

THE BIG IDEAS

Who Invented Low Carb?

Hint: Look back 1 million years.

A to Z

And how's your insulin?

Metabolic Whodunnit

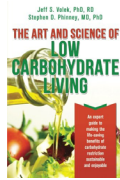
Solved: Carbs.

Exercise

Think: Wellness tool not weight loss.

Battle to Bliss

See you on the other side!



The Art and Science of Low Carbohydrate Living

BY JEFF S. VOLEK AND STEPHEN D. PHINNEY · BEYOND OBESITY LLC © 2011 · 302 PAGES

“We believe both history and science now dictate that it is time to transcend the myths and sound bites that dominate the discussion of optimum dietary fat and carbohydrate intakes. We need to get beyond the simplistic idea that all humans can and should eat the same ‘perfect diet’ across all phases of life. Given the obvious metabolic diversity among humans, we need to accept dietary diversity as an important variable in achieving optimum health across the whole population.

Thus the purpose of this book—scientific evidence now supports inclusion of well-formulated low carbohydrate diets in the list of safe and sustainable dietary options to promote individual optimum health and well-being. And this is where the ‘art’ must join the ‘science.’ Just because you decide to stop eating sugar, bread, potatoes, rice and pasta doesn’t mean that you have a low carbohydrate diet suitable for long-term use. That path to a well-formulated diet is more complex. In fact, understanding the ‘how and why’ of this formulation process takes a whole book.”

~ Jeff S. Volek and Stephen D. Phinney from

The Art and Science of Low Carbohydrate Living

This is our second Note on one of Jeff Volek and Stephen Phinney’s books. The first was on [The Art and Science of Low Carbohydrate Performance](#). I loved that one and decided to dive into their more general book and here we are.

As we discussed in the other Note, Volek and Phinney are two of the leading academic researchers who have been studying the efficacy of ketogenic diets for decades (a combined 50+ years between the two of them). Phinney actually coined the hyphenated word-phrase “keto-adapted” to describe the process that typically takes at least 2 weeks to go from burning primarily sugar for fuel to burning primarily fat for fuel.

In addition to being brilliant, iconoclastic, contrarian scientists (my favorite kind), Volek and Phinney are also funny. In this book they walk us through the SCIENCE behind why a well-formulated (<- IMPORTANT distinction!) low-carbohydrate approach works. If that’s your thing, I think you’ll dig it. (Get a copy [here](#).)

They also make fun of themselves by saying, “One of the authors was once characterized by the statement: ‘Ask him directions to get to a certain bridge and he’ll tell you how to build one.’”

So... Although they do offer plenty of practical “pearls,” if you’re looking for a more practical guidebook to making a transition to the keto world, I think you might prefer Mark Sisson’s [The Keto Reset Diet](#) (especially if you’re athletic) and/or Mark Hyman’s [Eat Fat, Get Thin](#), Dr. Mercola’s [Fat for Fuel](#) or Will Cole’s [Ketotarian](#) (which is especially good if you’re vegetarian/vegan). (Other great books by scientists echoing this wisdom: [Fat Chance](#) by Robert Lustig and [Always Hungry?](#) by David Ludwig. Then there’s Gary Taubes’s [Why We Get Fat](#) and [The Case Against Sugar](#) that echo the same themes!)

“Insulin, which goes up in the blood when we eat carbohydrates, turns off fat oxidation and stimulates fat storage. And when we stop eating lots of carbs and our insulin levels fall, the opposite happens; fats come out of storage and become the body’s primary fuel.”

~ Jeff S. Volek and
Stephen D. Phinney

"A 'low fat diet' - even one restricted in calories - is high in carbohydrate, which drives up insulin levels. Insulin is a hormone that drives fat into storage (i.e., into fat cells) and stimulates hunger. A low carbohydrate diet, on the other hand, allows insulin levels to remain low and fat stores to be burned in the context of reduced hunger and cravings."

~ Jeff S. Volek and
Stephen D. Phinney

The book is packed with Big Ideas and I'm excited to share some favorites, so let's jump in!

WHO INVENTED THE LOW-CARB DIET?

"Who invented the low carbohydrate diet? Was it Dr. Robert Atkins' weight loss revolution of 1972? Or Wilder and Peterman's anti-seizure diet at the Mayo Clinic in the 1920's? Or perhaps Banting's pamphlet in Britain in 1863?

The answer: none of the above. But for sure, it was long, long before these recorded efforts to codify and monetize carbohydrate restriction. This does not in any way discount the contributions of these contrarian pioneers who attempted to steer us away from our sometimes fatal romance with agricultural carbohydrates. But to understand the origins of low carbohydrate metabolism and to appreciate how deeply it is rooted in our basic human physiology, we need to go back hundreds of thousands of years, if not a million or two.

Current evidence suggests that our human ancestors evolved in Africa and then spread across the globe in successive waves of migration. And while that original African ancestral group may have developed in a tropical environment where fruit and tubers could be foraged year-round, our ability as humans to migrate into barren and temperate regions depended upon our ability to survive prolonged periods of fasting, and to adapt to hunting and gathering of less carbohydrate-rich fare."

That's from chapter 1: "Overview of Low Carbohydrate and Ketogenic Diets." The main point? A "low carb diet" wasn't invented yesterday. In fact, Volek and Phinney tell us that when our ancient ancestors migrated away from their tropical environment, they were faced with prolonged periods of fasting and lived on less carbohydrate-rich foods.

How'd they do that? In short: By burning FAT for fuel not carbohydrates. Why is that relevant for us today? Because a lot of us (they say ~75%!!!) are "carbohydrate intolerant." Those of us who are would be wise to consider shifting away from burning carbs to burning fat for fuel.

P.S. Get this: "Long before these last low carbohydrate cultures were finally suppressed by the agricultural imperative, much of the world's populace subsisted (if not thrived) on continuous intermittent carbohydrate restriction. For example, agricultural carbohydrates such as wheat and rye did not come north of the Alps until brought by the Romans after the time of Christ. The Irish, Scandinavians, and Russians had no agricultural carbohydrates suitable to their climate until the potato emigrated to Europe from the Andes in the 16th century AD. What this means is that many of our ancestors had little exposure to high proportions of dietary carbohydrate until 1-2 thousand years ago; and for many aboriginal cultures, their choice of a low carbohydrate lifestyle persisted to within the last few hundred years."

A TO Z: HOW'S YOUR INSULIN?

"After publishing this initial paper [on the A-to-Z Study] in JAMA, Dr. Gardner went back and examined his data based upon the subjects' insulin levels before they started dieting. When the women on each diet were divided into three subgroups (tertiles) based on baseline insulin resistance, the results were striking. In the low carbohydrate diet group, weight loss was similar in the most insulin sensitive (11.7 lbs) and insulin resistant (11.9 lbs) women. However, weight loss with the high carbohydrate (Ornish) diet was much greater in the insulin sensitive (9.0 lbs) than the insulin resistant (3.3 lbs) women.

Thus the most insulin sensitive sub-groups of women experienced a similar weight loss when assigned diets either high (9.9 lbs) or low (11.7 lbs) in carbohydrate. In contrast, the sub-groups that were insulin resistant fared very poorly when assigned a diet high in carbohydrate (3.3 lbs lost) compared to a low carbohydrate diet (11.9 lbs). Specifically, those women with insulin resistance lost almost 4-times as much weight when dietary carbohydrates were restricted.

“ Even if you thrive on a low fat diet now, carbohydrate intolerance is increasingly prevalent as we age. Thus, over a lifetime, the majority of us may find that we are better suited to a low carbohydrate diet.”

~ Jeff S. Volek and
Stephen D. Phinney

Simply put, insulin resistance strongly influences how we respond to different diets. This validates the concept that insulin resistance is essentially an expression of carbohydrate intolerance. Dr. Gardner’s data clearly demonstrates that rather than forcing an insulin resistant body to deal with a macronutrient it can’t handle well, this condition is best treated with a diet that limits carbohydrate.”

That’s from a chapter near the middle of the book called “Insulin Resistance” (from the section on “Physiology” in which we look at the inner scientific workings of how we produce energy).

That data perfectly articulates a few of the most important themes of the book. Here’s the super quick take: First, insulin is REALLY important. Second, people have different levels of insulin resistance (which, in this case, is “bad”) vs. insulin *sensitivity* (which, in this case, is “good”). Third, depending on your insulin resistance/sensitivity, carbs may or may not work for you.

In short: If you’re insulin *sensitive*, carbs don’t negatively impact you as much as if you’re insulin RESISTANT.

So... Put a person with healthy insulin sensitivity on either a high-carb diet (like Ornish) or a low-carb diet (like Atkins) and they’ll tend to do well—losing 9.9 and 11.7 lbs, respectively.

BUT... (And this is a VERY big but!! <- Insert jokes about big BUTTS here—lol)

Put a person with unhealthy insulin resistance on a high-carb diet and they won’t do as well as they would on a low-carb diet. The insulin resistant people only lost 3.3 lbs on the high-carb diet but they lost 11.9 lbs on the low-carb. (In other words: If you’ve got insulin issues, you’ll lose FOUR TIMES as much weight on the low-carb diet than the high-carb diet.) <- Isn’t that *fascinating*? Kinda begs the question(s): Are you insulin resistant? And... How’s your carbohydrate tolerance?

P.S. Longer chat but quick note: One of the points they make in the book is that most of the studies low-fat evangelists point to saying low-carb/high-fat diets don’t work (while ignoring studies like this that show they DO work) *aren’t* actually well-formulated low-carb/high-fat/moderate protein diets. And, the time frame on which the studies are conducted are often too brief—not allowing the subjects to flip the switch that occurs around two weeks.

P.P.S. We talked about the A to Z Study done by Stanford’s Dr. Gardner in our Note on *Why We Get Fat* in which Gary Taubes tells us: “*Even though the subjects on the Atkins diet were counseled to eat as much food as they wanted, to eat copious amounts of red meat and thus the saturated fat that goes with it, they lost more weight, their triglycerides dropped further (a good thing), their HDL went up further (a good thing), and their blood pressure down further (a good thing) than those on any of the other diets.*”

Here’s how the Stanford researchers describe the results:

Many concerns have been expressed that low-carbohydrate weight-loss diets, high in total and saturated fat, will adversely affect blood lipid levels and cardiovascular risk. These concerns have not been substantiated in recent weight-loss diet trials. The recent trials, like the current study, have consistently reported that triglycerides, HDL-C [HDL cholesterol], blood pressure and measures of insulin resistance either were not significantly different or were more favorable for the very-low-carbohydrate groups.

The point man on this trial was Christopher Gardner, director of Nutrition Studies at the Stanford Prevention Research Center. Gardner presented the results of the trial in a lecture that’s now viewable on YouTube—“The Battle of Weight Loss Diets: Is Anyone Winning (at Losing)?” He begins the lecture by acknowledging that he’s been a vegetarian for twenty-five years. He did the study, he explains, because he was concerned that a diet like the Atkins diet, rich in meat and saturated fat, could be dangerous. When he described the triumph of the very low-carbohydrate, meat-rich Atkins diet, he called it ‘a bitter pill to swallow.’”

THE METABOLIC SYNDROME “WHODUNIT” MYSTERY

“So what is the verdict in the ‘whodunit’ case? The culprit is our excessive intake of insulin-stimulatory dietary carbohydrates, especially simple sugars and refined starches. Lock enough of them up permanently, and the metabolic crime spree will end. Good work detective—metabolic syndrome solved—case closed!”

~ Jeff S. Volek and
Stephen D. Phinney

“A chapter on metabolic syndrome might be best told as a ‘whodunit’ detective story. The victims: approximately 64 million or 34% of adults with metabolic syndrome in the United States. The perpetrator(s) of the crime: a cast of alleged suspects have been identified. Like any good mystery, a web of deception has been artfully cast to cloak the real culprit. For a while at least, the wrong suspect has been put in jail. If you’re clever though, maybe you’ve already deduced the truly guilty party. But if not, in this chapter we’ll lay out the clues to the puzzle. And once deprived of his cloak, the villain, a well known player at the metabolic table, will be inescapably revealed. ...

As the definitions imply, metabolic syndrome describes a collection of metabolic abnormalities. These derangements in combination are a harbinger of type 2 diabetes and cardiovascular disease. With any collection of symptoms, a good scientific detective asks whether there is a common cause. In the case of metabolic syndrome the common thread linking an ever growing constellation of abnormalities is insulin resistance. Insulin resistance is defined as a diminished response to a given concentration of insulin. While insulin resistance may be doing the dirty work at the cellular level, the ringleader of the metabolic syndrome crime syndicate is dietary carbohydrate. Since the inability to properly metabolize dietary carbohydrate is the direct result when insulin action is impaired, from a functional perspective, insulin resistance can be more accurately described as *carbohydrate intolerance*. When viewed in this context, carbohydrate restriction is a fully rational approach to treating the diverse factors that congregate in metabolic syndrome. Restricting carbohydrate is akin to arresting the crime boss—once you put the correct perpetrator in jail, everything else falls in place.”

Want to solve the metabolic syndrome mystery? Hint: Volek and Phinney tell us it’s the carbs. Ultimately, they tell us that what we’re dealing with is a “carbohydrate intolerance.”

Which, btw, happens to be exactly what Phil Maffetone calls it as well. If you’re not ready to make the deep dive into Ketoville, you might like his [2-Week Test](#) as a simple way to gauge YOUR carbohydrate intolerance! Although... Phinney and Volek strongly recommend going all in and officially flipping the switch from burning sugar to burning fat lest we get caught in a sort of no-man’s land. See our Notes on *Low Carb Performance* for a longer chat but they say it’s kinda like flying from California to Hawaii. Mid-way there isn’t where you want to land. :)

Volek and Phinney use a bunch of other great metaphors to bring their point home. Such as:

The Flame-Thrower: “*Managing the metabolic mayhem in someone with insulin resistance by increasing dietary carbohydrate is like using a flame-thrower to fight a house fire.*”

The Thorn: “*It’s a bit simplistic but helpful to view a low carbohydrate diet as the ‘natural’ nutrient mix that a type-2 diabetic’s body is wired to handle. By restricting the primary source of the problem, everything gets better. If you get a thorn in your foot... it hurts, so you remove the thorn as fast as possible. You don’t take a pain killer and then keep walking on it hoping it will get better. A high carbohydrate diet is the proverbial ‘metabolic thorn’ for diabetics, and cutting down on dietary carbohydrate intake stops the metabolic pain at its source.*”

Blackjack: “*For those readers who play poker, adding carbs back is a bit like taking a hit in blackjack when you are holding a hard 17, 18, 19 or 20. While there is a chance you can improve your hand (i.e., you might be able to tolerate the carbs), the odds are that you will bust (i.e., insulin resistance signs returns). A safer alternative is to add more fat into your diet—like having an ace in your pocket (note—we’re not promoting cheating). Bottom line it’s safer to stay **low carb** than to hope for a **low card**.*”

P.S. Gary Taubes wrote an entire book on a similar metaphorical theme. In *The Case Against Sugar*, you can guess who he concludes is our prime suspect. :)

“Put simply, consuming too much carbohydrate is like metabolic kryptonite if you already have insulin resistance.”

~ Jeff S. Volek and
Stephen D. Phinney

"Most of the fat in prepared mayonnaise, dressings, sauces, and marinades is the wrong kind for a person on a high fat diet—high in polyunsaturated fat (PUFA) from the cheap, government subsidized soy, corn, and cottonseed oils used as ingredients."

~ Jeff S. Volek and
Stephen D. Phinney

"Simply put, there is no option for weight maintenance that is simultaneously low in carbohydrate and low fat. Your energy has to come from somewhere, and for people with carbohydrate intolerance, their best (and safest) long-term energy source is dietary fat. ... Our point here is that with your dietary carb intake constrained by your individual level of carbohydrate tolerance (be it 40 or 100 grams), you must get comfortable eating fat as your primary source of dietary energy if you want to succeed in low carb maintenance."

~ Jeff S. Volek and
Stephen D. Phinney

EXERCISE IS A WELLNESS TOOL NOT A WEIGHT LOSS TOOL

"Exercise done by heavy people causes a lot of collateral damage. Think ankles, knees, hips, and low backs. So here's a radical idea (which of course is totally out of place in this book): let heavy people try carbohydrate restriction first, lose some weight (which most do without resorting to exercise), and then let them decide when to become more active once they are empowered, energized, and lighter of foot. Making heavy people exercise is punitive. Enabling heavy people to lose weight and then become more fit is smart."

That's from a chapter on "Ten Clinical Pearls" in which we get the super-distilled practical tips including Pearl #7: "Exercise is a wellness tool. It is not a weight loss tool."

Exercise is unquestionably awesome for our overall well-being. It's like that little bit of Ritalin and Prozac a la John Ratey's *Spark*. And, as Sonja Lyubomirsky tells us in *The How of Happiness*, it's been shown to be as effective as Zoloft in reducing depression.

But, again, remember: Exercise is NOT primarily a weight-loss tool. It's a *wellness* tool.

I often think of this when I'm out on the mountain and see overweight people training so hard. It makes a LOT more sense to slow down and get your weight down THEN train. And, a well-formulated low-carb approach is a REALLY easy, effective way to get your weight Optimized.

To put it in perspective, every other day I train in my aerobic zone. (One day in aerobic zone training; then mellow recovery hike where I don't even hit my aerobic zone.) On training days, I carry something heavy for the first and last 5 minutes up to the start of the trail—either a 50 pound sand bag or a bucket filled with 50 pounds of gravel-rocks. (That's like me!)

People often look at me and ask, "What are you carrying?!" Then we have a sweet Love 2.0 moment as we chat about Spartan Races, etc. But... No one ever pauses to think about the fact that running with 15 to 25 to 50+ extra pounds is AT LEAST as weird as me carrying a 50-pound bag of sand or a 50-pound bucket of rocks! lol

So... If you're carrying extra weight, consider putting ALL your energy into dropping it THEN hitting your aerobic training. (Note: Carry on with the resistance training during the transition!)

P.S. Remember Goran Kropp from *Spartan Up!* and the +1 on [Really Hard vs. Impossible?](#) Get this: "In his 1996 trek to the summit of Everest after riding his bicycle there from Sweden, the adventurer Goran Kropp made three attempts to reach the summit before finally doing so. Up through the second attempt, he had been eating a vegetarian low fat diet. When he descended after his second attempt failed, he was so exhausted and depleted that he broke from his vegetarian diet and ate a large can of pure butter that he pan-handled off of the film crew that was documenting his climb. With enough fat back in his diet, on his third attempt he went on to reach the 30,030 foot summit without using supplemental oxygen."

BATTLE TO BLISS

"When people contemplate permanently eliminating most carbohydrate-rich foods from their diet, it often seems overwhelming. So many of our food habits, both personal and social, revolve around carbohydrate foods like orange juice for breakfast and doughnuts with coffee. And some carbohydrate foods are icons of whole cultures, like bread for the French, tortillas for Mexicans, and rice for Asians. Separating yourself from these deeply ingrained behaviors is never easy.

However once an individual gets past the first few weeks of adaptation to a low carbohydrate diet, the positive changes in one's life (not just weight, but well-being and sense of empowerment) become positively reinforcing. Every day you wake up and don't have to take as much (or any) medication for diabetes, fluid retention, high blood pressure, or chronic pain is another nail in the carbohydrate coffin. Every day you stand on the scale and see that there's a lot

*" We live in interesting times.
May we continue to work
together until that day when,
walking down the street, we
find that obesity is once again
rare and no longer the norm."*

~ Jeff S. Volek and
Stephen D. Phinney

less of you (or even that you can look past your tummy to see the numbers at all) is another step down your path to independence from sugars and refined carbohydrates, and towards better health and well-being. At some point, be it months or years into the process, sticking with your low carbohydrate lifestyle is no longer a battle of intellect (I know I'm better off not eating that stuff) over desire. Eventually, it just feels right."

Those are the last words of the book. It's always a good idea to remember that the early stages of any behavioral change are hard. (But only, pretty much, always! :)

It's *especially* challenging to change something as fundamental as our nutrition—and, to be willing to venture into an approach that goes against so many cultural norms. (As I was reading their examples of different cultures, I thought of pizza for Americans. Specifically, pizza parties after youth sports events. If there's anything more subtly yet tragically emblematic of just how unhealthy our society is, it's imagining families binging on pizza and soda to celebrate their sports achievements. It takes something heroic for the mom or dad to step out of THAT tidal wave of conformity and choose a healthier course...)

But, at some point, we cross a threshold where it becomes harder to do the old, unhealthy thing than the new, healthy thing. When I look back at my own path, it was REALLY hard for me to stop eating fast food and Cheetos. Until it wasn't. Now, I look back at my eating behaviors from a decade ago and wonder who that guy was. You couldn't pay me to eat the stuff I used to eat.

Seneca always comes to mind when I contemplate such things. 2,000 years ago he said: *"How much better to pursue a straight course and eventually reach that destination where the things that are pleasant and the things that are honorable finally become, for you, the same."*

So, whether you're choosing to go all in on a low-carb experiment or just taking the next baby steps in Optimizing your nutrition and life, here's to getting to a point where doing what we know is best for us, *feels* GREAT as well!

B

Brian Johnson,
Chief Philosopher

About the Authors of "The Art and Science of Low Carbohydrate Living"

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Jeff Volek is a dietitian-scientist who has spent 15 years studying diet and exercise effects on health and performance. He has held an academic position at Ball State University and is currently an associate professor at the University of Connecticut.



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Brian Johnson loves helping people optimize their lives so they can actualize their potential as he studies, embodies and teaches the fundamentals of optimal living—integrating ancient wisdom + modern science + practical tools. Learn more and optimize your life at optimize.me.

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