MUSCLE MYTHS

50 HEALTH & FITNESS MISTAKES YOU DON’T KNOW YOU’RE MAKING

Michael Matthews
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Hi,

I'm Mike and I've been training for nearly a decade now.

I believe that every person can achieve the body of his or her dreams, and I work hard to give everyone that chance by providing workable, proven advice grounded in science, not a desire to sell phony magazines, workout products, or supplements.

Through my work, I’ve helped thousands of people achieve their health and fitness goals, and I share everything I know in my books.

So if you’re looking to get in shape and look great, then I think I can help you. I hope you enjoy my books and I'd love to hear from you at my site, [www.muscleforlife.com](http://www.muscleforlife.com).

Sincerely,

Mike
YOU HAVE BEEN LIED TO, AND IT’S TIME TO LEARN THE TRUTH

The health and fitness industry is notorious for scams, fallacies, and pseudo-science.

THE WAR AGAINST BS AND BROSCIENCE

Learn about the biggest lie factories in the industry, and how to inoculate yourself.

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This is the book I wish I had had when I started training nearly a decade ago—back when I was full of wrong ideas.

I thought that my genetics weren’t good enough, that it took hours and hours of grueling cardio to lose weight, that I was a hardgainer, that a really sick pump was the key to muscle growth, that I shouldn’t eat at night if I didn’t want to get fat, and many other fallacies that were foisted upon me by workout magazines and trainers (many of whom get their information from magazines).

Like many people, I would hit the gym regularly only to see minor improvements that came far too slowly. Achieving my ideal physique seemed impossible.

This frustrating rut can lead to quitting, or turning to unhealthy diets or steroids and other drugs that can seriously harm your health. Fortunately, I chose the path of better education, and it has since helped me transform the way I eat and train, and as a result, transform my entire physique. I then started writing books to help others do the same.

The fact is—and this is probably the biggest lesson I’ve learned over the last ten years—building a great body just isn’t that complicated. It’s like good sex—sure, it requires effort, but the principles are few and simple, and if you stick to them, you get the job done.

Here’s what it boils down to: If you’re willing to exercise for 30–45 minutes per day, 3–5 times per week, and follow a sensible eating plan, you can have a great body that you’re proud of. And if you’re not already a

YOU HAVE BEEN LIED TO, AND IT’S TIME TO LEARN THE TRUTH
seasoned lifter, you can easily gain 10–15 pounds in your first 10–12 weeks of training—a pretty dramatic change. If you’re looking to lose weight, you can lose the same amount, or more, in the same period.

In this book I’m going to address a bunch of myths and bogus claims in a scientific and straightforward manner. I’m not going to bother with a bunch of pictures or fluff material because you can get more than your fill of that in other fitness books and on various websites. I’m going to give you the straight facts and help you approach your training and nutrition in a smarter way. You don’t necessarily have to read this book in order. Feel free to scan the Table of Contents and jump to whatever sparks your interest most.

By the end of this book, you’re going to understand things about your body and the physiology of weight loss and muscle growth that most people will never know. And you’re going to be able to put what you learn into practice to make achieving your ideal body easier, faster, and more enjoyable than ever before.

Before we begin with the myth busting, however, I want to talk about the lie factories that spawn many of these bunk fallacies and how you can avoid the many more that are sure to come. So let’s get to it.
A couple decades ago, there wasn’t enough information available on working out.

These days, with the internet and racks full of glossed-up magazines featuring chemically enhanced athletes, the workout information market is like a mountainous garbage dump. Somewhere in the muck are the basic, workable truths—the stuff you’re actually looking for—but the useful info is greatly outnumbered by the worthless crap.

If you hit the internet and start participating in health and fitness forums, you’re entering a land ruled by broscience and idiocy, where it’s almost impossible to sort out what’s true from what’s not.

“What’s broscience?” you ask. Broscience is the predominant brand of reasoning used by amateur bodybuilders and fitness enthusiasts where the anecdotal stories of people who really have no idea what’s going on inside their bodies take precedence over credible scientific research. Just because a guy is big thanks to steroids or a woman is thin thanks to starvation diets that have wrecked her metabolism doesn’t mean these people have good advice for you.

A million bad pieces of advice fall under the heading of broscience. You should do high reps and low weight to tone your muscles—BZZZT. Eating too many carbs will make you fat—BZZZT. Deadlifts are bad for your back—BZZZT. Women shouldn’t lift weights because they’ll get bulky—BZZZT. Wrong, wrong, wrong, bro.

And what about the magazines? Here’s a fun fact that you probably didn’t
know: MuscleMag, IronMan, Flex, Muscular Development, Muscle & Fitness, Muscle Media, and the rest of the mainstream bodybuilding magazines are owned by supplement companies and are used simply as mouthpieces for their products. Yup. MuscleMag is controlled by MuscleTech; IronMan is controlled by MuscleLink; Muscular Development is Twinlab’s shill piece; Muscle & Fitness and Flex are owned by Joe Weider, and are thus promotion catalogues for his companies, such as Weider, Metaform, and MuscleTribe; and MuscleMedia is the EAS cheerleader.

The primary goal of these magazines is to pimp supplements for the companies controlling them, and they work damn well. The magazines push products in various ways. They have pretty advertisements all over the place, they regularly run “advertorials” (advertisements disguised as informative articles), and they balance the sales pitches with some articles that actually provide workout and nutrition advice (which also, in many cases, end with product recommendations of some kind).

So, this is the first blow that magazines deal to you: They give you a lot of “advice” that is geared first and foremost to selling you products, not helping you achieve your goals.

The supplement companies know that if they can keep getting these magazines into people’s hands, they will keep selling products. So, how do they ensure that you will keep buying? By coming up with a constant flow of new advice and ideas, of course.

And this is the second, probably more harmful, blow: They inundate you with all kinds of false ideas about what it takes to get into great shape. If they told the simple truth every month, they would have maybe twenty articles that they could re-print over and over. Instead, they get quite creative with all kinds of sophisticated (but useless) workout routines, tricks, and diets (that include certain supplements to really MAXIMIZE the effectiveness, of course).

The bottom line is that you can’t trust these magazines. They’re nothing more than shiny lobbyists for the supplement companies.

All right, now that we have all that out of the way, let’s have some fun.
SECTION ONE:
WEIGHTLIFTING MYTHS
I CAN'T BUILD MUSCLE / LOSE WEIGHT BECAUSE I HAVE BAD GENETICS

This one gets tossed around a lot. Genetics are a favorite scapegoat for people who can't build enough muscle or lose enough fat. But what are they, exactly, and how much do they actually influence your results?

The word genetics comes from a Greek word meaning “origin,” and it refers to the molecular structure and function of our genes. Genes are molecules in our DNA that provide instructions for the creation of special types of proteins that then tell each of our cells what to do, such as build muscle, make bone, carry nerve signals, and so forth.

While our bodies all contain the same types of genes, our programming is different. For instance, the cells that form my iris were programmed to be a certain shade of blue, whereas yours were programmed to be a different shade, or a different color altogether. This variability in programming applies to every physiological activity in our bodies.

So yes, your genes determine things like which muscle groups tend to be your strong points, your natural hormone levels, how much fat you tend to hold on your body, and where you tend to store it, but they don’t alter the basic physiological processes by which your body builds muscle or loses fat. So long as you don’t have a disease directly impairing these functions, you can get into amazing shape if you know what you’re doing. Period.

I’ve helped quite a few hardgainers to gain 30, 40, and even 50 pounds in 1–2 years of training and eating correctly (and with no drugs). I’ve helped scores of men and women who were convinced that they were genetically programmed to be fat get in the best shape of their lives by targeting and
changing the many little things they were doing wrong.

If you’re afraid that your body is genetically destined to be small, weak, or fat, you can lay those fears to rest. Your body contains the same genetic programs as mine that result in muscle growth and fat loss. In fact, your body might be able to do certain functions relating to these things better than mine. If I’ve made better progress than you with my physique, it’s only because I have a better understanding of how to kick those programs into gear—that is, I know more about proper training, eating, and resting. That’s it.

Now, genetics can make parts of the process easier or harder. Some people have naturally high testosterone and growth hormone levels, which means faster muscle growth and an overall leaner physique. Some people’s bodies mobilize fat stores more effectively than others, making weight loss an easier endeavor. Genetics also plays a role in the shape of your muscles. Not all guys can have that perfect square chest or ridiculous bicep peak, and not all women can have a gravity-defying, perfectly round butt.

But none of these things are limitations. Who cares if you gain muscle or lose fat more slowly than someone else? As long as you can see regular improvements and get to where you want to be, the added time is irrelevant. Regardless of the “quality” of your muscle-building and fat-burning genetic programming, you can build the body of your dreams in a matter of a few years and maintain it for the rest of your life.

And it’s no big deal if you can’t have the same aesthetics as your favorite fitness cover model. You can still look awesome and, more importantly, feel great, and that’s what it’s all about.
Some guys believe that their bodies are genetically programmed to stay scrawny and weak, regardless of how hard they train or how much they eat. Sometimes they turn to steroids, and sometimes they just quit.

While it’s true that some people naturally have an easier time gaining muscle than others due to hormone levels and genetic predispositions, nobody is doomed to have a forever-frail physique.

The truth is every person I’ve known who has made the hardgainer claim was training and eating incorrectly—every single one. They were all making several (or, in some cases, all) of the following mistakes: working out too little or too much (not giving your body enough rest is severely detrimental to gains), lifting with too little weight and intensity, doing the wrong exercises (relying mainly on isolation machines and not doing compound mass-builders is a sure way to stay small and weak), and eating too little every day/week.

If you’re an ectomorph body type—skinny and lean, and you have trouble putting on size—I actually envy you. Your natural leanness is a blessing because when you start lifting hard and eating properly, you’ll build muscle like the rest of us, but you’ll put on less body fat, making you look better with less effort. And when you want to cut down to super-lean body fat levels, you’ll find it much easier than most. Yet another benefit of being an ectomorph is that you don’t need as much muscle mass to look big when you’re lean. Fifteen pounds put on a lean frame can be quite a dramatic change, and if you know what you’re doing, that’s 3–5 months of work, tops.
But you need to know what you’re doing in those first few months. This primarily boils down to doing two simple things: eating enough food and lifting heavy weights.

**YOU HAVE TO EAT BIG TO GET BIG, BUT YOU DON’T WANT TO PILE ON THE BODY FAT**

The word bulking has negative connotations with many guys.

They think it means spending their days planning meals and eating everything in sight, that it results in a gradual transformation into some kind of amorphous blob that can throw around 150-lb dumbbells.

Excessive weight gain is not only unnecessary in a proper bulk; it should be avoided for several reasons. Being overweight comes with all kinds of health risks, as most people know, but it also accelerates fat storage and gets in the way of building muscle.

How?

Because as body fat levels rise, insulin sensitivity drops¹, which in turn impairs your body’s ability to burn fat and increases the likelihood that it will store carbohydrates as fat², and suppresses intracellular signaling responsible for protein synthesis (which can actually lead to muscle loss)³. Yes, you read that right. Excessive weight gain during a “dirty” or “dreamer” bulk impairs muscle growth and makes undoing the weight gain even harder.

So, a much smarter way to bulk is to provide a low-to-moderate caloric surplus that allows for steady muscle growth while minimizing fat storage. A proper bulk should give you about 0.5–1.5 lbs. of weight gain per week, and here’s a simple way to work this out for your body:

1. Eat 1 gram of protein per pound of body weight per day.
2. Eat 2 grams of carbs per pound of body weight per day.
3. Eat .4 grams of healthy fat per pound of body weight per day.

That’s where you start. For a 150-pound male, it would look like this:

- 150 grams of protein per day
- 300 grams of carbs per day
- 60 grams of fat per day

Since protein and carbs total about 4 calories per gram, and fats pack 9 calories per gram, this would be about 2,340 calories per day, which should be enough to maintain steady muscle growth.

If you eat like this for 10–14 days and haven’t gained weight, you should
up your calories by about 200 per day to see if that fixes it. If after another 10–14 days your weight is still stuck, simply bump your calories up again. While most people don’t have to adjust much, metabolisms do vary, so part of the process is finding your body’s sweet spot.

While dietary needs for building muscle efficiently and without excessive weight gain aren’t disputed (eat enough protein every day and keep your body in a moderate caloric surplus), the subject of how to train to maximize strength and muscle growth is controversial.

Let’s tackle that next.

“Everybody Wants to Be a Bodybuilder...But Nobody Wants to Lift This Heavy Ass Weight!”

The above quote is an astute observation made by one of the leading minds in exercise science, Professor Ronnie Coleman (hyuk hyuk).

Seriously though, here’s a simple little fact most guys, and even many “experts,” want to avoid: If you want to get big and strong in the least amount of time possible, you have to lift heavy weights, and you have to get off the machines.

The reasoning is simple: Muscle grows in response to increased tension within the muscle⁴. In order to keep stimulating growth, you have to keep increasing the tension caused by lifting; that is, you have to keep adding weight to the bar⁵. And while machines are good for rehabilitating injuries, research has shown that they just don’t build muscle and strength as effectively as free weights do⁶.

One of the main never-ending arguments in the world of weightlifting is over the ideal rep range for growth. That is, how much weight you should use and how many reps should you do in each set. Opinions on what’s best are all over the place, ranging from recommendations of only a few heavy sets to 20–30 high-rep sets per workout.

I can say with absolute certainty that there’s something special about lifting heavy weights while keeping your total workout sets (known as your workout volume) moderate in number. And this isn’t just based on personal experience; you’ll find evidence of its effectiveness in various places in literature.

One example is a study conducted by Arizona State University wherein they reviewed 140 other weightlifting studies and concluded that training with weights that are 80% of your one-rep max produces maximal strength gains⁷.

A paper published by the American College of Sports Medicine recommends an “eventual emphasis on heavy loading (1–6 repetition maximum)
using at least 3-minute rest periods between sets.8"

Yet another sign of the effectiveness of lifting heavy weights is found in a study conducted by Ohio University in which 32 untrained men lifted weights for 8 weeks. They were split into 3 groups. One worked in the range of 3–5 reps, another in the range of 9–11 reps, and the last in the range of 20–28 reps. By the end of the 8-week period, the group working in the lowest rep range made significantly more gains in both strength and muscle than the other two groups9.

My conviction about the superiority of this style of training goes beyond studies and theory. I used to train exclusively in the 10–12 rep range and REALLY got stuck in terms of strength and physique development. When I switched to focusing on 4–6 reps (about 3 years in), my strength exploded and physique dramatically changed. I’ve since increased my weights on every lift by 50–80%, which resulted in a change from 187 lbs. at 11% body fat to 193 lbs. at 8%.

I’ve also had the opportunity to coach hundreds of people through my work, and the results are the same. Every day I email with guys who were stuck in a rut, pounding away in the 8–12 rep range, and who are now making progress again by focusing on heavy lifting with medium/high workout volume.

Unsurprisingly, many of the most respected names in this industry, such as Charles Poliquin, Mark Rippetoe, Martin Berkhan, Alan Aragon, Lyle McDonald, and Pavel Tsatsouline, advocate heavy, compound lifting. The consensus is simple: It just works.

The bottom line is if you want to get bigger, you have to get stronger, and the best way to do that is to lift heavy stuff.

If you’ve had trouble building muscle despite regular weightlifting, heed my advice. Eat big and lift big, and you’ll get big.
In the ’70s, top powerlifters like John Kuc, John Cole, and Don Reinhoudt had outstanding deadlifts with personal bests around 900 pounds. It was considered the king of compound exercises.

These days, many powerlifters choose to compete only in the bench press, and for those who compete in all three (bench press, squat, and deadlift), the deadlift takes the back seat because of assistance gear that can add hundreds of pounds to their bench and squat, but nothing to their deadlift.

Well, the fact is the deadlift is, hands down, one of toughest—and most rewarding—exercises you can do. It's the ultimate full-body workout, training just about every muscle group: legs, glutes, core, arms, and the entire back. Anything that's involved in producing whole-body power is blasted by the deadlift, and it's an integral part of any serious strength-training program.

Oddly enough, it’s also one of the most neglected compound exercises by both guys and gals, the unfortunate victim of the long-standing myth that it’s “bad for your back.”

At first, it would seem to make sense that lifting hundreds of pounds off the ground—putting all that pressure on your back, particularly your low-back and erector spinae muscles (also known as the spinal erectors)—would be a recipe for spinal disaster.

Anecdotal evidence is ambivalent: We all know or have heard of someone who “messed up their back deadlifting,” yet also know that many
serious strength trainers, bodybuilders, and powerlifters swear by it.

Is the deadlift bad for your back when performed properly? A series of scientific studies shed more light on this oft-feared, oft-revered lift.

THE SCIENCE OF DEADLIFTING

Let’s start with a bang and look at a study conducted by the University of Valencia to determine the most effective way to train the paraspinal muscles, which run down both sides of your spine and play a major role in the prevention of back injuries 10.

Researchers had 25 people with no low-back pain perform two types of exercise for their backs: body weight exercises like lumbar extensions, forward flexions, single-leg deadlifts, and bridges; and two weighted exercises, deadlifts and lunges, using 70% of their one-rep max weight. Muscle activity was measured using electromyography, a technique of evaluating and recording electrical activity produced by muscles (the more and harder a muscle contracts, the more electrical activity takes place inside it).

The result? Deadlifts most activated the paraspinal muscles. And the contest wasn’t even close. The deadlift’s average electromyographic muscle activity was 88% and peaked at 113%. In contrast, the back extension produced an average activity of 55% and peak of 58%; the lunge, an average of 46% and peak of 61%. The rest of the exercises’ average activities rang in between 29–42%. (The supine bridge on a BOSU ball was the least effective, in case you were wondering.)

Thus, researchers concluded, the deadlift is an incredibly effective way to strengthen the paraspinal muscles.

Another study conducted by the University of Waterloo set out to determine how much low-back flexion deadlifting caused and thus how much strain it put on the vertebrae and lumbar ligament (there were many claims that the lift put these things under tremendous strain, which could lead to injury) 11.

Researchers used real-time x-ray imaging (fluoroscopy) to watch the spines of elite powerlifters while they fully flexed their spines with no weights and while they deadlifted over 400 pounds. With the exception of one trial of one subject, all men completed their deadlifts within the normal range of motion they displayed during full flexion. Ligament lengths were unaffected, indicating that they don’t help support the load, but instead limit range of motion.

As we can see, a proper deadlift effectively strengthens your entire back,
including your erector spinae muscles, and doesn’t force anything unnatural in terms of range of motion. The major no-no in deadlifting is rounding your back, as this shifts much of the stress away from the erector spinae muscles to the vertebrae and ligaments—and this is what’s bad for your back.

**Two useful variations of the deadlift: sumo and hex**

While you can’t go wrong doing a full-range conventional deadlift, there are two useful variations that you should know about.

The **sumo deadlift** uses a wide stance (1.5–2 times the width of your shoulders) to shorten the range of motion and reduce shearing force on the lower back. It also can feel more comfortable in the hips than a conventional deadlift, depending on your biomechanics (if you walk with your toes pointed out, the sumo may be better for you).

The downside of the sumo deadlift is the reduced range of motion, which results in less work, which means less muscle development. Nevertheless, give this variation a try if you lack the flexibility to do a conventional deadlift, if it just feels very uncomfortable (certain people’s bodies are better suited to the sumo deadlift), or if it causes you low-back pain.

The **hex bar deadlift**, or trap bar deadlift, is a great way to learn to deadlift, because it doesn’t require as much hip and ankle mobility to get to the bar, and it puts less shearing stress on the spine. It also allows you to lift more weight than the conventional deadlift, which may make it a more effective exercise for developing overall lower body power. That said, since the hex-bar deadlift is more like a squat due to the increased load it places on the quadriceps, the conventional deadlift is more effective in strengthening the erector spinae muscles and hip muscles.

So there you have it: Deadlifting isn’t bad for your back, and to the contrary, is actually a great way to protect yourself against back injury and low-back pain. I think it should be included in all workout routines, so feel free to try all three variations to see which you like best.

Someone who already has low-back pain or a disc injury will need to do a rehabilitation program before they can perform conventional deadlifts, but that will often include sumo and/or hex deadlifts to gradually strengthen the erector spinae muscles and restore structural balance.

And if you don’t deadlift because you believe regular squatting makes it unnecessary, you’re wrong. Research has shown that these two lifts train very different sets of muscles.

Before I sign off on this myth, a caveat and comment: Some people advocate deadlifting on unstable surfaces like the BOSU ball. Don’t bother
with this—it decreases the effectiveness of the exercise\textsuperscript{17}.
Like the deadlift, the squat is one of the most powerful exercises you can do, involving the strength and coordination of over 200 muscles in your body\textsuperscript{18}.

But, also like the deadlift, it’s avoided by many due to the fear that it’s bad for your back and knees.

The fact that many sports doctors say these things doesn’t help the squat’s cause. Consider, however, that these doctors specialize in treating people with injuries, many of whom should not be squatting in their current conditions. These people are not representative of the average, healthy gym-goer, and the advice that applies to those undergoing rehab does not apply to everyone. Just because barbell squats can exacerbate a knee injury doesn’t mean performing them will cause a similar injury in a healthy person.

Another common reason why these squat myths linger is even less scientific. Just like how heavy, strenuous deadlifts look like they’re bad for your back (when, if performed correctly, they’re not), intense squats look like they’re bad for your back and knees.

To get to the bottom of these myths, let’s look to the anecdotal evidence of decades of weightlifters in combination with the scientific evidence of published literature.

**WHY SERIOUS LIFTERS ARE IN LOVE WITH THE SQUAT**

When it comes to leg training, there are usually two types of people. The first loads up the leg press with every plate in the gym and goes
through an intricate ritual involving tourniquet-tight knee wraps, a weight belt cinched to its tightest notch, and pre-lift announcements and cheers. He then wiggles into the sled and grinds out a few excruciating half-reps, ending with an ear-splitting yell and high-fives with his buddies.

The other type? Well, he was in the corner with the squat rack (you know, the loneliest place in the gym) quietly going about his business with deep, heavy squats. No wraps, no belts, no swagger—just a bar bending across his back, loaded with a “measly” few hundred pounds, and a puddle of sweat on the ground.

Who’s the winner in the end? Who will consistently get bigger and stronger, and who’s the least likely to get hurt? The latter, of course.

While many people will do anything for legs before putting the barbell on their backs, they’re missing out on what many of the top strength coaches in the world consider the absolute toughest and most rewarding exercise.

Squatting strengthens every muscle in your legs, which in turn helps you not only lift more weight in the gym, but run faster, jump higher, and improve flexibility, mobility, and agility. As if those aren’t reasons enough to squat, it’s also an incredibly effective core workout.

That said, the biggest fears that keep people from including squats in their workout routines are worries of spinal and knee injuries. Are these valid concerns?

**HOW YOUR BACK AND KNEES CAN LOVE THE SQUAT TOO**

The myth that squatting is bad for your knees started with work done in the 1960s. Research concluded that a properly done squat stretched the knee ligaments, increasing the risk of injury. These findings spread like wildfire through the fitness world. Some US military services even cut squatting movements out of their training programs.

It was noted that the studies had serious flaws, including the choice of subjects and researcher bias (for instance, one of the studies was done with parachute jumpers, who often hurt their knees due to legs getting caught in parachute lines and violent impacts when landing), but that wasn’t enough to stop the uprising against the squat.

Extensive research has been done since then, however, and a much different picture has emerged.

A rigorous study conducted by Duke University involved the analysis of over two decades of published literature to determine, in great detail, the biomechanics of the squat exercise and the stresses it places on the ankles, knees, hip joint, and spine.
Highlights from the study, and many reviewed within, set the record straight on how the squat affects our bodies, and teach us a lot about proper squat form:

- While most of the attention is given to the knee, hip, and spine, ankle strength plays a large role in power generation during squat performance. Research has shown that ankle weakness actually causes faulty movement patterns during the squat\textsuperscript{23}.

- The hamstrings counteract the pull on the shinbone, which helps neutralize the shearing force placed on the knee, and alleviates stress on the ACL.

- Even in extreme cases, such as powerlifters lifting 2.5 times bodyweight, the compressive forces placed on the knee and its tendons are well within their ranges of ultimate strength.

- Stress placed on the ACL is negligible considering its ultimate strength (in one study, the highest ACL force recorded when squatting was a mere 6\% of its ultimate strength)\textsuperscript{24}. Highest recorded PCL forces in other studies were well within natural strength limits as well.

- Don’t let your knees bow inward at any point during the squat. Keep them in line with your toes.

- Squat depth matters—a lot. The deeper you squat, the more work your legs and butt have to do. (I recommend either full squats or parallel squats, but not half squats.)

- Full squats cause more muscle activity in the butt than shallower squat depths (you hear that, girls?)\textsuperscript{25}. Use a wide stance too if you want to hit your butt even harder!

- Your spine is better at dealing with compressive force than shearing. If you maintain a neutral spine position while squatting (instead of a rigidly flexed position), you greatly reduce the shearing force placed on your vertebrae\textsuperscript{26}.

- Maintaining a posture as close to upright as possible further reduces this force\textsuperscript{27}, as does increasing intra-abdominal pressure\textsuperscript{28}, which you can create by holding your breath while you squat, and gazing straight ahead instead of down\textsuperscript{29}. 
• Squatting rapidly can double the amount of shearing and compressive forces placed on your knees\textsuperscript{30}. Keep your reps at a controlled pace to avoid this (I like a 2:1:2 pace—2 seconds down, pause, 2 seconds up).

• Avoid exaggerated rotation of the feet inward or outward, as they don’t make the exercise any more effective, and can potentially cause undesirable knee movements.

• While the low-bar position produces less torque on the knees than the high-bar position, the magnitudes of both forces are well within tolerable ranges, making neither position better than the other in this regard. Use whichever is most comfortable for you.

• The front squat produces significantly lower knee compression and low-back stress in comparison to the back squat, and thus is a viable alternative for those suffering from various knee and back problems\textsuperscript{31}.

• Squatting while you’re fatigued can cause poor form, and is likely a contributing factor in both short- and long-term injuries\textsuperscript{32}. (This is one of my gripes regarding Crossfit, wherein participants are often urged to squat and deadlift heavy weights while fatigued—an injury just waiting to happen).

Researchers concluded that the squat “does not compromise knee stability and can enhance stability if performed correctly.” Furthermore, any risks of spinal injury can be avoided by simply minimizing the amount of shearing force placed on the spine.

LET’S GET SQUATTING

According to the National Strength and Conditioning Association:

“Squats, when performed correctly and with appropriate supervision, are not only safe, but may be a significant deterrent to knee injuries.”\textsuperscript{33}

So rest easy: As long as you use proper form, the squat does not put your back or knees at risk of injury.

Oh, and as a final note, don’t bother with the Smith Machine squat. It forces an unnatural range of motion, which can actually lead to knee and back injuries, and research has shown it’s far less effective than the free-weight barbell squat\textsuperscript{34}. 
These days, having six-pack abs is basically synonymous with being sexy and in shape. For men, this means a washboard stomach. The goal is a little different for women: less defined but flat, lean, and toned.

Fitness magazines are constantly touting new ab workouts. Fancy new supplements are released every month that promise to kick your fat burning into high gear and help you get a lean, rippling stomach. There are quite a few “ab gurus” online selling eBooks on the secrets of getting a six-pack.

At first glance, the belief that ab training gives you great abs seems to make sense. That's basically true with any other muscle in the body, so it must also hold true for the abs, right?

Well, not quite.

While direct ab training will grow the muscle over time, just as with any muscle, you're not just going for bigger ab muscles—you're going for visibility. That is, if you have a beautifully developed set of abs hiding under a layer of fat, you just look fat.

A study conducted by Southern Illinois University Edwardsville demonstrated this very clearly with 24 healthy adults. A control group did nothing different, and the other did 140 repetitions of ab work 5 days per week for 6 weeks. After the training period, the ab training group saw no change in body weight, body fat percentage, abdominal circumference, or abdominal skinfold measurements. Although their abs were stronger, they looked exactly the same.

So the good news is you don't have to train your abs for hours and hours

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MYTH #5:

YOU HAVE TO WORK YOUR ABS MORE TO GET A SIX-PACK

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So the good news is you don't have to train your abs for hours and hours
every week to have a six-pack. In fact, you don’t have to train them at all. What do you have to do?

If you’re a guy, the mystical secret to a sexy stomach is to get your body fat percentage under 12%. Yup, that’s it. When your body fat percentage approaches 10%, your abs become clearly visible whether you directly train them or not. If you’re a woman, getting your body fat percentage under 20% will get you a flat, lean, toned stomach. That’s all there is to it (although exact numbers vary by body type, of course).

While reducing body fat percentage requires nothing more than making sure your body burns more energy every day than it gets from food, there are a few little tricks that have been scientifically proven to speed up the loss of not just fat, but abdominal fat in particular.

The first is known as fasted training.

**FASTED TRAINING HELPS REDUCE ABDOMINAL FAT**

When you eat food, your body breaks it down into various substances, one of which is glucose, or blood sugar. Your body also releases the hormone insulin, which tells your liver, muscles, and fat tissue to take the glucose from the blood and store it.

Your liver and muscles store the glucose as a substance known as glycogen, and your fat cells store it as a substance known as triglycerides. The storage of glycogen expands the size of the muscle cells, and the storage of triglycerides expands the fat cells, which in turn expands your waistline.

When you’re in this fed state, fat burning does not occur\(^{36}\). Your body uses the glucose in the blood for all its energy needs and stores the excess. Depending on how much you eat, this state can last for several hours\(^{37}\).

But, as the nutrients recently eaten are absorbed, insulin levels decline, and the body senses that its post-meal energy is running out. It then shifts toward burning fat stores to meet its energy needs. Day after day, it juggles these states, storing nutrients you eat and then burning its stores when the supplies run out.

When insulin is at a baseline level, your body is in a fasted state and therefore relies on its energy stores. For a moderate-sized meal, it takes 2–3 hours for your body to enter this state.

When exercise is performed in this state, fat loss is accelerated\(^{38}\). Weight training in a fasted state is particularly effective\(^{39}\). As an added bonus, research has shown that weightlifting in a fasted state results in an improved anabolic response to a post-workout meal\(^{40}\).

A fasted state is also great for that six-pack because it increases blood
flow in the abdominal region, resulting in more stubborn fat mobilization\textsuperscript{41}. And it gets even better: Fasted training first thing in the morning has an added benefit since fasting for longer than 6 hours increases your body’s ability to burn fat\textsuperscript{42}.

There is one significant drawback: accelerated breakdown of muscle tissue. Fortunately, this is simple to prevent. Supplementing with BCAAs 10–15 minutes before training will suppress muscle breakdown during your workout\textsuperscript{43}.

**GREEN TEA EXTRACT HELPS TOO**

Green tea extract (GTE) is an herbal product derived from green tea leaves. It contains a large amount of a substance known as a catechin, which is responsible for many of tea’s health benefits\textsuperscript{44}.

One of these benefits relates to weight loss. Research has shown that supplementation with GTE accelerates exercise-induced fat loss\textsuperscript{45}. In particular, it can help reduce abdominal fat\textsuperscript{46}.

Based on these studies, you want to take 600–900 mg of catechins per day to realize the weight-loss benefits. The average GTE product contains about 300 mg of catechins per pill.

**IS AB TRAINING POINTLESS?**

Some experts say that regular deadlifts and squats are all you need for ab training, but I disagree.

Both deadlifts and squats do provide an excellent core workout, but unless you naturally have excellent ab development, you will benefit from direct ab training in addition to the core work that comes with heavy, compound lifting. If your abs are underdeveloped, no matter how lean you get, you’ll always feel like something is lacking.

But remember—no matter how trained your abs might be, they only look good when you’re lean.
This is the health and fitness version of alchemy. It’s a fool’s errand.

Fat and muscle are two completely different substances, and you can only decrease and increase them—no transmogrification possible.

On top of that, you can only focus on one or the other—you can’t maximize both simultaneously. Losing fat requires that you consume less energy (food) than your body needs, causing it to burn fat for the extra energy. Building muscle requires that you eat more energy than the body needs, not only enabling it to build muscle efficiently, but also causing it to store some fat too. The former is generally known as cutting and the latter as bulking.

If this sounds like a hopeless situation, don’t despair. When you diet correctly, you’ll lose more fat than muscle when cutting, and you’ll gain more muscle than fat when bulking, which will allow you to juggle these eating cycles to change your overall body composition. This is how, over time, guys go from 150 pounds at 15% body fat to 190 pounds at 8% body fat—in one phase of bulking, they might gain 10 pounds of muscle and 3 pounds of fat, followed by a phase of cutting wherein they lose the 3 pounds of fat along with a pound of muscle. This leaves them as lean as before the bulking cycle, but with 6 more pounds of lean muscle. If you repeat this a few times, you’ll fully transform your body.

There’s an exception worth mentioning. It’s very common for both men and women new to the style of training and dieting I teach in my books *Bigger Leaner Stronger* and *Thinner Leaner Stronger* to build muscle while...
losing fat, at least for the first few months. These people are enjoying the very real “newbie gains” that come with starting a proper program, but eventually they are subject to the rules like everyone else.

If you’re already fairly lean and want to put on muscle, don’t be afraid to gain some fat along the way. It’s just part of the game. Then, when you’re ready to lose fat, if you train and diet properly, you will keep your muscle and just lose the fat.

If you’re a woman, training is a bit easier in this regard. You don’t have to bother with bulking unless you really want to focus on growing your muscles as big as possible. Most women just want to get lean, strong, and defined and stay there, which is simply a matter of reaching the target body fat percentage (usually around 17%), building enough muscle to show, and eating to stay in that condition.
Common “expert” advice for people who are dieting to lose weight is to start doing high-rep, high-volume workouts with light weights. Explanations about how this is actually supposed to work usually degenerate into broscience about it “really bringing out striations,” giving you “really nice cuts,” and other such nonsense.

I have some different advice for you. Do the opposite.

When you’re dieting to lose weight, lift heavy weights—weights that allow for no more than 10 reps if you’re a woman, and no more than 6 reps if you’re a man.

Why? Several reasons.

The first relates to what you learned in the chapter on hardgainer claims—heavy weights build strength and muscle faster than light weights. What exactly do high-rep sets do to your muscles, then?

Well, research has shown that lifting lighter weights (40–60% of your one-rep max, or 1RM) for many reps (15+) doesn’t do much in the way of improving your absolute strength or building bigger muscles, but instead improves your muscles’ aerobic capacity and time to exhaustion. That is, it improves your muscles’ ability to perform prolonged or repeated contractions with that weight. That’s why I don’t ever recommend training with light weights if you’re trying to build muscle; it just doesn’t work that way.

There’s another reason to lift heavy, though, and it relates directly to fat loss.

A study conducted by Greek sports scientists found that men who trained
with heavy weights (80–85% of their 1RM) increased their metabolic rates over the following three days, burning hundreds more calories than the men who trained with lighter weights (45-65% of their 1RM). Another study showed that the increased energy expenditure after lifting heavy weights is mainly derived from burning fat (researchers weren’t sure why).

So, hit the weights and hit them hard if you want to jack up your metabolic rate and, in turn, speed up your fat loss. And if you want to score extra points, focus on compound lifts like squats and deadlifts because they burn the most post-workout calories.
Most women desire the same type of body. They want to be lean but not too skinny. They want to have some muscle definition, particularly in their arms, stomach, and legs. And they want to have a bubbly butt that fills their jeans. And, amen! I’m all for that.

To achieve this physique, the average woman needs to lose fat and add some muscle. Just losing the fat wouldn’t be enough as most women lack the muscle that gives an athletic look (leaving them with the common skinny-fat body type).

What is the best way to achieve these goals? Conventional “wisdom” has women grinding away on the treadmill every day and working out with three-pound dumbbells. I’ve yet to see a woman achieve a fitness model physique by doing that.

Achieving a lean, athletic look takes nothing more than having a good amount of muscle and low body fat percentage. Reducing body fat percentage is mainly a function of diet, but what’s the best way to build muscle? Lifting weights, of course. And you’re probably not surprised that I recommend heavy weights.

I can already hear you disagreeing. Women shouldn’t lift heavy weights because they don’t want to get bulky, right? Wrong. It’s incredibly difficult for a woman to ever reach the point of looking bulky, regardless of how hard or often she trains.

The hormone that most directly regulates muscle growth is testosterone, and an average woman’s testosterone levels are a mere 5–10% of an
average man’s. In one study, post-exercise testosterone levels were 45 times higher in men than women. This isn’t surprising when you consider that research has shown that resistance training doesn’t even increase testosterone levels in women—only growth hormone, estradiol (a type of estrogen), and cortisol.

If you’re a woman, I PROMISE you that you will never wake up one day disgusted with your bulky physique if you lift heavy weights (heavy for YOU, but light for weightlifting guys) and stay lean. Getting to the point of having large, protruding muscles is a very gradual, grueling process that you would have to consciously work at every day, and it would take years.

BENEFITS OF BUILDING MUSCLE

If you’re a woman and you’re still not quite sold on weightlifting yet, these health benefits of building your muscles, as discussed in a study conducted by the University of Texas, will change your mind:

- Your chances of developing diseases like diabetes, metabolic syndrome, and cancer are significantly reduced.
- Your bones become stronger.
- Your metabolism speeds up because muscle, even when idle, burns energy. This makes it easier to stay lean.
- Your life expectancy increases.
- Your immune system becomes stronger.

And what about your physique? Well, gaining muscle does wonders for that too. Strong, well-developed muscles are what give women the curves they love. Nothing improves your image more in and out of your clothes than lean, defined muscles.

If all that isn’t enough, then you should also know that maintaining a strong, well-muscled body helps you age better. Research has shown that greater muscle mass percentage in older women is associated with better mobility, lower body weight, and lower body fat levels.

Now, what qualifies as heavy weight for a woman? Weight that is heavy enough to limit you to 8–10 repetitions. Lifting heavy weights (relative to your strength, of course) is just the fastest way to change your physique.

If you’re a woman and you want toned, sexy legs and a round, tight butt, then you can’t beat an intense workout of “boy exercises” such as barbell squats, Romanian deadlifts, and barbell lunges. If you want sleek, defined arms, the quickest way to get there is by going heavy on exercises.
like dumbbell curls, straight-bar curls, and EZ-bar curls.

Women, it’s time to put down the pink play weights and get sexy by lifting with the guys! (They’ll find it pretty hot, too.)
In most endeavors in life, you can expect to receive rewards in proportion to what you give in time and effort.

Work more and harder in your career, and you’ll grow your business or earn promotions and raises.

Spend more time with friends and family, and you’ll build stronger, more fulfilling relationships.

Practice longer and more diligently on your golf swing, and you’ll shave strokes off your game.

Exercise—and weightlifting in particular—is a bit different, however. There’s a point where exerting more effort actually becomes counterproductive. Most people are aware of this concept, but they don’t know how easy it is to overtrain or how to spot it.

You see people overtraining all the time. The guys that spend 2+ hours working a single muscle group, doing set after set after set, are overtraining without realizing it. They don’t understand why they don’t get bigger or stronger despite their long, grueling workouts. The more effort they put into growing their chest, they figure, the more it will grow. That’s not how it works, though. Your body can only take so much before it becomes afflicted with what’s known as overtraining.

Overtraining is simply an imbalance between work and recovery. When you put too much stress on the body and don’t give it the proper amount of rest, various undesirable things happen. The common side effects are a state of chronic fatigue, depression, and underperformance despite rest, but it’s
not always that extreme or obvious. There are other, subtler signs of over-training that you should know and watch for so you can stop the process before you hit the point where you require an extensive—several weeks’ long in some cases—recovery.

What follows is a list of signs that you may be overtraining. If you’re only experiencing one of the symptoms, it may not indicate overtraining. But if you’re experiencing several, chances are you need to take a rest week (5–7 days of no exercise or very light training has always handled it for me). Getting a proper amount of sleep is also a key part of preventing overtraining. Seven to eight hours per night is generally considered optimal. The last crucial element is a proper diet that fully provides your body with everything it needs to repair itself.

**YOU SIMPLY CAN’T FINISH A PROPER WORKOUT.**

When your body is overtrained, you won’t be able to lift the weights you normally can, you won’t have the energy to do as many sprints, you won’t have the stamina to run your normal route, and so forth. Even though you’re hitting the gym every day, you’ll feel progressively weaker, slower, and more lethargic. I’ve had it so bad before that I couldn’t stop yawning in the gym and couldn’t possibly push myself to do another set.

**YOU’RE GETTING FATTER DESPITE TRAINING HARD.**

When hormones are normal, losing fat is simply a matter of increasing energy output over caloric intake, but when you’re overtraining, this no longer holds true. What gives? Your hormones get thrown out of whack. Testosterone levels plunge, and cortisol levels rise, which causes catabolism (the breakdown of muscle tissue) and increases insulin resistance and fat deposition. The end result? You train harder and watch your diet closely, but you get fatter.

**YOU’RE TRAINING HARD EVERY DAY OF THE WEEK.**

I’ve yet to meet someone not on drugs who can lift heavy, sprint hard, or engage in otherwise intense training every day of the week and still adequately recover. Unless you have Wolverine’s gift of regeneration, it’s absolutely vital that you take at least two days off weights per week and schedule at least one day of absolutely no exercise.

What I like to do is lift weights Monday–Friday and do cardio Sunday–Tuesday or Wednesday. That leaves Saturday as a full rest day. You can intersperse your rest days throughout the week too:

Day 1: Weights
Day 2: Weights & cardio
Day 3: Cardio only
Day 4: Weights & cardio
Day 5: Weights & cardio
Day 6: Weights
Day 7: Full rest

You can play with this as much as you want so long as you take two days off weights and let yourself have one day of no exercise whatsoever. If you want to give your metabolism a little boost, don’t take two full rest days in a row.

**YOU’RE RESTLESS AT NIGHT AND ARE HAVING TROUBLE SLEEPING.**

If you do a lot of aerobic exercise and are overtrained, your sympathetic nervous system can remain excited at all times. As a result, you’ll feel restless and unable to focus, and your sleep will be disturbed and broken.

**YOU FEEL OVERLY FATIGUED AND SLUGGISH.**

If you’re a weightlifter and are overtrained, your parasympathetic nervous system becomes overstimulated, leading to a decrease in testosterone, an increase in cortisol, a crushing fatigue (mental and physical), and a stubborn tendency to hang onto body fat.

**YOU HAVE ODD ACHES AND PAINS IN YOUR JOINTS, BONES, OR LIMBS.**

This is one of the first things that I notice as I approach the point of overtraining. My shoulder will start to ache. Then my wrist. Then my knee. Then my forearm. It’ll usually take 8–10 consecutive weeks of intense training before repetitive stress issues like tendinitis turn on, and then I take a week off to let my body recover. They’re always gone by the end of the rest period.

(Aches and pains can also be signs of poor form, but that’s easy enough to diagnose. If you’re lifting heavy weights for the first time, you can also expect various aches like these right off the bat, but your body should steadily adapt.)
YOU’RE GETTING SICK MORE OFTEN THAN USUAL.

You can throw a wrench into your immune system in many different ways. Increasing sugar can do it, as can a lack of vitamin D/sunlight, poor sleep habits, and even mental stress. But if you’re all good on these fronts and are getting inexplicable little coughs, sniffles, sinus pressure, or headaches, you may be overtraining. Take a rest week and let your immune system build back up.

YOU FEEL DRAINED AND CRAPPY AFTER WHAT NORMALLY WOULD BE A GOOD WORKOUT.

The post-workout feeling of general wellbeing is one of my favorite things about training. The rush of endorphins calms the entire body and mind and can last for hours. It’s great, isn’t it? Well, if it never comes, and if you feel irritable and uncomfortable after working out, you may be overtraining. Exercise should elevate your mood. If you’re feeling negative instead, it might be time to take a rest.

Listen to your body, and you can avoid the incredibly frustrating and discouraging trap of overtraining.
In my dreams, I can do cable flyes to make my chest squarer—you know, the type of pecs that look like symmetrical armor plates. I can do concentration curls to get a scary high peak on my biceps, followed by reverse decline crunches to get symmetrical, sculpted abs.

Well, unfortunately, there’s no such thing as a shaping exercise. You can make your muscles bigger or smaller, but your genetics will determine their shape (think of “adding clay,” as Arnold put it in *Pumping Iron*). That being said, you can still do quite a bit with your physique to compensate for weak areas.

If you feel you lack bicep peak, for example, you should focus on growing your biceps with good ol’ heavy weight training, including reverse or Zottman curls and hammer curls to work the brachioradialis and brachialis muscles, which can push your bicep up.

If you’re unhappy with some aspect of your chest—the upper part, lower part, or middle—make it bigger with proven mass-builders like the dumbbell and barbell bench press (I like to do them on both flat and incline benches) and weighted dips.

If you’re not happy with the width of your shoulders, you can really isolate the middle deltoid with an exercise like the leaning lateral raise.

For women in particular, it’s important to know that the claims that certain forms of strength training will make long, lean muscles like a dancer’s while others will result in bulky, ugly muscles like a wrestler’s are bogus. Whether you do Pilates, yoga, or weight training to strengthen and build
your muscles, their shape will come out the same. The key difference is that weight training will grow your muscles the fastest, and yoga and Pilates can offer things that weight training doesn't, such as extreme flexibility, intense sweating (hot yoga, for instance), and built-in meditation.

While shaping is a myth, sculpting best describes what is actually possible. You can build your muscles and reduce your body fat percentage, which will give you that thin, athletic “beach body” that so many women envy.

The key takeaway here is that you can work out your muscles in such a way as to achieve full development, but in the end, the overall shape is going to be determined by your genetics.
Generally speaking, there are two types of people in the gym: those on the cardio machines trying to get or stay thin or lean and those on the weights and machines trying to get bigger muscles.

Section Two: Cardio Myths will cover the many benefits of cardio for weightlifters, but what about the benefits of weightlifting for people who just do cardio?

Those who stick to cardio often don’t see the point in lifting weights because they want to have a lean, athletic look. At the extreme end, cardio junkies might even think lifting is only for meatheads who have neurotic breakdowns if they don’t have a protein shake every 3 hours.

The type of physique most guys and gals want actually requires that they gain a fair amount of lean mass—and weightlifting is the only way to do this efficiently—but there are even greater benefits to consider.

Unless you do something to stop it, starting in your 20s, your body will lose a small amount of muscle and strength every year. Research has shown that upwards of 40% of total muscle is lost between the ages of 20 and 60.

In medical lingo, this is known as sarcopenia, and studies have associated the gradual loss of strength and muscle with:

- Increased risk of diabetes and heart disease
- Increased risk of osteoporosis
- Shorter lifespan

MYTH #11:

YOU DON’T HAVE TO LIFT WEIGHTS IF YOU JUST WANT TO BE HEALTHY AND FIT
• Decline of metabolic health\textsuperscript{58}

• Frailty and disability in the elderly\textsuperscript{59}

People often build muscle merely to look good, but it’s incredibly healthy in the long term as well. Muscle mass not only combats sarcopenia, but it imparts many of the metabolic benefits once thought to be the sole realm of cardiovascular exercise. And in terms of aging, having a significant amount of muscle mass is one of the most important things you can do to maintain your health and ward off disease.

I strongly believe that everyone, men and women of all ages, should include some form of resistance training in their exercise routine. The frequency and intensity of the training should be dictated by personal goals, but even if your goal is just to stay healthy, resistance training must be part of your workout regimen.

And don’t think that weightlifting is only for young people. Research has shown that middle-aged men (35-50 years old) on a weightlifting program can build strength and muscle as well as college-aged men\textsuperscript{60}. Studies have even shown that the elderly (ages 60 to 80) can make significant gains in both muscle growth and strength in response to regular weightlifting\textsuperscript{61}.
The common reasons for static stretching—holding stretched positions for extended lengths of time—before exercise is the belief that it helps prevent injury, makes you stronger and faster, reduces muscle soreness, and accelerates recovery. Everyone from pee wee soccer players to professional athletes stretch before or after training, so it must work, right?

While anecdotal evidence would seem to support these claims, what does science have to say about stretching?

STRETCHING AND PREVENTING INJURY

Many people stretch before aerobic exercise and weightlifting because they believe it will ward off injury. Research says otherwise.

A paper published in 2004 by the Centers for Disease Control (CDC) reviewed 361 studies on stretching before various kinds of exercise and concluded that it doesn't reduce injury rates. The SMBD-Jewish General Hospital did an analysis of their own and found that “stretching before exercise does not reduce the risk of injury.” Other studies, such as the one conducted by McMaster University, agree.

In fact, according to Dr. Ian Shrier, a McGill University sports medicine specialist, it’s possible that static stretching before exercise can increase your chances of injury due to the cellular damage it causes to muscle and its analgesic effect. (It’s probably not a good idea to damage a muscle, increase your tolerance of pain, and then strenuously exercise it, right?)

So where did the belief that stretching prevents injury come from?
This faulty logic hinges on the assumption that improved flexibility (which stretching definitely accomplishes) reduces the risk of injury.

Research has shown that most muscle injuries occur within the normal range of motion, however, and specifically during the “eccentric” portion of movements (wherein the muscle lengthens, such as when you’re lowering a dumbbell in a curl)\(^6\). Therefore, improving flexibility doesn’t do anything in terms of preventing injury except when the activity calls for actions that require great flexibility (such as doing the splits).

Another reason there’s widespread confusion about this issue is the fact that stretching is often done as a part of a more comprehensive warm-up routine. This raises body temperature and involves repeated movements within the expected range of motion, which *does* prevent injury, whether you add static stretching or not\(^6\). Scientists mistakenly attributed these benefits to stretching rather than the warm-up, and the myth was born.

**STRETCHING AND STRENGTH AND MUSCLE GROWTH**

Many weightlifting routines begin with a series of stretches in the hopes of increased strength and muscle growth. Is this just another myth?

First, consider a study conducted by the University of Milan\(^6\). Researchers had 17 young males do a series of jumps from various squat positions, with or without stretching beforehand. Jump height, power, and maximum velocity were all lower in the group that stretched for 10 minutes before the jumps.

Other research indicates that only static stretches of longer duration (over 60 seconds) negatively impact maximal muscle performance, whereas shorter static stretches (under 30 seconds) don’t improve performance, but don’t impair it either\(^7\).

There are various theories for why stretching can reduce strength and power. Some researchers believe that loose muscles and tendons can’t contract as forcefully as shorter ones, whereas others point to evidence that stretching interferes with signals from the brain that tell muscles to contract\(^7\).

And what about stretching and muscle growth? Research has proven the claim that stretching helps more deeply activate muscles and stimulate additional growth to be false\(^7\).

**STRETCHING AND SPEED**

Louisiana State University conducted a study in 2008 to determine how stretching affects the speed of sprinters\(^7\). They had 19 of their top sprinters perform three 40-meter sprints in two sessions a week apart. Before each
MYTH #12: YOU SHOULD ALWAYS STRETCH BEFORE WORKING OUT

Session the runners performed a warm-up routine.

Four static stretches of the calf and thigh were added before one of the sprint sessions.

The result?

The stretching slowed them down by one-tenth of a second, with most of the loss occurring in the second half of the sprint.

Miami University conducted a similar study with 18 collegiate sprinters, and their research revealed that static stretching resulted in “a significant slowing in performance...in the second 20 meters of the [100 m] sprint trials.”

STRETCHING AND MUSCLE SORENESS AND RECOVERY

Next on the chopping block is the myth that stretching reduces exercise-related muscle soreness and accelerates recovery. Sorry to spoil the surprise, but that’s just not true.

It used to be believed that muscles damaged by exercise would spasm, which then blocked blood flow and caused the pain we know as delayed-onset muscle soreness (DOMS). As stretching helps alleviate spasm, it was hypothesized that it would alleviate post-workout muscle soreness.

Although the spasm theory was debunked in 1986, the stretching advice has lingered to this day. Yet evidence of its ineffectiveness in reducing DOMS is readily available.

The University of Sydney published a paper in 2008 involving the review of 10 studies on stretching and muscle soreness. It concludes that “muscle stretching does not reduce delayed-onset muscle soreness in young healthy adults.”

Another study, this time by the University of Western Australia, demonstrated that neither hot/cold therapy nor post-exercise stretching helped elite rowers recover from stair-climb running. The university published another study with football players demonstrating that post-game recovery is not enhanced by stretching either.

DYNAMIC STRETCHING VS. STATIC STRETCHING

While static stretching doesn’t help prevent injury, increase strength, speed, or muscle growth and doesn’t reduce soreness or accelerate recovery, it does have its uses. If you’re going to engage in a sport or activity that requires a high amount of flexibility, then static stretching will absolutely be a help. It’s best to do static stretches when your muscles are warm (like after exercise, for instance).
One form of stretching has actually been shown to improve strength, power, muscular endurance, anaerobic capacity, speed, and agility: *dynamic* stretching⁷⁹.

Unlike static stretching, which involves holding stretched positions for various lengths of time, dynamic stretching involves movements that repeatedly put muscles through the expected ranges of motion, such as air squats, leg kicks, side lunges, arm circles, and so forth.

Dynamic stretching accomplishes several things that improve performance. It increases the suppleness of and blood flow to the muscles, raises body temperature, and enhances free, coordinated movement⁸⁰. It can and should be done before any type of exercise. This is why I recommend several warm-up sets when weightlifting that progressively increase blood flow to the muscles that will be trained before you load your working weight.
This is a myth that will never go away thanks to silly advertisements and workout products.

You can do a million side-twists, but it won’t make your obliques emerge from the flab. You can work your inner thighs religiously, and they aren’t going to get thinner. That’s not how fat loss works, and research has proven it.

The only way to make a particular area of your body leaner is to reduce your overall body fat percentage, which will reduce fat everywhere on your body. This is a function of diet more than anything else.

Another thing you need to know is that people’s bodies are different in terms of where they lose fat first and more easily, determining which areas are more stubborn and last to lean out. Unfortunately, the areas that take the longest to get lean are usually the ones people are most concerned about—the abdominal area in men and the pelvic region, thighs, and butt in women.

Generally speaking, upper body fat tends to go first, whereas lower body fat takes its time. When someone checks the mirror every day and really only pays attention to the latter, they can easily get discouraged.

My advice to combat this is simple: Keep the body fat percentage moving down and have some patience. As long as you keep reducing your body fat percentage, you will get rid of the unsightly gut, saddle bags, and thunder thighs. Just remember that no special exercises can speed up the process of getting rid of the stubborn fat you’re most concerned about.
Every day in the gym I cringe at some people’s form.

Knees wrapped, plates stacked on the bar, squatting down maybe a foot or two before struggling to stand—that’s a knee injury waiting to happen. Loading up the bench to barely manage a few quarter-reps—shoulders don’t appreciate that.

Here’s the deal: These people are not only risking injury, but they’re also cheating themselves of gains. Big time. When a guy wildly swings around 130 pounds on the EZ-bar for a bicep workout, he’s actually only moving a fraction of that weight with his biceps. The rest is being lifted by the lower back, shoulders, and momentum. Worse, his elbows have to bear the full brunt of the weight that his arms can’t actually lift, which can lead to injury.

In order to achieve full, optimal muscle growth, you must engage as many muscle fibers as possible, and this can be maximized by lifting with a full range of motion (good form). If you’re squatting, that means deep squats where your thighs reach a point slightly below parallel to the ground (your butt will be just below your knees). If you’re benching, it means a controlled lowering of the bar to your chest (no bouncing!) followed by a slight pause and an explosive movement upward. If you’re curling, it means your elbows stay at your side with minimal swinging.

A study conducted by Federal University of Rio Grande do Sul in Brazil demonstrates the importance of proper form. Researchers split men with no prior resistance training experience into three groups: a control group, a partial range group, and a full-range group. The participants trained twice
per week for ten weeks, using a program that increased weight and decreased reps every two weeks. The only exercise performed was the preacher curl: 1RM was tested for strength gains, and muscle thickness was measured to determine muscle growth.

After ten weeks, both the partial- and full-rep groups increased strength, but the full-rep group's strength gains were 60% higher. Both groups experienced muscle growth, but the full-rep group's muscle growth was 29% higher.

These mechanics apply to every exercise you do. By doing partial reps, you can literally make half the potential gains while exposing yourself to an unnecessary risk of injury.

That said, when you’re lifting heavy, sometimes squeezing out that last rep means your form gets a little sloppy. Maybe you miss parallel by an inch or two on your squat, or the barbell bounces a little off your chest while on the bench. That’s okay, but you should always strive to keep your form as strict as possible. If you find you’re cheating by the second or third rep, you’re using too much weight.

Don’t lift with ego in the gym. Throwing around heavy weights like an idiot impresses nobody. To the contrary, people who know what they’re doing respect good form when they see it, regardless of the weight being lifted.
“Look at Arnold now!” people say in defense of this myth. Arnold Schwarzenegger doesn’t have a flabby physique because the muscle he once had “turned to fat.” That’s scientifically impossible; muscle and fat are two completely different substances. Just as you can’t transform the fat on your body into muscle, muscle can’t morph into fat.

Here’s what can happen. When a guy trains, he eats a lot of calories to ensure his body can recover and build muscle. Because of his high amount of muscle mass, which burns calories every day, he stays fairly lean. But if he stops training for whatever reason and keeps eating the same way, his body has not only lost the extra calorie burn from workouts, but it also sheds muscle that it no longer needs, further reducing the amount of calories it needs to maintain its current condition. Before long, the guy is sheathed in a layer of fat, and if he doesn’t curb his eating, his body composition will keep progressing in that fashion, losing muscle and gaining fat.

This is what people think is muscle turning into fat: muscle is broken down because it’s no longer needed at the same time fat is added because of overeating. But, don’t think that this means you can’t ever take a break from training because you’ll lose muscle and gain fat. If a very muscular guy was to stop training and reduce his eating proportionately, he would lose muscle but stay lean.

According to one study, strength and muscle mass is generally maintained for up to four weeks of no training. In my experience, this seems a bit optimistic as I’ve seen drop-offs in strength in as little as one week of no
training, but no noticeable muscle loss in two and even three weeks out of the gym.

Nevertheless, I don’t like to take that much time off, even when I’m on vacation. I prefer to do a daily full-body workout with body-weight exercises like push-ups, pull-ups (I travel with a doorway pull-up bar), squats, and lunges. I find it really helps me retain my strength so that, once I’m home, I can (more or less) carry on with the weights where I left off.
Some bodybuilders follow grueling yo-yo diets. They gorge for months, turning into massive balls of fat, and then cut hard to get into competition shape. This cycle is very tough on the body.

It’s true that your body requires a surplus of energy to build muscle efficiently (you have to eat more energy, or calories, than you burn every day). But I don’t recommend that you see this bulking phase as a license to eat anything and everything, also known as a “dirty” or “dreamer” bulk.

There are several problems with dirty bulking.

The first was talked about in the myth about hardgainers. As body fat levels rise, insulin sensitivity drops, and this can then get in the way of muscle growth and accelerate fat storage. It also doesn’t help that a dirty bulk tends to shoot your water retention through the roof, causing you to look and feel quite bloated all the time.

Another problem with the dirty bulk is the longer cutting (weight loss) phase that has to follow for you to get back to a respectable body fat percentage. A longer weight-loss phase means more chances to fall off the wagon and more muscle loss along the way. Your body doesn’t burn 100% fat when you’re restricting calories—it burns some muscle too, although heavy weightlifting can mitigate much of this loss.

I recommend that you “clean” bulk, which means eat controlled, albeit large, amounts of calories sourced from high-quality foods. You’re looking to keep yourself in a 300–500 calorie surplus every day, and you want to focus on good carbs, such as whole wheat grains, brown rice, sweet potato,
oats, and fruits; lean proteins, such as chicken, turkey, fish, and lean beef; and healthy fats, such as those found in fish, avocado, nuts, and olive oil.

If you bulk correctly, you should be able to gain 2–3 pounds of muscle for every pound of fat.
THIS ONE HAS BEEN AROUND for a while. Athletes were once advised not to lift weights because it would make them stiff and inflexible and thereby hurt their performance.

Well, we now know better. Sure, being a hulking brute naturally limits your flexibility (big bodybuilders have an interesting time with daily tasks like wiping on the toilet and showering), but research has shown that weightlifting itself, with a full range of motion, actually increases flexibility just as well as, or even better than, static stretching.

In a study conducted by the University of North Dakota, researchers divided 25 volunteers into three groups: a control group (that did nothing, of course), a static stretching group, and a resistance training group.

After five weeks, the researchers found no significant difference between the static stretching and resistance training groups in all measures of flexibility (hip extension, hip flexion, shoulder extension, knee extension)\(^84\).

Another study conducted by Castelo Branco University in Brazil showed that 8 weeks of resistance training improved flexibility better than static stretching in all but one measurement\(^85\).

The reality is that weight training with proper form increases flexibility because you’re repeatedly moving muscles, joints, and ligaments through their full ranges of motion.

In fact, some weight training exercises provide deep stretches that are hard to beat, such as the dumbbell fly, Romanian deadlift, dumbbell pullover, dumbbell row, and overhead triceps press.
Improved flexibility is yet another reason to use a full range of motion in weightlifting (in addition to preventing injuries and improving strength gains and muscle growth, covered in Myth #14).
SECTION TWO: CARDIO MYTHS
Like most bad advice in the health and fitness industry, this myth is given a false air of scientific legitimacy. Cardio machines often show pretty graphs indicating where your heart rate should be for “fat burning” versus “cardiovascular training.” You calculate this magical heart rate by subtracting your age from 200 and multiplying this number by 0.6. If you keep your heart rate at this number, as the story goes, you’ll be in the “fat burning zone.”

There’s a kernel of truth here. You do burn both fat and carbohydrates when you exercise, and the proportion varies with the intensity of exercise. A very low-intensity activity like walking taps mainly into fat stores, whereas high-intensity sprints pull much more heavily from carbohydrate stores. At about 60% of maximum exertion, your body gets about half of its energy from carbohydrate stores and half from fat stores (which is why many “experts” claim that you should work in the range of 60–70% of maximum exertion).

Based on the above, you might think that I’m actually arguing in defense of this myth, but there’s more to consider.

The first issue is total calories burned while exercising. If you walk off 100 calories, 85 of which come from fat stores, that isn’t as effective as spending that time in a moderate run that burns off 400 calories with 200 coming from fat. And that, in turn, isn’t as effective as spending that time doing sprint intervals that burn off 800 calories with 300 coming from fat.

The second issue to consider is that studies such as those conducted by
Laval University\textsuperscript{86}, Baylor College of Medicine\textsuperscript{87}, and the University of New South Wales have shown that shorter, high-intensity cardio sessions result in greater fat loss over time than low-intensity sessions\textsuperscript{88}. Research has also shown that high-intensity training is more muscle-sparing than low-intensity cardio\textsuperscript{89}.

Although the exact mechanisms of how high-intensity cardio trumps steady-state cardio aren’t fully understood yet, scientists have isolated quite a few of the factors: increased resting metabolic rate for upwards of 24 hours after exercise; improved insulin sensitivity in the muscles; higher levels of fat oxidation in the muscles; significant spikes in growth hormone levels (which aid in fat loss) and catecholamine levels (chemicals your body produces to directly induce fat mobilization); and post-exercise appetite suppression\textsuperscript{90}.

You can apply high-intensity interval training (or HIIT) to any type of cardio that you would normally do. You can head outside and walk and sprint, or you can hop on the elliptical trainer or recumbent bike to get it done.

A standard HIIT protocol looks like this:

1. You start your workout with 2–3 minutes of low-intensity warmup.

2. You then go all-out, as fast as possible, for 30-60 seconds (if you’re new to HIIT, 30-second intervals will be plenty, but you want to try to work toward being able to do 60-second intervals).

3. Slow it down to a low-intensity recovery period for the same period as your high-intensity interval. Again, if you’re new to HIIT, you may need to extend this rest period to 1.5–2 times as long as your high-intensity interval. If you’re still out of breath and your heart is racing, you’re not ready to hit the high-intensity again.

4. You repeat this cycle of all-out and recovery intervals for 20–30 minutes.

5. You do a 2–3 minute cool-down at a low intensity.

Give it a try next time you’re planning on losing weight. You’ll be amazed at how much more effective your workouts are.
If you’ve been into fitness for a while, you’ve probably heard this before: “Your body doesn’t start tapping into fat stores until you’ve done about 20 minutes of cardio.”

This piece of wisdom has led many people to believe that cardio is only effective in long bouts (40+ minutes), which can be hard to fit into a busy schedule (and can be horribly boring to boot).

Well, the good news is this claim is rubbish and has no basis in science. As you learned in the “fat burning zone” myth, your body begins burning a combination of fat and carbohydrates the minute you start exercising. The proportions change based on the intensity and duration of the workout, but there’s no magical point during exercise when your body begins aggressively burning fat.

This is also another opportunity for me to shamelessly plug high-intensity interval training (HIIT). Not only does it result in more fat loss than low-intensity cardio, but it requires less time as well; 20 minutes of HIIT is plenty and can be more effective in terms of fat burning than even 60 minutes of a low-intensity form of cardio. Research has even shown that high-intensity interval cardio is more effective at reducing abdominal fat.

Remember, however, that no amount or type of cardio will result in sustained fat loss if you take in as many or more calories (energy) than your body burns every day. The big mistake many people make is they increase their eating in proportion to their training, which negates the fat loss potential of burning extra calories.
How many people have you seen that spend hours on the treadmill every week, yet never get lean?

How many people have you seen who seem to only lift weights and never do cardio, but were ripped?

What gives? Everybody knows that cardio is required to get lean and weightlifting is just for getting bigger muscles, right?

Not exactly.

Your body fat percentage is primarily determined by your diet. Doing cardio does burn fat, but if you eat too much, your body will simply replace the fat lost with the excess calories you’re giving it.

Weightlifting actually burns about the same amount of calories per hour as low-intensity cardio, but it also burns more calories after the workout—the afterburn effect, as it’s called. The muscle you build as a result also helps keep you lean because it increases the total amount of calories that your body burns while at rest.

While I recommend cardio for its many health benefits (detailed in the next myth), if you’re willing to be strict with your diet, you can get lean by that alone and not even bother with cardio.
Lots of guys fear the treadmill, believing it has a mystical ability to shrivel up muscle and sap strength. And some bodybuilder types bash cardio simply because they don’t like doing it.

While it’s clearly evident that excessive cardio causes muscle loss (just look at any marathon runner), what about moderate cardio? Does it interfere with your muscle growth, or does it help?

Actually, it can go either way.

3 WAYS CARDIO CAN HELP WITH MUSCLE GROWTH

There are 3 primary ways that cardio can help you build (and retain) more muscle:

1. It improves muscle recovery.
2. It improves your body’s metabolic responses to food.
3. It keeps up your conditioning, making the transition from “bulking” to “cutting” easier on your body.

Let’s look at these in more detail.

CARDIO AND MUSCLE RECOVERY

As you know, intense exercise causes damage to muscle fibers, which must then be repaired. This damage is the cause of the soreness that you feel the day or two following a workout and is known as delayed onset muscle soreness (DOMS).
The reparation of the damage is a complex process that is partly regulated by two simple factors: how much of the substances needed for repair are brought to the damaged muscle over time and the speed at which waste products are removed.

Cardio can help your body repair muscle damage quicker because it increases blood flow. This helps your body build the muscle back up more quickly and remove the waste, which results in an all-around faster recovery. This is why I always do a cardio session on legs day—it dramatically reduces leg soreness in the days to follow.

It's worth noting, however, that these benefits are primarily seen in the legs because most forms of cardio don't really involve the upper body. If you want to boost whole-body recovery, then you would need to do something that gets your upper body working, like a rowing machine, or even using your arms to help pump on the elliptical.

**CARDIO AND HOW YOUR BODY METABOLIZES FOOD**

In our collective dietary fantasy, all nutrients eaten would be sucked into the muscles and either absorbed or burned off, and none would result in fat storage. And when we dieted to lose weight, all energy needs would be met by burning fat, not muscle.

The reality, however, is that our bodies do these things to varying degrees. Some people's bodies store less fat when they overeat (they burn off more excess calories instead of storing them) and lose less muscle when they diet for weight loss (more energy is sucked from fat than muscle to make up for the caloric deficit). Other people are more likely to store excess calories as fat and to lose muscle when they restrict calories for weight loss.

Hormones like testosterone and cortisol play major roles in this. Higher levels of testosterone promote more muscle and less fat, whereas higher levels of cortisol promote less muscle and more fat. But unfortunately, there isn't much we can do about either beyond injecting ourselves with dangerous drugs. Our genetics have set our normal physiological hormonal ranges, and that's that.

All is not lost if you're not of the genetic elite, though. Another factor in what your body does with the food you eat is insulin sensitivity (how well your cells respond to insulin's signals). As discussed in my advice for hardgainers, being insulin sensitive is highly beneficial when you're eating a surplus of calories to build muscle, whereas insulin resistance inhibits muscle growth and promotes fat storage under these dietary conditions.

Genetics affect natural levels of insulin sensitivity as well, but you can take various steps to manipulate this mechanism. This is where cardio
comes in, because it improves insulin sensitivity\textsuperscript{93}. And does so in a dose-dependent manner (meaning the more you do, the more benefits you get)\textsuperscript{94}.

Cardio can help your muscles better absorb the nutrients you eat, leaving less available for fat storage.

**CARDIO AND CONDITIONING**

A common issue in the bodybuilding world is the dramatic reduction in cardiovascular fitness when focusing only on heavy weightlifting for months on end.

Building one’s cardio conditioning back up is not only uncomfortable, but doing so on top of a caloric deficit for weight-loss purposes puts a lot of stress on the body. This added stress makes weight loss physically and psychologically tougher and can even accelerate muscle loss\textsuperscript{95}.

By keeping regular cardio in your routine during your bulking phases, you can maintain your metabolic conditioning and prevent the “shell shock” that many people experience during the beginning of a cut.

It’s also common for people who have bulked for months without cardio to experience an initial lag in weight loss. Those who keep doing cardio regularly seem to better retain the ability to oxidize fat\textsuperscript{96}.

**2 WAYS CARDIO CAN GET IN THE WAY OF MUSCLE GROWTH**

As I said to introduce this myth, cardio can both hurt and help muscle growth. The two primary ways it can negatively affect your gains are by reducing your caloric surplus too much and by causing you to overtrain.

The surplus issue is pretty moot, though, if you watch what you’re burning. Normal cardio sessions don’t burn that many calories (a few hundred at most), which is easy enough to correct (eat a pile of fruit afterward, for instance). But if long, intense sessions go for a couple hours or longer, it can cause more caloric deficit than you can easily make up for.

Hardgainers have more to worry about in this regard as they usually have trouble eating enough as it is. Research has shown that low-intensity cardio stimulates the appetite, so including some every week can help ensure you eat enough\textsuperscript{97}.

Issues relating to cardio and overtraining revolve around intensity and frequency. Simply put, the more cardio you do, and the more intense it is, the more your strength and growth will be negatively affected due to excessive stresses put on both the central nervous system and muscles being worked (usually the legs get it the worst)\textsuperscript{98}.
SO, CARDIO WHILE FOCUSING ON MUSCLE GROWTH—YES OR NO?

I think the positives of including cardio when you're bulking clearly outweigh the negatives, especially considering the fact that the negatives are easily dealt with.

Generally speaking, I prefer HIIT cardio to steady-state even when bulking, despite the fact that it puts more stress on my body. Research has shown that HIIT cardio preserves muscle better than steady-state, but don't take that as a carte blanche to do hours of HIIT every week while bulking. The point at which the added cardio will impair your strength gains and muscle growth will depend on your genetics and conditioning, but a safe recommendation is no more than 2–3 sessions of cardio each week for no longer than 30 minutes.

If you find that even that much HIIT negatively impacts your strength, then opt for a few sessions of low-to-moderate cardio each week instead. That will still be enough to enjoy the benefits of cardio while avoiding its drawbacks.

Research has shown that cycling is a better choice than running when you're trying to maximize muscle gains, probably because it mimics movements you perform with weights. I experienced this when I made the switch to cycling for all of my cardio, and my leg strength dramatically jumped over the following few months.
People often start their workouts with cardio, thinking it’s a warm-up, and then move on to the weights. This is a mistake.

While a few minutes of light cardio before lifting can raise body temperature, which improves athletic performance, a moderate bout will get in the way of your weight training in several ways.

Research shows that doing both weightlifting and cardio in the same workout can reduce results. Researchers from RMIT University worked with well-trained athletes in 2009 and found that “combining resistance exercise and cardio in the same session may disrupt genes for anabolism.” In laymen’s terms, they found that combining endurance and resistance training sends mixed signals to the muscles. Cardio before the resistance training suppressed anabolic hormones such as IGF-1 and MGF, and cardio after resistance training increased muscle tissue breakdown.

Several other studies, such as those conducted by Children’s National Medical Center, the Waikato Institute of Technology, and the University of Jyvaskyla (Finland), came to the same conclusions: Training for both endurance and strength simultaneously impairs your gains on both fronts. Training purely for strength or purely for endurance in a workout is far superior.

Furthermore, cardio before weightlifting saps your energy and makes it much harder to train heavy, which in turn inhibits your muscle growth.

So, not only is doing cardio before weightlifting bad, but doing it immediately after isn’t optimal, either. It’s best to separate your cardio and weight-
lifting workouts by at least a few hours.

This can be tough, however, depending on your schedule, lifestyle, and chosen activity. If there’s no way for you to separate the workouts, then I recommend doing your cardio after, but not before, your weightlifting.

And instead of hopping on the treadmill for a weightlifting warm-up, I recommend you use what you learned in the chapter on stretching. Do a dynamic warm-up routine consisting of several sets of the exercise up first for the muscle group(s) being trained that day.
Some people still don heavy sweat suits or plastic suits while doing their cardio workouts. The idea is that by making yourself sweat more, you’ll burn more calories.

If only this were true, the sauna would be my best friend.

While sweating is great for keeping your skin clear, more sweating unfortunately does not equal more fat loss. Any extra weight you lose is simply water weight, and your body will quickly gain it back once you rehydrate.

In fact, doing things to jack up your core body temperature and induce excessive sweating can actually be dangerous. Sweating is a mechanism by which your body cools itself (through the evaporation of the sweat), and short-circuiting this process can raise your body temperature to unsafe levels.

The National Collegiate Athletic Association banned rubber sweat suits in 1997 after three wrestlers died using them in a high-heat environment to drop as much water weight as possible.

Excessive sweating can also lead to dehydration, which according to a study conducted by California State University, increases circulating concentrations of the stress hormones cortisol and norepinephrine, blunts the testosterone response to exercise, and negatively impacts the body’s metabolism of carbohydrate and fat\textsuperscript{105}.

So, don’t worry about how much you sweat while exercising. Just keep the body moving vigorously and long enough, and you’ll be able to achieve your fat loss goals.

\textbf{MYTH #23:}

\textbf{SWEATING MORE DURING CARDIO BURNS MORE FAT}
SECTION THREE:
DIET & NUTRITION MYTHS
We've all heard this a million times, and it seems to make logical sense. If we go too long without eating, wouldn't our body think it's being starved and drastically reduce its metabolic speed? In order to better deal with future starvation, wouldn't it increase the rate at which it stores fat once we actually do eat?

Regardless of how much it might seem plausible, it's not true.

FASTING DOESN'T NEGATIVELY AFFECT YOUR METABOLISM

A study conducted by the University of Rochester showed that metabolic rate didn't decline until 60 hours of fasting—and the reduction was a mere 8%

106. In fact, research has demonstrated that the metabolism actually speeds up after 36-48 hours of fasting

107,108.

True “starvation” in the eyes of the body occurs after about 3 days (72 hours) of not eating, at which point the primary source of energy becomes the breakdown of proteins (and the biggest source of protein is muscle)

109.

Until then it relies on body fat and glycogen stores in the liver and muscles for its energy, nothing more than routine biological functioning. Once it has to begin breaking down proteins for energy, however, the body knows its survival is imperiled, and that is when the real starvation mode begins.

This makes sense from an evolutionary perspective. If we haven’t eaten in quite some time, what does our body want us to do? Go find food, of course. And how does it stimulate us to do that? By increasing production of two chemicals called adrenaline and noradrenaline, which sharpen our
minds and make us want to go move around. They also increase our basal metabolic rate, the minimal amount of calories you burn at absolute rest. (Exercise elevates these chemicals as well.)

And what happens when we lose muscle? We become physically weaker, our metabolism slows down, we become more likely to succumb to disease, and eventually we die (usually from a heart attack).

THE HEALTH BENEFITS OF FASTING

A growing body of evidence is demonstrating that fasting has various health benefits. Studies have shown that fasting increases insulin sensitivity, stress resistance, fat oxidation, and life span and reduces the risk of disease.  

Yes, you read that right: Relatively long periods of fasting (16–24 hours) actually improve your health and help you burn more fat without any worries of the body obsessively storing every calorie you eat after the fast.

There are dietary strategies built around this research, and they are known as intermittent fasting routines. Such protocols entail splitting up your days into fasting and feeding periods, usually calling for 16–20 hours of fasting and 4–8-hour “feeding windows.” You eat your entire day’s worth of calories during these feeding periods, which requires large meals, especially if you’re lifting weights.

You should also know that intermittent fasting while exercising regularly requires proper meal and workout timing if you’re to make optimal gains. I won’t go into all the details here, but if you’re interested in following this style of dieting, I recommend you read my blog post on it, which you can find by visiting my website (www.muscleforlife.com) and searching for “intermittent fasting.”

Personally, I don’t like having to eat large (1,000+ calories) meals due to the uncomfortable fullness, as well as the ensuing lethargy caused by a hormone called cholecystokinin that is released when you eat protein and fat.

The key takeaway of this chapter is that you can eat infrequently if that’s how you like to do it, or have to due to schedule hiccups. Only two meals need be set in stone: your pre- and post-workout meals. Your pre-workout meal should contain about 30 grams of protein and carbohydrates, and your post-workout meal should contain about the same amount of protein and between 30–40% of your total daily carbs.

You can even work in a planned fast once or twice per week to reap some of its benefits. I will occasionally do this by simply skipping breakfast on a day that I’m not lifting (I lift early in the morning) and eating my first meal after about 12–14 hours of fasting.
MYTH #25:

IF YOU EAT A LOT OF CARBS, YOU WILL ALWAYS BE FAT

The hysterical crusade against the carbohydrate has reached a frantic pitch these days.

From the scientifically bankrupt theories of guys like Gary Taubes to the trendy low-carb diets like Paleo, Zone, Dukan, and so forth, the carbohydrate is now the victim of the same level of persecution that saturated fat endured for decades.

We’ve come to learn that saturated fats aren’t the evil heart killers they were made out to be.\(^{112}\) (This excludes the processed form, trans fat, which is known to increase risk of heart disease, among other health issues)\(^ {113}\).

If we’re to believe the leaders of the Carbohydrate Inquisition, this molecule will force us to be fat, break our metabolism, lead us to develop diabetes and other diseases, and generally turn us into hungry, horrible people.

If you ditch the diabolic carbohydrate, “experts” claim you will melt fat away and keep it off (without having to count pesky calories), build an invincible immune system, live forever, and maybe even develop superpowers. And you’ll be part of the cool crowd to boot.

But is this dietary culture war justified? In other words, does it have any basis in science?

CARBOHYDRATE INTAKE AND INSULIN LEVELS

Much of the carbohydrate controversy revolves around its relationship to the hormone \textit{insulin}.

As the unfounded claims go, insulin makes you fat, and carbohydrates
spike insulin; thus, “carbohydrates make you fat.” Sounds so simple, right? Well, yeah, the story is simple because it’s false.

While it’s true that insulin’s job is to pull glucose out of the blood and store excess as fat, the hormone is also responsible for driving amino acids into our muscles for protein synthesis and clearing dietary fats out of the blood (which are stored as body fat more efficiently than carbohydrate, I might add). On top of all that, insulin has a mild anti-catabolic effect (meaning it helps preserve your muscle).

And while it’s also true that eating carbohydrates increases insulin levels in your blood, many common sources of protein (such as eggs, cheese, beef, and fish) are comparable in their ability to do the same.

Some people claim that because your body generally produces more insulin when you eat carbohydrates, this leads to more fat storage. They’re wrong—research has shown that the amount of insulin your body produces in response to eating food (or insulin response) doesn’t affect the amount of fat stored.

So, in short, insulin is your friend, not part of a conspiracy between your pancreas and fat cells to ruin your self-image.

That’s one strike against the “carbs make you fat” camp. Now let’s look at the connection between carbohydrate intake and fat loss.

CARBOHYDRATE INTAKE AND REAL-WORLD WEIGHT LOSS

Many low-carb gurus will claim that you can lose weight much more quickly if you consume very few carbs every day. Some people even believe they can only lose weight if they cut their carbs to nil.

The problem with these beliefs is they fly in the face of both basic physiology and scientific findings, and they mask the most common weight-loss roadblock: eating too much while moving too little.

A simple review of scientific literature shows that diet composition has no effect on long-term weight loss.

Let’s first look at a study conducted by the University of Pennsylvania. Researchers assigned 63 obese adults to either a low-carb, high-protein, high-fat diet (20 grams of carbohydrate per day, gradually increased until target weight was achieved), or a conventional diet of 60% of calories from carbohydrates, 25% from fat, and 15% from protein.

The result: the low-carbohydrate group lost more weight in the first 3 months, but the difference at 12 months was insignificant.

Reducing carbohydrate intake decreases the amount of glycogen we store in our liver and muscles. The 3-month result isn’t surprising, then,
considering that total body water retention is decreased\textsuperscript{120}. This causes a rapid drop in weight that has nothing to do with burning fat (anyone that has reduced carbohydrate intake as a means of cutting calories for weight loss has experienced this).

Harvard University published a study in 2009 on the effects of diet composition and weight loss. They assigned 811 overweight adults to one of several diets, which were composed of the following percentages of fat, protein, and carbs: 20, 15, and 65%; 40, 15, and 45%; and 40, 25, and 35\%\textsuperscript{121}.

After 6 months of dieting, participants had lost an average of 6 kg (roughly 13.2 pounds). They began to regain weight after 12 months, and by 2 years, weight loss averaged out to 4 kg, with no meaningful differences between low-protein or high-protein, low-fat or high-fat, and low-carb or high-carb groups.

A study conducted by Arizona State University found that an 8-week high-carbohydrate, low-fat, low-protein diet was equally effective in terms of weight loss as a low-carbohydrate, low-fat, high-protein diet\textsuperscript{122}.

So, the conclusion we can derive is brutally simple and clear: As long as you keep yourself in a caloric deficit, you’ll lose weight regardless of the dietary protocol you follow\textsuperscript{123}.

**THE EXCEPTIONS TO THE RULE: WHEN LOW-CARB (OR HIGH-CARB) MIGHT BE BETTER**

Despite this body of evidence, practical experience in coaching hundreds of people has taught me that some people just do better on high-carb or low-carb diets, whereas some do fine with either.

For instance, some people—like myself—do very well with high-carbohydrate diets. They can lose weight very easily, feel energized all day without any crashes, and are able to maintain considerable strength in the gym. Others don’t do well with a high-carb approach. Weight loss is slower than optimal, they are very hungry, which leads to overeating, and any progress comes with frustrating energy highs and lows.

This personal response can go the other way, too. When people don’t react well to low-carb, high-fat diets, they can feel lethargic and mentally clouded, lose a ton of strength, and have trouble getting lean. Others thrive on fats, having plenty of energy and a general sense of well-being. What gives?

While feeling like crap certainly increases the chance you’ll overeat and give less than 100\% in your workouts, there’s more at work here.

Research has shown that some people’s bodies deal better with large
amounts of dietary fat than others\textsuperscript{124}, responding with positive metabolic changes like an increase in resting energy expenditure and fat oxidation to maintain energy balance\textsuperscript{125}. It can also result in better appetite control\textsuperscript{126}. However, other people’s bodies respond negatively to high amounts of dietary fat and are more likely to store it as stubborn body fat. Such research sheds light on why different individuals respond so well or poorly to low-carb, high-fat diets.

The above also relates to research on how insulin sensitivity and response can affect diet results. Studies have shown that weight-loss efforts aren’t improved or impaired by insulin sensitivity or resistance per se\textsuperscript{127}. But when we move away from a balance of nutrients and use high-carb, low-fat, or low-carb, high-fat diets in conjunction with different levels of insulin sensitivity and response, things change.

For instance, a study conducted by the Tufts-New England Medical Center found that a low-glycemic load diet helped overweight adults with high insulin secretion lose more weight, but did not help overweight adults with low insulin secretion\textsuperscript{128}.

A study conducted by the University of Colorado demonstrated that obese women who were insulin sensitive lost significantly more weight on a high-carb, low-fat diet than a low-carb, high-fat diet (average weight loss of 13.5\% vs. 6.8\% of body weight, respectively). Women who were insulin resistant lost significantly more weight on a low-carb, high-fat diet than a high-carb, low-fat diet (average weight loss of 13.4\% vs. 8.5\% of body weight, respectively).

What we can take away from these studies (and my anecdotal observations) is that if you have good insulin sensitivity and low secretion (good insulin response), you’ll probably lose weight more easily on a high-carb, low-fat diet. On the other hand, if you have poor insulin sensitivity and high secretion (poor insulin response), odds are you’ll do better with a low-carb, high-fat diet.

**SO, WHICH APPROACH, THEN? HIGH-CARB OR LOW-CARB?**

Unfortunately it’s not easy to tell if your body type responds better to a high-fat or low-fat diet, but it is fairly easy to take an educated guess regarding your body’s insulin dynamics.

After eating a high-carb meal, signs of good insulin sensitivity and response are pumped muscles that feel “full,” mental alertness, stable energy levels (no crash), and satiety. Signs of poor insulin sensitivity and response are bloat, gassiness, mental fogginess/inability to focus, sleepiness, and hunger soon after eating.
Based on the above symptoms, you can decide which approach to try. But remember that these are only general guidelines—in the end, actual weight loss is what matters most.

You should be able to lose 1–2 lbs. per week with the right caloric intake. If you’re not seeing progress despite being absolutely certain that you’re in a proper caloric deficit, you may benefit from altering the composition of your diet.
MYTH #26:

EAT MANY SMALL MEALS PER DAY TO STOKE THE METABOLISM AND CONTROL HUNGER

This myth was dietary dogma for the longest time, and is still promoted by fitness “experts” and related magazines.

The idea that small, frequent meals will speed up your metabolism and help you control hunger kind of makes sense at first. When you eat, your metabolic rate increases as it breaks down the food. So, if you eat every few hours, your metabolism will remain in a constantly elevated state, right? And nibbling on food throughout the day should help reduce hunger, right?

Bodies are not so simple. Like many of the myths that seem to make sense on paper, this one just doesn’t pan out in clinical research.

MEAL FREQUENCY AND YOUR METABOLISM

Each type of essential nutrient (protein, carbohydrate, and fat) requires varying amounts of energy to break down and process. This is the thermic effect of food consumption and is the metabolic boost that comes after eating.

The magnitude and duration of that boost depends on how much you eat. A small meal causes a small metabolic spike that doesn't last very long, whereas a large meal produces a larger spike that lasts longer.

So the question, then, is whether a higher frequency of smaller meals per day increases total energy expenditure over a 24-hour period than fewer, larger meals. The French National Institute of Health and Medical Research had the same question and performed an extensive review of literature to provide an answer.
Researchers looked at scores of studies comparing the thermic effect of food in a wide variety of eating patterns, ranging from 1 to 17 meals per day\textsuperscript{130}. In terms of 24-hour energy expenditure, they found no difference between nibbling and gorging. Small meals caused small, short metabolic boosts, and large meals caused larger, longer boosts, but by the end of each day, they balanced out in terms of total calories burned.

A study conducted by the University of Ontario split participants into two dietary groups: 3 meals per day vs. 3 meals plus 3 snacks per day, with both in a caloric restriction for weight loss\textsuperscript{131}. After 8 weeks, researchers found no significant difference in average weight loss, fat loss, and muscle loss among 16 individuals.

While increasing meal frequency can make dieting more enjoyable for some, it doesn’t help burn more energy.

**MEAL FREQUENCY AND APPETITE**

A study conducted by the University of Missouri with 27 overweight/obese men found that after 12 weeks of dieting to lose weight, increasing protein intake improved appetite control, but meal frequency (3 vs. 6 meals per day) had no effect\textsuperscript{132}.

The University of Kansas investigated the effects of meal frequency and protein intake on perceived appetite, satiety, and hormonal responses in overweight/obese men\textsuperscript{133}. In line with many other studies, the researchers found that higher protein intake led to greater feelings of fullness and that 6 meals actually resulted in lower daily fullness than 3 meals.

On the other hand, you can find studies wherein participants were less satiated on 3 meals per day and found that increasing meal frequency increased feelings of fullness, thereby making it easier to stick to their diets.

The bottom line is that there are many variables, including psychological ones, and clinical evidence shows that it’s incorrect to conclusively state that either more or fewer meals per day for hunger control will be best for everyone.

**SO HOW MANY MEALS PER DAY, THEN?**

How often you should eat boils down to personal preference. As the cliché goes, the best dietary protocol is the one you’ll stick to, and reducing psychological stress makes a big difference in increasing diet compliance and thus overall effectiveness.

I often recommend eating more, smaller meals per day. In my experience coaching hundreds of people, many prefer the feeling of eating every few hours as opposed to fewer, larger ones separated by 5–6 hours. I person-
ally don’t like eating 800–1,000 calories to then feel stuffed for several hours. I much prefer a 400-calorie meal that leaves me satisfied for a few hours, followed by another smaller meal with different ingredients and flavors, and so forth.

That said, if someone can’t or doesn’t want to eat frequently, then we work out a meal plan consisting of fewer, larger meals that fit their preferences or lifestyle. Our hunger patterns are established by our meal patterns, so it’s usually easiest to work around your schedule, not against it\textsuperscript{134}.
Alcohol and its relation to health and fitness is a tricky subject.

In small amounts—a drink or two a day—it has potential health benefits like improved insulin sensitivity\textsuperscript{135}, healthier cardiac function\textsuperscript{136}, and decrease in blood lipids (fatty substances in your blood, which when lowered, reduces your risk of heart disease)\textsuperscript{137}.

In larger amounts, alcohol leads to barely conscious drives home, fist-fights over who’s the best NFL rusher of all time, and charges of public indecency. And to nobody’s surprise, chronic alcohol abuse basically just breaks your ass\textsuperscript{138}.

But this chapter isn’t about the various effects of mild or severe drinking.

Instead, it will answer a question on all dieters’ and body builders’ minds: How much alcohol can we drink before it will negatively affect our efforts to lose weight and build muscle?

**Alcohol and Fat Loss**

Similar to the carbohydrate inquisition that’s in vogue these days, alcohol is the target of many criticisms. According to some people, if you drink, you’re going to get fat—end of story. And, depending on whom you talk to, you might just lose all your muscle as a bonus.

Well, if we take a quick look at epidemiological research, we can see that moderate alcohol consumption is actually associated with lower body weight, not higher\textsuperscript{139}.
A study published in 1985 in the *American Journal of Clinical Nutrition* looked at the diets of 1,944 adults aged 18-74. Researchers found that an increase in calories from ethanol (alcohol) alone didn’t result in the weight gain that would normally occur if those calories were from protein, carbs, or fat. In fact, thanks to regular alcohol intake, drinkers took in an average of 16% more calories each day than non-drinkers and had the same levels of physical activity, but weren’t any fatter than their alcohol-free counterparts.

Another study following obese women on a weight-loss diet instructed one group to intake 10% of daily calories from white wine and another from grape juice. After 3 months, the white wine drinkers lost about 2 pounds more than the grape juice group.

The exact mechanisms at work aren’t totally clear, but a likely factor is that drinking can reduce your appetite for food. According to another study, it may also be related to alcohol’s effects on insulin sensitivity.

While it may seem like I’m encouraging you to drink to get shredded, that’s not the goal. Alcohol consumption can hinder your weight loss efforts, but in an indirect way.

While alcohol itself basically can’t be stored as body fat, it blocks fat oxidation, which in turn accelerates the rate at which your body stores dietary fat as body fat.

In short, it’s not the calories from alcohol that can make you fat, but all the crap that you eat with it, which is hard to resist when you’re hammered. So, if you want to be able to drink while dieting and still lose weight, don’t consume alcohol more than one day per week, and use the following tips to protect yourself from excess fat storage:

- Restrict your dietary fat intake that day, and don’t eat any fatty foods while you’re drinking.
- Get the vast majority of your calories from protein and carbs that day (with most coming from protein).
- Stay away from carb-laden drinks like beer and fruity cocktails. Dry wines are a good choice as well as spirits (when not mixed with sugary soda or juices).

By following these guidelines, you can enjoy a few drinks every week without having to feel guilty and without ruining your weight-loss regimen.

**ALCOHOL AND TESTOSTERONE LEVELS**

Men do have to face the music when it comes to one result of alcohol: It suppresses testosterone production. The magnitude of this effect varies.
A study conducted by the TNO Nutrition and Food Research Institute had 10 men drink 30–40 grams of alcohol per day (2 to 3 beers, 2 to 3 ounces of liquor, or 10 to 15 ounces of wine). After 3 weeks, their testosterone levels had dropped by about 7% (pretty insignificant)\(^\text{147}\).

Another study had 9 men drink 60–70 grams after working out, and it had no effect on testosterone levels during the following 5 hours\(^\text{148}\).

What happens when we increase the post-workout dose, though?

The University of Helsinki conducted a similar study, administering 1.5 g ethanol per kg of body weight (the equivalent of six beers or six 1.5-oz. shots) to 8 healthy men ages 20 to 26. Their testosterone levels dropped by 23% on average between the 10th and 16th hour after they started drinking\(^\text{149}\). Furthermore, cortisol levels were elevated by 36% on average, and growth hormone secretion was heavily suppressed.

Another study conducted by the same university agreed: Binge drinking after engaging in exercise is bad for testosterone production, thus proving that 10 beers is a poor post-workout meal (awww, shucks)\(^\text{150}\).

All things considered, if you have a few drinks here and there, you probably have nothing to worry about in terms of testosterone production. But doing post-workout shots? Not a good idea.

**ALCOHOL AND MUSCLE RECOVERY AND PERFORMANCE**

In rat and in vitro studies, alcohol impairs protein synthesis\(^\text{151,152}\). Some people directly apply that type of research to living, breathing humans and say it prevents you from building muscle and accelerates muscle loss.

Well, it doesn’t work like that. Rats and humans have major metabolic differences, and in vitro findings don’t always pan out in vivo.

In live humans, muscle-wasting effects of alcohol have only been seen in chronic alcoholics\(^\text{153}\). If you have 7+ drinks per day, you’re going to have trouble building muscle. And walking. And remembering your name.

It’s also commonly claimed that alcohol consumption impairs strength and interferes with the body’s ability to repair muscle damage.

According to studies conducted by the University of Massachusetts and Aarhus University, however, alcohol has no effect on strength or indicators of exercise-induced muscle\(^\text{154, 155}\).

To the contrary, a study conducted by Massey University showed that 1 g of ethanol per kg of body weight after exercise magnified post-workout muscle damage\(^\text{156}\). It should be noted that the workout regimen used was a bit ridiculous (300 eccentric contractions on a machine for training the legs), so we can’t be sure its findings apply to more traditional, lower-volume
weightlifting workouts.

TO DRINK OR NOT TO DRINK?

Alcohol advocates like to talk it up as some kind of superfood, but the bottom line is it’s not necessary in any way for good health and it won’t give you any performance benefits.

If you’re like me and don’t drink, I don’t see any reason to start. If you drink regularly, you have a lot more to worry about than it interfering with muscle gains.

But if you drink infrequently and moderately enough to not notice any aftereffects (no hangovers or lingering issues), then you probably don’t have reason to give it up altogether.
MYTH #28: FRUIT JUICE IS GOOD FOR YOU

The general health advice to consume several servings of fruit every day has been around for a while, and this has led people to drink more fruit juice and juice-based drinks as a way to do this.

While most fruits are healthy snacks (I’ll be debunking claims against fruit next), juice is another story.

The first thing to consider is the fact that fruit juices and smoothies that you buy in the store are almost all full of added sugar—some even have hundreds of grams of carbs per bottle, which is crazy.

The Lille 2 University of Health and Law conducted a study in 2012 that analyzed 187 different fruit beverages, including juices, smoothies (juice plus pulp), fruit drinks (water plus fruit juices), and fruit-flavored waters (waters that have fruit flavors, but no juice)\(^\text{157}\).

They found that 71% of smoothies, drinks, and fruit-flavored waters contain added sugar, and smoothies and juices contain, on average, just 44.5% and 10.5% fruit juice, respectively. Average sugar content:

- Fruit-flavored water: 2.4g per 100 mL / 5.8g per cup
- Fruit drinks: 8.8g per 100 mL / 21.1g per cup
- Fruit juices: 10.7g per 100 mL / 25.7g per cup
- Fruit smoothies: 10.8g per 100 mL / 25.9g per cup

In many cases, drinking a glass of a fruit juice-based beverage is no better for your body than mixing a few cubes of sugar in water and drinking
it. And, to nobody’s surprise, research has associated regular consumption of sugar-sweetened beverages with an increased risk of developing type 2 diabetes\textsuperscript{158}.

Even if you make your own fruit juice, you are removing the flesh of the fruit, which provides fiber. The flesh is what makes you feel full and slows the digestion of the sweet sugars that make the juice taste good, so removing it makes it too easy to consume the calories of several servings of fruit without even realizing it. Eating 5 apples in one go would fill you up for quite a while; drinking the juice obtained from 5 apples would provide more or less the same amount of calories, but wouldn't fill you up for nearly as long.

When it comes to getting your daily serving of fruit, stick to eating whole fruits and drink water instead.
MYTH #29: FRUIT IS BAD FOR YOU

I figured this would be a good one to address on the heels of the last. Many health gurus claim that fruit can cause horrible things in the body due to the sugar molecule it contains, known as fructose.

I’ve known many people who were thoroughly convinced they would get fatter if they ate any fruit (many of whom were already overweight, which is ironic) and who couldn’t believe I was able to stay in the single-digit body fat percentages while eating over 100 grams of carbohydrate from fruit every day. (Apples, oranges, and bananas are my favorites.)

Some pretty heavy claims have been leveled at fructose in the pop culture of nutrition and diet. One popular crusader against it is Dr. Robert H. Lustig, whose talk “Sugar: The Bitter Truth” has over 3.4 million views on YouTube. According to Lustig and others, fructose has special qualities that directly induce fat storage and make it toxic to the liver.

But does the current scientific evidence support these positions? Is fructose—and, by association, fruit—bad for our health?

WHAT IS FRUCTOSE ANYWAY, AND WHAT’S THE BIG DEAL?

Fructose is a simple carbohydrate (one that is broken down quickly into energy) that, together with glucose, makes up sucrose (table sugar). It’s found in many plant sources like honey, fruits, flowers, and root vegetables and is one of the three basic forms of sugar that our body can use as fuel.

Eating an abundance of refined sugars—fructose included—can definitely cause problems beyond added calories. They have addictive proper-
ties normally found with drug abuse, and that can lead to cravings, binging, and withdrawal symptoms\textsuperscript{159}. Regular consumptions of sugar-sweetened beverages is particularly bad and has been associated with weight gain and obesity\textsuperscript{160}, as well as an increased risk of cancer\textsuperscript{161}.

But, if we’re to listen to fructose alarmists, this molecule in particular is to be avoided at all costs. Research has indicated that regular consumption of fructose may play a causative role in the epidemic of a cocktail of diseases, including hypertension, obesity, metabolic syndrome, diabetes, and kidney and cardiovascular disease\textsuperscript{162}.

These observational studies have led to assumptions that the less fruit you eat, the better. But there’s more to this story.

\textbf{THE BIG FLAW IN FRUCTOSE ALARMISM}

When you really dig into the feeding trials that highlight the health problems associated with fructose intake, something seems peculiar. The dosages of fructose required to produce negative effects are quite high. Not out of reach through dietary means, but damn near impossible to intake through fruit alone.

One study conducted by the University of Lausanne showed that 7 days of a high-fructose diet increased fat deposits in the liver and muscle, as well as fasting triglycerides and decreased insulin sensitivity\textsuperscript{163}. Bad, no doubt.

Yet the researchers had 16 guys consume a solution consisting of 3.5 grams of fructose per kilogram of weight every day. I weigh about 90 kilograms, so that would mean I would have to eat 315 grams of fructose per day. If I wanted to get that from bananas, I’d have to eat about 45. Or 80 cups of strawberries. Or 800 cherries. Or 26 apples.

Another study conducted by the University of Fribourg in Switzerland had one group drink a beverage containing 60 grams of fructose and the second a beverage with the same amount of glucose\textsuperscript{164}. Blood pressure levels were elevated for 2 hours in the fructose group, but not the glucose group. But that’s the fructose found in about 9 bananas, 15 cups of strawberries, 150 cherries, or 5 apples—in one sitting!

Yet another study, this time conducted by the University of California, made sure participants got 25\% of their daily calories from either fructose or glucose\textsuperscript{165}. After 12 weeks, both groups gained weight (due to overeating), but the fructose group experienced negative side effects not seen in the glucose group:

- Increased amount of visceral fat (abdominal fat that gets packed between the organs, as opposed to fat that’s just under the skin)
- Increased fat production in the liver
- Decreased insulin sensitivity
- Elevated LDL (bad) cholesterol
- Increased triglyceride levels (fatty substances in the blood that, when elevated, increase the risk of heart disease and stroke)

Pretty nasty indeed. But wait a minute—25% of daily calories? Well, I eat close to 3,000 calories per day, so that would call for about 175 grams of fructose per day. I won’t bother with the fruit list, but you get the idea.

Okay then, so eating large amounts of fructose every day is a bad idea. But, practically speaking, reaching dangerous levels through fruit alone would require deliberate overfeeding. Not only that, but the fiber content of fruit changes how your body deals with sugar. Fruit also contains various phytochemicals that are good for our overall health\(^\text{166}\).

Bottom line: Consuming 30 grams of fructose from fruit is different than drinking 30 grams of pure fructose, or eating that much in the form of high-fructose corn syrup.

**BONUS ROUND: DOES FRUCTOSE MAGICALLY TURN INTO BODY FAT AND WRECK YOUR LIVER?**

One of the common claims against fructose is that, regardless of level of intake, it leads to more weight gain than other types of carbohydrate. Another is that it’s toxic to the liver, nearly as much as alcohol.

Unfortunately, these positions just aren’t supported by studies done with humans, as opposed to mice and rats (which have very different metabolic characteristics than humans). Research has shown that a paltry 2–3% of fructose consumed is converted into fat in the liver, whereas 50% ends up as glucose, 25% as lactate, and 15% as glycogen\(^\text{167}\).

It’s not surprising, then, that a McMaster University meta-analysis published in 2012 reviewed 31 fructose feeding trials involving 637 total participants to conclude that “fructose does not seem to cause weight gain when it is substituted for other carbohydrates in diets providing similar calories\(^\text{168}\).”

Some people point to the lactate production as a problem, but these claims were debunked over a decade ago\(^\text{169}\). It turns out that lactate isn’t a metabolic miscreant; in fact, it plays an important role in a number of metabolic processes and is an effective aerobic fuel.

Fructose, like any other form of calories, will cause weight gain when overeaten. But it doesn’t have magical fat storage powers, and it doesn’t
damage your liver at low-moderate consumption levels.

**SO, HOW MUCH FRUCTOSE SHOULD YOU EAT EVERY DAY?**

According to a meta-analysis of clinical trials evaluating fructose intake, 25–40 grams of fructose per day is totally safe. That’s 3–6 bananas, 6–10 cups of strawberries, 10–15 cherries, or 2–3 apples per day. Or, as the sage old advice goes, a few standard servings of fruit every day.

While regular fruit eaters don’t have anything to worry about, regular eaters of refined sugars like high-fructose corn syrup or sucrose can reach unhealthy levels very easily. A 20-ounce bottle of soda sweetened with high-fructose corn syrup contains about 35 grams of fructose. One gram of sucrose is about half glucose, half fructose, so if you eat a dessert with 50 grams of sugar, you’re getting about 25 grams of fructose. High-fructose corn syrup is about 55% fructose and found in many processed foods, so this can add up quickly.

Even agave syrups, which are touted as healthy by many due to their low-glycemic properties, can be as high as 90% fructose. Other less processed forms can be as low as 55%.

You can avoid all the health complications associated with simple sugars like fructose by keeping your daily intake relatively low. The sources are many, but the effects are the same for agave, sucrose, honey, maple syrup, raw sugar, molasses, brown sugar, high-fructose corn syrup, turbinado sugar, and on and on.
MYTH #30:

THE BODY CAN ONLY ABSORB AND USE (INSERT NUMBER HERE) GRAMS OF PROTEIN AT A TIME

Many different numbers are perpetuated in this myth. Some sources say 30 grams is the max, while others say 60.

Who’s right? As with many issues of nutrition, there’s no simple answer. It would stand to reason that an NFL linebacker’s body deals with protein intake differently than a 120-lb weakling. Protein needs due to lifestyle and lean mass should influence the matter of protein metabolism.

Additionally, if it were true that a person can only absorb a relatively small amount of protein in one meal, then “super-dosing” daily protein needs into 2–3 meals would result in protein deficiencies. This assumption begs the question of how the human species survived the hunter-gatherer days. Can there be any truth in these claims?

THE SCIENCE OF PROTEIN ABSORPTION

In order to better evaluate the issue at hand, let’s look at what actually happens when you eat protein.

First, your stomach uses its acid and enzymes to break the protein down into its building blocks, amino acids. These amino acids are transported into the bloodstream by special cells that line the intestines and are then delivered to various parts of the body. Your body only has so many transporter cells, which limits the amount of amino acids that can be infused into your blood every hour. This is what we’re talking about with “protein absorption”—how quickly our bodies can absorb the amino acids into our bloodstreams.
It’s widely known that the human body absorbs different proteins at different rates. According to one review, whey clocks in at 8–10 grams absorbed per hour, casein at 6.1, soy at 3.9, and egg at 1.3. These numbers aren’t completely accurate due to the complexities involved in measuring protein absorption, but they lend insight nonetheless: certain proteins are absorbed very slowly, whereas others can be quite fast.

You should also know that food substances don’t move uniformly through the digestive tract, and they don’t leave sections in the same order that they arrived in. For instance, the presence of protein in the stomach stimulates the production of a hormone that delays “gastric emptying” (the emptying of the food from the stomach), and that slows down intestinal contractions. This causes food to move more slowly through the small intestines, where nutrients are absorbed, and this is how your body buys the time it needs to absorb the protein you eat. Carbohydrates and fats can move through and be absorbed while your body is still working on the protein.

The next step in protein metabolism occurs once the amino acids make it into the bloodstream. Your body does various things with them, such as tissue growth and repair, and it can temporarily store (up to about 24 hours or so) excess amino acids in muscle for future needs.

If there are still amino acids in the blood after doing all of the above, your body can break them down into fuel for your brain and other cells.

If that’s how your body processes proteins we eat, what’s up with the claims that it can only absorb so much in one meal?

THE PROBLEMS WITH CLAIMS OF PROTEIN ABSORPTION LIMITATIONS

Claims that the body can only absorb so much protein in one sitting are usually based on one of two things:

1. An ignorance of how food moves through the digestive system. Some people believe that all foods move through the small intestines in 2–3 hours. Thus, if you ate even the fastest type of protein that can be absorbed at a rate of 8–10 grams per hour, you could only absorb 25–30 grams of protein in one meal. If you eat proteins that are absorbed more slowly, then you would (apparently) wind up with even fewer grams absorbed into the bloodstream.

2. References to studies relating to the anabolic response to protein consumption.

We’ve already addressed number one. Your body is smart and regulates
the speed at which protein moves through the small intestines to ensure it can absorb all the amino acids present.

Let’s look at number two. A study commonly cited in connection with protein absorption showed that 20 grams of post-workout protein stimulated maximum muscle protein synthesis in young men\textsuperscript{175}. That is, eating more than 20 grams of protein after working out did nothing more in terms of stimulating muscle growth.

The most obvious flaw in this argument is you can’t use studies on the anabolic response to protein consumption to extrapolate ideas about how much we can absorb in one sitting.

Acute anabolic responses to eating protein don’t give us the whole picture. Absorption relates to the availability of amino acids over extended periods of time, which prevents muscle breakdown and provides raw materials for growth. And, as we now know, our body doesn’t just throw away all of the amino acids it can’t immediately use—it can store them for later.

Further supporting this position is a study conducted by the Human Nutrition Research Center\textsuperscript{176}. It had 16 young women eat 79\% of the day’s protein (about 54 grams) in one meal or four meals over the course of 14 days. Researchers found no difference between the groups in terms of protein synthesis or degradation.

Furthermore, if we look at the amount of protein used in the above study relative to body weight, it comes out to about 1.17g/kg. Apply that to a man weighing 80 kilograms (176 pounds), and you get about 94 grams of protein. While this isn’t scientific proof, it’s food for thought.

Research on the style of dieting known as intermittent fasting is also relevant. For this diet people fast for extended periods, followed by anywhere from 2–8-hour “feeding windows.” One study found that eating the entire day’s worth of protein in a 4-hour window (followed by 20 hours of fasting) didn’t negatively impact muscle preservation\textsuperscript{177}.

It’s also worth noting that you shouldn’t take the 20 gram number as the final word on the acute anabolic response to protein consumption. Protein metabolism is affected by several things:

- How much muscle you have: The more you have, the more amino acids your body needs to maintain your musculature, and the more places your body can store surpluses.

- How active you are: The more you move around, the more protein your body needs\textsuperscript{178}.

- How old you are. The older you get, the more protein your body
needs to maintain its muscle\textsuperscript{179}.

- Your hormones. Elevated levels of growth hormone and insulin-like growth factor 1 (IGF-1) stimulates muscle synthesis, whereas elevated levels of cortisol reduces protein synthesis and accelerates gluconeogenesis (thus leaving fewer amino acids for tissue repair and growth).

So, while 20 grams of protein might be enough to stimulate maximal muscle growth in a 140 lb man with little lean mass, the same wouldn’t hold true for someone with 180 lbs of lean mass.

**THE BOTTOM LINE: YOU CAN BE FLEXIBLE WITH YOUR PROTEIN INTAKE**

As you can see, it’s impossible to put a cap on how much protein your body can absorb in one meal. It’s definitely a hell of a lot more than the 20–30 grams that some people claim.

While it’s smart to have a good amount of protein before and after training, break up the rest of your daily needs however you want and let your body take care of the rest\textsuperscript{182}. Personally, I like to eat every few hours, but if you prefer fewer, larger meals, then don’t be afraid to load up on the protein when you eat.
MYTH #31:

I WON’T HAVE TO WATCH WHAT I EAT IF I EXERCISE A LOT

Oh, how I wish this were true. I would plan epic feasts multiple days per week and just train extra hard on those days.

The truth is that how you eat determines much of how you look. If you eat like crap (and eating too much of healthy food qualifies as eating like crap for this discussion), you’re going to look like crap. End of story.

How many people have you seen who work out daily and have little to show for it because of an ever-present coat of flab? Even guys who have worked their butts off to build a considerable amount of muscle just wind up looking like big, puffy meatballs until they get lean. Many of them could look awesome if they were willing to fix how they ate.

Unfortunately, you can’t out-exercise poor eating habits. You can’t burn enough calories through exercise to do it. The handful of cookies you ate for dessert requires an hour of intense cardio to offset. And what about the pizza you ate before the cookies? Forget it—there’s another few hours.

The bottom line is if you don’t follow an eating plan and know how many calories you’re eating every day and why, you’ll never achieve the type of body that you dream of.

Ironically, food quality doesn’t even matter in terms of body composition—it all boils down to how much energy you’re putting in your body versus how much energy it’s using. Weight loss, gain, and maintenance are governed by the laws of thermodynamics, not Men's Health broscience rapid fat loss tips.

It’s okay to indulge now and again, but it needs to be the exception, not
the rule. When dieting to lose weight, I eat no more than one cheat meal per week. That means that every meal I eat is planned in terms of calories, protein, carbs, and fats, and the cheat meal is an intentional, semi-controlled instance of overeating.

When I’m dieting to gain weight (muscle), I follow a meal plan in the same way. Although I eat a lot more every day, I’m keeping my caloric surplus regulated so as to prevent excessive fat storage. I usually do two cheat meals per week, and I don’t go crazy.

The key is you have to look at food as fuel.

Imagine for a second that your car has no mechanism to stop the pump when its tank is full. And imagine that when you go to the gas station, you just decide on random amounts of time to pump, regardless of your tank’s capacity. Sometimes you over-pump and spill gas all over the place, and other times you under-pump and leave yourself with a less-than-full tank. And, for the sake of continuing the metaphor, imagine that over-pumping was a lot more fun than under-pumping.

Well, that’s how eating goes. The amount of energy your body burns every day is, in a sense, your tank’s capacity. Unfortunately, if you over-fuel your body, it doesn’t just pee out or burn off the excess energy—it stores a portion of it as fat. When it gets under-fueled, it goes to its stores for the energy it needs, and this results in fat loss.

Proper dieting is little more than regulating your fuel intake based on your goals and your tank’s capacity. Sure, you can eat food that tastes good and build a great physique, but you have to know how much fuel you’re putting in and how much your body needs to maintain its current state.
MYTH #32:

DON’T EAT AT NIGHT IF YOU WANT TO LOSE WEIGHT

This is silly advice, but it’s followed by many. Losing weight requires that you consume less energy (calories) than you expend, and meal timing has little bearing on this.

If you overeat during the day instead of late at night, there’s no difference in the effect of those extra calories. Weight loss is such a precise activity that if you eat too much in just one meal but stick to your meal plan for the rest of the day, you can fail to lose fat that day.

A literature review conducted by the French National Institute of Health and Medical Research highlights several key findings relating to meal frequency:

- Past studies that associated a “grazing” style of eating (many small meals per day) with greater weight loss were flawed in various ways, and the conclusions drawn from them even more so.

- Newer, more rigorous research has shown that there are no metabolic advantages to eating fewer or greater meals per day.

- Meal patterns do not directly accelerate or impair weight loss, but can predispose people to overeat and thus fail to lose weight\textsuperscript{183}.

You may be shocked to learn that studies have shown that eating larger meals later in the evening can actually result in more fat loss and less muscle loss\textsuperscript{184}. (I’ve yet to experience this personally, but it soothed any fears I had in the past about eating late dinners.)

I like to eat a couple smaller meals at night (in addition to larger break-
fasts and lunches), but if your schedule or lifestyle is better suited to larger meals at night, don’t worry—it won’t get in the way of hitting your goals. Instead of trying to tough it out for hours and hours with no food at night, plan your meals so you can eat on a schedule that you like while maintaining a caloric deficit, and you will lose weight.
MYTH #33:

IF YOU EAT BREAKFAST, YOU’LL STAY THIN. IF YOU SKIP IT, YOU’LL GET FAT

For many years now, a staple in weight-loss plans and maintenance advice has been to eat a nice, big breakfast every day.

This is backed by observational research in which eating breakfast is associated with lower body weight in large populations, such as the analyses conducted by the University of Warsaw and University of Tsukuba\(^{185, 186}\).

This myth perfectly illustrates how bad advice can become so prevalent in this industry. Observational research, which can’t establish causation, suggests that something may be the case (skipping breakfast seems to be negatively associated with body weight), but indicates that more rigorous research is needed to see if there truly is a connection and why.

The media, however, jumps on such studies as cold, hard proof and starts running stories with headlines announcing “breakthrough” discoveries. Big health and fitness magazines and websites pick up on those stories for new content, trainers and gym-goers read it and spread it, and on it goes.

The side of the breakfast story you’re not told is that research has shown that people who skip breakfast are more likely to eat junk food and tend to eat more in general\(^{188}\). It wasn’t the breakfast skipping that was causing the problem; it was the candy, soda, and excess calories. Breakfast eaters merely tend to maintain better overall dietary habits—no big surprise that they tend to be thinner as well.

So, eat breakfast if you like it (I do), especially if you find yourself very hungry when you wake up. But skip it if that works better for you. I know you’re sick of hearing it by now, but when it comes to weight loss and weight
maintenance, *how much* you eat is what matters, not when.
MYTH #34:

EGG YOLKS INCREASE THE RISK OF HEART DISEASE

The yolk contains half of the egg’s protein and most of its vitamins and minerals, and it helps with the digestion and absorption of the protein in the white. The reason often given for leaving out the yolk is that the cholesterol it contains increases the risk of heart disease.

It’s hard to pinpoint exactly where this claim originated, but a good place to start is research published by the American Heart Association in 1961 on the relationship between cholesterol and heart attacks and strokes. At the time, it was believed that reducing intake of dietary fats and cholesterol would reduce the risk of cardiovascular disease and that increasing intake would increase the risk. As egg yolks contain a fair amount of cholesterol (about 200 mg per yolk), the general recommendation became to avoid them altogether.

The AHA has maintained this position ever since. As of December 2012, it recommends that you eat less than 300 mg of cholesterol per day. Considering the cholesterol content of egg yolk, we’re clearly not supposed to eat much of it. For whatever reason, the AHA doesn’t want to change its mind despite the steadily growing pile of evidence mounted against its claims.

For instance, a study conducted by the Shiga University of Medical Science analyzed two Japanese health surveys, one from 1980 and the other from 1989, and noted a decline in deaths from heart disease despite a dramatic rise of elevated cholesterol levels.

Another study conducted by Harvard University involved the analysis
of over 100,000 subjects. It concluded that increased egg consumption was not associated with the risk of heart disease\textsuperscript{192}.

These observational findings are also supported by clinical trials.

In a recent study conducted by the University of Connecticut, 3 eggs per day for 12 weeks raised HDL-C levels ("good" cholesterol) without affecting LDL-C levels ("bad" cholesterol)\textsuperscript{193}. Further research showed that eating eggs also reduced various markers of inflammation, which can help prevent all manner of health problems and disease\textsuperscript{194}.

Other health benefits of eating egg yolks include reduced risk of thrombosis (blood clotting that can disturb blood flow and cause heart attacks or strokes) and higher blood concentrations of two powerful antioxidants, lutein and zeaxanthin, which protect your eyes and skin from UV damage and prevent eyesight degradation\textsuperscript{196}.

Don't buy into the egg yolk hysteria. The only reason to keep your intake low is when you're restricting calories, but even then, including a couple yolks per day is a great way to get your healthy fats while reaping the other benefits of eggs.
MYTH #35:

EATING FATS MAKES YOU FAT

While going low-carb is all the rage right now, the fad of eating as little fat as possible has enjoyed its time in the sun too, and many people still avoid dietary fats out of a fear of gaining weight.

Like many myths, the belief that the more fat you eat, the fatter you get begins with a simple, scientific fact that is colored to look menacing when it's harmless.

THE “PROBLEM” WITH DIETARY FAT

Dietary fat is very easily stored as body fat. Research has shown that 0–3% of the energy contained in dietary fat is used to store it as body fat, which means that basically all of the calories you eat from fats are available for storage (and that's exactly what your body likes to do with them)\(^1\). Dietary fat contains quite a bit of energy as well—about 9 calories per gram, which is a little over double that of protein and carbohydrate.

Carbohydrates require more energy to store as body fat. Research has shown that the storage cost of carbohydrates is about 25% of the energy it contains, leaving only 3 out of every 4 calories from carbohydrates available for fat storage\(^2\). Furthermore, your liver and muscles store a large amount of carbohydrate, and your body will only store carbohydrate as fat after the muscles and liver are “full”\(^3\).

Protein is the least efficient macronutrient in terms of fat storage. The exact storage cost isn't known, but we do know that 20–30% of the energy contained in protein is used just to break it down into amino acids, which the body can then use\(^4\). Further processing must occur to turn the amino...
acids into body fat, expending more energy. Practically speaking, the body can store very few calories from protein as body fat.

So, when we consider just the above information, it might seem sensible to avoid eating fats. Not quite.

**DIETARY FAT ISN'T THE ENEMY AFTER ALL**

Reducing fat intake can help with weight loss in the short term because it’s an easy way to create a caloric deficit, but you can achieve the same result by following a properly calculated high-fat or high-protein diet. Any diet that creates an energy deficit is effective for weight loss; this has been demonstrated numerous times in scientific literature (and mentioned a whole lot throughout this book).

A massive study conducted by the MedStar Research Institute involved 48,835 postmenopausal women following either a low-fat or “normal” diet. After 7 years, researchers found that the low-fat diet offered no weight-related advantages over the typical diet.

In a study conducted by Harvard University, 811 overweight adults followed one of four diets, each with differing percentages of calories derived from protein, carbs, and fats. After 2 years of the trial, with 80% of participants remaining, researchers concluded that “reduced-calorie diets result in clinically meaningful weight loss regardless of which macronutrients they emphasize.”

The reality is that neither protein, carbohydrate, nor fat can cause us to gain weight until we put ourselves in a positive energy balance. That is, we have to overeat to gain weight. And consuming fats can’t stop anyone in a caloric deficit from losing weight.
MYTH #36:

DON’T DRINK WATER WHILE EATING BECAUSE IT INTERFERES WITH DIGESTION

This story generally goes like this: Drinking water with meals dilutes gastric acids and enzymes, which interferes with or slows down digestion. Another version of the myth is that cold water in particular causes issues because digestion is a “hot” process (I’m not sure what that even means, but this advice is out there).

These claims have been around for a long time (thousands of years, actually—admonitions against combining food and water can be found in ancient Arabic and Greek medical texts) and continue to make the rounds, despite the fact that they have no scientific legs to stand on.

One of the earliest studies dispelling these baseless claims was conducted by the University of Illinois and published in 1910\textsuperscript{203}. Researchers had a healthy, 22-year-old man drink three liters of water with meals for five days and then studied the effects on his body. They found that the water intake didn’t impair digestion through dilution because the body produced more gastric juices to compensate. Contrary to this myth, the water intake actually improved the absorption of nutrients in the food, leading the researchers to conclude that water is a beneficial part of digestion, helping to carry the food to your stomach and then break it down.

Furthermore, drinking water with meals can actually help you lose weight, as reported in a study conducted in 2010 by Virginia Tech\textsuperscript{204}. A weight-loss diet was assigned to 48 overweight adults, who were split into two groups: one with 500 mL of water prior to each daily meal, the other without. After 12 weeks, the water group had lost 44\% more weight (over 4 pounds) than the non-water group.
Researchers couldn’t be sure as to the exact mechanisms behind this, but they suspect it had to do with satiety. Other studies have shown that drinking water with a meal is a simple way to cope with feelings of hunger and can help prevent overeating.\textsuperscript{205}
MYTH #37:

DIET SODAS ARE GOOD FOR DIETING

When it comes to advertising, names can be very misleading. To nobody’s surprise, research has associated regular consumption of sucrose-sweetened beverages (table sugar) with weight gain and obesity\textsuperscript{206}, type 2 diabetes, and metabolic syndrome\textsuperscript{207}.

As a result, many soda drinkers have switched to diet versions of their favorites, believing them to be a relatively healthy alternative. By drinking diet soda, you reduce your caloric and fructose or sucrose intake, which are good things for both weight loss and general health. While that may be the case, research is showing that artificially sweetened beverages come with many of the problems of their sucrose-sweetened counterparts—and then some.

A study conducted by the Center for Research in Epidemiology and Population Health analyzed 14 years of dietary information for 66,118 women and found that both sucrose-sweetened and artificially sweetened beverages increase the risk for type 2 diabetes\textsuperscript{208}.

Researchers point to several findings as possible explanations for why artificial sweeteners have this effect:

- Increases in sweet preference and appetite have been linked with increased consumption of artificially sweetened beverages\textsuperscript{209}.

- Aspartame, one of the most commonly used artificial sweeteners, produces a similar insulin response as sucrose\textsuperscript{210}.

- Regular use of artificial sweeteners has been shown to increase both
triglyceride and blood glucose levels, which, over time, can cause various types of disease\textsuperscript{211}.

While there’s still much research to be done regarding artificial sweeteners’ effects on weight management and general health, the scales of scientific evidence are tipping in favor of reducing intake.

If you just stay away from sweet drinks altogether, you’ll avoid the many potential health risks they carry.
MYTH #38: SALT IS BAD FOR YOU

Salt has gotten a pretty bad rap over the years. It’s blamed for high blood pressure, heart attacks and stroke, water retention, and other health nightmares.

Table salt is a combination of two electrolytes: sodium and chloride. In fact, since electrolytes conduct electrical currents, sodium is a vital nutrient that helps regulate blood pressure, support the nervous system, and ensure muscles contract properly.

Like many substances we eat, it’s not inherently bad for us, but too much is. Eating too much sodium causes water retention (which gives you that puffy, soft look), and it can lead to high blood pressure and heart disease. Chronic high-sodium diets have even been linked to risk of stomach cancer. On the other hand, too little sodium in your body can lead to nausea, lethargy, dizziness, vomiting, and other health problems.

The goal isn’t to eat as little sodium as possible, but to eat the right amount.

RECOMMENDED SODIUM INTAKE, AND ACTUAL INTAKE

The Institute of Medicine recommends 1,500 milligrams of sodium per day as the adequate intake level for most adults, with an upper limit of 2,300 mg per day.

Most people eat a lot more than this. According to the CDC, the average American ages 2 and up eats 3,436 milligrams of sodium per day.

Over-consumption of sodium is surprisingly easy. A teaspoon of table
salt contains a whopping 2,300 mg of sodium. Yup, you read that right—one teaspoon per day is the recommended upper limit of sodium intake.

Not only that, but many commonly eaten processed foods contain a ton of sodium. According to data from the National Health and Nutrition Examination Surveys, the top 10 food sources of sodium in the American diet are:

1. Meat pizza
2. White bread
3. Processed cheese
4. Hot dogs
5. Spaghetti with sauce
6. Ham
7. Ketchup
8. Cooked rice
9. White rolls
10. Flour tortillas

Frozen and canned foods are full of sodium, as are cured meats like bacon and sausage (one slice of bacon has 1,000 milligrams of sodium!). Fast food is full of sodium, and restaurant food is often full of salt because it’s an effective flavor enhancer.

5 SIMPLE WAYS TO CUT BACK ON THE SODIUM

A few simple ways to decrease your daily sodium intake are as follows:

1. No canned or pre-packaged foods (salt is used as a preservative)
2. No deli meat (full of sodium)
3. Reduce your use of table salt and spices. Use a salt substitute like potassium chloride instead. Many spices are high in sodium as well—use them sparingly.
4. Watch out for sauces and salad dressings, many of which contain a lot of sodium.
5. Reduce your intake of cheese, which is often quite high in sodium.
It’s also worth noting that ensuring your body gets enough potassium is important as it helps balance cellular sodium levels by pumping it out of the cells. Most of us eat way too much sodium but an average of 2,500 mg of potassium per day, which is about half of the daily recommendation for adults. Some good natural sources of potassium are bananas, avocados, fish, and beans. You can also buy potassium tablets to take as a supplement, if necessary.
MYTH #39:

CERTAIN FOODS HAVE "NEGATIVE CALORIES"

It’s often claimed that certain foods, such as celery, spinach, asparagus, cabbage, and apples, require more energy to digest than they contain in calories. Thus, they are said to have “negative calories.” According to this myth, these types of foods will help you lose weight because they increase the amount of calories you burn every day.

Long story short, all foods contain more energy than it costs for your body to metabolize them. When we look over foods commonly touted as containing “negative calories,” what we’re really looking at are very low-calorie foods. For instance, celery is mainly water; a 12-inch stalk has a mere 9 calories. A large lemon contains about 25 calories, and a cup of canned, drained spinach has about 50 calories.

Now, it is true that certain foods require more energy to break down than others. This is the thermic effect of food that I mentioned earlier.

Most of the energy from dietary fat is available for storage (discussed in Myth #35), whereas it costs more energy to process carbohydrates and protein, which have greater thermic effects. Therefore, the greater the thermic effect, the less energy is left over for fat storage after metabolizing what is eaten.

Research has shown that the thermic effect of food varies among people—some people’s bodies burn more of the calories eaten than others—based on insulin sensitivity. The more insulin resistant you are, the weaker the effect, and vice versa.

Not all fats, carbs, and proteins are equal in terms of thermic effects.
This has led to the popularization of various fad “thermogenic” diets that promote eating low-calorie foods with greater thermic effects than others. Some protocols also include strategies for improving insulin sensitivity. This kind of diet would have you use an unsaturated fat like olive oil instead of butter since the former requires more energy for processing than the latter, but the difference is so slight it’s basically irrelevant.

The reality of weight loss is it really doesn’t matter what you eat so long as you keep yourself in a caloric deficit. If you want to make it complicated and severely restrict the foods you eat to only those that produce maximum thermic effects, that’s one way of doing it. But if you want to eat more freely and are willing to plan out and track all the calories you’re eating, that’s a more enjoyable way (I think) to ensure a deficit.

THE EXCEPTION TO THE MYTH

There is a substance you can consume that is scientifically proven to contain “negative calories”: cold water.

Water provides 0 calories, and your body heats it up after ingestion, which requires energy. A study conducted by the University of Medicine Berlin demonstrated that drinking just 500 mL of 70-degree water (about 16 ounces, or 2 cups) increased energy expenditure up to 30% over the course of an hour after drinking\textsuperscript{218}. However, 50 mL of water had no effect.

Now, before you start chugging gallons of icy water every day, remember that drinking too much water can cause serious health issues and even death. The Institute of Medicine reported in 2004 that women should consume about 91 ounces of water—or three-quarters of a gallon—per day, and men should consume about 125 ounces—just shy of a gallon—per day\textsuperscript{219}. 
MYTH #40:

I DON’T NEED TO COUNT CALORIES IF I EAT HEALTHY FOODS AND WATCH MY PORTIONS

How many people out there want to lose weight but not count calories? That’s about as logical as saying that you want to drive across the country but don’t want to have to pay attention to your gas tank.

I won’t be too hard on them, though, because most people who say this don’t even know what a calorie is, let alone why and how to count them.

The usual compromise people make is to try to eat healthy foods and stick to smaller portions, and although that’s the right idea, it may or may not work in practice without a way to track how much the amount eaten stacks up against the amount needed to stay alive and kicking. There are two primary reasons why this is a very hit-and-miss way to attempt to lose weight.

PORTION CONTROL IS INFERIOR TO CALORIE REGULATION

According to research conducted by Duke University, people are quite bad at estimating the amount of calories contained in a meal\(^2\)\(^2\). A study conducted by Cornell University found that caloric estimations become more inaccurate as meals get bigger, and overweight people are poorer estimators than lean\(^2\)\(^2\).

By focusing on eating smaller portions of healthy food, you’ll surely eat less than if you wolfed down as much junk as you wanted, but will you eat less energy than your body burns, thus resulting in weight loss? Maybe. Maybe not. Healthy foods such as healthy fats, grains, dairy products, legumes, and meats can be very calorie dense.
Another problem relates to satiety (the feeling of having your appetite satisfied). Our natural eating instincts are regulated by three hormones: insulin, ghrelin, and leptin\textsuperscript{222}.

When we haven’t eaten in several hours and our bodies have finished metabolizing and absorbing the nutrients in the last meal, insulin levels drop to a baseline (because insulin’s job is to shuttle food’s nutrients from the blood into the cells for use). Ghrelin levels then rise, which stimulates hunger. When you eat food, leptin levels rise, which “turns off” the hunger.

When you let this natural cycle guide your eating habits—when you eat when you’re hungry and only until satisfied, you’re going to maintain your current weight. Why? Your body requires a certain amount of energy every day to operate, and it uses ghrelin and leptin to persuade you to give it that amount. It naturally doesn’t want to over- or undereat.

Something that baffles many overweight people is they don’t have to eat very much to stay the way they are. They often think it’s because their metabolisms are extremely slow, but that’s not why; it just doesn’t require much energy to maintain a high body fat percentage. While having muscle costs quite a bit of energy to maintain, fat needs much less.

When you’re in a caloric deficit, circulating leptin levels decrease as ghrelin levels increase\textsuperscript{223}. And as you lose body fat, leptin levels drop even further\textsuperscript{224}. The net effect of this is that dieting for weight loss generally makes you feel hungrier and makes meals feel less satisfying.

Realize that your body’s goal is to attain an energy balance—it wants to consume as much energy as it uses. It doesn’t want to be in a deficit even though that’s what it takes to lose weight and become a healthier, happier body. When you listen to your natural instincts and eat more than you planned, it doesn’t take much to halt your weight loss. A few extra bites of calorie-dense food at each meal can be enough to eliminate the deficit and keep your weight the same.

That’s why keeping hunger under control is so important when dieting for weight loss. If we give in, we fail to lose weight. But if we try to suffer through it, we want to run people off the road. Fortunately, defeating hunger isn’t too hard when you know how to combat it.

8 WAYS TO IMPROVE HUNGER CONTROL AND WEIGHT LOSS

The number one weight-loss problem that I help people with is, by far, sticking to their diet plans. This is especially the case with people who are new to a healthy weight-loss regimen, which requires them to remain in a caloric deficit for many weeks, as opposed to a crash diet that is followed for
a short period of time.

The overall experience of being in a caloric deficit varies dramatically. For some (lucky bastards) it causes little-to-no uncomfortable symptoms—no hunger issues, no cravings, no energy lows. For others (the rest of us mere mortals), cutting calories can get super tough due to hunger pangs, intense cravings (usually brought on by any level of hunger), and a lingering lethargy, which can be particularly bad when you go low-carb.

**GET 30-40% OF YOUR DAILY ENERGY FROM PROTEIN, AND INCLUDE SOME IN EACH MEAL YOU EAT**

When you’re dieting to lose weight, protein is your best friend. It helps you preserve muscle and results in basically no fat storage. Best of all, research has shown that a high-protein diet reduces overall appetite, possibly by increasing leptin sensitivity. With protein, you feel fuller and more satisfied by the food you eat\(^225\).

Take advantage of this by getting 30–40% of your daily calories from protein, and eat protein-rich foods at every meal to keep the effect going throughout the day.

**DON’T HEAVILY RESTRICT YOUR CARBOHYDRATE INTAKE**

I always hated low-carb dieting because it caused significant declines in strength (due to lower glycogen levels), but also because it just made me generally hungrier. And there’s a reason why.

Dietary fat isn’t very effective at increasing leptin levels\(^226\), and research has shown that low-carb, high-fat diets reduce 24-hour circulating leptin levels\(^227\). High-fat diets are basically a recipe for reduced satiety. It’s also possible that dietary fat induces leptin resistance (meaning that leptin’s signals become blunted), as demonstrated in animal research\(^228\).

Carbohydrates, on the other hand, dramatically increase leptin levels\(^229\), and the more carbs you eat, the higher your 24-hour circulating leptin levels become\(^230\). A high-protein and moderate-carbohydrate diet (40% of calories from protein, 40% from carbohydrate, and 20% from fat) makes for a double-whammy of satiety.

Based on the above, it’s not surprising that research has found that high-carbohydrate, low-fat diets are very effective for weight loss, even when subjects follow ad libitum diets (eat as much as they want each meal)\(^231\). Researchers from the Royal Veterinary and Agricultural University put it simply:

“In conclusion, a low-fat diet, high in protein and fibre-rich carbohydrates, mainly from different vegetables, fruits and whole grains, is
**highly satiating for fewer calories than fatty foods. This diet composition provides good sources of vitamins, minerals, trace elements and fibre, and may have the most beneficial effect on blood lipids and blood-pressure levels.”**

**INCREASE YOUR FIBER INTAKE**

Fiber is an indigestible portion of food that absorbs water as it moves through the digestive tract (and helps you take healthy poops). Research has also shown that it increases satiety\(^{232}\).

Keep your fiber intake high by eating plenty of fibrous vegetables and fruits. I include one or the other in every meal. You can even use supplementary fiber like psyllium seed husks, which rapidly expand in your stomach and induce a feeling of fullness.

The Institute of Medicine recommends children and adults consume 14 grams of fiber for every 1,000 calories they eat each day\(^{233}\).

**EAT MORE NUTS**

Nuts not only contain protein and fiber to increase satiety, but they are a great source of healthy fats as well. Studies have also associated frequent nut consumption with a reduced risk of weight gain\(^{234}\).

**DRINK WATER WITH EACH MEAL**

Research has shown that drinking a couple of glasses of water with each meal increases satiety while eating\(^{235}\).

**AVOID HIGH-GLYCEMIC CARBOHYDRATES**

The glycemic index (or GI) is a scale that measures the effect of different carbohydrates on blood sugar levels. Carbohydrates that break down slowly and release glucose into the blood slowly are low on the glycemic index. Carbohydrates that break down quickly will release glucose into the blood quickly, causing insulin levels to suddenly spike; these are high on the glycemic index. Below 55 on the GI is considered low, and above 70 is considered high.

Pure glucose is 100 on the GI. Research has shown that the rapid absorption of glucose that occurs after eating high-glycemic carbohydrates induces a sequence of hormonal and metabolic changes that result in the desire to eat more\(^{236}\).

Furthermore, most high-glycemic foods are processed junk with little nutritive value. Replace them with unprocessed, low-glycemic alternatives, and you’ll be better off in not just the hunger control department, but general health as well.
EAT SLOWLY

Research has shown that eating slower helps reduce the amount you need to eat to feel satisfied\textsuperscript{237}. So take your time, chew your food, and enjoy each and every bite.

GET ENOUGH SLEEP

When you restrict your sleep, leptin levels drop, and ghrelin levels rise. One study found that people who slept 5 hours had 15\% lower leptin levels and about 15\% higher ghrelin levels than people who slept 8 hours\textsuperscript{238}. Researchers found that the less people slept, the fatter they generally were. Sleep needs vary from individual to individual, but according to the National Sleep Foundation, adults need 7–9 hours of sleep per night to avoid the negative effects of sleep deprivation\textsuperscript{239}.

KEEP DIETING SIMPLE AND EASY

Don't make dieting unnecessarily hard by failing to plan and prepare your meals to meet specific daily caloric targets. I recommend that you buy a food scale if you're new to dieting in this fashion because it can help you be very precise with your portions. Use the strategies outlined in this chapter to beat hunger so you can follow your diet with relative ease.
MYTH #41:

EATING A LOT OF PROTEIN IS BAD FOR YOUR KIDNEYS

Protein is a natural compound composed of substances called amino acids. Amino acids are an essential part of all living things and comprise structural components of the body such as muscle, hair, nails, skin, and other tissues.

Hemoglobin, a substance in our blood that carries oxygen, is a protein. Antibodies, which fight off disease, are composed of proteins. Certain hormones are made from amino acids, and they regulate many systems in the body including metabolism, digestion, and nutrient absorption. There are quite a few more vital bodily functions that require protein, but you get the idea.

Your body is able to synthesize 12 amino acids it needs but must obtain the final 9 from the food you eat. This is why you must eat protein to survive.

PROTEIN REQUIREMENTS ARE VARIABLE

Protein needs vary from individual to individual. To avoid losing muscle mass, the Institute of Medicine recommends 0.8 grams of protein per kilogram of body weight per day for ages 17–90\(^2\). Note that this “recommended dietary allowance” (RDA) is a bare minimum that applies to sedentary individuals.

Most people know that the more physically active they are, the more protein their body needs to repair and build tissues. Research has demonstrated that protein intake over the RDA offers favorable benefits to sedentary individuals as well.
In a study conducted by Maastricht University, 72 overweight or obese participants followed one of two isocaloric (equal in total calories) weight loss diets. One diet called for 0.8 grams of protein per kilogram of body weight per day, and the other 1.2 grams. Weight loss was the same between the groups, but the high-protein group lost more fat and less muscle, had a higher resting metabolic rate (the amount of calories your body burns while at rest), and lower blood pressure than the low-protein group.

Research has also indicated that many of the demonstrated benefits of low-carb diets can be attributed to the increased protein intake that comes with them, not the reduction of carbohydrate intake per se.

These levels of protein intake are relatively low, though. For a 180 lb man, 0.8–1.2 grams per kg of body weight would only be 65–97 grams of protein per day. An ounce of chicken has about 6 grams of protein; a cup of low-fat cottage cheese, 30 grams; and even a cup of peas, roughly 15 grams.

The claims that eating large amounts of protein will harm your kidneys usually refer to the consumption levels commonly seem among physically active people, athletes, and bodybuilders, which can vary from 1–2 grams per pound of body weight per day (2.2–4.4 grams per kilogram).

**Can a high-protein diet harm your kidneys?**

Your kidneys perform a number of functions, including filtering your blood to get rid of waste, regulating blood pressure via water and sodium balance, maintaining a healthy blood pH level, and creating certain hormones.

When your body metabolizes the protein you eat, a substance called urea is created, and the kidneys have to remove it from your blood and prepare it for elimination through urine. Thus, the more protein you eat, the more your kidneys have to work. This is the basis of the myth—the more your kidneys have to work, the more stressed they become.

Increased protein intake has been associated with the progression of kidney disease, but what does research show for people with healthy kidneys?

A study conducted by the Free University of Brussels investigated bodybuilders and other well-trained athletes with above-average protein intake (up to 2.8 grams per kg of body weight per day). After 7 days of dietary analysis and blood work, researchers found no evidence of kidney distress.

The University of Ulm investigated chronic protein intake on kidney function in 88 healthy volunteers, including vegetarians and bodybuilders, with protein intake as high as 2.6 grams per kg of body weight per day. After
4 months, there were no signs of negative changes in kidney function\textsuperscript{245}.

The 2003 Nurses’ Health Study conducted by Harvard Medical School supports these findings. After analyzing the protein intake of 1,624 women over the course of several years, researchers found no association between high protein intake and a decline in kidney function in females with normal kidney function\textsuperscript{246}.

**HOW MUCH PROTEIN YOU SHOULD BE EATING**

This depends on whom you listen to, and as research shows, ranges much higher than the RDA of 0.8 grams per kg of body weight per day have notable benefits.

According to research conducted by the University of Western Ontario, 1.2–1.5 grams per kg of body weight per day is sufficient for individuals participating in regular endurance exercise, and 1.6–1.8 grams per kg of body weight per day is recommended for those involved in strength exercise\textsuperscript{247}.

The International Society of Sports Nutrition reported that 1.4–2.0 grams per kg of body weight per day was sufficient for active individuals\textsuperscript{248}.

A literature review conducted by California State University found that protein requirements of people that engage in regular strength training ranges from 1.2–2.2 grams per kg of body weight per day\textsuperscript{249}.

Personally, I never eat less than 1 gram of protein per pound of body weight per day (2.2 grams per kg of body weight per day), and I eat a bit more when cutting (1.2 grams per pound of body weight per day). Intake this high may or may not confer any exercise-related benefits (research on this is currently ambivalent)\textsuperscript{250}. But it’s certainly not harmful to my kidneys, and protein is a great source of calories when cutting because of how little of it is stored as body fat.
MYTH #42:

ONE CHEAT DAY PER WEEK IS OKAY

Many diets give you one day per week to “cheat” and claim that eating whatever you want on these days won’t interfere with your fat loss. Some even claim an occasional overindulgence may actually speed it up.

Here’s the problem with unrestricted cheat days: They often lead to no-holds-barred gorging, which can easily cancel out the calories you’ve worked so hard to cut during the week.

If you successfully maintained a 500-calorie daily deficit throughout the week and then overeat by 3,000 calories on the seventh day—easy to do when you’re cheating for an entire day—you’ll have undone much of your work (not necessarily all, as your body is able to use the excess for things other than fat storage).

There are much smarter ways to go about cheating.

The first is to think in cheat meals, not days. No sensible diet should include entire days of overeating, but a single bout of overeating per week is actually advisable when you’re dieting to lose weight.

Why?

First there’s the psychological boost keeping you happy and motivated, which ultimately makes sticking to your diet easier\textsuperscript{251}.

But there’s also a physiological boost.

Studies on overfeeding (the scientific term for binging on food) show that doing so can boost your metabolic rate by anywhere from 3–10\textsuperscript{252}. While this sounds good, it actually doesn’t mean much when you consider that you would need to eat anywhere from a few hundred to a few thousand...
extra calories in a day to achieve this effect, thus negating the calorie-related benefits.

More important are the effects cheating has on the hormone leptin, which regulates hunger, your metabolic rate, appetite, motivation, and libido and serves other functions in your body.

When you’re in a caloric deficit and lose body fat, your leptin levels drop. This, in turn, causes your metabolic rate to slow down, your appetite to increase, your motivation to wane, and your mood to sour. When you boost your leptin levels, this can have positive effects on fat oxidation, thyroid activity, mood, and even testosterone levels.

What you really want from a cheat meal is a leptin boost. Eating carbohydrates is the most effective method. Second to that is eating protein (high-protein meals also raise your metabolic rate). Dietary fats aren’t very effective at increasing leptin levels, and alcohol actually inhibits it.

So, if your weight is stuck and you’re irritable and unmotivated, a nice kick of leptin might be all you need to get the scales moving again. To accomplish this, I like to bump my carbohydrate intake to about 2 grams per pound one day per week when I’m dieting to lose weight. I also drop my fat intake to about 10% of total calories that day and set my protein intake at about 1 gram per pound.
SECTION FOUR:
SUPPLEMENT MYTHS
MYTH #43:

THE ONLY WAY TO GET BIG AND LEAN IS TO TAKE STEROIDS

An easy way to write off someone’s physique or progress is to chalk it up to steroids. “Who cares? He’s obviously on steroids,” is a common saying at the gym or while arguing about sports. The mystique of steroids lies in the false belief that you can take them and magically transform into a Greek god. It isn’t that simple.

Anabolic steroids are synthetic hormones that resemble testosterone and trigger protein synthesis in cells, especially in muscles. They also promote the development of masculine characteristics, such as the growth of the vocal cords, testicles, and body hair. And they’re illegal—just possessing them is a felony offense here in the U.S.

The truth is that steroids do work incredibly well. They enable you to build muscle very quickly and stay lean without much effort. They speed muscle recovery and dramatically increase strength.

They don’t, however, guarantee anything in terms of obtaining a great physique. It takes a lot more than supercharged protein synthesis and webs of slithering veins to look good. Many guys have horrendously unattractive bodies thanks to steroids—bulging stomachs, severe acne, and an overall puffy, bloated look are common side effects.

Not only that, but steroid use increases your risk of injury because your muscle strength outpaces the development of your supporting tendons and ligaments. While it may feel like your chest, arm, and shoulder muscles can handle that massive bench press, a tendon or ligament might tear under the strain. (This is why druggers seem to hurt shoulders, knees, and elbows
Another reason to stay away from steroids is that you can cause serious and even permanent damage to your endocrine system, especially if you don’t know exactly what you’re doing in terms of what drugs to take, how to dose them, and what to take when you’re “off” (post-cycle therapy). Many guys have ruined their bodies’ natural balance of hormones and suffer the consequences, which include “man boobs” (gynecomastia), hair loss, testicular atrophy, prostate enlargement, loss of libido, and other emasculating consequences.

Roiders who don’t know what they’re doing are going to wish they hadn’t turned to the dark side when they’re in their 50s and suffering from grim health complications. (Think it won’t happen to you? A guy I know was a big dragger in the ’70s, and now he can’t get an erection anymore—not worth it!)

The most unfortunate aspect of cheating with steroids or other performance-enhancing drugs is that through proper dieting and training, you can not only reach your fitness and aesthetic goals, but you can also do it while improving your health and with an eye to longevity.
MYTH #44:

YOU HAVE TO TAKE A BUNCH OF SUPPLEMENTS TO GET JACKED

This is what the supplement industry would have you believe, and they spend a lot of money trying to convince you of it. You can spend a fortune every month filling up your cabinets with pre-workout supplements, intra-workout supplements, post-workout supplements, test boosters, HGH boosters, nitric oxide supplements, estrogen blockers, and the list goes on and on.

If you believe half of the hype you read in supplement advertisements or on their labels, it would take a while before you realize the simple truth of the matter...

Most everything you see in the world of workout supplements is utterly worthless.

Yup, a complete waste of money. Not all, but most.

How can I say that so confidently? I’ve not only tried nearly every type of supplement you can imagine, but I’ve studied the science and only follow what has been objectively proven. Don’t be swayed by subjective testimony and fancy marketing pitches.

The supplement companies are cashing in BIG on a little trick that your mind can play on you known as the placebo effect. This is the scientifically proven mind-game that your simple belief in the effectiveness of a medicine or supplement can make it work. People have overcome every form of illness you can imagine, mental and physical, by taking substances that they believed to have therapeutic value, but that actually didn’t. I’m talking about things like curing cancer and diabetes, eliminating depression and
anxiety, and lowering blood pressure and cholesterol levels by taking medi-
cally worthless substances that the people believed were treatments for their
problems.

Many guys believe that the shiny new bottle of “muscle-maximizing”
pills will work, and sometimes they actually do “feel them working” even
though, it comes out later, the ingredients have never been scientifically
proven to do anything the company claims. Or it’s revealed that the scien-
tific trials they tout in their ads were biased and invalid.

That said, there are a handful of supplements that actually are worth
buying and using.

• Protein powder is convenient and helps you reach your daily
protein requirements.

• A multi-vitamin provides your body with the micronutrients it may
not be getting from the food you eat.

• Fish oil is a fabulous supplement that has many potential benefits,
such as reduced muscle soreness and inflammation, improved
weight loss and protein synthesis, increased insulin sensitivity, and
more.

• Creatine is a safe, effective way to improve strength and muscle
growth.

• A good pre-workout drink gives you a nice kick of energy and,
depending on its ingredients and dosages, can help improve your
performance in the gym.

• Glutamine helps the body better deal with the systemic stress of
exercise.

I talk about supplements in more depth in my books Bigger Leaner
Stronger and Thinner Leaner Stronger, but the key takeaway about this myth
is that the fancy stuff marketed to sound like it’s more effective than steroids
is always a waste of money.

While the supplements listed above are worthwhile, don’t think that go-
ing without them will prevent you from reaching your goals. If you’re tight
on cash, you’re much better off skipping the supplements and spending that
money on high-quality food instead—that will improve your gains more
than any supplements.
MYTH #45:

FAT BURNERS GET YOU RIPPED

The weight-loss industry is HUGE (like $30 billion+ huge), and scams abound. A new “wonder ingredient” takes the media by storm every couple of months, and millions upon millions of dollars are quickly wasted on crap like acai berry drinks and resveratrol pills.

Many people incorrectly believe that a pill can trigger massive fat loss. This simply isn’t true.

Most fat burners are more or less the same. The common ingredients are stimulants like caffeine, synephrine, and guarana; molecules known to aid in fat mobilization and oxidation such as green tea extract and yohimbe extract; the occasional amino acid such as taurine or tyrosine, which can affect blood flow; compounds known to decrease appetite such as 5-HTP; and things that will do basically nothing in terms of fat loss such as B-vitamins, fancy-sounding herbs, and plant extracts.

The most common marketing claim used to sell these products relates to increasing your metabolic rate. While they can speed up your metabolism, it’s not by much—you can expect a 3–5% increase in your metabolic rate from an effective fat burner.

To put this into perspective, a 200-lb male with a normal amount of lean mass burns about 1,900 calories per day with no physical activity whatsoever (known as your basal metabolic rate, or BMR). A good fat burner would bump this up a mere 100 calories or so—very negligible when you consider the fact that a pound of fat equals about 3,500 calories.

A bigger benefit of fat burners is the appetite suppression and the en-
ergy kick. These effects are very welcome when you’re on an extremely strict diet and you need to get in a daily workout.

Remember that weight loss requires a daily calorie deficit—there’s no getting around it. Fat burners can help a little, but they will never allow you to avoid following a proper diet.

To be fair, I do use one when I’m cutting because it speeds the process up a little. Want to know which fat burner I currently recommend? Head over to www.muscleforlife.com and check out my supplement recommendations.
Creatine is a substance found naturally in the body and in foods like red meat. It is perhaps the most researched molecule in the world of sports nutrition—the subject of over 200 studies—and the consensus is very clear. Supplementation with creatine can help you build muscle and improve strength, improve anaerobic endurance, and reduce muscle damage and soreness from exercise.

Yet for some reason, it’s often claimed that creatine is bad for your kidneys. You can rest easy—these claims have been categorically and repeatedly disproven.

In healthy subjects, creatine has been shown to have no harmful side effects in both short- or long-term usage. However, people with kidney disease are not advised to supplement with creatine.

Creatine is safe, cheap, and effective, and I can’t recommend it enough. But there are many types out there, and it’s hard to know which is best.

**WHICH TYPE OF CREATINE SHOULD YOU TAKE?**

Creatine monohydrate is used in the vast majority of studies and is a proven winner, but the marketing machines of supplement companies are constantly pumping up fancy-sounding stuff like creatine citrate, creatine ethyl ester, liquid creatine, creatine nitrate, buffered creatine, and creatine hydrochloride.

These variations are certainly more expensive than creatine monohydrate, but are they any more effective? Let’s find out.
Creatine citrate is creatine bound to citric acid, and research indicates it’s no different from creatine monohydrate in terms of absorption and effectiveness\textsuperscript{263}.

There is evidence that creatine citrate is more water-soluble than monohydrate, but this plays no role in muscle absorption or effectiveness, only palatability.

Creatine ethyl ester is a form that is supposed to convert back to usable creatine in the body. It is usually marketed as having a better absorption rate than monohydrate. Too bad that’s not true. In fact, creatine ethyl ester is less effective than creatine monohydrate, on par with a placebo\textsuperscript{264}. Research has indicated that this is due to the fact that once creatine ethyl ester enters your body, it’s quickly converted into an inactive substance known as creatinine\textsuperscript{265}.

Liquid creatine is simply any form—usually monohydrate—suspended in liquid. It has been shown to be less effective than creatine monohydrate due to the breakdown of creatine into the inactive form, creatinine, when suspended in a solution for several days\textsuperscript{266}.

Creatine nitrate is an extremely water-soluble form that may be more drinkable and easier on the stomach, but no research has yet indicated it to be more effective than the monohydrate form.

Buffered creatine is a form of creatine touted to out-perform monohydrate due to a higher pH level. Research indicates otherwise: it’s no more effective than monohydrate\textsuperscript{267}.

Creatine hydrochloride is creatine bound with hydrochloric acid. It’s turned into a basic creatine molecule by stomach acid, and research has not yet proven it to be any more effective than monohydrate. Like other forms of creatine, creatine HCL may be more water-soluble than monohydrate, but this has no effect on absorption.

Creatine malate is creatine bound with malic acid. While malic acid alone may enhance performance, it hasn’t been researched in conjunction with creatine\textsuperscript{268}.

Creatine pyruvate is creatine bound with pyruvic acid. Research has shown it to produce higher plasma levels of creatine, but that makes it no more effective than monohydrate in terms of absorption\textsuperscript{269}.

There is evidence that creatine pyruvate is more effective than creatine citrate, which would imply it’s more effective than monohydrate too\textsuperscript{270}. Other research contradicts these findings, however, showing creatine pyruvate to be ineffective in improving the endurance or sprinting performance of cyclists—an activity that creatine monohydrate positively affects\textsuperscript{271}. More
research on creatine pyruvate is needed.

THE BOTTOM LINE: STICK TO CREATINE MONOHYDRATE

According to research, don’t overpay for over-hyped forms of creatine pushed by million-dollar ad campaigns and sold in fancy bottles. Creatine monohydrate is the best bang for your buck and is the standard by which all other forms of creatine are still judged.

If creatine monohydrate bothers your stomach, however, it might be worth the hit on your wallet to try a more water-soluble form such as micronized creatine, or creatine citrate, nitrate, or hydrochloride.
SECTION FIVE:
LIFESTYLE MYTHS
MYTH #47:

STRESS AND CORTISOL
MAKE YOU GAIN WEIGHT

The “stress hormone” cortisol is a favorite scapegoat of the shameless weight-loss pill pushers.

The marketing pitch is that when your body is stressed, it releases cortisol, which causes bloating and fat storage, especially in the belly area. Therefore, the pitch continues, if you simply take pills that block cortisol, you can lose weight without exercising or changing how you eat.

Sounds enticing, but this myth is bogus.

Cortisol, like every other hormone in the body, has a specific purpose, which includes regulating the energy levels of the body. It does this by moving energy from fat stores to tissues that need it and, when the body is under stress, by providing protein for conversion into energy. Things like restricting calories, weightlifting, traveling, and getting angry increase cortisol levels.

As you’ll see, this myth is yet another example of fitness alarmists misinterpreting and over-simplifying research.

LIKE INSULIN, CORTISOL ISN’T A PROBLEM—UNTIL IT GETS OUT OF CONTROL

There are two studies often cited to promote this myth. The first, conducted by Yale University, included men and women. The researchers associated increased levels of stress and cortisol with increased levels of abdominal fat.

Media sources and fake gurus jumped on this observational research
(which can only indicate correlation, not causation), touting it as scientific “proof” that cortisol induces weight gain, particularly in the abdominal region.

This is an ironic position to take considering the fact that cortisol actually induces lipolysis (the breakdown of fat into usable energy, known as free fatty acids) and oxidation (the burning of those fatty molecules)\(^ {274} \). Acute cortisol spikes help with fat loss, which is part of the fat-burning power of exercise.

It’s interesting to note, however, that while cortisol increases whole-body lipolysis, it tends to spare abdominal fat\(^ {275} \). This partially explains why people with chronically elevated cortisol levels are characterized by abdominal obesity\(^ {276} \).

As with other hormones in the body, the problems with cortisol begin when there’s too much for too long. When cortisol levels become elevated over prolonged periods, insulin resistance and hyperinsulinemia (excess insulin in the blood) result, which leads to easier weight gain\(^ {277} \). It also leads to the degradation of muscle mass, which slows down your metabolism and sets the stage for various health problems.

Regardless, since weight gain requires excess calories to be eaten, no amount of cortisol can cause you to gain weight unless you give your body more energy than it burns.

The scientifically accurate statement is that chronically elevated cortisol levels in addition to excess calories appears to lead to increased abdominal fat. And that leads me to the final point to discuss about this myth, which is how cortisol affects appetite.

### The Dwindling Spiral of Stress and Weight Gain

The relationship between stress and overeating has been thoroughly researched. A literature review conducted by Louisiana State University found that as stress hormones like cortisol increase, so do ghrelin levels (which, if you remember from Myth #40, is the hormone that stimulates appetite\(^ {278} \)). This hunger drives us to eat more and sometimes even binge.

We’ve all experienced this before, turning to food to cope with stressful situations in our lives. Further weight gain just adds more stress, which can lead to more overeating, and so the unhealthy spiral goes. Fortunately, you can avoid this by taking action to keep cortisol levels in a normal range:

- Do things that you find relaxing, like reading a book, listening to calming music, or going for a walk.
- Get in your exercise. Research has shown that low-intensity exercise lowers cortisol levels\(^{279}\). And while high-intensity Exercise temporarily spikes it, it also causes physiological changes that help the body better deal with, and nullify, negative effects of stress\(^{280}\).

- Get enough sleep.

- Cut back on the alcohol.

- Take Vitamin C. One study showed that 1 gram per day significantly reduced cortisol levels in junior elite weightlifters\(^{281}\).

- Research is emerging to indicate that supplementation with glutamine may help reduce the negative effects of exercise stress\(^{282}\).

Try incorporating these simple stress busters into your lifestyle and you may be surprised how much better you feel and how much easier it is to prevent weight gain.
High-quality sleep is getting scarcer and scarcer these days thanks to ever-increasing work hours, TV watching, video game playing, obesity, and other distractions that keep us up at night.

To research average sleep habits, the CDC followed 74,751 adults in 12 states. According to the findings published in 2011, 35.3% reported less than 7 hours of sleep per night, 38% reported unintentionally falling asleep during the day at least once in the preceding month, and 4.7% reported nodding off or falling asleep while driving at least once in the preceding month283.

Sleep insufficiency has been linked to auto crashes, industrial disasters, and medical and other occupational errors. It can also increase risk of chronic diseases like hypertension, diabetes, depression, obesity, and cancer; increase mortality; and reduce quality of life and productivity284.

When your body is asleep, it might look inactive, but that’s far from the case. It’s very busy repairing tissue and producing hormones—functions that are especially important if you’re subjecting your body to increased levels of stress every day through exercise.

Let’s look at some of the various effects sleep has on our ability to achieve health and fitness goals.

SLEEP AND FAT LOSS

A large amount of fat loss occurs while you sleep for two reasons. Your body burns quite a few calories while you sleep (a 160-lb person
burns about 70 calories per hour), and much of it must come from fat stores because you haven’t eaten any food in several hours. Furthermore, much of your body’s growth hormone is produced while you’re sleeping, further stimulating fat loss.

With that in mind, it’s not surprising that the amount we sleep affects our weight-loss efforts and overall health.

In a study conducted by the University of Chicago, 10 overweight adults followed a weight-loss diet (caloric restriction) for 2 weeks. One group slept 8.5 hours per night; the other, 5.5. The 5.5-hour group lost 55% less fat and 60% more muscle than the 8.5-hour group, and on top of that, they experienced increased hunger throughout the day.

This correlation has been observed elsewhere as well. Research conducted by the National Center for Global Health and Medicine associated shorter sleep duration with increased levels of body fat. There’s also evidence that acute sleep loss causes insulin resistance to a level similar to someone with type 2 diabetes, which can increase the rate at which your body stores carbohydrates as fat.

**SLEEP AND HORMONES**

Insufficient sleep can negatively impact our hormone profiles. Another study conducted by the University of Chicago found that when 10 healthy men reduced sleep for a week from about 9 hours per night to 5, their testosterone levels dropped by up to 14% during the day.

It’s also known that insufficient sleep decreases growth hormone and insulin-like growth factor-1 (IGF-1) levels, which play important roles in maintaining muscle mass.

**SLEEP AND ATHLETIC PERFORMANCE**

While you would think that sleep deprivation has profound effects on strength and speed, research says otherwise. A study conducted by the Imam Khomeini International University demonstrated that one night of sleep deprivation didn’t affect anaerobic power in male participants, but did impair reaction times.

A study conducted by the Defence and Civil Institute of Environmental Medicine had 11 male subjects undergo 60 hours of sleep deprivation and then perform repetitions of forearm and leg exercises. They found that the sleep-deprived group performed equally as well as the group that slept 7 hours per night in reaction time and muscular performance.

Further research by the same institute, however, found that sleep depri-
A practical takeaway from these findings is that you don’t have to skip your workout if you slept less than usual, but in general, try to get a good night’s sleep as frequently as you can. My experience lines up with the above findings: Sleep-deprived workouts are tough to get through, and while I often lose a rep or two (reduced muscle endurance), my strength isn’t negatively affected.

**SO HOW MUCH SLEEP SHOULD WE GET THEN?**

Sleep needs vary from individual to individual, but according to the National Sleep Foundation, adults need 7–9 hours of sleep per night to avoid the negative effects of sleep deprivation.

Since genetics and age affect how much sleep your body optimally needs, a simple way to determine what’s optimal for you is to pick a two-week period such as a vacation and go to bed at the same time each night without an alarm set. Chances are you’ll sleep longer than usual at first if you have “sleep debt” to cancel out, but toward the end of the second week, your body will establish a pattern of sleeping about the same amount every night. And it’s trying to tell you something: That’s exactly how much sleep it needs.

While research has shown that sleep deprivation doesn’t impair athletic performance, studies indicate that extended sleep may improve it. Research conducted by Stanford University demonstrated that when basketball players extended sleep from 6–9 hours per night to at least 10 hours per night, they ran faster, shot more accurately, had better reaction times, and felt more physically and mentally fit during practices and games.

**SIMPLE, NATURAL WAYS TO SLEEP BETTER**

Most people know they should sleep 7–9 hours, but it’s easier said than done. As of 2006, it’s estimated that 50–70 million Americans suffer from a sleep disorder.

Hypnotic drugs like Ambien, Rozerem, and Sepracor are common solutions, but they have been associated with a host of rather scary side effects, such as depression, increased risk of skin cancer and infections, delirium, nightmares, and hallucinations, and more. Relying on these types of drugs is clearly not ideal. Fortunately, there are quite a few things you can do to naturally improve your sleep:
• Make getting enough sleep a priority. Just as you give priority to proper diet and exercise, getting to bed on time must be non-negotiable.

• Avoid caffeine, alcohol, nicotine, and other chemicals that interfere with sleep. We all know that caffeine and nicotine are stimulants, but many don’t know that alcohol may disrupt their shuteye. It can help bring on sleep, but a couple hours after drinking, alcohol acts as a stimulant and can increase the number of awakenings during the night.

• Keep your bedroom dark, quiet, and cool, which are all cues for the brain to put the body to sleep. Don’t expose yourself to bright lights while you’re getting ready for bed because this can suppress the production of melatonin, a hormone that induces sleep.\textsuperscript{300}

• Don’t watch TV or use a computer, tablet, or smartphone for at least an hour before bed. These devices emit a type of light known as “blue light,” which is a powerful melatonin suppressant\textsuperscript{301}.

• Establish a relaxing pre-sleep routine, such as taking a bath, reading a book, listening to calming music, and stretching or doing breathing exercises. Avoid stressful or stimulating conversations or activity.

• Don’t just lie in bed staring at the clock. This can stress you, in turn causing your body to produce cortisol, which keeps you awake. Instead, ignore the clock, and if you’re unable to fall asleep in a reasonable amount of time, get up and occupy yourself with a quiet, soothing activity like reading or listening to music until your eyes become droopy. Then go back to bed.

• Keep your body’s internal clock regulated by going to bed and waking up at the same time every day. Waking up at the same time despite when you went to bed is the best way to set your body’s clock and maintain it.

• Don’t exercise too late. Finish your workout at least 3 hours before bedtime to allow cortisol levels and body temperature to drop, which is conducive to sleep. (Gentle stretching before bed, on the other hand, is a great way to unwind.)
I don’t know how many times I’ve heard an overweight person chalk up his or her physical condition to a slow metabolism. It’s the easiest excuse. If a diet or exercise routine failed, it’s not that he or she did it wrong, it’s just that dang slow metabolism.

The fact is almost everyone that leans on this popular old crutch is wrong. I say almost everyone because some people actually do have an under-performing thyroid (hypothyroidism); this causes the basal metabolic rate to drop, which in turn makes it easier to overeat and gain weight. Other symptoms of a low-functioning thyroid are depression, sleepiness and fatigue, loss of sex drive, constipation, and hair loss. If you suspect that you might have a thyroid problem, you should see a doctor to get your hormone levels checked.

That said, most of us have perfectly functioning thyroids, and our metabolisms are more than adequate for weight loss. So let’s get to the bottom of this myth, starting with the basics of metabolism and how it relates to weight loss.

**WHAT IS ACTUALLY MEANT BY “METABOLIC SPEED”?**

Your body burns a certain number of calories regardless of any physical activity, and this is called your basal metabolic rate (BMR). Your total daily energy expenditure (TDEE) for a day is your BMR plus the energy expended during any physical activities.

When your metabolism is said to “speed up” or “slow down,” what is actually meant is that your basal metabolic rate goes up or goes down. That
is, your body burns more or less calories while at rest, making it harder or easier to overeat and gain weight.

Of course, some people do have naturally faster metabolisms than others. Their bodies happen to burn more energy while at rest, and thus it's easier for them to stay lean and harder for them to gain weight. However, the difference between the fastest and slowest of metabolisms isn't as profound as many people think.

A literature review conducted by the University of Vermont found that about 68% of people's metabolisms are within 5–8% of the population average, and 96% are within 10–16% of the population average.\textsuperscript{303}

To illustrate this more concretely, if we assume 2,000 calories as an average BMR, 68% of people would fall in the BMR range of about 1,800–2,200 calories per day and 96% in the range of about 1,700–2,300 calories per day. The difference between the absolute slowest and fastest metabolisms would be about 600 calories per day. While that sounds fairly significant, we're comparing two extremes here. The vast majority of people are, for all intents and purposes, metabolically comparable.

"How can so-and-so eat nothing but pizza and ice cream and never gain weight, then?" you might be thinking. I can guarantee you that the person you have in mind doesn't eat nearly as many calories as you might think, or burns more calories than you're accounting for. Remember: Even if you eat nothing but junk, as long as you don't overeat in terms of calories, you won't become overweight (your general health would be another issue, though!).

Your metabolism might make it a tiny bit harder for you to reach a caloric deficit than someone else, but nobody has a metabolism so fast that they can never exercise yet eat thousands of calories day in and day out without gaining weight.
MYTH #50:

I DON'T HAVE THE TIME/OPPORTUNITY TO DIET AND EXERCISE

This is always a problem of priority, not of time or work or anything else.

Consider this: If you eat and train properly, you can make great gains with 2–3 hours of exercise per week, and you'd never need more than 5–6 hours per week. Just about anybody can figure out how to steal 2–6 hours per week away from other responsibilities to benefit their health.

Fitting in cardio workouts is especially easy because you don’t need a gym or more than 20–30 minutes of time, 3–4 days per week. (For more about how easy this can be, check out my book Cardio Sucks! The Simple Science of Burning Fat Fast and Getting in Shape.)

Fitting weight training into a very busy schedule is a bit tougher. If you want to lift weights and are really crunched for time, I recommend a 3-day “Push, Pull, Legs” routine. Here’s how it works:

**Day One—Pull**
- Deadlifts—5 sets x 5 reps
- Rows (barbell, dumbbell, or t-bar)—5 sets x 5 reps
- Weighted pull-ups—5 sets x 5 reps

**Day Two—Push**
- Flat or incline barbell or Dumbbell press—5 sets x 5 reps
- Military press—5 sets x 5 reps
Weighted dip or Close-grip bench press—5 sets x 5 reps

**Day Three—Legs**

Barbell squat—5 sets x 5 reps

Leg press—5 sets x 5 reps

Standing or seated calf raise—3 sets x 10–12 reps

If you rest for 2–3 minutes in between sets, you should be able to finish these workouts in about an hour, meaning you need to carve out just three hours a week to complete it.

This type of routine has endured for decades because it works—it works every major muscle group in the body and relies on heavy, compound movements (movements that engage multiple muscle groups) to produce maximum strength and size gains.

Plan your workout times and stick to them. I prefer to train first thing in the morning before work because I have more energy for training and also enjoy higher energy levels throughout the day. And since it’s before many people start their day, nothing can interfere with my plans at 7 am.

As for sticking to a diet when your life is hectic, it’s actually easier than you might think. Pick one or two days per week, cook the meals you need for the next week, and store them in air-tight containers in the fridge. Then bring your daily meals to work (or wherever you go) and keep them in the fridge or in a cooler. Work snacks into your diet that don’t require preparation, such as low-fat yogurt, low-fat cottage cheese, nuts, packaged tuna, and fruit.

It’s a big help to have a bunch of recipes for delicious foods you cook for both cutting and bulking. Be sure to check out my cookbook, *The Shredded Chef: 120 Recipes for Getting Lean, and Staying Healthy*. 
If you want to know how to build muscle and burn fat by eating healthy, delicious meals that are easy to cook and easy on your wallet, then you want to read this special report.

Do you lack confidence in the kitchen and think that you just can’t cook great food?

Are you not sure of how to prepare food that is not only delicious and healthy but also effective in helping you build muscle and lose fat?

Are you afraid that cooking nutritious, restaurant-quality meals is too time-consuming and expensive?

Do you think that eating healthy means having to force down the same boring, bland food every day?

If you answered “yes” to any of those questions, don’t worry—you’re not alone. And this book is going to help. Inside you’ll find 15 fast, healthy, and tasty meals that will help you build muscle or lose weight, regardless of your current skills.
Download this report now and learn how to escape the dreadful experience of “dieting” and how to cook nutritious, delicious meals that make burning fat or building muscle easy and enjoyable!

Visit WWW.BIT.LY/MUS-MEALS to get this report now!
Thank you for buying my book. I hope that it will help you avoid many of the pitfalls of the world of health and fitness, and I hope that it will help you achieve your goals.

I have a small favor to ask. Would you mind taking a minute to write a blurb on Amazon about this book? I check all my reviews and love to get feedback (that’s the real pay for my work—knowing that I’m helping people).

Visit the following page to leave me a review:

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Also, if you have any friends or family who might enjoy this book, spread the love and lend it to them!

Now, I don’t just want to sell you a book—I want to see you use what you’ve learned to build the body of your dreams.

As you work toward your goals, however, you’ll probably have questions or run into some difficulties. I’d like to be able to help you with these, so let’s connect up! I don’t charge for the help, of course, and I answer questions from readers every day.

Here’s how we can connect:

Facebook: facebook.com/muscleforlifefitness
Twitter: @muscleforlife
And last but not least, my website is www.muscleforlife.com and if you want to write me, my email address is mike@muscleforlife.

Thanks again and I wish you the best!

Mike

P.S. Turn to the last page to check out other books of mine that you might like!
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HERE’S THE BOTTOM-LINE TRUTH OF THIS MULTI-BILLION-DOLLAR INDUSTRY:

While certain supplements can help, they do NOT build great physiques (proper training and nutrition does), and most are a complete waste of money.

Too many products are “proprietary blends” of low-quality ingredients, junk fillers, and unnecessary additives. Key ingredients are horribly underdosed. There’s a distinct lack of credible scientific evidence to back up the outrageous claims made on labels and in ads. The list of what’s wrong with this industry goes on and on.

And that’s why I decided to get into the supplement game.

What gives? Am I just a hypocritical sell-out? Well, hear me out for a minute and then decide. The last thing we need is yet another marketing machine churning out yet another line of hyped up, flashy products claiming to be more effective than steroids.

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   The only reason to use proprietary blends is fraud and deception. You deserve to know exactly what you’re buying.

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   Research suggests that regular consumption of artificial sweeteners can be harmful to our health, which is why we use stevia, a natural sweetener with proven health benefits.
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(I’m using a pen name for this book, as well as for a few other projects not related to health and fitness, but I thought you might enjoy it so I’m including it here.)

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