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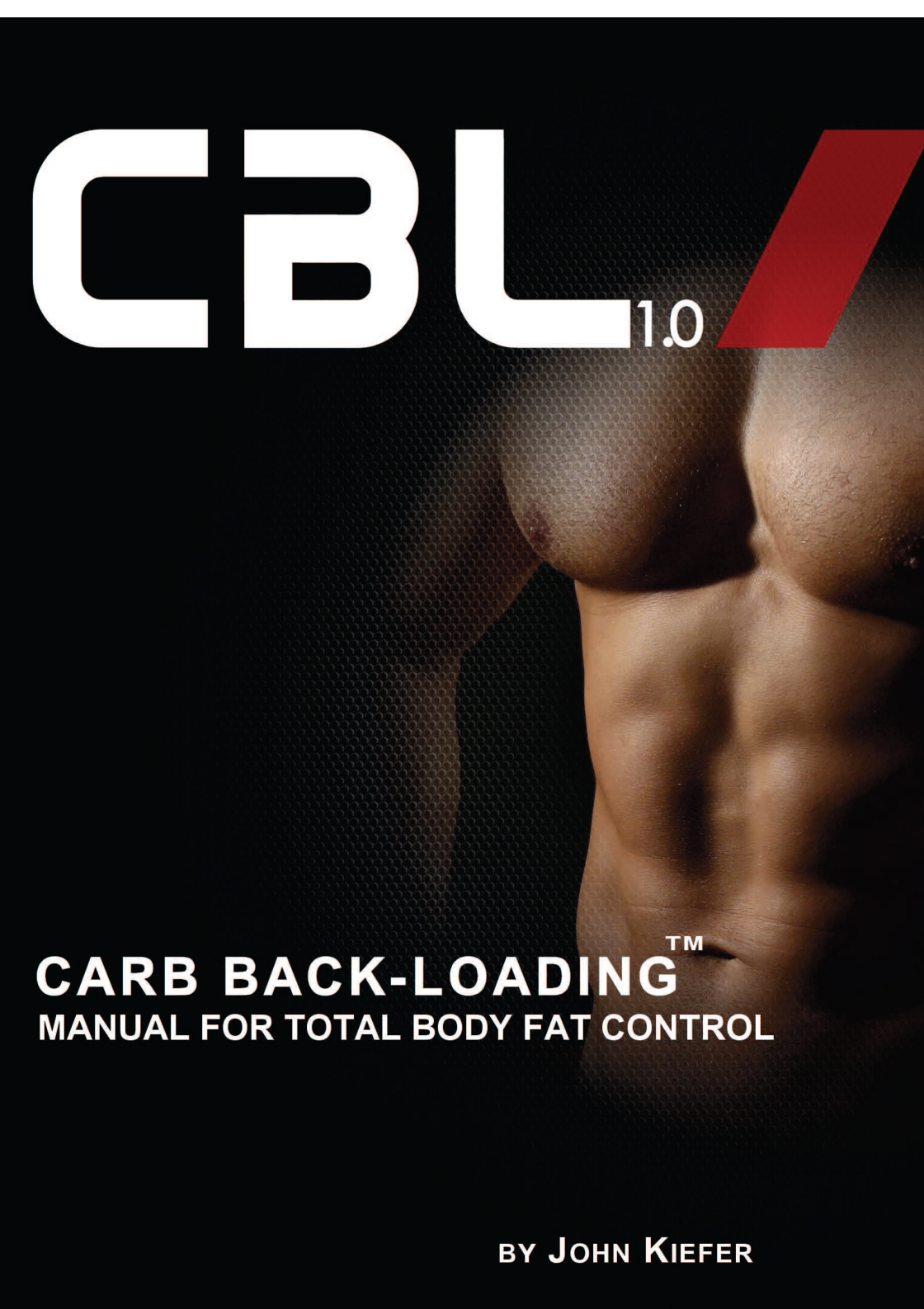

CARB BACK-LOADING™
MANUAL FOR TOTAL BODY FAT CONTROL

BY JOHN KIEFER

Carb Back-Loading™

Manual For Total Body Fat Control

John Kiefer, MS

DH Press

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The *Content* presented herein is for informational purposes only and intended for use by adults capable of understanding the Content and capable of seeking medical advice from appropriately licensed professionals when necessary or appropriate. Although I have researched various topics extensively and attempted to organize numerous issues associated with diet and exercise in a clarifying manner, the Content is not intended as a substitute for professional medical input or action. Always seek the advice of a qualified health provider regarding a medical condition or your ability to apply the Content in a safe manner. Please never disregard professional medical advice or fail to seek it in a timely manner because of something you have read anywhere, including here.

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Carb Back-Loading

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Carb Back-Loading

About the Author

KIEFER

WARNING: He goes only by ***Kiefer***

John Kiefer is a highly sought after training and nutrition consultant. To guide his work, he has read over 40,000 medical research papers covering various facets of human biology. His extensive knowledge of human nutrition and performance is tempered by 15 years of experience applying, observing and refining his methodology.

Kiefer holds two B.A.s (Mathematics and Physics) from Otterbein College and a Master's of Science in Physics from the University of Florida. He published his first diet book for radical fat loss, *The Carb Nite® Solution*, in 2005, which can be found at **http://www.CarbNite.com**.

He is currently an advisor to Muscle&Fitness and Men's Fitness magazines and his clientele includes world-record powerlifters, internationally ranked fitness competitors, CEOs and recreational athletes who want super-human results without the super-human torture.

Find more of Kiefer's work at **http://DangerouslyHardcore.com**.

Carb Back-Loading

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And everyone else who made this project possible.

Carb Back-Loading

Section I

INTRODUCTION

Chapter 1

The Ultimate Drug

Carbs are a drug. As with any drug, knowledge of effects—and side effects—is the only way to guarantee the right outcome. Drugs often hit the market before all the effects show, leaving consumers scrambling for answers, alternatives and adjuncts. Carbs share this trait, having become a part of the human diet millennia ahead of our capacity to understand their full influence. Years of ignorance left a trail of recommendations prepackaged with folk-lore, hearsay and guesswork as to what type to eat, when to eat and what, exactly, their role in the body is.

This common-sense approach to carb inclusion ranges from eating carbs first thing in the morning, to cycling them; some people go anabolic—eating carbs just on the weekend—and still others have just one Carb Nite® a week. But only recently have people started eating their carbs at night.

Oh that's right, Oprah's trainer says don't eat them at night. As a matter of fact, don't eat anything at night. That'd just be dumb according to the supposed experts. There's nothing to gain but fat. Wouldn't it be nice, though, if a pepperoni pizza before bed—the whole pizza—could cause fat loss and make muscles grow? Stop right there, they say; that's crazy talk.

Admittedly, not everyone's concerned about their carbs, as some people eat them at-will without affecting strength, muscle mass or waistline. The rest of us, unfortunately, need to control the starchy dinners and sugary sweets. Pancakes for breakfast; sure and how about a serving of moobs—man boobs for the un-indoctrinated—in a few weeks to go with it.

For those who don't need to worry, the pancakes won't matter, nor will ice cream or pasta or even post-workout nutrition. They're freaks. Most of us seethe over the inequity of it because despite how carbs cause body fat stores to bulge, carbs spark muscular growth too. Forget the sweet savory taste, forget how they turn a boring slab of breast meat into chicken and dumplings—growing huge rounded shoulders, sculpted pecs and massive quads requires carbs. They're a means to an end.

Most people need the carbs to approach the realm of freakiness, but on the way, fat accumulates and hides the hard work. That's what carbs do, they make things grow. They make lots of things grow like fat cells and muscle cells. Carbs don't discriminate. The solution: limit the carbs, cut them out or cycle them in some way. It's not fun going sans carbs and even less fun going months without, only to lose some of the muscle and strength gained along the way.

We can do better.

That's what this book is about. Forget about the constant cycle of bulking up, leaning down, bulking again, leaning down again and so on, taking one step backward for every two steps forward. It's time to gain muscle and lose fat at the same time. An extra 100 pounds of body fat is not a prerequisite, either. Starting at a typical low-20's

body fat percentage, anyone can gain muscle, strength and maybe even good looks while dropping into the sub-15% body fat range and lower. No magical supplements or crazy food combinations needed; it's as easy as pie…literally.

I don't live in a vacuum and know that these promises float around the internet like fairy dust, and they're about as real too. The empty promises only empty the wallet. Yet gurus everywhere chant the mythical formula: gain muscle and lose fat at the same time with ease. Hell, the cover accompanying my article in the May 2011 Muscle&Fitness advertised Carb Back-Loading as *The Holy Grail of Dieting*. Had I been a typical reader, I would have been skeptical, as were the magazine editors when I first discussed it with them—until they tried it. And loved it.

I'm not going to convince anyone to read further or to rush to the checkout counter for those flipping these pages in the bookstore. I'm not going to say, *I'm awesome, trust me*. I won't even mention how stupid-simple the program is and how anyone can get results with only half-assed effort. But I will issue a warning: if you keep reading, the excitement and impatience to achieve the physique of your dreams—or your significant-other's dreams—will overwhelm. Knowledge is power; after reading this book, you'll be omnipotent.

Chapter 2

Catalyst

Every diet worth its salt has an origin story, some reason the thing exists in the first place, the catalyst. Most of the time, it's fabricated, a lot of marketing with a smidgen of personal history for authenticity. Carb Back-Loading's origin story is nothing of the kind. I invented it twenty years ago when a group of military scientists drafted me to become part of black-ops human enhancement project with the ultimate goal of...

Wait a second. That's not what happened at all. I've been spending too much time on the Internet again.

If no super-soldier origin story exists, then how did an average guy from Podunk, Indiana come up with what everyone's chased for years?

Simple: I was a fat kid. A very smart, very tenacious, very self-conscious fat kid.

The details bore the paint off the walls, and there's no reason to share them, so here's the short of it: my parents fed me breakfast cereal, pop tarts and coca-cola, I grew moobs, students made fun of me, my gym teacher made fun of me, I started working out and it changed my life—sort of. Training brought strength, muscle and a

definite change in my physique, but I was still doughy. I wanted *jacked* and I wanted *ripped*.

My diet needed help. Hell, my family taught me that washing down a grilled cheese sandwich with ketchup packets constituted a healthy lunch. Grains, dairy and vegetables: what more could a guy need? The fact that I believed it is embarrassing enough, but the physique it created was more so. The epiphany took time, but I did realize that maybe my family—and their trouble with their own weight—hindered me rather than helped. I did what any science-minded youth would do, I hit the books.

This was before the Internet, so I literally hit the books. I quickly learned that the books weren't any better than my parents because none of them could produce the results I wanted. Maintaining muscle while leaning down seemed beyond the knowledge of the most famous diet writers. And forget about getting shredded.

The first serious reduction in my body fat came with my near religious dedication to—in my opinion—the first legitimate attempt at harnessing the drug-like potential of carbs, Dr. Mauro DiPasquale's, *The Anabolic Diet*. This was back in 1995 when science still didn't know about things like ghrelin, leptin, nutrient-activated protein synthesis channels and the function of glucose and fatty acid transporters, but we were discovering new things every day. The Renaissance had started and Dr. DiPasquale took advantage of the emerging information, filling gaps with his experience.

The Anabolic Diet didn't take me all the way, however, and I definitely didn't gain muscle, even when I tried the bulking phase.

But I didn't gain body fat either, I lost it—exclusively. For the first time in my life, I didn't have love handles.

That was a long time ago. Discoveries built upon discoveries, growing faster than all but the most diligent—and geeky—could keep up with, and now, even they can't ingest the deluge quickly enough. Everybody and their brother learned that to become successful in the fitness world took no real knowledge at all: throw out a few buzzwords, promise a quick-six-pack or eight minutes to a sexy figure and spew random opinions about health on the Web and success would follow. Who could have guessed that a Renaissance would bring the Dieting Dark Ages that exist today?

I couldn't take it anymore. The tallest boots I found still didn't reach high enough to avoid getting splattered with pseudo-knowledge excrement. I devised The Carb Nite® Solution, an ultra-low carb diet that includes a night of almost literal binging on carbs: pizza, donuts, pasta, cupcakes, pretzels, popcorn, etc.

I spent a ridiculous amount of time researching the human body to refine Carb Nite® to cause massive fat loss without a loss of muscle tissue and without devastating metabolism in the process. No excrement necessary. I'm not here to talk about Carb Nite, though, because it has one fatal flaw: it doesn't allow much muscle growth unless starting off portly.

A few years ago, I found myself engineering software for a large company, glued to my chair for some 80 hours per week. I didn't train, I didn't eat well and it showed. My body reverted to its true fat-kid nature, not only in function—because of all the shit I ate—but also in form. I felt and looked disgusting.

Not a big deal. I quit my job, decided to build a business for myself, trained my ass off and followed Carb Nite with the blind dedication I once had for *The Anabolic Diet*. In no time, I dropped 20 lbs of fat, was shredded, vascular, freaky and lifting big. But as short of a time as it took to get back to *normal*, I became frustrated. I was stuck at *normal*.

I didn't want to be just shredded, I wanted to get huge again, back to my 230 when I was cut and jacked, before diving full-time into the software world. No matter how much I ate, even the addition of a second Carb Nite per week, my muscle mass didn't budge. What did happen? I stayed shredded, felt exhausted most of the time and started accumulating injuries.

Know the song *Baby Got Back*, by Sir Mix-a-Lot? One-hit wonder without a doubt and I believe he still performs *Baby Got Back* at some of the more progressive Bar Mitzvahs. Diet writers are like this too: one-hit wonders who keep peddling an out-of-date product. They don't realize, or refuse to realize, that science learns more each day and we'd be wise to take lessons, adapt and prosper.

That's why I'm always poring over research. Maybe it's a strength routine to correct scoliosis, maybe it's about cellular receptor sites like the mammalian target of rapamycin, or maybe epigenetics and why all those pop tarts as a kid screwed up how my genes express, making it easier to stay and get fat. On the day of the epiphany that sparked the creation of Carb Back-Loading, I was reading papers about using resistance training to help type II diabetics control their blood sugar.

This might seem like an odd topic to inspire the creation of the Holy Grail of Dieting, but that's where it started. I'll explain with more detail later, but basically, in type II diabetes the cells of the body no longer react to insulin and, therefore, can't absorb sugar. After resistance training, however, the muscles of diabetic subjects can absorb and burn sugar without increasing their sensitivity to insulin. This set off a cascade of thoughts and a new research focus.

Before I explain why and how it works, maybe I should first tell you how to do it.

Chapter 3

Carb Back-Loading: The Cliff Notes

Carb Back-Loading runs contrary to about everything out there. It bucks many established norms. Many of these norms grew from a time before a deep understanding of human metabolism and performance existed, making some of the most common truths no more than anecdote. Take breakfast's place as the most important meal of day in health folklore, or the idea to eat most calories before evening or even ensuring that the first meal of the day needs to be carby and fatless. Not a single one of these can be established as fact. It's not because scientists never researched the topics. They have. That's how I know they're not fact; the research shows that none of these ideas is true.

Carb Back-Loading snubs all three of these recommendations and does so because of the existing research, not because I want to be a contrarian. Back-Loading does, however, also complement many lifestyles. Even with these seemingly thrown-in-for-convenience rules, I base the prescription on science rather than marketability. What results is an easy, ridiculously effective plan.

Carb Back-Loading Cliff Notes

1. Shift calories to later in the day, eating lighter in the morning and early afternoon, and feast at night. This may include skipping breakfast.
2. Keep carbs at an absolute minimum throughout the day until training.
3. Train in the afternoon, at around 5pm or so.
4. Start ingesting carbs after your training session, up to 30 minutes later.
5. Continue eating carbs throughout the night.

That's all there is to it. It may seem too good to be true, that I designed this simply to sell, but it's how the body works. Eat bacon and eggs, maybe a chicken salad, a few nuts, cottage cheese, a hamburger patty with a tomato and some mustard—fat and protein with some fiber—before training. Train in the evening, say from 5 to 6:30, then start slamming the carbs. When I say slam, I mean slam. Pizza, French fries, donuts, sandwiches, ice cream, whatever, as long as there's carbs involved.

Chapter 4

Modulated Tissue Response (MTR™)

To the less astute, Carb Back-Loading may look like normal nutrient timing: eat carbs post training, end of story. But this misses the point—it misses the whole target. The mechanisms that allow Carb Back-Loading to build muscle while simultaneously losing fat with ease depend on daily biological rhythms, bio-molecular manipulation and, unlike most diet protocols, a specific window of time in which training should occur.

One of the guidelines is to train in the afternoon. Back-Loading accommodates other training times while remaining simple but, as I explain later in the book, the best results will come with an optimum training schedule.

The reason is a principle I call Modulated Tissue Response™, or MTR. It may sound complicated or esoteric, but the gist is not. MTR describes the process by which we give each tissue of the body a specific instruction, either through diet, activity or both. Understanding the interaction of food, exercise, and daily rhythms gives control over any aspect of the body, from health to performance or simply aesthetics. MTR makes getting and staying ripped stupid-simple, or it can make dropping even a few pounds of fat impossible.

I am not going to tell a story involving post-WWII Bulgarian research that defines the principles of MTR. Not until the last decade has experimental methods existed to develop targeted procedures of body-manipulation. Sure, we knew the basics: eat too much and get fat, train enough and get muscular—but everything in between was a crap shoot and created an industry of pet-programs without basis in science and often without real-world results. Any rationale—illogical or not—was enough to convince the desperate. Hope fostered an unscrupulous industry of shit-slingers.

MTR utilizes the latest research to target and manipulate biomolecular signals to achieve any goal with the least possible effort. If I could choose a tagline, it would be *work smarter, not harder*. This bleeding-edge research allowed the creation of the soon-to-be-released Shockwave Protocols that integrate training and diet for maximum results toward various goals. Carb Back-Loading forms an integral component of the protocols.

Everyone, every day utilizes MTR. Look at the typical American, the result of undirected MTR. The lack of activity tells the body to lose muscle and bone, to waste and weaken; the standard desk-posture tells the trapezius muscles to enervate and lengthen and pecs and front delts to shorten and tighten; eating carbs while being inactive signals fat cells to multiply and expand; and because they give the body far more calories than it needs, it becomes diabetic, the body's last attempt to prevent the addition of more body fat. Understanding MTR makes one thing clear: sole responsibility for how the body looks and functions lies with the owner.

On the other hand, even a little direction creates huge change. Training gives muscles the signal to grow, redirecting the growth

signals produced by eating food. Lift heavy weights, eat carbs and protein and muscles expand and strengthen, which in turn strengthens bones and increases nervous system efficiency. But the carbs give fat cells the instruction to grow as well. The side effect is expanding fat mass along with muscle mass. Our signaling is still 100% anabolic.

Of course the signaling should be anabolic; growth requires anabolic signals. That's exactly what anabolic means, stimulating tissue to grow. Catabolic, a word loathed in the health and fitness community, means to destroy tissue. Testosterone is anabolic for muscle tissue; estrogen is anabolic for fat tissue. Insulin is anabolic for muscle and fat tissue; cortisol is anabolic for fat tissue and catabolic for muscle tissue, but, depending on conditions, can be catabolic for fat tissue instead. The list of actions goes on and on. The short of it: hormones and other signals set the thermostat to grow or shrink based on a large set of complicated interactions.

Manipulate these signals and transform the body. Even medication plays a part. Think about it: 100 years ago the average person needed to exert an incredible amount of effort to reach 300 lbs, but now that food science and the drug industry have mastered the correct signaling process for unlimited fat mass, we longer need to pay a nickel to see the fat man or woman at the carnival. Sit in front of Walmart and watch as 300-plus pounders stream by in herds.

MTR, however, does not and cannot define one perfect diet, as many experts and authors like to assert about their plans. These experts pick up a single fact or study—or worse, an unfounded personal belief—and push it as the only option. There are no alternatives, they say, but what they mean is that they know little

about the human body. They may know one diet and its effects, and the rudimentary knowledge to defend it, but take them from their sweet spot, and they're clueless.

No absolute best diet exists; no absolute best diet exists for anyone, but there is an absolute best diet at a specific time for a specific goal.

This makes the principles of MTR invaluable by offering the opportunity to fine-tune the body through diet and training to meet any need at any moment. Acquiring the knowledge—not just a collection of facts, but experience applying the information—to competently invoke MTR takes a massive commitment, the time for which few have.

But don't worry, my job is to understand MTR and describe how to use it. In this book, I teach a specific method of combining MTR principles—Carb Back-Loading—to enhance performance and aesthetics. You can use the content as a synergistic-whole or dissect it, decompose it and reassemble it for other purposes. Each section contains enough information to bend the MTR methods to your needs if your needs are different than wanting to look and perform like a super hero.

Chapter 5

Always Improving

The Version 1.0 on the cover of a performance oriented nutritional guide might seem odd. I designated this book Version 1.0, not because I engineer software—well, it obviously has something to do with that—but because any nutritional protocol claiming to be the bleeding edge needs to adapt quickly as new research unfolds and as the author gathers more experience.

As such, the old publishing model of first edition, five years on the shelf, second edition, five years on the shelf and so on is defunct and for human performance manuals detrimental. As limiting as this old-style procedure may be, it is mimicked by online eBook publishers.

Adopting antiquated systems is not my style. I like to forge new paths, so I decided to do the same here. In the software world companies release the best product available at the time, then make improvements as rapidly as possible. They designate each release thereafter with versions, minor revisions or additions being labeled by a 1.1 or 1.2 and major revisions—new editions in old-speak—being labeled 2.0, 3.0, etc.

I made this mistake with my first published book, The Carb Nite Solution, and now after five years, I feel I could have been adding

periodic refinements, producing an exceptional manual. The information it contains is still cutting-edge and, most importantly, it works better than its competitors. But it's no longer *bleeding-edge*.

As I incorporate newer information and add alterations based on mounting experience, I will release new versions as warranted, and for those of you jumping onto the ground floor with Version 1.0, each minor upgrade will cost nothing; and each major upgrade will be steeply discounted.

Section I

Essential Points

Carb Back-Loading Cliff Notes

1. Shift calories to later in the day, eating lighter in the morning and early afternoon, and feast at night. This may include skipping breakfast.
2. Keep carbs at an absolute minimum throughout the day until training.
3. Train in the afternoon, at around 5pm or so.
4. Start ingesting carbs after your training session, up to 30 minutes later.
5. Continue eating carbs throughout the night.

Modulated Tissue Response (MTR)™

The ability to select which tissues grow and which shrink, e.g. growing muscle while losing fat.

Section II

BRICKS

Carb Back-Loading

Chapter 6

Controversy

Carbs cause controversy. While the health experts and celebrity doctors battle over whether humans need carbs to survive—we don't—the more performance minded nutrition experts ponder an intelligent question: how best can we use carbs to achieve various goals?

Science has yet to answer this question for all the various athletic scenarios. Researchers drag trusted assumptions, like the dependence of endurance training success on carbohydrates, into the laboratory for verification and discover that the assumptions were worthless. Deeper exploration of the carb conundrum reveals that carbs impart little benefit except when used in precise, timed fashion. For endurance, achieving maximum performance does not require carbs during the training phase; but for peak performance at the event, the body needs carbs. Precision is key.

To reach that level of precision, however, the simple ideas handed down through the years about food, particularly carbs and insulin, need to be modified and sometimes abandoned. With all the discussion about sugar and insulin in the media, it might appear that I'm wasting time talking about the two. Turn on the TV, fire up Dr. Oz and listen to how simple it sounds: eat carbs, the carbs cause a rise in insulin levels and then the insulin pushes the carbs into cells

for energy. Throw in a little type II diabetes and the cells just don't listen to insulin and then sugar floats around in the bloodstream doing nothing.

For the average person who needs to lose 50 to 100 lbs of pure fat and is probably only a week away from full-blown diabetes, this explanation is good enough. But if you're 15% body fat, want to gain 30 lbs of pure muscle and maybe lose a few percentage points of body fat along the way, you need to know more than 6th-grade basics.

Chapter 7

Insulin: The eXtreme Growth Agent

Most people with whom I work don't fully understand the function of insulin. From the information spewed all over the web by the current cavalcade of health gurus, I know why: many of the experts don't quite get it either.

In the health industry—to distinguish from the scientific community—people see insulin like lighter fluid. Sugar is fuel. Hose it down with a little insulin and a roaring inferno ensues. This is not the case. Insulin's main function in the body is anabolic: it wants to build stuff. That's why insulin rules amongst the anabolic elite: it makes everything grow from muscle mass, fat mass and even glycogen, which is essentially human starch.

Insulin, however, has no real plan about how to build anything, nor does it participate directly. Its job—the most critical in any building project—is to transport raw material. Insulin alerts cells to the presence of material and gets them ready to absorb. This goes for everything from blood sugar to cholesterol molecules[1].

Most cells can absorb these raw materials to some extent without insulin, but insulin turbo charges the process, which I'll explain later. A host of factors determines how cells use the raw material, but if more material flows in than the cell needs, it's going to store it

as something: triaglycerol (fat), glycogen or even muscle tissue (of which there is a type that's made for storing protein and is essentially non-functional).

Insulin does seem to know which material should be used first, however. That's why when insulin's around, not only is it anabolic, but it's greatly anti-catabolic. It can stop muscle protein breakdown[2]—which is good—but it also stops the body from releasing and burning fat[3]. When insulin levels drop, however, fat burning goes through the roof[4]. When insulin is high, it increases the efficiency of fat storage—insulin makes storing fat easier for the body[5].

Eating carbs with all 6 to 8 of the traditional every-two-hour meals tells the body that if there's excess material, do something with it. Protein, sure, is going to be used for tissue repair and growth, enzyme and hormone production and so on. Fat, well, excess fat will get stored as fat. For carbs, if glycogen levels are full—which they normally are—fat cells convert the excess to fat before storing it away.

The point: don't think you need super-elevated levels of insulin 24/7. You don't. It's extremely useful to elevate insulin levels at times, and detrimental at others. Carb Back-Loading is the easiest way to optimize your eating and training schedule so that insulin is always targeting the correct tissues while not interfering with fat burning.

Chapter 8

Carbs to Burn

Throughout this book I make reference to low-carb portions of the day and yet meal plans located later in book contain lots of vegetable suggestions like lettuce, asparagus, some tomatoes, olives, cucumbers and so on.

Without clarification this may seem oxymoronic. It's not. What doesn't make sense is using chemists' classifications for carbohydrates instead of a modern system that recognizes effects on the endocrine system. From the body's point of view, only two types of carb exist: *usable carbs* and *fiber*.

Carbs, in general, as is well known, cause a release of insulin, get burned in lieu of fat, augment blood sugar levels and get stored as fat. This last condition occurs when eating more than the body needs at that moment, as I alluded in the previous chapter. These burnable, fat-inducing carbs include sugar, starch, glycerine and sugar alcohols—also called polyol—and make up what I term *usable carbs*.

Fiber, however, doesn't do any of these things and often does the opposite. The only way for the body to get energy from fiber is through fermentation in the colon[1]. The result of the fermentation is not sugar or alcohol, but short chain fatty acids. Fiber—a

carbohydrate—ultimately gets used as fat. This changes the calorie count seen on standard U.S. nutritional labels significantly.

I didn't add fiber to the meal plans to make a performance oriented diet look healthy. I am, however, using a bit of trickery that if the health experts did know, they could probably get people to eat their fiber. By including fiber, up to 20 percent of calories from a meal get lost[2]. Beside other potential health benefits, fiber cuts calories while creating a sense of fullness. If using Carb Back-Loading for fat loss, including fiber enhances results.

So you can eat fiber during the low-carb portions of the plan but the rest of the carb family fall within the usable carbs category because the body uses them for fuel in lieu of fat—this includes glycerine[3] and the polyols[4]. Avoid usable carbs during the low-carb part of the day. Don't worry: you'll include them in mass quantities in the evening.

Common Polyols:
Initial Calories[5] and Calories After Regular Consumption[6]

Name	Initial Calories	Calories After 7 Days
Erythritol	0.2	0.2
Isomalt	2	≈4
Lactitol	2	[no data]
Maltitol	2.1	3.5
Mannitol	1.6	[no data]
Sorbitol	2.6	3.6
Xylitol	2.4	≈3.5

Chapter 9

Glucose Transport

In the chapter on insulin, I said that insulin helps provide nutrients to cells, but it doesn't carry anything into cells. As a matter of fact, if insulin were needed to carry sugar into all cells of the body, then the sugar couldn't get into pancreatic beta-cells in the first place to trigger the production of insulin. Insulin does not shuttle sugar into cells. Specialized structures called GLUTs handle that.

GLUT (pronounced 'gloot') stands for glucose transporter, which comprises a family of proteins that belong to the Solute Carrier family 2 (SLC2) group[1]. As the name implies, members of this family of proteins carries things. We know of 14 GLUTs, named creative things like GLUT1, GLUT2, … Despite their name, not all GLUTs transport glucose into cells: some carry fructose (GLUT5); others, polyols[2].

GLUT reside in the jelly-like outer coating of cells. GLUT1-3 all transport glucose and are always ready to do so. If a cell contains enough of these GLUTs, it can absorb sugar whenever blood sugar levels rise. The liver and cells of the central nervous system can always use sugar whether there's insulin around or not[1,2].

The next GLUT, GLUT4 and its cohort GLUT12 are different. Both transport glucose, just as GLUT 1-3, but are not normally exposed on the cell's surface. Rather, GLUT4 and 12 tuck below the surface and within the cellular membrane, preventing them from transporting sugar, even if blood levels rise to threatening levels. Despite the withdrawn nature of GLUT4 and 12, they are the most important of the GLUTs for this discussion.

Cells that contain GLUT4 and 12 react to the presence of insulin by moving these GLUTs from the interior of the cellular membrane to the surface[3]. This insulin-mediated translocation of the GLUT enables the pathway through which high volumes of glucose enter the cell. Once within the cell, glucose might be used to produce energy or a cell might store it as glycogen or as triaglycerol. Since GLUT4 and 12 act identically, I'll use tGLUT to refer to both.

NOTE: Both GLUT4 and GLUT12 predominate in muscle tissue and must translocate before transporting glucose into cells. The two together are referred to as *tGLUT*.

To illustrate the translocation process, I'll use the example of eating a banana. After the banana digests and sugar enters the bloodstream, any cell that already contains GLUT1-3 will start sucking up the sugar: the liver, nervous system cells and most importantly for our discussion, the beta cells of the pancreas.

The beta cells produce insulin in response to the concentration of glucose present in the bloodstream—the faster the sugar enters the bloodstream, the greater the release of insulin. As the freshly produced insulin traverses the body, it causes tGLUT to rise to the

surface of cells. Once this happens, the tGLUT-containing cells absorb glucose and do whatever they feel like with it.

What tissues possess tGLUT? GLUT4 and GLUT12 represent the predominant types of GLUT in skeletal muscle. Fat cells unfortunately also contain abundant tGLUT. Because both muscle and fat contain the same tGLUT, eating carbs sparks simultaneous growth of both—biceps get jacked, but love handles start hanging over the ever-tightening belt. It's this coupling or tying together of growth signals for fat and muscle that makes people believe that muscularity includes some level of fat-gain.

You don't need to resign yourself to such a fate. Properly structured use of MTR makes growing muscle and losing fat simple by decoupling the growth response of the two tissues. Carb Back-Loading is the result.

Carb Back-Loading

Chapter 10

Why So Sensitive?

Being sensitive is often considered a bad thing for men. Woman, would you want a guy who's crying all the time or who sits on the steps after a physique contest choking back the tears shed over a 4th place finish? I didn't think so. Nothing repels the opposite sex like the sound of sucking back one's mucus.

Doctors and pharmaceutical companies, personal trainers and nutritionists think of a particular type of sensitivity as good for everyone: insulin sensitivity. I would agree if discussing obese, sedentary individuals. Such people need to increase their sensitivity to insulin or risk becoming sick and suffering an amputation or two before dying. Type II diabetes—characterized by a lack of insulin sensitivity—kills people, but what does it mean to be insulin sensitive or the opposite, insulin resistant?

In terms of the glucose transporters, insulin sensitivity only means that when insulin hits muscle or fat, tGLUT rises to the surface and begins clearing glucose from the blood stream by pulling it into cells. For someone without much fat, muscle tissue absorbs most of the sugar. Chubby folk, however—or formerly chubby —have a lot of fat cells that will also soak up the carbs. Being insulin sensitive, therefore, means fat and muscle can absorb glucose, and fat cells will most likely store it…as fat.

When tGLUT respond strongly to insulin, translocate to the cell surface quickly and in abundance, cells are sensitive to insulin. If this translocation is less than ideal, then it's some degree of insulin insensitivity and covers the spectrum from slightly insensitive—some tGLUT response, but not total—to completely insulin resistant where little to no tGLUT moves.

When resistant, no matter how much insulin the body produces, no matter how much bathes muscle and fat cells, tGLUT never comes to the surface and the two tissues that once cleared the majority of sugar from the blood stream can't. Type II diabetics pretty much fall into the completely-insensitive category.

That's the crux of it: insulin resistance makes it very difficult to continue getting fat (although, normally, someone who has diet-induced type II diabetes is pretty fat), but it's also difficult to grow new muscle. Remember, insulin's main role is to make things grow. Get too fat and the body tries to shut down the ability to get fatter, i.e. prevents fat cells from absorbing more fat. Luckily, we live in the modern age where doctors can prescribe drugs like metformin and allow people to get even fatter.

On the other hand, insulin sensitivity helps trigger muscle growth and recovery from exercise, but also increases fat accumulation. It's the ultimate Catch-22 for anyone who cares about aesthetics. In a perfect world, we could stop our fat cells from absorbing sugar, but continue to allow our muscle cells to do so...or maybe it's possible in a not-so-perfect world with the perfect diet.

Chapter 11

Sensitivity, It Varies

Insulin sensitivity changes throughout our lives. As people age, insulin sensitivity decreases and, of course, when an obese person loses weight, or someone stops shoveling McDonald's into their mouth, starts walking 30 minutes a day and eats a few vegetables that weren't deep-fried, their insulin sensitivity increases.

In addition to these long-term fluctuations in sensitivity, changes also occur within the day. First thing in the morning, fat and muscle cells react strongly to insulin and soak up sugar like a fat kid with a gallon of melted ice cream and a straw, i.e. insulin sensitivity is high in the morning. Insulin sensitivity then drops steadily until evening when it hits a nadir[1], making it hard for both fat and muscle to absorb sugar.

NOTE: Both fat and muscle cells react strongly to insulin in the morning and less so as the day goes on, i.e. insulin sensitivity is high in the morning.

See why every health expert and their sister recommends eating carbs first thing in the morning as opposed to bed time? Wheaties it is, or better yet, bring on the Coco Puffs, Lucky Charms, or some

sugar-packed maple and brown sugar instant oatmeal...and that's just for starters. We're insulin sensitive, baby, and we might as well take advantage of it. To be part of this complete breakfast we need to throw in a banana, glass of OJ and some toast, but don't go crazy on the protein, one egg will do. Bam, son, instant growth: all because we were smart enough to eat carbs when we crawled out of bed…but that's maximum growth of fat cells as well as muscle.

Compare this with what happens at night: muscle and fat tissue don't, under normal conditions, want to absorb excess sugar from the bloodstream. This, of course, can cause a host of issues. If the main avenues for glucose disposal take a break, then blood sugar levels stay high longer than they should. Insulin levels will continue to rise, attempting to clear the glucose. The brain and other tissue that contain GLUTs 2 and 3—the always-on GLUTs—must do the work. This process causes lethargy, affects logical thought and makes it hard to focus on anything besides trash TV.

Eating carbs at night sounds like a horrible idea. With normal diet and lifestyle—which includes overeating—I agree, eating carbs at night is a bad idea. But if you're reading this book, you're not normal. We may not be able to control the daily rhythm of insulin sensitivity, but we can things that will allow us to use the nighttime insulin resistance to our advantage.

Chapter 12

Exercise a Little Control

It probably sounds as though insulin sensitivity lies beyond our control. Muscles will, however, use sugar efficiency and in high-volume without manipulating insulin sensitivity. Bypassing the whole sensitivity paradigm and moving tGLUT to the surface of cells is possible and easy.

Any change in insulin sensitivity affects both fat cells and muscle tissue in the same way. If muscles become more sensitive to insulin and can store and use carbs, then so can fat cells. If, on the other hand, fat cells become less sensitive and find it difficult to use and store carbs, then so do muscles. It seems the choices are weak and ripped or jacked and fat. Or, of course, get fat then spend 20 to 30 weeks leaning down as slowly as possible to see the hard-earned gains without losing any.

Possessing the ability to translocate tGLUT at-will changes everything. What is this magical power of which I speak? Resistance training. I don't expect this to be a massive revelation. Resistance training triggers so many cellular reactions within muscle that it seems reasonable that it can also replace part of insulin's functionality. But how can we benefit from the translocation of tGLUT without insulin playing a role?

This is where the studies on diabetic patients paid off, and initiated my autodidactic endeavor into the GLUT and other cellular transport systems. I happened upon a paper that tested insulin sensitivity and glucose clearance in type II diabetics after resistance training[1]. Despite a lack of increase in insulin sensitivity immediately post-exercise, glucose clearance from the bloodstream increased. This seemed counterintuitive until I learned about the insulin-independent translocation of tGLUT[2].

Non-insulin mediated translocation of tGLUT occurs with resistance training in all mammals, diabetic or otherwise[3]. Resistance training prepares muscles to soak up sugar even before insulin is present. The moment the sugar hits the bloodstream, skeletal muscle doesn't need to wait for a rise in insulin to absorb glucose. This pre-insulin clearance of carbs can decrease the insulin response and robs fat cells of both a large insulin spike and of all that precious sugar that fat cells would love to convert into fat.

For diabetics, this process couldn't be more extra-ordinary and potentially life altering. It doesn't matter that a type-II-diabetic's cells don't react to insulin any longer because resistance training mimics a key function of insulin. With resistance training, a diabetic can clear sugar from their bloodstream without medication while their fat cells remain insulin resistant.

I want to be very clear: this process operates independently of insulin. When talking about non-insulin mediated translocation (note the 'non'), we can ignore insulin, at least as far as its necessity to increase glucose absorption and speed recovery from training. Recovery and resynthesis of glycogen stores depends on carbohydrate availability and not necessarily on insulin secretion

(although insulin may serve other purposes in the process of muscle growth).

Don't confuse the concepts. Translocation of tGLUT caused by muscular contractions does not increase insulin sensitivity. It is unrelated. Essentially, resistance training achieves results similar to those initiated by insulin, but without it. It may sound redundant, but there's a lot of confusion about this topic and choosing proper post-training nutrition to amplify and attenuate the right signals depends on understanding this fact.

NOTE: The translocation of tGLUT that occurs with exercise is not related to insulin function or increased insulin sensitivity. tGLUT move to the surface of muscle cells when contracting under load. The process is called *insulin independent translocation*.

This is an amazing process and exemplifies the concept of MTR: targeting a response exclusively in one type of tissue that normally affects multiple tissues. We choose which tissue absorbs carbs are without increasing another tissue's absorption, despite the fact that in other cases, the ability of both to use carbs rises and falls together. Resistance training, however, decouples the two.

As an added advantage, resistance training triggers two more desirable changes. Resistance training not only causes tGLUT to move around without insulin, but also increase the amount and, therefore, concentration of tGLUT in muscle cells[4]. So not only do tGLUT activate with training, there's more of them to active.

Resistance training equips muscle cells to absorb sugar at a faster rate, either for storage or energy production.

On top of that, muscle cells also become more sensitive to insulin over time, so when things calm down from the training and everything's back to normal, the muscle cells react stronger and faster to insulin than fat cells can, once again clearing glucose from circulation before fat cells can get hold of it and turn it into fat.

This is just a small number of the biomolecular changes that occur within muscle cells with resistance training. Covering all of the changes and their implication on health, well being, strength, fat loss, and so on, would fill its own volume, which is not my goal at the moment—later, maybe, but not now. For now, focus is on the changes dealing with GLUT and insulin.

For diabetics, the benefit is clear: instead of medication that makes both muscle and fat cells sensitive to insulin again, allowing them to get fatter and sicker, they can lift weights and get healthy. Wait, what kind of nonsense am I talking? It'd be way easier to pop a pill and get fatter. Maybe the real benefit is to you, who already trains hard, battles with the iron on a day-to-day basis, who strives for more than health—those of you who want to be exceptional.

Section II

Essential Points

Insulin can make all tissue grow.

Usable carbs stop fat burning.

All carbs except fiber stop the body from burning fat and are termed *usable carbs*.

GLUT carries glucose into cells.

Specialized proteins called glucose transporters (GLUT) carry glucose into cells. The primary type in muscle and fat is called *tGLUT* and needs insulin to work.

tGLUT responds best in the morning.

Specialized proteins called glucose transporters (GLUT) carry glucose into cells. The primary type in muscle and fat is called tGLUT and needs insulin to work.

Exercise makes tGLUT work without insulin.

Resistance training mimics the function of insulin in muscle cells and puts tGLUT to work shuttling glucose into skeletal muscle tissue.

Carb Back-Loading

Section III

MORTAR

Carb Back-Loading

Chapter 13

Some Assembly Required

I've written down all this heavy-handed science about metabolism, insulin sensitivity and a whole section on cellular glucose transporter proteins leading to some sort of explanation—or so everyone hopes. Who knows, maybe I just wanted to sound smart; then no one would question the protocol and jump right in after seeing a few hundred citations.

I know the synopsis looked very basic and may not appear to warrant such information for a plan that looks like the standard, time-tested wisdom of eat, train, drink a post-workout shake with carbs and go to bed. Admittedly, if someone introduced this to me for the first time and I read only the synopsis, I would think the same, *Way to state the obvious, buddy*.

Carb Back-Loading, however, requires more than a post workout shake with a few carbs or a Gatorade during the training session. As far as I know, it is the first dieting strategy diet integrating training time and the timing and type of each meal. A method based on hard-science and not anecdote. Carb Back-Loading works best when training within an optimal window of time. And if someone can't work the ideal structure for Carb Back-Loading into their day, unbelievable changes still result with few modifications. Even then, this is the easiest, most maintainable dieting strategy ever devised.

Section III: Mortar

The preceding section allows me to now explain how the pieces of Carb Back-Loading fit together to create a plan in which fat loss and muscle growth happen simultaneously, the Holy Grail of dieting. Now it's time to drop all the pieces into place.

Chapter 14

Best Breakfast Ever—None

Inviting a bout of vitriol is as easy as standing in front of a fitness guru or strength coach and mentioning that there might be benefits to everyone if they skip breakfast. Why the anger? I have to be honest, I really don't know because my reason for suggesting a start to the day that does not include an immediate calorie load stems from how the body works and the resulting research to prove the effectiveness.

If you're like me, you've skimmed ahead and noticed something peculiar: I spend more time on breakfast than other topics—this chapter is two to three times as long as other chapters. Eating (or not eating) early in the day dictates the metabolic status of the body for the rest of the day. Breakfast is simply that important.

By skipping breakfast, it's easy to change several aspects of the metabolism, like whether the body burns fat for energy or carbs. I do realize that the gurus across all folds, from medical doctors to bodybuilding coaches believe that breakfast is essential, preaching it with zeal. Sometimes, it sounds as though death may occur from skipping breakfast after some of the harangues I've heard, but the facts don't agree and don't lie.

NOTE: Eating (or not eating) early in the day dictates the metabolic status of the body for the rest of the day. *Breakfast is that important*.

For the average individual, upon waking or thereabouts (say 7am), levels of the potent hormone cortisol reach a high point for the day. Cortisol elevates naturally through the night[1,2] and peaks upon waking[1,3].

Cortisol is catabolic, a statement beyond dispute, but catabolic how? Catabolic only means tearing down a more complex material in the body for a different use. Destroying muscle tissue—as happens during resistance training—is a normal and common catabolic process associated with cortisol release. But releasing glucose from glycogen stores is also catabolic; and so is releasing fat from fat cells.

Cortisol is like nega-insulin. Insulin's main purpose is to make tissue grow; cortisol breaks things down. And like insulin that stimulates both muscle and fat cells to grow, cortisol also stimulates the breakdown of both fat and muscle. Also like insulin, diet and exercise controls which tissue cortisol attacks.

When acting without elevated insulin levels and in a natural manner—so without being constantly elevated like during chronic stress—cortisol triggers the breakdown of triglycerides into free-fatty acids (FFAs) for metabolization a process known as lipolysis[1,4]. The morning before eating is the one consistent time when insulin levels are very low and cortisol is high, i.e. cortisol accelerates fat burning in the morning if nothing interferes.

More happens in the morning with hormones as well. The body releases ghrelin—the main hunger-control hormone[5]—in a pulsatile

manner through the night with a peak occurring upon waking[6]. This spike incites hunger and is why the stomach growls when getting out of bed. Hunger's not always something to avoid: ghrelin also stimulates growth hormone release[8]. As growth hormone levels rise the body releases more fat to be burned as fuel[8] and decreases the destruction of protein for use as fuel[9]. Growth hormone levels peaks roughly two hours after waking if skipping breakfast[10].

In other words, every day the body starts as a fat-burning furnace. Even during exercise, without eating breakfast, the body burns far higher levels of fat than normal[11] and causes an increase in the production of fat-burning enzymes, allowing the body to metabolize fat faster[12].

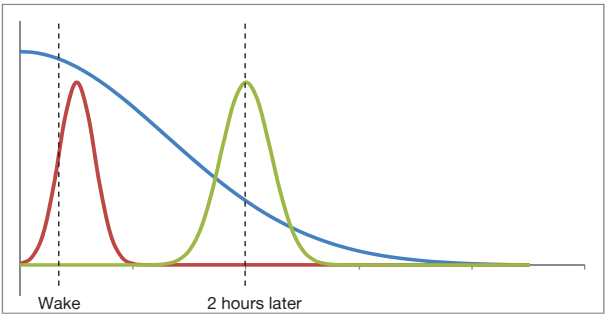


Figure 1: Levels of cortisol (●), ghrelin (●) and growth hormone (●) after waking that create the perfect fat burning environment if not disturbed by breakfast.

Contrast this with what happens by eating a healthy, balanced breakfast, one that contains as little as 30 grams of carbs. As is well known, insulin levels rise with the rise in blood sugar, kick-starting

a downward spiral of fat burning: the early-morning release of insulin hinders fat burning for the rest of the day[13]; while cortisol levels remain high, the insulin release causes new empty fat cells to be created[14]. The insulin also lowers levels of ghrelin and growth hormone[15]. Maybe hunger drops, but so does fat burning.

From the facts above—this is *fact*, not *guesswork*—one would come to the conclusion that maybe holding breakfast off for a few hours is a good idea, or at least until cortisol levels return to normal and growth hormone levels fall naturally, which takes a few hours. Skipping breakfast looks like a way to lose body fat faster, or at least to keep it off.

It might seem that skipping carbs would be enough, but truthfully, it'd be best to skip everything but pure fat. In the supplement chapter, I mention how most fats aren't available for energy for several hours after eating, which works perfectly, but protein can absorb quickly and even cause insulin spikes.

The morning is a time to avoid interfering with the natural combination of hormones because if the body maintains the fat-burning homeostasis, it casts a fat-burning shadow across the entire day. When attempting to lose weight, moving the majority of daily calories to the evening causes more fat loss and preserves muscle[16]. Instead of fasting from 7 pm until bed time, eat a smaller amount of calories before dinner time, then go-to-town from then on until bed time, even if bed time is 10 pm. Sounds like Carb Back-Loading to me.

Celebrity trainers will dismiss this out of hand, call it crazy, disparage the research—that they'll never read—and claim to be

right because they have become celebrities by proxy of working with celebrities. But their clients—as seen on TV—struggle to hold even an average waistline from year to year. It's not solely the breakfast rule plus the no-eating-after-7pm rule, but I would wager a bet that their unfounded advice about these two points doesn't make it easy.

I know many people, even if convinced about the fat burning, fear a mental-lethargy attack if they skip breakfast. There's no doubt that after eating breakfast on a regular basis for years, skipping it for a few days slows mental acuity a bit. This is transient.

My best IQ-driven work is done in the morning without breakfast, without anything but coffee and this may go on until noon. And when I say IQ-driven, I mean developing computer algorithms, writing an excellent piece of prose or taking a four-hour test on Quantum Mechanics—not that I feel like I'm better at reading the newspaper. I've even outlined how to increase mental focus and cerebral performance in an upcoming eBook, and one of the main components is skipping breakfast.

NOTE: Eggs contain primarily fat and protein and at most, one gram of carbohydrates. Despite the overwhelming predominance of two non-insulin stimulating macronutrients, eggs can spike insulin levels[17]. Don't, therefore, eat eggs in great abundance during the low-carb portion of the day. One egg, not a problem; six or more all at once, problem.

There's plenty of research to validate my personal experience and the experience of others. Conditions in which breakfast does help

cognitive function involve malnourishment. I'm talking about true malnourishment, not little-Timmy-didn't-get-his-customary-Twinkie-with-dinner-last-night malnourished, but someone who hasn't eaten for days. In such a case, breakfast or any food whatsoever, improves cognitive performance[18]. Who would have guessed: give a starving kid a Pop Tart and suddenly they think better.

For healthy kids, however, the story differs. Researchers took two sets of academically matched students (they were all at about the same performance level) and withheld breakfast from one group of kids, letting them eat at lunch, and the other group had a balanced breakfast.

When kids skip breakfast and have their first meal at lunch they pay attention, behave, and perform better throughout the entire school day[18,19].

Whatever fears or concerns exist about skipping breakfast, abandon them. I promise that the trepidation is based on anecdote, opinion and, really, what amounts to an old wives' tale. Having a goal means taking the steps necessary to achieve it and that might mean skipping breakfast, keeping calories light and pigging out at night. And who knows, with one less thing to worry about, it might even be more convenient for those rushing-around-the-house-to-get-ready mornings.

Chapter 15

Eat At Night

From the massive number of trainers and doctors teaching to eat breakfast and not eat before bed, I'd expect them to base such advice on scientific research. The research does exist to answer the question, Should we eat more in the morning or in the afternoon? There is, however one problem: the research says don't eat the majority of calories early in the day, eat them at night.

The current advice is a remnant of a reasonable assumption based on reasonable logic that no one ever checked. The logic: when first waking, the body is starving from the overnight fast; feed it and it'll start burning all those calories right away. But before bed, the body's going into torpor for hours and won't burn any calories, so don't give it any food and it can't store it.

Research shows something very different. As far as body weight is concerned there's no real difference between eating calories early in the morning and few at night or vice versa. But checking the difference in body composition tells a very different story. People who eat a big breakfast and start fasting at 7pm lose mostly muscle tissue. People who skip breakfast and eat after 7pm lose body fat and may actually gain muscle. This, dear readers, is fact[1].

To maximize the burning of fat and growth of muscle tissue during Carb Back-Loading it seems obvious to eat in sync with how the body also achieves that goal, by having fewer calories in the morning and more at night.

Chapter 16

No Carbs, No Problem

For the vast majority of people, carbs sometimes seem like the enemy and for good reason: once carbs enter the system, the body no longer easily burns fat from fat cells, so it switches to carbs for fuel. The available carbs, however, may or may not be enough to sustain activity levels. If the body requires more than is available, other processes initiate the production of glucose—carbs—from various sources, one of which is lean tissue.

Not only will this happen immediately upon eating carbs—and possibly anything that spikes insulin levels—but eating carbs for breakfast inhibits fat burning for the entire day[1]. That's a serious problem.

One nearly universal goal these days is to burn a maximum amount of body fat while still being able to grow. The earlier carbs slip into the diet, the earlier the body stops burning fat. By cutting off the supply of carbs, the body continues burning fat as it did through the night. There's no end of research to show that without carbs, the body burns a lot of fat.

Limiting carbs, especially in the first half of the day, forces the metabolism to rely on fat for energy needs. Coupled with the first

rule—limiting our intake of food—the body releases body fat to keep up with energy needs.

Limiting carbs—and therefore limiting insulin release—is crucial for another reason. This is when insulin affects fat cells and muscle cells the strongest, allowing them to store carbohydrates. The body has an almost unlimited capacity to convert and store carbs as fat, but has limits on the amount of glycogen it can store.

Insulin also increases the efficiency of fat cells to store fat by making the formation of triaglycerol—the main storage form of fat in fat cells—easier. By avoiding carbs, it makes it difficult for fat cells to store carbs as fat and to store fat as fat. At the same time, it makes it hard for muscle cells to store carbs as glycogen.

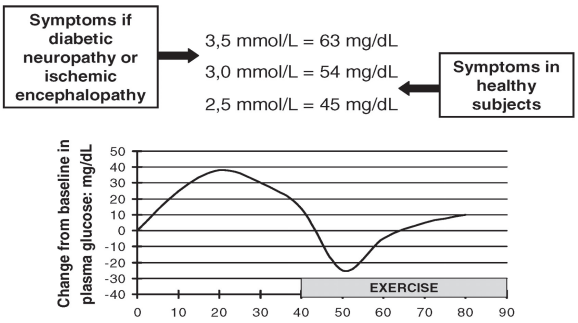


Figure 2: Ingesting carbs pre-training, especially after an ultra-low carb day, can cause blood sugar levels to dip during training, triggering hypoglycemia-like symptoms. Some react strongly; others, hardly at all.

Eating carbs immediately pre-training—has the potential to cause rebound hypoglycemia[2], which occurs when muscles, the liver and other tissues clear glucose from the bloodstream too fast. This causes shakiness, sweating, light-headedness and an inability to think clearly, let alone focus on performing another set of a complex, compound movement.

This risk comes with no advantages, nothing worth the possibility of a bout of hypoglycemia. Because no advantage exists but there's the potential of looking like an intoxicated fool in the gym, skip the pre-training carbs. This is not to say that pre-training nutrition should be ignored, but it won't include carbs.

Training in the low-carb state carries advantages: three distinct strength-enhancing benefits, the collection of which I often refer to as The Hulk Effect™.

Hulk Effect™

1. After adjusting to a low-carb diet the body releases adrenaline faster and muscle cells react stronger than when on a standard carb-based diet[3].
2. Psychomotor performance increases, which is the ability to perform coordinated movement, even under load[4].
3. The nervous system fires with greater amplitude than normal, allowing maximum contraction strength[5].

Maybe training without carbs isn't so bad after all.

It also turns out that depleted glycogen levels do not affect strength training, or at least not the outcome[6]. Ketones and fatty acids—with the help of the enhanced sympathetic nervous system and adrenaline release —pick up the slack of depleted glycogen levels. And as I cover later, Carb Back-Loading helps maintain glycogen levels for the next day's training.

Chapter 17

The Sweet Spot

The Carb Back-Loading day starts with a lighter caloric load and no carbs, and as the evening approaches insulin sensitivity wanes. Introducing too many carbs into the system at this time could mean metabolic chaos. Ah…but wait: there's a way to make muscle cells soak up carbs even if insulin sensitivity tanks. Resistance training.

Sure, someone can back-load calories and not eat carbs, but can't successfully reintroduce carbs without implementing resistance training. By successfully reintroduce, I mean start eating carbs later in the day, in massive abundance, without getting fat. Resistance training, by causing the non-insulin mediated translocation of the tGLUT discussed earlier, allows muscles to absorb all the carbs the tissue can handle.

Remember, this movement and activation of tGLUT caused by resistance training is independent of whether the muscle cells are sensitive to insulin or not. A strong, powerful contraction and, boom: muscles act as though they were bathed in insulin and start absorbing sugar, assuming there's sugar to absorb.

Strength, of course, is a concern for any athlete modifying their diet or changing their schedule. As insulin sensitivity decreases through

the day, the rate of perceived exertion (RPE) goes down. Translation: intensity is naturally higher when training at night without realizing it[1]. That this correlates with the perfect time to train for Carb Back-Loading only increases the number of reasons to consider moving training into the sweet spot if possible.

There's also a matter of the ideal hormonal environment for growth, which—don't be surprised—can depend on the time of day. It turns out that training in the evening causes a lower cortisol response to training than normal while leaving levels of other anabolic hormones, like testosterone, the same or elevated[2]. This creates an anabolic and anti-catabolic environment greater for evening training than for morning training.

It's nice that so many hormonal advantages for training line up with other daily rhythms that make Carb Back-Loading effective. There really is a perfect time to train.

Chapter 18

16oz Carb Curls, Post-Training

Insulin sensitivity decreases all day, and falls near its lowest point in the afternoon hours. Resistance training during this window of time—which will be time shifted by different amounts for different people—doesn't reestablish insulin sensitivity, but does something better. It performs a little MTR magic by getting muscle tissue to absorb carbs for energy production and glycogen repletion, but leaves fat cells in their standard insulin-resistant state. Eating carbs at this time does not enhance body fat storage, but rather, it only supports the goal of our training efforts.

When engaged in resistance training, the body tries to deteriorate muscle tissue, a process called proteolysis. Resistance training is actually catabolic[1].

During the training session, building muscle is impossible no matter the nutritional or supplemental measures taken. The goal, therefore, is to limit proteolysis to the greatest extent possible during our training session. The less that's torn down, the more new muscle we can build.

Insulin attenuates and can possibly stop proteolysis after training and maybe during, thus preserving our lean tissue and muscle mass[1]. It might seem obvious then: eat carbs during training sessions. Some

situations warrant eating simple carbs during training sessions—like strongman training—but certain dietary supplements increase insulin levels without the carbs during training. In most cases, avoid carbs for insulin spikes because better alternatives exist.

One thing I've noticed ever since I introduced the idea of tGLUT manipulation for performance gains, is a shift in the recommendation of post-workout carbs. The recommendation is to focus on low-glycemic carbs post-training to stay lean. The argument revolves around having carbs available for hours and avoiding insulin spikes which can make people fat.

It couldn't be further from the research, i.e. further from the truth. After the completion of training, stopping the proteolysis that occurs requires a large insulin spike: the larger, the better[2]. Achieving a big spike takes high-glycemic, high-insulinemic carbs, which we can enhance by adding the right proteins and amino acids.

Don't worry about getting fat either. After resistance training, storing body fat is nearly impossible for up to an hour[3]. Another good reason to get a huge, short-lived spike: get the carbs in and get them out before the fat-resistant window closes.

Chapter 19

Slam the Carbs

It's time for the fun part of Carb Back-Loading: eating some trash. After training, the one goal besides fueling muscle growth is refilling glycogen levels. Rebuilding the depleted stores—depleted assuming an ass-busting training session—isn't necessarily for muscle growth. Glycogen stores fuel performance, nervous system recovery and help limit muscle breakdown during the next-day's training.

Skeletal muscle, even after the most grueling DOMS-creating workouts, recovers within 48 hours[1]. The nervous system, in contrast, can take 10 days[2]. I could accurately describe resistance training as nervous system brutality.

As hard as muscles appear to work during training sessions, the nervous system works at a far greater level for its capacity. Cells of the nervous system will use ketones for fuel, but glucose is more efficient. Having plenty of glycogen in reserve allows motor neurons to fire at a higher level during training. If muscles don't fire with maximum force, they won't experience maximum growth or conditioning.

Glucose is also necessary for maximal contraction as a set approaches failure. When hitting the anaerobic point during

training, glucose is needed to continue contracting as it enters the glycolytic—glucose burning—cycle. Not ketone-burning cycle or fatty-acid burning cycle, but glucose-burning.

As far as we know, muscles require glucose to squeeze out those last few grueling reps. Topping off glycogen levels allows muscles to use fatty acids during the training until the need for glucose arises, at which point glycogen is broken down and used.

There's some debate on whether glycogen levels help muscular growth or not. Research shows that full glycogen reserves help limit the protein breakdown caused by training sessions and increases glycogen usage during the following days' training session[3]. Once again, replenishing glycogen levels is not to recover from today's training but to prepare for the next day's.

These carbs should be trash, as I like to say, by which I mean donuts, pizza, French fries, pecan pie and my personal favorite, cherry turnovers with a healthy amount of icing. People think I'm being facetious. I'm not. I have good reason to recommend such stuff, as I always do.

We all know—or should know—that eating carbs before bed disrupts nighttime release of growth hormone. I'm not going to spend time talking about the benefits of growth hormone other than to reiterate its role as a fat burner and a lean tissue builder: something no one wants to screw up with poor food choice.

The poor choice here is low-glycemic carbs. The body will not release growth hormone during sleep until roughly two hours after blood sugar and insulin levels return to normal[4]. Low-glycemic carbs keep insulin and blood sugar levels elevated for hours, while

high-glycemic create a spike that ends within an hour or so of eating. Eating junk gives the benefit of replenishing glycogen stores without interfering with the nocturnal hGH cycle.

When someone attempts to Carb Back-Load using brown rice and whole-grain toast, they get crappy results. They want to do a healthy version of the diet, only to realize healthy means impotent. They too narrowly define healthy.

Eat like a fat kid to get jacked, end of story.

NOTE: Delayed Onset Muscle Soreness (DOMS) is a condition that occurs with intense training, most often associated with a person's first excursion into resistance training or returning to the gym after a long hiatus. The soreness occurs 24 to 48 hours post-training and is not related to lactic acid buildup, but stems from muscle fiber damage[5]. DOMS should not limit or affect training—although one's pain threshold will dictate training intensity while experiencing the DOMS[6].

Carb Back-Loading

Chapter 20

Highly Inefficient Design

I'm recommending skipping breakfast and eating junk; I expect skepticism. To be honest, I appreciate the skeptics: they keep me on my toes, keep me digging, researching, refining and rethinking. Without skeptics—including myself—I wouldn't know half of what I do.

What might be setting off some alarms is, how does this work? I don't talk about calories or restricting them in any way, only shifting them around and splitting the macronutrient content of the day between a low-carb morning and a high-carb night with a fuzzy region between the two. I give reasons as to why, but those reasons don't necessarily explain how it's possible. A calorie is a calorie, after all.

The full explanation of why a calorie is not a calorie is beyond the scope of this book. It covers topics like the second law of thermodynamics and the expanded subject of statistical mechanics to deal with kinetic flux and entropy[1]. What these subjects describe and explain is efficiency.

The human body is no different than any machine that requires an energy source to perform work. Whether it's a car engine or a coal-burning stove, fuel goes in, work gets done and heat gets produced.

Getting the maximum amount of work possible from the fuel while wasting the least amount of heat is *efficiency*. While the 2nd law of thermodynamics puts an upper limit on efficiency—it can never be 100% —there is no lower limit besides 0. It's possible that all the heat is lost and no useful work is done.

A car engine runs at various efficiencies and depends on several factors like air temperature, rpm and even the type and temperature of the fuel.

Pathways to Energy Production and Efficiency[1]

Pathway	ATP/mole	Efficiency(%)
Glucose → CO_2	38	38.5
Glucose → glycogen → glucose → CO_2	36	35
"Average" AA → CO_2	—	33
AA → Protein → AA → CO_2	-4	27
Palmitate → CO_2	129	40.9
Palmitate → Ketone → CO_2	121	38.3

A body's efficiency depends on even more variables, variables that depend on other variables, the duration a particular type of fuel has been in use, the type of work done, levels of more than a dozen different hormones, lean mass, time of day and so on. Each of these alters the efficiency of the body and manipulated appropriately, they can produce incredible, almost unbelievable effects—for fat loss or even fat gain.

Take the simple example of exercise. Researchers monitored four groups of people—one group does nothing (group C), one diets (group D), one exercises (group E), and a final group that diets and exercises (group DE)—to assess weight loss, fat loss and muscle loss over time. For periods of less than nine months, groups D and DE lose identical amounts of weight, as do groups C and E.

In other words, over the length of the study, the extra calories burned during exercise made no difference in weight loss[2].

Sounds incredible, I'm sure—maybe impossible. How can exercise not make a difference? Someone who sits on their ass all day loses the same amount of weight as someone who exercises, which, according to the study, is none. By all measures of sanity, the idea of burning more calories with exercise and not losing additional weight feels absurd. It's not.

Adaptation is the hallmark of life and the human body excels at it. When thrust into a new exhaustive activity, the body quickly down-regulates thyroid hormone, which slows all aspects of metabolism.

This is a conservation mechanism to save enough energy to make sure that exercise does not jeopardize normal, day-to-day life activities. Suddenly, the body is running at higher efficiency, which means better gas mileage—i.e. it gets harder to lose fat.

But efficiency doesn't have to go up. The process can go the other direct. Several well-controlled studies record weight loss by changing the macronutrient profile of a person's diet while keeping calories identical. The dietary switch: from high-carb to low-carb.

Weight Loss Differences By Switching From Carb-based Diet to Fat-based[3]

Reference	%CHO Low	%CHO High	Avg. Wt. Lost (lbs) Low CHO group	Avg. Wt. Lost (lbs) High CHO group
Young et al (1971)	7	23	**35.6**	26.2
Rabast et al (1978)	10	68	**30.8**	21.6
Rabast et al (1981)	12	70	**27.5**	20.9
Golay, Allaz et al (1996)	15	45	**19.6**	16.5
Golay, Eigenheer et al (1996)	25	45	**22.4**	18.9
Lean et al (1997)	35	58	**15.0**	12.3
Baba et al (1999)	25	68	**18.3**	13.2
Greene et al (2003)	5	55	**22.9**	16.9
Layman et al (2003)	44	59	**16.5**	15.4

Carb Back-Loading targets the same systems but in a complex way—not simply stripping carbs from the diet—to modulate and utilize these inefficiencies to burn body fat while maintaining the efficiency of the processes necessary for muscle growth.

This is MTR's ultimate goal, control over metabolism, growth and tissue repair. Although all of this may seem unbelievable at first, there are multiple studies to vet the theory. There's also an entire branch of physics devoted to the subject and proves that the underlying logic behind a calorie is a calorie violates the most basic laws of the universe.

Carb Back-Loading

Section III

Essential Points

Breakfast is extremely important—to skip.

When you first wake, the body is in a powerful fat-burning mode. Eating could put you in fat-gaining mode.

Eating at night helps preserve muscle mass.

It's safe to train without carbs.

Strength and hypertrophy training are unaffected by day-time carbs as long as glycogen stays full.

Train at night.

Training at night lowers catabolic hormones, raises anabolic and you're stronger at night.

To recover from training use only high-GI carbs.

High glycemic index carbs speed recovery, don't interfere with nighttime GH secretion and, post-training, can't store fat.

Not eating carbs makes you burn more fat.

Carb Back-Loading

Section IV

AFTERMARKET ADD-ONS

Carb Back-Loading

Chapter 21

High Performance Tuning

Carb Back-Loading, simple as it may be to do, is obviously based on a substantial amount of research to nail the timing and type of carbs that need to be eaten at the appropriate times. Some people want the absolute basics and if you're one of those people, you can jump to the section on Implementation, which provides the information necessary to implement the lowest level version of the diet.

If you're like me, though, you don't want the basics. Sure, you can have a stock Ferrari—which would be pretty bad-ass as-is—but if you can strip a few hundred pounds from the car, add 400 horsepower and bump the top speed up to about 220 mph, why the hell wouldn't you? Especially if I told you it could be done for, equivalently, pocket change.

And the first step of any successful human-performance modifications is supplementation.

I can't assess the value of the majority of the supplements out there, mostly because absolutely no verifiable research exists that explores the efficacy of most products. A couple of decades in this industry taught me a valuable lesson. If the product makes any claim without research, then the claim is false 99% of the time.

When I say research, I mean peer-reviewed, verified research, not some clinical study performed at an undisclosed location with undisclosed results. When researchers do get around to testing the chemicals supposedly contained in the product, the results show, without doubt, that it doesn't work. That's why companies try to get patents on certain chemicals—this way, they can prevent independent research of the substance.

This section of the book contains a list of supplements vetted by research and experience. They are not exclusive to use with Carb Back-Loading, but the guides later in the book explain how to include these supplements for maximum effect while back-loading.

Chapter 22

Omega-3s

Recommendations for supplementing diet with omega 3s fall from the sky and for every recommendation there's a different reason given. I'm not going to go into all the health aspects or what the ideal ratio of omega-3s in your diet should be, but these arguments, at best, are speculative. I'm going to discuss things we actually know, like what omega-3s mean to cellular membranes and how to use them for increased hypertrophy.

Fat is an essential nutrient. Of course, it's used for fuel, but it also forms the structure of every membrane of every cell in the body. Stripping all fat from the diet—as recommended by a few prominent doctors-turned-wellness-experts—would cause death, but not before becoming an emaciated wreck of a human being—look at the same doctors mentioned above.

Because fatty acids encase cells with a gooey membrane, the types of fats in the membrane affect the properties of the coating, including the viscosity, which dictates the ease with which things can move through the membrane[1]. Things like tGLUTs. The higher the viscosity, the harder it is for stuff to move through the membranes.

Slick, less viscous membranes, however, allow nutrients, transporters and hormones to enter and exit cells efficiently. That's actually one indicator of biological age: the stiffness of cellular membranes increases—becomes more viscous—as we age[2]. Diet, however, plays a larger role. How much of what type of fats we consume dictates cellular viscosity more than anything else.

Stiff fatty acids—like saturated fat—form the underlying structure of the covering, but too much makes the membrane thick and rigid[3]. Stiff membranes resist the flow of nutrients into and out of cells and make the movement of transporters difficult. Cell function suffers. Polyunsaturated omega-3s, on the other end of the spectrum, create less-viscous coatings that allow nutrients and transporter proteins to flow without effort[4]. This ease-of-flow allows cells to operate at peak performance.

NOTE: Eating 5 grams or more of a combination of the omega-3 fatty acids DHA and EPA can enhance the hypertrophic signals associated with resistance training.

Since diet determines the raw materials available for cellular membranes—you are what you eat—eating a lot of saturated fat turns cells old before their time. Eat a lot of omega-3 fat and cells contain much higher proportions. This goes for monounsaturated fats in olive oil and the trans-fats in margarine.

Although nuts, seeds, soybeans, hemp and most grains contain polyunsaturated fats in abundance, they don't provide a full

spectrum of the polyunsaturated fat we need. They contain predominantly omega-6s and we need both omega-6s and omega-3s.

Besides needing omega-3s to survive, the body is more anabolic as dietary omega-3 increases. Supplementing with omega-3s in quantities 3 to 4 times recommended can increase the anabolic signaling of insulin and amino acids[5]. To build muscle efficiently takes more than protein, the body needs omega-3s too.

One word probably comes to mind: Flax. Yes, flax oil does contain omega-3s but it contains a form called alpha-linolenic acid. Not all omega-3s are created equal, however and the right type is needed for maximum efficacy and the right type is most readily available from fish oils.

Although the plant-derived omega-3, alpha-linolenic acid (ALA), is the essential omega-3 fatty acid, the body must use enzymes to convert ALA to docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) and the amount of these enzymes is limited[6].

Since we eat such large quantities of other fats that use the same enzymes, we could ingest enough ALA to theoretically meet needs, but still be deficient in DHA and EPA: the enzymatic system may be maxed out. By ingesting these two directly, our bodies don't rely on enzymes to convert the omega-3s, thus allowing greater incorporation into cells.

Also—and this is almost exclusively important to Carb Back-Loading—omega-3 supplementation helps certain muscle fiber structures to switch easily from burning fatty acids to glucose and vice versa, depending on which substrate is most available[7]. Carb Back-Loading causes this switch of nutrient availability on a daily

basis. Include liberal amounts of the omega-3s, 5 grams or more of DHA and EPA, for maximum growth.

Chapter 23

Medium Chain Triglycerides (MCT)

People rarely talk about fat as functional. I think the most I've heard relates to the release of cholecystokinin, CCK, as a hunger satiating response from eating fat, any type of fat.

Maybe someone might get a little crazy with how eating fat changes what eicosanoids get produced in what ratios, which is, I would argue, functional, but that takes months. I'm interested how it affects the system now...not next month, not next week, not even two days from today, but now.

No one talks about fat as functional because digestion and availability is slow. After eating fat, two to six hours pass before the fat from the meal enters the blood stream and is available for use[1].

As with everything, there's an exception to the rule. Medium chain triglycerides—recently relabeled medium chain fatty acids since triglyceride sounds scary—raise free fatty acid levels quickly after ingestion[2].

This rapid availability of fat can be advantageous when we're not eating carbs, like during the first half of a Carb Back-Loading day. The rapid rise in fatty acid and triglyceride levels can prolong the morning ketogenesis that occurs when we wake, causing the body

to burn more fat and waste energy in the ongoing production of ketones[3].

MCT oil, because of the rapid influx of fat, increases the fat burning and increases the rate of fat burning[4]; again activating another pathway to enhanced fat burning by possibly increasing lipolytic enzymes. When on a low-carb diet, or when eating low-carb during a regular and consistent part of the day, MCT oil offers several ways to accelerate fat loss.

I recommend coconut oil, but you can also find purified MCT oil that's liquid at room temperature and tasteless. Good coconut milk is also three-fifths MCT and is very low-carb.

NOTE: MCT oil is ingested rapidly into the bloodstream and is available for energy faster than other fats, causing the body to burn more fat. Coconut oil is a rich source of medium chain triglycerides.

Chapter 24

High Insulinotropic Carbs

Before ever supplementing with protein for post-workout nutrition, I supplemented with carbs. I read weight gainer on the bottle and downed copious amounts. I had no idea what I was doing, all I knew was that it lacked fat and had only trace amounts of protein and I wanted to be huge. Talk about bulking.

Times have changed and so has the extent of my ken. Now, I ignore the carb count on the label and go straight to the ingredient list to see what kind of carb the powder contains. With the advent of the internet, I don't even waste my time with that, to be honest. I open my browser, click a few links and purchase the pure form of the exact powder I want based on the function I need.

Today, I require one function and one only, to spike insulin and blood sugar levels. Okay, that may seem like two functions, but, in general, they go hand in hand when discussing carbs. If the carb powder causes a rapid rise in glucose levels, there will be a concomitant rise in insulin. It's pretty much unavoidable.

The basics work best: dextrose, maltodextrin and waxy maize or waxy rice. Functionally, there's not a big difference amongst them, only their chemical structure distinguishes them. Dextrose (d-glucose) powder is pure glucose and is a very simple sugar—as

simple as a saccharide gets. Maltodextrin, often labeled as a complex carbohydrate, contains long chains of glucose and absorbs faster than individual glucose molecules.

Finally, waxy maize and waxy rice are also complex branch-structured starches called amylopectin. Amylopectin makes up a part of most starches, the other part being amylose. Amylose, as opposed to amylopectin, is not branched but is a long chain.

The ratio of amylose to amylopectin determines how fast the body can absorb the starch and, consequently, how fast it can raise blood sugar: the more amylopectin, the faster the absorption and the better for insulin spikes[1].

The ration of amylose to amylopectin helps determine the best carbs for optimal results when Carb Back-Loading. For example, pick waxy potatoes (purple) over russets, or sticky-rice over spaghetti. I provide tables in the index.

Chapter 25

Whey Isolate

Of all the supplement revolutions over the last few decades to improve performance or help us get more from training, I consider whey isolate the first legitimate one. Everyone who trains knows that whey increases muscle growth better than most proteins especially when taken post-workout. And its derivatives—like whey hydrolysates—outperform almost all other proteins when it comes to potentiating and supporting growth.

Other advantages to whey isolate besides hypertrophy exist that modern nutrition experts ignore or are ignorant of. For one, whey isolate is particularly effective at alleviating and preventing oxidative damage.

It works by increasing levels of an amino acid called glutathione[1], which fuels the main anti-oxidant machinery of the cells in the body[2]. Eating fruits and vegetables pales in comparison to the glutathione mechanism. Glutathione also helps recycle other anti-oxidants like vitamin C and vitamin E, decreasing the need for these vitamins[3].

The two systems differ wildly. Anti-oxidants of the fruit-and-veggie type float around the blood stream and might bump into a free-radical, neutralize it and prevent it from doing damage. Even with

massive amounts of blood-born anti-oxidants, it's still a crap-shoot as to whether free radicals get nullified. The glutathione-driven system, however, works within each cell, so cells neutralize the free-radical, thus preventing an attack. It's no longer random chance if the reactive-oxidative agent gets neutralized—it does.

CAVEAT EMPTOR: choose the form of whey isolate wisely. Many pre-mixed drinks exist, but all these drinks, no matter the label claims, no matter what started off in the bottle, don't contain much whey isolate. It's impossible. Isolate may have been the original content, but all milk-derived products in the United States must be pasteurized, and this includes pre-mixed whey protein drinks. Whey, however, is not heat stable and pasteurization destroys it[4]. If you want your isolate, you need to buy powder and mix it yourself.

The analogy I use involves burglars. The fruit-and-veggie anti-oxidants represent the police and glutathione, three trained Rottweilers. The police might stop a burglar from breaking-an-entering if they drive by at the exact moment the burglars burgle, or if they accidentally crash into the burglar's car en route. The Rottweilers, however, will stop the burglars every time. Even if one guard dog goes down, the others continue preventing damage. Whey isolate feeds the pack of attack dogs in each cell.

Since resistance training—exercise in general—creates large amounts of reactive-oxygen species, anti-oxidant protection keeps the body healthy and growing without the burden of diverting excess nutrients to the task of damage control and repair.

Carb Back-Loading

Whey Isolate also enabled me to create peri-meal supplementation for enhanced goals. I'm sure this sounds odd, as it means supplementing around eating. Ingesting certain foods at certain times around a meal changes how, when and to what extent the body releases hormones.

Consuming 10 grams of whey isolate a few minutes before a meal, for example, decreases the amount of insulin released and can assuage hunger[5]. Depending on the meal and time of day, it can also enhance ketone production, a wasteful metabolic process that burns fat. Using whey isolate fine-tunes the power of Back-Loading.

Carb Back-Loading

Chapter 26

Protein Hydrolysates

Hydrolyzed proteins—or protein hydrolysates—start as intact proteins until heating, acids and enzymes break the longer chains down into smaller pieces[1]. These smaller chunks—often composed of just two or three amino acids—possess different functional properties than the original. Sometimes, radically different.

Before describing the functional properties of hydrolysates, I want to avoid confusing them with their intact counterparts. Micellar casein and calcium caseinate can taste pretty good. Casein hydrolysate, on the other hand, is the most awful stuff I've ever put in my mouth. The same is true of whey hydrolysates, all varieties. They taste like flaming rubber with a hint of burnt cheese. There's not many ways to mask the taste either—I have few effective solutions which, arguably, aren't solutions at all.

The enzymatic process creates the horrid taste accompanying hydrolyzed milk proteins from casein and whey. An unfortunate byproduct of the process produces large amounts of the amino acid proline, which taste buds perceive as pure nasty bitterness[2].

At least the benefits out-weigh the nasty taste. For example, ingesting either whey or casein hydrolysate post training

substantially enhance post-training muscle protein synthesis and decrease muscle protein breakdown[3].

NOTE: Supplementing with hydrolysates blocks the catabolic, protein-burning effects of resistance training while potentially doubling the growth over intact proteins[4].

Ingesting hydrolysates, particularly casein and whey, rapidly increases free amino acid and insulin levels[5]. Hydrolysates absorb through the intestinal wall faster than individual amino acids while not interfering with their absorption. An independent transport mechanism for the di- and tripeptides contained in hydrolysates moves these short peptides rapidly through the gut wall[6].

The necessarily low carb and insulin segment of the day of Carb Back-Loading limits use of hydrolysates because they spike insulin levels independent of the presence of glucose as described above. Back-Loading uses hydrolysates primarily around training and the nighttime feedings because hydrolysates can also enhance muscular usage of glucose[7].

One last comment: Beware hydrolyzed collagen or collagen hydrolysates. These are pretty much junk. Collagen lacks the essential amino acid tryptophan—as does its hydrolysate—and isn't used for skeletal muscle tissue growth or repair. Manufacturers normally use it as a junk filler in concentrated liquid protein supplements.

Chapter 27

Leucine

I am a skeptic. Unless I can find peer reviewed research on a supplement, I assume it's junk. That's why I warned against branched-chain amino acids (BCAAs) for so many years, until recently. All the accumulated studies, when qualitatively averaging their results—this one showed benefits, this one didn't—failed to answer a simple question: Can BCAAs enhance muscle growth?

It was a coin toss as to whether BCAAs carried any advantages for strength athletes or not. Why spend the money when other, proven supplements—like whey hydrolysates—show consistent increases in muscle growth compared with a placebo? Just buy the good stuff and let someone else gamble on BCAAs efficacy.

How training and nutrition triggers muscle growth is an interesting process with many different components. The mammalian target of rapamycin (mTOR) is one[1].

For growth and differentiation to take place something must activate the associated pathway of RNA transcription and translation. Hypertrophy—like any growth process—depends on the activation of such pathways. Think of the pathway as a chain of steps and signaling proteins and hormones activate or deactivate each step—they either strengthen chain links or break them.

The mTOR target is a link in the chain that allows dietary components to activate the pathway of cellular hypertrophy. This is the interesting quality of the mTOR receptor: it ties dietary nutrients directly to the cellular signaling process[2].

Normally, hormones need to mediate these signals. For example, carbs cause a rise in insulin levels and insulin then potentiates the growth pathway (it won't cause growth without the necessary raw materials). Certain dietary supplements, however, can bypass the hormones and activate the pathway directly via mTOR. Just eating the right food triggers muscular hypertrophy.

And the right food: the branched-chain amino acid, leucine. Hence my renewed insterest in branched-chain amino acids. Leucine directly binds to the mTOR receptor to trigger muscle growth and limit muscle breakdown[3]. Anyone looking to change the distribution of tissues in their body—say, going from less fat to more muscle—should supplement with leucine.

All good things come with a price, and for leucine, it is the ability to raise insulin levels independent of blood sugar. Other amino acids only increase insulin secretion in the presence of ample amounts of blood sugar, but not leucine[4], making it difficult to include during the low-carb portion of Carb Back-Loading. During the nighttime carb-up, however, leucine gives us the advantage of enhancing insulin release from a meal.

I'm not shy with the dosages as will become evident in the supplement plans, sometimes recommending upwards of 40 grams of additional dietary leucine in a day. If safety is a concern, a 150 lb

male can eat upwards of 2.5 lbs without demonstrating any problems, except, possibly, diarrhea[5].

NOTE: Because of leucine's anabolic and anti-catabolic properties, everyone should supplement with leucine regardless of weight loss or weight gain goals.

Carb Back-Loading

Chapter 28

Caffeine

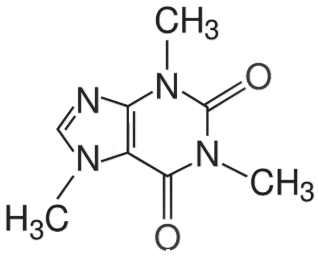
Anyone, on any diet, can use caffeine as adjunct nutrition with benefits. The basics of caffeine are impressive: accelerated fat burning, increased adrenaline response, heightened awareness, improved strength and possibly even greater nitrous oxide accumulation in muscle tissue. But caffeine enhances certain aspects of Carb Back-Loading making it indispensible.

The fat-burning properties complement the first half of the day when Carb Back-Loading because of the lack of carbohydrates in the diet, without which the body burns fat readily. Carbs and the subsequent insulin release don't necessarily block the fat-burning and mobilizing properties of caffeine but can interfere and limit it[1]. By eliminating carbs during the first half of the day and including caffeine, the body burns more fat.

Thus far, I've been referencing caffeine and I mean specifically caffeine, which is found in coffee and guarana beans. Caffeine is the strongest known natural member of a family of compounds called methylxanthines[2].

Other sources of caffeine actually don't have much true caffeine. Chocolate contains a methylxanthine called theobromine and teas contain theophylline. In terms of function, each of these acts

differently in the intensity of response. Theobromine and theophylline do not stimulate the system with the strength of caffeine, but their effects last longer[3]. Despite lasting longer, caffeine's stronger response and the infinite availability thereof makes it a better choice for serious athletes. When I speak of caffeine, thefore, I am referencing caffeine, not using it as a generic catch-all phrase for methyxanthines.



Caffeine

Most of the time, I'm going to recommend coffee. Not because it's a cheap and abundant source of caffeine, but because roasted coffee beans also contain chemicals called cholinomimetics that are minor stimulants, but can also suppress hunger[4]. They can be found in decaffinated coffee as well, which is why people still experience a stimulant effect from decaf.

Those are the basics. What makes caffeine integral to Carb Back-Loading is the ability to cause transient insulin insensitivity. Not only does insulin interfere with the actions of caffeine, but caffeine interferes with insulin's function as well, by decreasing insulin-mediated tGLUT response[5].

With caffeine, it's possible to both amplify Carb Back-Loading when training at the perfect time, but also to modify insulin sensitivity to accommodate training at non-ideal times, such as in first thing in the morning. People are the most sensitive to insulin in the

morning, and most apt to store excess carbs as fat —caffeine changes that.

Caffeine can also increase the speed at which we resynthesize and replenish glycogen after training[6]. The reason for this, I suspect, is the same reason Carb Back-Loading works: caffeine shuts down insulin sensitivity instead of depending on circadian rhythms, while training causes the all-important translocation of tGLUT. Since fat cells no longer compete for blood sugar, there will be larger amounts of sugar available for muscles to refill drained glycogen stores.

As it seems to go with any extended talk about caffeine, people often get confused about caffeine's role with insulin, mistaken in the belief that caffeine causes insulin release. This is absolutely not true[7], despite Barry Sears' ranting in The Zone.

What is true, however, is that caffeine ingestion with carbohydrates increases the amount of insulin released[8]. Caffeine's ability to desensitize cells to the action of insulin drives greater total insulin production as the body tries to clear blood sugar.

Cells can no longer clear glucose as rapidly, so the extended elevation in blood sugar causes the body to release higher amounts of insulin, attempting to clear the sugar faster. It's a positive-feedback loop: caffeine inhibits insulin action and the body interrupts this as a need to produce more insulin.

NOTE: Caffeine in capsule or powder form—caffeine alkyloids—cause greater insulin insensitivity, i.e. greater resistance than does coffee[9].

In general, I prescribe a lot of optional caffeine. When training times are not ideal however—e.g. training in the morning as opposed to training in the evening—caffeine becomes essential in the plan. Recommended levels may be upwards of 800 mg in a sitting, an amount tolerated well by most people[10]. The plans make it obvious when you need a cup of joe, and when to skip it.

Chapter 29

Creatine

Few supplements boast the amount of human-based performance research as creatine. Scientists study everything from endurance to greater power production and enhanced hypertrophy, so science knows a lot about creatine and how it affects metabolism, hormone levels and how many extra reps it might enable.

There's nothing unnatural about creatine. The body manufactures it. Muscles metabolize ATP into ADP and, if ATP is not produced fast enough, ADP can be metabolized into AMP and after that, the muscle's producing lactic acid, at which point, it can't fire effectively or for much longer. Creatine is the active chemical transporter that helps recycle AMP and ADP back into ATP[1].

By supplementing correctly, and raising intramuscular levels to supraphysiological levels—way above normal—creatine helps extend a set of squats because the excess amount holds back lactic-acid production. Without all those free positive-ion donors, we can push rep counts higher[2].

While it is true that creatine can improve strength and muscle growth beyond normal[3], I prefer to focus on a recent discovery about creatine, which, instead of being an anabolic effect, is anticatabolic. Creatine may block myostatin production, which can

allow significant growth because myostatin is a powerful anti-growth factor[4]. Knock out an antigrowth factor and, consequently, trigger new growth.

Many hormones signal growth as levels increase, myostatin, however stops muscular growth and cell differentiation when levels are high. Myostatin is one of the key factors that limit the size of skeletal muscle and training lowers the production of myostatin thus allowing muscular hypertrophy[5].

Effects of Myostatin Deficiency Vs. Blockade[6]

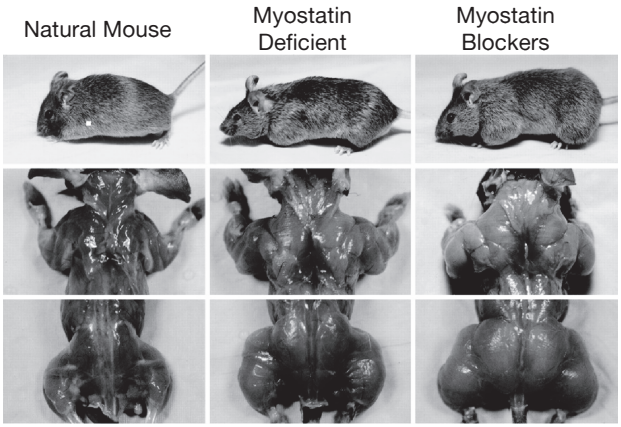


Figure 3: By blocking myostatin, muscular hypertrophy is extreme compared to the natural mouse.

Creatine's got another mode of action, one only recently discovered, that can enhance the efficacy of Carb Back-Loading. When dosed properly, creatine increases the amount of glycogen muscles can

store and tGLUT action[7]. One of the main goals of Carb Back-Loading is to refill glycogen stores to the maximum amount possible given the limited time for refeeding. Creatine augments storage, giving the capacity to store more, and hence endure longer, more intense training sessions the next day.

Carb Back-Loading

Section IV

Essential Points

Omega-3s increase hypertrophy.

Everyone should supplement with whey isolate.

Not only is whey isolate anabolic for muscle tissue but it fuels the most powerful antioxidant system in the body.

Premade whey drinks don't contain whey.

Because of the pasteurization process required for all milk-derived liquid products in the U.S., nearly all of the whey protein is destroyed in these drinks.

Leucine is powerfully anabolic.

It doesn't matter if your goal is more muscle mass or less body fat, take leucine.

Caffeine can simulate daily insulin resistance.

Because caffeine can cause transient insulin resistance, taking it earlier in the day can allow you to use Carb Back-Loading based on your schedule, not your body's.

Creatine can cause hypertrophy.

If you've been avoiding creatine because you don't care

about that last extra rep or two, think again: creatine may be a potent anti-catabolic supplement.

Carb Back-Loading

Section V

WHAT TO DO

Carb Back-Loading

Chapter 30

Tell Me How, Hold the Details

People use Carb Back-Loading for multiple purposes ranging from pure bulking to exposing their six-pack. By employing MTR to create and enhance metabolic inefficiencies while amplifying hypertrophy, Carb Back-Loading is the easiest way to eat for most goals; and it fits most people's lives.

Busy during the first half of the day, making it hard to get in the number of calories suggested by another program? Back-Loading requires only light eating during the first half of the day and mountains of food before bed—no calorie counting necessary. No time to train on the random schedule of other exercise plans—after work is the only possibility? Back-Loading is perfect.

What I get from people, more than any other question, is, "So what should I eat for _____." Fill in the blank with any name ever given for any meal on any diet. I wish a boilerplate answer existed, something simple, something everyone wants to hear, like, "have a glass of milk and six donuts." Okay, well, I do say that from time to time, but I can't say that every time to everyone.

I understand the frustration when they have to start planning. As straight forward as it may seem in the reading, it suddenly turns into a convoluted mess. They attempt to put all the pieces together as the

program outlines, except more pieces exist than slots to fill. And that's almost always the way, the simpler a diet plan sounds the harder it is to get right. The Zone, for example, sounds simple: 40-30-30. Ever try it? When compared with other diets, more people quit than with any other because it's near impossible to actually do[1].

Carb Back-Loading is different: it is that simple. Nothing's hidden from view. No carbs until you train; hit the gym in the afternoon; slam the carbs.

But, be honest, questions are already forming. Not everyone has time to dig through the research, experiment on several dozen human-guinea pig, collect the results and answer all the unknowns. This section, therefore, is dedicated to making implementation as simple as possible by outlining each meal of the day, step-by-step, from breakfast (or lack thereof) to pre-, intra- and post-training to the best carbs to eat before hitting the sack.

Chapter 31

Strength Accumulation & Density Bulking

For every goal and training style, tweaks and alterations exist to optimize Carb Back-Loading. Covering all possibilities in a single tome is unrealistic and even if I tried, I'd still miss a couple hundred variants. In this book, I focus on using back-loading for one of two main purposes: Strength Accumulation™ and Density Bulking™.

Strength Accumulation™

The Strength Accumulation protocol delivers significant increases in strength, moderate to low mass gain, and massive fat loss. Besides those already starting at a body fat percent below 10, lean body mass gain is likely and even then is still possible. Very few people who follow the lean strength plan don't gain muscle. The result: ripped and jacked.

Density Bulking™

Use the Density Bulking protocol if the ultimate goal is an increase in body weight by 10 to 20% while keeping body fat percentage the same. This could mean a small increase in body fat, but not much. In

most instances, depending on starting body-fat levels—over 15%—body fat percentage decreases while adding rock-solid mass.

Throughout the implementation section, I specify how and where to make alterations to optimize for one protocol or another. Recognizing the differences is easy, although sometimes, even with what seems like two distinct goals, the separation between the two is fuzzy. Like I said, I can't include an infinite number of variations, but I try to provide enough information that it's easy to make changes for individual goals and lifestyles.

Chapter 32

Preparation Phase

For those implementing the Density Bulk protocol or with a body fat level already at or below the 10% level, the preparation procedure in this chapter is optional. Otherwise, use this phase to wipe out glycogen reserves and get the body primed for fat burning.

The prep phase is rather straight forward. Eliminate usable carbs—all carbs except fiber—for 10 days. Basically, it's Carb Back-Loading without the back-loading: ultra-low carb for 10 days—all day every day.

Stripping carbs from the diet to near non-existent levels carries a few surprises for the uninitiated. Without understanding what happens the first few days, many people quit because they don't recognize what their experience as normal. Here is what normally happens during these 10 days[1], broken into three segments.

Carb Depletion (days 1→4)

The body will burn through stored glycogen reserves within about three days. The body stores 3 grams of water for every gram of carbohydrates[2] so as the glycogen stores dwindle, excess water is flushed from the body. Significant weight loss occurs during this period, of which roughly 60% is water and the rest is fat[3], give or

take a few percentage points. Expect the water weight to come back when carbs re-enter the diet.

Ketone Buildup (days 3→6)

As carb reserves drain, the body replaces its quick-fuel needs with ketones[4]. Ketone production cover energy needs for short-duration exertion and for brain activity. By the 6th day, the body's capacity for ketone production reaches a peak. This timeframe contains the cross-over point, the moment at which the body no longer has carbs to burn, but ketone production and utilization still lags. Prepare for a bit of mental lethargy.

Fuel Reorientation (days 7→10)

The brain fails to use the ketones at first because, like glucose, ketones require special transporters to cross what's known as the blood-brain barrier[5]. Without prior exposure to an ultra-low carb plan, there's a good chance the brain hasn't used ketones since infancy. The end of the mental lethargy from the last segment marks the beginning of this stage. By the end of this phase, the body has adapted to life without carbohydrates[5,6].

It is possible to shorten the duration of the first segment and almost avoid it altogether. This shortens the entire process by 3 or 4 days, but makes for a potentially miserable experience. For most people, regularly scheduled training should wipe out carb reserves to shorten the entire process by a day or two—if it doesn't, get a new training program.

To skip the first three days worth of depletion and head straight for the mental-sloth stage, include a few high-intensity interval training (HIIT) cycles[7]. I go into more detail about HIIT later in the book and charts specify the appropriate HIIT cycle for differing goals.

In lieu of a rapid depletion, or just to be on the safe side, take a full 10 days without usable carbs.

NOTE: Ketones are a high-efficiency fuel for muscle and nervous tissue in times of glucose depletion or situations when the body can't get glucose where it's needed fast enough[8]. The body produces ketones from fatty acids or amino-acids and although ketones burn efficiently, production is metabolically inefficient[9], i.e. making ketones wastes a lot of energy. Most health experts believe that ketone production is dangerous, but production occurs during exercise and first thing in the morning before eating.

Carb Back-Loading

Chapter 33

Upon Waking

What you eat—carbs, fat, protein, some combination thereof of nothing at all—determines your body's reaction to food and training for the rest of that day. Getting lean or staying lean, and adding muscle, therefore, requires doing things right, and that includes starting the day with a single goal: keep the body burning fat for as long as possible.

Me and the majority of my clients delay eating breakfast by a few hours for this goal—the easiest solution. I often get up at 5 a.m., but if I eat breakfast, it won't be until 8 am or later—sometimes much, much later—around 1pm.

That's a long gap to go without anything—most people need something to curb their appetite, which may be pretty strong in the morning due to the release of the hunger-stimulating hormone ghrelin.

Earlier, I described the state of the body's metabolism when first getting moving in the morning: a fat-burning inferno. Maybe delicate smolder describes the process better because eating the wrong thing interrupts the fat burning process. Depending on the food, knocking the body out of fat-burning mode might not take much.

One thing I didn't mention earlier in the book about the fat-burning forces at play in the morning is ketone production. Ketone production is wasteful but fragile. Ketogenesis—the production of ketones—turns itself off by being too effective. Once enough ketones accumulate in the blood stream, insulin levels rise and shut down ketone production[1]. By adding the right supplements at the right time, we can prolong ketogenesis well past the normal shut-off time.

It looks like there are now four goals when first waking, listed in order of importance for succeeding with Carb Back-Loading:

Four Early-Morning Goals

1. Control hunger;
2. Keep burning body fat;
3. Prevent muscle loss; and
4. Prolong ketogenesis.

Control Hunger

Morning hunger can become nauseating and hard to stave off with sheer force of will. Your first option is coffee, no sugar—although an intense sweetener is okay in limited quantity. Caffeine can increase fat burning and doesn't interrupt metabolism while the cholinomimetics help control hunger. This is what many people already do whether they understand or even know the effect.

Another option, if that's not satiating enough, is to add heavy whipping cream—a slow-absorbing source of pure fat.

Coffee is the key to controlling hunger, not the caffeine which is not an appetite suppressant; the cholinomimetics from roasted coffee beans are. Don't tolerate caffeine well? Not a problem—drink decaf. Fat burning may not be enhanced, but the decaf still curbs appetite because of the cholinomimetics, which also stimulate nervous system activity, only not as much as caffeine.

NOTE: Using caffeinated energy drinks is not an option, although I wish they were with the variety and prevalence. The sugar-free versions don't work—not normally, anyway—because they contain the artificial sweetener acesulfame potassium also labeled as acesulfame-K. Of all the sweeteners, wouldn't it figure that the only one that spikes insulin levels[2] is the one that's in nearly all sugar-free drinks?

Keep Burning Body Fat

Goal number two—to enhance and prolong fat burning—requires eating little to no food and including optional supplements for a boost. Caffeine is the best and most readily available options, either from coffee, tea or even caffeine pills. Remember, though, getting caffeine through a source other than coffee will not help with appetite— I'm going to keep repeating this.

Prevent Muscle Loss

Preventing muscle loss while not hindering fat burning or interfering with the next goal (prolonging ketogenesis) requires a bit of finesse. Increasing free amino acid (FAA) levels stops or attenuates potential destruction of muscle by sparing lean tissue from proteolysis, the technical term for the breakdown of intact protein structures like muscle. A rapid rise in FAA levels in the bloodstream however spikes insulin levels. That's no good because insulin can stop fat burning.

A slow and small rise in FAA levels helps prevent proteolysis and prolong ketogenesis. Whey Isolate to the rescue. Ten grams or so—about half a serving for most commercial formulations —raises FAA levels without over-stimulating insulin release[3]. There may be a small increase, but not enough to derail fat-burning and not enough to throw off ketogenesis.

Prolong Ketogenesis

Prolonging ketogenesis, I would say, is the least important of the goals, but why not squeeze every last bit of performance from the body? Ketogenesis requires two things to work.

The first is a lack of carbs. The second is an ample supply of triglycerides[4]. Keeping triglyceride levels elevated forces the body to continue producing ketones.

MCT oil, because it absorbs quickly unlike other fats, raises triglyceride levels. So now, instead of adding heavy whipping cream to coffee, add coconut oil or unsweetened, full-fat coconut milk. Or

throw in a tablespoon or two of coconut milk into the whey isolate protein shake.

Result: A.M. Accelerator Shake

Mixing the above components makes a tasty shake. I often combine all the ingredients—coffee, vanilla-flavored whey isolate powder and coconut milk—into a single latte-like concoction. Don't worry about adding whey isolate to hot coffee.

Although intact whey breaks down with heat, the amount that breaks down depends on time and temperature. Coffee doesn't stay hot enough long enough to destroy much of the protein, nor should the shake survive long before downing the whole thing.

This ideal fat-burning formula isn't limited to a one-time shot. Have it twice; maybe three times. Each time, it sparks the same metabolic and hormonal reactions, assuming that the time between ingestions is a couple of hours or more.

Skipping food until the afternoon can accelerate fat loss during a Strength Accumulation protocol, but not for Density Bulking. Gaining muscle requires creating a strong and persistent anabolic state which in turn requires food.

For Density Bulking, it's best to drink the magic concoction first thing in the morning an hour before breakfast, which is the subject of the next chapter.

A.M. Accelerator Shake

Component	Amount	Purpose
Coffee (*decaf or regular*)	1 to 2 cups	Hunger Control
Caffeine (*coffee or other*)	200-400 mg	Fat Burning
Whey Isolate	10 g	Catabolism Prevention
MCT oil (*coconut milk/oil*)	1 tbsp of MCT	Ketogenesis

Chapter 34

Low-Carb Mealtimes

Some people may or may not consider the suggested formulation from the last chapter as a meal, but even with the addition of all components, it's a paltry amount of sustenance—exactly right depending on goals, but still minuscule. To me, it's targeted, functional nutrition and I hesitate to designate it breakfast. Breakfast, like all meals before training, falls into the ultra-low-carb part of the day and is composed of solid food.

The number of meals eaten before training depends on goals and personal preference. Actually, it depends more on personal preference than anything else. I don't prescribe a specific number of meals or any specific schedule on which to ingest food. There's no evidence to support doing anything other than what works with the daily routine[1]: the breakdown and distribution of calories and macro nutrients throughout the day matters far more than the number of meals[2].

The goal for all meals in this part of the day—the ultra-low part—is to keep the total grams of carbs from all meals under 30 grams. That's not much in the way of carbs, but it's pretty easy to achieve. Green vegetables, meats, cheeses, fats and limited amounts of nuts comprise the diet during this portion of the day.

Example Low-Carb Meals
A ham steak with asparagus sautéed in butter
Hamburger patty with a slice of cheddar cheese on a bed of spinach
Half a cup of nuts and a pound of low-fat cottage cheese
Sliced turkey, avocado and tomato

Okay, tomatoes aren't green and both avocado and tomatoes aren't vegetables, but they're safe in limited quantities depending on variety. There's a basic list of vegetable selections in the appendix. I suggest referring to it.

Eggs may seem like an obvious choice, but I didn't include them in the examples for a reason. Not that they're not safe—they can be—but I wanted to draw particular attention to them because eggs, eaten alone can raise insulin levels, something I noted earlier. We want to limit insulin release during the first half of the day.

The solution: eat eggs with something fatty. Fried in plenty of butter, omelets, scrambles with cheese, hardboiled with a handful of nuts, whatever…bacon and eggs works well too.

Later in the book I discuss how to determine calories for the first half of the day. This section focuses on food selection and meal choice. Remember to eat vegetables. People who fail to recognize

the importance of the vegetables during this part of the day often do poorly compared to their veggie-including counterparts. As explained in the chapter about usable carbs, eating fiber combined with fat helps reduce the number of usable calories from a meal by up to 20%.

The take-away message from this chapter is simple: no bread—whole-grain or otherwise—pasta, fruit, sugary treats, chips, donuts, rice, potatoes, sugar-laden condiments, and so on. The easiest thing to remember might be that if it's green or once had a face—or both I suppose—it's safe to eat.

NOTE: Usable carbs include all carbohydrates except fiber. Sugar, starch, glycerine and sugar alcohols all qualify as *usable carbs*.

Carb Back-Loading

Chapter 35

Pre-Training

Often cited as a critical time for growth and performance gains, pre-workout gets a lot of attention from the current cult of gurus, but the dearth of evidence should convince us otherwise. The best I can say is that it might make a difference; and if it does, the effects of advanced post-workout nutrition will make any advantages insignificant.

Although there's not much evidence for pre-workout nutrition for growth, formulations exist to increase ketone production and, consequently, increased fat burning. And choosing a slow-absorbing source of amino acids—like whey isolate—helps limit proteolysis without interfering with fat burning[1]. Pre-workout nutrition may not enhance growth, but it can increase fat burning and stop muscle burning.

The formula mimics that of the A.M. Accelerator Shake: 10 to 20 grams of whey isolate, 600 to 800 mg of caffeine and 5 to 10 grams of MCTs. This time, any source of caffeine produces the desired effect since hunger control is not a concern: tea, powder, coffee, even carb-free energy drinks (in moderation).

Adding the caffeine causes a certain level of resistance to insulin. In the pre workout shake, it amplifies the effectiveness of Carb Back-

Loading. Research also shows that consuming caffeine before training accelerates the rate at which the body replenishes glycogen, another important component of Carb Back-Loading: filling carb stores after our training session empties them.

Consume this formula 30 minutes before training. The whole thing is optional and applies equally to Density Bulking and Strength Accumulation, but I do highly recommend ingesting a healthy amount of pre-training caffeine.

Before I discuss intra-workout nutrition, notice that I didn't recommend pre-training carbs. That's not an oversight on my part. Eating carbs before training offers no benefit, and only stymies fat burning. So, stay clear of the pre-workout carbs—include them when they matter most, after the training session.

Ignition Formula

Component	Amount	
	Strength Accumulation	**Density Bulking**
Caffeine (*coffee or other*)	400-800 mg	200-400 mg
Whey Isolate	10 g	20-30 g
MCT oil (*coconut milk/oil*)	1 tbsp of MCT	2-3 tbsp of MCT
Creatine	5 g	5 g

Chapter 36

Intra-Training

Consuming nutrients during the training session is nothing new, whether it's Gatorade or a part of a peri-workout protocol. The problem is how to know exactly what to consume or if consuming anything is even a good idea.

Resistance training is inherently catabolic, increasing muscle protein breakdown. However, after resistance training ends, providing adequate raw materials, like amino acids or di- and tri-peptides, however, stimulates muscle protein synthesis after resistance training ends. The combination of the two—muscle protein breakdown (MPB) and muscle protein synthesis (MPS)—is the skeletal muscle turnover rate.

If the rate leans too far toward MPB, we lose muscle. Shifting toward MPS sparks hypertrophy and we get jacked. The combined goals of increasing MPS and decreasing MPB should drive every nutritional decision made around training time.

Recognizing that two goals exist and not just one—trying to grow and trying to prevent destruction—allows supplement and food choice to target either or both. Training doesn't need to tear muscle down for growth to occur, as many high school gym teachers still

preach. We can build and forgo the destruction. Just as there are two goals, two tools exist: insulin and amino acids.

Insulin supports growth of nearly all tissues in the body and often triggers the growth process. During training, however, insulin doesn't trigger muscle growth, doesn't increase potential growth or activate any pathways to hypertrophy, but it does stop the breakdown of muscle tissue. The last decade of research revealed insulin as purely anti-catabolic during training rather than anabolic. High insulin levels suppress MPB—protect muscle—up to some critical point at which higher levels make no difference.

Spiking insulin during a workout is easy: drink a sugary drink. This works, but Carb Back-Loading—for either Density Bulking or Strength Accumulation—works to decrease fat mass while growing new muscle. That makes ingesting carbs during a workout a bad idea, since carbs, in the specific context of avoiding carbs all day until after training, decrease performance, impede fat burning and can cause rebound hypoglycemia, also called glycemic distress: a condition in which the body cannot maintain normal blood sugar levels. The body actually has an easier time maintaining blood sugar levels without exogenous carbs.

Without carbs, we have a limited range of strong insulin secretagogues from which to choose. Eggs, as I pointed out early, can raise insulin levels—not spike, unfortunately—but I'm not a fan of downing eggs during my training session and I don't know many people who are. I elucidated two possibilities earlier: leucine and protein hydrolysate. Both work together to raise insulin levels more than either alone. The two, mixed appropriately, spike intra-

training insulin levels and, if taken during the training session, can limit MPB[1].

Using hydrolysates and leucine to trigger an insulin release gives us a few advantages beyond continued fat burning. We need an excess of leucine to trigger the maximum anabolic response from resistance training because it activates the mTOR receptor, one of the positive regulators of muscle growth. Because insulin is needed to potentiate the action of the mTOR receptor on growth, leucine delivers a one-two punch: decrease MPB and set the stage for increased MPS.

Adding leucine alone, even with its ability to trigger insulin secretion, does not initiate muscle growth. MPS requires a large supply of amino acids. Casein hydrolysate absorbs quickly in the gut and causes an immediate jump in free amino-acid levels. Almost any protein hydrolysate works, but hydrolyzed casein seems to be the best. I recommend pure PeptoPro® because a patented debittering process prevents it from tasting horrid, but regular hydrolyzed casein works fine if taste isn't a concern.

These two in combination—a hydrolyzed protein and leucine—do everything: spike insulin levels to decrease MPB and potentiate maximum muscle growth; supply leucine to trigger maximum muscle growth; provides free amino acids to fuel MPS. All of this sans carbs.

There's another effect of raising insulin. During training, cortisol levels rise[2]. It's a normal reaction. The magnitude of that rise depends on time of day—which I touched upon earlier—and also insulin levels. As insulin levels rise during a training session, cortisol

levels drop[3]. This fact influences if and how we want to implement an intra-workout shake.

In the absence of carbs and insulin—like when first waking in the morning—cortisol enhances fat burning, which is also true during training. For Strength Accumulation, it's best to skip the intra-workout nutrition and let the body burn as much extra fat as possible during training. So, option number one: skip the intra-workout shake.

The next option is for those who decided to Density Bulk. Here, the entire program tries to achieve the maximum amount of lean mass without adding body fat. The intra-training shake, in this case, enhances the effect of back-loading by increasing hypertrophy[4], if at the expense of burning fat.

Sustainer Formula

Component	Amount
Whey Isolate	10 g
Casein Hydrolysate	20 g
Leucine	3 g

Chapter 37

Post-Training

If there's anything in this book of value, it's the information in this chapter. It describes building the perfect post-workout shake—according to the latest available research and a decade of results. Although I'm specifying this formula in the context of Carb Back-loading, its applicability is universal for all resistance training athletes battling against iron, steel or stone for a singular purpose: to transcend limitations.

As I described in the previous chapter, training is intrinsically catabolic but activates several anabolic channels. Just like the intra-workout nutritional supplementation, the goal is to limit muscle protein breakdown (MPB) and stimulate muscle protein synthesis (MPS). Unlike the nutrition during training when most of the effort fights MPB, in the wake of training the majority of the nutritional effort goes toward building.

The marked difference in formulation from all the potential previous shakes of the day differs by the addition of carbs. When deciding on the carbs added to the post-workout (PWO) shake, quality matters over quantity. The carb must spike blood sugar levels and insulin levels, i.e. must be high-glycemic and insulinotropic. Any from the chapter on supplements meet these criteria: dextrose, maltodextrin and waxy maize or rice. Real food

options exist and work, although they don't perform as well. Two such options are white bread or overly-ripe, brown-spotted bananas (being overly ripe is important).

We don't need much: 20 to 40 grams (that's one or two large bananas' worth). We're hunting for a spike in blood sugar and insulin, not trying to replenish the glycogen reserves drained during training. That comes later. Immediately after training, blood sugar and insulin production need a jolt. In conjunction with the carbs, the post workout shake includes protein hydrolysates, as did the intra-workout formula, but this time, hydrolysates derived from both whey and casein. Throw in some leucine and the formula is almost complete.

It's reasonable to question the addition of carbs when all we need to drive muscle protein turnover positive is insulin and a large supply of amino acids. The bigger the insulin spike, the better, and carbs—of the type listed above—plus protein hydrolysates and leucine raise insulin levels two times that achieved by any of the three alone or any combination of two. All three together act synergistically to produce a massive increase in MPS[1].

Most low-carb gurus fear this post-training suggestion because they take as fact that in all metabolic situations with elevated insulin and glucose levels, the body stores fat. As I mentioned in the chapter on insulin, this can be true and is one of insulin's possible modes of actions. For the average couch-sitting American that spends 90% of their day sitting or lying down, I would agree this is probably the case. But at the outset, I excluded that group from the ranks of individuals who should be reading this book.

As resistance-trained athletes, we can create situations that nullify even insulin's ability to spark lipogenesis. Raising insulin levels through the roof and supplying a little sugar won't make a difference because it's nearly impossible to add fat for an hour or two after training[2].

Right now the formula sounds pretty good, but we can get even more from the post-workout shake by adding caffeine and creatine. Both increase the rate at which glycogen stores refill[3]. Don't forget, creatine blocks myostatin, making it hypertrophic.

In the end, the constituents of the formula aren't far off of a hybrid of the pre-workout and intra-workout suggestion with the addition of three c's: carbs, caffeine, and creatine. The quantities differ and there's the inclusion of whey protein isolate and a small amount of intact casein, both added to create a sustained release of amino acids necessary to support skeletal muscle hypertrophy.

The rapid rise in amino acids from the hydrolysates and leucine ignite MPS, but the rush recedes too quickly to *sustain* MPS[4]. When ingested post-training, intact casein, for example, increases 24 hour MPS[5].

Aside from the requisite constituents of what might be the best possible post-workout shake, timing is a key factor. Although the gurus recommend immediate ingestion of any post-workout nutrition, the window is much wider and there may be benefit to waiting up to 30 minutes after training to ingest the post-workout shake.

Hypertrophic Potentiator

Component	Amount	
	Strength Accumulation	Density Bulking
Caffeine (*powder is best*)	200-600 mg	200-400 mg
Whey Isolate	15-20 g	30 g
High-GI Carb	20-40 g	40-100 g
Casein (intact)	10-15g	15-25 g
Hydrolysate (Whey, Casein or Both)	10-15 g	25-30 g
Leucine	3 g	5 g
Creatine	5 g	5 g

Chapter 38

Carb-Loading Mealtimes

About thirty minutes to an hour after a PWO shake, the time comes that everyone reading this book has been salivating over: the carb back-load.

This is where pizzas, pastries, donuts, French fries and milk shakes come in handy. Food-wise, the goal is to supply the nutrients necessary to support the anabolic signaling triggered with training and to refill glycogen levels for the *next-day's* training. Everything wants to grow—everything but fat cells. As a matter of fact, each bout of resistance training creates a fat-burning shadow extending across the next 24 hours.

Even though aminos, di- and tripeptides and insulin flooded the blood stream during the most anabolic window of time—post workout—there's still more anabolic signaling to trigger. Eating large amounts of carbs in successive meals prolongs the insulin spike and not only keeps the anabolic machinery humming, but also makes the body more efficient at burning carbs during the next training session[1].

The few health and diet gurus who've jumped on the back-loading bandwagon suggest evening options based on pop-diet culture, e.g. low-glycemic carbs. Not only is this advice wrong, but fat-inducing.

Choose foods that they say to avoid. This rule of thumb works well with the addition of a simple qualifier: choose the bad foods which are the least processed, e.g. a fresh made donut instead of a Twinkie, homemade cookies over Oreos—or even natural cookies at the local grocer. Get a hand-tossed pizza from the pizzeria down the street rather than a frozen piece of cardboard with some rubbery cheese from the frozen-foods section.

The less processed foods or rather the one's closest to whole foods, act differently than their highly-processed siblings. Even for two meals of identical macro nutrient content—one that contains whole-food, or lightly processed ingredients and another that's highly processed—the less processed version causes different hormonal reactions than the highly processed one[2]. And we want the clean one.

NOTE: You need to eat very high-glycemic carbs for Carb Back-Loading to work. Trying to eat healthy carbs—low-glycemic or fibrous food items—will sabotage your results.

So, make a burger at home and get Wendy's Natural-Cut fries instead of something from the super-fast-food chain whose burgers and fries start as pastes, formed later into the right shape with the appropriate flavoring added. The meat in these products is of such low quality, the fast-food chains invented beef flavoring to add so at least the taste buds think it's a burger even if the endocrine system knows better.

Don't worry about the fat: post-training, the insulin response does not stop the after-burn effect of resistance training—the body continues burning fat for up to 36 hours[3].

Now, pizza and a burger and fries sounds great, but significantly less complex meals work. Stir fry chicken with white rice—yes, white; and sticky is even better. Sushi, brown-mottled, super-ripe bananas, sweet potatoes, red potatoes, waxy purple potatoes, grapes, a sandwich on white bread, and so on.

Stay away from the healthy foods: avoid whole-grain breads, high-fiber, low-glycemic foods. This is the time go get high—high glycemic and insulinotropic. Cherry turnovers, apple pie or rice pudding work.

These junk items, as health experts call them, spike insulin and supply huge glucose boluses to help refill glycogen stores[4]. I specify these foods for another reason.

The body releases growth hormone at night, but it won't begin doing so until insulin levels return to normal and stay at that level for about two hours[5]. Eating the high-glycemic goodies causes a big rush of blood sugar and jolt of insulin, then a quick drop as things settle back to normal, leaving the nocturnal hours free of insulin and full of growth hormone.

Let me say this a bit more clearly: absolutely avoid low-glycemic carbs. They cause sustained and low-grade blood sugar and insulin levels that may last hours, sabotaging the nightly release of a powerful fat burning hormone and sabotaging your results.

Maybe the couch-potato neighbor needs to listen to Dr. Oz and eat only low-glycemic tree-bark, but high-performance athletes don't: that's why we train in the first place, to rise above the norm.

How to distribute the carbs

For the first meal after training, don't limit carbs, but remember, keep it trashy. Don't forget, however, that glycogen is not the only tissue trying to resynthesize and recover from the training.

Anabolic signaling for muscle tissue is active, so feed the machinery what it needs to grow, not what it wants to burn. Intact animal proteins support growth and attenuate any catabolic processes that could occur during the evening and even through the next day, i.e. eat beef, chicken, pork, cottage cheese and, as a supplement, use a casein additive[6]. It also does an excellent job of preventing muscle protein breakdown over a 24 hour period.

Don't forget the hydrolysates. When taken with a mixed meal, hydrolysates increase the insulin response of intact food by up to 50% and can help replenish glycogen stores faster[7]. Added leucine can drive insulin levels even higher. Add a shake containing about 10 grams of hydrolysate and 5 grams of leucine to each of the carb-laden evening meals, in addition to a cut of meat or fish for maximum effect.

Chapter 39

Before-Bed

Depending on what time evening training sessions end and when the carb feeding-frenzy begins, there might be time for one more meal before bedding down.

It's all about raw materials for growth. In the evening, as before, the main goal is to supply raw material for growth through the nighttime torpor. This amounts to making sure that the final meal of the day meets the body's protein needs for sustained growth without interfering with growth hormone release. Eat plenty of meat or casein at each carb meal and don't worry too much about it. But there's always room for tinkering.

Don't think I'm about to recommend a slow-absorbing protein that elevates amino acids through the night. There was a time when I would have made such a recommendation, and it remains a very guru-esque thing to say. Time, experience and emerging scientific research forced me to let go of my proclivities and say, it doesn't matter.

Right before bed and after only a handful of hours from finishing training, almost any type of protein supplies the material needed to grow at the appropriate rate regardless of how fast it absorbs. Intact sources like meat, fish, cottage cheese, eggs, milk or powders like

casein (calcium caseinate or micellar) and whey (concentrate or isolate) all appear equivalent for 24 hour whole-body protein synthesis despite varying rates of absorption.

Chapter 40

Off-Days

Training regimens should include recovery days, which should be off-days—off from resistance training, at least. If not, consider changing training splits to include at least one day away from weight lifting. Now that everyone's on the same page and has at least one day of the week without resistance training, I can describe how to Carb Back-Load on off-days in the simplest terms possible: *don't*.

Now that that's out of the way, here are the exceptions.

Exception Nº 1: Density Bulking

Density Bulking, particularly for those at an already low body fat percentage (below 15%) benefits from back-loading on off-days, so enjoy.

For Strength Accumulation, however, follow the general guidelines above for back loading carbs in the evening: i.e. don't do it. In this case, dinner should be a chicken ceasar salad; meat balls with green beans; or salmon with asparagus. Make sure to include the fat either with a dressing for the salad or by sautéing the vegetables in butter or nut oil.

Exception Nº 2: High Training Volume

Sometimes, depending on training volume, the body fails to ever catch up with the continuous depletion of glycogen reserves. Glycogen debt becomes a state of being.

If training in this state, lethargy signifies the end of workouts because each night, time — partial, not total — disappears before an over-load of carbs makes it down the hatch. The cycle continues day after day. This problem occurs often with strongman competitors.

With this scenario, I advise clients to continue back-loading even on off days. I've found the high-volume athletes sustain adequate glycogen levels this way up to a point. If volume goes too high, other modifications are needed and back-loading may not be appropriate.

Exception Nº 3: Back-to-Back Off Days

One final exception: taking off more than one day in a row might invite the need for an off-day back-load. On the final day of rest of a contiguous block of off-days, back-load the carbs.

It's always hard to gauge how much food the body needs on a non-training back-loading night, and the only guidance I can provide without direct supervision is to go by feel. Flat and lethargic: eat a lot on the last off-day before training resumes; Full muscles, holding some water: eat, at most, a single light meal of carbs.

With any of these scenarios—Density Bulking, high training volume or consecutive off days—the back-load is like any training day unless otherwise mentioned. No carbs through the first half of

the day, then simply have one or two big carby meals, the first at dinner time. Grazing is also an alternative: ingesting copious amounts of food, but doing so with constant small quantities.

Carb Back-Loading

Chapter 41

All-Day Supplementation

At this level of performance—the Super Hero In Training (**S.H.I.T.™**) level—maximum results derive from extra-ordinary measures. Carb Back-Loading may be the easiest nutritional protocol in existence for reaching elite status, but we can tweak here and there, which adds a bit of complexity but takes us further. Even with the added complexity of advanced tweaking, back-loading is stupid simple.

The worst, in almost all protocols, is the supplementation requirements. Just read the full details of the protocol laid out in this section: one type of shake before, one type during and yet a third type after training, and then there's the addition of protein hydrolysates and leucine to each of the evening meals. Think that's extreme already? We haven't yet talked about all-day, every meal supplementation. Don't worry that I'm going to suggest a handful of pills, a cabinet full of liquids and a laxative or two. In my opinion, only two supplements warrant attention in this chapter: fish oil and creatine.

As was mentioned in the supplement section, fish oil helps increase anabolic signaling, likely because of increased cellular function when incorporated into cellular membranes. This allows nutrients and hormones to exert stronger effects on cells[1] and enhances

muscle tissue's ability to switch between carb burning and fat burning[2].

It requires about five grams of a combination of the omega-3s DHA and EPA. That's five grams of the omega-3s, not five grams of fish oil. Check the label. Most liquid fish-oil products—liquid is the form I recommend—have ratios of fish oil to omega-3s of about 3:1.

So for every three grams of fish oil, you are only ingesting one gram of omega-3s. For that reason, I suggest spreading the doses throughout the day, taking a serving with each meal, but not in any of the peri-workout — before, during, after — nutrition shakes.

The other all-day supplement is creatine. Many dosing schedules exist amongst various expert advisors, gym rats, gurus, but in the most recent, well controlled published studies, sustaining supra-physiological intramuscular concentrations of creatine requires roughly 60 grams of ingested creatine per day divided into multiple doses. This is not a loading phase—for daily supra-physiological levels, this procedure needs to be done every day[3].

Now, do I expect anyone to consume 60g of creatine per day? Not many people. The effect may not warrant the cost, but I suspect someone will do it. I also suspect that taking 5 grams with each feeding could be highly beneficial. Remember, besides allowing us to squeeze one or two more reps per set, creatine blocks (down regulates) myostatin. This regular dosing of creatine may also help maintain excess storage of intramuscular glycogen by about 15%.

Section V

Essential Points

Carb Back-Loading

Section VI

NOBODY'S PERFECT

Carb Back-Loading

Chapter 42

Customize

I don't live in some dream world with a job that lets me lift at the perfect time every day. Meetings, phone calls, editors, clients and personal matters all vie for my time. Running a business is no picnic. In other words, I get it: it may not be possible to train in the Carb Back-Loading sweet spot. I would say, not a big deal, but it is a big deal. Carb Back-Loading is only stupid-simple when done super-strict. Sounds oxymoronic, but the principles that make Carb Back-Loading work with relative ease depend on integrating training schedule and eating schedule with immutable circadian rhythms.

For example, maybe the only available training time is early morning. After I emphatically detailed why training in the afternoon is critical to the effectiveness of back-loading, it may seem that early morning training eliminates the possibility of back-loading. But Carb Back-Loading still works. It just requires tuning.

Earlier-than-ideal training complements Strength Accumulation more so than Density Bulking. Research even shows that Carb Back-Loading works for leaning down and preserving muscle mass even without training. That doesn't mean Density Bulking is impossible with early morning training, only that it requires more care. And by more care, I mean more food. In either case—Strength

Accumulation or Density Bulking—resistance training increases the concentration of tGLUT in muscles and increases skeletal muscle's sensitivity to insulin. Fat cells can no longer compete effectively for nutrients to store.

Morning training sessions require a slightly different eating schedule, but otherwise, the basics remain unchanged. Use the following guidelines to modify Carb Back-Loading for your particular training schedule. Note: none of the following alterations produce results with the ease of the ideal version, but they all produce amazing results and remain simple.

Chapter 43

Training Fasted

Modifying Carb Back-Loading for training first thing in the morning entails straightforward changes and additions.

Before training, drink coffee and…that's it. Consume nothing else except possibly water. Avoid intra-training nutrition as well. From waking until training completion, ingest only caffeine in whatever form works best: pills, coffee, tea, powder.

Many people complain about or resist the idea of training on an empty stomach, but doing so does two things. First, it increases fat burning and the production of fat-burning enzymes[1].

The second effect of training fasted in the morning results from increased activation of muscular growth factors. By including a small amount of carbs after early-morning-fasted training, we double the anabolic response of a regular, pre-fed training session[2].

Immediately after the morning training, therefore, things remain exactly as if training at the ideal time including the carbs: the post training-formula is identical to normal. Some people prefer solid food in the early morning and my best suggestion for something that goes with the morning shake and seems breakfast-like is a very ripe, large banana with those characteristic brown polka dots.

To get the largest insulin spike possible from our early-A.M. training, consume the highest glycemic carbs possible the night *before* the training session—the higher the insulin spike from the carbs the night before, the higher the insulin response the next morning[3]. Everything we eat causes a reaction, sometimes extending over several hours.

This changes how we define an *off-day*. We no longer define a day off as a day without training. An *off-day* is a day when you don't train the next morning. Remember, carb ingestion is to replenish glycogen for the next-day's training session. Therefore, eat carbs on each night preceding a fasted-A.M. training session.

The rest of the program is identical: just withhold carbs until dinner time, say 6 p.m. or so, and have one carb-laden meal and possibly a sugary meal an hour or so after that. To determine the extent of the carbs to eat, following these guidelines based on goals.

NOTE: When training fasted first thing in the morning, you will include carbs in your post-training shake, but not again until dinner time. If you don't train the next morning, either don't eat carbs for dinner or eat light.

Strength Accumulation Guidelines

How Do You Feel	What You Should Eat
Soft, holding water	One carb meal
Strength is good and every morning the skin is visibly tight	Two carb meals and a dessert
Tired, flat, training that morning was excessively difficult	As much as possible, starting an hour or two before normal

Density Bulking Guidelines

How Do You Feel	What You Should Eat
Waking up softer each morning	One carb meal
Waking up soft, but no noticeable loss of definition from day to day, body weight increases weekly	Exactly as you have been; change nothing
Waking up fat	Not so much; slow down. Cut down to one carb meal per night, or go sans carbs for a couple of days.

Carb Back-Loading

Chapter 44

Middle Training

Middle Training includes training any time between the first meal of the day to shortly after noon and is possibly the worst time to train for Carb Back-Loading because, unfortunately, no special hormonal scenarios or bio rhythms exist from which we could gain advantage. Nothing changes much other than inclusion of the pre- or intra-workout formulas, or both. Only do this if breakfast or some other meal came first—something other than coffee or the a.m. metabolic accelerator shake.

For post-workout recovery nutrition, include everything from the standard protocol—leucine, hydrolysates and caffeine—but sans carbs. Since the body is not quite in the ideal window of time, glycogen replenishment will start later in the day.

From post-training on, follow the modifications as outlined in the previous chapter and judge carb load based on the chart therein.

Carb Back-Loading

Chapter 45

Late-Night Sessions

Having to train late at night deviates the least from the ideal form of Carb Back-Loading and still imparts all the hormonal, circadian and biomolecular advantages. The difference—rather, the problem—is the lack of adequate time to refill glycogen stores[1].

A few ways exist to solve this problem. If Density Bulking, start carbs at the normal time, say 6 p.m., even if this is before training. The meal should be heavy and carby, i.e. a hamburger with French fries or a few pieces of pizza with half a roasted chicken. In these situations, I almost always go for some variation of Denny's Moons Over My Hammy: a ham, egg and cheese sandwich with tomatoes on sourdough bread with hash browns into which I mix two over-medium egg yolks. Twenty to thirty minutes before eating this meal, drink about 10 to 20 grams of whey isolate and a cup of coffee.

I don't think I've seen too many recommendations for Moons Over My Hammy as pre-workout nutrition which leads me to believe it's exceedingly rare. My best guess is because it doesn't jive with what's considered healthy. That's fine for a diet book, but this is a guide about targeted nutrition and there's good reason to recommend the greasy-carby combo.

The carbs and fat help create a long and even release of carbs and energy to utilize during training and to help avoid completely depleting glycogen since enough time to replenish post-training doesn't exist. Unlike post training when a rollercoaster of insulin release works to our advantage, pre-training, we need an even, steady flow of carbs with moderate insulin levels to avoid rebound hypoglycemia.

Pre-training nutrition doesn't need to change, nor does the intra-workout formula, although, if Density Bulking, I suggest adding roughly 40 to 50 grams of a carb powder to the intra-training shake, not the pre-training. Increase the carb content of the post-workout formula to 100 to 200 grams of carb powder, the higher end of the scale being appropriate if this is the only meal before bed—i.e. train, drink, sleep. Including caffeine to the PWO shake may be a bad idea in this case, obviously. If this is not the last meal, follow the ideal guidelines from here on out: lower-fat and higher glycaemic.

Section VI

Essential Points

- Early A.M. training requires the most changes
- Changes for early A.M. training, p160
- Changes for middle-morning/afternoon, p162
- Changes for late night, p165
- Sample meal plans, Appendix E

Carb Back-Loading

Section VII

DOS AND DON'TS

Carb Back-Loading

Chapter 46

Everybody Needs Advice

No matter how much detail provide, it's never enough. I try to lay things out in a clear and concise manner, giving loads of detail and explanation when I feel it's necessary and turning to stupid-simple explanations when it's time for implementation or sample diet templates. Detailed explanation I like; confusing, hard to figure out instructions, I don't. I assume the same of my audience.

Attempting to keep things simple in the Implementation Section, I didn't want to delve into those pieces of advice that might specialize the diet for a particular group or might prevent someone from baking thirty pounds of bacon-and-maple infused brownies, pouring the batter into the bathtub, and eating their way to the bottom—and yes, similar things have happened.

I find some FAQs so fundamental, that in addition to an FAQ section later, I added this section with extended advice for the most common experiences. I hope this makes the diet quicker to implement, to get you on the way to becoming a **S.H.I.T.™**

Carb Back-Loading

Chapter 47

Don't Be a Fat Kid

Some things seem obvious and I shouldn't have to point out that two triple cheeseburgers from a fast-food restaurant do not count as carbs for a Carb Back-Loading evening. Making food choices such as this is nothing more than using Back-Loading as an excuse to eat like shit—excuse the expletive, but that's the most precise way to describe it.

People do this all the time, often misled by the local self-proclaimed Carb Back-Loading expert. I don't care if someone knows me or if they've talked with me once or even worked with me, they're not an expert on Carb Back-Loading, trust me. Advice like this—the triple cheeseburgers—makes people fat, pure and simple. I've watched it happen because people would listen to their trainer rather than the guy who invented the diet.

Another problem is the notion that once training is over, no matter what time of day it is, pounding carbs for the next several hour counts as carb back-loading. I've seen people try this over-and-over again, creating a new diet—as they tell people.

I've also heard people tell me they're Carb Back-Loading who train at 7 a.m. then eat a scone or two, drink a cup of coffee then wolf-down a huge pasta lunch. Sure, for the next two hours after lunch

they'll skip carbs, but as soon as the evening rolls around they start slamming them again like a fat kid who's been locked up for a week without his sugary cream-filled snack cakes. Guess what happens: they get strong but they get fat—really fat.

Unless it's in this book or straight from my lips, remain skeptical of any advice on or interpretation of Carb Back-Loading. I didn't do all this research to leave gaps. If I don't recommend certain things it's because I know they don't work, not because I overlooked something, like pigging out and calling it a diet.

Chapter 48

Gluten Allergies

While I'm on the subject of pasta from the last chapter, it's a horrible carb for Back-Loading even when training at the ideal time. Devouring that big plate of penne an hour after training in the evening, the typical carbohydrate sweet spot, does not cause the ideal hormonal response.

Pasta is low glycemic, which disqualifies it right there, but it's also primarily wheat, which might present an even bigger problem.

About 50% of people have some sort of adverse intestinal reaction to gluten, which wheat contains in abundance[1]. A couple of different types of allergies exist, but regardless of type, the reaction is the same: bloating, discomfort and decreased nutrient absorption.

It's hard to determine if one of these milder-gluten allergies exists. One way to check is to remove all carbs from the diet for a week or more—such as during the preparation phase—then eat something like pasta, whole grain breads or even a bagel. If bloating occurs almost immediately, appetite wanes or disappears, and pressure from an inflated gut is crippling, that's a good indication of a gluten allergy.

This is one reason people succeed with pastry products for carb choices rather than bread or pasta. Not only do pastry-type products absorb quickly, the wheat used in pastry flour is gluten depleted. Like I said, I recommend junk for a reason.

Chapter 49

Don't Let Training Derail You

Although this is a book about targeted performance nutrition, the outlined plan relies heavily upon training for its efficacy. I need, therefore, to discuss training and what qualifies as acceptable. All training is not created equal when it comes to back-loading.

People like to oversimplify—because they want an excuse to be lazy and still eat everything they want— and start finding random excuses to justify back loading.

Vacuumed the living room today? Well, that's kind of like resistance training, all of those reps, pushing and pulling the vacuum cleaner. Obviously, this calls for a Back-Load. Walked up and down the stairs in the house several times today? Back-load. Turned page-after-page of this book or clicked mouse-button after mouse-button to get through the electronic version? Back-load!

This may sound asinine, and I am going a bit far, but not far beyond things I've heard in real life. I once had a stay-at-home mother tell me that she loved back-loading, but she couldn't figure out why she was gaining weight. After a few questions, it became clear, she never exercised, barely made it off the couch during the day, yet, at dinner every night, began slamming cupcakes, brownies and ice

cream. Hmmm…I wonder what the problem could have been. But she worked out—which, to her, meant putting groceries away, doing chores and vacuuming every now and again, pushing the stroller around in the store.

Hopefully I made it clear that this protocol is for people who train, but as important as training is to the program, so is the type of training. I talked throughout the book about resistance training. It should, therefore, not surprise anyone that Carb Back-Loading is not intended for endurance training individuals.

Endurance training includes, but is not limited to running, cycling, rowing, cross-country skiing, aerobics classes and spin classes. Endurance training a muscle decreases tGLUT concentration and does not translocate tGLUT as does resistance training and may even impair tGLUT function[1], thereby forgoing skeletal muscle preference to store glucose and giving fat cells an opportunity to store it as fat. .

NOTE: Neither endurance type training—e.g. marathon training, CrossFit—or purely eccentric training—e.g. Mike Mentzer's Heavy Duty—translocate tGLUT; therefore, don't use either exclusively while Back-Loading.

Be aware that some types of endurance training use resistance-assisted movements in attempt to increase endurance. Despite the use of a few bumper-plates, this resistance-assisted endurance training is biomechanically and molecularly identical to traditional modes of endurance training.

Recent years have blessed us with several of these hybrid whole-body training programs designed to devastate the energy systems of the body without providing much benefit. Such programs include P90X and its successor P90X2, Insanity Training and CrossFit. Carb Back-Loading, as outlined in this book, is not suited to these training modalities for the same reasons as endurance training. In an upcoming book, I will address advanced nutrition for these types of programs.

What's left is traditional goal-oriented forms of resistance training, like strength, power or hypertrophy regiments. Even here, when it comes to back-loading, not all forms of legitimate resistance training work.

Mike Mentzer's Heavy Duty training or variant thereof like Dorian Yate's Blood-and-Guts style of training, Dog Crap or any eccentric-based resistance program fails to translocate tGLUT. Muscular contractions—concentric movement—causes tGLUT translocation[2]. Heavy Duty training, therefore, can't produce the critical effect necessary to make Carb Back-Loading work as advertised[3].

This is not to say that eccentric training can't be used in a training program while back-loading, as it has many benefits, but make it a component of an integrated protocol like my upcoming Shockwave Protocol and not an exclusive way to train.

Finally, don't think a frou-frou workout on the selectorized speed circuit at the big-box gym counts either. The non-insulin mediated translocation of tGLUT depends on training intensity just as it does type[4]. Heavy contractions cause the greatest response in tGLUT

movement and increase in concentration thereof within skeletal muscle cells.

When done right, resistance training and the insulin surge created by our post-training formula will work synergistically to redirect glucose intake away from fat tissue and toward skeletal muscle[5]. So remember the ageless idiom: *go big or go home*.

Chapter 50

Cardio

For those familiar with my writing, it comes as no surprise that I don't recommend cardio, at least not long duration, steady-state cardio. I don't care about the goal: this type of cardio is essentially useless, even for marathon training.

This is not, however, a place for a diatribe on cardio, nor is it the place to elucidate the best training methodologies for endurance events. It is the place to discuss what kind of cardio is best while back loading: HIIT.

Unfamiliar with HIIT? Many people are, so don't fret. HIIT stands for High Intensity Interval Training and athletes have used it for a long time, arguably as long as 1937 with the invention of Fartlek training.

With HIIT, endurance training is broken down into sets of very high intensity work, separated by a prescribed period of active rest. Sounds a lot like resistance training and that's a fair comparison in many ways. HIIT comprises sets of anaerobic training interspersed with rest.

HIIT is rather spectacular because $\frac{1}{4}$ the time and literally $\frac{1}{10}$ the workload produces the same benefits as moderate intensity steady-

state endurance training[1]. Plus it causes an accelerated rate of fat burning[2].

What sounds preferable, running on the treadmill for 2 hours or doing six sprints, each one 30 seconds long spaced by four minutes of rest? Both produce identical benefits. That would be 27 minutes out of the day compared to the 2 hours—and of those 27 minutes, 3 minutes require intense effort.

The prescription for HIIT cycles is written somewhat like odds on a horse race. As an example, one prescription would be 4:1, where the 4 specifies the amount of active rest—say walking—and the 1 specifies the time of maximum exertion—like all-out sprinting. Using the walking-sprinting examples with the 4:1 prescription would give: walk slowly for 4 minutes, sprint for 1 minute followed by another 4 minutes of walking, then another minute of sprinting and so on until reaching the desired time or number of sets.

The rest period between sprints should not exceed four minutes and shouldn't go below two minutes. For the full-throttle portions, the minimum and maximum, respectively, are 30 seconds and 4 minutes.

Vary the amount of rest—a little longer between some sprints and shorter between others—and adjust the duration of the sprint portion. This makes HIIT more akin to the Fartlek training mentioned above in which there is no defined rest period or full-throttle period: go full-throttle as soon as breathing is back under control, and sprint until loss of breath control or 30 seconds, whichever comes first.

Carb Back-Loading

No matter the split—1:2, 2:4, 4:$\frac{1}{2}$, 4:1, 3:1, etc. or Fartlek-style—I suggest limiting the volume to 30 minutes total or 8 cycles, whichever is shorter, per day.

High Intensity Interval Training (HIIT) Prescriptions

Sprint Duration	Rest Period	Cycles	Suggested For
≈ 2min	4 min	5	Strength Accumulation/ Fat Loss
30 sec	2 to 4 min	6	Density Bulking/ General

Carb Back-Loading

Chapter 51

Gender Differences

I wrote this book with men as my target audience, both in the program and style of writing because—and this is unfortunate in my opinion—not many women resistance train with the intensity necessary to benefit from back loading.

Maybe it's a fear of looking like a female bodybuilder from the late nineties, or maybe they don't want to lift heavy because they're too kind, trying to spare the typical big-box-gym male clientele the embarrassment of being out-lifted by a woman. I don't know for sure (although my hunch is the latter). But I do know it's a travesty.

This doesn't mean, however, that women can't back load successfully. Many have, getting exceptional results with a minimum of effort (e.g. read about Julia Ladewski's experience on page 209). The biggest trouble I've witnessed is training intensity coupled with a proclivity to over-consume carbs.

Meeting the carb needs of a 130 lb female athlete takes far smaller volumes than that of a 240 lb bodybuilding male. The amount of carbs anyone can eat while Back-Loading depends on their quantity of muscle mass. The average female athlete doesn't have the muscle mass necessary to get away with eating an entire box of chocolates every night.

To be successful with Carb Back-Loading as a woman, do three things:

Suggestions for Females

1. Lift heavy in the gym.
   Wondering about your intensity and if it qualifies as intense enough is a good sign that it's not. Kicking ass in the gym is unmistakable.

2. Eat one carb meal post-training and don't binge.
   A couple pieces of pizza or a sushi roll or two is more than plenty. Even consider skipping the carbs in the post-training shake and saving them for a single meal (which may include dessert).

3. Include 2 to 3 HIIT sessions per week of the 2:4 type.
   This helps to keep glycogen levels from getting or staying full. Be sure to ditch all steady state cardio.

I also suggest—and this is not as important as the above list—to go through the preparatory phase of the Implementation Section. You'll gain enough information to fine tune the total amount of carbs needed for back-loaded meals by using Appendix C.

Section VII

Essential Points

Don't be a fat kid: follow Back-Loading principles, not fat-guy-at-the-gym advice.

Limit gluten intake: there's a 50% chance that you have some type of allergy, and even a minor one can derail back-loading.

Endurance and eccentric training do not work with Carb Back-Loading.

If you do cardio, do HIIT, p182.

Women do not, in general, have the muscle mass necessary to gorge like men.

Carb Back-Loading

Section VIII

EXPERIENCES

Carb Back-Loading

Chapter 52

Case Study: Jay DeMayo

No other subject seems to bring harsh critics from the woodwork faster than alternative dieting strategies and when the author claims *performance enhancing*, it generates more heat than any other. Strength coaches, I've found, get fired up and defensive worst of all.

They've got one diet they use with their clients and they refuse to deviate. I don't blame them: why change something if it works. So when I got text message from Jason DeMayo, CSCS and head strength coach for the University of Richmond, Virginia, asking about a Carb Back-Loading program, he surprised me. But when he told me it was for him, I felt the sweat form on my brow.

I've been tailoring diets for a few years for everyone from bodybuilders, powerlifters, CrossFitters and cyclists, at all levels, from amateurs to world-record holders, but I knew from our conversation that DeMayo needed results and wanted them fast.

He needed to lean out, he wanted to get stronger, wanted to build muscle and he needed it to be stupid-simple because his schedule is insanely complex. After his list of requirements, I relaxed: this was going to be easy.

I agreed to work with Jay if he would agree to record his stats through the dieting process. He agreed and I put together a very simple diet for him as follow:

Simple Carb Back-Loading Diet
(Training @ 9am)

Approx Mealtime	Meal
Upon Waking (6am)	Coffee, 1-2 tbsp heavy whipping cream
Late Breakfast (noon)	6 eggs, $\frac{1}{2}$ lb bacon
Late Lunch (3pm)	1 hamburger patty, mustard, slice of cheese
Late Dinner (7-8pm)	3 Spicy Chicken Filets, Frosty and a large fry from Wendy's or a pizza

Simple Carb Back-Loading Diet
(Off-Day)

Approx Mealtime	Meal
Upon Waking (6am)	Coffee, 1-2 tbsp heavy whipping cream
Late Breakfast (noon)	6 eggs, $\frac{1}{2}$ lb bacon (optional)
Late Lunch (3pm)	1 hamburger patty, mustard, slice of cheese (optional)
Late Dinner (8pm)	2 chicken breasts and a salad

Looking at the tables, you can see that Jay couldn't train at the ideal time of day, but I still had to make the diet as simple and easy as possible. Notice that on off-days, I marked two meals as optional. Depending on how Jay felt—tired, hungry or energetic, sated—he would skip one meal or the other. He never skipped both.

Of course, on training days he included only the Hypertrophic Potentiator Formula (p139) minus the carbs. Again, depending on how he *felt*, he might include a ripe banana or two after his morning training session. Also note that Jay trained completely fasted except for a small amount of heavy whipping cream, which was probably just getting into his system at training time—normal fats, as discussed earlier, take a few hours before the body can access them for energy.

Jay went for 8 weeks on the program and recorded his weight and skin fold measurements.

Jay DeMayo's
Skin Fold Measurements

Date	Tricep	Pec	Mid Ax	Sub Scap	Ab	Supra	Quad
2011/06/01	15	22	14	23	35	18	21
2011/06/29	16	19	14	17	23	15	21
2011/07/27	9	15	11	15	20	15	20

From the skin fold data it's clear that Jay lost *a lot of abdominal fat fast* (see circled column above) and tightened up substantially at all points except the quadriceps where he started lean. The following

table translates these numbers into body-fat percentages (%BF) and lean-body weight (LBW).

Jay DeMayo's
Body Fat and Lean Mass Measurements

Date	Weight	% BF	% LBW	LBW
2011/06/01	214.5	21.2	78.8	168.9
2011/06/29	209.5	18.3	81.7	171.1
2011/07/27	203.5	15.6	84.4	171.7

Jay lost about 6% body fat while simultaneously gaining 4 lbs of muscle in just 8 weeks. Someone on a forum once commented that gaining muscle mass while losing body fat is alchemy—i.e. impossible. Well, Carb Back-Loading must be the Philosopher's Stone (I'd prefer a Physicist's Stone, but, technically, every rock would qualify as such).

What about Jay's strength? Something had to give; there's no way to gain muscle and lose fat at the same time without sacrificing something, like strength. Jay also recorded his numbers on four lifts; the movements and his best lift in each before and after back loading tell the story.

Jay DeMayo's PRs, Pre and Post

	Squat	Bench	Deadlift	Overhead
Week Before	385×6	260×6	425×8	175×6
Week After	400×10	270×8	440×10	190×8

Keep in mind that Jay achieved these results without training at the ideal time for Carb Back-Loading. Scheduling forced him to train in the morning and only gave him enough time for one meal later in the day. Essentially, life forced him into a non-ideal Strength Accumulation phase. The results…impressive.

There's really not much else to say. Carb Back-Loading works. End of story. DeMayo seemed a bit skeptical and had it not been for the prodding of friends who'd tried it with great success—success he witnessed—he never would have contacted me in the first place.

Now that he finished his personal trial with Back-Loading, he's discussed creating a version that complies with NCAA standards that he can use with his athletes. So his opinion now…well, his most recent message after I thanked him for his stats: *No, thank you. This is awesome!*

To learn more about Jay DeMayo, his training and experience, go to: **http://www.cvasps.com/jay-demayo/**

Carb Back-Loading

Chapter 53

Professionals

People at the top of their game, the elite, strive to find the best supplements, best training protocols and the best nutrition possible. They do whatever it takes to get to the next level, trading convenience and free time for a chance at glory.

In the last couple of years, things changed. Carb Back-Loading snuck onto the performance nutrition scene, a blip on the radar, a it's-too-good-to-be-true rumor. But as athletes across various disciplines tried Back-Loading, they found they could devote more energy to training and recovery and worry less about diet. Because Carb Back-Loading is stupid-simple.

It wasn't long before they hit new personal records (PRs), required less time to prepare for contests and started breaking world records.

This garnered a lot of attention from fitness industry professionals at magazines like Muscle&Fitness and Men's Fitness. The editors were, of course, skeptical and refused to publish such wild dietary advice. Then the staff started trying it. Then more staff. Then, the editors. Soon after, Carb Back-Loading made it into print.

Here are their experiences.

Brian Carroll, 30

From: Jacksonville, FL
Profession: LMT and Strength and Conditioning Coach
Website: http://briangcarroll.com/
Accomplishments: EliteFTS sponsored athlete, Ranked top 10 in 3 weight classes, #2 in the world in the SPF powerlifting organization with a total (squat, bench, deadlift) of 2730 lbs and a world record 1185 lb squat, both in the 275 lb weight class.

In the past, I didn't care about diet much and it didn't seem to matter. I trained and lifted and my lifts went up. Within a few years of competing, I was a top lifter. When I knew I was close to world records, I decided to take everything seriously, even my eating.

I had a chance to talk with the creator of Carb Back-Loading before he called it Carb Back-Loading and before I even knew who the hell he really was. It sounded like something I work with and make fit with work and training.

Since I first started using back-loading, I've hit new PRs and a world record squat. I also have abs. For a 275 lb powerlifter, it's kind of unheard of. The first time I ever used it, I cut my body fat % down an average of 1% a week for 7 weeks. Not bad for nothing but changing when I ate carbs!

Alex Navarro, 27

From: San Francisco, CA
Profession: Personal Trainer and Fitness Model
Website: http://www.alexnavarrofitness.com/
Accomplishments: Ms. Natural Fitness Olympia

As a bikini and fitness competitor it's important to have an off-season nutritional program that allows me to maintain the physique that I worked so hard for and yet still be able to make aesthetic and strength improvements where necessary. Carb Back-Loading has made this possible.

In my past experiences off-season can be tricky. There are always areas for improvement in my physique, yet at the same time I don't want to blow up like so many competitors do off-season. It's been one of the hardest parts about competing: watching all your hard work get covered up by extra body fat and bloat. Yet, I'm happy to say that this post-season has been the easiest to date because of Carb Back-Loading. It has allowed me to build muscle while keeping my body fat low and my body picture-ready.

I was pleasantly surprised at how easy it is to push back my carb intake to the evenings, especially knowing that I'm able to then consume foods that I previously thought would destroy all my hard work in the gym. I never imagined being able to eat high glycemic foods such as white bread or rice and even ice cream, especially in the evening. Now they are helping me make the changes that I want and I still look and feel great. In fact, I feel even better than on past diets that were meant to help me build muscle. My energy has improved, my cravings are minimal and my strength and recovery are beyond what I thought they could be.

Scott Paltos, 34

From: East Hanover, NJ
Profession: Owner/Operator PUMP CrossFit & Performance
Website: http://www.pumpcrossfit.com/
Accomplishments: #7 in the Northeast Region for CrossFit and #75 in the World Wide CrossFit Open

I have been an athlete all of my life, from a stint in the NFL, to being a highly competitive strongman & powerlifter, to starting on a 25+ amateur national championship baseball team, and now being a top competitor in CrossFit.

I have never had results from my nutrition like I have had this past six months. Carb Back-Loading has played a major part in the success I have had in my new adventures in CrossFit. For those who follow Kiefer, you know that CrossFit is not his most adored form of training methods…but being that I don't fit the normal CrossFitter mold (5'11" 235lbs) he took me on.

There is no doubt of what we have done through nutrition for my work capacity, anaerobic threshold, aerobic endurance and recovery, while still getting leaner and increasing my strength. It's been a huge positive. With my background and with Carb Back-Loading I was able to finish #7 in the Northeast Region for CrossFit and was ranked #75 in the World Wide CrossFit Open going into the Regional Competition.

Rob Fitzgerald Ihlenfeldt, 38

From: New York, NY
Profession: Group Features Editorial Director
Men's Fitness, Muscle & Fitness magazines

A number of world class powerlifters told me about Kiefer's Carb Back-Loading ideas, but I was extremely skeptical at first because none of it made any sense. We're always taught to eat several meals throughout the day, and that eating carbs at night is an absolute cardinal sin.

Two things about Kiefer stood out to me, however. First, he's a brilliant guy, and it was obvious he'd dug deeper into the science of nutrition than anyone else and done his research. Next, everyone who tried Carb Back-Loading was getting very favorable results. I had Kiefer give me a very simple plan, and I ended up eating way MORE supposed 'junk' than ever before, but waking up the following morning looking visibly leaner. Best of all, I've gained muscle mass and I'm getting stronger at a phenomenal rate.

Carb Back-Loading is the absolute, no-bullshit truth. I've seen the results with my own eyes on both myself and with athletes I know—and it's one of maybe only two or three things in the fitness industry I'd ever endorse.

Caroline Gick, 40

From: Concord, CA
Profession: Senior Branch Manager, Contra Costa Libraries
Website: http://carolinegick.com/
Accomplishments: National Fitness Competitor

I started Carb Back-loading as a way to avoid the trap I see so many fellow figure competitors fall into—bulk up in the off-season to put on muscle, invariably putting on just as much fat, and then starving themselves down to prepare for the stage, getting rid of all the fat, but also losing almost all the muscle they spent so long working for.

It seemed debilitating, not to mention pointless! By Back-loading, I've been able to put on muscle, nearly 4 pounds of lean muscle mass just in the last year, while staying tight, lean and close to show weight. I really have no off-season/on-season, no bulk and cut.

Carb Back-loading keeps me looking AND feeling good year round, which is important to me and getting ready for competition is nowhere near the traumatic event I see so many competitors endure.

Vincent Dizenzo, 42

From: Stratford, CT
Profession: Special Education Teacher
Accomplishments: EliteFTS sponsored athlete, Raw bench press of 600 lbs at a body weight of 305.

The last time I had my body fat tested was July 22, 2011. I weighed 288 lbs. and my body fat was 17.5%. Back on June 5, 2010 I was 267 lbs at 18%. So basically in just a little over a year I gained 21 lbs and am .5% leaner. I'd also like to note that the same person tested me using the same sites and calipers.

I can't remember when I started playing with Carb Back-Loading, but it made sense to me and it seemed sustainable. I don't much care what I eat during the day, I'm busy so I don't mind getting down whatever I need to. Back-loading offers more flexibility in the evening which is when I like to sit down and enjoy my food a bit more. Plus, with training in the late afternoon, Kiefer's plan just made more sense to me than traditional plans.

After working with Kiefer, a little correspondence and trial and error we developed the plan I am on now. I am leaner than I have been in around 20 years and am putting up PR's in the gym regardless of bodyweight.

I am confident that Carb Back-Loading will help me maintain my top level benching. I have already bested my equipped bench of 820 at 308 lbs. with 830 at 275. I also hit a raw bench of 600 at 305 lbs. whereas the first time I hit a 600 in competition I had to push my bodyweight up to 329.

Sean Hyson, 30

From: New York, NY
Profession: Fitness Editorial Director, Men's Fitness and Muscle & Fitness magazines.
Website: http://www.seanhyson.com/
Accomplishments: Lost 35 lbs in 12 weeks while hitting a PR of 405 lbs on the squat.

Carb Back-loading is easily my favorite nutrition strategy that I've ever experimented with. Kiefer has made the dream a reality: eat anything you want and lose fat while building muscle. I wouldn't have believed it if I hadn't tried it myself.

There's a reason we called it Nutrition's Holy Grail when we wrote about it at the magazine: It works as advertised!

Rob Luyando, 41

From: Rock Falls, IL
Profession: Detective
Accomplishments: All-time Single Ply World record, 848 lbs, and Multi Ply, 948 lbs, both at a body weight of 275 lbs.

When I first started Carb Back-Loading, I was a sloppy and strong 305 lb Power lifter. My goal was to get back down under 270 lbs and maintain my strength levels. So I thought I may be up against the wall trying to drop at least 35 lbs and not lose any strength. Kiefer introduced his carb back loading plan to me and at first I thought there is no way I'm going to be able to maintain strength with while not consuming carbs throughout the day. I was wrong. My energy levels and strength increased using the carb back loading plan that Kiefer structured for me.

I went from 305 lbs to a solid 268. I also went on to set two new All-time Single Ply World records in the bench press. Now that I have reached my goals of getting under 270 lbs with Carb Back-Loading and maintaining World-Record-breaking strength I decided my next goal was to bench press over 1000 lbs. Kiefer again restructured my plan and I have increased mass and strength while burning away fat. Carb Back-Loading, together with Kiefer's cardio plan allows me to get the necessary foods to fuel my body and also help speed up my body's recovery so I can push it to the limit every day of the week. I highly recommend Carb Back-Loading to anyone serious about improving!

Carb Back-Loading

Chapter 54

Everyday Success Stories

Carb Back-Loading obviously works for those who dedicate their lives to fitness and performance to achieve super-human results, for professionals who sought my help directly. Sure they got stupid-simple results. They had an unfair advantage—my help.

But what about the people who train with the simple goal of getting better every time they enter the gym who didn't get my help, who went it alone. Maybe there're competitive athletes, maybe they only care about seeing their abs or stripping fat from the thighs. What are their results? Is Carb Back-Loading really that easy?

After reading through the countless testimonials I received, my amazement at people's results made me want to call this chapter **S.H.I.T.**s (Super-Heroes In Training), but I'm not sure everyone likes being called a **S.H.I.T.™**

What follows are the words of those who found out how stupid-simple Carb Back-Loading is. They all share the same experience: disbelief at how easily they achieved results they thought were impossible (i.e. they're **S.H.I.T.**s, like it or not).

Tanner Fox

From: North Dakota

In 12 weeks I successfully went from a body weight of 225lb to 240lb, took my squat from 400lb to 500lb, my deadlift from 500lb to 600lb, and not gained one ounce of body fat during the process. The log book, measurements, and mirror don't lie and I thank Carb Back-Loading for it.

My life is easier from not having to stare at the clock every 3 hours to obsess about food. When the time comes to eat, I am MORE than satisfied and never go to bed hungry. Convenience is just a side effect of Carb Back-Loading. My mind is clear throughout the day with a consistent energy, my workouts have never been more intense, and I have never had this amount of convenience in my life combined with using food to enhance my goals in the gym to a degree I've never experienced. It really is a win-win.

Carb Back-Loading has essentially allowed me to hack my body to find out its true potential and I will eat this way for the rest of my life.

Gabe L

From: Indiana

I was interested in LeanGains, but don't like the idea of carb cycling. I am more of a creature of habit. If I eat low carb one day, it's easier for me to eat low carb the next. If I eat carbs one day, it's easier to

eat carbs the next. This is what led me to Carb Back-Loading. If I don't eat carbs all day, but have them peri-workout (or back loaded), I can do that the next day.

My results: 188lbs at 18% body fat (calipers) down to 170lbs and 11% body fat (estimate)

Now, I'm a little small for my liking, but I intend on using the same approach to try to gain, just with more calories. The idea of the low carb intro would probably be beneficial, and anything else I could get out of the upcoming book will definitely help.

Danny K

From: DH Forums (**http://dangerouslyhardcore.com/forum/**)

I am a 38 year old power lifter who trains 3 days a week and does martial arts 2 days a week. I have been back loading for about 6 months and I love it. It is the easiest way to eat and see results. In the past I walked around between 215 and 220. When I started back loading I lost 10lbs fast. It must have been mostly fat because the only difference in my clothing is I now need a belt. My powerlifting gear still fits and all my clothes and suits still fit fine except in the waist. I am still hitting PRs in the gym and have plenty of energy for my grueling training. I don't like to eat breakfast so CBL fits my life style perfect. CBL allows me to still sit down with my family and enjoy good ole fashion American home cooked meals. As a bonus, when I walk around with my shirt of my wife takes notice (in a good way). In the past she hated when I dropped weight, calling me twerpy. But, when the weight you drop

is fat and you hold on to and even add muscle you actually look bigger at a lower body weight.

Julia Ladewski

From: Midwest (http://www.julialadewski.com/)

I thought my husband was crazy when he mentioned the thought of carb back-loading. He claimed that many strength athletes were getting pretty good results with losing body fat and maintaining (or building) strength. Pfft. I thought this was another "low-carb" plan... which I've tried before and wasn't too fond of. And I was not about to partake in anything of the sort again.

My husband had been back-loading for about a week. I took the time to read up on it and learn a little more. Then, I finally gave in and said, "Fine... I'll give it a shot."

Three weeks had passed and I never looked back. And below are my findings.

1. I love back-loading way more than any other nutritional protocol I've tried in the past. I don't feel as restricted and can still have some of the things I enjoy. At the same time, I feel that I'm making better choices, even during my back-loading time frame when I could technically eat what I want.

2. I don't let eating this way control my life. It guides me in the direction I want to go by eating the foods I should be eating and love. When I have a family function to go to, I adjust accordingly.

Also, 99% of the functions I attend are in the afternoon or evening anyway.

3. I train in the morning and it still works for me. I've just started experimenting with adding in a banana to my post-workout shake and while I haven't noticed any differences either way, I do like the idea of getting in some carbs post training.

4. Learning how my body responds to carbohydrates has been a real eye-opener. I never associated the afternoon fatigue, hunger and bloat to the carbs I was eating in the morning. Also learning how to time my carbohydrates has played a huge role in keeping my strength and energy levels up for the intense training sessions.

5. Here's the big one... a ***REALLY BIG TAKE AWAY****... I. Feel. Better. I feel better about the choices I make. I feel better about the foods I'm eating (no more processed junk). I feel better energy-wise. I'm not hungry. I don't crash at 2:00 in the afternoon because I've carbed up all morning. I'm strong(er) and my training rocks. I feel better about the foods I'm feeding my kids.*

After eating this way for nearly 9 months, I can honestly say that I can eat this way continually. It's not a "diet" to follow; therefore, it's not a "diet" to sabotage either. After doing it for a month, my body felt so much better. I was comfortable and happy with the way I was eating.

And after all, when mom is happy, everyone is happy.

Tony F

From: Melbourne, Victoria, Australia

I first came across Carb Back-Loading while I was dieting for my 1st bodybuilding comp...and I was dying to use it but of course I had to wait...

After a week off from training after my comps I started carb back-loading as I was purely after some mass gains and I must say I'm very impressed with my results!

I know what some people are thinking "that's just post-comp rebound"...which yes does help but I have plenty of natural bodybuilder mates who just put a lot of weight on after a comp and mostly all fat and hardly any gains at all if any...whereas I'm gaining every week and getting stronger...

Thanks Kiefer for giving another weapon for us natural guys to keep packing some muscle on!

Casey D

From: Maine

I'm beyond impressed at this point. When I was eating for size prior to back-loading, I was trying my best to keep it extremely clean and I was very regimented, much to the dismay of my wife. She loves me being on this new diet, mostly because I can "eat like a normal person again". I feel like a kid again when I get to eat my favorite

cereals like Lucky Charms and Fruity Pebbles. To sum up, best diet ever.

Mark G

From: DH Forums (**http://dangerouslyhardcore.com/forum/**)

I first heard of Kiefer and Carb Back-Loading from the EliteFTS article. I read his articles and thought that he was saying not much more than John Berardi at Precision Nutrition has espoused for years. I have seen so many people repackage his ideas that I initially wrote Kiefer off.

What eventually drew me to Carb-Back Loading was the amount of research he had done (which, as a skeptic, I checked out). As a physics teacher and Engineering major in college, I appreciate the work and proof that he provides for his program.

I decided to read and listen to everything he has written/spoken about on the internet (and the article in Men's Fitness) and have been giving it a try. I have been one of those carb-phobic individuals, so it has been a difficult adjustment, but I'm slowly getting the hang of it.

I still have trouble judging my daily/weekly progress and am unsure if I am doing it correctly, which is why I am so looking forward to the book.

Matt Tuthill (@MCTuthill)

From: Muscle&Fitness and Men's Fitness Magazine (associate editor)

I read about Carb Back Loading in Muscle&Fitness and immediately dismissed it as something that could only work for those gifted people who never seem to gain an ounce despite eating junk food their whole lives. A diet in which eating muffins and ice cream at night is not only allowed, but actually encouraged on tough training days could never work for me. A friend of mine was hooked on the idea, though, and gave it a try. In no time, he was raving about his results, and insisted I try it. What finally pushed me over the edge was that Kiefer's story sounded a lot like mine; he created this diet after years of eating clean, training hard, and still being frustrated by his physique. I plunged in head-first.

Flash forward 12 weeks into the diet: I gained 12 pounds total—a steady pace of one pound a week—and my waistline not only didn't expand, but my pants actually fit better. The 12 pounds all went straight to my legs, chest, back, shoulders, and arms.

The diet has spread like wildfire around my office, and everyone's extremely happy with their results. If you follow the instructions, IT WORKS. Don't waste your time looking for something better. I've tried a lot of different diets, and nothing works as well as this. Gaining muscle and losing fat are no longer mutually exclusive pursuits, something I absolutely never thought possible. Thank you, Kiefer!

Section IX

APPENDIX

Carb Back-Loading

Appendix A

FAQs

Q: *How does clean food fit into Carb Back-Loading?*

A: Clean food fits pretty easily into Carb Back-Loading. The first half of the day, the ultra-low carb portion, is the perfect time to slam some vegetables. Asparagus, broccoli, lettuce, zucchini and an assortment of other vegetables work perfectly and should be included. It's not carbs total, it's usable carbs that matter. Other than tuberous vegetables and winter squashes—pumpkin, butternut squash, potatoes, carrots—you can eat most vegetables in mass quantity.

At night, however, we should avoid these *healthy* carbs, as they sabotage the whole reason back-loading works in the first place. That doesn't mean, however, that you have to eat trash. You need to trigger a strong insulin response. Use white rice, sweet potatoes, the winter squashes, ripe bananas and grapes, all of which produce strong insulin reactions.

Carb Back-Loading does not depend on junk; it's just that it allows you to eat it without consequence.

Q: *Do I have to drink coffee?*

A: You don't *have* to do anything. I do, however, recommend coffee, but it's not necessary if you train in the evening. Most people use coffee to control their appetite, not to enhance the back-load. For hunger control, there is no simple alternative to coffee (regular or decaf) other than brushing your teeth when you become ravenous in lieu of eating.

If you train earlier in the day, say first thing in the morning, then I highly recommend some type of caffeine—something. To shift the temporary insulin insensitivity to around training time (i.e. A.M. training), then your best option actually isn't coffee but a caffeine supplement, either a powder or an over-the-counter wakefulness aid that's packed with caffeine, like Vivarin®.

Q: *Is whipping cream an absolute must if I do drink coffee in the morning?*

A: What, you don't like heavy whipping cream in your coffee? Anyway, it is by no means necessary and neither is coconut milk or oil.

Q: *How do I back-load on off-days?*

A: This is actually a complex question. See Chapter 40, p145.

Q: *How would one tailor a Carb Back-Loading plan to focus more on weight loss instead of weight maintenance?*

A: What you're looking for, rather than the Density Bulking that strength and physique athletes desire, is the Strength Accumulation tailoring, which you can find in Section V. A brief description is in Chapter 30, p114.

Q: *Is there an ideal macro nutrient breakdown?*

A: There is, for both portions of the day, but it matters most during the night. There are charts in Appendix C and D that help you determine the baseline macro nutrients levels you should get while back-loading. Eat at, above or below this level to maintain, grow or lean-down, respectively.

Q: *Since I can eat up to 30g of carbs in the first half of the day, can I eat all of those at breakfast?*

A: Yes, if you want to destroy the hormonal processes that make back-loading work thereby getting fat instead of shredded.

If that is not your goal, then no, you can't. No more important time of day exists for controlling metabolism than when you first wake. What you eat, or don't eat, literally determines if you burn primarily fat for the rest of the day or not. By eating all of your carbs at once, you actually force the body to stop burning fat, causing it to flounder during periods of heightened energy utilization, like during training.

Of course, there is an exception: early A.M. fasted training. In that case, yes, you can but only immediately after the training session. See Chapter 43, p158 for more detail.

Q: *Can this protocol be coupled with Intermittent Fasting?*

A: In truth, intermittent fasting (IF) is a subset of Carb Back-Loading. Without a good understanding of how metabolism works under multiple scenarios—like high-protein, high-fat, high-carb, mixed-ratios and fasting—I can see how one might

stumble upon IF, tweak it here and there and get excellent results. The problem, however, is that fasting intermittently makes it easy to lose fat, but difficult to grow new muscle or maintain a heavily muscled frame.

This is a complex subject and is beyond the scope of this book, but metabolically there is no difference between eating ultra-low carb (high fat) and fasting. The body acts identically. Even levels of metabolic hormones drop equally, slowing metabolism if the body goes too long without carbs almost as if fasting (hence the reliance of my first diet, The Carb Nite Solution®, on weekly carb feedings). Therefore, Carb Back-Loading is IF, *evolved*.

Q: *Your first diet book, The Carb Nite Solution, describes bulk carbohydrate sweeteners like fructose as bad; does the same hold true for back-loading? And what about fruit?*

A: Yes and no. Ideally, you don't want to use Coca-Cola® and Twinkies for you back-loading meals because they have high amounts of fructose (either bound as sucrose or in high-fructose corn syrup). When the body is in an energy surplus, fructose can bypass the rate-limiting steps that prevent glucose from creating infinite levels of fat.

That means fructose *can* create unlimited amounts of fat.

Therefore fruit juice, agave nectar and similar natural alternatives with higher percentages of fructose are even more heinous and should be avoided with diligence.

Intact fruit, on the other hand, is restricted because it just doesn't produce the insulin spikes we're looking for, in general but can be filling, thus preventing us from getting in enough insulinotropic carbs.

Some fruits, under some conditions, though, are perfect. Like brown-spotted bananas which can trigger significant insulin release.

Q: *So I fell off the wagon and ate carbs all day for a week or so. Should I do the preparation phase again before starting back?*

A: Maybe not. It depends on your goal. For the best results and the best bio-feedback (reactions from your body from food) I suggest doing the prep phase again.

Appendix B

Ultra-Low Carb Vegetables

Vegetable	Serving Size	Usable Carbs	Fiber	Fat	Prot
Alfalfa Sprouts	1 cup	0	1	0	1
Arugula, fresh	1/2 cup	0	1	0	0
Asparagus, raw	4 spears	0	1	0	2
Baby Spinach	3 cups	0	2	0	2
Celery	2 stalks	0	2	0	1
Green Olives	1 oz	0	1	4	0
Kimchee	1/2 cup	0	4	0	2
Pimientos	1 tsp	0	0	0	0
Romaine Lettuce, shredded	1 cup	0	1	0	0
Watercress, raw	1 cup	0	0	0	1
Boston Lettuce	1 cup	1	1	0	1
Cauliflower, Cooked	1/2 cup	1	2	0	1

Vegetable	Serving Size	Usable Carbs	Fiber	Fat	Prot
Chinese Broccoli	1 cup	1	2	1	1
Garlic	1 clove	1	0	0	0
Green Onion	3 stalks	1	1	0	0
Jalapeno	1/2 cup	1	1	0	0
Pickle, Dill	1 spear	1	0	0	0
Radicchio, raw	1 cup	1	0	0	0
Rhubarb, raw	1 stalk	1	1	0	0
Sauerkraut	1/2 up	1	2	0	0
Bamboo Shoots, canned	1 cup	2	2	0	2
Cabbage	1 cup	2	2	0	0
Zucchini	1/2 cup	2	1	0	0
Bell Pepper, Green	1 medium	3	2	0	0
Turnips, cooked	1/2 cup	3	2	0	0
Yellow	1/2 cup	3	2	0	2

Appendix C

Carb Needs Calculators

One of the trickiest parts of Carb Back-Loading is determining the level of carbs to start eating for a baseline—to maintain, neither gaining nor losing. Once you determine this amount, it's easy to modify carb levels for Density Bulking or Strength Accumulation. There are two ways to determine baseline carb needs.

Determine Baseline Carbs

1. Perform the Preparation Phase and note weight loss. Once you know the amount of weight lost from the Preparation Phase, you can use the Weight-Delta chart that follows.

2. Record your body weight before back-loading. You can use this value to look up your carb needs in the BW to Carbs calculator that follows. This method is not nearly as reliable as the first method.

Delta-Weight Chart

Weight Lost (lbs)	Baseline Carbs (g)	Weight Lost (lbs)	Baseline Carbs (g)
0.25	23	5.25	477
0.5	45	5.5	500
0.75	68	5.75	523
1	91	6	545
1.25	114	6.25	568
1.5	136	6.5	591
1.75	159	6.75	614
2	182	7	636
2.25	205	7.25	659
2.5	227	7.5	682
2.75	250	7.75	705
3	273	8	727
3.25	295	8.25	750
3.5	318	8.5	773
3.75	341	8.75	795
4	364	9	818
4.25	386	9.25	841
4.5	409	9.5	864
4.75	432	9.75	886
5	455	10	909

Delta-Weight Chart (con't)

Weight Lost (lbs)	Baseline Carbs (g)	Weight Lost (lbs)	Baseline Carbs (g)
10.25	932	15.25	1386
10.5	955	15.5	1409
10.75	977	15.75	1432
11	1000	16	1455
11.25	1023	16.25	1477
11.5	1045	16.5	1500
11.75	1068	16.75	1523
12	1091	17	1545
12.25	1114	17.25	1568
12.5	1136	17.5	1591
12.75	1159	17.75	1614
13	1182	18	1636
13.25	1205	18.25	1659
13.5	1227	18.5	1682
13.75	1250	18.75	1705
14	1273	19	1727
14.25	1295	19.25	1750
14.5	1318	19.5	1773
14.75	1341	19.75	1795
15	1364	20	1818

Delta-Weight Chart (con't)

Weight Lost (lbs)	Baseline Carbs (g)	Weight Lost (lbs)	Baseline Carbs (g)
20.25	1841	25.25	2295
20.5	1864	25.5	2318
20.75	1886	25.75	2341
21	1909	26	2364
21.25	1932	26.25	2386
21.5	1955	26.5	2409
21.75	1977	26.75	2432
22	2000	27	2455
22.25	2023	27.25	2477
22.5	2045	27.5	2500
22.75	2068	27.75	2523
23	2091	28	2545
23.25	2114	28.25	2568
23.5	2136	28.5	2591
23.75	2159	28.75	2614
24	2182	29	2636
24.25	2205	29.25	2659
24.5	2227	29.5	2682
24.75	2250	29.75	2705
25	2273	30	2727

BW To Carbs Calculator

BW	Carbs (g)	BW	Carbs (g)	BW	Carbs (g)	BW	Carbs (g)
90	315	144	504	198	693	252	882
92	322	146	511	200	700	254	889
94	329	148	518	202	707	256	896
96	336	150	525	204	714	258	903
98	343	152	532	206	721	260	910
100	350	154	539	208	728	262	917
102	357	156	546	210	735	264	924
104	364	158	553	212	742	266	931
106	371	160	560	214	749	268	938
108	378	162	567	216	756	270	945
110	385	164	574	218	763	272	952
112	392	166	581	220	770	274	959
114	399	168	588	222	777	276	966
116	406	170	595	224	784	278	973
118	413	172	602	226	791	280	980
120	420	174	609	228	798	282	987
122	427	176	616	230	805	284	994
124	434	178	623	232	812	286	1001
126	441	180	630	234	819	288	1008
128	448	182	637	236	826	290	1015
130	455	184	644	238	833	292	1022
132	462	186	651	240	840	294	1029
134	469	188	658	242	847	296	1036
136	476	190	665	244	854	298	1043
138	483	192	672	246	861	300	1050
140	490	194	679	248	868		
142	497	196	686	250	875		

Carb Back-Loading

Appendix D

Pre Carb-Mealtimes Macro Calculator

The following tables will help you assess baseline fat and protein needs for the low-carb portion of the day when Carb Back-Loading. The tables contain estimates based on averaged scientific data—i.e. this is a rough guide. You will need to experiment.

How to Use

1. Find your desired weight in the chart.
   This is the weight you want to be. The column gives low and high protein estimates needed for that level, along with fat needs and estimated pre-carb meal calories.

2. Start experimenting.
   The numbers given are starting points. Calorie estimates in the table run low. To gain mass or lean down, use the high end of the protein scale. To maintain or change the composition of your body, use middle protein values. To lean down, use the fat levels in the table. To grow, increase fat content.

3. Note the protein deficits.
   This is how much protein you should consume with your carbs in the evening including post-training shake.

Target BW	Prot Lo	Prot Hi	Fat	Low-Carb Calories	Prot Deficit Lo	Prot Deficit Hi
101	43.1	77.0	18.7	410	27.6	49.2
102	43.6	77.8	18.9	410	27.8	49.7
103	44.0	78.5	19.1	420	28.1	50.2
104	44.4	79.3	19.2	420	28.4	50.7
105	44.8	80.1	19.4	420	28.7	51.2
106	45.3	80.8	19.6	430	28.9	51.7
107	45.7	81.6	19.8	430	29.2	52.2
108	46.1	82.4	20.0	440	29.5	52.7
109	46.5	83.1	20.2	440	29.8	53.1
110	47.0	83.9	20.4	440	30.0	53.6
111	47.4	84.6	20.5	450	30.3	54.1
112	47.8	85.4	20.7	450	30.6	54.6
113	48.3	86.2	20.9	460	30.8	55.1
114	48.7	86.9	21.1	460	31.1	55.6
115	49.1	87.7	21.3	470	31.4	56.1
116	49.5	88.5	21.5	470	31.7	56.6
117	50.0	89.2	21.6	470	31.9	57.0
118	50.4	90.0	21.8	480	32.2	57.5
119	50.8	90.7	22.0	480	32.5	58.0
120	51.2	91.5	22.2	490	32.8	58.5
121	51.7	92.3	22.4	490	33.0	59.0
122	52.1	93.0	22.6	490	33.3	59.5
123	52.5	93.8	22.8	500	33.6	60.0
124	52.9	94.6	22.9	500	33.9	60.5
125	53.4	95.3	23.1	510	34.1	60.9
126	53.8	96.1	23.3	510	34.4	61.4
127	54.2	96.8	23.5	510	34.7	61.9
128	54.7	97.6	23.7	520	34.9	62.4
129	55.1	98.4	23.9	520	35.2	62.9
130	55.5	99.1	24.1	530	35.5	63.4

Target BW	Prot Lo	Prot Hi	Fat	Low-Carb Calories	Prot Deficit Lo	Prot Deficit Hi
131	55.9	99.9	24.2	530	35.8	63.9
132	56.4	100.7	24.4	530	36.0	64.4
133	56.8	101.4	24.6	540	36.3	64.8
134	57.2	102.2	24.8	540	36.6	65.3
135	57.6	102.9	25.0	550	36.9	65.8
136	58.1	103.7	25.2	550	37.1	66.3
137	58.5	104.5	25.3	550	37.4	66.8
138	58.9	105.2	25.5	560	37.7	67.3
139	59.4	106.0	25.7	560	37.9	67.8
140	59.8	106.8	25.9	570	38.2	68.3
141	60.2	107.5	26.1	570	38.5	68.7
142	60.6	108.3	26.3	570	38.8	69.2
143	61.1	109.0	26.5	580	39.0	69.7
144	61.5	109.8	26.6	580	39.3	70.2
145	61.9	110.6	26.8	590	39.6	70.7
146	62.3	111.3	27.0	590	39.9	71.2
147	62.8	112.1	27.2	590	40.1	71.7
148	63.2	112.9	27.4	600	40.4	72.2
149	63.6	113.6	27.6	600	40.7	72.6
150	64.1	114.4	27.8	610	41.0	73.1
151	64.5	115.1	27.9	610	41.2	73.6
152	64.9	115.9	28.1	610	41.5	74.1
153	65.3	116.7	28.3	620	41.8	74.6
154	65.8	117.4	28.5	620	42.0	75.1
155	66.2	118.2	28.7	630	42.3	75.6
156	66.6	119.0	28.9	630	42.6	76.1
157	67.0	119.7	29.1	630	42.9	76.5
158	67.5	120.5	29.2	640	43.1	77.0
159	67.9	121.2	29.4	640	43.4	77.5
160	68.3	122.0	29.6	650	43.7	78.0

Target BW	Prot Lo	Prot Hi	Fat	Low-Carb Calories	Prot Deficit Lo	Prot Deficit Hi
161	68.7	122.8	29.8	650	44.0	78.5
162	69.2	123.5	30.0	660	44.2	79.0
163	69.6	124.3	30.2	660	44.5	79.5
164	70.0	125.1	30.3	660	44.8	80.0
165	70.5	125.8	30.5	670	45.0	80.4
166	70.9	126.6	30.7	670	45.3	80.9
167	71.3	127.3	30.9	680	45.6	81.4
168	71.7	128.1	31.1	680	45.9	81.9
169	72.2	128.9	31.3	680	46.1	82.4
170	72.6	129.6	31.5	690	46.4	82.9
171	73.0	130.4	31.6	690	46.7	83.4
172	73.4	131.2	31.8	700	47.0	83.9
173	73.9	131.9	32.0	700	47.2	84.3
174	74.3	132.7	32.2	700	47.5	84.8
175	74.7	133.4	32.4	710	47.8	85.3
176	75.2	134.2	32.6	710	48.0	85.8
177	75.6	135.0	32.8	720	48.3	86.3
178	76.0	135.7	32.9	720	48.6	86.8
179	76.4	136.5	33.1	720	48.9	87.3
180	76.9	137.3	33.3	730	49.1	87.8
181	77.3	138.0	33.5	730	49.4	88.2
182	77.7	138.8	33.7	740	49.7	88.7
183	78.1	139.5	33.9	740	50.0	89.2
184	78.6	140.3	34.0	740	50.2	89.7
185	79.0	141.1	34.2	750	50.5	90.2
186	79.4	141.8	34.4	750	50.8	90.7
187	79.8	142.6	34.6	760	51.1	91.2
188	80.3	143.4	34.8	760	51.3	91.7
189	80.7	144.1	35.0	760	51.6	92.1
190	81.1	144.9	35.2	770	51.9	92.6

Target BW	Prot Lo	Prot Hi	Fat	Low-Carb Calories	Prot Deficit Lo	Prot Deficit Hi
191	81.6	145.6	35.3	770	52.1	93.1
192	82.0	146.4	35.5	780	52.4	93.6
193	82.4	147.2	35.7	780	52.7	94.1
194	82.8	147.9	35.9	780	53.0	94.6
195	83.3	148.7	36.1	790	53.2	95.1
196	83.7	149.5	36.3	790	53.5	95.6
197	84.1	150.2	36.5	800	53.8	96.0
198	84.5	151.0	36.6	800	54.1	96.5
199	85.0	151.7	36.8	800	54.3	97.0
200	85.4	152.5	37.0	810	54.6	97.5
201	85.8	153.3	37.2	810	54.9	98.0
202	86.3	154.0	37.4	820	55.1	98.5
203	86.7	154.8	37.6	820	55.4	99.0
204	87.1	155.6	37.7	830	55.7	99.5
205	87.5	156.3	37.9	830	56.0	99.9
206	88.0	157.1	38.1	830	56.2	100.4
207	88.4	157.8	38.3	840	56.5	100.9
208	88.8	158.6	38.5	840	56.8	101.4
209	89.2	159.4	38.7	850	57.1	101.9
210	89.7	160.1	38.9	850	57.3	102.4
211	90.1	160.9	39.0	850	57.6	102.9
212	90.5	161.7	39.2	860	57.9	103.4
213	91.0	162.4	39.4	860	58.1	103.8
214	91.4	163.2	39.6	870	58.4	104.3
215	91.8	163.9	39.8	870	58.7	104.8
216	92.2	164.7	40.0	870	59.0	105.3
217	92.7	165.5	40.2	880	59.2	105.8
218	93.1	166.2	40.3	880	59.5	106.3
219	93.5	167.0	40.5	890	59.8	106.8
220	93.9	167.8	40.7	890	60.1	107.3

Target BW	Prot Lo	Prot Hi	Fat	Low-Carb Calories	Prot Deficit Lo	Prot Deficit Hi
221	94.4	168.5	40.9	890	60.3	107.7
222	94.8	169.3	41.1	900	60.6	108.2
223	95.2	170.0	41.3	900	60.9	108.7
224	95.6	170.8	41.4	910	61.2	109.2
225	96.1	171.6	41.6	910	61.4	109.7
226	96.5	172.3	41.8	910	61.7	110.2
227	96.9	173.1	42.0	920	62.0	110.7
228	97.4	173.9	42.2	920	62.2	111.2
229	97.8	174.6	42.4	930	62.5	111.6
230	98.2	175.4	42.6	930	62.8	112.1
231	98.6	176.1	42.7	930	63.1	112.6
232	99.1	176.9	42.9	940	63.3	113.1
233	99.5	177.7	43.1	940	63.6	113.6
234	99.9	178.4	43.3	950	63.9	114.1
235	100.3	179.2	43.5	950	64.2	114.6
236	100.8	180.0	43.7	950	64.4	115.1
237	101.2	180.7	43.9	960	64.7	115.5
238	101.6	181.5	44.0	960	65.0	116.0
239	102.1	182.2	44.2	970	65.2	116.5
240	102.5	183.0	44.4	970	65.5	117.0
241	102.9	183.8	44.6	970	65.8	117.5
242	103.3	184.5	44.8	980	66.1	118.0
243	103.8	185.3	45.0	980	66.3	118.5
244	104.2	186.1	45.1	990	66.6	119.0
245	104.6	186.8	45.3	990	66.9	119.4
246	105.0	187.6	45.5	990	67.2	119.9
247	105.5	188.3	45.7	1,000	67.4	120.4
248	105.9	189.1	45.9	1,000	67.7	120.9
249	106.3	189.9	46.1	1,010	68.0	121.4
250	106.8	190.6	46.3	1,010	68.3	121.9

Target BW	Prot Lo	Prot Hi	Fat	Low-Carb Calories	Prot Deficit Lo	Prot Deficit Hi
251	107.2	191.4	46.4	1,020	68.5	122.4
252	107.6	192.2	46.6	1,020	68.8	122.9
253	108.0	192.9	46.8	1,020	69.1	123.3
254	108.5	193.7	47.0	1,030	69.3	123.8
255	108.9	194.4	47.2	1,030	69.6	124.3
256	109.3	195.2	47.4	1,040	69.9	124.8
257	109.7	196.0	47.6	1,040	70.2	125.3
258	110.2	196.7	47.7	1,040	70.4	125.8
259	110.6	197.5	47.9	1,050	70.7	126.3
260	111.0	198.3	48.1	1,050	71.0	126.8
261	111.4	199.0	48.3	1,060	71.3	127.2
262	111.9	199.8	48.5	1,060	71.5	127.7
263	112.3	200.5	48.7	1,060	71.8	128.2
264	112.7	201.3	48.8	1,070	72.1	128.7
265	113.2	202.1	49.0	1,070	72.3	129.2
266	113.6	202.8	49.2	1,080	72.6	129.7
267	114.0	203.6	49.4	1,080	72.9	130.2
268	114.4	204.4	49.6	1,080	73.2	130.7
269	114.9	205.1	49.8	1,090	73.4	131.1
270	115.3	205.9	50.0	1,090	73.7	131.6
271	115.7	206.6	50.1	1,100	74.0	132.1
272	116.1	207.4	50.3	1,100	74.3	132.6
273	116.6	208.2	50.5	1,100	74.5	133.1
274	117.0	208.9	50.7	1,110	74.8	133.6
275	117.4	209.7	50.9	1,110	75.1	134.1
276	117.9	210.5	51.1	1,120	75.3	134.6
277	118.3	211.2	51.3	1,120	75.6	135.0
278	118.7	212.0	51.4	1,120	75.9	135.5
279	119.1	212.7	51.6	1,130	76.2	136.0
280	119.6	213.5	51.8	1,130	76.4	136.5

Target BW	Prot Lo	Prot Hi	Fat	Low-Carb Calories	Prot Deficit Lo	Prot Deficit Hi
281	120.0	214.3	52.0	1,140	76.7	137.0
282	120.4	215.0	52.2	1,140	77.0	137.5
283	120.8	215.8	52.4	1,140	77.3	138.0
284	121.3	216.6	52.5	1,150	77.5	138.5
285	121.7	217.3	52.7	1,150	77.8	138.9
286	122.1	218.1	52.9	1,160	78.1	139.4
287	122.5	218.8	53.1	1,160	78.4	139.9
288	123.0	219.6	53.3	1,160	78.6	140.4
289	123.4	220.4	53.5	1,170	78.9	140.9
290	123.8	221.1	53.7	1,170	79.2	141.4
291	124.3	221.9	53.8	1,180	79.4	141.9
292	124.7	222.7	54.0	1,180	79.7	142.4
293	125.1	223.4	54.2	1,180	80.0	142.8
294	125.5	224.2	54.4	1,190	80.3	143.3
295	126.0	224.9	54.6	1,190	80.5	143.8
296	126.4	225.7	54.8	1,200	80.8	144.3
297	126.8	226.5	55.0	1,200	81.1	144.8
298	127.2	227.2	55.1	1,210	81.4	145.3
299	127.7	228.0	55.3	1,210	81.6	145.8
300	128.1	228.8	55.5	1,210	81.9	146.3
301	128.5	229.5	55.7	1,220	82.2	146.7
302	129.0	230.3	55.9	1,220	82.4	147.2
303	129.4	231.0	56.1	1,230	82.7	147.7
304	129.8	231.8	56.3	1,230	83.0	148.2
305	130.2	232.6	56.4	1,230	83.3	148.7
306	130.7	233.3	56.6	1,240	83.5	149.2
307	131.1	234.1	56.8	1,240	83.8	149.7
308	131.5	234.9	57.0	1,250	84.1	150.2
309	131.9	235.6	57.2	1,250	84.4	150.6
310	132.4	236.4	57.4	1,250	84.6	151.1

Appendix E

Sample Meal Plans

Sample meal plans are attached at the end of the document and are formatted for printing on standard, letter-sized (8.5”×11”) paper.

What are presented are examples for various training times. Use Sections III and IV of the book to determine food quantities better than the guides suggest, which are for a 160-175 lb individual doing Density Bulking or 200 lb person doing Strength Accumulation.

For females, throw out all snacks, and as the book details, use discretion for the night meals. Consult the Carb Needs Calculators in Appendix C for starting levels.

Keep in mind, these are samples to show various ways of choosing meals and timing nutrients based on training schedule.

Carb Back-Loading

Section X

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Preparation Phase

Off Day

Upon Waking

Item	*QTY*	
Coffee	ad libitum	(optional)
Heavy Whipping Cream	2 tbsp	(optional)
	OR	
A.M. Accelerator Formula	1 shake	p125 (optional)

Lunch

Item	*QTY*	
Chicken Breast	8 oz	Or some other lean meat
Romaine Lettuce	2 cup	
Olive oil	1 to 2 tbsp	
Vinegar	to taste	
Additional veggies	variable	Olives, tomatoes, cucumbers, onions, celery

Snack

Item	*QTY*	
Protein shake	~20 g protein	Ultra-low carb whey isolate
Eggs	2 large	hardboiled
Almonds	¼ cup	

Dinner

Item	*QTY*	
Steak	1 lb	Tri-tip or some roast is good
Asparagus	1 to 2 cups	
Butter	2 tbsp	

Before Bed

Item	*QTY*	
Cottage Cheese	1 to 2 cups	Low-fat

Preparation Phase

Train @ 9 or 10 am

Upon Waking

Item	*QTY*	
Coffee	ad libitum	(optional)
Heavy Whipping Cream	2 tbsp	(optional)
	OR	
A.M. Accelerator Formula	1 shake	p125 (optional)

Pre-Training

Item		
Ignition Formula	1 shake	p131 (optional)

Intra-Training

Item		
Sustainer Formula	1 shake	p135 (optional)

Post-Training

Item		
Hypertrophic Potentiator Formula	1 shake	p139 (no carbs)

Lunch

Item	*QTY*	
Chicken Breast	8 oz	Or some other lean meat
Romaine Lettuce	2 cup	
Olive oil	1 to 2 tbsp	
Vinegar	to taste	
Additional veggies	variable	Olives, tomatoes, cucumbers, onions, celery

Snack (optional)

Item	*QTY*	
Protein shake	~10 g protein	Ultra-low carb whey isolate
Eggs	2 large	hardboiled
Almonds	¼ cup	

Dinner

Item	*QTY*	
Chicken	1/2 to a whole	Roasted
Greek-style salad	2 cup	Marinated Artichoke hearts, olives, cucumbers, tomatoes
Feta Cheese	2 oz	
Olive Oil	1 tbsp	
Vinegar	to taste	Rice, White, Red (no balsamic)

Before Bed (Weight Maintenance)

Item	*QTY*	
Cottage Cheese	1 to 2 cups	Low-fat
Almond Butter	2 to 3 tbsp	

Preparation Phase

Train @ noon or 1

Upon Waking

Item	*QTY*	
Coffee	ad libitum	(optional)
Heavy Whipping Cream	2 tbsp	(optional)
	OR	
A.M. Accelerator Formula	1 shake	p125

Meal 1

Item	*QTY*	
Coffee	ad libitum	
Eggs	3 large, whole	
Breakfast meat	8 oz	Ham, sausage
Cottage Cheese	½ cup	
Tomatoes	1 medium, sliced	

Snack (optional)

Item	*QTY*	
Protein shake	~20 g protein	Ultra-low carb whey isolate
Almonds	½ cup	

Pre-Training

Item		
Ignition Formula	1 shake	p131 (optional)

Intra-Training

Item		
Sustainer Formula	1 shake	p135 (optional)

Post-Training

Item		
Hypertrophic Potentiator Formu	1 shake	p139 (no carbs)

Lunch

Item	*QTY*	
Chicken Breast	8 oz	Or some other lean meat
Romaine Lettuce	2 cup	
Olive oil	1 to 2 tbsp	
Vinegar	to taste	
Additional veggies	variable	Olives, tomatoes, cucumbers, onions, celery

Snack

Item	*QTY*	
Protein shake	~20 g protein	Ultra-low carb whey isolate
Eggs	2 large	hardboiled
Almonds	¼ cup	

Dinner

Item	*QTY*	
Hamburger meat, extra lean	¾ lb-pre cooked	
Broccoli	2 cup	
Cheese	2 to 4 slices or tb	Melted American or ultra-low carb queso sauce

Before Bed (Weight Maintenance)

Item	*QTY*	
Cottage Cheese	1 to 2 cups	Low-fat
Almond Butter	2 to 3 tbsp	

Back Loading

Off Day

Upon Waking

Item	*QTY*	
Coffee	ad libitum	(optional)
Heavy Whipping Cream	2 tbsp	(optional)
	OR	
A.M. Accelerator Formula	1 shake	p125 (optional)

Breakfast (optional)

Item	*QTY*	
Eggs	3 large, whole	
Cottage Cheese	½ cup	

Snack (optional)

Item	*QTY*	
Protein shake	~20 g protein	Ultra-low carb whey isolate
Almonds	½ cup	

Lunch

Item	*QTY*	
Chicken Breast	8 oz	Or some other lean meat
Romaine Lettuce	2 cup	
Olive oil	1 to 2 tbsp	
Vinegar	to taste	
Additional veggies	variable	Olives, tomatoes, cucumbers, onions, celery

Snack

Item	*QTY*	
Protein shake	~20 g protein	Ultra-low carb whey isolate
Leucine	5 g	
Eggs	2 large	hardboiled
Almonds	¼ cup	

Dinner

Item	*QTY*	
Hypertrophic Potentiator Formu	1 shake	p139
Pizza	½ to a whole	

Before Bed (eating carbs)

Item	*QTY*	
Hypertrophic Potentiator Formu	1 shake	p139
Cereal	2 bowls	

Before Bed (not eating carbs)

Item	*QTY*	
Cottage Cheese	1 to 2 cups	Low-fat

Back Loading

Train @ 6am

Upon Waking

Item	*QTY*	
Coffee	ad libitum	or caffeine pills
No other Food		

Preworkout

Item	*QTY*	
No Food		

Post-Training

Item		
Hypertrophic Potentiator Formula	1 shake	p139

Approx 30 minutes later

Item	*QTY*	
Ignition Formula	1 to 2 shakes	p131

Late Breakfast/Lunch

Item	*QTY*	
Hamburger patty	¼ to ¾ lb	
Salad	2 cups	
Additional veggies	variable	Olives, cucumbers, onions, celery

Snack

Item	*QTY*	
Protein shake	~10 g protein	Ultra-low carb whey isolate
Eggs	2 large	hardboiled
Almonds	¼ cup	

Dinner (around 6 ish)

Item	*QTY*	
Tri-Tip	½ to ¾ lb	However
Broccoli	2 cups	steamed
Butter	1 or 2 tbsp	

Before Bed (Weight Maintenance)

Item	*QTY*	
Post-Training Formula	1 shake	p139
Density Meal	1 to 3	something like PB&J sandwich, milk, tater-tots, eggs
Protein shake	30g protein	Blend D
Leucine	5 g	

Before Bed (Weight Maintenance-Alternate)

Item	*QTY*	
Hypertrophic Potentiator Formula	1 shake	p139
Eggs	4 to 6	Fried, sunny-side up, scrambled
Flavored Oatmeal	2 to 3 packets	

Back Loading

Train @ 9am

Upon Waking

Item	*QTY*	
Coffee	ad libitum	
Heavy Whipping Cream	2 tbsp	

Preworkout

Item	*QTY*	
Coffee	ad libitum	

Post-Training

Item		
Hypertrophic Potentiator Formu	1 shake	p139 (no carbs)

Approx 30 minutes later

Item	*QTY*	
Ignition Formula	1 to 2 shakes	p131

Lunch

Item	*QTY*	
Chicken Breast	8 oz	Or some other lean meat
Romaine Lettuce	2 cup	
Olive oil	1 to 2 tbsp	
Vinegar	to taste	
Additional veggies	variable	Olives, tomatoes, cucumbers, onions, celery

Snack

Item	*QTY*	
Protein shake	~20 g protein	Ultra-low carb whey isolate (drink shake
Eggs	2 large	hardboiled
Almonds	¼ cup	

Dinner (around 6 ish)

Item	*QTY*	
Chicken	1/2 to a whole	Roasted
Mashed Potatoes	whatever	
Biscuit	1 or 2	
Corn	whatever	

Before Bed (Weight Maintenance)

Item	*QTY*	
Hypertrophic Potentiator Formu	1 shake	p139
Ice cream	pint	

Back Loading

Train @ 10am

Upon Waking

Item	*QTY*	
Coffee	ad libitum	(optional)
Heavy Whipping Cream	2 tbsp	(optional)
	OR	
A.M. Accelerator Formula	1 shake	p125

Pre-Training

Item		
Ignition Formula	1 shake	p131 (optional)

Intra-Training

Item		
Sustainer Formula	1 shake	p135 (optional)

Post-Training

Item		
Hypertrophic Potentiator Formu	1 shake	p139 (no carbs)

Lunch

Item	*QTY*	
Chicken	½ to a whole	Roasted
Greek-style salad	2 cup	Marinated Artichoke hearts, olives, cucumbers, tomatoes
Feta Cheese	2 oz	
Olive Oil	1 tbsp	
Vinegar	to taste	Rice, White, Red (no balsamic)

Snack

Item	*QTY*	
Protein shake	~20 g protein	Ultra-low carb whey isolate
Eggs	2 large	hardboiled
Almonds	¼ cup	

Dinner (around 6 ish)

Item	*QTY*	
Moons Over My Hammy	1 sandwich	Just an example
Hashbrowns	1 serving	
Hypertrophic Potentiator Formu	½ shake	p139

Before Bed (Weight Maintenance)

Item	*QTY*	
Hypertrophic Potentiator Formu	1 shake	p139
Carbs		Left over pizza, muffins, cereal, turnovers

Back Loading

Train @ noon or 1

Breakfast

Item	*QTY*	
Coffee	ad libitum	
Breakfast meat	6 oz	ham, sausages, bacon
Cottage Cheese	½ cup	
Tomatoes	1 medium, sliced	

Pre-Training

Item		
Ignition Formula	1 shake	p131 (optional)

Intra-Training

Item		
Sustainer Formula	1 shake	p135 (optional)

Post-Training

Item		
Hypertrophic Potentiator Formu	1 shake	p139 (no carbs)

Lunch

Item	*QTY*
Chicken Breasts	1 large
Cheese	4 oz
Olive Oil	2 tbsp
Vinegar	to taste

Snack

Item	*QTY*
Almonds	½ cup
Cottage Cheese	1 to 2 cups

Dinner

Item	*QTY*	
Hamburger	2/3 lb	Bun, mustard, no mayo, whatever
Fries		
Leucine	5g	

Before Bed (Weight Maintenance)

Item	*QTY*	
Hypertrophic Potentiator Formu	1 shake	p139 (no carbs)
Carbs		Left over pizza, muffins, cereal, turnovers

Back Loading

Train @ 2pm

Upon Waking

Item	*QTY*	
Coffee	ad libitum	(optional)
Heavy Whipping Cream	2 tbsp	(optional)
	OR	
A.M. Accelerator Formula	1 shake	p125 (optional)

Snack (optional)

Item	*QTY*	
Almonds	¼ cup	any nut, pretty much

Breakfast/Lunch (noon)

Item	*QTY*	
Breakfast meat (or bacon)	6 oz (or 6 slices)	
Cottage Cheese	½ cup	
Tomatoes	1 medium, sliced	(optional)

Pre-Training

Item		
Ignition Formula	1 shake	p131 (optional)

Intra-Training

Item		
Sustainer Formula	1 shake	p135 (optional)

Post-Training

Item		
Hypertrophic Potentiator Formu	1 shake	p139

Snack (30 minutes later)

Item	*QTY*
Pineapple	½ cup
Cottage Cheese	1 to 2 cups

Post-postworkout (start 2hr later)

Item	*QTY*	
Splurge		
Hypertrophic Potentiator Formu	½ shake	With each meal

Back Loading

Train @ 4pm

Upon Waking

Item	*QTY*	
Coffee	ad libitum	(optional)
Heavy Whipping Cream	2 tbsp	(optional)
	OR	
A.M. Accelerator Formula	1 shake	p125 (optional)

Snack (optional)

Item	*QTY*	
Almonds	¼ cup	any nut, pretty much

Breakfast/Lunch (noon)

Item	*QTY*	
Breakfast meat (or bacon)	6 oz (or 6 slices)	
Cottage Cheese	½ cup	
Tomatoes	1 medium, sliced	(optional)

Pre-Training

Item		
Ignition Formula	1 shake	p131 (optional)

Intra-Training

Item		
Sustainer Formula	1 shake	p135 (optional)

Post-Training

Item		
Hypertrophic Potentiator Formu	1 shake	p139 (no carbs)
Bananas, Mango or Carb Powd	40 to 50 g of carbs	

Post-postworkout (start 1hr later)

Item	*QTY*	
Splurge		
Hypertrophic Potentiator Formu	½ shake	With each meal

Back Loading

Train @ 6pm

Upon Waking

Item	*QTY*	
Coffee	ad libitum	
Whey Protein Isolate	1 scoop (~20g)	Drink before the rest of the meal
Breakfast meat	6 oz	
Tomatoes	1 medium, sliced	

Lunch

Item	*QTY*	
Chicken Breasts	1 large	
Salad	2 to 3 cups	Greek Salad or a simple lettuce salad
Olive Oil	2 tbsp	
Vinegar	to taste	

Snack

Item	*QTY*	
Almonds	¼ cup	
Cottage Cheese	1 cup	

Pre-Training

Item		
Ignition Formula	1 shake	p131 (optional)

Intra-Training

Item		
Sustainer Formula	1 shake	p135 (optional)

Post-Training

Item		
Hypertrophic Potentiator Formu	1 shake	p139 (no carbs)

Dinner

Item	*QTY*	
Protein	~60 grams	Protein powder, lean meat, cottage cheese, whatever
Pizza	at least 2 slices	

Back Loading

Train @ 9pm

Upon Waking

Item	*QTY*	
Coffee	ad libitum	(optional)
Heavy Whipping Cream	2 tbsp	(optional)
	OR	
A.M. Accelerator Formula	1 shake	p125 (optional)

Breakfast

Item	*QTY*	
Eggs	3 large, whole	
Breakfast meat	8 oz	
Tomatoes	1 medium, sliced	

Lunch

Item	*QTY*	
Hamburger meat, extra lean	1 lb-pre cooked	
Broccoli	2 cup	
Cheese	1 slice	Melted American or ultra-low carb

Snack

Item	*QTY*	
Eggs	2 large	hardboiled
Cottage Cheese	1 cup	
Almonds	½ to 1 cup	

Dinner

Item	*QTY*	
Hypertrophic Potentiator Formul	1 shake	p139
Something heavy and carby:		
Steak or chicken	4 to 8 oz	
Mashed Potatoes	ad libitum	
(alternatives:)	Hamburger with fries; Reuben with hashbrowns…	

Post-Training

Item		
Hypertrophic Potentiator Formul	1 shake	p139
Bananas (Very Ripe)	1 to 3 large	Could use carb powder instead

Bedtime

Item	*QTY*	
Hypertrophic Potentiator Formul	1 shake	p139
Cereal or Flavored Instant Oatme	A bowl	Alt: donut, muffin, crackers, pretzels, mashed potatoes.