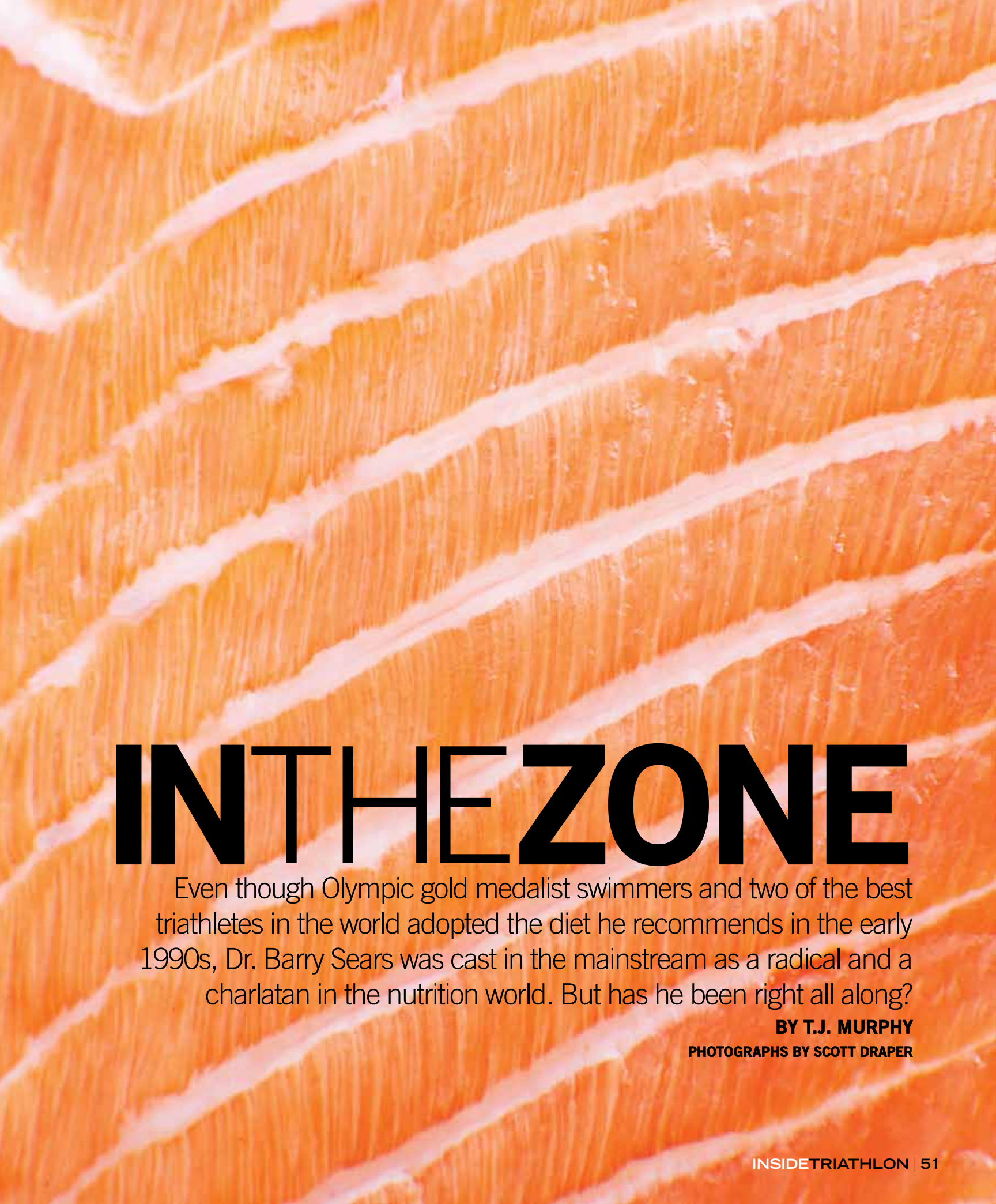


IN THE ZONE

Even though Olympic gold medalist swimmers and two of the best triathletes in the world adopted the diet he recommends in the early 1990s, Dr. Barry Sears was cast in the mainstream as a radical and a charlatan in the nutrition world. But has he been right all along?

BY T.J. MURPHY

PHOTOGRAPHS BY SCOTT DRAPER


Dr. Barry Sears

"He did not live on nuts and berries; if the furnace was hot enough, anything would burn, even Big Macs." — "Once A Runner" by John L. Parker, Jr.

This line from my favorite work of running fiction pretty much summed up my nutritional philosophy for 15 years. I trained for everything from the 1500 meters on the track to the Ironman triathlon, and as a disciple of the high-mileage creed I pounded out 20-mile long runs even when training for the shorter-than-1-mile foot race. At peak mileage I did what triathlon legend Scott Molina used to do: two long runs per week. The payoffs were two by my reckoning: One, I got fit as hell and two, I felt I could eat anything and everything I wanted. Looking back though, and having learned what I've learned the hard way in the past two years, I have to wonder: If I hadn't treated my diet as such a nonissue would I have been faster?

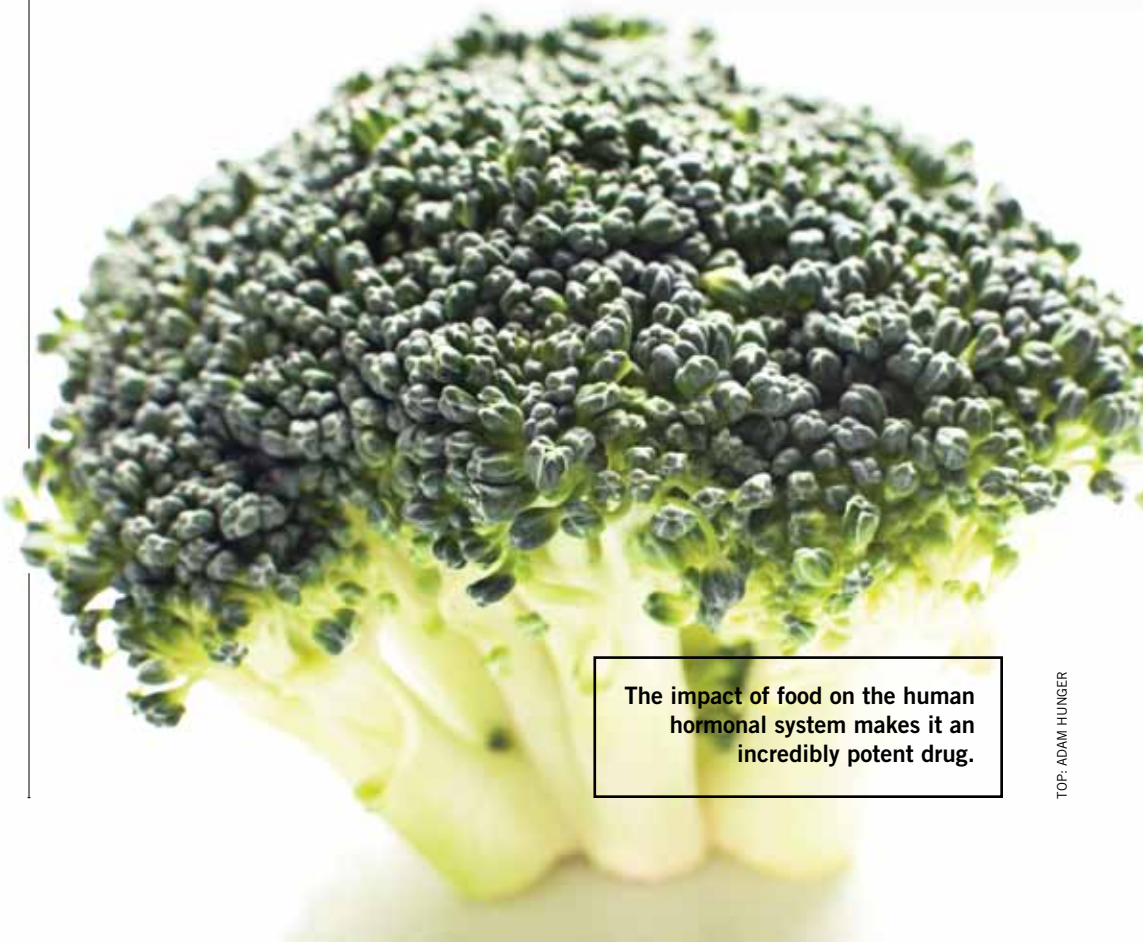
"You cannot dissociate training from the diet," said author Barry Sears, Ph.D., one of the world's leading authorities—if not the leading authority—on hormonal response to food intake. "The two are coupled at the genetic and molecular level."

My introduction to Sears was back in 1995 when his first (of many) books on the Zone diet hit the shelves and became a bestseller. In "The Zone," Sears claimed that by adhering to a diet consisting of 40 percent carbohydrates, 30 percent protein and 30 percent fat, a practitioner would reap the following benefits: permanent weight loss, prevention of disease, enhanced mental productivity and peak athletic performance. Within the book Sears argued that a 40-30-30 diet, high in omega-3s, would stabilize the hormonal response to food and shift into gear a fat-burning metabolism. I recall vividly the outcry of the sports nutrition world—his book a heresy, swiftly labeled as being a high-fat, high-protein, low-carb diet that would harm rather than help. Based on the reaction of the dietitians and scientists to the Zone topic I witnessed at a sports science conference in Vancouver, British Columbia, in June of 1996—I was there as a reporter—I never cracked open the spine of a Zone book and quickly dismissed Sears as another want-to-be diet guru. Besides, I was still operating on the "if the furnace is hot enough" nutrition plan.

But three years ago my body staged a strike to a dramatic effect: In addition to limping along with 15-watt-bulb levels of energy, and increasingly aware that I was being gripped by depression (and perhaps it was already so), a sequence of physiological breakdowns occurred, including my back going out for weeks at a time and a failing right knee. Intuitively, without a doctor's recommendation or advice from a friend, I knew my garbage diet was the problem. I then began trying a variety of things, from juice fasts to a completely vegan diet. Being vegan definitely helped me shed weight, but the low energy levels persisted, as did my injury problems, and I was losing my identity as a triathlete and runner.

In a parallel way, I was following a path once blazed by triathlon legend Mike Pigg.

"I was eating like an 18-year-old, just a complete garbage hound," Mike Pigg told me over the phone recently. I'd asked him about the late 1980s, years when the Californian known for being the hardest working triathlete in the world struggled to nail a breakthrough at the Hawaii Ironman. "In 1989 everything was going downhill." Pigg was plagued by diarrhea and a weak stomach, and he experienced a moment of enlightenment when he noticed how he felt after eating his customary stack of six pancakes before getting ready for a bike ride. "I felt both sleepy and hungry," he said, the exact opposite of his intent. "This turned out to be one of the most important lessons I have learned in life. Ask yourself how you feel after you eat a meal. Does a meal make you feel stronger or weaker?" When Pigg began to listen to his body, he altered his diet so that it had more protein and healthy fats. He ditched processed sugar and reached for more fruits and vegetables. "I realized that carbs and protein were the ticket. And I'm happy to eat


The impact of food on the human hormonal system makes it an incredibly potent drug.

TOP: ADAM HUNGER

the good fats—avocados, butter and olive oil." A favorite dish of his became steak, potatoes and avocado.

"I made the changes to my diet and was able to extend my career as a pro for another 10 years," he said. Pigg remains a formidable athlete to this day, recently having earned, through a sub-eight-hour ride, the coveted belt buckle at the Leadville 100 mountain bike race.

The diet that Pigg says helped salvage his life as an athlete was in sync with the essential parameters of the Zone diet that Sears, a former staff scientist at the Massachusetts Institute of Technology, was still developing in 1989. Sears was working to answer the question: What's the impact of food on the hormonal system and how does this affect a person's health?

Unlike Pigg, Sears wasn't pressured to salvage a career as a pro athlete—he was considerably more motivated by personal reasons. His father died at the age of 53 from a heart attack, as did three uncles, also in their early 50s. A biochemist with expertise in genetic expression, cancer delivery systems and the molecular mechanics of hormones, Sears knew that this was more than a coincidence. "I'm a walking genetic time bomb," he once wrote. Sears began thinking about food at a biochemical level and developed the belief that when it comes to the expression, or non-expression, of our genes, the impact of food on the human hormonal system made food an incredibly potent drug.

"If you write one thing from this interview," Pigg said, "Tell the readers this: Listen to what your body tells you after you eat a meal." In Sears' books, he says the same thing, indicating that messages, like the ones Pigg described, are hormonally driven at the molecular level, for powerful reasons, and he gives readers instructions on how to adapt meals to what is sensed—"Do you feel tired? Do you feel hungry? Do you feel full?"

The path to developing the Zone diet began when Sears reviewed biochemistry research performed by Sune K. Bergström, Bengt I. Samuelsson and John R. Vane—research that earned the Nobel Prize for Medicine in 1982. The subject was eicosanoids, molecules that control hormones and are produced in every living cell in the body, and, as Sears describes them, are "the molecular glue that holds the human body together. Think of them as the biological Internet." Eicosanoids were discovered in 1936, and the lab technology of the 1970s enabled an understanding of the effects of eicosanoids on both cellular inflammation and immunity.

Sears says that a basic understanding of how manipulating eicosanoids can change cellular inflammation levels can be seen with aspirin. The pain that makes you want to pop an aspirin is rooted in a traumatic engagement at the cellular level. For example, if you wake up from a nap with a headache because you slept wrong, the trauma releases prostaglandins, a type of eicosanoids, resulting in pain. Aspirin puts a stop to the pain by inhibiting cyclooxygenase, the enzyme that generates prostaglandins. With that the cellular inflammation decreases and the headache goes away.

The cycle of acute inflammation and the body's anti-inflammatory response is how an injury gets healed and how we, as athletes, stimulate a response through hard training and ultimately get stronger and improve performance through recovery. Chronic inflammation, however, is considered a root cause for diseases as serious as diabetes and cancer.

For Sears, the role eicosanoids play in increasing or decreasing cellular inflammation was the target. And since certain fatty acids were the building blocks of eicosanoids, Sears sought to encourage production of good eicosanoids (anti-inflammatory, built with omega-3 fatty acids) against the bad eicosanoids (pro-inflammatory, built with omega-6 fatty acids). Sears envisioned that fish oil, loaded with omega-3s, could help produce a positive outcome in this equation. By eating fish or supplementing with fish oil, he reasoned, a person can increase the amount of good fatty acid intake and increase the amount of production of good eicosanoids, and thus fortify the body's anti-inflammatory responses. Initial results showed Sears he was on the right track in his quest to control inflammation, but ultimately Sears' research pointed to diet.

Sears recounted the story for me. "In 1988," he said, "while I was working with the Stanford swim team coaches Richard Quick and Skip Kenney, we were getting good results with the fatty acid intake experiments in Japan, but when they returned to the United States their performance was crap. The thing that had changed was their diet: In the U.S. they were eating dorm food. I went into the bowels of the MIT library and found the data that showed us what was going on: If you have high levels of insulin, you'll drive the anti-inflammatory eicosanoids into becoming inflammatory. So unless I controlled the diet I would not be able to control inflammation." Sears said that it was in the following year that he developed the specific 40-30-30 diet necessary to complement the power of omega-3 fatty acids. It was a diet that sparked an ideal hormonal response to food—one that released a combination of insulin, a hormone stimulated by carbohydrates, and glucagon, a hormone stimulated by protein—to a neutral conclusion.

Sears conducted his initial tests on a range of athletes, from the Stanford swimmers to the Pittsburgh Steelers (under Sears' nutritional supervision, Stanford swimmers won eight gold medals in the 1992 Barcelona Olympics). Throughout the past 20 years, Sears has since campaigned hard on the dangers of a high-carbohydrate diet, making the case that scarfing too much sugar, particularly from processed foods and grains, leads to chronically high levels of blood sugar and weight gain—precursors to adult-onset diabetes and obesity.

When Sears' books started coming out in 1995, he was crucified because high-carbohydrate diets (generally recommending 10 percent of calories coming from fats, 15 percent from protein and 75 percent from carbs) still had a hold on the sports nutrition community and, as a matter of fact, the medical community, from the American Heart Association to the U.S. Surgeon General to the makers of the Food Guide Pyramid. They collectively trumpeted that to fight obesity you had to minimize or eradicate fat from the diet.

But Sears argued that a high-carb/low-fat diet left you feeling unsatiated and lethargic. Pigg's anecdote about eating a stack of pancakes and finding himself both tired and hungry is an example of what Sears said was the body's hormonal system working against you.

But Sears wasn't given much of a chance to present his case. Since the medical establishment was so firmly entrenched in the idea of a high-carb/low-fat/low-protein diet, mainstream journalists were armed with quotes and documentation to paint Sears as a greedy snake oil salesman, as Jessica Seigel did in a 1997 story for *Los Angeles Magazine*. "Sears claims that his diet, which calls for roughly twice the fat and protein recommended by the USDA, regulates the body's supply of insulin," she wrote. "According to Sears, reducing levels of this crucial hormone makes the body burn fat faster and eliminates

The Zone diet recommends getting most of your carbohydrates from fruits and vegetables.

destructive food cravings. Medical research, though, has not linked insulin levels to weight gain in healthy people, and increasingly confirms that eating fat makes people fatter."

That was then.

In the past decade a growing number of voices in the medical community have begun to support what Sears has been saying all along. One, that weight gain or loss is not simply a matter of calories in versus calories out, and that how food affects our hormones can have huge consequences on health and, ultimately, the economy of our nation.

This may have started on July 7, 2002, when the *New York Times* published an article, "What if It's All Been a Big Fat Lie?" by nutrition journalist Gary Taubes. "If the members of the American medical establishment were to have a collective find-yourself-standing-naked-in-Times-Square-type nightmare, this might be it. . . . They find that their very own dietary recommendations—eat less fat and more carbohydrates—are the cause of the rampaging epidemic of obesity in America." In the story, Taubes reported how a "subtle shift" had been taking place and established researchers based in places like the Harvard School of Public Health were having to acknowledge that despite lower cholesterol levels and a decline in smoking, heart disease had not declined with them. "That is very disconcerting," Walter Willett, the chairman of the department of nutrition at the Harvard School of Public Health, told Taubes. "It suggests something bad is happening." Taubes detailed how a hypothesis was growing that a high-carb, fat-free diet was "counter-productive," making people "hungrier and then heavier." The epidemic rages on: A study conducted at Johns Hopkins and published this summer suggested that if current trends continue, 86 percent of the American population will register as obese in the year 2030. And they will all be more prone to Type-2 diabetes, a situation that Sears has predicted will ravage the U.S. economy.

My personal experience with a high-carb, low-fat diet—my six months eating a vegan diet in which I paid little attention to the amount of protein and fat I was taking in—produced unwanted results. Despite running 50 miles a week at the time, a blood workup showed signs that I was becoming dangerously insulin-resistant. Or, in other words, pre-diabetic. Because my diet was constantly prompting a spike in insulin levels—insulin being a hormone that prompts the body to either use glucose for energy or store excess glucose in the liver and muscles—I was exhausting the system and a backlog of glucose was piling up in my blood, further taxing my hormonal system and creating a state known as hyperinsulinemia. Since it's when insulin levels go down that the body starts tapping into stored body fat as energy, I had also enabled a fat-trapping mechanism within and I was recording a weight much higher than I should have been.

Mike Pigg was not the only triathlete in the 1990s who was on record as following the 40-30-30 protocol. So was Mark Allen. At a Sport and Spirit camp I attended in the late 1990s, in a series of lectures Allen detailed all of his training methods, including his approach to nutrition. Perhaps the most fascinating aspect of it all was *how* Allen came to rely on the methods that delivered him across the Hawaii Ironman finish line first in six consecutive attempts, between 1989 and 1995. During a lecture on strength training, one of the other campers, a personal trainer, raised her hand to add an exercise to the mix that Allen was presenting. Allen politely stopped her and said, "This is how I did it." The point being that the arsenal of techniques and methods that he counted on—and that he explained were all necessary to defeat Thomas Hellriegel in 1995—were the ones that he collected through a long process of trial and error. In other words, Allen conducted his own experiments, and his diet—which I witnessed personally—was composed of real foods, from spinach to fish to hard-boiled eggs to butter.

This observation was in line with what noted sports scientist Randy Eichner once told me when we were discussing the Hawaii Ironman. I had asked Eichner, a hematologist who had spent time studying the problem of hyponatremia faced by triathletes in long, hot-weather events, what he thought about the practice of elites using salt tablets during the race. The conventional

thought was that this was too much—that an athlete should be able to get enough electrolytes out of sports drinks. "The thing about elite athletes," Eichner said frankly, "is that they're out there pushing the cutting edge and can be well ahead of where we're at with science." Having been a triathlon journalist since 1996, I've witnessed a large number of professional triathletes sitting down to various meals. Except for the way Dave Scott reportedly ate in the 1980s—a high-carbohydrate, low-fat vegetarian diet—most seemed to gravitate toward more balanced portions of macronutrients and higher fat diets overall.

Which leads to the question: Perhaps a Zone or anti-inflammatory diet is a wise choice for overall health, but what's the value for a triathlete in want of sheer high performance?

This past summer on a 100-degree day I went to visit Sears at the Zone Laboratories, 18 miles north of Boston, in Marblehead, Mass. I met with Sears in a conference room and for more than two hours he spoke about topics ranging from athletic performance and the nuances of nutrition timing and hormonal response to his history as a controversial figure.

Before my visit I had picked up his book "Mastering the Zone" and had been experimenting with the Zone meals and ratios. I recalled how the Zone diet had been labeled high-protein, high-fat and low-carbohydrate back in the 1990s, but I quickly learned in trying the diet that the critics surely never attempted a single recipe. I'm no nutritionist, but it's immediately apparent when following the diet that by typical American standards it's far from being high-fat, high-protein or low-carb (see sidebar).

"It's basically your grandmother's diet," Sears told me. "It's moderate, rich in fruits and vegetables, has healthy fat and calls for you to take your fish oil every day, just like your grandmother used to have you take your spoonful of cod liver oil."

On the day I was talking to Sears, the Tour de France was in full swing, and with it Team Garmin-Cervélo—whom Sears was advising on an anti-inflammation diet—was on its way to winning the team classification. Sears' labs monitored the inflammation levels of the riders before the tour through blood tests designed to pinpoint the ratio of arachidonic acid (an omega-6 fatty acid) and eicosapentaenoic acid (an omega-3 fatty acid) in the blood. "To know that you're ready to race the Tour de France, or the Hawaii Ironman, you want to know that you're in a state capable of peak performance—performing at the highest level your genetics allow," Sears said. Sears consulted with the team in using fish oil and diet to bring down inflammation levels. According to the Garmin-Cervélo blog, the team had reduced reliance on traditional staples such as bread and pasta and upped their intake of chicken, turkey and fish, as well as supplemented with fish oil—all with the intent of maintaining low inflammation levels.

"It's about metabolic flexibility," Sears said when I ask him about the value of his diet for the endurance athlete. "When you're talking about an endurance event, whether it's the Ironman, an ultramarathon or the Tour de France, it's about who can produce the most energy." At the molecular level, Sears added, this means who can produce the most adenosine triphosphate, or ATP molecules, which are used to perform almost anything in the body that requires energy. "Fat is the most efficient fuel source you have, but you have to train to be able to use it. To produce the ATP I can use a low-octane fuel—carbohydrates, which we have a limited supply of—or a high-octane fuel—fats, which we have an ample supply of. In order to use the high-octane fuel you need the appropriate enzymes in your muscle cells, and to do that, you have to train the muscles through your diet."

In his book "Enter the Zone," Sears uses the example of a 150-pound marathoner with 10 percent body fat, or 15 pounds of total body fat, three pounds of which is not accessible because, Sears writes, "It's in places like the brain." This leaves 12 pounds of fat for possible energy use." With 3500 calories stored in a single pound of fat, the theoretical runner would have 42,000 calories of energy to burn compared to the maximum amount of carbohydrate energy he could store in the muscles and liver: around 2000 calories' worth. In his call for developing metabolic flexibility Sears

In the '80s Mike Pigg adopted a diet similar to the Zone diet using intuition.

CHECKINGTHEZONE

Common criticism of the Zone diet has held that it's a high-fat, high-protein diet that's too low in carbohydrate. In following the diet for two weeks, this is how I see it.

It's not a high-fat diet. Sears recommends relying on "healthy fats" like olive oil and avocados and limiting the saturated fats that come with whole eggs and red meat. And even then 30 percent, in practice, sure doesn't seem like much—in a Zone snack, for example, you get your recommended fat contribution from one single macadamia nut. That's right, one nut. How can that possibly be high-fat?

It's not a high-protein diet. At dinner I would have four or five ounces of chicken, or maybe six ounces of fish. "It should be about as much as you can fit in your hand," he says. It's not like ripping through a porterhouse steak at Outback. Again, it's not high-protein.

You definitely eat carbs because it's a high vegetable-and-fruit diet. Even though the Zone calls for less carbohydrates than what the likes of the American Heart Association calls for (40 percent for Sears as opposed to 70 percent for the AHA), the Zone diet emphasizes making an effort to get most carbs from vegetables and fruits, and to achieve the 40 percent level you have to eat a ton of vegetables. I'm eating more vegetables than I did when I was vegan. Fruits—Sears recommends berries in particular—help keep things manageable. In meals in which I try to get all my carbs from vegetables I am not messing around. Considering my lean body mass and activity level, if I were to try to get all the carbs prescribed through asparagus, for example, I would need 60 asparagus spears to close the deal. I've done it and it's a lot. I can't imagine what it would be if I were trying to match the 70 percent goal.

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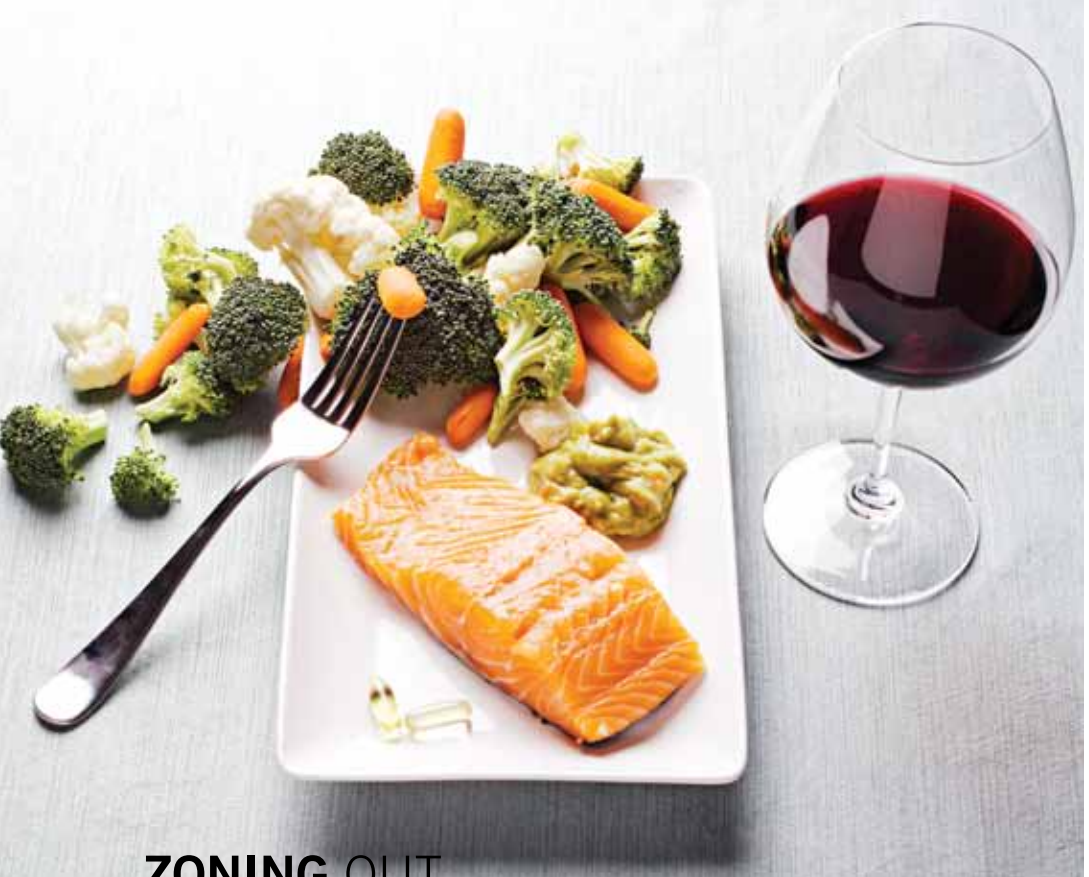

ZONING OUT

The Sept. 2, 2011, diet of the author, using Zone diet recommendations.

6:30 a.m.
2 cups low-fat milk
1 scoop whey protein powder
15 almonds
2 cups strawberries
½ cup blueberries
2 grams high-grade fish oil
5 Zone blocks

10:30 a.m.
1 ounce turkey breast
1 macadamia nut
½ apple
1 Zone block

2 p.m.
5 ounces chicken breast
Massive spinach salad with onions, mushrooms, tomatoes, cauliflower and broccoli
5 teaspoons olive oil and vinegar dressing
5 Zone blocks

5:30 p.m. (half-hour before workout)
½ apple
1 macadamia nut
¼ cup low-fat cottage cheese
1 Zone block

7:15 p.m. (15 minutes after workout)
Whey protein powder mixed with coconut water
1 Zone block

8:30 p.m.
6 ounces broiled salmon
Bag of mixed vegetables from Trader Joe's with four tablespoons of guacamole
4 ounces red wine
2 grams high-grade fish oil
5 Zone blocks
Daily Zone tally: 17 blocks

says that the major factor in increasing fat-burning efficiency is hormonal balance—the more of an anti-inflammatory state you're in, the more your muscles will be able to access fat as a fuel for athletic performance.

Recovery is the other area in which Sears says a proper diet can help a triathlete. "Triathletes want to burn the candles at both ends," he said. "When they overtrain and don't see the results they want to see, what do they do then? They train even more. This creates overtraining syndrome; levels of cortisol increase and your performance continues to deteriorate."

Sears says that in addition to proper cycles of rest, a triathlete can enhance recovery with an anti-inflammatory diet. "The key to greater performance is how quickly you can repair the damage caused by training and reduce levels of inflammation. At the University of Texas at Austin, John Ivy has shown conclusively that by using a mixture of carbohydrates and protein in your post-workout recovery drink, consumed within a half-hour after you've finished the workout, you will restore levels of muscle glycogen much faster as compared to strictly using a carbohydrate-only drink." Sears adds that amino acids from the protein will help rebuild the tissue damage caused by intense training.

As part of my reporting for this story, but also for my own reasons, I spent the last month of the summer adopting the Zone diet. The essential method (detailed in the Zone books) is this: Calculate your lean muscle mass in pounds against your activity level. From there you figure how much physical repair your body is trying to institute daily and then calculate how many grams of protein you need to get per day. Most of Sears' books are focused on strategies for how to make the Zone diet practical within a busy life. The protein prescription is how you derive the number of "Zone blocks" you need to get in a day. In each meal and snack, you eat about a handful of lean protein, balanced by a smaller amount of fat and the rest of your plate is carbohydrate (ideally vegetables and fruits). For athletes with high-training volumes and especially low body fat levels, Sears has them increase the fat intake. In addition to trying to get my protein from lean sources I try to get most of my fats from healthy fats and most of my carbs from vegetables and fruits. Each day I supplement with four grams of high-grade fish oil (meaning that it's had most of the impurities and toxins removed). And I drink a lot of water. And that's the Zone diet in a nutshell.

How does it work? In my case, my energy levels have been high and consistent, and I've experienced an improvement in mental clarity. My body fat has dropped. As far as athletic performance, I'm training well and am curious to see what I do when I race again. I've been kicking myself for not investigating the diet more open-mindedly in the '90s.

In my interview in Marblehead, Sears talked at length about the difficulty he's found in discussing nutrition at all. "There's politics and religion, and there's nutrition," he said. "Discussing nutrition is like grabbing onto the third rail. Everyone eats three times a day so everyone feels like an expert. But I'm not the message. I'm just the messenger. There's nothing radical about the Zone diet—it's justified and validated by molecular biology. You can silence inflammatory genes, you can have more energy by producing more ATP, you can think more clearly when you stabilize your blood sugar levels, and you will lose excess body fat. It's hard work, but it can be done." IT

For more on T.J. Murphy's reporting on the Zone diet and Dr. Barry Sears, visit Insidetriathlon.com/zone.