Loading

The first time I ever used any sort of nutritional supplement in sports, it was 1979 during two-a-day football practices in the thick heat and humidity of August in Iowa. Once every hour or so, the coaches made us take a break from drills and had us sprint back and forth to a garden hose that lay near the field. Someone had taken a punch to the hose so it had about 10 holes in it. A light trickle of water flowed from each hole. Of course, by the time we got to the hose the coaches were already yelling at us to run back, so you were lucky if you got a taste of the water.

Surely the hose was installed because hydration had become a sports-science topic after Costill began work in the early '70s conducting experiments on exercise and hydration, measuring rectal temperatures in runners and so on. The notion of drinking water or Gatorade was antithetical to what my coaches had experienced as athletes in their own high-school years. My dad played football in the 1970s for Les Hipple, an Iowa legend who led Marion High School to state championships in football, basketball, track and cross-country running. Drinking fluids during practice or games was strictly forbidden. Dad told me some of his teammates stashed lemon wedges into their helmets and ate them surreptitiously to help stave off thirst.

On Sept. 18, 1983, I did my first triathlon: The All-Iowa Triathlon, held at Lake McBride near Iowa City. It might have been the first triathlon held in Iowa. You had a choice between the half-Ironman (1.2-mile swim, 56-mile bike ride and 13.1-mile run) and the full. I did the half. It was during that race that I saw and used an aid station for the first time. There was just one that I recall, at the halfway



T.J. Murphy

At the Boston Marathon, aid stations abound, and carbs are never far from reach of the runners.

point in the bike ride. It looked like a neighborhood lemonade stand: a small table attended by a den mother and two of her Cub Scouts. They handed out cups of water and slices of banana.

How vastly different things would be in 15 years.

In 1998 I was racing Ironman Australia, and there was a station every 20 km or so during the bike and much more frequently during the run. (In 2015, they had an aid station every 2 km on the run course.) These stations were virtual 7-Elevens with a wide array of drink choices from water to sports drinks to flat cola. And there was food: bananas, orange slices, sports bars and "biscuits." As we biked or ran by tables, countless volunteers would shout out what they had in their hand to offer. I took a biscuit out of curiosity more than anything else—they were actually chocolate-chip cookies.

By this time in my life, I had been training and competing in both running races and the occasional triathlon. I had also worked at a running-shoe store in the years prior to

my becoming editor-in-chief of Triathlete Magazine, which at the time was based in San Francisco, California. Both as an athlete and editor, I had been immersed in learning whatever I could from the prominent sports scientists who concentrated on endurance athletics. The big names to me were Costill; Edmund Burke, an exercise physiologist who had served at the Olympic Training Center in Colorado Springs, Colorado; Ed Coyle, a sports scientist who specialized in carbohydrates and performance at the University of Texas at Austin; and Noakes.

When I was free of injury (which wasn't that often), I routinely tallied anywhere from 60 to 100 miles per week as a runner. Largely because of the studies conducted by Noakes, Burke and Coyle, I and just about every competitive runner I knew became carbohydrate freaks. The message from the research was clear: Endurance athletes who didn't consume enough carbohydrate before, during and after exercise were blowing it. If you weren't effectively carbo-loading in the days before a competition—filling up both muscle and liver glycogen stores by cramming down as much pasta,

potatoes and pancakes as you could—you would come up short on energy during the race. On a day before a marathon, I would glug down a jello-like substance called Exceed High-Carbohydrate.

The message from the research was clear: Endurance athletes who didn't consume enough carbohydrate before, during and after exercise were blowing it.

In 1996, I had gone to Vancouver, Canada, as a journalist to report on the Gatorade Sports Science Institute (GSSI) annual meeting, where exercise scientists flew in



Dave Re/CrossFit Journal

Fuel for elite endurance athletics?



T.J. Murphy

Some athletes are now questioning traditional fueling strategies and looking beyond carbohydrates.

from around the globe to present papers and hold panel discussions. I vividly remember Coyle's talk on carbohydrate for recovery. He talked about how critical it was to eat a high-carb meal before exercise and—depending on the duration and intensity of the workout—how important it was to strive to eat and drink carbs not just immediately after the session or race but also for the next 24 hours.

Run a hard 10 miles, for example, and the prudent runner should take in a steady stream of carbohydrates on the hour every hour. I tried to comply: I ate pasta and oatmeal and drank as many sugary drinks as I could stand. I ate PowerBars and Chips Ahoy cookies.

The injuries I sustained during the 1990s were usually joint related—knees, ankles, hips. I had irritable bowel syndrome as well. Noakes told me he's sure he would have sustained a better level of performance in his earlier years as an ultra-runner if he hadn't been fueling his insulin resistance with high levels of carbohydrates. As a 52-year-old who is in most ways far more fit and healthy than I was as a competitive distance runner and triathlete in the 1990s, I, too, wonder if I would have performed better with different fuel.

In 1997, I made a visit to GSSI headquarters in Barrington, Illinois. I met a number of researchers with doctorates who were busy conducting studies on heat and hydration. It was winter, and I went for a 45-minute run with two of the scientists. It was cold—freezing, in fact—but they insisted I carry a bottle of Gatorade, and they were on me the whole run to sip the fruit-punch-flavored beverage. I didn't want a drop. I wasn't thirsty for one thing, and I had to force it down to drink to the satisfaction of the scientists.

I recently spoke with Mark Sisson of [Mark's Daily Apple](#) on how—to this day—the carbo-loading party is ritualistic at big marathons and races. These days, Sisson is a fierce advocate for eating a Paleolithic, low-carb diet. But back in the late 1970s as a 2:18 marathoner trying to make the 1980 Olympic trials, Sisson—who had studied pre-med at Williams College and read every piece of research he could get his hands on—strived to consume at least 1,000 g of carbohydrates per day in accordance with what he had read. By the age of 27, Sisson was plagued by upper-respiratory-tract inflammation, arthritis in his feet and irritable bowel syndrome. When he started eating a diet more in the range of 100-150 g of carbs per day and avoiding grains and processed sugars entirely, all that went away.

I had an experience similar to those of Noakes and Sisson. In 2010, even though I was running 50-60 miles a week, I couldn't get my weight below 200 lb. My body fat percentage was well over 20, and to my utter shock a blood test showed I was prediabetic. When I ran in a half-marathon that year, I noticed the same thing Noakes said he was seeing in the races in South Africa: a lot of fat runners, as he described it. The first 100 or so were skinny, and most of the rest were not.

If exercise is the key to ending the obesity crisis—as Coke and the Global Energy Balance Network would have you believe—why all the fat runners?

In the October 2010 Los Angeles Rock 'n' Roll Half-Marathon, I saw the same sort of thing. And I was seeing the same thing in the mirror.

After I finished the race, I sat on a curb and tried to stretch out my knees, which were screaming with inflammation. Just about the same time Noakes was having his desperate epiphany, I had mine.

When I talked to Noakes this past spring, he was at a difficult juncture in his life. He was preparing to retire from his position at the University of Cape Town and be put “on trial” by colleagues at the school who were attacking his campaign against processed carbohydrates in the diet.

In talking to Noakes, I recalled how I had met him in person at the Hawaii Ironman in 1999 and was surprised that an ultra-runner could carry so much weight. Noakes is now thin as a rail and training for marathons. But his central passion is the Noakes Foundation, through which he wants to support dietary research that will “reverse the global epidemics of obesity and Type 2 diabetes mellitus,” he said.

He’s set out to bring things back into balance.

As for me, leaving behind the runner’s traditional high-carb diet reversed my being prediabetic. I eat moderate protein, avoid processed carbs and have upped the fat intake. I remember when I first made the change: I dropped 10 lb. of excess fat in about two weeks and my energy levels became consistent. It was a shocker.

In late May 2015, I was offered a free entry to the San Diego Rock ‘n’ Roll Half Marathon the day before the race. I took it even though my running mileage was about what most CrossFitters log—a couple of miles a week max, in the form of intervals. As an experiment, I bypassed every aid station the entire day. Not a single drop of Gatorade Endurance, sports gel or even water.

It was a warm day. During the race, I recalled how I used to comb through aid stations in a panic, freaked out that I would risk “hitting the wall” if I didn’t take in everything I could. Also called “bonking,” hitting the wall is a term used to describe what happens when you run out of glycogen.

I used the half-marathon as a personal experiment. I didn’t carbo-load or take in a single gram of carbohydrate during the race. My previous understanding of the matter suggested I would bonk, blow up and probably have to walk the last third of the race. But that didn’t happen. As I ran through Mile 10, I actually felt stronger, and my energy levels seemed to stay steady throughout the 13 miles.

The question that’s being asked now by researchers such as Noakes is this: What if you prioritize fat burning in your



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Carb culture: Athletes sample product at this year’s Boston Marathon expo.

training and avoid having to incessantly top off your glycogen tank with carbo-loading?

As Noakes told me, there’s a lot to be learned about how best to balance fat burning and smarter use of carbs during a race for an optimal strategy. But freedom from the up-and-down insulin cycle of high-carb intake was a good thing for me.

I’ll never look back.



About the Author

T.J. Murphy is a New York Times best-selling author, a contributing writer to Outside Magazine and the former editor-in-chief of Triathlete Magazine. His books include “Unbreakable Runner,” “Ready to Run” and “Inside the Box.”