THE
PRIMAL BLUEPRINT

21-DAY TOTAL BODY TRANSFORMATION
“I designed this program as a 21-day adventure. Reading and putting the program into action will take less than an hour a day—really! The results of your gene reprogramming will benefit you for the rest of your life—as long as you remain on the Primal path.”

- Mark Sisson
Malibu, CA. October, 2011
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THE PRIMAL BLUEPRINT
21-DAY TOTAL BODY TRANSFORMATION

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INTRODUCTION
The 284-page *Primal Blueprint* (released in September 2009) took three years of research and writing, and over 30 years of immersion in the world of diet, fitness, performance nutrition, and elite athletics. I was honored by the resulting critical acclaim and sales popularity, as it climbed to the #2 best-seller overall on amazon.com in March 2010. Personal satisfaction aside, the popularity of the Primal Blueprint, MarksDailyApple.com, and the Primal/paleo/hunter-gatherer movement in general sends the clear message that people are tired of flawed Conventional Wisdom and are ready to embrace the lessons of our past when striving to lead healthy, happy, active lives.

“Going Primal” offers an appealing alternative to the distorted message conveyed by Conventional Wisdom—that we have little control over the aging process or our genetic predispositions to health problems and excess body fat. On the contrary, you can actually reprogram some of your genes, press the “reset” button on the runaway decline in human health throughout the modern world, and reconnect with your personal recipe for optimal health, ideal body composition, and longevity that has been molded by two million years of human evolution. In fact, as you will soon discover, it is your birthright to be lean, strong, fit, healthy, and happy. I’m here to take you through the steps to regain that birthright.

After the *Primal Blueprint* was released, I started receiving recurring backhanded compliments along the lines of “Wow—really comprehensive work Mark, great detail and excellent research. But...what exactly do I do now? What are the precise steps I can take to start living Primally today?”

The *Primal Blueprint 21-Day Total Body Transformation* is the answer to that question. It’s a practical, action-oriented guide for how to eat, exercise and live Primally—a “cut to the chase” resource to make a smooth and quick transition to a Primal lifestyle. First, we will cover eight Key Concepts—“things you need to know”—to succeed. These Key Concepts represent the most important day-to-day elements of the *Primal Blueprint* and address some of the common questions posed by readers. Once you are armed with the knowledge and understanding of these Key Concepts, you can proceed with confidence and focus to tackle the five Action Items—“things you need to do.” Finally, you will jump into the 21-Day Challenge—“time to get to it!” This step-by-step journey of daily challenges (categorized as Diet, Exercise, or Lifestyle challenges) relates to the Action Items and features corresponding journal exercises.

The *Primal Blueprint is about getting the greatest health and fitness benefits you can with the least amount of pain, suffering, and sacrifice.*

So, when I ask you to throw away a large percentage of the food that currently occupies your fridge and pantry—staples that probably have sustained you for your entire life—you’ll be buoyed by a clear understanding of how these dietary shifts will profoundly improve your metabolism and health. Likewise, when I explain why you really don’t need to spend that much time exercising, you won’t be inclined to doubt me (or try to sneak in some “extra credit” workouts!).
Unlike many other diet and exercise “programs,” the Primal Blueprint philosophy offers tremendous flexibility for personal preference, and even the hedonistic enjoyment of comfortable modern life. You can be sure that I walk my talk, but I’m no ascetic or tightly wound fitness freak. As I detailed in the *Primal Blueprint*, I’ve been there and done that during my career as an elite marathon runner and ironman triathlete. Today, my goal is to look super fit without having to follow an exhaustive, time-consuming exercise regimen, to enjoy the heck out of my meals without the slightest hint of deprivation or restriction, and essentially to neutralize the aging process by engaging in lifestyle behaviors that promote optimal gene expression. I want you to experience that kind of freedom and empowerment as well.

**A 21-DAY TRANSFORMATION THAT WILL LAST THE REST OF YOUR LIFE**

Your genes are extremely sensitive to environmental influences, many of which you control directly, so you really can make great progress toward reversing years of adverse lifestyle habits in just 21 days. By eating and exercising Primally, you will transform from a sugar-dependent, fat-storing organism that constantly battles hunger, illness, depression, and weight gain, into what I call a “fat-burning beast” who burns stored body fat day and night, at exercise and at rest, as your primary energy source. By recalibrating delicate hormonal processes that have been thrown out of whack by hectic modern life, you’ll be able to manage stress smoothly, avoid burnout, enjoy elevated immune function and high energy levels all day long, fall asleep easily each evening, and awaken refreshed each morning.

Twenty-one days represents a benchmark in the gene reprogramming process, and, not coincidentally, is also believed by many experts to be the length of time required to eliminate old habits and replace them with new ones. Make a sincere effort to follow this program for 21 days and you’ll be transformed for life—as long as you remain on the Primal path.

If you visit MarksDailyApple.com and check out the success stories link, you will see that profound changes in body composition happen quickly when you go Primal. A few of my favorite success stories are presented here. It’s reasonable to expect a reduction of three to seven pounds of excess body fat in your first 21 days, and to continue at that rate safely until you reach your ideal body composition.

I’m confident that the benefits you’ll experience will promote a transformation in not only how you eat and exercise for the rest of your life, but also in how you think
about diet, exercise, aging, immune function, prescription medication, and numerous other Conventional Wisdom elements that have been surreptitiously compromising your health for decades. One of the most common testimonials on MarksDailyApple is “I’ve lost 50 pounds effortlessly, but it feels like I’ve also lost 1,000 pounds off my shoulders, because I know I can live like this for the rest of my life!”

While you’ll hopefully experience an exceptional first 21 days, it’s possible that you’ll have some difficulty out of the gate, depending on your particular history and lifestyle circumstances. If you’ve spent years eating the Standard American Diet (let’s call it “SAD,” shall we?) marked by heavy consumption of processed carbohydrates, sugars, and certain unhealthy fats, and if you’ve been immersed in what I call a “Chronic Cardio” exercise pattern, you may struggle with occasional swings of hunger and energy for the first 7-21 days of eating Primally. Have no fear; these symptoms will dissipate with each passing day as you gradually repair some of the metabolic damage from SAD eating, normalize your insulin levels, and reprogram your genes to burn stored body fat for energy.

Shoot – Just For Kicks!

Consider taking a “Before” photograph at the outset of your 21-Day Transformation. This is not about winning a trip to Hawaii by starving yourself and snapping an amazing “After” photo. Rather, it’s recording for posterity—and for fun—the starting point of a long-term lifestyle transformation. Please don’t feel any negativity about your starting point—just grab a camera and snap a full-body shot in private. In 21 days, you will likely be down a few pounds of excess body fat (if desired), a jeans size or two, and may notice added/toned muscle. However, you should emphasize enjoyment of the process over physique changes, allowing results to happen at a comfortable pace. Who knows? In three month’s time, or a year’s time, your improvement may be dramatic enough to submit an “After” photograph to MarksDailyApple.com!

Marie Bencivenga from San Francisco went from 157 lbs to 123 lbs on her Primal journey in 2010-2011
TAKING RESPONSIBILITY

Your Primal Blueprint 21-Day Total Body Transformation will be characterized by flexibility and personal empowerment. I hesitate to use words like “program,” “regimen,” or “diet” when talking about the Primal Blueprint. Really, this journey is about understanding the behaviors that promote optimal gene expression, and taking responsibility for the consequences of your day-to-day lifestyle choices. When you embrace this mentality, you will be able to skirt the all-too-common phenomenon of diving enthusiastically into a program, regimen, or diet, becoming fixated on a specific result, and then losing momentum for various reasons. Perhaps you’ve lost motivation with past “programs” because they were too difficult, impractical, or physically and mentally stressful to sustain long term. Perhaps you didn’t achieve the result you expected and didn’t have any fun in the process. Worst of all, you probably experienced a decline in health despite devoted efforts to do the right thing by Conventional Wisdom.

Your Primal efforts must be fun, energizing, and easy to maintain at all times, otherwise you are destined to fail. What are the best workouts within in the parameters of the Primal Blueprint Fitness principles? Whatever is the most fun for you—seriously! What are the best foods to eat within the parameters of the Primal Blueprint Food Pyramid? The ones that you enjoy the most!

“Your Primal efforts must be fun, energizing, and easy to maintain at all times, otherwise you are destined to fail.”

There is no greater feeling of empowerment than truly comprehending how much influence you have over your health, fitness, and well-being. Once you realize that your genes respond to environmental signals that you largely create, you are no longer at the mercy of your parents’ legacy, your doctor’s nebulous warnings, or the tremendous momentum against health and balance in hectic modern life. Everything changes as soon as you “own” the Key Concept that you can influence gene expression on a day-to-day basis. In many cases, you can choose which genes to flip on and which to flip off through your food and activity choices!

This is a profound responsibility to reflect upon. We live in a world of such abundant choice and freedom that we can direct gene expression away from health and still not suffer any penalty in the traditional “survival of the fittest” evolutionary sense (today, unfit humans are not eaten by predators, and furthermore, are able to reproduce freely!). For two million years, humans were
subjected to unimaginably severe selection pressures, and adapted and thrived to enjoy a position at the top of the food chain. Since the advent of civilization 7,000 years ago, the typical evolutionary selection pressure ceased to the extent that we are literally “devolving” from the pinnacle of human health represented by our hunter-gatherer ancestors.

I strongly support taking advantage of free choice, but I’d like you to reflect for a moment on the obligation you have to yourself, your loved ones, and the planet to take good care of yourself. Today, cloaked in the veneer of affluence and rampant consumerism, there is far too much unnecessary, expensive, and totally preventable pain and suffering caused by poor health practices and unconscious lifestyle choices. This program entails making informed choices and exercising personal responsibility and empowerment!

**WHOM TO TRUST? HOW ABOUT YOU!**

I must admit that some of the Primal Blueprint Key Concepts are hotly contested, with respected scientists and health professionals passionately defending their life’s work on both sides of the debate. It can be quite disconcerting to absorb conflicting advice when determining the best course of action for your health. I don’t want to force dogma down your throat and urge that you simply take my word for it with so much on the line, particularly since I’m not an accredited scientist or doctor. Instead, I’ll present you with my interpretation of a variety of scientific, medical, and anecdotal data relating to the Key Concepts and let you decide for yourself. But the anecdotal evidence of the success of my 21-Day Transformation approach is there: I have had the pleasure of seeing thousands of people lose fat, increase energy, and regain excellent health by following the Primal Blueprint.

> Regardless of your starting point, past failures, or bad luck with familial genes, you can turn things around quickly—starting with your next meal and next workout. Your genes expect you to be lean, strong, energetic, and healthy.

First, you might want to take stock of how things are working for you right now. For example, are you one who enjoys engaging in chronic exercise—always balancing on the edge of burnout, illness, and injury? Do you enjoy strictly controlling fat intake in the name of weight control, avoiding some of the most delicious foods on the planet (steak, eggs, bacon, butter, macadamia nuts, avocados, etc.)? Does portion control and the hassle and regimentation of trying to balance calories consumed with calories burned each day work effectively for you? Do you already enjoy optimal health, fitness, and body com-
position, and have you managed to avoid the overstress/burnout syndrome that is epidemic in our hectic modern world, or could things be a little—or a whole lot—better?

It’s clear that even today’s most devoted health and fitness enthusiasts struggle with weight control, recurring fatigue and minor illness, chronic pain in joints and muscles, increased risk factors for lifestyle-related diseases, and an aging process that is vastly more accelerated and debilitating than it has to be. What’s also apparent from recent scientific advances is how readily and efficiently our bodies embrace behaviors that promote optimal gene expression. Regardless of your starting point, past failures, or bad luck with familial genes that predispose you to excess body fat and other health problems, you can turn things around quickly and build momentum for lifestyle transformation—starting with your next meal and next workout. You can literally recreate, rebuild, and renew your body using the Primal Blueprint principles. Based on two million years of human evolution, your genes want—and expect—you to be lean, strong, energetic, and healthy.

I have great respect and interest in science, medicine, epigenetics, evolutionary biology, and exercise physiology, but I default to personal experience whenever I’m conflicted about what is the best course of action to promote my health. I strongly encourage you to do the same. If you aren’t having fun at workouts, then whatever you’re doing is dead wrong for you. If you’re not enjoying meals, then your diet is literally unhealthy. One caveat here: I aim to be healthy, happy, and energetic, and I want to achieve that with the least amount of pain, suffering, sacrifice, discipline, calorie-counting, and portion control possible. I will make the assumption that you do too.
THE PRIMAL BLUEPRINT 21-DAY TRANSFORMATION: KEY CONCEPTS AND ACTION ITEMS

The eight Key Concepts create the framework around which you will smoothly transition into a custom-designed Primal lifestyle. Once you understand these concepts, you can implement the five Action Items with confidence, dialing in your eating, exercise, sleep, and play for the rest of your life.

KEY CONCEPTS

1. Yes, You Really Can Reprogram Your Genes: More than just determining your fixed heritable traits, genes are responsible for continually directing the production of the proteins that control how your body functions every second. Genes turn on or off only in response to signals they receive from the environment surrounding them—signals that you provide based on the foods you eat, the types of exercise you do (or don’t do), your sleeping habits, sun exposure and so forth.

2. The Clues to Optimal Gene Expression Are Found in Evolution: Two million years of selection pressure and harsh environmental circumstances created the perfect genetic recipe for human health and longevity. Our genes expect us to be lean, fit, and healthy by modeling the lifestyle behaviors and diets of our hunter-gatherer ancestors—even in the context of hectic modern life. Plants and animals (meat/fish/fowl/eggs, vegetables, fruits, nuts, and seeds) should comprise the entirety of the human diet, with allowances for the moderate intake of certain modern foods. As for exercise forms and frequency, less is often more.

3. Your Body Prefers Burning Fat over Carbohydrates: Conventional Wisdom’s grain-based, low-fat diet has artificially created a sugar and carbohydrate-based metabolism that you’ve been stuck in, and suffering from, your entire life. Going Primal shifts you into the fat-based, all-day energy metabolism that has supported human survival for two million years. This shift is the most liberating aspect of Primal living.

4. 80 Percent of Your Body Composition Success Is Determined by How You Eat: Many modern foods (even ones you thought were healthy) are causing you to gain weight and get sick. Moderating insulin production by ditching grains, sugars, and legumes, and lowering inflammation by eliminating harmful manmade fats, will promote efficient reduction of excess body fat, effortless maintenance of ideal body composition, increased daily energy levels, decreased risk for illness, and optimal function of various other hormones systems (stress, appetite, immune, metabolic, sleep, thyroid, etc.).

5. Grains Are Totally Unnecessary: The centerpiece of the Standard American Diet (SAD) offers minimal nutritional value, promotes fat storage by raising insulin, and contains anti-nutrients that promote inflammation, compromise digestion, and often interfere with immune function. There is no good reason to make grains (or legumes, for that matter) any part of your diet unless you want a cheap source of calories that easily converts to sugar.

6. Saturated Fat and Cholesterol Are Not Your Enemy: The Conventional Wisdom story about heart disease is only validated when you eat lots of sugar and refined carbohydrates. Cholesterol is one of the body’s most vital
molecules. Saturated fat is our preferred fuel. The true heart disease risk factors—oxidation and inflammation—are driven strongly by polyunsaturated fats, simple sugars, excess insulin production, and stress. Limiting processed carbohydrates and eating more high quality fats and whole foods (including saturated animal fat) can promote health, weight management, and reduced risk of heart disease.

7. Exercise is Ineffective for Weight Management: Burning calories through exercise has little influence on your ability to achieve and maintain ideal body composition. When you depend on carbohydrate (glucose) as your primary fuel, exercise simply stimulates increased appetite and calorie intake. Chronic exercise patterns inhibit fat metabolism, break down lean muscle tissue, and lead to fatigue, injury, and burnout.

8. Maximum Fitness Can Be Achieved in Minimal Time With High Intensity Workouts: Regular brief, intense strength training sessions and occasional all-out sprints promote optimal gene expression and broad athletic competency. Enjoy more benefits in a fraction of the time spent doing the chronic exercise advocated by Conventional Wisdom.

4. Exercise Primally – Move, Lift, and Sprint!: Pursue broad athletic competency with an intuitive blend of workouts honoring the three Primal Blueprint Fitness laws (Move Frequently at a Slow Pace, Lift Heavy Things, and Sprint Once in a While).

5. Slow Life Down: Take the time to enjoy simple pleasures such as “slow food” over industrialized food; balanced instead of chronic exercise; focused work habits instead of multitasking; interpersonal relationships over social media; calm, relaxing evenings instead of excessive artificial light and digital stimulation, and plenty of time for play, sun exposure, and rest and relaxation.
21-Day Transformation
Sneak Preview
Here’s a quick overview of the lifestyle changes you will make during your 21-Day Transformation and beyond. The way you proceed with your 21-Day Transformation is up to you. If you are the deliberate, analytical type, feel free to read the entire book before you embark on your first kitchen/pantry cleanout or Primal workout. If you are the enthusiastic, fast-action type, you can implement lifestyle changes as you make your way through the text, building some momentum immediately with the following “Out with the Old” and “In With the New” sneak previews.

We’ll detail everything over the course of the book, but the essence of Primal living is not complicated. It’s about reducing the complexity of modern life and adapting the simple lifestyle practices of your hunter-gatherer ancestors as best you can.

OUT WITH THE OLD

1. Grains, sugars, sweetened beverages:
Processed carbohydrates drive excess insulin production, which can lead to lifelong insidious weight gain. Even if you don’t have excess body fat concerns, a high insulin-producing diet promotes systemic inflammation, fatigue, and burnout. Grains might be the most offensive foods in your diet because they also contain “antinutrients” that may cause health problems beyond just weight gain.

2. Industrial and polyunsaturated oils: Trans and partially-hydrogenated fats (from heavily processed snack or frozen foods); deep-fried menu items (from fast-food joints), assorted packaged snacks and baked goods (chips, crackers, cookies, etc.), margarine-type spreads, and bottled vegetable oils (canola, corn, safflower, etc.) promote oxidation and inflammation, setting the stage for cancer and heart disease.

3. Beans and other legumes: Beans, lentils, peanuts, peas, and soy products contain antinutrients that compromise digestion, immune function, and general health. The highly touted fiber in beans is problematic, and the carbohydrate content in all legumes is high enough to warrant cutting or eliminating them in the interest of moderating insulin production.

4. Dairy: Most commercial dairy products are unhealthy for everyone and laden with hormones and other impurities. Organic butter and heavy cream are the preferred forms of dairy, if you are lactose tolerant.

5. Chronic exercise: Workouts that are too hard, too long, and done too frequently with insufficient recovery lead to burnout and failed weight loss efforts. Reject the notion that reaching a consistent level of mileage, hours, or workout frequency is the key to fitness.

6. Sedentary patterns: Prolonged sedentary periods (commuting, desk jobs, and digital entertainment) promote fat storage, elevated cardiovascular disease risk, joint pain, muscle...
weakness, and diminished energy and focus on peak performance tasks.

7. **Poor sleep habits:** Excess artificial light and digital stimulation in the evening disturb the optimal flow of sleep and stress hormones, compromising health, fitness, weight management, and longevity.

8. **Somber, spartan approach to lifestyle transformation:** No more calorie counting, portion control, rigid meal timing and menu choices, guilt, or binging cycles. No regimented workout schedule or predetermined mileage, time, or rep standards to attain without regard to daily fluctuations in energy, motivation, and performance levels. No struggling or suffering in the name of health and fitness! Going Primal can truly feel easy, effortless, and natural, once you break free from die-hard old habits.

**IN WITH THE NEW**

1. **Primal foods:** Meat, fish, fowl, eggs, vegetables, fruit, nuts and seeds, high quality fats, a moderate intake of high-fat dairy products and supplemental carbs (for heavy exercisers and growing youth), and occasional sensible indulgences such as red wine and dark chocolate.

2. **Primal eating philosophy:** Enjoy tremendous freedom and flexibility when choosing your favorite foods and recipes within the incredibly broad Primal Blueprint guidelines. Eat to your heart’s content, with full awareness and appreciation of natural hunger and satiety cycles. Indulge sensibly with a clear conscience that it’s okay to enjoy life!

3. **Increase daily movement:** Make a concerted effort to engage in more general daily movement (neighborhood strolls, using stairs instead of elevators, spontaneous play sessions, walk breaks at work, etc.). Conduct regular low-level (easy) aerobic workouts at appropriate heart rates, and take frequent movement breaks when engaged in prolonged sedentary tasks.

4. **Brief, intense workouts:** This is a centerpiece for optimal gene expression in muscles, heart, and lungs, and is essential to maintain high energy, anti-aging, and broad athletic competency. Go harder but less frequently and for less duration. Thirty-minute strength workouts or 15-minute sprint workouts are plenty—any longer is probably too much for most people.

5. **Calming evening rituals:** After dark, minimize exposure to artificial light and digital stimulation, and wind things down with calming endeavors (e.g., strolling, reading, socializing).

6. **Fun approach to lifestyle transformation:** Explore exciting new foods, recipes, and spontaneous, intuitive Primal eating practices. Exercise for energy and fun, and avoid overtraining. Tap into your youthful spirit by taking short breaks and grand outings to play. Power down your hyper-connectivity inclinations and appreciate the simple pleasures of family, friends, and personal reflective time. Realize that being healthy and fit (even super-fit) does not have to involve suffering or deprivation, and can actually be fun!
WHAT TO EXPECT WHEN YOU’RE EXPECTING...TO GO PRIMAL!

- **Anti-Aging:** A 2011 study published by the Cooper Institute in Dallas suggested that your fitness level—represented by how fast you can complete a one-mile run—is an excellent predictor of longevity. Primal Blueprint Fitness workouts will build strength, speed, and endurance safely and quickly. Over time, fitness improvements will facilitate improved psychological health, further counteracting the aging process as it is perceived today.

- **Appetite:** As your genes redirect your cells to derive more energy from fat and depend less on glucose, you’ll be freed from the need to eat frequent high-carb meals and snacks to continually prop up sagging blood glucose levels. Your appetite will “self-regulate” to the point that you’ll tend not to overeat anymore. Eating Primally also enables you to easily engage in Intermittent Fasting (I.F.)—both spontaneous and structured—to boost immune function, cellular repair, and fat metabolism.

- **Blood Markers:** You can expect significantly lower triglyceride and “bad” (LDL) cholesterol levels, higher “good” (HDL) cholesterol levels, normalized blood sugar, healthier blood pressure, and improvements in other critical blood test markers, in as little as 21 days.

- **Body Fat:** Expect to lose excess body fat at a rate of four to eight pounds (1.8-3.6 kg) per month until you achieve your ideal body composition. This happens incidentally when you switch to Primal eating, even if you’ve had extreme difficulty losing weight by the conventional calories in/calories out methodology. If, in rare circumstances, you struggle to attain this rate of fat loss, the Primal Leap program (primalblueprint.com) will enable you to dial in fat reduction with greater accuracy.

- **Cravings:** As you train yourself to more easily burn fat and depend less on glucose (blood sugar) for energy, your cravings for sweets will lessen. You just won’t “have” to have them so often. Similarly, as you remove processed foods and grain-based products, you’ll tend not to seek out commonly craved salty foods.

- **Digestion:** Eliminating processed foods foreign to your genetic makeup will quickly help alleviate symptoms of digestive dysfunction, even lifelong “issues” that may seem like normal by-products of stressful daily life, genetic frailties, or aging. You may even repair damaged digestive tissue. Allergies, asthma, inflammation (anything with “-itis”) will minimize or disappear in a matter of days or weeks.

- **Drug-Free:** Experiencing rapid improvements in blood markers and disease symptoms can enable you to progress toward an important goal of eliminating your reliance on prescription medications—an accomplishment your doctor will support when your blood markers return to normal range.

- **Energy:** When your body transitions to deriving most of its energy from stored body fat, you
won’t be subject to the blood glucose swings and burnout cycles that happen with the Standard American Diet. Instead, you will notice—in 21 days or less—increased and more stabilized daily energy levels, even if you find yourself inadvertently skipping meals or forgetting to eat.

- **Immunity**: Moderating production of cortisol (a primary catabolic stress hormone) and reducing levels of glucose and insulin in your blood will help your immune system function optimally. You’ll probably get sick less often and recover more quickly if you happen to get run down.

- **Measurements**: Your clothes will fit looser as you decrease body fat, systemic inflammation, and any accompanying water retention and bloating. You’ll see the most results in your rear end, hips, thighs, and waist, the primary storage areas for fat.

- **Muscle Mass**: You can increase or sculpt muscle while dropping fat (or maintain muscle mass if you already have as much as you need). In contrast, the Conventional Wisdom approach of chronic exercise and high-carbohydrate eating commonly results in muscle catabolism (break down) in order to deal with wildly fluctuating blood glucose levels.

- **Sleep**: Aligning your lifestyle with your circadian rhythm will enable you to go to sleep easily, sleep soundly, and awaken naturally (no alarm) each morning, refreshed and energized.

- **Stress**: Living Primally and rejecting the SAD/chronic exercise pattern will regulate your body’s stress response system, helping you to avoid the fatigue, burnout, disease, and dysfunction that are driven by hectic modern life.

- **Total Fitness**: Primal Blueprint Fitness involves full-body, functional exercises that develop broad athletic competency and a balanced physique. This allows you to pursue a variety of fitness and athletic goals without the risk of overtraining and injury common with narrowly focused programs.

- **Various Other Health Markers**: Directing optimal gene expression improves bone density, glucose tolerance, insulin sensitivity, blood pressure, hormone balance, and many other benefits…including LGN (*Looking Good Naked*).
KEY CONCEPTS

Things you need to know
Inside each of your cells is a DNA “recipe”—a set of general instructions for how to build a lean, fit, happy, productive human being. I say “general,” because how things actually play out in your life is a function of activating or deactivating thousands of very specific genes (which are subsets of DNA) on a day-to-day basis.

Genes are commonly viewed as fixed traits that you inherit from your parents: hair and eye color, height, body type, and predispositions to alcoholism, flat feet, rheumatoid arthritis, shyness, wide hips, and so forth. You have minimal influence over heritable traits such as these, but you can directly influence genes involved in muscle development, body fat storage, inflammation, and many other aspects of general health and longevity. Your ability to influence this gene expression is the very foundation of the Primal Blueprint.

Many thousands of genes are constantly at work directing cellular functions, orchestrating the building of critical structures and enzyme pathways, and repairing, regenerating, and sometimes even destroying your cells based on the signals they get from their immediate environment. You can control these environmental signals through the foods you eat, the workouts you conduct, the sleeping and lifestyle habits you engage in, and even the medication you take.

Genes can be viewed as an assortment of “on/off” switches for building the protein molecules that influence every element of body function and structure. Turn on “good” gene switches and you build muscle, increase fat burning, or knock out an invading virus. Turn on “bad” gene switches and you might experience inflammation and indigestion, or, over the long term, you may develop obesity, heart disease, and cancer.

The genetic recipe for a strong, fit, healthy human exists in almost all of us. It’s our “factory setting” at birth.

To really grasp this Key Concept, it’s essential to recognize the difference between the particulars of your unique familial genes and the basic human genes that we all share. We all build muscle and bone, burn and store fat, and combat germs the same way, using the same biochemical pathways in our Homo sapiens genes. It’s just the degree to which we do these things that varies among individuals. Some of us—thanks to mom and dad—build muscle a little faster and better than others. Some of us
Gene Expression in Practice: Otto and Ewald

Otto and Ewald, pictured here in 1969, are German twins who possess identical copies of the genes their parents gave them. They achieved notoriety in scientific circles as a compelling case study for how environment influences gene expression. Otto was photographed while in training for long distance running, while Ewald was a competitor in field events (discus, shot put, hammer throw) which call for brief, explosive bursts of power. Otto’s low-intensity endurance workouts trained his muscles to process oxygen more efficiently, but partly deactived the genes that trigger protein synthesis and increased muscle size. Ewald’s high-intensity training increased gene activity involved in protein synthesis, so his muscles grew larger and more capable of brief, explosive efforts.

From Michael J Rennie, G.L. Brown Prize Lecture, 2005

seem to burn off fat with far greater ease. Some of us have genes that make us more prone to getting cancer or heart disease. But in most, if not all, of these cases, you have significant power to affect whether genes get switched on or off. You just have to know which behaviors or foods affect which genes. Luckily, discoveries in human evolution coupled with recent advances in mapping the human genome provide many of the clues.

Here’s a big problem though: your genes have strong expectations to receive a specific and narrow range of signals from you, but they don’t really know or care
if you make “good” or “bad” lifestyle choices. These myriad on/off switches are hard-wired from millions of years of evolutionary selection pressure to first and foremost keep you alive until you are old enough to reproduce. Hate to break it to you, but your genes will pursue this mission without taking into account the effect upon your long-term health.

It’s fair to assume that your genes prefer the path of least resistance/best health, and are always ready and waiting to build a strong lean, fit, healthy, happy human. When you conduct an all-out sprint workout, your genes stimulate a pulse of anabolic hormones, enabling your body to adapt and grow stronger for your next sprint session. That’s a good thing. On the other hand, when you mismanage your genes with poor dietary habits or chronic exercise patterns, you will likely suffer from obesity (through the chronic overproduction of insulin), fatigue (poor sleep habits disturbing optimal hormone balance), and systemic inflammation and burnout (chronic production of “fight-or-flight” hormones in the face of unrelenting environmental stressors).

When you get type 2 diabetes, it’s not necessarily a sign of defective genes; in fact, it’s an example of your Homo sapiens genes (with some familial influence) doing what they think is appropriate to protect you from an overabundance of sugar in your bloodstream. However, abusing this life-saving mechanism is definitely a bad thing for your long-term health. With this in mind, ironically, everyone is naturally predisposed to developing type 2 diabetes if they send their genes the wrong signals enough times.

It’s important to recognize that “results may vary” due to the particulars of your familial genes. Olympic athletes and magazine cover models represent optimal expression of their specific physical genetic attributes, but the hard-wired limitations of your familial genes might preclude you from ever winning a gold medal. Accepting this reality, it’s critical to settle for nothing less than superior health and maximum longevity, and to avoid the devastating pattern of decline and disease that is endemic to modern life. Realizing your genetic potential is as simple as knowing what switches to flip.

**Yes, You Really Can Reprogram Your Genes Summary**

- Genes are like “on/off” switches for building protein molecules that influence every element of body function and structure.
- Genes are more than fixed heritable traits—they constantly direct the repair, rebuilding, and regeneration of your cells.
- While some genetic functions are beyond our control (eye color, skin pigment, etc.) we have tremendous influence over day-to-day operations through the environmental signals we send to our genes (diet, exercise, and lifestyle choices).
- Genes strive to promote short-term health in response to all environmental signals, whether health promoting over the long term or not (e.g., type 2 diabetes).
- Accept the limitations and predispositions of your familial genes; then focus on optimal expression of your Homo sapiens genes.
Noted evolutionary biologist Theodosius Dobzhansky once famously said, “Nothing in biology makes sense except in the light of evolution.” Modern research in epigenetics and evolutionary biology confirms that we are genetically identical to our hunter-gatherer ancestors, a premise that frames today’s popular Primal/paleo/evolutionary-based eating, exercise, and lifestyle movement. In order to discover which foods or behaviors can have the greatest impact on your genes and thus advance you towards better health today, it’s instructive to look closely at human evolution over the past two million years.

The food, exercise habits, and lifestyle behaviors that sustained evolution have shaped, molded, and supported the modern human genome (our complete collection of genetic material). Modeling the lifestyle behaviors of our hunter-gatherer ancestors (and adapting them into the realities of high-tech modern life) provides the ingredients to complete your own personal recipe for a lean, strong, fit, healthy, happy human. To help you visualize this, I’ve created a primal human role model affectionately known as Grok and memorialized him in the Primal Blueprint logo.

Our ancestors who were able to survive and reproduce under unimaginably harsh environmental circumstances refined and perfected the human genetic recipe. It was classic survival of the fittest: those who were unable to adapt died out, and those lazy, slow, stupid, weak genetic attributes were lost forever. Today, your genes expect you to eat a certain way, engage in both extensive low-level movement and brief, high-intensity workouts, sleep in alignment with the rising and setting of the sun, and so forth.

We may all rejoice in winning the survival of the fittest battle to enjoy our lofty perch at the top of the food chain, but we must not take the hard work and good fortune of our ancestors for granted. The recipe and the ingredients we need to maximize our health and well-being are right in front of us, but modern humans seem to disrespect and disregard the profound legacy of our ancestors.

It might be hard to believe that we’re exactly the same inside as the loin-clothed Grok from 10,000 years ago. With a few minor exceptions, we are indeed identical to our ancestors in how we metabolize food, respond to exercise, cycle
through sleep phases each night, absorb sunlight, and deal with various other environmental influences. Oh, with one critical distinction: our ancestors from 10,000 years ago were stronger and healthier than most of us are today! Anthropological records from Grok’s time show robust specimens with little to no evidence of heart disease, cancer, obesity, diabetes, or autoimmune diseases. These hunter-gatherers lived on meat, fish, fowl, insects, eggs, nuts, plants and fruits, and engaged in lots of varied physical movement in the thousands of years before agriculture.

Conversely, the initial generations of predominantly grain-based eaters—such as the Egyptians around 7,000 years ago—were significantly shorter and less muscular, and had lower bone density and shorter lifespans than their predecessors; they even exhibited dental decay. The decline in human health prompted by civilization occurred because we departed from what our genes were accustomed to for the previous two million years: meat, fish, eggs, plants, and constant activity. Instead, humans transitioned to brand new agricultural foods (wheat, barley, peas, and lentils were among the first cultivated crops) and adopted a less physically strenuous lifestyle. The abrupt lifestyle change of civilization—what University of California, Los Angeles evolutionary biologist and Pulitzer Prize winner Dr. Jared Diamond refers to as “the worst mistake in the history of the human race”—dramatically altered which genes were switched on, and which were turned off.

The genes of early civilized humans weren't adapted to these new foods, many of which contained toxins in the form of plant chemical defenses. Members of these early agricultural societies often survived just long enough to have several children and to pass their genes along to the next generation, but you really couldn’t say that these people thrived from a health standpoint. Even thousands of years later, despite amazing technological, scientific, and medical progress, we are pretty much living the same scenario: people around the world—whether impoverished or wealthy—are simply surviving (from a health standpoint), not thriving.

Our genes still expect us to eat a higher fat diet. Our genes see many of these agricultural foods we take for granted as “poisonous,” because our guts haven’t adapted. Our genes see an overabundance of sugar as toxic, and take dramatic steps to save us. Our genes see our lack of exercise, sleep, and sunlight as problematic because we haven’t adapted to being inside, illuminated, and immobile.

We simply don’t give our genes what they have evolved to expect from us, which begs the question: Why haven’t we evolved to the point that we can thrive on these newer agricultural foods? Why are these foods still toxic thousands of years later? Couldn’t we have evolved to eat these newer foods without penalty by now? The answer centers around selection pressure. Once civilization took hold with
permanent housing structures and relatively plentiful supplies of calories from agricultural efforts, the primary environmental selection pressures that had driven human evolution for the previous two million years by rewarding the genes of the best adapted were effectively eliminated. The constant threat of death by starvation or predator danger basically ended. Survival of the fittest has transitioned into survival of the weak, sickly, diabetic, and arthritic. Consequently, the human race has been able to carry on, overpopulate the earth, and see today’s inhabitants of the most developed, affluent countries become the fattest, least fit population in the history of mankind.

“Our genes still expect us to eat a higher fat diet; they still see agricultural foods (and modern foods such as sugar), as poisonous; they still see lack of sunlight and exercise as problematic. We haven’t genetically adapted to modern life because there is no selection pressure in the civilized world.”

Meet my pal Grok: he’s genetically identical to you and me—except stronger and fitter!
**LIVE LONG, DROP DEAD**

You may have heard, accurately, that life expectancy was only around 33 in Grok’s time, but this longevity statistic is much more impressive when you factor out predator danger, high infant mortality rates, and routine infections and trauma that were commonly fatal in prehistoric times. Ten thousand years ago, anthropologists assert that it was not uncommon for humans who avoided rudimentary fatalities (eaten by lion, fatal infection from a scraped knee, etc.) to live six or seven decades in robust health—with no medical care or modern comforts of any kind.

Even with their lifelong struggle for food, shelter, and safety, the “maximum observed lifespan” in Grok’s time was a mind-boggling 94! Impressive longevity is also enjoyed today among the last remaining pockets of primitive hunter-gatherer cultures on the globe, such as the Ache, Hadza, Hiwi and !Kung. More than a quarter of today’s Ache (AH-CHAY) people in Paraguay make it to 70. Moreover, 73 percent of Ache adults eventually die from accidents, and only 17 percent from illness.

Meanwhile, the nearly octogenarian life expectancy in Western nations is tainted by a deplorable decline in health, vitality, fitness, and productivity known affectionately as the aging process. In contrast, Grok enjoyed truly exceptional health and fitness for his entire life, whether it ended early by misfortune, or whether he was able to go six or seven decades at full throttle. Grok actualizes the motto I’ve recently come to embrace: “**Live long, drop dead!**” There was simply no such thing as today’s steady decline into old age, in some cases twenty years of slipping down the slope of declining health.

It may seem implausible to consider a bunch of freakishly fit, healthy, and energetic primal humans roaming the earth, but it’s the truth. Pre-civilized humans with genetic, physical, or even psychological frailties were naturally and ruthlessly weeded out of the clan in a manner as routine as the rising and setting of the sun. Survival of the fittest ain’t pretty, and thanks to technological progress, life today is easier, safer, and more humane. Nevertheless, while no one wishes to return to the brutal realities of selection pressure, we must never take the legacy of human evolution for granted.

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*The dotted line represents the routine sudden end of life in Grok’s time—typically by accident or brief (and often minor by comparison today) illnesses—no steady decline into feeble old age.*
The *Primal Blueprint 21-Day Total Body Transformation* is about making life-transforming choices based on solid scientific information. Knowing this, we can reject the complexity and gimmicks common to the latest diet or exercise craze, and look to our ancestors and evolutionary biology to discover optimal foods and movement patterns. This is not to suggest you must hunt down wild animals or forage for berries all day to be Primal-aligned; it’s about finding ways to use 21st century convenience, abundance, and technology in ways that are consistent with our inherited biology. As we begin to drill down into what we should or shouldn’t eat, our main criterion must be: will eating this food be consistent with my biology, or will it potentially cause problems? As we investigate the best forms of working out, we must ask ourselves: how does this exercise best take advantage of my genetic recipe for strength, power, and endurance?

“Due to the elimination of selection pressure and the insufficient time frame for evolutionary adaptation, modern research in epigenetics and evolutionary biology confirm that we are genetically identical to our hunter-gatherer ancestors from 10,000 years ago.”

Today’s exploding global population generates tremendous genetic diversity, but each of us still responds in a similar manner to environmental signals—foods, workouts, sleep, sun exposure—that direct our unique and ideal genetic expression. The great news is that being healthy does not require extreme training, restrictive/obsessive dietary habits, or a joyless, Spartan daily regimen. Thanks to the tribulations and triumphs of our ancestors, humans are hard-wired to pursue a life of ease, contentment, and happiness. We’ve adapted to a tremendous variety of foods and environmental circumstances in order to populate and thrive in all corners of the globe. Personal preference is going to have the strongest influence on lifestyle behaviors that promote optimal gene expression, as long as you operate in the broad framework that we will continue to outline in the Key Concepts that follow.

**GROK’S LIFE LESSONS – THE ORIGINAL AFFLUENT SOCIETY**

Grok’s hunter-gatherer lifestyle reveals simple insights into how to be healthy. Regarding diet, the bulk of our ancestors’ calories came from eating a variety of animal life (estimates range from 45 to 85 percent, depending on geography),
including insects, grubs, amphibians, birds, eggs, fish and shellfish, small mammals, and some larger mammals. Berries and other fruit, leafy greens, primitive roots, shoots, and other vegetation, nuts, and seeds rounded out hunter-gatherer caloric intake.

Absent from Grok’s diet were the agricultural foods that appeared and became predominant over the past 7,000 years, as well as the modern foods that we’ve introduced over the past century. Loren Cordain, Ph.D., author of the *Paleo Diet*, claims that 71 percent of daily calories in the SAD come from “modern” foods that were entirely absent from the diet of our ancestors, and thus foreign to our hunter-gatherer genes: refined sugar products (to the tune of 154 pounds/70 kg per person annually), grain foods (bread, corn, pasta, rice, etc.), legumes (beans, lentils, peanuts, peas, soy products), chemically altered trans and partially hydrogenated fats (deep-fried, frozen, packaged “junk” foods), polyunsaturated fatty acids (aka “PUFA”: vegetable and seed oils, packaged and baked goods, salad dressings), processed dairy products, meat from Concentrated Animal Feeding Operations (CAFO) laden with hormones, pesticides, and antibiotics, and other packaged, refined, frozen, heavily processed fare that has been disastrous to human health.

Another notable element of Grok’s diet contrasts sharply with modern life: his caloric intake was wildly inconsistent. There was never any guarantee of where the next meal would come from, or whether Grok might become some other creature’s next meal! Consequently, we adapted to the constant threat of starvation by becoming adept at storing energy for later use, and particularly adept at manufacturing glucose internally to fuel essential biological processes when dietary carbs were scarce, which was often.

We store ingested calories in the form of saturated fat in fat cells, glycogen (the storage form of glucose found in the liver and muscles), and protein (muscle tissue—burned for energy as a last resort). As we will discuss in detail shortly, insulin is the key hormone that facilitates this storage. Efforts to consume regularly scheduled carbohydrate-based meals—three squares, six smalls, or other such modern gimmicks—actually do more harm than good by stimulating excessive insulin production and de-activating the genes that promote efficient fat burning. Our genes expect us to be healthy by often not eating regular meals!

Regarding lifestyle elements that promote optimal gene expression, the legacy of our ancestors has been seriously mischaracterized—distorted by our civilized values that lack appreciation for the redeeming qualities of primitive times. In the 17th century, English philosopher Thomas Hobbes popularized the notion that the lives of our pre-civilized ancestors were “solitary, poor, nasty, brutish, and short.” These beliefs continue to shape Conventional Wisdom even today, despite extensive research suggesting otherwise.
Anthropologist Marshall Sahlins has advanced a more dignified theory of hunter-gatherers as the “original affluent society.” They wanted for little, met those desires on a daily basis, and thereby enjoyed a level of affluence—by the literal definition—that was superior to the distorted values of today’s consumerism culture. There was no need or desire to accumulate material wealth, vie for the prestige of having the biggest hut, hoard more food than thy neighbor, or engage in other stressful and unnecessary rat race battles.

Our hunter-gatherer ancestors did just enough work to get by and enjoyed a life of extensive leisure time and rich social interaction. Estimates derived from modern-day hunter-gatherers suggest that Grok’s routine probably consisted of 3-5 hours of procuring food, another few hours of chores relating to habitat, shelter, and basic human needs, 10 hours of sleep and rest (probably bi-phasic and featuring a good afternoon siesta), and 6 hours of leisure time each day, consisting of play and family or group socializing. Rather than accumulating material goods, it would appear that ample leisure time (art, dance, music, play, sports, and storytelling) is the true currency of the hunter-gatherer. Maybe that should be how we measure success today as well.

The hunter-gatherer active lifestyle made our ancestors exceptionally fit, but they approached fitness from a “necessity” perspective, with exercise flowing naturally from their basic needs: pick berries, seek out water, build shelter, or sprint from a predator. These exercise patterns contrast sharply with the chronic, narrowly-focused exercise regimens common today. For example, humans aren’t literally “born to run,” at least not daily. Our genes are wired for frequent walking, hiking, jogging (if one is quite fit), and general low-to-moderate-intensity movement.

To be sure, we are adapted to perform occasional grand endurance feats, such as a persistence hunt. Check out YouTube for the documentary, The Great Dance, where !Xo San Bushmen literally run an antelope to death over some four hours in the 120-degree heat of the Kalahari Desert in Botswana. Unlike today’s
mileage-obsessed marathon runners, however, our ancestors (and modern hunter-gatherers) balanced these awesome occasional efforts with extensive recovery periods.

Other simplicities of Grok’s daily routine must be considered in light of the disastrous state of modern health. Aligning your sleep habits more closely with the rising and setting of the sun may not sound as exciting as consuming a variety of digital entertainment available 24/7, but it can enhance your health immeasurably. Carving time out of daily life to play, hang out and talk with friends, relax in the sunshine, or take a relaxing evening stroll with your partner are activities that we commonly neglect in the name of productivity. However, embracing these seemingly trivial little diversions from your busy appointment calendar may help you to manage stress, depression, fatigue, and high blood pressure better than a concoction of prescription medications. And your genes expect you to do all this to be healthy and fit.

The Clues to Optimal Gene Expression Are Found in Evolution Summary

- Because civilization ended selection pressure/evolution, we are genetically identical to Grok, a premise that frames the Primal Blueprint.
- The pinnacle of human physical evolution was reached 10,000 years ago, prior to civilization. Grok was healthier, fitter, and stronger than civilized humans today.
- Civilization ushered in a decline in human health due to eating, exercise, and lifestyle patterns that compromised optimal gene expression for the first time. We’ve mismanaged our genes even more severely over the past century and have become the fattest, sickest, least fit population in the history of mankind.
- Grok enjoyed excellent longevity (factoring out primitive risks/misfortunes) and quality of life. “Live long, drop dead!” contrasts with the steady decline into old age that we experience today.
- Hunter-gatherer diet: plants and animals, wildly fluctuating caloric intake. In contrast, we eat 71 percent of calories from genetically unfamiliar and offensive “modern” foods.
- Hunter-gatherer exercise: fitness by necessity, which blends frequent low-intensity movement with occasional high-intensity strength and sprint efforts, and extensive recovery.
- Hunter-gatherer lifestyle: the “original affluent society” which wanted for little and fulfilled all needs daily. Sleep habits aligned with the sun. Lifestyle of slower pace, relaxation, play, and socializing.
key concept #3
YOUR BODY PREFERS BURNING FAT OVER CARBOHYDRATES

This might be the most important Key Concept in the book, so I really want you to get this: your original “factory setting” is to be an efficient fat-burning beast! You are designed to derive most of your energy—minute by minute, day by day—from either the healthy fats in your meals, or from the body fat stored on your rear end, hips, thighs, and waist. Your genes expect you to eat fats and to access stored fat for energy needs, both at rest and during low- to medium-intensity exercise.

Unfortunately, due to the misinterpretation of health and dietary science (and perhaps a little corporate profit incentive propaganda thrown in for good measure) that began a few decades ago, you were likely socialized into a Standard American Diet at an early age. As 20th century lifestyle “progress” took hold (eating food from factories instead of farms, driving instead of walking, etc.), and waistlines began to expand, Conventional Wisdom dispensed the flawed observation that eating fat makes you fat. We were convinced, erroneously, that carbohydrates (and the glucose and stored glycogen they generate) are what our bodies prefer to burn, because carbs burn quickly and easily, and because certain vital organs like the brain cannot live without them.

Consequently, industrious food manufacturers revved up their machinery to pump out heavily processed carbohydrate foods and beverages. We cultivated and indulged our collective sweet tooth, and assuaged our health ambitions by eating low-fat, grain-based meals that we truly believed were nutritious and responsible for weight control. While the nuances of this issue might be debated by those in the whole grain, low-fat camp today, one unassailable truth is that the Standard American Diet of the past few generations has been an unmitigated disaster.

As we learned in the examination of evolution and our ancestor’s low-carb lifestyle, a steady supply of dietary carbohydrates is entirely unnecessary and counterproductive to our health. Yes, the brain needs a small amount of glucose to keep it running, but this and other essential metabolic functions involving glucose are easily handled by internal glucose manufacturing mechanisms that are hard-wired into our genes. Your liver, if healthy, can make up to 130 grams of glucose—which it can also store as glycogen—on its own every day. This is more
than enough to supply the brain and other organs, even if you never ate another carbohydrate. We only “prefer” to burn glucose (from dietary carbohydrates) when it’s present in large quantities, since excess glucose in the bloodstream is toxic.

In an effort to dispense with excess glucose as quickly as possible, your body burns it for immediate energy, stores it as glycogen in the muscles and liver, or stores it as fat in your fat cells. Glucose is indeed a cheap and easy-burning source of fuel, but that doesn’t mean that you should depend on dietary carbohydrates as a primary source of fuel. For one thing, operating a mostly sugar-burning engine (one that depends on fresh glucose all the time) will most likely lead to lifelong insidious weight gain unless you become a calorie counter and exercise junkie. Even big-time exercisers with exceptional genes who maintain lean physiques can suffer serious repercussions from being sugar burners, a consequence we will discuss in the Exhaustion Epidemic section of Key Concept #4. Also, pumping too much glucose and insulin through your bloodstream over a lifetime promotes systemic inflammation, the catalyst for all manner of health conditions and serious disease.

As we’ll discuss in the next Key Concept, when you overstress your insulin response system and become “insulin resistant,” you are in big trouble. If glucose is not efficiently processed (either burned, stored as glycogen, or stored as fat), it will damage protein molecules through a process known as glycation. In fact, the various health issues experienced by those with obesity and type 2 diabetes all generally relate to this glycation effect.

**TRANSITIONING FROM SUGAR BURNER TO FAT-BURNING BEAST**

Like most people around the globe, you probably grew up eating your fair share of high carbohydrate staples like whole grain and refined cereals, breads, pasta, fruit juices, sweetened drinks, potatoes, rice, rolls, cookies, pastries, pies and all other manner of high carbohydrate foods. Even if some—or most—of your diet has been in the form of “complex” carbs, this excessive and unnecessary intake has reprogrammed your genes from an early age to make you more dependent on a regular supply of dietary carbohydrate.

“Operating a mostly sugar-burning engine will likely lead to lifelong insidious weight gain and systemic inflammation.”

You are a “sugar burner” if you are trapped in this carbohydrate dependency. If you’re like most people, this high intake of carbs over time has elevated your insulin levels (see Key Concept #4) throughout the day and resulted in excess calories (from all foods, not just carbs) being stored as body fat. Over the years, chronically high levels of glucose and insulin in your blood have altered your fat cells so that you can’t easily burn this plentiful source of stored energy. If your body is accustomed to burning carbs as
fuel instead of stored fat, your brain will crave your usual fuel source (carbs) more often. This leads to a vicious cycle of insidious weight gain over a lifetime, even if you exercise frequently.

We use the term “up-regulate” and “down-regulate” to describe how gene pathways are activated or de-activated by the environmental signals they receive. With a diet very high in carbohydrates, and/or an exercise regimen lacking high-intensity workouts, genes down-regulate fat-burning processes and up-regulate most of the enzyme systems and pathways that are involved in sugar burning and fat storage. The good news is that you can return your genes to their factory “fat-burning beast” setting in a short time by eating, exercising, and living Primally.

Think about this: there is no requirement for dietary carbohydrates in human nutrition. Through a process known as gluconeogenesis, your body can manufacture glucose on demand from proteins and fats, and in amounts needed to keep your brain humming and energy levels stable. This elegant function happens in the liver where fats and proteins (either ingested or stored) are converted into glucose and pumped into the bloodstream to keep you focused and energized. Many experts believe that gluconeogenesis can supply you with up to 150 grams (600 calories worth) of glucose per day if necessary. This is a significant amount, which might even cause you to second-guess the wives’ tale sugar-burning edict to consume regular meals in order to stabilize blood sugar.

You may have heard that gluconeogenesis is sometimes associated with the stress response, where hard-earned lean muscle tissue is stripped down when you exercise chronically or endure a crisis in your personal life and run on fumes for days on end. Gluconeogenesis can certainly be a less-than-optimal survival-based process in those types of situations (particularly before you become fat-adapted and are more vulnerable to blood sugar dives), but it can also become a regular, daily useful tool for providing a steady supply of glucose (in the absence of dietary carbs) from ingested fats and proteins, without triggering adverse effects. This is what happens when you choose to reprogram your genes and cells to selectively derive most of your energy from stored body fat. This “choice” is, of
Our ancestors went for days without anything to eat, and carbohydrates were extremely scarce for two million years. The truth is, fat is the preferred fuel for human metabolism.

course, dependent upon the signals you send your genes. To optimize your internal glucose manufacturing abilities, it’s best to be fat-adapted (eat Primally, moderate carb intake/insulin production), consume sufficient protein to preserve muscle tissue, and avoid chronic exercise.

Entire civilizations have existed for ages on practically zero-carb diets. Mind you, these resilient folks did not exist this way by choice, and I’m not suggesting that you should never eat carbs or that they are somehow inherently dangerous. I prefer to view carbohydrates as the “elective” macronutrient, usually only needed in any appreciable amount after heavy exercise when you want to replenish muscle glycogen (or perhaps also increase body fat if you’re a sumo wrestler or high school football player). By simply cutting out the excess, undesirable carbs—sugary foods and beverages, refined and whole grains, and legumes—and leaving in healthy carbs (such as those in vegetables, fruits, and tubers), you will arrive naturally at a biologically appropriate carbohydrate intake level that minimizes your fat storage and sets you up to be an efficient fat burner for the rest of your life.

Before you breeze by this section and go on your merry way, I must assert that excess carbohydrates have a distinct, unique ability to ravage and metabolically disturb a person’s body. If you’re overweight, as most people in the United States are, it’s very likely that your carbohydrate metabolism is dysfunctional. You’re probably insulin resistant to the extent that even moderate amounts of carbs will inhibit healthy fat metabolism, promote systemic inflammation, and suppress immune function. We will discuss these topics further in Key Concept #4 and Key Concept #5 about the drawbacks of consuming anti-nutrients in grains and legumes. Of course, all or most of that dysfunction can be fixed over time by adhering to a Primal Blueprint lifestyle.

The truth is, fat and protein were the dominant macronutrients for two million years of human evolution, with carbohydrates only ascending to center stage with the advent of agriculture around 7,000 years ago. Our ancestors often went days without anything to eat at all, yet they had to maintain their strength and mental focus until they could score more food. The lack of regular access to food and the scarcity of carbohydrates resulted in selection pressure to develop efficient pathways to access body fat for energy. This was the only way humans could survive day-to-day and generation-to-generation. Our genes are still programmed to rely on effective fat metabolism as our primary energy source as long as we send them the right signals.
Our movement patterns over millions of years (lots of low level fat-burning activity punctuated by brief bouts of intense sprinting or lifting) were such that we never needed to consume large amounts of glucose or store large amounts of glycogen in our muscles and liver. It was predominantly stored fats and ketones (an energy source made in the liver as a by-product of fat metabolism—more on that in a bit) that helped us to survive, evolve, and thrive. Hey, there’s another t-shirt slogan to go with “Live Long, Drop Dead!”: “Survive, Evolve, and Thrive!”

When you consider how ridiculously small the body’s glycogen storage reservoirs are, you understand that it would have been impossible for us to survive as a species if glucose were truly the “preferred” fuel. The liver, which is the main back-up glucose storage facility for the brain and other glucose-burning organs, can only store about 100 grams of glycogen—less than a day’s worth. Your muscles can only hold another 350-500 grams. All told, that’s barely enough to run for 90 minutes at a reasonable clip, as any marathoner who has “hit the wall” and run out of glucose can attest.

Meanwhile, we have a virtually unlimited storage capacity for fat (close to a million calories worth on some Biggest Loser contestants). Excessive glycogen storage has been unnecessary because we have tremendous capacity to store fat, to burn fat, and to produce glucose and ketones through internal mechanisms. Besides, there just weren’t that many carbs to eat for most of our two million years evolving.

If you can limit carb intake to the bare minimum (or even up to 50 grams a day over that), and make up the difference with tasty fats and protein, you can literally reprogram your genes to their evolutionary-based factory setting, the setting you had at birth. In only 21 days, you can transform yourself into an efficient, fat-burning organism, and can maintain that status as long as you send the right signals to your genes. The idea that you can become an efficient, fat-burning beast is the major premise of the Primal Blueprint eating and exercise strategies.
THE INNER WORKINGS OF GLUCOSE

The total amount of glucose dissolved in the bloodstream of a healthy non-diabetic adult is equivalent to only a teaspoonful (5 g). Much more than that is toxic; much less than that and you pass out. Not a big range for a so-called “preferred” fuel! During normal low-intensity activity (i.e., at rest or walking) your body only burns about five grams of glucose an hour—less if you are adapted to burn fat or ketones.

The brain is the major consumer of glucose, needing maybe 120 grams a day. Low-carb eating reduces the brain’s glucose requirements considerably, and those who are eating very low-carb and are keto-adapted may only require about 30-50 grams of glucose per day to fuel the brain. Similarly, little to no glucose is required to fuel muscles when you exercise at 75 percent or less of maximum heart rate. Twenty of those 120 glucose grams can come from glycerol (a by-product of fat metabolism) and the balance (easily) from gluconeogenesis in the liver. We don’t have to rely on a single carbohydrate calorie to fuel our brains with glucose or our muscles with glycogen.

Unless you are an active growing youth, an extreme training athlete, or a physical laborer depleting muscle glycogen stores daily, you probably don’t ever need to consume more than 150 grams of dietary carbohydrate per day, on average. Once you become fat-adapted, you can probably thrive on far less. Many Primal Blueprint enthusiasts do very well on as few as 30-70 grams a day, even when engaged in an ambitious schedule of Primal workouts.

World-champion ultra-distance triathlete Jonas Colting of Sweden trains several hours per day while eating Primally. Contrary to Conventional Wisdom about endurance training, Jonas relies on a relatively high-fat diet. He carefully selects supplemental carbs to keep muscle glycogen stores topped off and eschews the synthetic energy bars and fuels most endurance athletes rely on. Jonas’s diet and training patterns over the years have programmed his genes to burn fat efficiently, even while racing at a phenomenal pace by mere mortal standards. This provides a tremendous advantage in ultra-endurance competitions over carb-dependent athletes.
BECOMING A KETO-BURNING BEAST TOO!

We’ve already talked a little about the three major fuels that our bodies use for energy: carbohydrates (as glucose), fats (as free fatty acids), and protein (as amino acids). But now we’re going to discuss a fourth fuel that our bodies evolved to metabolize when carbs are scarce: ketones, or ketone bodies. Despite the undeserved misgivings some people have about ketones, ketone burning is one of the best energy management tools we humans have developed.

Ketones are an energy-rich by-product of gluconeogenesis produced when the liver uses fat to fuel the conversion process. Ketones are typically considered by the sugar-burning world to be merely an emergency fuel, but they do much more. Your brain actually works more efficiently with ketones than with glucose, probably due to our ancestors’ ability to access internal ketones rather than hard-to-find external carbs. When you become keto-adapted, you will substantially decrease your glucose requirements over time. Your heart and other organs can also work very well on ketones. Skeletal muscle can be trained to rely heavily on a mixture of fats and ketones as fuel for long periods when you are exercising at 75 percent of maximum heart rate or below.

Throughout any given day, the average person uses a combination of carbohydrates, fat, protein, and ketone bodies as fuel. The relative amount of each fuel used shifts in accordance with the signals you send your genes through diet and exercise choices. If you have programmed yourself to be a sugar burner up until now, most of your energy will come from glucose (the carbs from your meals or the glycogen stored in your muscles) and very little will come from fat (free fatty acids). Some amount of amino acids from meals or muscle tissue will contribute directly to fuel needs, while a bit more will be converted to glucose through gluconeogenesis. Finally, you’ll derive a tiny energy contribution from ketones, so even a sugar burner is metabolizing ketones on some level.

As you begin to shift away from a grain-based carbohydrate diet toward one made up of healthy fats and proteins, you’ll send your genes new signals that up-regulate not only the systems that release fat from cells, but also those that improve fat-burning rates. You’ll get to the point where the vast majority of your daily energy requirements come from your newfound ability to tap into your stored body fat and to burn it easily. You’ll also up-regulate the biochemical machinery that burns ketones more efficiently. We use terms like “fat-adapted” and “keto-adapted” to describe these particular aspects of gene reprogramming. Adapting to your Homo sapiens factory setting is truly existing in a 24/7 fat-burning zone.
You may find this scientifically interesting, but what are the real-life advantages of being fat- and keto-adapted? For one, you will no longer have an issue with storing excess body fat, and you will easily arrive at and maintain your genetically ideal body composition. Second, you will experience less systemic inflammation, which is a disturbing by-product of being a sugar burner. Pumping too much glucose through your bloodstream every day compromises healthy cellular function, something scientists and medical experts universally agree on and use the catch-all term metabolic syndrome to characterize. Finally, your body will adapt to survive for the rest of your life on fewer calories—without an increase in your hunger or a decrease in your daily energy levels. You’ll be less reliant and less hassled by the need to constantly find fuel to keep your brain and your engine running, and you will very likely extend your lifespan (and the quality of that lifespan), as this so-called “caloric efficiency” strongly correlates with longevity in every living organism.

The big problem when you are a sugar burner and you don’t eat every few hours is that your blood glucose stores dwindle and you get tired and cranky. Your brain (which doesn’t burn fat and isn’t yet keto-adapted) will frantically prompt you to become hungry and to seek out more carbs. If you don’t refuel quickly, your brain will direct your adrenal glands to release hormones that stimulate glucose production in your liver. The fresh supply of glucose will help re-energize your brain and bloodstream, so you’ll feel better for a little while. However, because you are a sugar burner, you will break down lean muscle tissue in order to produce this glucose, and you will produce ketones as a by-product of this gluconeogenesis. Unfortunately, because you are not yet fat- or keto-adapted, your brain and muscles haven’t had the time to up-regulate the biochemistry necessary to effectively use these ketones for energy. Instead, they will leak out (the ketones, not your brains), unused, into your breath, sweat, and urine.

This state of ketosis is not dangerous or even harmful (unless you are a type 1 diabetic). It’s just an indication that your body is producing ketones at a rate faster than it can use them as fuel. Maybe you’ve experienced this yourself or have noticed a sugar-burning friend who has skipped a few meals and now has that sweet “acetone” breath. He or she is making ketones, but can’t use them yet. On the other hand, when you become fat-adapted and keto-adapted, your body derives most of its energy from fats (either from a recent meal or from typical storage depots on your body), and your daily glucose requirements drop dramatically. You can go for long periods of time without eating (either through a purposeful fast or by just forgetting to eat during a busy day), and you won’t experience sugar burner side effects such as light-headedness, lethargy, bad moods, and hunger. Consequently, stress hormones aren’t called into action and muscle tissue is spared.

When you arrive at this blissful, genetically optimal state—as a fat-burning and keto-burning beast—your perspective about food and weight loss shifts forever. It feels a little like you’ve won a brand new Prius in a raffle, because you’ve upgraded your body to a hybrid engine. You can either burn gas from your tank (i.e., ingested calories) or use the internal battery (stored energy from body fat and ketones). You will enjoy better fuel efficiency (fewer visits to the gas station), and you will unload excess weight from your chassis in the process.

ENJOYING BESTIAL BENEFITS

If you’ve been a sugar burner for decades, you may struggle initially with de-regulating your obsessive carbohydrate refueling sessions. However, in a matter of a few weeks of sending the right signals to
your genes through Primal eating, your appetite, hormone function, energy production, fat metabolism, and other systems will self-regulate. Worrying about calorie counting, portion sizes, meal timing, food combining, glycemic loads, and other sugar burner madness will become irrelevant when you are a fat-burning beast.

After 21 days of gene reprogramming, you will be able to Intermittently Fast (I.F.) at any time and achieve efficient weight loss/weight control as you become adapted to fat burning, gluconeogenesis, ketosis, and inconsistent meal times. The secret is to moderate your insulin production by restricting processed carbs and sugars, and to obtain sufficient daily fats and protein calories from your diet to sustain lean muscle and general metabolic function. You will then be able to manufacture glucose or ketones as needed, and eliminate the fat storage pattern that occurs when you have a sugar-burning engine.

**Your Body Prefers Burning Fat over Carbohydrates Summary**

- Your “factory setting” is to be an efficient fat-burning beast. You can manufacture glucose and ketones internally, rendering dietary carbs almost unnecessary.
- A high-carbohydrate diet interferes with these internal energy production mechanisms, making you reliant on dietary carbs (a “sugar burner”) until you can reprogram your genes.
- Gluconeogenesis converts protein and fat into glucose in the liver. If you are fat-adapted, it’s an efficient energy mechanism (utilizing dietary protein), but sugar burners can suffer from the breakdown of lean tissue during the process.
- 150 grams per day of carbohydrate intake is the most you’ll need (except in extreme circumstances with mega-calorie burners), and can be obtained largely from vegetables, fruits, nuts, and seeds. Grains, sugars, and even legumes are unnecessary.
- Ketones are a by-product of using fat to fuel gluconeogenesis and can be an efficient source of energy, provided you are keto-adapted. By contrast, sugar burners excrete valuable ketones in breath, sweat, and urine.
- You can reprogram your genes in 21 days of Primal eating, transforming yourself from a sugar burner into a fat-burning (and ketone-burning) beast.
SUCCESS STORY: TARA GRANT

At MarksDailyApple.com, we have published hundreds of reader success stories dating back to 2006. Few, if any, of the before and after shots are as stunning as Tara’s. While the photographs tell a compelling story, Tara’s frustrations, setbacks, and her eventual healthy transformation provide valuable insights into the benefits of a Primal lifestyle.

Tara reports that she was healthy and active until the age of 24, at which point things started to fall apart: acne, allergies, boils, extreme weight gain, irritable bowel syndrome, itchy scalp, joint pain, reproductive problems, and, not surprisingly, depression. She visited dozens of doctors, who “poked, prodded, and bled” her, to no avail. “The conclusion that all of the doctors shared was that I was overreacting, hysterical, and wasting their time. According to them, I was just fat and lazy, and probably a hypochondriac,” Tara relates.

Through the years, Tara’s health problems continued to escalate. Tara finally took matters into her own hands, did research online, and diagnosed herself with PMS, polycystic ovarian syndrome (PCOS), metabolic syndrome, endometriosis, a rare skin condition called hidradenitis suppurativa, and depression. Doctors concurred and put her on Prozac, which only escalated her weight gain. Tara, standing 5’9”, topped out at 235 pounds—eating a diet of “nothing but simple, refined carbs... I thought nothing of eating an entire plate of white rice for dinner, and nothing else.”

Tara experimented with a low-carb diet and quickly dropped 40 pounds. She embarked upon an intensive exercise program—she “practically killed” herself—to drop another 20 pounds in time for her 2005 wedding. Alas, “the minute I said, ‘I do,’ I gained five pounds.” For the next four years, Tara’s life was a blur of hormonal problems, doctor visits, and
“useless tests and pharmaceuticals.” In 2008, she had a “miserable, sugar-soaked, bedridden pregnancy” during which she gained 80 pounds. Even five months postpartum, she was holding at 235 pounds, “pissed off because I thought the weight was supposed to just melt right off” after pregnancy.

Tara’s brother introduced her to the Primal Blueprint in May of 2009. She discovered Mark’s Daily Apple community members who reported similar health symptoms and Primal-inspired health improvements. She eliminated grains and sugars and gradually drifted in a Primal direction, honoring the 80% rule by “planning treats once in a while and enjoying the hell out of them.” Meanwhile, Tara noticed that her hormonal imbalances were correcting; her skin was clearing up, her reproductive cycles were regulating, and her mood was improving: “I was freaking happy all the time, and I was losing weight!”

With fat loss humming along at a slow and steady rate (“about a pound a week; I wasn’t really trying that hard”), Tara’s energy increased such that she could embark on a balanced exercise program: CrossFit workouts a couple times a week, some yoga, walking around the neighborhood with her kids, and even occasional sprints. “I especially liked Mark’s take on fitness—you don’t have to do as much as the industry leads you to believe,” relates Tara.

Eighteen months into her Primal journey, Tara submitted her photograph weighing in at 153 pounds, “less than I did in high school!” She noted that “since my insulin and blood glucose are working properly now, going a whole day without food actually leaves me feeling fantastic and energized. I couldn’t have imagined missing even a single meal in my old life! My depression, PMS, PCOS, endometriosis and everything else is just… gone.”

Tara continues, “My entire immediate family has now gone Primal and we have all had tremendous success. My mom and dad also now weigh less than they did in high school. My two-year-old twins are doing great on a (mostly!) Primal diet. They sleep through the night, are fairly mellow most of the time and are quite big for their age. Their first solid food was pureed chicken and apples. I’m currently working on becoming a certified personal trainer, so I can officially start helping others. In the meantime, I’m doing what I can through my blog and becoming involved in the Primal/paleo community. Mark Sisson, the Primal Blueprint, and Mark’s Daily Apple have changed my life, and I would like to pay it forward.” Good luck Tara!

Submitted Oct 2011, Travis Air Force Base, CA
The right kinds of exercise are important for overall health and for developing functional strength and fitness, but I am very certain that at least 80 percent of your body composition success is determined by how you eat. Tens of thousands of Primal Blueprint followers have confirmed this. And in a way, so have millions of devoted fitness enthusiasts who struggle—and generally fail—to reach an ideal body composition despite hours of weekly exercise and “watching” what they eat. The problem is, they are eating grains, sugars, and legumes. When you fully understand (we like to say, “when you Grok”) Key Concept #4 and eliminate the foods that promote systemic inflammation and fat storage and start eating Primally, you will automatically lose the bloating, because inflammation causes water retention and superfluous weight gain. This enables you to begin the process of burning off excess body fat until you eventually reach your ideal body composition.

Two to three pounds (1-1.4 kg) a week of steady fat loss is not unusual among Primal enthusiasts. Of course, results may vary according to your genetic predisposition to store fat, but when you moderate carbohydrate intake and insulin production to a genetically optimal level, you will lose excess body fat. This will happen no matter how predisposed your familial genes are to storing fat, as we will see with Paul and Chase Shaeffer on pages 51 and 52. Also, when you eliminate the foods which cause severe digestive problems and/or autoimmune issues, you free up important nutrients that allow you to regain health and repair metabolic damage.

Unfortunately, we have been socialized to fixate on ineffective ways of controlling weight. We envy those with simple genetic good luck or with the exceptional discipline to perpetually restrict caloric intake and/or exercise like crazy. The rest of us seem resigned to a disturbing fate: Americans gain an average of 1.5 pounds of fat (680 grams) and lose a half-pound (227 grams) of muscle each year throughout our adult lives (ages 25-55). It may be hard to swallow the concept that the cereal, orange juice, whole wheat bread, and pasta you eat have more influence on your waistline than your gym membership or the big numbers in your training log do, but it’s true. Strong evidence, both scientific and anecdotal, points to the wildly excessive insulin production of the Standard American Diet as a major variable in our collective failure to achieve body composition potential.

If you stand at the entrance to Disneyland or a Las Vegas casino, you will get a good cross section of SAD statistics: 68 percent of American adults are overweight and 34 percent obese. Stand at the starting line of a major marathon or observe an aerobics class at your local health club and things look a whole lot better, but you will still see a surprising range of body composition levels for such a driven group of exercisers. Many fit folks carry 10, 15, or even 20 pounds of excess body fat despite training regimens of 10, 15, or even 20 hours per week! Such is the fate of the sugar burner. Consuming ample processed vegetable oils (canola, safflower, sunflower, soybean oils, etc.) in the name of pursuing better
heart health certainly doesn't help their cause either. These unhealthy fats send signals to their genes that promote inflammation, insulin resistance, and other metabolic damage.

Sure, there are some exceptions, like the driven and genetically gifted types who can train long hours, refuel on carbs and not add much body fat (hey, I was one). Unless you love to work out incessantly and have exceptional familial genes, however, a sugar-burning existence is unsustainable and ridiculous. You are running on a literal and figurative treadmill of insidious weight gain over the years, with little to no understanding of the true cause. Like an experimental lab rat, you are behaving as directed by Conventional Wisdom and destroying your health in the process.

Nutrition and medical experts now believe that a vigorous exercise program, while offering assorted health and fitness benefits (provided you don't overdo it), stimulates increases in appetite and calorie consumption that result in a wash when it comes to weight management (we'll detail this in Key Concept #7). Think about it: You assume that carbohydrates are the basis of a healthy diet, so you eat lots of them. As a result, your insulin levels rise and store the excess carb calories as fat. So you think to yourself, “I have to exercise more to burn off this fat,” but because you are a sugar burner, your muscles prefer to burn glucose and glycogen instead of fat. This depletes your glycogen stores every time you exercise, making your brain think, “If this fool is going to try this again tomorrow, I'd better stock up on carbs and refill my glycogen tonight.” Presto! You eat even more carbs over the next 24 hours, just so you can exercise hard again the next day! And the calorie burning, carb eating, fat-storing cycle continues.

“Exercise stimulates an increase in appetite and calorie consumption such that it results in a wash when it comes to weight management.”

Your workout routine and lifestyle obviously have some influence on your body composition potential, but not as much as most people assume. I estimate a sensible Primal exercise program contributes about 10 percent of influence on your ultimate genetic potential, while an extreme training regimen (heavy CrossFit, competitive endurance or team sport athlete) contributes another five percent. Complimentary lifestyle factors—particularly getting adequate sleep to regulate appetite hormones—contribute another five percent. Fully 80 percent of your body composition is determined by how you manipulate hormones and gene expression through the foods you eat. Owning this fact can be one of the more empowering aspects of the Primal Blueprint 21-Day Total Body Transformation.
IT’S MOSTLY ABOUT INSULIN

When we look closely at how we can manipulate hormones and genes to arrive at our ideal body composition, we see that insulin has a profound influence. Studies have investigated the influence of various other hormones (glucagon, leptin, ghrelin, PPY, T3, epinephrine, cortisol, testosterone, human growth hormone, and many more) on hunger, satiety, appetite, inflammation, obesity, diabetes, and general metabolism, but the most important thing for you to know is that insulin sits at the very top of this hierarchy.

Insulin exists in all living organisms and is one of the oldest hormones in nature. We’ve talked about insulin’s role in fat storage, but insulin also plays a role in thyroid function, stress hormone production, sleep cycles, appetite-regulation, and the metabolization of cholesterol and triglycerides. When you are able to optimize insulin production, sex hormones are delivered properly to target organs, cholesterol assists with energy and hormone production, and appetite, sleep, and thyroid hormones become balanced. Insulin is considered the “master hormone” for its critical and comprehensive role in transport-

Eighty percent of your body composition success is determined by how you eat. Excess body fat is a consequence of your familial genetic predisposition to store body fat combined with the amount of carbs you consume/insulin you produce in your diet.
ing nutrients from the bloodstream into the cells in your body, but some of its most important action takes place in muscle cells and fat cells. That’s certainly where you see the most obvious effects.

It’s an undisputed scientific observation that within any species, individuals who secrete the most insulin over a lifetime live the shortest lives. That fact alone should be enough to prompt you to reprogram your genes to operate more efficiently at lower insulin levels. Our ancestors’ pre-civilized diet of meat, fish, eggs, insects, and the occasional wild vegetable, fruit, or tuber yielded minimal insulin production over their lifetimes. Even fruits, the one major source of dietary carbs during Grok’s time, were generally eaten only during narrow ripening seasons, and were far more fibrous and less sugary than today’s highly cultivated, sweetened varieties, prompting very little insulin secretion.

This predominantly fat-burning existence programmed our human genetic recipe to favor insulin sensitivity. This means that receptor sites in your cell membranes can easily use small amounts of insulin as a key to unlock special access pores, enabling the assimilation of desired nutrients into the cell: fatty acids, glucose, amino acids, vitamin C, and various other molecules. In healthy, fit people, muscle cells are the largest benefactor of insulin’s actions. Amino acids are granted access to repair and increase muscle size and strength, and glucose is allowed inside for immediate energy or conversion into glycogen for storage.

*We’ve been socialized to believe that eating a SAD diet is healthy, but lifelong consumption can lead to insulin resistance, unless you exercise like crazy and have lucky familial genes.*
When you, as a sugar burner, chronically overproduce insulin and fail to routinely empty and restock muscle glycogen through adequate exercise, your muscle cells become insulin resistant. Insulin resistance occurs when muscle and liver cells become desensitized to insulin’s storage signals due to excessive production. Instead of unlocking pores, these cells put out a “No Vacancy” sign, because they are typically already full of glycogen.

The repercussions of insulin resistance are severe and wide-ranging. Ironically, when the insulin is no longer effective at normal levels, your pancreas thinks more will do the trick and pumps out an even higher volume. High insulin levels wreak havoc in many ways. Cholesterol and triglycerides become oxidized and inflamed, initiating the process of atherosclerosis, or hardening of the arteries. Appetite hormones get thrown out of whack, causing you to continue eating even when you should feel satiated. Fat cells stay sensitive well after muscle cells have become resistant, so the excess sugar and other calories wind up as stored body fat. Melatonin/serotonin cycles get messed up, making you feel groggy and cranky in the morning and craving sugar in the evenings. Becoming insulin-resistant can directly lead to metabolic syndrome and type 2 diabetes. You just don’t live as long, or as well, thanks to sugars, grains, legumes, and the massive lifelong insulin overdose caused by SAD.

Insulin resistance occurs when muscle and liver cells become desensitized to insulin’s storage signals due to excessive production. This condition promotes obesity, accelerated aging, atherosclerosis, sleep deprivation, and type 2 diabetes.

Insulin resistance is strongly linked with obesity, but even those without excess body fat suffer negative consequences from a high insulin-producing diet. Those seemingly fortunate folks who appear skinny don’t tend to store much visible fat under the skin, but rather in deeper tissues and organs (known as visceral fat), which brings an even greater risk of disease. Furthermore, with fat storage genes switched off, blood glucose levels can spike, increasing disease risk. This excess blood sugar, with nowhere to go, binds with proteins that cause all manner of nerve damage, arterial damage, vision damage, and much more.

Besides tracking your disease risk factors through the Body Mass Index (BMI) charts, it’s advisable to test your blood for triglycerides, fasting blood glucose and insulin, C-reactive protein, and small, dense LDL, a special type of cholesterol molecule that promotes atherosclerosis. If these markers are out of normal ranges, it can foretell risks beyond the numbers on the scale or the statistics produced by a routine physical.

Western medicine is adept at identifying the particular health problems caused by insulin overproduction, but errs in applying a targeted pharmaceutical approach to a big-picture problem. Statins, sleep medication, thyroid medication, anti-aging hormones, and other powerful prescription drugs are com-
monly dispensed to counteract imbalances that originate with excess insulin production. These drugs artificially manipulate gene expression as intended, but do nothing to address the root cause of SAD-related health problems. Furthermore, prescription drugs often exacerbate these problems by destabilizing natural hormone production to the extent that the user becomes reliant on medication to achieve repeated temporary relief at the expense of long-term health.

The good news is that your day-to-day health is greatly influenced by the quality of your last meal. Eat just a few low insulin-producing meals, and you will likely experience an improvement in appetite, energy levels, sleep cycles, and other sensations of vitality. Establish a pattern of insulin moderation for 21 days, and several pounds of excess body fat might just melt away without the typical deprivation and restriction associated with fat reduction efforts. Over the long term, moderating insulin production could save your life, neutralizing the pathologies of metabolic syndrome, systemic inflammation, glycation (excess glucose-damaging protein molecules that lead to assorted disease and dysfunction), obesity, and heart disease that originate in large part from being a sugar burner.

Behold the dinner feast at our PrimalCon retreat. Incredibly delicious fare, and lots of it, but no insulin spike.
**THE EXHAUSTION EPIDEMIC**

When you chronically overproduce insulin as a sugar burner, you overstress various delicate hormonal and metabolic mechanisms that have been hard-wired through evolution to thrive in the fat-burning zone. A vicious cycle leading to exhaustion transpires as follows: First, the ingestion of processed carbs elevates blood glucose levels, creating an immediate boost in energy, mood, and cognitive function. Within minutes, your elevated blood glucose prompts the pancreas to release insulin into the bloodstream. This is an essential function, because excess glucose in the bloodstream is toxic and can quickly become life-threatening if not removed (as experienced by diabetics). When insulin does its job and removes glucose from the bloodstream, this “sugar crash” suddenly makes you feel sluggish, moody, and unfocused.

*The combination of blood glucose spike, insulin-triggered glucose crash, stress response pumping more glucose into the bloodstream temporarily, and eventual stress hormone crash leads to a physical, mental, and emotional lull best described as burnout.*

This sudden drop in energy is perceived as a stressful event by your body, triggering the familiar fight-or-flight response. When the fight-or-flight hormone cortisol floods your bloodstream, muscle tissue is converted into glucose through gluconeogenesis, giving you the quick energy you crave, but often causing you to feel jittery and hyper. After some time, the mood and energy-elevating effects of cortisol wear off. After all, the fight-or-flight response is designed to produce brief bursts of high energy and heightened function for emergency situations, not to be a recurring component of your daily metabolic rhythm.

The combination of blood glucose spike, insulin-triggered glucose crash, temporary glucose pump, and eventual stress hormone crash leads to a physical, mental, and emotional exhaustion often described as “burnout.” Over time, the daily roller coaster of too much glucose and insulin in the bloodstream promotes systemic inflammation, setting the stage for assorted health problems and diseases.
Paul, a 26-year-old software developer two years into his Primal journey, sets the opening scene for his story as follows: “As I went through college, my entire life consisted of sitting in front of computers, watching movies, playing World of Warcraft (mass participation online game), and consuming Cheetos® and Mountain Dew®. I was generally happy, but I felt and lived like a slob. I wanted to become more involved in the world, especially with females, but my weight and general appearance caused me horrible social anxiety.”

Hovering at 5’9” and 300 pounds, Paul’s transformation was inspired by...a container of Wal-Mart potato salad. “I lost 15 pounds from three days of horrible food poisoning. At one point I passed out, face-planting on a tile floor and shattering my glasses. When I saw myself in the mirror without the glasses (inspired by a slightly thinner waistline from the ordeal), I made up my mind right there that I would fix myself and become a member of society again.”

Paul continues, “I started eating oatmeal, bagels, and fiber crackers by the boatload. A few months into my low-fat, whole grain effort, I developed a crippling case of diverticulitis and had a foot of colon surgically removed.” Soon after recovery, Paul wandered into a CrossFit gym and became exposed to the Primal Blueprint. After only two months of Primal eating and exercise, Paul shed a remarkable 50 pounds. Two more months and he’d lost 85 pounds and now weighed 215 pounds. “Everyone around me was amazed. I was feeling the best I ever had in my life...girls no longer looked the other way when I walked into a room!”

Over the course of about 15 months, Paul created a chiseled 150-pound physique—half the man he once was, but with double the confidence. “I
was able to begin making friends, get over my social hang-ups, and actually go out and do things in public, in the fresh air—even compete in Brazilian Jiu-Jitsu—and not be ashamed. I have transformed myself into a powerful, lean, and self-satisfied person, thanks to the Primal Blueprint book and the great support of MarksDailyApple.com user forums.”

“In 15 months, Paul went from 300 pounds to a chiseled 150—half the man he once was, but with double the confidence. “Everyone around me was amazed. I was feeling the best I ever had in my life!”

“CHASE-ING PAUL”
An interesting wrinkle to the story arises when Paul reveals that he has an identical twin brother, Chase. With the same genes and SAD lifestyle habits, Chase, too, tipped the scales at 300 pounds and suffered from assorted health problems. It might be fair to suggest that the twins had lousy luck with their familial genes, but knowing what we know about gene reprogramming, we can rethink this assumption.

Chase, inspired by Paul’s success, starting transitioning to a Primal lifestyle in 2011, and has also enjoyed spectacular results, dropping 70 pounds (31 kg) in the first five months. The rapid success enjoyed by the Shaeffers suggests they share profound familial genetic gifts that enabled them to progress extremely quickly from their couch potato starting points. Digging deeper into such a remarkable success story, it turns out that Paul and Chase’s parents are both extraordinary athletes—dad was a professional gymnast, and mom a professional ballerina!
DIALING-IN RESULTS WITH THE CARBOHYDRATE CURVE

The impact of various levels of carbohydrate intake, and consequently insulin production, are detailed on the Primal Blueprint Carbohydrate Curve. When you are at your ideal body composition, eating Primally will default you into the Effortless Weight Maintenance Zone. When you are interested in losing weight, you can make a more focused effort to eat in the Sweet Spot. This will enable you to reduce body fat at a rate of four to eight pounds (1.8-3.6 kilos) per month (rate depending on sex, weight, and fitness level) until you reach your ideal body composition. On the other hand, SAD eating will default you into the Insidious Weight Gain Zone or Danger Zone.

0 to 50 grams per day - Ketosis/Intermittent Fasting Zone: Acceptable for occasional one- to two-day Intermittent Fasting efforts toward aggressive fat loss (or longer term for medically supervised weight-loss programs for the obese and/or type 2 diabetics), provided adequate protein, fat, and supplements are consumed. Eating in this zone is not recommended as a long-term practice for most people due to the resultant deprivation of high nutrient value vegetables and fruits.

50 to 100 grams per day - Weight Loss Sweet Spot: Minimizes insulin production and accelerates fat metabolism. By meeting average daily protein requirements (.7 to 1 gram per pound of lean mass—range depends on activity level), eating nutritious vegetables and fruits, and staying satisfied with delicious high-fat foods (meat, fish, eggs, nuts, seeds), you can lose 1 to 2 pounds (around 1/2 to 1 kilo) of body fat per week in the Sweet Spot.
**100 to 150 grams per day - Maintenance Zone:** Allows for genetically optimal fat burning, muscle development, and weight maintenance. Rationale is supported by humans eating and evolving in this range (or below) for two million years. Enjoy carbohydrates from abundant servings of vegetables, strategic consumption of fruit, and incidental carbs from nuts, seeds, high-fat dairy products, and occasional dark chocolate.

**150 to 300 grams per day - Insidious Weight Gain Zone:** Continuous insulin-stimulating effects prevent efficient fat metabolism and contribute to widespread health conditions. The de facto recommendation of many popular diets and health authorities (including the USDA Food Pyramid!) is in this zone, despite clear indications that this range promotes the development of metabolic syndrome.

Some chronic exercisers and active growing adolescents may find that they can eat at this level for an extended period without gaining fat, but eventually fat storage and/or metabolic problems are highly probable. This insidious zone is easy to drift into, even for health-conscious eaters, when grains and legumes are a dietary centerpiece, obligatory vegetables and fruits are enjoyed, and sweetened beverages and treats leak into the picture here and there. Despite well-intentioned efforts to moderate intake of fat, sweets, and total calories, many people still gain a pound or two of fat per year for decades as a result of carb intake in this insidious range.

**300 or more grams per day - Danger Zone:** Pretty SAD! This is where the average American falls, thanks to following the official USDA dietary guidelines (which suggest you eat 45 percent to 65 percent of daily calories from carbs), and routinely adding sweetened beverages, packaged snacks, and desserts into the picture. Extended time in the Danger Zone results in almost certain weight gain, metabolic syndrome, obesity, type 2 diabetes, and other widespread health problems. For persons in this Zone, immediate and dramatic reduction of sugars, grains, and legumes is critical.

Keep in mind the values on the curve represent averages. Relax, enjoy your meals, and think in terms of a week or a month instead of obsessing about macronutrient content at each meal. The 50-gram/200-calorie range within each zone on the curve allows for individual disparities in body weight and metabolic rate (e.g., small female - low end; large male - upper end). While the curve offers general recommendations, tens of thousands of MarksDailyApple.com and Primal Blueprint readers have proven that the curve is quite accurate.

**Note for Athletes:** If you are involved in a devoted exercise regimen, you can adjust your curve values upward to fuel particularly hard workouts. Depending upon your individual variables and body composition goals, you can experiment with adding up to an additional 100 grams of daily carbohydrates for each hour of vigorous exercise (over 75 percent of your max heart rate) that you engage in. Experiment is the operative word. If you are struggling to reach body composition goals despite a devoted exercise program and Primal eating efforts, you may have to track the association between carb intake and body composition, as detailed in the Primal Leap weight loss program at primalblueprint.com.
When we talk about ideal body composition in the Primal Blueprint, we are talking about your genetic ideal, not your dream of gracing the cover of *Shape* or *Men’s Fitness* at single-digit body fat. As we mentioned before, your parents (and your parents’ parents) contributed a range of possible outcomes to your human recipe. You may not be able to achieve 13 percent body fat as a woman or 8 percent as a man, without an unrealistic and unpleasant amount of pain, suffering, and sacrifice. But that’s okay. Let’s say you make great progress with the Primal Blueprint and lose a pound or so each week—more or less effortlessly—for weeks or months until you hit a plateau (perhaps 21 percent body fat for a woman or 15 percent for a guy). That doesn’t mean that you can’t drop down even further over time, but for now, you might be at your genetically ideal body composition. Here, your familial genetic recipe is telling you, “I like this weight. I feel great, I never get sick anymore, I’m stronger, I handle stress easier, my clothes fit better, I have all the energy I need, I can maintain this weight easily without dieting, and I’ll live a long time at this weight.” What’s wrong with that?

We say at MarksDailyApple.com that in order to have what you want, you have to want what you have. When it comes to familial genes, it’s important to love yourself for who you really are and to recognize that you may have ultimate limitations compared to other genetic specimens. By living and eating Primally, you can achieve the highest potential of your personal genetic recipe. When you acknowledge this, you are free to enjoy life (and food) without guilt or disappointment. From there, you can decide if it’s truly worth the time, energy and effort to get even leaner and stronger. As many people discover, the increase in sacrifice to add those extra 10 pounds of muscle or to drop more body fat just isn’t worth it.

Fixating on the genetic freaks gracing magazine covers or playing on professional sports teams is not recommended, because these “role models” generally engage in extreme diet and exercise regimens that are undesirable and unhealthy to emulate. Instead, harken back to the age when you looked and felt your best. Perhaps you were an active youth or a high school athlete? If not, consider a fit sibling as a reference point. Depending on your starting point, you can achieve your personal genetic potential quickly: 45, 90, or 365 days from now.

Take a moment to reflect on the remarkable photos submitted by Paul Schaeffer (page 51), Tara Grant (page 56), and Timothy Williams (page 65). They, and
hundreds of other success stories at MarksDailyApple.com, are real people leading busy, hectic lives, possessing a range of genetic attributes and transforming their bodies by living Primally. Results may indeed vary based on genetic factors, but this caveat is mostly relevant to what you can control: you’ll have a range of bad luck to terrible luck when you mismanage your genes. When you eat, exercise, and live Primally, you’ll look and feel your very best. It’s that simple!

A year after Tara’s original success story submission, we checked in with her and procured some additional photos. Tara says, “I’ve lost another five pounds and another dress size. I still feel and look better than I ever have.”

Check out Tara’s blog, “Primal Girl in a Modern World,” at http://primalgirl.wordpress.com!

80 Percent of Your Body Composition Success Is Determined by How You Eat Summary

- Body composition is 80 percent dependent on diet. Excess body fat reflects familial genetic predisposition combined with dietary insulin production.
- Insulin is the “master hormone” responsible for transporting nutrients and hormones through the bloodstream to target cells and organs.
- Excess insulin production from a grain-based Standard American Diet inhibits fat metabolism, disrupts hormone and immune function, accelerates aging, and promotes systemic inflammation and disease. Moderating insulin production promotes efficient fat metabolism, optimal hormone and immune function, and longevity.
- The Primal Blueprint Carbohydrate Curve reveals that eating 150 grams per day or less results in effortless weight loss or maintenance; eating over 150 grams (per SAD recommendations) results in lifelong insidious weight gain and accelerated disease risk.
- Your genes compensate for a high insulin-producing diet by triggering the fight-or-flight response, resulting in a “burnout” cycle of glucose-spike/insulin-crash stress response, and finally exhaustion. Alas, skinny people suffer too—from burnout, accelerated aging, and disease pathologies.
key concept #5
GRAINS ARE TOTALLY UNNECESSARY
(and so are legumes, for that matter)

There is simply no good reason for you to ever eat grains again, and plenty of reasons to completely eliminate all forms of grain foods from your diet. In fact, as I emphasize in my seminars, the only reason to make grains a part of your eating strategy is as a cheap source of calories that easily converts to glucose. Grain foods (wheat, rice, corn, pasta, bread, cereal, muffins, crackers, chips, baked goods, etc.) elicit a high insulin response, have far less nutritional value than Primal foods, and contain anti-nutrients (basically toxins) that promote inflammation and compromise digestion and immune function. Grains are merely a convenient source of calories that are easy to harvest, store, and process into all manner of high-profit packaged, baked, and frozen goods.

While the major focus here is on grains since they are the foundation of SAD, I must also mention legumes in the same breath. Beans, lentils, peanuts, peas, and soy products are slightly less offensive than grains, but they also contain objectionable anti-nutrients and stimulate excessive insulin production. Legumes are yet another cheap source of modern calories that are simply unnecessary—and quite possibly counterproductive—to health, energy, and weight management.

 Granted, ditching grains, sugars, and legumes may cause some initial discomfort and require tremendous focus and discipline to maintain over the long term. As you commence your transition away from a grain-based diet, you can make things easier by surrounding yourself with nutritious Primal foods whenever you need a snack or hanker to return to your old sugar-burning ways. Even though eliminating processed carbs may leave a void in your daily caloric intake, not to mention your pantry, there is no reason you should ever feel deprived or depleted because you can replace them with abundant servings of delicious and satisfying Primal foods.

It’s necessary to fully commit to this dietary transition in order to normalize your insulin production and transition to the fat-burning beast that’s part of your genetic code. Half-hearted efforts to restrict grains, sugars, and legumes will compromise the goal of reducing systemic inflammation and healing digestive or metabolic damage. I must admit, I’ve encountered plenty of pushback on this issue, with people arguing that they simply can’t imagine life without various grain staples in their diet. The influence of comforting food rituals and warm bready smells is not to be discounted. I certainly have fond memories of stacks of blueberry pancakes at Sunday brunch, best enjoyed after a 20-mile run back in the day. But consider what you are giving up—is it really the taste of grains that
SUGAR-COATING GRAINS
(AND LEGUMES FOR THAT MATTER)

I don’t spend much time discussing sugar per se in this book, as the drawbacks of consuming junk calories are well understood, and it’s assumed that sweet foods and drinks should be virtually absent from your diet if you want to be healthy. The ingestion of sugary foods and beverages is the ultimate affront to your genes. It promotes systemic inflammation, causes an instant suppression of immune function, and instigates the sugar high/insulin crash/stress hormone spike burnout cycle discussed previously. What I want you to get is that grains and legumes are not much different than straight sugar to your body. In fact, nearly every form of carbohydrate that you consume eventually winds up in your bloodstream as glucose. Your brain and muscle cells can’t tell whether the latest dose of glucose is from a bowl of steel cut oats or a bowl of sugar! It’s all just glucose to your body.

You may be familiar with the terms glycemic index and glycemic load, and the concepts of balancing macronutrients into target “zones,” pairing quick-burning foods with slow-burning foods, snacking frequently with small portion sizes, and other such nonsense we’ve already sufficiently slammed. All of this sugar-burner folly still compromises optimal gene expression, which is only possible when you become fat- and keto-adapted.

Whether you start your day with a 380-calorie breakfast of Cheerios®, skim milk, banana, and orange juice, lunch on a 380-calorie serving of brown rice and split pea soup, or stop at roadside to wolf down 380 calories of root beer float and a half-bag of Skittles®, your body will ultimately have to produce a requisite amount of insulin to deal with every gram of glucose generated by the ingested carbohydrate. A steady insulin drip to deal with the more complex “slow-burning” carbohydrate grain foods is widely viewed as preferable to the quick spike junk food option, but we must rethink even this seemingly obvious conclusion. With the steady insulin drip, you apply chronic stress to your metabolic and endocrine systems and inhibit fat metabolism over a longer period than what might have transpired with the Skittles and root beer float. And while the SAD breakfast and lunch meals deliver more vitamins and other micro-nutrients than the soda counter offering, the scale of this advantage is inconsequential—dwarfed by the advantages of eating nutrient-dense plant and animal foods. Essentially, we’re debating the lesser of three evils—my sincere apologies to the cereal, dairy, rice, and root beer float lobbies!

Your genes are adept at handling brief, intermittent stressors—a plunge in cold water, running a few all-out sprints, an occasional late night of revelry, an airplane trip across time zones, or even an occasional slamming down of a root beer float. A junk food binge elicits a quick spike of insulin, followed by an energy lull, and then—if you are fat-adapted from a general pattern of Primal eating—your blood soon regulates to an optimal balance of insulin and glucose. In contrast, the chronic day-in, day-out stress of excess glucose and insulin in the bloodstream from SAD eating leads to adrenal burnout and systemic inflammation.
Hard to believe, but these disparate eating options are pretty close to a tossup relating to total insulin production and weight management.

**BROWN RICE AND SPLIT PEA SOUP**

- 71 g carbs
- 14 g protein
- 5 g fat
- 380 calories
- 77% carbohydrate

**SKITTLES AND ROOT BEER FLOAT**

- 81 g carbs
- 3 g protein
- 7 g fat
- 378 calories
- 81% carbohydrate

**CHEERIOS, SKIM MILK, BANANA AND A GLASS OF ORANGE JUICE**

- 85 g carbs
- 11 g protein
- 3 g fat
- 383 calories
- 83% carbohydrate
you can’t live without? A steaming hot bowl of plain oatmeal, plain pasta, or brown rice? These are hardly foods that anyone would consider rich and satisfying by themselves. It’s the stuff you put on grains that make them taste good, and you can easily recalibrate your notion of comfort foods and meal traditions when you go Primal.

*The Primal Blueprint Cookbook, Primal Blueprint Quick and Easy Meals, MarksDailyApple.com, and various other cookbooks and Internet resources honoring the Primal/paleo/low-carb eating movement offer delicious suggestions, including clever substitutes for popular grain-based recipes. Spaghetti and meatballs? Keep the delicious meatballs and sauce, and pan fry some thin slices of squash, carrot, and zucchini as colorful substitutes for pasta noodles. Enjoy your BLT for lunch but hold the bread and make it a lettuce wrap—a LBLT—“label it”! You can explore an exciting new world of culinary options without feeling like you have to sacrifice any gustatory pleasure.*

**WHOLE GRAINS AREN’T A WHOLE LOT BETTER...AND MIGHT EVEN BE WORSE!**

There seems to be universal agreement that refined grains such as sugary snacks and treats, white flour products, and sweetened beverages are unhealthy. Even the food industry’s sneaky inclusion of trans and partially hydrogenated fats and high-fructose corn syrup (HFCS) into all kinds of processed foods and drinks over the past few decades is being moderated thanks to consumer outcry. Soda machines are being banned from schools, and headline stories are connecting excess sugar consumption with obesity, ADHD, allergies, and other maladies. Well, that’s a start.

Always trying to do the right thing in the name of health and disease prevention, Conventional Wisdom eagerly recommends you transition from refined grains to whole grains. Unfortunately, even a whole grain-based diet cannot save you from the perils of being a sugar burner, as we covered in the Sugar Coating sidebar. Furthermore, whole grains contain anti-nutrients in the form of lectins, glutens, and phytates that can compromise health in other ways. Yes, you need to give up your whole grains too.

Whole grains are comprised of three components: bran (fiber), germ (oil), and endosperm (starch). Refined grains have been stripped of their bran and germ to leave only the starchy endosperm. While whole grains have more vitamins, minerals, and fiber than do refined grains (this “more” is inconsequential in comparison to nutrient-rich Primal foods), whole grains also contain higher levels of anti-nutrients. Furthermore, experts such as Konstantin Monastyrsky, author of *The Fiber Menace,* believe that a grain-based diet results in excessive fiber intake, resulting in nutrient depletion and digestive irregularities—the exact opposite of what we have been led to believe. If getting enough fiber is a health concern for you, be confident knowing that eating reasonable amounts of vegetables, fruits, nuts, and seeds provides plenty of fiber to ensure digestive health, as it has for two million years. And be open to the idea that your efforts to obtain more fiber (via over-the-counter psyllium drinks and grain-based eating) could actually be making you irregular.

Those who suffer from wheat allergies or gluten intolerance understand how a seemingly innocuous slice of bread or plate of pasta can throw your whole life out of whack. I’d argue that all of us are intolerant to the anti-nutrients in whole grains at some level, even if we don’t experience acute symptoms.
Lectins are natural plant toxins that suppress immune function, interfere with normal protective gut barriers, and promote inflammation by allowing undigested protein molecules to infiltrate your digestive tract and trigger an autoimmune response—a situation characterized by the familiar term, “leaky gut syndrome.” You may not experience any major acute symptoms, but toxic foreign agents are inflicting long-term damage on your delicate digestive tract.

“**All of us are intolerant to the anti-nutrients in whole grains at some level. Even if you don’t experience any major acute symptoms, a grain-based diet will tend to suppress immune function, compromise digestive health (“leaky gut”), and promote systemic inflammation (e.g., “-itis” conditions).**”

Gluten, a type of lectin, triggers a pro-inflammatory condition in the body, disturbing healthy immune function and promoting all manner of inflammation-related health problems (skin, joint, reproductive, allergies, assorted “-itis” issues), and other serious diseases over time. Celiac disease is the most severe manifestation of lectin and gluten intolerance and affects millions of Americans. Some milder forms of gluten intolerance are still believed to affect an additional third of all Americans, yet a significant portion of celiac and gluten intolerance sufferers may not even realize their afflictions. Of course, gluten is most prevalent in wheat—and wheat is the most prevalent grain in the SAD.

Phytates are indigestible agents that bind with and inhibit the absorption of important nutrients in the digestive tract, such as calcium, magnesium, iron, and zinc. Phytates are found not only in whole grains but also in legumes, nuts, and seeds. Eating small amounts of phytates is not problematic, since Primal eating delivers plenty of minerals. Excessive grain intake, however, as often seen in vegetarians/vegans, can promote mineral deficiencies due to the high levels of phytates in these foods. Millions of women take supplemental calcium to prevent osteoporosis, but also consume lots of “healthy” whole grains and then wonder why their bone density doesn’t improve. It could be the high levels of phytates from grains inhibiting their absorption of calcium.
Those fortunate enough not to experience severe intolerance to anti-nutrients still suffer at a sub-clinical level such that digestive issues (bloating, bowel irregularities such as irritable bowel syndrome, colitis, constipation, gas), mild-to-nagging inflammatory conditions throughout the body, and frequent immune system disturbances are seen as normal. Many Primal enthusiasts have experienced (as related in compelling success stories published here and on MarksDailyApple.com) rapid and immediate improvements in overall health to the extent that lifelong health issues requiring prescription medication are reversed in a matter of weeks. Often, an individual's sense of general health becomes recalibrated so that “exceptional” becomes the new normal!

**Food For Thought**

The massive global population expansion in the last few generations—for better or for worse—has been enabled by grain-based diets. Today, half the world obtains half of its calories from bread! Citizens of these impoverished nations suffer from widespread deficiencies of even the most basic nutrients. Furthermore, helter-skelter population growth compromises overall quality of life and the planet’s natural resources, creating a complex public health and humanitarian dilemma. Those of us fortunate enough to live in relative comfort with abundant dietary options are compelled to reflect upon whether we are properly honoring these privileges.

While starving Third World citizens can be excused for eating whatever calories they can get their hands on, eating a diet of 71 percent processed foods is an abomination for inhabitants of the wealthiest nations on earth. Our continued consumption of these products enables multinational food conglomerates to escalate marketing and manufacturing efforts (government subsidies help here too), and further entrench processed foods into modern culture.

I have deep respect and appreciation for the green ideals of sustaining oneself with minimal drain on the planet’s natural resources, and I agree that there are moral, sustainability, environmental, and physical health objections to consuming CAFO products. I make every effort to emphasize organic, grass-fed, pasture-raised animals over CAFO animals, but I would definitely eat a CAFO animal product before I’d eat a slice of bread or a scoop of brown rice.

**WHEN IT COMES TO LEGUMES, DON’T ASSUME...**

Legumes include beans (black, kidney, pinto, soy and derivative products such as tofu, etc), lentils, peanut and derivative products such as peanut butter, and peas. Legumes contain many of the same undesirable lectins as grains. Furthermore, legumes are generally not the great sources of protein they are sometimes reputed to be, but, like grains, are abundant sources of cheap carbohydrates that easily convert to glucose. Ironically, one of the main features of legumes touted by some dietitians is the idea that they contain lots of fiber and may assist in bowel health. However, once again, the fiber in beans
and most other legumes is unnecessary and possibly counterproductive when you can satisfy your need for fiber with adequate vegetables. And really, who needs the gas?

Legumes are not something we evolved to eat. Not only do legumes have to be soaked, sprouted, denatured, and cooked to be eaten at all—in many cases they are poisonous if they are not extensively pre-treated. In fact, one of the most deadly poisons known to man is ricin. An extract of castor bean, ricin has been used in military attacks for decades. Soy, which has become one of the largest crops in the world and is used in countless processed foods, is not only a source of lectins, but is also a phytoestrogen (it mimics the effects of estrogen in men and women and may disrupt normal sex hormone cycles). In the opinion of many experts, soy, and everything made from it, is one of the most offensive foods in the SAD.

If you are resistant to ditching legumes along with grains, I’ll give you this: legumes are slightly less offensive than grains, as they offer a bit more nutritional value and fewer anti-nutrients. However, in the context of correcting disastrous SAD eating habits and insulin overdoses, legumes are simply not necessary, and can compromise your health and weight loss efforts.

If you have any excess body fat or suffer from any sort of digestive irregularities or inflammatory conditions, it’s worth testing the effects of a total elimination of grains, sugars, and legumes from your diet for at least 21 days. See how much better you feel. Then, if you’re at a party and see a plate of fresh veggies with a bowl of hummus (made from garbanzo beans) and are inclined to take a few dips, you certainly don’t need to lose any sleep over it. Just remember that all of your dietary choices exist on a continuum, with the ultimate goal of aligning as closely as possible with optimal gene expression. When I see a grain or legume option that might be of interest, I weigh it against having one more delicious chunk of steak, and the decision is no contest.

TRY A 21-DAY RESTRICTION EXPERIMENT

I was one of those people who thought I could eat grains forever and without penalty. When I completely eliminated grains from my diet back in 2002 as a simple 21-day experiment, many assorted lifelong symptoms that I attributed to stress, hard training, or just “normal” aging vanished: arthritis in my hands, knees, and hips; bowel urgency every single morning of my life; bloating and gas after meals requiring a belt buckle adjustment; frequent minor immune disturbances such as sore throats and minor colds; sensitivity to sunburn, and many other annoying little issues too boring to write about (but cumulatively, a significant hassle).
Life was good before I gave up grains, but became exceptional after I made the change. Oh, I still get stressed from time to time, but it doesn’t tear up my digestive system like it used to when I ate a grain-based diet. Arthritis that noticeably compromised the simple act of properly gripping a golf club (beginning around age 40) disappeared within months. My immune system became fine-tuned such that I almost never get a sore throat or cold. There are various other complementary lifestyle practices that support my health, but I believe that eliminating grains and legumes has been the single most profound health benefit of my Primal journey. I am certain it can be profound for you as well.

As I pursue my mission of empowering people to reconnect with their genetic expectations for health, fitness, and longevity, the single most valuable suggestion I can offer is to eliminate grains from your diet and to strongly consider ditching legumes at the same time. If you have read this far and are still on the fence about the grain issue in particular, I urge you to conduct an experiment and discern how your body responds to a 21-day period of eliminating grains, sugars, and legumes. Pay close attention to any changes in daily energy level, immune function, and inflammatory conditions, and it’s likely that you will experience not only fat reduction but also an improvement in many aspects of general health.

Grains Are Totally Unnecessary Summary

- Grains elicit a high insulin response, offer minimal nutritional value relative to Primal foods, and contain anti-nutrients that promote inflammation and compromise digestion and immune function. They are a cheap source of calories and entirely unnecessary for health.
- Transitioning out of a grain-based diet requires focus and discipline, but success can be achieved by substituting satisfying Primal foods and considering that grain foods have little taste by themselves.
- Whole grains offer more fiber and nutrients than refined grains do, but potential benefits are nullified by the presence of lectins (which hamper digestion and immune function), glutens (allergenic, pro-inflammatory), and phytates (deplete nutrients). Everyone is intolerant at some level!
- Legumes are slightly less offensive than grains, but still contain appreciable levels of anti-nutrients and elicit an unfavorable insulin response.
- Excluding grains, sugars, and legumes for 21 days can produce significant improvements in chronic health conditions, energy balance, and reduction of excess body fat.
SUCCESS STORY: TIMOTHY WILLIAMS

Timothy stumbled upon MarksDailyApple.com in early 2010 and was immediately intrigued by the Primal theme due to his background as a student of anthropology and early humans. “I was blown away by the simple premise that our bodies are finely-tuned by evolution for a pre-agriculture environment,” explains Timothy. “I read all I could about Primal living and implemented it immediately. I quickly discovered that grains had been the cause of horrible intestinal conditions I’d battled for years: irritable bowel syndrome, ulcerative colitis, and maybe celiac disease. When I ate foods such as bread, my abdomen swelled up like a beach ball. After seven years of nagging illness, I felt completely recovered after a week of eating Primally—one week!”

In 2009, prior to his discovery of the Primal Blueprint, Timothy pursued a seven-month fitness crash course. Inspired by the impending birth of his first child, the 5’10” (177 cm) Timothy dropped from a 38-inch (96 cm) waist and over 200 pounds (90 kg), to 185 pounds (84 kg) and 34-inch (86 cm) waist—“through grueling exercise and grim determination.” It was there that he plateaued, and continued to struggle with digestive issues, hormone imbalances (particularly diminished testosterone and growth hormone), recurrent tinnitus (ringing in the ears), and severe migraines requiring assorted prescription drugs.

As his gene reprogramming solidified from Primal eating, Timothy steered his fitness pursuits in a different direction, embodying a true Primal spirit in the process. Ditching his conventional approach to working out, he simply “bought a pair of Vibram Five Finger shoes and a sledgehammer and did what came naturally to me. I had no personal...”
trainer to goad me, no exercise classes to keep me consistent, no gym workouts under flourescent lights.” After only two months of Primal eating and exercise, Timothy dropped from 185 pounds to 153 (69 kg), boasted a 30-inch (76 cm) waist, was prescription drug-free, and experienced a breakthrough in energy and vitality that Timothy likens to “…a second puberty—better than winning the lottery! Everybody in my life seems amazed at my physical transformation...I had to throw out my entire wardrobe.”

Timothy has continued his passionate immersion into Primal living (check him out at urbanprimalist.com), bringing his family to PrimalCon in 2010 and returning in 2011 to serve as a group leader and sledgehammer workout presenter. He even crafted a “Timothy’s Top Ten Most Unexpected Benefits of Going Primal”:

1. **Endless energy:** On a whim, I’d find myself running shirtless for miles through winter rain after a 24-hour fast on a day I’d already exercised.
2. **Ironclad immune system:** Since going Primal I haven’t had so much as a sniffle, even as my fellow office workers succumb to winter sickness left and right.
3. **No more migraines:** Who knew that my crippling migraines were a function of diet? I thought they were due to skipping meals or not getting enough sleep.
4. **Tinnitus no longer noticeable:** If you’ve ever had constant ringing in your ears, you know how annoying it can be, and how much you wish there were a way to make it stop.
5. **Mad chef skills:** My whole life I resented cooking; I’d do the dishes instead. Now, with a few simple ingredients, I make things at home that are far more delicious and nutritious than the finest restaurant fare.
6. **Food bills slashed:** True, buying grass-fed meat and organic produce is more expensive. However, I eat far less frequently, derive more nutrition from what I eat, and no longer need expensive, pre-cooked, unbalanced meals and snacks.
7. **Connoisseur’s palate:** I eat all sorts of stuff now that I previously considered inedible, such as kimchi, sauerkraut, sardines, and chicken liver. When I eat a piece of fruit these days, it’s a treat as stupendously delicious as it is rare—just as it was for Grok.
8. **Hormonal balance:** High cortisol and insulin levels suppressed my testosterone and human growth hormone levels. Today, I can feel the unmistakable effects of testosterone coursing through my veins. My muscle tone is tighter, beard thicker, and I’m having to adjust to feeling particularly confident and intense all the time—an issue I welcome managing!
9. **Near immunity to sunburn:** Throughout my life, a half-hour’s direct sun exposure left my fair skin scalded, and it took weeks to recover. Now, I spend hours in the sun shirtless without even a patch of tender skin afterwards. While this is an anecdotal example, I believe the implications are profound—likely involving enhanced cell repair, cancer prevention, and delayed aging.
10. **Food is medicine:** I never suspected that the world’s greatest medicines, the cures for almost every disease, the elixirs of strength and youth, are freely available in nature’s most delicious foods. I used to be a ward of the medical industry, plied with expensive prescriptions and intrusive diagnostics and told to reduce my high blood pressure by morbidly obese doctors. Now that my health is in my own hands, I am a free man at last! I don’t expect to take another pharmaceutical as long as I live.

Submitted Oct 2011, West Los Angeles, CA
key concept #6
SATURATED FAT AND CHOLESTEROL ARE NOT YOUR ENEMY

When I tell people to cut their intake of simple sugars, processed carbs, and grain-based foods, they often say, “Well, if I end up eating more fat, won’t that be bad for my heart?” The answer is: no, it won’t, as long as you cut out processed carbs as well as bad fats, such as omega-6 PUFAs, and trans fats and partially hydrogenated oils. Eating Primally reprograms your genes away from a sugar-burning, inflammation-prone existence with an increased risk of heart disease, towards a healthier, leaner, stronger life with a decreased risk for heart disease.

Fat and cholesterol by themselves have little to do with your risk for heart disease. Conventional Wisdom’s “lipid hypothesis of heart disease” suggests that eating foods high in saturated fat and cholesterol, and having higher blood levels of cholesterol, cause atherosclerosis (heart disease). In fact, there’s no proof at all that fat or cholesterol are the proximate causes of heart disease. We have been fed this information by well-meaning science and medical professionals who have failed to consider the role of a high-carbohydrate, high insulin-producing diet on the way we metabolize fats and cholesterol. Eating cholesterol and bad fats will contribute to heart disease if and only if you bathe them in a massive lifelong overdose of insulin and glucose.

“Eating cholesterol and bad fat will contribute to heart disease if and only if you bathe them in a massive lifelong overdose of insulin and glucose.”

When you are a sugar burner, your excess intake of carbohydrates and polyunsaturated oils promotes oxidation and inflammation that are the real causes of heart disease. Let’s reframe the story properly so you can get a basic understanding of the critical role that cholesterol and fat play in metabolic function and overall health, and how to greatly minimize your risk of heart disease, even if you have a strong genetic predisposition for it.
THE PRIMAL TAKE ON FAT

Your genes expect you to consume a variety of healthy fats as a significant part of your diet. Fats are among the most important molecules found in the human body. Cell membranes are comprised largely of fats; your brain is mostly fat (don’t worry, mine is too); fat protects your organs and transports fat-soluble vitamins; and we store valuable energy in the form of saturated fat.

Most dietary fats found in their true natural state—even saturated fats—are good for us, but clearly some of the dietary fats we encounter in the modern world are bad, and it’s very important to distinguish between the healthy and the harmful fats. Trans and partially hydrogenated fats are among the more dangerous foods you can eat. These highly toxic fats (also known as industrial fats or “Franken fats”) are created by chemically treating vegetable and seed oils at high temperatures to render them solid. It’s an inexpensive way to enhance the shelf life of all manner of processed and frozen foods. Contrary to popular belief, these agents do not even improve the flavor of food; it’s all about shelf life and thus increased profits for the manufacturer, at the blatant expense of your health.

Trans and partially hydrogenated fats oxidize to form free-radical chain reactions that have been shown to damage cell membranes and other tissue in your cardiovascular system, immune system, nervous system, and brain. Consumption of these agents has long been associated with cancer, heart disease, obesity, inflammation, and accelerated aging. They should simply never be consumed—sobering when you consider the widely cited estimate that 40 percent of the processed, packaged, frozen, junk food items in a typical supermarket contain these ingredients.

Another class of fats that warrant concern are polyunsaturated fatty acids, also known as PUFAs. Excessive intake of PUFAs, (found in industrial oils such as canola, corn, safflower, and soybean; margarine and buttery sprays and spreads; and assorted baked, frozen, packaged, and processed foods) can also compromise health. These fats also oxidize easily and may contribute to systemic inflammation as the immune system tries to deal with the oxidation. They may be a major factor in arterial oxidation and inflammation. Your endocrine system is especially sensitive to PUFA consumption, which can lead to symptoms such as a slowed metabolism, low energy levels, and sluggish thyroid function. PUFAs are also thought to be major players in metabolic syndrome and cancer. They should be replaced with more stable saturated fats (butter, coconut oil, palm oil, lard, and tallow) for cooking, and tasty grass-fed animal fats, wild-caught fish, and high-fat plants that contain monounsaturated fats (avocados, macadamia nuts, olives/olive oil). We’ll detail all the best options for consuming healthy fats in Action Items #2 and #3.

Trans and partially hydrogenated fats and PUFAs contain high levels of omega-6 fatty acids. Grain-fattened CAFO meat is also higher in omega-6 fat, as are many types of nuts. While omega-6 fats offer some health benefits, we tend to consume them in excessive amounts while not eating enough of the complementary omega-3 fats. An omega-6:omega-3 (O6:O3) imbalance promotes a pro-inflammatory condition in the body. O6:O3 ratios have recently become a hot topic in progressive health circles, and it’s worth making a concerted effort to get your ratio more in line with your genetic requirements for health than with the obscene imbalances produced by SAD habits. Anthropologists believe that Grok enjoyed an O6:O3 ratio of 2:1 or even 1:1, while SAD ratios can commonly reach 20:1 and as high as 50:1!
While bumping up your omega-3 intake with oily, cold water fish and fish oil supplements is a sound strategy, it may be even more important to reduce your omega-6 intake by cutting out grains and grain-based processed foods, the PUFAs found in seed oils, and chemically altered fats. We’ll give you other reasons why you should reduce your consumption of CAFO animal products and most nuts, except macadamia, in Action Item #3.

Healthy fats are critical to cellular function and hormone balance, and they taste great! One of the critical assumptions of Primal eating is that eating fat won’t make you fat—unless you eat too many processed carbohydrates.

Quick Fat Summary

- Healthy high-fat and cholesterol-containing foods are critical to optimal metabolic function and general health.
- The Conventional Wisdom “lipid hypothesis of heart disease” is relevant only if you are a sugar burner, with high levels of insulin and glucose in the blood promoting oxidation and inflammation.
- Trans and partially hydrogenated oils (processed, packaged, frozen, junk foods) and PUFAs (vegetable and seed oils, margarine, buttery sprays, baked and packaged goods) disturb healthy cellular function and promote systemic inflammation, obesity, and all manner of serious disease. Total elimination of objectional PUFA oils and Franken fats is critical.
- Emphasize intake of healthy fats, including saturated animal fats (ideally pasture-raised/grass-fed, or organic), oily, cold water fish (high in omega-3), and monounsaturated fat plant foods (avocado, macadamia nuts, olives/extra-virgin olive oil). A healthy “high-fat” (by SAD standards) diet supports optimal hormone and cellular function, promotes satiety, and raises HDL.
- Strive to improve O6:O3 balance by eliminating bad fats, moderating intake of CAFO animal products and nuts (except macadamia), and increasing omega-3 foods and supplements.
DAILY MEALS COMPARISON: MARK VS. KEN

Here’s an analysis of a typical day of meals for me and a hypothetical health-conscious SAD eater named Ken Korg (the modern antithesis of Grok, as featured in the Primal Blueprint). Of particular note is how my carb intake lands me in the Effortless Weight Maintenance zone on the Carbohydrate Curve, despite my eating a couple hundred more calories than Ken does.

MARK SISSON DAILY REPORT

I was at my home for all meals on this particular day in the summer of 2011 and attempted to eat in a routine manner. I think I actually ate more than usual since I was excited about the photo shoot!

Breakfast: Primal Omelet
4 medium pastured eggs, 1 oz (30 ml) cream, 1/2 oz (14 g) shredded cheddar cheese, chopped mushrooms, onions, red peppers (1 oz/28 g each)
1 cup (250 ml) black coffee
(Breakfast: 30 g protein, 12 g carb, 38 g fat)

Lunch: Primal Salad
2 cup mixed greens, chopped onions, jicama, red peppers, cherry tomatoes (1 oz/28 g each), chopped chicken (3 oz/85 g), sesame seeds (1/3 oz/10 g), chopped walnuts (1/2 oz/14 g), extra-virgin olive oil & lemon (homemade) dressing (2 tbl/30 ml)
(Lunch: 31 g protein, 30 g carb, 38 g fat)

Dinner: Steak and vegetables
Grass-fed ribeye bison (7.5 oz/212 g)
1.5 cups broccoli, 1 cup spinach, 1 cup mushrooms, 1 tbl butter
Glass of cabernet sauvignon
(Dinner 66 g protein, 39 g carb, 38 g fat)

Snacks:
1.5 oz/40 g macadamia nuts, 1.2 oz/30 g dark chocolate (85% cacao):
(Snacks 5 g protein, 20 g carb, 44 g fat)

Daily totals:
Protein: 132 grams, 528 calories, 21% of total calories
Carbs: 101 grams, 404 calories, 16%
Fat: 158 grams, 1,422 calories, 58%
Alcohol: 15 grams, 107 calories, 4%
2,461 total calories
KEN KORG DAILY REPORT

Yep, I had him over for dinner and fed him some delicious bison. He opted for a baked potato (he brought it with him in his pocket), and skimmed on veggies. Despite Conventional Wisdom-approved meal choices, Ken’s carb intake lands him in the Danger Zone. With a few minor tweaks to Ken’s meal choices, he can go Primal without any suffering or deprivation.

**Breakfast: Oatmeal and juice**
1.5 cups cooked whole oatmeal with
4 teaspoons of brown sugar
1 cup orange juice
(Breakfast: 9 g protein, 50 g carb, 4 g fat)

**Lunch: Sandwich, fruit, and energy drink**
Sliced turkey sandwich on whole wheat bread, with lettuce, mayo (1 tbl) and mustard (2 tsp)
20 oz Vitamin Water
1 large banana
(Lunch: 20 g protein, 65 g carb, 20 g fat)

**Dinner: Steak, vegetables, and potato**
Grass-fed ribeye bison (7.5 oz)
1 cup broccoli
Medium baked russet potato with 1.5 tbl butter
(Dinner: 60 g protein, 50 g carb, 33 g fat)

**Snacks:**
Clif bar, 1 med apple (afternoon); 1 bottle light beer, 2 med chocolate chip cookies (evening)

(Snacks: 12 g protein, 62 g carbs, 10 g fat)

**Daily totals:**
Protein: 98 grams, 392 calories, 17% of total calories
Carbs: 300 grams, 1,184 calories, 52%
Fat: 71 grams, 640 calories, 28%
Alcohol: 11 grams, 77 calories, 3%
**2,230 total calories**

*Note: The discrepancy between the weight of foods and macronutrient totals are due to the water content in the foods.*
THE PRIMAL TAKE ON CHOLESTEROL

It upsets me to no end that the medical establishment so vilifies cholesterol. After all, cholesterol is one of the most important molecules in the body. It is involved in the structure and function of all cell membranes; the brain itself is 25% cholesterol; it’s a raw material for many hormones; and it’s the precursor to vitamin D (which is made when UVB rays from the sun react with the cholesterol near the skin surface). Cholesterol is a critical component of the bile salts necessary to emulsify and digest fats. Cholesterol is so important that we evolved an elaborate system of lipoprotein transporters to deliver this critical substance throughout the bloodstream to wherever it is needed.

The main lipoprotein transporters are VLDL (very low density lipoprotein), LDL (low density lipoprotein), and HDL (high density lipoprotein) molecules. You are likely familiar with the oversimplified characterizations of HDL as “good” cholesterol and LDL as “bad” cholesterol. VLDLs are manufactured in the liver to transport mostly triglycerides (fatty acid molecules that are increased when a high-carb diet provides more glucose than can be burned or stored) and some cholesterol to cells throughout your body. After delivering their nutrients, VLDLs shrink substantially in size and convert into either large, fluffy LDLs or small, dense LDLs. Large, fluffy LDLs are generally harmless in the bloodstream, even when levels are unusually high—a factor that is strongly associated with genetics.

When triglycerides are high in the blood (usually due to a high-carbohydrate diet and excess insulin production), VLDL production skyrockets to handle the extra load, and many of these particles can convert into small, dense LDLs. These small, dense LDL have been identified as the problematic particles of cholesterol that can become stuck in small spaces on the walls of your arteries and later become oxidized and inflamed. This atherosclerosis process is further accelerated when you consume easily oxidized PUFAs. A diet lower in carbohydrates has been shown to reduce the number of these dangerous particles.

This is the point in the story where Conventional Wisdom goes off track. While it’s true that statin drugs or low-fat/vegetarian eating can lower the level of triglycerides and cholesterol in the bloodstream, a high insulin-producing diet can and will take whatever small, dense LDLs are still there and initiate the oxidation and inflammation process. In 2008, television journalist Tim Russert, unfortunately, illustrated the point when he succumbed to a heart attack at age 58 despite a (statin-induced) extremely low 105mg/dL level of total cholesterol in his bloodstream.

Conversely, HDLs are known as “nature’s garbage trucks” because they scavenge old “used” cholesterol in the bloodstream and return it to the liver for recycling. HDLs are very small molecules that can also easily get into the artery lining and remove small, dense LDLs lodged there, so their effect within the arterial lining is very beneficial. High blood values of HDL can be achieved with sensible (not chronic) exercise, moderating insulin production and consuming saturated fat (really!) and high-antioxidant (pesticide-free) vegetables and fruits. Nailing these four recommendations goes a long way toward making you heart attack proof.
HEART ATTACK RISKS AND PREVENTION - AT A GLANCE

RISK FACTORS
1. **HIGH-CARBOHYDRATE DIET**: drives excess insulin production, high triglycerides, and conversion of VLDL into dangerous small, dense LDL.
2. **HIGH-PUFA DIET**: promotes oxidation and inflammation, allowing small, dense LDL to damage arteries.
3. **STATIN USE**: compromises cellular energy production (depleted CoQ10), damages muscles and liver, and lowers HDL.
4. **EXERCISE**: not enough promotes insulin resistance as a SAD sugar burner eating in the sugar-burning zone, or too much produces excessive cortisol and oxidative stress.
5. **GENETICS**: predispositions are usually only relevant when combined with adverse lifestyle (insulin, chronic exercise, stress) practices.

PREVENTION TIPS
1. **ELIMINATE PROCESSED CARBS**: moderates insulin, lowers triglycerides, raises HDL.
2. **ELIMINATE PUFA**: reduces oxidation and inflammation.
3. **INCREASE SATURATED FAT INTAKE**: raises HDL
4. **EAT PRIMALLY**: moderates insulin, balances O6:O3 ratio, boosts antioxidants.
5. **EXERCISE PRIMALLY**: raises HDL, lowers triglycerides, lowers small, dense LDL.
6. **MODERATE STRESS**: sleep, sun, play—reconnect with genetic requirements for health!
7. **BLOOD TESTS**: Focus on triglycerides, fasting blood glucose and insulin, LDL particle size (small, dense LDL), and C-Reactive Protein (key marker of systemic inflammation). Please see the *Primal Blueprint*, Chapter 3, for further details.

*This is commonly where the SAD story ends—with clogged arteries and a tragic demise in health. Steer clear of this trouble by eating and living Primally!*
The Framingham Heart Study and Nurses Health Study, two of the largest and most comprehensive studies of diet and health ever conducted, report no correlation between dietary cholesterol intake and blood cholesterol levels, no correlation between blood cholesterol levels and heart disease, and no correlation between saturated fat intake and heart disease. These conclusions refute the premise of statin use, another example of Conventional Wisdom addressing symptoms and disrespecting causes and context (i.e., eating in the sugar-burning world).

Statins are the world's best-selling prescription drug, and arguably do more harm than good on the whole. Statins indeed slash your cholesterol total across the board (even those beneficial HDLs, unfortunately) in short order, but they also produce highly objectionable side effects. Statins deplete your cells of Coenzyme Q10, a critical nutrient for mitochondrial energy production. Consequently, statin users commonly experience muscle pain and weakness, liver dysfunction, and chronic fatigue. Furthermore, statin use has no effect on triglyceride levels or LDL particle size, and is perhaps most effective for its marginal benefit as a mild anti-inflammatory agent. An even more profound anti-inflammatory effect, however, can be achieved through proper diet and exercise. This negates any rationale for taking statin drugs. Unfortunately, many well-intentioned folks with heart attack risk factors from their familial genes and SAD diets, and who are most in need of exercise and HDL scavenging, actually increase their mortality risk by taking statins and ignoring the root causes of heart disease.

Quick Cholesterol Summary

- Cholesterol is a critical structural component of all cells and supports fat metabolism, sex hormone synthesis, and vitamin D production.
- VLDLs are made in the liver to transport triglycerides and cholesterol to cells. After deliveries are made, VLDLs convert to large, fluffy LDLs (generally harmless) or small, dense LDLs (potentially dangerous).
- Small, dense LDLs can become oxidized and inflamed when insulin and triglycerides are elevated, leading to atherosclerosis.
- HDLs—“nature’s garbage trucks”—scavenge waste products in the bloodstream (including small, dense LDLs) and return them to the liver for recycling. HDLs are increased by performing sensible (not chronic) exercise, moderating insulin production, and consuming saturated fats and high-antioxidant vegetables and fruits.
- There is no direct correlation between cholesterol or saturated fat intake and heart disease; Conventional Wisdom’s lipid hypothesis of heart disease actually occurs through the lifelong overdose of glucose and insulin in the bloodstream.
key concept #7

EXERCISE IS INEFFECTIVE FOR WEIGHT MANAGEMENT

Up to this point we’ve covered mostly diet, since these concepts require plenty of discussion and convincing in the face of flawed Conventional Wisdom. But leading a healthy, active, fit lifestyle is also of great importance, and is the topic of our final two Key Concepts before we jump into the Action Items.

Conventional Wisdom suggests that you engage in a ridiculously unrealistic amount of chronic exercise in order to combat obesity, which is epidemic among today’s sugar-burning masses. “Sixty minutes of moderate-to-vigorous-intensity activity on most days of the week” is the official US Government recommendation. Of course, a sensible exercise program balancing plenty of low-level movement with brief, intense efforts is tremendously beneficial to general health, but it’s critical to understand that 80 percent of your body composition comes from how you manipulate hormones and gene expression via the foods you eat. It’s also enlightening to realize that it doesn’t take much exercise to get fit, firm, lean, and toned, and to look good naked. If you are exercising simply to burn calories and to lose weight, you are fighting a losing battle. To put it another way, you can’t exercise away a bad diet.

“The theory of compensation asserts that calories burned through exercises are more than offset by increased caloric intake, and generally being lazier, in the hours after exercise—a way of subconsciously rewarding ourselves for the effort.”

Recent studies assert that calories burned through exercise are offset, or more than offset by increased appetite and caloric intake in the hours following exercise. This theory of “compensation” suggests that besides the genetically driven physical craving to replenish depleted blood glucose and muscle glycogen, we also subconsciously consume more calories as a way of rewarding ourselves for working out. Furthermore, some scientists believe that structured workouts, par-
particularly in a chronic pattern, are likely to make us lazier throughout the day. Again, the compensation principle applies on a subconscious level such that we are more inclined to take the elevator instead of the stairs if we hammered out a Spinning class that same morning.

I suppose you can suck it up and starve yourself after hard workouts for a few weeks or maybe even a few months, to produce impressive body composition results—as they do on The Biggest Loser. But unless you have your own personal Jillian yelling at you constantly, or you put locks on your fridge and pantry, exercising to manage body fat is simply unsustainable. That’s why so many folks following extreme regimens, under the bright lights of TV or in relative anonymity in gyms across the world, typically regain all the weight they lose during regimented sugar-burner efforts.

On the other hand, maybe you’ve heard that you should lift weights intensely and frequently to put on muscle, because muscle burns more calories than fat. And that’s true to some extent, but not to the extent that the urban myth would have you believe. Some health professionals (Dr. Oz, for example) have suggested that a pound of new muscle burns 50 extra calories in a day. If that were true, then adding ten pounds of muscle would mean you could burn an extra 500 calories each day just sitting around the house. The problem is that a lean, muscular body at rest doesn’t burn that many more calories than a higher fat body of the same weight. A pound of muscle burns approximately six calories per day, while a pound of fat—commonly believed to burn nothing—actually burns two calories per day.

Consider a 200-pound man with a basal (resting) metabolic rate of 2,000 calories a day. We know that the brain uses about 20 percent of the calories in the body (400). The heart uses another 20 percent (400); the liver another 15-20 percent (300-400); and the rest of the organs another 15-20 percent (300-400). That leaves only about 400—600 calories (20-30 percent of the total) available for skeletal muscle. If our example man has 90 pounds of muscle, that works out to about six calories per pound, per day. Even if you were overweight and were to dramatically transform your body by dropping 40 pounds of fat (40 x 2 = 80 calories per day subtracted from basal metabolic rate) and gaining 20 pounds of muscle (20 x 6 = 120 calories added), you would only increase your total daily caloric expenditure by 40 calories. So it’s true, “muscle burns more than fat”...to the tune of two macadamia nuts per day!

Muscle burns more than fat...to the tune of two macadamia nuts per day!

While exercise offers minimal benefit for weight management, there are many other wide-ranging lifestyle benefits to be enjoyed from exercise: enhanced cardiovascular, musculoskeletal, immune, and cognitive function, and generally superior health and well-being. And of course, you’ll look better naked. It’s the movement—not the calories—that provides the benefits. Unfortunately, the sedentary forces of modern life make it very difficult to achieve the optimal level of basic everyday movement that our genes require to be healthy. And it is this basic, everyday movement that experts believe is even more critical to general health than busting out a vigorous daily workout and then heading off
into a commute, sedentary job, and an evening of digital entertainment at home. Scientists have actually coined the term “active couch potatoes,” and have noted various health concerns, including an increased risk of heart attacks, in folks who spend inordinate amounts of time sitting—at commutes, desk jobs, and homes—even if they follow a devoted schedule of daily workouts!

For two million years, our ancestors walked, hiked, scouted, foraged, hunted, gathered, migrated, crawled, climbed, and scrambled all day long. This pattern of daily activity developed a strong capillary (blood vessel) network to provide oxygen and fuel to each muscle cell and to readily convert stored fat into energy, since fat is the main fuel used for low-level aerobic activity. Bones, joints, and connective tissue became strong and resilient from all this weight-bearing, functional activity, and aging and disease risk were neutralized.

Modern life makes it impractical, not to mention undesirable, to be out foraging for food all day. Therefore, it’s critical to model the spirit of our ancestors and to promote optimal gene expression by engaging in at least two to five hours per week of slow-paced movement, blending structured aerobic workouts in the proper heart rate zone (55-75 percent of maximum, as we’ll detail in Action Item #4) with frequent, spontaneous efforts to move throughout the day. Two to five hours might pale in comparison to the hours of daily activity in the life of Grok, but will be sufficient to dramatically reduce your disease risk factors and improve all aspects of physical (not to mention psychological) health.

**DRAWBACKS OF CHRONIC CARDIO**

Unfortunately, many devoted fitness enthusiasts engage in a pattern of overly stressful aerobic workouts that are too long, too hard, and conducted too frequently with insufficient rest in between. This approach—what I refer to as “Chronic Cardio”—leads to fatigue, suppressed immune function, injury, failed weight loss efforts, and burnout among what should be considered the healthiest and fittest modern humans.

When you hike, walk, or pedal at a comfortable pace, you burn mostly fat for fuel. Your workout effectively becomes a training session for being a fat-burning beast. As exercise intensity increases beyond 75 percent of maximum heart rate, you burn an ever-greater percentage of glucose (the preferred fuel choice when oxygen is insufficient) and stimulate the release of stress hormones into your bloodstream. Once in a while, it’s fine to get out there and bust a 10K run or a 50-mile bike ride (if you happen to be passionate about these endeavors), and then rest appropriately afterward. Doing it frequently without sufficient rest is when the problems start to mount.
Burning glucose and stimulating the fight-or-flight response promotes optimal gene expression when efforts are brief, intense, and occasional, but when this happens chronically, fatigue, depletion, sugar cravings, compromised fat metabolism, and burnout ensue. Remember, our human genes are operating on a “survival of the fittest” principle. We are simply not adapted to grind ourselves down through chronic exercise to the point of illness, injury, and burnout. For many devoted exercisers, the exhortation to “slow down!” can lead to breakthroughs in fitness, energy levels, body composition, and general health.

Exercising in your aerobic zone of 55-75 percent of maximum heart rate allows you to hone your fat-burning skills even further and to develop a strong fitness base without the breakdown and burnout caused by Chronic Cardio. There is a time and place to push yourself really hard and achieve fitness breakthroughs, but casual and serious exercisers alike can benefit from moderating workout pace in general. You can make your difficult “breakthrough” workouts less frequent—and of higher quality—when you harness your resources on a day-to-day basis.

Comfortably paced aerobic workouts do not burn the mega-calories that chronic exercise burns, but eating right predominates over calorie concerns when it comes to weight management. Exercise is not about the calories burned, it’s about the movement—building a solid foundation of cardiovascular and musculoskeletal fitness, and enjoying the psychological benefits of being active.

**Exercise Is Ineffective for Weight Management Summary**

- Frequent medium-to-difficult intensity exercise promotes the consumption of additional calories and less general activity in the ensuing hours. This “compensation” principle asserts that exercise is a wash when it comes to weight management.
- Muscle burns minimally more calories than fat at rest, further negating the influence of fitness on weight management.
- Our genes require two to five hours per week of low-intensity exercise for maximum health benefits and disease protection. In addition to structured aerobic workouts at 55-75 percent of maximum heart rate, it’s critical to find creative ways to move around more in daily life, avoiding the “active couch potato” syndrome.
- Eliminate “Chronic Cardio” patterns of excessive medium-to-difficult intensity (75 percent of max or above) sessions that increase stress, suppress immune function, compromise weight loss efforts, and promote burnout.
As a complement to the need for frequent daily low-intensity movement, you must observe the “use it or lose it” principle that fundamentally defines the process of fitness, as well as aging. Your genes expect you to challenge your body from time to time with brief, intense workouts that help build strength, speed, and power—great markers for anti-aging as well as broad athletic competency. A critical factor here is to keep the intensity high and the duration short, and allow for sufficient recovery between sessions.

Unfortunately, the gyms of America are filled with many well-meaning enthusiasts who have become socialized (that’s a nicer word than addicted!) to a Type-A, over-caffeinated, over-testosteroned, obsessive “no pain, no gain” approach that can lead to declining performance, fatigue, and burnout. On the flip side, those less inclined to fitness pursuits have become justifiably turned off with what appears to be a complex, time-consuming, exhausting approach to building muscle and getting fit. The truth is, once you have the diet dialed in, it doesn’t require much time to become really, really fit. There is no requirement to join a gym, to obsessively log miles, or to subject yourself to hard-core personal trainers who can easily overstress you.

Over the course of the last few decades, my weekly training time has declined literally ten-fold. Back in the day, I’d put in 20-30 hours per week of moderate-to-difficult sustained endurance exercise. Today, a typical week might include several short walks, a weekend hike of 1-2 hours, a couple of 20-30-minute strength training sessions, one sprint workout with around 7 minutes of hard effort (the whole thing lasts 15-20 minutes total), assorted mini workouts (e.g., busting some pushups for a computer break or sprinting up office stairs), and of course my beloved play time: Ultimate Frisbee, slackline (i.e., walking a tightrope) with my teenage son Kyle, and various other spontaneous efforts lasting as little as a few minutes. All told, it’s no more than one to two hours of real effort per week and a few more hours of casual movement. When you get that 80 percent of your body composition happens as a result of how you eat, you see that it doesn’t take much for you to become fit and delay the aging process.
I’m almost embarrassed at how little time I spend training to enjoy comprehensive health, fitness, and anti-aging benefits. I can sprint faster now at age 58 than when I was a world-class triathlete at 29, I’m far stronger in the gym, my overall health is superior, and I have much more fun!

**Primal Blueprint Fitness Pyramid**

The Primal Blueprint Fitness Pyramid reflects the exercise patterns that shaped human evolution for two million years.
LIFT HEAVY THINGS – PRIMAL ESSENTIAL MOVEMENTS

The Primal Blueprint 21-Day Total Body Transformation aims to make strength training simple, safe, and appealing to exercisers of all ability levels. The last thing I want is for you to feel unqualified or intimidated by a workout recommendation that seems beyond your knowledge or ability level. Instead, I present four of the most simple—and effective—exercises ever known to mankind, the Primal Essential Movements (PEM): pushups, pullups, squats, and planks.

Collectively, these exercises work all the muscles in your body and promote functional fitness for a broad application of athletic and daily life activities. These are movements our bodies have executed (in some semblance or another) on a daily, near-constant basis to promote survival for two million years. They can be done virtually anywhere with no equipment (save a bar for pullups), with no expert guidance or knowledge required, and with little injury risk when done properly.

"The Primal Essential Movements—pushups, pullups, squats, and planks—are movements our bodies have executed on a daily, near-constant basis to promote survival for two million years."

Since doing a sufficient number of repetitions of each baseline Primal Essential Movement can be difficult for many beginners, each PEM exercise offers a progression of two exercises that are less difficult than the baseline PEM, but allow you to work the same muscle groups. For example, if you can only do one or two standard pullups, you should scale down to chair-assisted pullups (double or single-legged) in order to complete an appropriate number of repetitions and build strength in the relevant muscle groups.

Once you reach the mastery level of your progression exercise, you can attempt a more difficult progression exercise. The goal is to eventually reach mastery level for each of the baseline PEMs. Once there, you can branch out into more creative and challenging exercises, all the while preserving the spirit of Primal
Blueprint Fitness strength training: brief, intense, full-body, functional movements for optimal gene expression. For example, you can simply don a weight vest to safely add a considerable degree of difficulty to each PEM.

If you currently work with a trainer, do CrossFit, or have a familiar and effective strength training routine, you probably don’t need much guidance in this area. Go ahead and stick with what you enjoy, but please adhere to the principles of emphasizing brief, intense full-body functional exercises, and refrain from the all-too-common chronic approach to strength training. Don’t hit the gym too frequently, and don’t work out too long. This approach lacks the intensity and explosive action needed to stimulate optimal gene expression.

The Conventional Wisdom notion that a good strength workout lasts for an hour or more is simply unfounded by science or real-life experience. Even a 10-minute workout can produce excellent fitness benefits. Surprising as it may seem to high-tech gym rats, a couple of PEM sessions per week, lasting 10 to 30 minutes, can get you extremely fit, delay the aging process, and help maintain ideal body composition—when combined with Primal eating of course. If you are immersed in a hard-core routine of three, four, or five “high-intensity” workouts each week, you can actually become stronger, fitter, and healthier by skipping some workouts, lessening the difficulty of some others, and hitting it extra hard at those special fitness breakthrough sessions.

RUN FOR YOUR LIFE ONCE IN A WHILE – THE ULTIMATE PRIMAL WORKOUT!

The final component to Primal Blueprint Fitness is to conduct occasional all-out sprints. These brief, intense, totally Primal sessions trigger the flow of adaptive hormones that help build muscle, burn fat, and increase energy levels. Sprint sessions should be conducted every 7-10 days, with the hard efforts totalling only a few minutes (e.g., a set of six sprints lasting 10-30 seconds each is less than 3 minutes of hard effort, wrapped into a 15-20 minute workout when you count warmup exercises, rest intervals, and cool down). These occasional sprint workouts can have a more profound effect on your overall fitness and health than hours of Chronic Cardio. It’s all about promoting optimal gene expression and challenging your body to adapt and grow stronger and faster from exercise stimulus.

While actual running is the most natural and time-efficient exercise, novices or those with high injury risk factors can choose low or no-impact options (stationary bike, cardio machines, uphill sprints, swimming, etc.) to enjoy the benefits of sprinting without the impact trauma of sprint running. Sprint workouts should only be conducted when you are 100 percent rested and energized to deliver a peak performance. All of your workouts should align with your daily levels of energy, motivation, and immune function.
Instead of the robotic, consistency-obsessed approach favored by Conventional Wisdom, feel free to apply an intuitive approach to Primal exercise. Remember, our ancestors faced harsh daily environmental circumstances and uncertain food supply. They survived by doing just enough foraging, hunting, heavy lifting, and general exercise to get by, and harnessed their energy very carefully. They delivered maximum efforts when called for (kill or be killed), adapting and growing stronger throughout most of their lives (seriously, the aging process is a modern myth), while remaining focused on a life of ease and contentment.

“Cultivate an intuitive approach to exercise with a careful balance of stress and rest. Remember, our ancestors did just enough exercise to survive and harnessed their energy very carefully.”

Hiking in the Grand Canyon with my daughter, Devyn, reminiscent of our hunter-gatherer ancestors. Later on our trip we foraged for food at the Bellagio in Las Vegas.
AGING IS A MODERN MYTH

Much of the so-called aging process is associated with a life of sugar burning, the excessive stress of hectic modern life, poor exercise habits (either chronic or insufficient), and poor lifestyle habits (lack of sufficient sleep, sun, and play).

At age 25, I directed my genes toward the narrowly focused goal of running a fast marathon. Despite a consistent weight lifting regimen (seriously, I was pumping iron three times a week!) and a massive daily caloric intake (between five and six-thousand calories, including some 800 grams of carbohydrates), I weighed in—dripping wet—at 142 pounds and seven percent body fat. I attained a top-five performance in the US national marathon championships and a personal best time of 2:18, but the consequences of pursuing this overly stressful training regimen paralleled the aging process: suppression of key vitality hormones such as testosterone and human growth hormone, compromised immune function to the tune of six to eight upper respiratory illnesses each year, digestive problems (irritable bowel syndrome, bloating, constipation), osteo-arthritis in my hips, chronic tendonitis in my ankles and knees, recurring fatigue, and ultimately physical and psychological burnout.

Today, at the age of 58, these symptoms of compromised health and aging have completely disappeared. At 168 pounds and nine percent body fat, I have added 21 additional pounds of muscle mass and a slight—and healthy—increase in body fat from when I was 25. My broad athletic ability has actually improved: I can lift heavier weights, jump higher, do more pullups, and play more competently than when I was pounding the miles out day after day. No, I can’t come anywhere near my marathon time from back in the day, but I have no desire to! On a dare, however, I could still jump into an endurance run such as a 10k and post a respectable time thanks to the diverse benefits of my Primal Blueprint Fitness routine.

There are other examples (spend a little time Googling the remarkable photos) of athletes who seem to have defied the aging process. Former NFL great Herschel Walker, who competes in Mixed Martial Arts at the age of 48, is visibly more ripped than when he won the Heisman Trophy at 21. Dara Torres has set longevity records in swimming, winning...
nine Olympic medals over a span of 24 years. As the oldest ever US Olympic swimmer in 2008 at age 41, she collected three silver medals in Beijing. Her age-defying performances (and stunning six-pack) have helped her transcend swimming to become a television personality and cultural icon. The late Jack LaLanne achieved strength and conditioning performance standards as an octogenarian that represent the top one-percent among college-aged students, giving him claim to the “body of a 21-year-old.”

Stuck in the paradigms of sugar-burning and flawed Conventional Wisdom, we commonly rationalize these age-defying specimens as genetic freaks. Knowing what you know now about gene expression, you can reframe your perspective to see Herschel, Dara, Jack, and, dare I say, myself, as normal and expected products of lifestyle behaviors that promote optimal gene expression. Perhaps you can see your personal potential with the expanded perspective of being able to reprogram your genes?

I can assure you that I’m an ordinary guy who started making better eating and exercise choices over the past 25 years, and have enjoyed a consequent arresting of the aging process. Sure, “results may vary” due to the limitations of your familial genes, and your Primal efforts may not take you inside the MMA cage to fight Herschel, or into the pool to battle Dara for a spot on the Olympic podium in your forties. However, promoting optimal gene expression will enable you to look and be at your best, regardless of your chronological age.

**Maximum Fitness Can Be Achieved in Minimal Time with High-Intensity Workouts**

- Brief, intense strength and sprint workouts promote optimal gene expression and help delay the aging process. Avoid unnecessary complexity or a chronic approach that compromises health.
- The four Primal Essential Movements—pushups, pullups, squats, and planks—are simple, safe, functional full-body exercises that are scalable to all fitness levels.
- All-out sprints are the ultimate Primal workout! Conduct when energy and motivation are 100 percent—once every 7-10 days is plenty. Low-impact options make sprinting accessible to all.
- The aging process is accelerated by declining physical fitness, along with poor eating, lifestyle, and stress management habits. “Use it or lose it” and reframe your perspective about aging by reprogramming genes through high-intensity training.
ACTION ITEMS

Things you need to do
The following five Action Items require minimal logistics, expense, and hassle. In fact, it’s likely that implementing these Action Items will reduce complexity and increase flexibility in your life. While I take great pains to reject a robotic, obsessive approach in favor of an intuitive approach, it’s essential to make the commitments detailed in order to enjoy the full benefits of living Primally. After reading and understanding this section, you can start your 21-Day Challenge detailed in the next section.

As a sugar burner, battling to control weight can be such a struggle that emotional and psychological health become compromised in the process. You will need to strengthen your resolve to leave self-destructive beliefs and habit patterns behind and to commit to Primal efforts. Hopefully the immediate benefits you experience will make it easy and exciting for you to stay on track.

Behold the objectional foods I purged during a kitchen/pantry cleanout of a party who shall remain anonymous!
GET READY TO PURGE!
This is a big one, my friend. It’s time to purge the pantry and the refrigerator of all those foods that have caused you problems (in many cases unknowingly) in the past, and which you might default to in the future out of habit. Rather than having these items staring at you, luring you in, and throwing you off track in a moment of weakness or boredom, it’s best to just throw them in the garbage, donate them to a food bank, or even stick them in storage for six months (just in case this Primal thing doesn’t work out...).

Beverages:
- Designer coffees (mochas, blended iced-coffee drinks)
- Energy drinks (Red Bull®, Rock Star®, Monster®)
- Bottled, fresh-squeezed, and refrigerated juices (acai, apple, grape, orange, pomegranate, Naked Juice® and Odwalla® concoctions, Nantucket Nectar®, Ocean Spray®, V8®)
- Almond, rice, soy, and other flavored so-called “milks”
- Powdered drink mixes (chai-flavored, coffee-flavored, or hot chocolate)
- Powdered juice mixes (lemonade, punch, iced tea, sports performance drinks)
- Soft drinks and diet soft drinks
- Sports performance drinks (Gatorade®, Powerade®, Vitamin Water®)
- Sweetened cocktails (daquiri, eggnog, margarita)
- Sweetened teas (Snapple®, Arizona®)

Sweetened beverages provide heavy doses of carbohydrate without filling you up, making them among the most objectionable elements of the modern diet. Stick to water, herbal tea, or coffee for your beverage choices. Sports performance drinks may be used during occasional strenuous workouts lasting over 30 minutes.
Condiments/cooking items: Honey mustard; jams and jellies; ketchup; mayonnaise and lite mayonnaise spreads; low-fat salad dressing; and anything containing high-fructose corn syrup; other products made with sugary sweeteners and/or PUFA oils.

Note: Using cooking/flavoring sauces such as tabasco, soy, worcestershire, barbeque sauce and the like may be acceptable in moderation. While these products typically contain some processed sugar and perhaps PUFA, their calorie contribution is minimal. Nevertheless, strive to find the highest quality sauces with the least offensive ingredients at alternative grocers such as Whole Foods Market or on the Internet.

Dairy products: Processed (American) cheese and cheese spreads (Velveeta®); ice cream; nonfat and low-fat milk; frozen yogurt; sweetened low-fat or non-fat yogurt. Some dairy is acceptable in moderation if you are lactose tolerant. These include products that are raw/unpasteurized, fermented (cheese, yogurt, kefir), organic/GMO/hormone-free, and of the highest possible fat content (whole milk, cream cheese, cottage cheese).
**Fats and oils:** All products containing trans or partially hydrogenated oil; buttery spreads and sprays (Smart Balance®, Promise®); canola, cottonseed, corn, soybean, safflower, sunflower, and all other high polyunsaturated oils; margarine; and vegetable shortening.

We’ll discuss the fats and oils best-to-worst spectrum in Action Item #3. For now, get your head around cooking with coconut oil, butter, or other saturated animal fats, and consuming extra-virgin olive oil at meals.

**Fast food:** Burgers, chicken sandwiches, fish fillets, French fries, hot dogs, onion rings, chimichangas, chalupas, chorizos, churros, and all other permutations of industrialized food we are surrounded by daily. If it has a plastic or cardboard wrapper and a Nutrition Facts panel, it’s probably not appropriate for the next 21 days nor in the future.

**Fish:** Most farmed fish (except a few approved options we’ll discuss shortly); fish caught by environmentally objectionable methods, or from polluted waters; large fish at the top of the food chain (shark, sword, etc.).

**Grains:** Cereal, corn, pasta, rice, and wheat; bread and flour products (baguettes, crackers, croissants, Danishes, donuts, graham crackers, muffins, pizza, pretzels, rolls, saltine crackers, swirls, tortillas, Triscuits®, Wheat Thins®); breakfast foods (Cream of Wheat®, dried cereal, French toast, granola, grits, oatmeal, pancakes, waffles); chips (corn, potato, tortilla); cooking grains (amaranth, barley, bulgur, couscous, millet, rye); and puffed snacks (Cheetos®, Goldfish®, Pirates Booty®, popcorn, rice cakes).
Ditching grains is the number one health-boosting lifestyle adjustment you can make! Understand that corn is a grain, not a vegetable. Corn and derivative products (such as the particularly offensive HFCS) are ubiquitous in the modern diet—used to sweeten all manner of beverages and processed foods.

**Legumes:** Alfalfa, beans, peanuts, peanut butter, peas, lentils, soybeans, and tofu. While these foods are less objectionable than grains, they still contain appreciable levels of anti-nutrients and stimulate an excessive insulin response.

**Meat:** Pre-packaged meat products processed with chemicals and sweeteners (breakfast sausage patties, dinner roasts, frozen meals, sliced lunch meats); smoked, cured, nitrate or nitrite-treated meats (bologna, ham, hot dogs, jerky, pepperoni, salami).

Strive to limit your intake of CAFO meats, since they are laden with hormones, pesticides, and antibiotics, and contain unfavorable O6:O3 ratios due to the animals’ excessive grain intake (yep, it’s bad for them too). Meat is a dietary centerpiece when you eat Primally, but you must make a strong effort to favor grass-fed/pasture-raised or organic options.
**Processed foods:** Energy bars; fruit bars and rolls; granola bars; protein bars; frozen breakfast, dinner, and dessert products; and packaged, grain/sugar-laden snack products. If it's in a box, package, or wrapper, think twice!

**Sweets:** Brownies; candy; candy bars; cake; chocolate syrup; cookies; donuts; ice cream; milk chocolate; milk chocolate chips; pie; sugar/sweeteners (agave, artificial sweeteners, brown sugar, cane sugar, evaporated cane juice, HFCS, honey, molasses, powdered sugar, raw sugar, table sugar); sugar/chocolate coated nuts and trails mixes; popsicles and other frozen desserts; syrups; and other packaged/processed sweets and treats.

Consuming sweets generates a high insulin response, minimal-to-zero nutritional benefit, and causes an immediate suppression of immune function (insulin competes with vitamin C at cell receptor sites). If you absolutely have to have something sweet in your house, you can acquire some high-cacao-content dark chocolate. Stevia, a plant-extract with some health-promoting properties, can be used in moderation as a sweetener in recipes. Giving up sweets for 21 days may seem daunting, but once you clear your system of excess glucose, you will notice cravings minimize, crashes moderate, and health improve noticeably.
Now that you’re feeling a little shell-shocked, you can restock your pantry and kitchen with Primal foods and implement winning strategies for shopping, meal preparation, and healthy snacks. Some critics contend that eating Primally is expensive due to the emphasis on meat and organic foods, but a strategic approach can help moderate the budget impact of eating higher quality, more nutritious foods, and make meal preparation more convenient for you. In fact, several MarksDailyApple.com readers relate that they actually save money when cutting out the expensive daily frappuccinos, energy bars, and the need to consume snack foods incessantly in the carb paradigm.

Many Primal enthusiasts actually save money when eating Primally. They no longer require incessant snacking on expensive snacks and beverages, and enjoy metabolic efficiencies (fewer daily calories) as fat-burning beasts.

Your Primal food options are meat, fish, fowl, and eggs, vegetables, macadamia nuts, moderate amounts of coffee, high fat dairy products, locally grown, in-season fruits, other nuts and seeds, certain fats and oils, supplemental carbs for mega-calorie burners (starchy tuber vegetables, quinoa, wild rice), and sensible indulgences of red wine and dark chocolate. We’ll get into the details about how to choose the best foods in each category during the next Action Item. For now, let’s cover shopping and meal preparation strategies to make going Primal as convenient and enjoyable as possible.

SHOPPING STRATEGIES

The majority of items in your friendly neighborhood grocery store are made with refined carbohydrates, chemically altered fats, preservatives, sweeteners, and other synthetic ingredients that are highly objectionable to your health. Even the popular tip to shop on the perimeter aisles—where fresh produce, dairy, and animal products are commonly found—can leave you with an unimpressive basket by Primal standards. Meat, egg, and dairy choices in mainstream supermarkets are sourced almost entirely from Concentrated Animal Feeding Operations, while produce is usually conventionally...
grown, picked too early, artificially ripened with ethylene gas, and transported from distant origins. It's time to branch out and find a superior source for your Primal foods.

Fortunately, alternative grocers, farmer’s markets, co-ops (member-owned “cooperatives”), and CSA (Community Supported Agriculture) providers are proliferating across the nation. Scour your local area for superior shopping options, using Google, the chamber of commerce, connecting with other health-conscious eaters, and visiting eatwild.com, localharvest.org, americangrassfed.org, and slowfoodusa.org to find local sources of animals and produce.

Whole Foods Market (wholefoods.com) is the premier national chain of organic and natural products supermarkets. Search their web site for a store location near you, and review their impeccable quality standards for foods allowed on their shelves. Trader Joe’s (traderjoes.com) is a discount alternative grocer based in Southern California and is expanding rapidly nationwide. If you can embrace their cramped parking lots, Spartan decor, and out-of-the-way locations, they offer a tremendous selection of organic and private label products at substantial savings over similar (or often inferior quality) brand name products.

Even if you aren’t near one of these chains, health-oriented supermarkets are springing up throughout the country. With a little research, you might find one near you. Even big box chains such as Costco offer more organic meat and produce, and buying there in bulk packaging can result in great savings. Many chain supermarkets are jumping into the action with expanded selections of organic and locally grown products.

The Internet allows you to overcome any shortcomings in your local area. For Internet ordering, a few of my favorite resources include thompsonriverranch.com for grass-fed, Japanese-style wagyu beef, diestelturkeys.com for pasture-raised turkeys, wildpacificsalmon.com for Alaskan salmon, and ArtisanaFoods.com for macadamia nut butter. MarksDailyApple.com has numerous posts archived about topics such as “cowpooling” (chipping in with friends to purchase a section of butchered cow) and navigating the abundant options on the Internet.
Ideally, you would do most of your shopping at a farmer’s market. Many communities host temporary open-air bazaars each week. Some communities enjoy semi-permanent venues that rotate days and locations. Perhaps you can discover a local farmer from whom you can buy produce or farm-fresh eggs directly?

Explore ethnic markets in your area (Asian, Latino, Mediterranean, Middle Eastern) for innovative meat options, including offerings from small local farms. You may also find exotic spices and other Primal-approved fare that are uncommon in mainstream markets. Co-ops are typically filled with knowledgeable, passionate, progressive-living staff members, and they make a sincere effort to source products from small, local farms. Due to their unique organizational structure, they can be very responsive to special requests and custom orders.

**MEAL PREPARATION STRATEGIES**

You’ve worked hard to bring home good food, so keep the momentum going by creating an efficient kitchen. The basics look like this: small pantry, refrigerator/freezer, cast iron cookware, wooden stirring spoons and spatulas (avoiding composite cookware due to chemical residue concerns), and a robust spice rack. A crock pot or dutch oven can be useful to prepare large quantities of meat, soup, stews, and chili that can be used for quick, delicious future meals.

Many Primal enthusiasts appreciate having a chest freezer to store larger quantities of meat and other foods. A blender is a great option for making quick Primal-approved smoothies or nut butters. Glass tupperware and ziploc baggies of various sizes help you store and transport food purchased in bulk or meals made with leftovers in mind (crock pot soups, stews, roasts), etc.
If you want to add a few bells and whistles to your kitchen arsenal, consider some of these items: food dehydrator (great for drying fruits, veggies, and making jerky); food processor (a mini one is great—investigate a blender attachment); mandoline (makes super-thin veggie slices—great noodle substitutes); pressure cooker (fast-cook soups, stews, and large cuts of meat); stick blender: (instant blending of soup, batter, and smoothies); and thermometer (targets rare, medium, or well-done).

Primalizing your pantry and fridge will make things look much more streamlined—no more pasta, rice, flour, cereal, boxes of grain-based snacks, jars of polyunsaturated oils, sugary sauces, and condiments. Instead, your food staples on hand might look like this:

- **Butter**: Great for eating or cooking. Other animal fats such as ghee (clarified butter, great for the particularly lactose-sensitive) lard, tallow, and even recycled bacon grease, are excellent to use for frying.
- **Coconut products**: Coconut oil, milk, butter, flour, flakes, and manna (creamed whole coconut flesh) offer outstanding health benefits and versatile use for cooking, smoothies, and PUFA and wheat flour in most recipes. Coconut is high in medium-chain fatty acids, which are rare in our modern diet and offer a variety of health and disease protection benefits. Review numerous coconut posts at MarksDailyApple.com for details.
- **Cookbooks**: Get some creative ideas and learn how to replace virtually every SAD staple with a Primal-friendly alternative. Start with the *Primal Blueprint Cookbook* and *Primal Blueprint Quick and Easy Meals*. Check MarksDailyApple.com for reviews and suggestions of many other Primal/paleo-inspired cookbooks.
- **Extra-virgin olive oil**: Great for salads, on vegetables, and other direct consumption. Can tolerate low-temperature heating only, so do more involved cooking with coconut oil or animal fats.
- **Five favorite meals**: Rotating through your favorite meals can help reduce struggles you might experience when transitioning to Primal eating. In the Primal Essential Meals sidebar in the next Action Item, we provide a list of easy to prepare go-to meals for breakfast, lunch, dinner, and snacking. Primal eating can be a gourmet adventure if you are inclined, but following a basic strategy can keep things simple and within reach of even busy folks who are disinclined to spend much time in the kitchen.
- **Fresh foods**: Strive to eat most of the food you acquire, such as fresh produce and animal products, in less than a week.
- **Snacks**: Surround yourself with Primal snacks so that you never suffer, struggle, or go hungry in your transition to Primal eating. I’ll detail a list of favorites in the next Action Item.
DINING OUT

For reasons both pleasurable and practical, you may be eating out for a significant portion of your meals. Becoming a modern forager requires some education and heightened awareness, but can be fun and rewarding. Remember, restaurants aim to please you—that’s how they stay in business—so don’t be afraid to throw some Meg Ryan (in her *When Harry Met Sally* role) moves into your repertoire to renegotiate the menu placed in front of you. If you’re hesitant to be assertive here, feel free to embellish a bit and explain that you are allergic to something—vegetable oil, wheat, gluten, processed sugar, or bad attitudes from service workers. Here are a few quick tips for dining out:

**Choose wisely:** Certain restaurants won’t work no matter how hard you try to manipulate the menu. Stay away from fast food, fried food (typically made with rancid, recycled vegetable oil), inexpensive diners, and joints focused overwhelmingly on grains (pizza parlors, etc.). Branch out into ethnic restaurants such as Greek, Indian, Italian, Japanese, Korean, Latin, Thai, and even soul food. While you certainly can go wrong at just about any restaurant by choosing grain staples or meals steeped in seed oils, the aforementioned cuisines (and many others) often serve meat and vegetables in creative ways that can be a refreshing departure from your home-cooked recipes.

**Cooking methods:** Request that your food be cooked in real butter instead of vegetable oil. This will save your body some free-radical damage and should be no hassle at all for any restaurant.

**Macronutrients:** Play to your strengths and build meals around protein and vegetables. These should always be available, but you will likely have to swap out typical accoutrements than can ruin a good basic dish.

**Renegotiate:** Scan the entire menu and request to shuffle the deck to create your ideal Primal-approved meal. Ask to substitute extra veggies instead of the pasta that comes with the fish. Ask for extra bacon.
instead of toast with that omelet, trade a baked potato for broccoli, or go with a lettuce wrap sandwich instead of bread. Be willing to pay more for these pleasures.

**FINDING THE BEST FAST FOOD**

Thanks to increased consumer awareness and demand for quality, options continue to improve for getting nutritious fare on the go. Keep in mind that animal products will be exclusively from Concentrated Animal Feeding Operations—unless otherwise noted by progressive establishments—and of much inferior quality than what you will have at home using the aforementioned shopping and meal preparation tips. Nevertheless, when you are out in the SAD world and hungry for something to eat, try these foraging tips:

**Chicken:** Boston Market, Chick-fil-A, Church’s, El Pollo Loco, Popeyes, KFC. Stay away from the deep-fried stuff in favor of broiled or oven-roasted chicken. Even KFC has an oven-roasted option on the menu (and their initials seem to have morphed from the old-time Kentucky Fried Chicken to “Kitchen Fresh Chicken”—although the Colonel lives on). Minimize your intake of sweet sauces, even scraping your bird clean if you have to. Grab a few pieces of broiled chicken, pick a vegetable side dish if possible and be on your way. Boston Market has an especially impressive assortment of vegetable and salad sides to go with rotisserie chicken, roasted turkey, beef brisket, and meatloaf entrees.

**Coffee houses:** Stick to straight coffee with cream and a pinch of sugar if you wish. Back off on the exotic beverages laden with sugar calories (macchiato, latte, mocha, blended iced coffees), and definitely ignore the baked goods (scones, muffins, croissants, biscotti) that seem to go hand in hand with coffee in the SAD.

**Ethnic:** Panda Express is a national chain that offers fresh vegetable and meat entrees, smorgasbord style, so you can custom design your own meal. Steer clear of the rice, noodles, heavy sauces, and deep-fried dishes, and you can do quite well with choices such as fried eggplant, and chicken or beef with vegetables. Other common ethnic fast food options include Chinese/wok-style buffets, Mongolian barbeques, Korean barbeques, and express Thai or Japanese. These cuisines make it easy to stick with meat and vegetables.

**Fresh Mex:** Chipotle proudly promotes sourcing the most natural, local, planet-friendly meat and produce (learn about their “Food With Integrity” mission at chipotle.com). The Chipotle “burrito bowl” is a fixture on the menu—enabling a custom-designed, tortilla-free burrito experience. Baja Fresh offers burritos “bare style” (no tortilla) and
Baja Burritos with veggies, cheese, meat and guacamole—no rice or beans. Chevy’s, La Salsa, Rubio’s, Qdoba, and other local outfits and regional chains offer health-conscious menus and flexibility with ordering.

Skip the tortillas, tacos, and obligatory rice and beans side dishes, and focus on meat (beef, pork, chicken, or fish) and vegetables—even if you have to eat out of a tostada and leave the hollow shell.

One of my favorite road meals ever was at Dos Coyotes Border Cafe in Roseville, CA, where I requested a plate of just carne asada and a side of guacamole. After their initial hesitation that this was what I really wanted, and some uncertainty about pricing, the order was placed and I was charged all of four bucks for a whopping plate of delicious meat!

**Hamburger chains:** McDonald’s, Burger King, Carl’s Jr, Wendy’s, Sonic, In ‘N Out Burger. While the major global chains serve the ultimate in chemical-laden, heavily processed CAFO meat, deep-fried fare, and grain and sugar-based menu options, if you simply must partake, some clever strategies can help you stay somewhat Primal-aligned. The main idea is to forgo the bun in favor of the meat. In ‘N Out Burger proclaims their product to be of higher quality, since they process all their meat themselves and cook burgers fresh on-site. They offer a “protein-style” burger sans bun. Carl’s Jr. also offers a bun-free burger and various other low-carb, vegetarian, and gluten-sensitive options on their menu. Most burger joints offer salad or other attempts at healthy fare. When none of this appeals, if your tour bus happens to pull into a burger joint, it might be a great chance to stretch your legs outside and engage in an Intermittent Fast.

**Pizza:** You’ll have to work a bit harder to manipulate the menu at a pizza joint. Look for antipasto salads, meatball sandwich (hold the bread), or simply ask them to throw some chicken and vegetables (typically offered as toppings) on a plate, sprinkle some cheese, warm in the oven, and serve.

**Sandwich shops:** Port O’ Subs, Subway, Togo’s, Quizno’s and the like distinguish themselves with fresh ingredients and preparation. One MarksDailyApple.com reader suggested ordering a plain salad, then adding vegetables and a side order, or two, of sandwich meat. You can also order a sandwich and request it be wrapped in lettuce instead of bread.

**Sit-down restaurant chains:** Applebee’s, Bennigan’s, Cheesecake Factory, Chili’s, Olive Garden, Outback Steakhouse, Ponderosa Steakhouse, Red Lobster, Ruby Tuesday, TGI Friday’s, and other national chains serving continental cuisine (burgers, steaks, ribs, salads, sandwiches, pasta, and assorted deep-fried, heavily battered appetizers). Stick with meat and vegetables, and request that your meat be cooked in butter. If it’s a salad you want, most of these places will add meat, chicken, or fish for a small added charge. Avoid dressings and sauces that are laden with sugar and PUFA. Instead, request extra-virgin olive oil and some vinegar.

**Smoothie shops:** Not much you can do here. Fruit smoothies and freshly squeezed fruit and vegetable juices deliver a sizeable sugar hit. In addition to the liquid offerings, you’ll typically find an assortment of grain-based baked goods, energy bars, and snacks—another great opportunity for some I.F. if your crew happens up on a smoothie shop.
action item #3

MAKE THE HEALTHIEST CHOICES ACROSS THE SPECTRUM

Transforming your diet entails understanding the best—and worst—choices you can make in the various Primal food categories. Eating at the best end of the spectrum all of the time may present a practical and budgetary challenge. Relax, do the best you can, enjoy your meals, but get into the rhythm of staying on the highest end of the spectrum as much as possible.

Astute Primal enthusiasts may notice some revisions from the original Primal Blueprint food pyramid released in 2009. Don’t worry, we’re not messing with two million years of evolution; just refining and clarifying certain positions based on breaking science.
PRIMAL ESSENTIAL MEALS
You have your PEM workouts and now your PEM meals! These meal templates are a great starting place and keep Primal eating simple and enjoyable. If you want to turn it up a notch, there are endless variations of the templates to keep meals fresh and adventurous.

BREAKFAST - PRIMAL OMELET

Breakfast doesn’t need to be any more difficult than frying up a few eggs: melt butter in a pan, add eggs, remove when cooked. Done! If you want a real treat that will kick-start your day and optimize fat metabolism, give a Primal omelet and its many amazing variations a try:

- 3-5 eggs, pasture-raised or organic
- Butter for pan frying
- ¼ to ½ cup (56-113 g) of chopped spinach, mushrooms, onions, bell peppers, tomatoes
- ¼ to ½ cup chopped bacon or other meat
- Salt, pepper, mixed seasonings as desired

**Preparation:** Sauté chopped vegetables and meat in a separate pan with an ample amount of butter. Set aside, prepared for quick inclusion into the omelet. Whisk eggs until smooth and pour into a buttered skillet over medium heat. Allow eggs to begin cooking, then use a spatula to carefully scrape the egg away from skillet edge as it sets, allowing uncooked egg to flow into the scraped away space. Lightly shaking the skillet helps the eggs to set evenly.

With eggs set (from liquid into solid), carefully spread your vegetable and/or meat ingredients over one half of the pan. With the spatula, carefully release and then lift the entire empty side of the omelet and fold onto the ingredients. Lightly press down on the omelet to seal. Cover skillet with lid for additional cooking if omelet appears runny inside. Scoop or slide omelet out carefully and serve.

**Variations:** Avocado, cheese, salsa, sour cream for Mexican-style. Green and red chili powder cumin and cilantro for Indian style. Pesto with extra cheese for Italian style. Vary cooking method with baked (frittata), hard-boiled, fried, poached, or scrambled.

BREAKFAST - PRIMAL FUEL SMOOTHIE

- 2 cups (500 ml) liquid (water or coconut milk)
- ½ cup (150 g) ice
- 2-3 scoops of Primal Fuel

**Preparation:** Blend ingredients thoroughly. Add water in small increments, and stop blender to reposition ingredients if you are having trouble. You should end with a consistent whirlpool of com-
pletely blended ingredients. Add coconut flakes, frozen bananas and/or berries, or nut butter to keep things interesting.

**LUNCH – PRIMAL SALAD**

You don’t really need a recipe for this one (aka my “two-minute Big Ass salad”!); just throw whatever greens, raw veggies, and cooked meat you have on hand into a big bowl, dress it with olive oil and lemon, sprinkle on some nuts or seeds, and viola! Your Primal salad is complete. Try the variations to ensure you’ll never grow tired of this fast and healthy lunchtime staple.

- Large handful of salad greens, such as mixed greens, romaine, or spinach
- Large handful of chopped-up protein, such as cooked steak, chicken, turkey, or wild salmon
- Small handfuls of various vegetables, aiming for four to six different types (e.g., bell peppers, carrots, celery, cherry tomatoes, cucumbers, jicama, onions, radishes)
- Small handful of nuts and/or seeds

**Dressing:** ½ cup (113 g) extra-virgin olive oil, ¼ cup (57 g) freshly squeezed lemon juice, ½ teaspoon (2.5 ml) sea salt, ¼ teaspoon (1.25 ml), freshly ground black pepper, ¼ cup finely chopped fresh herbs of choice.

**Preparation:** Keep containers of chopped vegetables in your fridge to quickly access all week. Cook extra meat at dinners to use for salads. Toss salad ingredients in a large bowl. Whisk together dressing ingredients in a separate bowl (or put into a jar), shake well and serve liberally (plenty left over for tomorrow). If you are taking your salad to work, use a large travel container and keep the dressing separate until it’s time to eat.

**Primal Salad Variations:**
Garnishes: A sprinkle of berries, dried fruit, pumpkin seeds or sunflower seeds, olives, or crumbled bacon adds more flavor and texture.
Toppings: Avocado, hard-boiled egg, and cheese add satiating fat.

**LUNCH - PRIMAL WRAP**

- Large leaf of iceberg lettuce for the wrap
- Favorite sandwich ingredients (see Primal wrap variations)
Preparation: Place the lettuce leaf on a plate and top with desired sauces or spreads. Layer fillings, putting the heaviest ingredients in first, such as meat. Stop short of the edges of the leaf to prevent spillage. Try to fold the edges in to form a barrier, then carefully roll the leaf around the fillings.

Primal Wrap Variations:
Carne asada: Flank steak, hot chiles, onions, salsa, spices, (cayenne pepper, oregano, salt, thyme), and tomatoes.
Chicken or turkey Cobb: Mix with chopped avocado, bacon, bleu cheese, spinach leaves, and tomatoes.
Corned beef and cabbage: Use the cabbage leaf as the wrap. Spread on some mustard and hot corned beef.
LBLT: Add strips of bacon and sliced tomatoes, wrap in lettuce, and hold the bread!
Salmon: Mix with chopped avocado, cucumber, sundried tomatoes, and plain yogurt.
Tuna salad: Mix tuna with chopped avocado, grated carrots, cucumbers, tomatoes, and plain yogurt.

DINNER – PRIMAL MEAT AND VEGETABLES

Why make life complicated after a busy day? Fry or grill a good steak (or lamb, pork, bison, chicken, turkey, or fish) and cook some veggies on the side for a great dinner.

- 1 rib-eye, porterhouse, t-bone, or flank steak, 4-8 ounces (115-230 g)
- a few shakes of salt, pepper, and olive oil
- sliced onions, mushrooms, or asparagus; chopped kale or spinach
- 2 tablespoons of butter, 1 tablespoon of chopped parsley

Preparation: Pat dry and season the steak on both sides with salt and pepper. Pre-heat the oven to 450°F/232°C. Heat olive oil in a skillet over medium heat and add onion and mushrooms. Sauté until the veggies have softened and browned slightly, then add kale or spinach. Sauté until greens are wilted. Add salt and pepper to taste.

Drizzle a little oil in an oven-proof pan (cast iron works great) and then heat the pan on the stove over high heat for several minutes until it just barely starts to smoke. Drop the steak in the pan and let it sit (don’t touch it!) for three minutes. Don’t be alarmed if there is some smoke.

Wait until the steak comes up relatively easily (around three minutes), then flip it. Put the pan, with the steak in it, in the oven. Bake for several minutes, then check by temperature/texture to see if it’s done. (Rare 130°F/54°C; medium, 140°F/60°C) Let the meat rest 5-10 minutes before cutting. Mash the butter with the parsley and top the steak and vegetables with the herb butter, letting it melt on top.
Primal Steak and Vegetables Variations:
Coconut milk: Simmer coconut milk with curry powder until reduced by half, then pour over meat and vegetables for a quick sauce. Add coconut milk to a marinade.

Cooking technique: Grill the steak and vegetables, or steam the veggies.

Flavored butter: Use your imagination to come up with your favorite flavored butter. Some flavors to mash into butter: basil, chives, red pepper flakes, cinnamon, bleu cheese, bacon bits.

Marinades: Marinate the meat in oil, garlic, and fresh herbs before cooking.

Seasonings: Use spices such as cumin, allspice, and paprika to flavor the steak.

Vegetables: Rotate different types of vegetables throughout the week (bok choy, broccoli, eggplant, zucchini, bell peppers). Serve mashed or grated steamed cauliflower on the side.

SNACKS
1. Berries: Locally-grown, in-season
2. Dark Chocolate: Highest possible cacao content
3. Fish: Canned herring, mackerel, sardines, tuna
4. Hard-boiled Eggs: Sprinkle with salt and olive oil
5. Jerky: Homemade or otherwise minimally processed
6. Macadamia nuts: Probably the ultimate healthy, incredibly satisfying between-meal snack.
7. Olives: A great source of monounsaturated fatty acids
8. Vegetables with nut butter spread
MEAT AND FOWL

Meat, fowl, fish, and eggs provide the bulk of your dietary calories when eating Primally. These foods are excellent sources of saturated fat and complete protein that support all facets of health, energy, weight control, and peak performance. The best end of the spectrum for meat and fowl starts with a lean, high omega-3 wild animal brought down by bow and arrow in the Alaskan wilderness. Next would be a pastured or 100-percent grass-fed animal raised in your local area. USDA-certified organic animals (easily identified with the simple green circular logo) actually rank behind local, pasture-raised animals that may not be officially certified. Organic animals have access to the outdoors by law, but are typically fed grains. In many cases, they may be nutritionally inferior to animals raised in pastures and that eat mostly grass, bugs and other elements of their natural diet that boost levels of omega-3 and other nutrients.

You can typically find local, pasture-raised animals at farmer’s markets, co-ops, or local butchers. USDA-certified organic products are prevalent at alternative grocers such as Whole Foods, Trader Joe’s, Costco and other big-box stores, and independent alternative grocers. Beyond these premium options for meat, various other descriptive terminologies (free-range, hormone/antibiotic-free, natural/vegetarian diet, etc.) are used on products, but regulation is loose, and the labeling may be of limited value in choosing the cleanest available option. Pages 120-121 in the Primal Blueprint provide further details about various terms used on packaged meat.

Unfortunately, the vast majority of animal products offered today are produced by Concentrated Animal Feeding Operations (CAFO) and are far inferior to pasture-raised or organic animal. CAFO animals typically contain hormones (to promote faster growth and increase profits), pesticides (ingested from inferior feed sources), and antibiotics (to prevent infection from living in cramped, dirty quarters).
Due to a diet based largely on grains—as opposed to the grasses (in the case of cattle) and bugs (in the case of chickens) that these animals evolved to thrive upon—CAFO animals are generally malnourished, higher in unhealthy omega-6 fatty acids, and deficient in the more preferable omega-3 fatty acids. Furthermore, many consumers have sincere objections about the inhumane treatment and processing of these animals. Besides the health and humane objections of CAFO production, the meat can taste discernibly less palatable than that of a naturally raised animal: bland, spongy, full of unnatural fats, and devoid of rich flavor. Meat from a pastured animal will have a rich, flavorful taste—a difference you can taste on your first bite. Make it a high priority to find locally and humanely raised animals, or certified organic products. “Clean” meat and fowl can cost significantly more than CAFO, but it tastes better, is better for you, and supports a greener, more sustainable planet.

If you can’t budget for grass-fed, grass-finished, or pastured meats or fowl all of the time, or if you are unable to source meats on the higher end of the spectrum, take comfort in knowing that partaking of a CAFO animal once in a while is still preferable to a life fueled on cereal, bread, pasta, and other sugar burner staples. When you find yourself taking advantage of that CAFO special in the supermarket, simply make a few adjustments, such as trimming the excess fat off the cut (not necessary with a pastured animal), and using butter to cook. Take care not to over-sear the meat, for carcinogens are present in blackened meat.
VEGGING OUT

While I’ve conveyed the health objections of eating CAFO meat, I will stop far short of the sensationalism and scare tactics dispensed by some anti-animal advocates. Humans evolved and thrived for two million years eating a diet centered on animal products. The potential concerns of ingesting toxins related to CAFO production can be minimized by proper cooking (don’t burn meat, trim excess fat), and by eating abundant servings of high-antioxidant plant foods. While I respect the humane concerns voiced by vegetarians, and agree with those critical of CAFO production, avoiding meat is problematic from a health standpoint because too many calories will come from processed carbohydrates by default.

The health benefits of a plant-heavy diet are undeniable, but vegetarians and vegans cannot escape the reality that health, weight control, and disease prevention is still all about eating foods that our genes expect. The risk factors for heart disease and systemic inflammation will likely be minimized if you go vegetarian instead of eating lots of CAFO mixed in with excessive grains and sugars. Nevertheless, struggles with lifelong insidious weight gain, energy level fluctuations, the glucose-insulin-cortisol burnout cycle, and other perils of a sugar burner metabolism are inescapable. The fact remains that no culture in the history of humanity has ever survived for a sustained period of time when eating a completely vegetarian diet.

If one must eat vegetarian, I would argue for maximum possible inclusion. Integrating oily, cold water fish, pastured eggs, high-fat dairy, macadamia and other nuts and seeds, high-antioxidant fruits, and tons of vegetables can make for an exceptionally healthy diet without disturbing the farm animals.
EGGS

Eggs can be enjoyed in abundance as a centerpiece of a healthy diet. Hopefully by now you can reject the unfounded and highly objectionable Conventional Wisdom that egg intake should be moderated (or whites should be consumed instead of yolks) due to cholesterol concerns. Egg yolk is one of the most nutritious foods on the planet, brimming with antioxidant and anti-inflammatory agents, a complete amino acid profile, omega-3 fats, saturated fats, vitamins A, E, K2, and B complex, and healthy cholesterol.

Strive to consume eggs from pastured chickens in your local area. They are highest on the spectrum. This often necessitates buying from a farmer’s market or directly from a small farm or hobbyist with a few hens. Chickens afforded their natural omnivorous diet of bugs, lizards, worms, and grass can produce eggs with up to ten times more omega-3s than conventionally-raised eggs. Anyone who has tried a farm-fresh egg from a pasture-raised chicken can attest to the incredible flavor intensity—and distinctive orange-tinted yolk (from beta-carotene)—in comparison with a conventional egg.

Next, organic eggs are preferable to CAFO since they are free of objectionable hormones, pesticides, and antibiotics, and are probably afforded less crowded and more sanitary living conditions. However, eggs labeled organic, free-range, or vegetarian are slightly nutritionally inferior to pasture-raised eggs due to a diet centered on grain feed and questionable access to an outdoor, active lifestyle. Furthermore, eggs obtained through mainstream channels can routinely be 30 days old when sitting on the shelf. Being able to easily crack or peel the shell of a hard-boiled egg can indicate an aged egg with diminished nutritional value.

The budget impact of buying at the top of the spectrum with pastured or organic eggs is minimal, so settle for nothing less than the best you can find. For your food budget’s nutritional return on investment, nothing beats four bucks for a dozen pastured eggs. You can also get a little adventurous and sample something besides chicken eggs. Caviar/roe, duck, emu, goose, ostrich, pheasant, and quail eggs offer distinct tastes, excellent nutritional value, and are free from the objections of eggs pumped through the CAFO pipeline.
FISH

Fish offer excellent nutritional value from complete protein, B-complex vitamins, selenium, vitamin D, vitamin E, zinc, iron, magnesium, phosphorous, antioxidants, and other nutrients. Regular consumption of fish has a strong anti-inflammatory effect and can reduce heart attack risks. Due to concerns (some warranted, some overblown, as we’ll discuss shortly) about ingesting contaminants from polluted waters and commercial farming methods, some selectivity and moderation is warranted in order to choose the most nutritious fish.

Oily, cold water fish from remote, pollution-free waters are some of the most nutrient-rich foods on the planet. No other food even comes close to the abundant omega-3 levels in wild-caught salmon, sardines, herring, mackerel, and anchovies.

The Monterey Bay Aquarium (montereybayaquarium.org) provides extensive guidance for choosing healthier, ocean-friendly seafood, including a handy downloadable pocket guide. The Environmental Defense Fund (edf.com) publishes a Seafood Health Alerts list, showing the maximum number of safe servings per month for various types of fish. It can get a little tricky evaluating the various species, fishing methods, and catch locations to determine what is healthy. Furthermore, irrational scare tactics are often deployed to discourage fish consumption due to toxin concerns.

Historically, one of the bigger concerns in consuming lots of fish was the possibility that fish at the top of the food chain could contain more mercury, a heavy metal that is toxic to humans when present at certain detectable levels. This led to the concern that people should limit their consumption of fish at the top of the food chain (tuna, swordfish, sharks, etc). As the poster from the Western Pacific Regional Fishery Management Council on the facing page reveals, most every Pacific fish except sword and shark has substantial levels of selenium, a substance that actually counteracts mercury toxicity. “Our favorite fish are more likely to protect against mercury toxicity than cause it,” according to the Council.

Staying lower on the food chain, favoring the least objectionable catching methods (troll or pole-caught fish over commercial longline operations), and eating a plant-heavy diet high in antioxidants should alleviate most of your concerns about consuming contaminating fish. If you are especially vulnerable to toxin ingestion (small children, pregnant or nursing mothers) or otherwise still harbor concerns, pay close attention to spectrum variables: favorable catch methods, remote, pollution-free waters, and fish lower on the food chain. For example, choosing “light” canned tuna over white or albacore tuna will reduce mercury risks, which are already low with canned tuna since it generally comes from smaller fish than the steaks offered in restaurants or fish markets.

I suggest that you avoid most farmed fish as a general rule. Their highly objectionable production methods can compromise your health in return for minimal nutritional benefit. Most farmed fish are raised in cramped, unsanitary conditions, exposed to high levels of dangerous chemicals (dioxins, dieldrin, toxaphene, and other pesticides), and fed antibiotics to ward off infections. They are much lower in omega-3 and higher in omega-6 than wild-caught fish.

There are certain categories of farmed fish with minimal toxin levels and superior nutritional profiles that make them acceptable to consume. If you are going to eat farmed fish, insist on domestic sources...
to alleviate the risk posed by polluted waters and lax chemical regulations in high-producing countries such as China. Farmed shellfish are okay because they have similar living circumstances as wild shellfish and they don’t eat artificial foods (i.e., they are attached to a fixed object). Make a strong effort to eat fresh over frozen shellfish. Domestic barramundi, catfish, crayfish, and tilapia have impressive nutritional profiles and minimal toxin risks. Farmed trout from the United States or Canada is nutritionally comparable to wild trout, with minimal contaminant concerns, making it another sensible choice.

When it comes to farmed salmon, some strategic selection can support liberal consumption of this popular and nutrient-dense fish. Most of the farmed salmon available is the Atlantic species, and should be avoided due to concerns about industrial and environmental contamination and poor omega-6:omega-3 ratios. Freshwater tank-farmed coho salmon is a superior form of farmed salmon, and even regular farmed coho salmon has acceptable O6:O3 ratios to warrant liberal consumption.

For a budget-friendly, diverse, and delicious fish consumption strategy, emphasize canned sources of high omega-3 fish such as herring, mackerel, sardines, and light tuna. For salmon, splurge on fresh wild-caught occasionally, enjoy budget-friendly wild-caught salmon that is frozen, canned, or smoked (found at Trader Joe’s, big boxes stores, or Internet resources), and try to find coho if you eat farmed. Supplement with other sources of wild-caught fish (ideally from remote, pollution-free waters) as budget allows, and enjoy domestic sources of the aforementioned approved farmed species.
For smart shopping, cultivate a relationship with a local dedicated fish market or farmer’s market vendor. Fish from a specialty vendor is more likely to be fresh than grocery store fare. Take aggressive, close-up sniffs of the offerings. Odor should be nonexistent for fresh water fish and perhaps a faint ocean smell for salt water fish. Bad fish will have the unmistakable smell of well, bad fish. Inquire about the source of the fish and stay away from Chinese or Asian imports, both farmed and wild-caught. Finally, be advised that the safety, quality, and sustainability of fish are in constant flux. Check resources such as the Marine Stewardship Council, Monterey Bay Aquarium Seafood Watch, and the Environmental Defense Fund for up-to-date information.

VEGETABLES

Vegetables offer excellent antioxidant, micronutrient, and anti-inflammatory properties and should form the bulk of your diet relating to portion sizes (high-fat animal products will provide the bulk of your calories). Adjust your mentality to make veggies a centerpiece of your meals and snacks. Get comfortable with consuming larger quantities than SAD traditions call for. Be confident that it takes a whole heap of veggies to even come close to maxing out your carbohydrate “budget” for the day. Why not enjoy an entire bowl of garden fresh tomatoes, a bag of cooked spinach, or a head of broccoli for lunch one day? Experiment with recipes in the Primal Blueprint cookbooks to discover creative, flavorful, vegetable-dominant dishes.

As with animal products, strive to emphasize locally grown vegetables for freshness, taste, and maximum nutrient value. Local produce ranks above anything grown remotely—even remotely grown organic vegetables—because the health benefits are compromised when produce is picked early and transported long distances to your market. Most local farm operations are unlikely to use objectionable pesticides and growing methods common with large commercial operators, even if they don’t assume the expense and hassle of obtaining government-certified organic status. Produce grown without heavy chemical influence yields higher levels of natural antioxidants (to ward off garden pests), resulting in substantially higher nutritional value and fewer health concerns than conventionally grown produce.

Make an effort to avoid conventionally grown vegetables that have large surface areas or thin, edible skins that make them more difficult to soak and wash. For example, leafy greens (lettuce, spinach,
kale) and bell peppers are often treated with potent pesticides that are difficult to fully mitigate before eating. Conversely, vegetables with an easily washable or non-edible skin (asparagus, avocados, onions, etc.) carry minimal pesticide risk. Try to stay away from genetically modified vegetables, which may raise health and philosophical objections. Avoid conventional products grown remotely, since they have typically been picked too early, artificially ripened with ethylene gas during or after shipment, and have nowhere near the taste or nutrient density of local produce.

You may have read how various color groups of vegetables offer specific health benefits: reds are believed to help prevent prostate cancer, greens contribute to anti-aging and vision, yellow and orange aid immune support and digestion, and so on. It’s nice to appreciate all these targeted benefits, but I prefer to focus on the big picture of abundant vegetable consumption to promote general health. Besides, they taste great. Be wary of slipping into the “fix it” mentality of the Standard American Diet, where one bandwagon after another is rolled out on the heels of a headline study about the amazing healing properties of the latest superfood or pharmaceutical. Here is a quick list of some of the vegetables with the highest antioxidant values: beets, broccoli, Brussels sprouts, carrots, cauliflower, eggplant, garlic, kale, onion, red bell peppers, spinach, and yellow squash.
FRUITS

While fruits are excellent sources of fiber, vitamins, minerals, phenols, antioxidants, and other micronutrients, some moderation is warranted for a few reasons. First, modern cultivation and chemical treatments have resulted in fruits that are large, brightly colored, uniformly shaped, and extra sweet, with much less micro-nutrition than the small, varied, highly fibrous, deep-colored, less sugary, and less insulin-stimulating fruits that Grok foraged for. Second, these overly-sweetened beauty queens are available year-round thanks to modern growing and transportation methods. Third, fructose (the predominant carbohydrate form contained in fruit) can cause significant metabolic problems when consumed in excess, particularly in conjunction with wildly excessive SAD carbohydrate intake.

When fructose (the carbohydrate form contained in fruit) is consumed, it’s converted in the liver into not only usable carbohydrate in the form of glucose, but also into triglycerides (fat). For heavy exercisers who regularly deplete muscle glycogen, fruit is a great choice to efficiently reload liver glycogen. If your glycogen stores are already full, your strawberry will quickly convert into fat in the liver, and then get dumped into the bloodstream. High blood triglycerides interfere with the function of the hormone leptin, causing you to want to overeat rather than rely on your stored body fat for energy. Possibly one-third of the population is fructose intolerant to some degree, evidenced by digestive symptoms such as flatulence, cramps, bloating, irritable bowel syndrome, and diarrhea. Excessive fructose consumption is also linked to fatigue, insulin resistance, diabetes, and high blood pressure. Yep, eating too much fruit can make you fat...even more so than eating too much fat, since at least fat will make you feel full!

The most simple and sensible approach is to try and emulate Grok by eating fruits only during their natural local ripening seasons (exceptions granted if you live in a fruit-challenged climate), especially if you are trying to shed excess body fat. Make a concerted effort (particularly with children) to rinse off fruit with a soft edible skin, such as berries. Don’t worry about fruits with thick, peeled skins (bananas, oranges, etc.).
If you’re bristling about moderating intake of some of the most nutrient-dense foods on the planet, let’s keep some perspective here. I’m not trying to project a “carbophobe” vibe a la Atkins, but the numbers on the Primal Blueprint Carbohydrate Curve must be respected. Ditch grains, sugars, and legumes, and you shouldn’t have to worry about excess body fat, or splitting hairs over fruit intake. However, any free license to consume fruit is granted on the assumption that you have eliminated all forms of processed fructose from your diet, such as sweetened beverages, condiments, and other hidden forms of fructose.

**Fruit Power Rankings**

You can be more selective by considering a fruit’s growing methods, pesticide risk and glycemic/antioxidant values (high-antioxidant, low-glycemic fruits being the best). Each list is ranked in order of best to worst.

**Growing Methods**
1. Wild: Hard to find so plant your own or hit the farmer’s market!
2. Local organic: Superior choice for nutritional value, taste, and safety.
3. Local conventional: Fresh-picked, sustainable community benefits.
5. Remote conventional: Avoid due to diminished nutritional value and pesticide risk. (Hint: if it’s out of season in your area, don’t eat it!)

**Nutritional Value**
1. Outstanding - high-antioxidant, low-glycemic: all berries, most stone (pitted) fruits (cherries, prunes, peaches, apricots).
2. Great - lower-antioxidant, higher-glycemic: apples, bananas, figs, grapefruit, kiwi, pears, pomegranates.
3. Exercise some moderation (or avoid, if you are trying to lose body fat) - low-antioxidant, high-glycemic: dates, dried fruits (all), grapes, mangoes, melons, nectarines, oranges, papayas, pineapples, plums, tangerines.

**Pesticide Risk**
1. High risk - soft, edible skin: apples, apricots, cherries, concentrated juices, grapes, nectarines, peaches, pears, raisins, raspberries, strawberries, tomatoes.
2. Low risk - tough, inedible skin: bananas, avocados, melons, oranges, tangerines, mandarins, pineapples, kiwis, mangoes, papayas, etc.
MACADAMIA NUTS

Macadamia nuts earn a distinction above other nuts and seeds because of their superior nutritional value. They are predominantly monounsaturated fat (84 percent—more than any other nut or seed), which is less likely to be stored as fat and helps raise HDL and lower LDL. They have the most favorable O6:O3 ratio of any nut (actually with minimal amounts of both). Macadamias contain all of the essential amino acids, various forms of healthy fiber, high levels of vitamins, minerals, and plant nutrients, and only trace amounts of carbohydrate. The flavonoids and tocopherols in macadamia nuts offer excellent antioxidant properties. They have a rich and satisfying taste, making them a great snack. Macadamia nut butter is hard to find, but worth the effort and additional expense. Check out ArtisanaFoods.com for 100-percent raw, organic macadamic/cashew nut butter, and many other nut butters and natural products that are delicious.

FATS AND OILS

It’s especially important to honor the spectrum in this category, since good fats offer tremendous health benefits and bad fats are quite destructive. For eating, the best fats are the aforementioned pastured/organic animal products, oily, cold water fish, macadamia nuts, avocados, coconut products, and extra-virgin olive oil. Emphasize locally (or at least domestically) grown olive oil with the “first cold-press only” distinction (contact manufacturer to confirm), and stay away from imported brands that are often over-processed, mixed with objectionable agents such as PUFA, and aged. The use of the “extra-virgin” moniker is loosely regulated, and there is a tremendous disparity in quality between local extra-virgin olive oil and imports. Visit lucerooliveoil.com to learn more about superior growing and harvesting methods used by this small family business in Northern California.

If you are not a big fish eater and wish to supplement your omega-3 intake, you can find refrigerated omega-3 oils in dark containers in the health food store, but look for something other than flax oil. While flax is the most common offering and is high in omega-3, recent research suggests that the predominant type of omega-3 found in flax oil, alpha-linoleic acid (ALA), is difficult to assimilate in the body. It must be enzymatically converted into the more useful omega-3 fractions: docosahexanoic acid (DHA) and eicosapentanoic acid (EPA). Even then, there’s still no guarantee that your body will handle that conversion efficiently. Some alternative offerings you might find are borage, cod liver, krill, salmon, and hemp seed.
Pharmaceutical-grade omega-3 fish oil capsules, high in DHA and EPA, offer an excellent budget-friendly alternative to boost omega-3 levels.

For cooking, saturated fats are more temperature stable than PUFAs, so you can heat them to high temperatures without risk of oxidization and resulting damage to cell membranes. Coconut oil, the most saturated of all vegetable oils, is a great choice for cooking, as is palm oil. Animal fats such as butter, ghee, lard, recycled bacon grease, and tallow are all excellent options for cooking. Isn’t it fascinating how so many of the things we were told were bad for us are actually very healthy?

Make a strong effort to completely eliminate trans, partially hydrogenated, and PUFA fats from your diet, which should happen automatically when you reject heavily processed, packaged, frozen, and fried foods (that are often made with grains as well). Replace PUFA products such as canola oil, soybean oil, safflower oil, corn oil, and margarine spreads with butter and extra-virgin olive oil for eating, and coconut oil or animal fats for cooking.

MODERATION FOODS

While I respect the hard-core Primal/paleo eaters who apply stringent guidelines to reject all “modern” foods, I believe it’s more important to make the Primal eating style as enjoyable and accessible to as many people as possible. These categories of foods are acceptable in moderation in the Primal eating style.

**High-fat dairy products:** While dairy should not be a centerpiece of your diet, if you are lactose tolerant and feel a need to keep some dairy on your menu, you can enjoy certain dairy products at the highest end of the spectrum. The best choices are raw, fermented, unpasteurized, unsweetened, and high-fat options such as ghee, butter, full cream, aged cheese, cottage cheese, cream cheese, Greek-style full fat yogurt, half and half, kefir, and raw whole milk. Stick to pasture-raised/grass-fed or organic dairy products to avoid the hormones, pesticides, and antibiotics common in commercial dairy products. Eliminate fruit-sweetened yogurt, frozen desserts, and other high-carb dairy offerings. Stay completely away from regular pasteurized, homogenized, two-percent, and skim milk.

If you can source them in your area, raw and unpasteurized dairy products are recommended. That’s right, some exposure to beneficial bacteria from raw foods helps strengthen your immune system, while the pasteurization process greatly compromises a product’s nutritional value. Dairy products made by CAFO require pasteur-
ization due to the high risk of food-borne illness in crowded commercial plants, which is why it's best to choose alternatives made in cleaner environments. Fermented dairy products offer exposure to beneficial probiotics, promoting digestive health and decreasing cancer risk. Fermentation also breaks down lactose, reducing the carbohydrate content and preventing digestive problems in sensitive folks.

“**The best choices in dairy are raw, fermented, unpasteurized, unsweetened, and high-fat products from pasture-raised/grass-fed animals.**”

Giving up conventional low-fat dairy products relieves you of lactose sugar (difficult to digest and stimulates excessive insulin production), casein (an objectionable protein with immune-compromising properties), epidural growth factor (EGF—increases risk of cancer and tumor growth), recombinant bovine growth hormone (rBGH—increases milk production but makes cows—and humans—sick), and other hormones, pesticides, and antibiotics. Furthermore, the calcium benefits of dairy are overblown. A typical grain-based diet can grossly interfere with calcium absorption, making people think they need even more calcium.

Ultimately, SAD eating can actually result in excessive calcium intake, altering the critical balance of calcium-to-magnesium in the body. It’s more worthwhile to focus on increasing magnesium intake from leafy greens, nuts, seeds, and fish. For bone health, getting enough vitamin D from sunlight is exponentially more beneficial than slamming down a glass of milk every day. An eight-ounce glass of fortified milk offers around 100 I.U. of vitamin D, while 20-40 minutes of direct sun exposure in a swimsuit offers around 10,000 I.U.

**Other nuts, seeds, and their derivative butters:** Nuts are fairly good sources of protein, fatty acids, enzymes, antioxidants, and vitamins and minerals. Their incredible nutrient density allows you to consume fewer calories to satisfy your hunger and energy needs compared to grain-based processed snacks. But be careful: some people find that they overdo the nuts when eating Primally, especially as snacks, and take in more calories than they may have guessed. When you ingest significant fat calories from nuts, your body won’t look to your stored fat as easily for energy. Also, some moderation is warranted in order to achieve a favorable overall dietary omega-6:omega-3 ratio. For example, walnuts are lauded for being a great source of omega-3s (highest of any nut or seed), but they are five times higher in omega-6 than omega-3.
Pumpkin seeds have the most favorable ratio among seeds, with significant values of omega-3s and “only” double that level of omega-6. Enjoy various other nuts and seeds as salad toppings or snacks, but emphasize calories from macadamia nuts, vegetables, and animal foods when replacing calories previously obtained from grain foods. Also keep in mind that peanuts are actually legumes, not nuts, and should be minimized or avoided since they are highly allergenic and can develop molds that produce aflatoxin, a potent carcinogen.

Nuts are good for about six months (twelve months if still shelled) and are best stored in a cool, dry place. Use the refrigerator or freezer if you don’t plan to eat them quickly. If your nuts have a rancid, oily smell or any discoloration, discard them immediately. Don’t concern yourself with organic versus conventional, since virtually all nuts grown in the US are grown conventionally, and pesticide exposure is insignificant due to the protection of hard exterior shells. Nut and seed butters are a great snack option. Try to find raw, cold-processed butters that are simply ground up (at low temperatures and free of added ingredients—except salt, which is fine), and refrigerate them at all times.

**Supplemental carbs:** Sweet potatoes (the orange variety are typically called yams), quinoa, and wild rice offer the most healthful source of carbohydrates for heavy exercisers who require additional dietary carbohydrates to replenish frequently depleted muscle glycogen. The select few folks who fall into the “need supplemental carbs” category are effortlessly maintaining ideal body fat levels and train so heavily that bonking (a sudden and severe drop in energy) and delayed recovery are occasional concerns when limiting intake of processed carbohydrates—think Tour de France cyclists, NBA basketball players, or high school cross country runners.

For the rest of us, instead of obsessing on “reloading” with carbs as Conventional Wisdom has harped upon for decades, it is better to prioritize obtaining the adequate number of dietary protein grams for your bodyweight and activity level. The recommended range is .7-1 gram per pound of lean mass per day, depending on your activity level. Meeting your protein needs will help preserve or build muscle tissue, and also facilitate gluconeogenesis (to replenish muscle glycogen and keep blood glucose stable), even when dietary carbohydrate is limited.
If you decide to eat more carbs, sweet potatoes and yams are superior to the excessively starchy white, russet, red, or new potatoes. Quinoa is technically not a cereal grain, but a chenopod—closely related to beets, spinach, and tumbleweeds. Vegetarians (and even Primal enthusiasts who harken for a grain-like taste or recipe base) laud quinoa for being a complete protein (containing all nine essential amino acids, with 12-18 percent of total calories as protein) and free from gluten.

Wild rice is also not a cereal grain but an aquatic grass. It offers a better nutritional value than cereal grains, a nearly complete profile of essential amino acids (14 percent protein calories), and is gluten-free. Quinoa and wild rice are the best options if you must have a grain-type experience. Categorize these supplemental carbohydrate foods as an indulgence. They may be enjoyable, but are likely unnecessary—especially if you are trying to reduce excess body fat.

BEVERAGES

After purging your fridge of sweetened beverages, you are not left with many options, but you will also be giving your system a nice break from the insulin surges prompted by the juices, smoothies, sodas, and sporty concoctions consumed in excess in the SAD (not to mention HFCS, bone-depleting phosphoric acid, and other chemicals and preservatives contained in many processed drinks). Fruit and vegetable juices, even fresh from the juice grinder bursting with antioxidants, are really not necessary. The large dose of sugar and resultant insulin surge overshadow any purported super-nutrition benefits. I’d prefer you focus on consuming whole food sources of produce instead of juicing.

Water will become your go-to beverage, but it’s important to reject the groundless Conventional Wisdom notion that you must robotically pound eight glasses per day to be healthy. This assertion is completely unsupported by science, and can potentially lead to some digestive and health problems associated with excessive intake. In fact, your thirst mechanism and your kidneys do an excellent job at regulating your hydration levels, and every beverage and solid food you eat contributes to hydration to some degree. Rather than worry or obsessively track your water intake, simply let your thirst be the guide.
Conventional Wisdom’s recommendation to drink eight glasses of water per day is unsupported by science. Simply let your thirst mechanism guide you to optimum fluid intake.

Certain other beverages are Primal-approved. Club soda or mineral water can add some pizazz to an ordinary glass of water and help assuage the elimination of a soda habit where carbonation is part of your comfort ritual. Add a squeeze of lemon and/or lime, a handful of berries, and a pinch of sea salt for some extra taste. Teas can be a great way to boost antioxidant intake and spice up beverages. Potent “true” teas (white, green, black) offer anti-inflammatory and immune supporting benefits, thereby protecting against cardiovascular disease, osteoporosis, arthritis, and possibly even some cancers. For all varieties, go for the freshest leaves possible, and use loose leaves or sachets over bags. You may find it convenient to make large batches of tea and chill them for later use.

Coffee may not have been part of Grok’s daily routine, but I enjoy my daily cup and see no reason to avoid it for health reasons. Since caffeinated coffee is a mild central nervous system stimulant, it’s important to refrain from using coffee as a crutch to prop up sagging energy levels, and to moderate your overall caffeine intake to avoid becoming habituated. Instead, choose decaf for your second cup of the day, engage in good sleeping habits, moderate insulin production in your diet, exercise Primally, and boost energy naturally with cold water plunges, deep breathing sequences, napping, or quick exercise breaks after long periods of inactivity. Make an effort to find organic, fair-trade coffee due to questionable chemical and pesticide use in some major coffee-producing countries. Darker roasts contain less caffeine, are more flavorful, and offer more health benefits.

HERBS AND SPICES

Herbs and spices are an important element of the Primal eating style due to the variety of flavor and nutritional benefits they offer. Herbs are green plants or plant parts used to add flavor to foods. Spices are used to enhance flavor, add color, or help prevent bacterial growth on food. Herbs and spices support cardiovascular and metabolic health, may help prevent cancer and other diseases, and
improve mental health and cognition. Some of the highest antioxidant values of all foods can be found among herbs and spices.

When used in cooked meat dishes, herbs and spices also reduce fat oxidation and the formation of potentially harmful compounds. Both dried and fresh herbs and spices offer excellent antioxidant values. Try to find organic sources for dried herbs, since conventional products are usually irradiated (diminishing nutritional value) and pesticide residues are easily ingested. Here are some flavorful herbs and spices with excellent antioxidant values that should be used regularly in your kitchen.

- Basil
- Black pepper
- Cayenne pepper
- Chili pepper
- Cilantro
- Coriander seeds
- Cinnamon
- Cloves
- Cumin seeds
- Dill
- Ginger
- Mint
- Mustard seeds
- Nutmeg
- Oregano
- Paprika
- Parsley
- Peppermint
- Rosemary
- Sage
- Tarragon
- Thyme
- Turmeric

Regarding salt, Primal eating will default you into an optimum intake range for sodium. Cutting out processed foods will remove several thousand milligrams of sodium from your diet, and consequently diminish your cravings for more. If you enjoy the flavor of salt, go ahead and shake a reasonable amount on your food without trepidation. There is actually a very minimal correlation between sodium intake and high blood pressure or heart disease. Your best choice is sea salt, which is richer in minerals and trace elements than is table salt, which has been nutritionally diluted by the refinement process.

SENSIBLE INDULGENCES

Sensible indulgences honor the Primal Blueprint philosophy of enjoying life and not stressing about perfection. They can enhance your appreciation of food and the celebration of life’s great moments with friends and family. To fully appreciate an indulgence, you must adopt a guilt-free mentality, focus intently on the pleasure of the experience, and of course observe a moderate approach. After all, too much of a good thing is not good at all.

Alcohol: I could officially recommend that you don’t drink alcohol at all, since the ethanol part of alcoholic drinks is a potent toxin. However, limited intake of certain alcoholic beverages should not harm you, and can actually deliver some antioxidant benefits. Obviously, drinking moderately and responsibly is critical. Your “when to say when” point can be ascertained by common sense, gender and body-weight, historic tolerance level, and environmental influences (Do you have to drive home? Are you tired, stressed, hungry, or otherwise potentially more susceptible at this particular time?).

Red wine is the superior alcoholic beverage choice for its impressive antioxidant benefits. Beer is marginal (after all, it’s made from grain!), while hard liquor and mixed drinks using sweetened beverages are the most objectionable. Note that alcohol calories (at seven per gram) are devoid of nutritional value and are generally the first to burn when ingested, which means burning stored body fat is interrupted while you indulge.
**Dark chocolate:** If you have a sweet tooth that is challenging your Primal transition, prioritize dark chocolate as a sensible indulgence. It has one of the highest antioxidant values of any food, along with brain-stimulating compounds, euphoric agents, and satisfying saturated fat. The key here is to find products with the highest possible cacao content. 75 percent or above is excellent, but as you get closer to 100 percent cacao, the lack of sweetness will make this indulgence tough to appreciate (85 percent is perfect for me). It may take a bit of time, but once you attune to the rich taste of high cacao content dark chocolate, you’ll likely lose your affinity for milk chocolate, which will consequently seem too sweet. Try to find organic chocolate due to pesticide concerns with cacao bean production in foreign countries.

**GOING PRIMAL ON A BUDGET**

One of the criticisms that really bugs me is when people claim Primal eating is prohibitively expensive. My gut reaction is, “expensive relative to what?” Consider the costs of obesity/metabolic syndrome care ($118 billion a year in the USA), cancer treatments, or the prolonged use of NSAIDs (heavy use can run over $200/month), statins ($50-$200/mo) and other popular prescription drugs used to combat health problems heavily influenced by poor dietary habits.

Now that I’ve calmed down a bit, how about a deeper analysis of the SAD food budget, with processed and fast foods, sweetened beverages, designer energy bars, meal replacement weight loss products, frozen and packaged treats, and the full complement of grain-based snacks to jack up the register totals? Going Primal will eliminate significant budget expenses for these foods, and transitioning over to the fat paradigm will likely reduce the number of daily calories you require to sustain energy (see Timothy Williams’s Success Story on page 65).

Granted, even if you eat less as a modern forager, it’s likely going to be higher cost stuff. Pastured or organic animal products can cost up to twice as much as conventional fare, while increased produce costs are not quite as severe but still significant. For argument’s sake, let’s say your overall food budget increases somewhat when you eat Primally. Can you reflect on the big picture, weigh the relative importance of various other discretionary expenses, and perhaps bump up the priority of your food budget a bit? Now that I have you in the proper frame of mind, let’s explore a few ways that you can eat Primally on a dime:
Alternative shopping: Farmer’s markets are at least competitive with major store prices, and great bargains can be had around closing time when vendors are packing up. Even Whole Foods Market, often maligned for catering to high income shoppers, has a house label—“365”—that offers an array of all-organic staple products at very competitive prices. Trader Joe’s bare bones shopping experience and private label products afford great savings, and Costco’s larger package sizes offer exceptional value, particularly with organic animal products that can be prohibitively expensive at specialty shops. Anne Brown, a MarksDailyApple.com reader in California, reports that her town’s specialty meat store (offering vastly superior local meats) has prices competitive to the local chain supermarket—likely due to reduced transportation, overhead, and advertising costs.

Home grown: Plant some seeds and get your backyard or urban garden plot going! It doesn’t get any cheaper—or more fun—than growing your own. Besides generating convenient, nutritious, inexpensive fresh produce, growing your own provides the psychological benefit of strengthening your connection to the food you eat in the age of industrialization. The same is true for hunting the animals you eat, if that’s your thing. Check MarksDailyApple.com for posts on “urban gardening.”

Storage: Invest in a chest freezer and avail yourself of discounts for buying in bulk—either from cowpooling, big box stores, the Internet, or other sources.

Work: Put in some part-time hours at a local co-op or alternative grocer to enhance your food education and enjoy employee purchase discounts typically ranging from 10 to 25 percent.

Honoring the 80 Percent Rule

Navigating the spectrum can get a little complex and potentially intimidating, so this is a good time to discuss one of the founding principles of the Primal Blueprint, the 80 Percent Rule. The essence of this rule is to do the best you can to stay aligned with healthy living, eat at the highest end of the spectrum, and promote optimal gene expression, but not to stress about perfection. When you establish a foundation of healthy habits, your body can become quite resilient to the occasional late night of revelry, indulgent slice of cheesecake, or long evening in front of the computer working on a deadline project. Living Primally is about waking up the next morning, recalibrating your compass, and getting back on course to honor your genes after occasional detours.

To be clear, I’m not offering a free pass to leave grain meals and chronic cardio workouts intact in your daily schedule. The spirit of the 80 Percent Rule is to strive for 100 percent compliance, and accept an 80 percent success rate due to the pressures, distractions, and logistical challenges of living Primally in the modern world.
EXERCISE PRIMALLY-MOVE, LIFT, AND SPRINT!

The Primal Blueprint Fitness plan is within reach of everyone, from sedentary folks just embarking on fitness pursuits, to reformed Chronic Cardio athletes and gym rats looking for a more sensible, time-efficient, and fun way to get fit, or even super-fit. The basic framework of Primal Blueprint Fitness is to move as much as possible at a low-level pace, both through structured aerobic workouts and general efforts to increase daily activity (e.g., stairs instead of elevators); conduct two high-intensity strength training sessions per week lasting 30 minutes or less; and conduct a brief, all-out sprint workout once every 7-10 days.

MOVING FREQUENTLY

You learned in the Key Concepts that exercise isn’t about calories burned, but about movement. It’s imperative to discover ways to simply move around more, even if only for brief periods, throughout your day. Make it official personal policy to take stairs instead of elevators, park at the farthest spot in parking lots instead of always angling for a closer one, and generally prioritize pedestrian movement over sedentary options. Here are several tips to add more movement to your daily routine:

- **Wake-up stroll:** Grab the dog and take a lap around the block to gradually build energy and prepare for a busy day. Even if you only have 5-10 minutes to spare in the morning, it’s well worth the effort.

- **Brief work breaks:** Mounting evidence suggests that work productivity, mental health, and stress management can improve significantly when you moderate digital stimulation and take frequent breaks away from focused, sedentary tasks to engage with fresh air, sunlight, open space, and physical movement. Get outside and stroll around the office courtyard, up and down the building stairwell, or otherwise make due with whatever your surroundings. When you sit back down at your desk, you will have a perceptible improvement in energy and focus.

- **Stroll before arriving home:** When you pull into the driveway after a long day behind the desk, behind the wheel, and behind in paperwork, hit the road for 5-10 minutes before you kill the momentum by opening the front door. You may be justifiably tired and dreaming of a cold beer and a soft couch, but you will get energized and refreshed by a simple stroll.

- **After-dinner stroll:** This is a great one to involve the entire family. Clear the plates, throw on some Vibram FiveFinger shoes (to simulate a barefoot experience—check out vibramfivefingers.com), and take dogs and/or
humans on a spin around the block. Regular 10- to 20-minute outings will establish a wonderful tradition of winding down the evening and present an appealing alternative to going from the dinner table straight into the TV or computer room. Take some deep breaths, share some conversation, and return to your abode with a perspective shift that there is more to the great American evening of leisure than digital media.

- **Grand weekend outing:** Take a trail hike at a regional park, or an urban journey downtown to the farmer’s market and back home. Set a reasonable goal based on your existing fitness level. Most everyone can walk or bicycle for at least an hour at a comfortable pace, and many can enjoy a two- or three-hour hike.

![Hiking in the Santa Monica mountains with Carrie. Sometimes we’ll explore new trails for several hours, but I’ll also frequently pop out for a simple, hour-long hike to clear my head during a workday.](image)

**AEROBIC WORKOUTS**

An aerobic workout is defined as anything that elevates your heart rate into the target zone of 55-75 percent of maximum for a sustained period of time. You can choose activities that are most appealing to you: brisk walking (or jogging if you are fit enough to stay under 75 percent), easy cycling (on a stationary machine or cruising around town for errands), various cardio machines at the gym, or winter/water activities such as snowshoeing, cross country skiing, swimming, rowing, and stand-up paddling (shameless plug for one of my favorite pastimes). Use some caution when doing a group exercise class or outdoor workout, because peppy instructors, pulsating music, and enthusiastic training partners can easily elevate your heart rate out of the aerobic zone and promote a chronic exercise pattern.
Exercising at 55 percent of maximum feels really easy—most people will get there while walking around the block. Seventy-five percent of your max heart rate still feels quite easy; you can carry on a conversation without getting winded, and end your session feeling refreshed instead of depleted. To dial in your zone numbers, you can perform a strenuous maximum heart rate test (get medical clearance first) or use a formula to estimate your max. The long-standard “220 minus age” formula is now believed to produce material inaccuracies in some people, so we recommend a new formula from University of Colorado researchers as follows: 208 minus (0.7 times age) = Estimated Maximum Heart Rate. For example, a male aged 40 has an estimated max heart rate of 180 beats per minute \([208 - 28 (0.7 \times 40 = 28)]\). His aerobic zone upper limit would be 75 percent of 180, or 135 beats per minute.

“Exercising in the aerobic zone of 55-75 percent of maximum heart rate should feel quite comfortable and leave you feeling refreshed and energized after workouts.”

Use a wireless heart rate monitor (options abound starting at $50; Polar is the leading brand) for the most direct and accurate feedback of your heart rate during exercise. Otherwise, you can calculate your training heart rate by pausing during your workout and placing your finger against the carotid artery on the side of your neck, the best place to feel a strong pulse. Check your watch and count how many beats occur in exactly 10 seconds. Multiply that number by six to determine your heart rate in beats per minute. That’s how I do it!

Please make an effort to regularly monitor heart rate after you get into the rhythm of your workout, particularly at times when you encounter a challenge such as a hill (or an obnoxious poser passing you abruptly on the bike path) that would necessitate some restraint. Going by perceived exertion alone can cause you to exceed the recommended zone because a 75 percent effort feels so moderate, and in many cases is well below your typical workout intensity level.

Don’t worry too much about monitoring the lower end of 55 percent of maximum heart rate. Super fit folks might have to escalate their walking pace a bit to reach 55 percent and achieve the desired aerobic training effect, but most of us will reach that minimum level simply by putting one foot in front of the other. There is also a subjective component of proper aerobic workout intensity to respect. Aerobic sessions are designed to energize and refresh you. If you feel at all
taxed or detect a craving for sugar after a session, it’s a safe bet that you have drifted outside your aero-
bic zone and compromised the desired effect of the workout.

During the 21-Day Challenge detailed in the next section, a sensible pattern of Primal workouts is sug-
gested, including a total of eight (if all goes well) aerobic workouts of either extended duration or mod-
erate duration. If “moderate duration” represents your typical session (say, between 20 and 45 minutes
for most exercisers), an “extended duration” workout is something significantly longer that stretches
your fitness capabilities. These are parameters that you will specify based on your workout history. As
your fitness progresses, you can lengthen the duration of both your moderate and extended duration
workouts while of course taking care to keep heart rate in the proper range.

**STRENGTH TRAINING SESSIONS**

Primal Blueprint Fitness is predicated on performing “functional” strength movements—exercises that
use many muscle groups at the same time for efforts that have broad, real-world application. There are
four Primal Essential Movements (PEMs) that form the basis of this training style: *pushups, pullups,
squats*, and *planks*. PEMs are simple movements that can be done by exercisers of all ability levels, in a
gym, at home, or adapted to include equipment if desired. During your 21-Day Challenge, you will
conduct a total of seven PEM workouts, either full-length (30 minutes) or abbreviated (10-15 minutes)
as directed.

A full-length session might entail two or three sets of maximum reps for each of the four aforementioned
PEMs. An abbreviated session might entail one or two sets of maximum reps for each PEM. Rest just enough
(30-60 seconds should do it) between each exercise to allow your respiration to return to near normal. If your
muscles fail before reaching the goal number of repetitions, rest for 5-10 seconds and then try to add a few
more reps to your total. However, don’t linger too long on any one exercise. Do as many reps as you can and
move along quickly.

All workouts should have a brief warmup period of two to five minutes of aerobic exercise to elevate body tem-
perature and transfer blood from your torso to your ex-
tremities in preparation for intense efforts. Try some
gentle jumping jacks, a few stair climbs, jogging (either in
place if indoors, or loop around your outdoor venue) or
using a stationary bike. After exercise, a gentle cool-down
session of a few minutes of light aerobic exercise and per-
haps some basic Primal stretches such as the Grok Hang
(pictured here) and the Grok Squat is advised.
Keep It Simple and Personal
I’d like to emphasize that the Primal approach to strength training is one of simplicity and flexibility. Fitness experts might debate various “right” ways to strength train, but I like to focus on the big picture view of developing lifelong functional fitness, enjoying yourself during workouts, tailoring your fitness endeavors to your lifestyle, and of course promoting optimal gene expression.

At MarksDailyApple.com, I’ve published a year’s worth of Workouts of the Week (WOW) with creative interpretations of the Primal Essential Movements, and hundreds of readers weigh in with suggestions to keep workouts fun and interesting. At some workouts, I’ll cycle through the PEMs in a linear fashion, while other days I may focus on a single exercise—such as pushups—and try to get 200 or 300 in over the course of 30 minutes or during three 10-minute sessions over the course of the morning hours. Sometimes I’ll do a set of PEMs, run a few wind sprints, do another set, run a few more sprints, etc., to complete a challenging workout. It all works!

If you are a creature of habit and prefer to do the same exact workout over and over, this is perfectly fine and will deliver exceptional fitness benefits. The popular notion of “confusing” your muscles with a never-ending stream of new exercises is not secretly super effective, nor is it inherently harmful. Let your workout choices be guided by personal preference, making sure to honor the “brief, intense” Primal philosophy. Of course, safety and competency with the movements you choose is also critical, which is why I recommend such a simple and scalable set of exercises.

Walking back to my car after a sprint workout on the beach, the retaining wall beckoned for some decline pushups!

If you are a novice, know that even a five-minute workout is beneficial. Get moving!
PRIMAL ESSENTIAL MOVEMENTS

Following are brief descriptions and illustrations of each PEM, and the progressions up to and beyond the baseline PEM. For more details on the Primal Essential Movements, visit MarksDailyApple.com for video instruction and a free ebook you can download, the 92-page Primal Blueprint Fitness Guidebook. The Guidebook has detailed descriptions of additional progression options for each PEM, as well as numerous advanced variations. However, the material here should be all you need to build a custom-designed total body strength training program, whether you are sedentary or quite fit.

Males - Essential Movement mastery: These mastery levels represent one set of maximum effort. If you fall short of any of these benchmarks, drop down to the appropriate progression exercise to build up your strength for a future attempt at reaching mastery numbers.

- 50 Pushups
- 12 Pullups (overhand grip)
- 50 Squats (thighs parallel to ground)
- Plank: 2 minutes holding the Forearm/Feet Plank position

Females - Essential Movement mastery:

- 20 Pushups
- 5 Pullups (overhand grip)
- 50 Squats (thighs parallel to ground)
- Plank: 2 minutes holding Forearm/Feet Plank position

Mastering each of these PEMs indicates an excellent level of functional fitness and broad athletic competency. In combination with plenty of low-level aerobic exercise and occasional sprints, your Primal Essential Movements efforts will enable you to play hard with minimal injury risk, participate in a variety of physical challenges, and put the finishing touches on a lean, toned physique (remember though, 80 percent of your physique depends on your diet). Furthermore, you will neutralize the aging process as we perceive it, which is strongly associated with declines in physical strength, power, endurance, muscle mass, and—by consequence—organ function.

Assessment: Your first PEM workout will be an assessment session to determine the appropriate starting exercise in each PEM progression. This may take more than 30 minutes with all the trial and error involved. Review the progression exercises and start with the exercise that you think you can complete the appropriate number of reps of. Count your maximum reps and determine if this number is worse or better than the progression or baseline standard. For example, a female attempting incline pushups should reach 25 reps, or otherwise embark upon PEM workouts doing knee pushups. If you easily exceed the standard on your exercise of choice during the assessment, bump up to the next progression at future workouts.

After settling in on the most appropriate progression exercise for each PEM (yes, you may be at different levels for each), work there for two to three sessions. When you can increase the number of maximum reps by approximately 25 percent (e.g., going from 9 chin-ups to 12 chin-ups), bump up to the next PEM progression exercise. Remember, the goal of PEM sessions is to challenge your muscles to their failure point. I believe that with diligent effort even a novice can achieve Essential Movement mastery in a few months.
PUSHUPS

**Easiest - Knee Pushup:** male 50, female: 30. Do pushups on the ground, but assuming a plank position on your knees.

**Next - Incline Pushup:** male: 50, female: 25. Do pushups with hands resting on a bench or other object elevated from ground.

**Baseline Pushups:** Plank position, arms extended, shoulder width, hands forward. Lower to ground—chest touching first! Keep body dead straight, core and glutes tight, head and neck neutral to torso. Elbows bend backwards at 45-degree angle.

**Baseline Essential Movement Mastery:**

male 50, female 20
**PULLUPS**

**Easiest - Chair-Assisted Pullup:**

male 20, female 15.

Start with your leg loosely positioned on a support chair under the bar. Engage your upper body muscles and use just enough leg force to assist getting your chin over the bar. You probably only need to use one leg (as pictured), but can use two if necessary.

**Next - Chin-Up (inverted grip):**

male 7, female 4.

Many find the chin-up to be slightly easier than a pullup, particularly if you have wrist, elbow, or shoulder issues.

**Baseline Pullups (overhand grip):** Elbows tight, chin tucked, shoulder blades retracted to protect spine. Lead with chest up, keeping lower body quiet. Raise your chin over the bar and gradually lower all the way until your arms are straight (or just before straight if you have joint issues).

**Baseline Essential Movement Mastery:** male 12, female 5.
**SQUATS**

**Easiest - Assisted Squat:** male and female: 50.  
Hold pole or support object while lowering into and raising up from squat position. Use support object as little as possible.

**Baseline Squats:** Feet shoulder width or slightly wider. Toes forward or naturally pointed outward slightly. Lower yourself by extending your butt out and bringing thighs to just below parallel to the ground. Stand back up completely, making sure your knees track in line with your feet.

**Baseline Essential Movement Mastery:** male 50, female 50.
PLANK

Easiest - Forearm/Knee Plank: male and female two minutes. Assume plank position with forearms and knees resting on ground. Tense core and glutes during exercise.

Next - Hand/Feet Plank: male and female two minutes. Assume plank position a la pushup starting point, with hands and feet on ground.

Baseline Elbow/ Feet Plank: Elbows on ground, aligned with shoulders. Raise onto toes with body horizontal. Tuck tailbone a bit to alleviate back stress.

Baseline Essential Movement Mastery: male and female two minutes. Some exercisers like to add a side plank to isolate the lateral muscles of the abdominal wall. For a side plank, turn sideways, rest opposite hand or forearm on ground, and stack your feet on top of each other. Raise your hip so that your body is in straight head-to-toe alignment sideways and hold for 45 seconds on each side.
SPRINT SESSIONS

Sprinting emulates the true hunter-gatherer in all of us. These all-out efforts stimulate increased testosterone production, a slight pulse of human growth hormone, an increase in muscle fiber growth, and assorted other metabolic and fitness benefits. During the 21-Day Challenge, two sprint sessions are suggested, with efforts scaled to your ability level to minimize risk of overdoing it. Sprint workouts can be running, if you can handle the impact, or using a bicycle or other cardio equipment for brief, all-out efforts with minimal or no impact.

An excellent basic sprint session can be conducted as follows: warmup for at least five minutes with easy cardiovascular exercise. If you are running, I also recommend a series of dynamic stretches (pictured) to really get the tendons and joints adapted to impending intense exercise. After your dynamic stretch sequence, initiate four to six “strides” where you gradually accelerate to your actual sprint speed for a few moments, then gradually ease back down into a jog. Each of these strides may take 15 seconds. Pay close attention to proper form during your strides, and take note of any pains or problem areas that might limit your efforts during the main workout set.

Knee-to-chest: Gently pull knees up to chest and release.

Pull quads: Glasses off—time to get serious! Grab foot and pull gently to butt, release with forward step.
**Open hips:** Face forward, rotate knee up and along body line. Great for hip flexors.

**Mini-lunge:** Take exaggerated-length steps, front thigh nearing parallel. Don’t overdo this one; it’s just warmup!

**Hopping drill:** Get the heart going now! Drive knee to chest while jumping up and forward, arms pumping. Land on same foot, repeat hop with other knee.

**High knees:** Toughest one last, almost ready to open the throttle and sprint! Exaggerate knee lift by slapping hands. Preserve tall, straight body, drive knees high, quick stride turnover. Remember these identical tips for actual sprinting!
Once you are properly warmed up, initiate your main set of six sprints lasting 10-30 seconds at 80-90 percent of maximum effort (effort range depending on your fitness and experience level). Accelerate gradually into each sprint to ease the risk of muscle strain. Take a 30-60 second recovery between each effort in order to return your breathing pattern to near normal. Your work and recovery times are also subject to your fitness level, so a novice might do six sprints of 10 seconds at 80 percent effort, with a 60-second recovery interval between each sprint. An expert might do six sprints of 30 seconds at 95-100 percent effort, with a 60-second rest interval. Don’t worry about your speed; the key here is to deliver a high-intensity effort. For less impact, conduct the identical set of six times 10-30-second efforts on a stationary bike or other cardio machine, or even sprinting uphill and jogging back downhill.

Special thanks to Usain Bolt (not pictured, but pacing me five meters ahead)
You may also wish to implement creative options such as plyometrics (bounding, bunny hopping, stair climbing) into your sessions. The key is to focus on the brief, intense, all-out aspect and refrain from a prolonged session that leads to exhaustion. With sprinting, the focus is always on increasing your explosive speed, not doing more reps or going further.

You should finish your sprint (and strength) workouts with tired muscles to be sure, but feeling pleasantly invigorated and buzzed from the effort. Remember to always align your efforts with your daily levels of energy, motivation, and health. If you miss a planned workout or fall short of the ideal recommendations here, it’s just not that big of a deal. Your body will preserve fitness quite well even if your workout routine and total weekly volume ebbs and flows with the variables and challenges of daily life.

PLAY SESSIONS

I think my main motivation to work hard in the gym or at the park doing PEMs and sprints is for the payoff I get when I play. My weekly pickup game of Ultimate Frisbee is a pretty spirited competition. Every Sunday, a dozen or more of Malibu’s finest gather at a city park and we go at it pretty hard for two hours. At 58, I’m assigned to match up mano-a-mano with some impressive—and much younger—physical specimens, including high school varsity athletes such as my son Kyle. They seem to get faster each week! The work I put in during my PEM and sprint sessions helps me to play hard and to prevent injuries that might arise during my efforts to hang with the younger generation.

During the 21-Day Challenge, you’ll tackle three play assignments: a small play endeavor, a grand weekend endeavor, and figuring out ways to take mini play breaks during the day. Your formal play sessions ideally will involve being outdoors in sunlight, fresh air, and open space and performing significant physical exertion. Even mini play breaks lasting 10 minutes can make a big difference. For example, stop off at the park on your way home from work and take a quick tour of the parcours or playground equipment. Head over to the local courts and jump into a pickup basketball game. Take your dog to the park and throw the frisbee, but surprise your pal by chasing him to the disc after you throw it!
action item #5
SLOW LIFE DOWN

Going Primal involves reducing the complexity of your diet, exercise, and lifestyle habits, and taking a simple, practical approach to concepts and challenges that we typically over-analyze. It’s about finding the time and space to actually have fun and enjoy your life as it otherwise rushes by. Let’s cover some specific ways to slow life down over the next 21 days in the areas of diet, digital stimulation, exercise, personal time, relationships, sleeping habits, and work.

DIET

If you can embrace the basic concepts of Primal eating and remember them for the rest of your life, you can reject the complexity and regimentation of Conventional Wisdom and cultivate a more relaxed and enjoyable relationship with food. During your 21-Day Challenge, you’ll engage in various diet challenges that will connect you with the global “slow food” movement, which promotes growing your own, buying locally, preparing meals from scratch, eating in a relaxed, celebratory environment, and generally deepening your appreciation of the entire experience of eating.

Some important elements of the Primal eating style I’d like you to keep in mind immediately are to focus on obtaining maximum pleasure from your meals and engaging in relaxing mealtime habits. Eat all of your meals and snacks with full attention and awareness to the pleasure it provides you. Depart from regimented meals to the extent that your body actually experiences sensations of hunger, which will deepen your appreciation of the satisfaction food provides. Increase

Phil McGrath, proprietor of McGrath Family Farms in Ventura County, CA—a fifth-generation operation.
the frequency of Intermittent Fasting efforts as you get more Primal-adapted. Eat your food slowly and chew eat bite completely (20-30 chomps is ideal) to facilitate proper digestion. Avoid overeating by asking yourself, “am I really hungry for another bite, or have I had enough?” Paying attention to how food makes your body feel will naturally regulate your appetite and caloric intake.

To be clear, paying attention in this manner is the antithesis of the compulsive approach where portions, calories, and food choices are obsessively regimented and measured against the arbitrary standards of some gimmicky diet. This is about paying attention to pleasure and satisfaction rather than a scorecard.

DIGITAL STIMULATION

Discipline your use of technology so you can leverage its advantages instead of becoming a slave to it. Here are a few tips for handling email, digital entertainment, and handheld devices. During your 21-Day Challenge, you’ll have lots of fun tackling these topics!

Email: No one is arguing that going back to the days of licking stamps and sealing envelopes is preferred to the efficiency of email, but could email serve you even better if you used it in a more focused and disciplined manner? Your email challenge will involve spending specified time blocks to correspond by email, then shutting it down in between to focus on peak performance tasks. It’s also critical to develop strategies to prioritize the communication you send and receive, paying more attention to high priority items and being disciplined to aggressively filter out low priority and unsolicited items.
**Entertainment:** Use a DVR (Digital Video Recorder) or hulu.com to streamline your television watching experience, set your own entertainment schedule, and eliminate exposure to offensive commercials. Restrict use of digital technology in the final two hours before bedtime. If you have kids, require that they turn in their digital technology (a big salad bowl on the kitchen table will do) after dark or until their homework is complete. Set aside time blocks to consume digital entertainment, social media, and news, and refrain from exposing yourself to a constant stream of distracting information tidbits throughout the day.

**PDAs:** Sure, it’s okay to enjoy the flexibility and efficiency advantages of mobile technology. It beats being chained to a desk or repeatedly circling campus looking for your kid after a Friday night football game. However, it’s critical to ensure that your potential for hyper-connectivity does not interfere with cognitive down time, family time, and meaningful interpersonal relationships. Establish “business hours” for your PDA by shutting it off when engaged with family and recreation, or when you’ve simply had enough. Realize that our genes are hard-wired to be attuned to distraction, whether it be the vibration of a text message during the school play, or an ominous rustling in the bushes during Grok’s time. There is simply no better solution than turning off the power so you are not even tempted to disengage from what you are doing at that moment.

**EXERCISE**

We’ve discussed at length the importance of rejecting Chronic Cardio in favor of aerobic sessions at moderate heart rates, along with increasing all forms of daily movement. It’s also important to reject any feelings of compulsion, guilt, or negativity about sub-par or missed workouts. Don’t worry that slowing down your pace or missing workouts will cause you to get out of shape or gain weight (especially as you transition from a sugar burner into a fat-burning beast). Appreciate the process of getting fit, being outdoors, and challenging your body to explore your physical limits, and stop attaching your happiness—and self-esteem—to results.

If you are the competitive type, harness your instincts and grand ambitions so you can direct them in a productive manner on race day. Cultivate authentic and mutually supportive relationships with your training partners, instead of allowing every workout to become a surreptitious competition and ego-feeding frenzy. If your body feels sluggish on certain days and you fall short of predetermined goals, understand that fitness improvement comes through an optimal balance of stress and rest. A tired body or stiff, sore muscles are indicators that you are still in the process of getting fitter from previous workouts, provided you take time to recover! Here are a couple more tips to develop a more healthy and balanced approach to exercise:

**Cultivate intuitive skills:** On a 1-10 scale, keep track of your energy level, motivation level, and health/immune function each day, along with the degree of dif-
difficulty, performance, and satisfaction level of your workouts. Strive to get your workout scores in alignment with your subjective scores, taking only what your body gives you each day and nothing more. For example, if you are having a rough day with scores of “4” in energy, motivation, and health, do a moderate workout that rates a “4” on a 1-10 difficulty scale.

As you get into the rhythm of aligning workouts with energy, make a practice of sitting quietly for a few moments before beginning your workouts, and envisioning the session in your mind. Ask yourself if your planned session is really the right thing to do on that particular day, or envision a different session that might feel more aligned with your current physical and mental condition. Don't be afraid to alter workouts midway through; pull the plug if your body is dragging, or push to a higher level if you are feeling fantastic.

Eliminate compulsive behaviors: If you are a slave to your training log or have a tendency to follow a regimented schedule regardless of how you feel, force yourself to become more flexible. You could even go so far as throwing away your log, or at least putting it aside for a month or two. Apply the same discipline and focus to resting as you do to training, so that you optimize both the stress and the rest sides of the balance scale. Remember, Grok's coping strategy to survive in primal life was to do the absolute bare minimum necessary for survival. There were no extra outings to pad weekly mileage totals, nor killing of surplus animals to win shiny trophies.

PERSONAL TIME

Realize the need to regularly unplug from everything, including digital stimulation, other people, and the civilized world. Even if you only have 20, 10, or 5 minutes to spare on a particular day, take some time to sit and contemplate, take a stroll, birdwatch, and just slow down the pace of your thinking and moving to reflect and relax. Whether you're on a farm in Iowa or a high-rise in New York City, it's likely that you can find a quiet place to unplug and experience some solitude when you need it. Reject the flawed rat-race notion that you are a bad mom or a corporate slacker if you take a time out during a hectic day to decompress. Grab a few minutes of personal time each day (we'll encourage your compliance during the 21-Day Challenge), and also make an effort to carve out some prolonged sessions on weekends and vacations.

I call this taking my “cave time.” Unfortunately, cave time often gets compromised when you need it most—when life gets busy and hectic. Often, my wife Carrie is there to provide a gentle reminder that my irritable, edgy behavior might benefit from some cave time. I often use the time to take inventory and reflect upon things in my life that I am grateful for. After a brief self-imposed seclusion (usually a few hours of hiking), I return to my real world as good as new.

RELATIONSHIPS

The accelerated pace of technological progress is in discord with our primal genes. We are accustomed to less stimulation and a firm rooting in the present, physical world. Much has been written about the potential fallout from digital life—kids missing out on a proper outdoor childhood of skinned knees and muddy clothes; burnt-out, multitasking moms trying vainly to keep pace with cultural pressures; or harried executives chasing “success” at the expense of health, family, and sanity.
One element of slowing life down you will focus on during your 21-Day Challenge is to de-emphasize your virtual relationships (email, texting, Facebook, Twitter, etc.) in favor of nurturing day-to-day interactions with family and friends. Envision your relationships in an “intimate circle” of family and close friends, and a larger “social circle” of co-workers, neighbors, casual friends, exercise partners, and so forth. Sociologists believe that you are capable of maintaining a strong intimate circle of around 12 people and a social circle of around 60 people. Attempting to maintain a larger social circle, through digital tools and other superficial communication, may compromise your ability to maintain a strong intimate circle, as well as a truly meaningful social circle. Sure, these numbers are merely theories, and it’s difficult to draw demarcation lines at various friendship levels, but it can be valuable to absorb the spirit of this message and focus more on face time than Facebook.

**Face time:** How about scheduling a lunch or a quick morning coffee with a business associate with whom you typically interact online? It might be more productive than a hundred emails. The late Mark McCormack, old-time business guru, founder of the global sports conglomerate IMG, and author of *What They Don’t Teach You At Harvard Business School*, related that a single round of golf with someone provided more character-revealing insights than prolonged traditional interactions in a business setting. Just be sure you aren’t texting between holes!

**Family-only time:** No digital stimulation or other distractions, just conversation, exercise/sports/leisure/play sessions, board games, art projects, and other endeavors that you can do together so that you can interact in a meaningful way.

**Favor test:** Anthropologist and evolutionary biologist Robin Dunbar characterizes an authentic and strong personal relationship by *an ability and willingness to do each other favors*. How many people would you bend over backwards for at a moment’s notice? You know—burn a weekend helping them move across town, or rush to their aid in the event of a family emergency? Do a bit of analysis on how you spend your social time each day, and strive to put family first, then nurture your social circle and downscale your quest to build a bigger Twitter following. As Dunbar reminds us, “A touch is worth a 1,000 words any day.”

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*Sisters Kristin (L) and Kathryn Jekielek traveled cross-country for a reunion weekend at 2010 PrimalCon.*

*Check out Kristin’s recipe exchange tool on facebook.com, “fastpaleo.”*
SLEEPING HABITS

For two million years, our circadian rhythms have been governed by the consistent rising and setting of the sun, a powerful natural phenomenon that has been artificially manipulated and widely disregarded only in the past century. Widespread sleep deprivation is one of the most destructive side effects of our fast paced, high-tech modern life. Excessive artificial light and digital stimulation after dark are the primary culprits in disturbing the flow of melatonin and other hormones that facilitate optimal sleep and restoration.

Soon after it gets dark, your genes are programmed to release melatonin into the bloodstream—a process known as Dim Light Melatonin Onset (DLMO). Melatonin causes you to feel drowsy by slowing down brain and metabolic functions and allowing you to gracefully transition from wake to sleep. Under ideal circumstances, the rising of the sun each morning, and your complete cycling through all phases of sleep, triggers a drop in melatonin and increased production of serotonin. Serotonin, aka the “feel good hormone,” boosts your metabolic function, mood, and energy levels, so you wake up feeling refreshed and ready for an active day.

“Today, the sleep process is initiated when we make it dark, throwing us out of alignment with the sun and compromising our ability to fall asleep easily, sleep soundly, and awaken refreshed.”

This elegant process has been all messed up by Thomas Edison, Bill Gates, Steve Jobs, ABC, HBO, Comedy Central, Netflix, and other facilitators of excess artificial light and digital stimulation after dark. Today, the sleep process is initiated when we make it dark, throwing us out of alignment with the sun and compromising our ability to fall asleep easily, sleep soundly, and awaken refreshed. Follow these tips to slow down your evenings, gradually transition into a sleeping state, and wake up refreshed each morning:

**Dim the lights after dark:** Make a general effort to minimize illumination throughout your home after it gets dark. Utilize dimmers, install yellow-tinted “bug” light bulbs in frequently-used lamps, light candles instead of flipping switches, and wear a pair of yellow lens sunglasses or yellow safety glasses (cheapies can be found at home improvement stores, or get a nice pair at SmithOptics.com). Using yellow bulbs, lenses, and candles will help prevent artificial light from interfering with DLMO. Although it might seem a little goofy to don a pair of yellow lenses for your evening computer or TV time, these little touches can go a long way toward mitigating the damage produced by excessive artificial light.
**Screen curfews:** If you insist on using computer, television, or other screens after dark, do it earlier in the evening and devote the final two hours before bedtime to relaxing activities such as an evening stroll, quiet reading, conversation, or family time (board games, etc.).

**Get f.lux:** Install a free software program called f.lux onto computers you use at nighttime (available at stereopsis.com). Flux changes your screen display (technically the “color temperature” of the screen) to align with ambient light, softening a light source as strong as the midday sun. Also, choose gray/minimal contrast backgrounds on software applications and browsers when possible.

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**HIGH-ENERGY MORNINGS**

Here are a few tips to enjoy high-energy mornings. Even if you’re not a morning person, we are all hard-wired to respond to the rising of the great orb each day.

**Get things right in the evening:** Allow DLMO to take effect so you get to bed on time and cycle through all phases of sleep optimally.

**Environment:** Keep your sleeping quarters relaxing, clutter-free, screen-free, cool (65-68 F), as dark as possible, and dedicated to rest or sleeping only. Avoid disturbing alarms: awaken with sunlight or soothing, natural sounds.

**Early to rise:** Awaken—hopefully naturally—as close as possible to sunrise. Expose yourself to bright light immediately upon awakening to kick-start serotonin production. Avoid disturbing alarms; use soothing, natural alarm functions if you must honor a designated wakeup time.

**Gradually transition into a wakeful state:** Do some light yoga sequences, walk around the block with the dog, take a leisurely hot shower, read in bed for a few minutes...
minutes, or do some deep breathing in the backyard. Skip the blaring morning news, and don’t move at too hectic a pace right away.

Getting adequate sleep and waking up refreshed and energized will improve your fat metabolism, eating habits/appetite regulation, workout performance, mood, energy levels, and work productivity.

WORK

A great many job descriptions seem to demand (literally...on the job description!) that you multitask, stay connected, respond quickly to assorted modes of communication, and generally do everything possible to speed the action up rather than slowing it down. Many experts are now second-guessing the ideal of a hyper-speed workplace. Even ER nurses, who operate in an extremely high stimulation crisis environment where speed of care is a life-or-death matter, must remain calm, focused, and centered amidst chaos. Sure, you have to keep pace with workplace norms and expectations, but do you really need the live chat window open while you’re working on a proposal, or to text during your kid’s T-ball game, or to answer emails in the final hour of your night? My productivity declines noticeably when I’m overstimulated, under-rested, under-nourished, or just plain burned out—whether it be writing, compiling research in an organized manner, or balancing my checkbook.

When you notice productivity slipping (pay close attention from now on!), take immediate corrective action. A quick stroll outside, a mini-workout, or a 20-minute nap will pay great dividends over the rest of the day. Don’t succumb to the flawed Conventional Wisdom notion that productivity is directly related to time, without distinguishing quality from quantity. The following tips can help you reduce workplace stress, and improve focus, productivity, and job satisfaction:

Customize and prioritize information: Strictly filter and edit every bit of information you are exposed to during your workday, and in your whole life for that matter. Ignore or dispose of information that is unsolicited, irrelevant, and uninteresting, such as roadside billboards, fluff articles in the morning newspaper, television commercials, news broadcasts, and Internet banner ads. Remain pro-active as much as possible throughout the day, focusing on the highest priority task (with a little help from your boss perhaps!), and refuse to be pulled away by potential distractions. Learn to say “no” when you need to, and negotiate with yourself and others to carve out the time and personal space you require to achieve maximum productivity and fulfillment in your work.

Focus on a single peak performance task at a time: The vaunted ability to multitask is a big fat ruse. When the human brain is faced with two or more sources of stimulation at the same time, we divert our attention back and forth in quick spurts, compromising our ability to focus on any single task. Sure, you can probably rake leaves and chat with a friend on your Bluetooth with no ill effects, but when complexity escalates (e.g., negotiating an important business deal on the phone while driving...
in rush hour traffic), your attention span, creativity, and intellectual ability will decline, your stress will increase, and you’ll get that familiar frazzled feeling that epitomizes rat race-induced burnout. Develop the discipline to ruthlessly eliminate all forms of distraction when you engage in a peak performance task. Honor the concept even with mundane tasks (don’t talk and drive; don’t even talk and rake!) to hone your focusing skills into a habit.

**Take frequent breaks:** Take a 1-3 minute break for every 20 minutes of intent focus at work, particularly if you are sedentary. Stand up, walk around a bit, refocus your eyes on distant objects, do some simple stretches or strengthening exercises, or simply close your eyes and chill for a while before turning your attention back to the screen or other focused engagement. If you have an active job, you might prefer to go sit in your car and listen to some classical music.

Take a 10-minute break every 2 hours (a few PEMs or sprints up the stairs anyone?), and a mid-day break of 30 minutes or more, perhaps for some spontaneous play—remember the hacky sack circles that flourished on college campuses back in the day?

[Image: Two photos of a person running up stairs, one with a water jug.]

*Whenever we need extra water at Primal headquarters, I just run upstairs and “borrow” some from our neighbors—the Malibu Sheriff’s Department...just kidding!*
THE 21-DAY TRANSFORMATION CHALLENGE

Time to get to it!
INSTRUCTIONS

Tackling these challenges will give you the knowledge and practical experience to custom design an enjoyable, flexible Primal lifestyle over the long term. At no time should you feel overburdened, overstressed, or exhausted by these challenges. For the most part, they require minimal time and are appropriate to all levels of fitness and previous knowledge about diet, exercise, and health.

Start the 21-Day Challenge when your energy and enthusiasm are high, and you have a minimal amount of distractions and overall life stress. If the present time is inconvenient, establish a suitable future date (after vacation, semester, or fiscal quarter). Please start Day 1 on a Monday, since certain endeavors are designed with a workday or weekend in mind. Each day includes some brief journal exercises and starts with a blank to assign an overall daily “Success Score” for how well you think you completed all the challenges. Rank your success scores on a scale of 1-10, with 10 being best.

DAY 1 CHALLENGES

**Diet - Kitchen/Pantry Purge:** First things first! Time to eliminate SAD foods that may be lurking in your house. Refer to Action Item #1 to complete a successful purge. There is no halfway allowed here. A purge is a purge, and even those precious old favorites must go if you want to transform from a sugar burner into a fat-burning beast quickly.

**Diet - Restock Preparation:** Grab a few essentials at your local supermarket so you don’t starve before tomorrow: eggs, veggies, fruit, nuts, and meat. Meanwhile, spend a little time on the telephone or Internet lining up the best locations for a proper Primal shopping spree tomorrow. Get ready to storm your local farmer’s market, co-op, or alternative grocer. If your local area lacks great options, refer to the Internet suggestions listed in Action Item #2.

**Exercise – Increase Daily Movement:** Refer to the suggestions in Action Item #4 and implement at least two basic movement suggestions today—a morning walk with the dog, brief work breaks, a stroll before arriving home, or an evening stroll with the family after dinner.

**Lifestyle – Primal Essentials:** Evening tools (f.lux, DVR, yellow lens/bulbs, candles); Exercise basics (comfortable clothing, suitable location for sprints—including pullup bar), weighted vest and Vibram’s for hotshots; Kitchen basics (fridge, freezer, cookbooks, cookware, spices, Primal foods); Shopping resources (local and Internet); Workplace options for quiet time and mini-workouts.
DAY 1 JOURNAL

Success score (1-10): ________

Kitchen/Pantry Purge
Hardest part: ________________________________________________________________
Best part: _________________________________________________________________
Comments: __________________________________________________________________
____________________________________________________________________________

Restock Preparation
Primal shopping resources: ____________________ ____________________ __________________
Comments: ___________________________________________________________________

Increase Daily Movement
Ways you can increase daily movement over the long term:
1: _____________________________________________________________________________
2: _____________________________________________________________________________
3: _____________________________________________________________________________
4: _____________________________________________________________________________
5: _____________________________________________________________________________

Describe today’s movement endeavors (morning, midday, evening stroll, etc.):
1: _____________________________________________________________________________
2: _____________________________________________________________________________
3: _____________________________________________________________________________

Primal Essentials
Items acquired today: ___________________________________________________________
Comments: ___________________________________________________________________
____________________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ______
Benefits noticed from Primal efforts: ______
Daily highlight(s): __________________________________________________________________
Daily needs-to-improve: ___________________________________________________________
DAY 2 CHALLENGES

Diet - Primal Shopping Spree: Here is a shopping list for Primal cooking essentials, breakfast omelet, lunch salad, meat and vegetable dinner, and Primal snacks. Refer to Action Items #2 and #3 for more details about choosing wisely in each food category.

- Bacon: Costco offers convenient pre-cooked bacon. Microwave for 30 seconds and fold inside your Primal omelet!
- Cheese: shredded mozzarella or cheddar to sprinkle on your omelet.
- Eggs: Pasture-raised or certified organic. Grab a couple dozen and make a three or four egg Primal omelet your go-to breakfast. It’s a great way to stabilize blood glucose and stay satisfied for hours.
- Flavorings/Sauces/Condiments: capers, coconut milk, Dijon mustard, fresh herbs, garlic, ginger, lemons, limes, nut butters, olives, pesto, sauerkraut, shallot, sundried tomatoes, tamari, unsweetened coconut flakes, vinegars.
- Fruit: if berries and pitted fruits are in season, grab some great local selections. Exercise moderation in this category if it’s off-season or you want to quickly shed excess body fat.
- Herbs and Spices: hopefully your spice rack is already stocked with the basics: bay leaves, black pepper, chili powder, cinnamon, cumin, garlic powder, nutmeg, onion powder, oregano, red pepper flakes, sea salt. To expand your flavor horizons add allspice, cardamom, coriander, fennel seeds, paprika, and turmeric. Spice blends such as curry powder, seasoned pepper, and the like are an easy way to add a lot of flavor at once.
- Meat, Fish, Fowl: use the highest quality and most appealing dinner entrees you can find, hopefully local/pasture-raised/grass-fed or organic meat, and wild-caught fish. Costco is within reach of most of America, and it has many organic beef, chicken, fish, and turkey offerings. If you are not the cooking type, grab a Costco tri-tip package, throw it into a crock pot for four to six hours, and you will have a fabulous dinner centerpiece with plenty of leftovers!
- Nuts: Macadamia nuts are the best option, or use other favorites in snacks and salads.
- Snacks: Choose your favorites from the list on page 105.
- Vegetables - omelet: peppers, onions, mushrooms, and spinach.
- Vegetables – salad: avocado, cabbage, carrots, cherry tomatoes, green or red onion, romaine lettuce head or package of spring mix.
- Vegetables – dinner: beets, broccoli, cabbage, eggplant, leafy greens (chard, kale, bok choy), squash, and zucchini are great to steam or stir-fry.

Exercise – Moderate Duration Aerobic Workout: Determine “moderate duration” according to your typical workout routine, likely somewhere in the range of 20 to 60 minutes. Maintain a comfortable pace of 55-75 percent of maximum heart rate, tracked by wireless heart rate monitor or a few pulse checks during the session.

Lifestyle - Calm, Relaxing Evening: Establish a screen curfew after dark, and dim the lights and/or use yellow lenses and bulbs. Take a 5- to 15-minute evening stroll, enjoy some family relaxation time (board game, cards, talking, reading). Awaken early, hopefully near sunrise and without an alarm, but do the best you can. Expose yourself to direct sunlight as soon as you wake up, and consider an energizing morning ritual (breathing and stretching exercises, cold water plunge, hot shower, neighborhood stroll), if you are not the morning type.
DAY 2 JOURNAL

Success score (1-10): __________

Primal Shopping Spree
Stores visited: ___________________ ___________________ ___________________ ___________________
Hardest part: ____________________________________________________________________________
Best part: ______________________________________________________________________________
Comments: ______________________________________________________________________________
________________________________________________________________________________________

Moderate Duration Aerobic Workout
Location: ___________________ Activity: ___________________ Duration: ___________________
Comments: ______________________________________________________________________________

Calm, Relaxing Evening
Suggestions you followed: ___________________ ___________________ ___________________ ___________________
Hardest part: ______________________________________________________________________________
Best part: ________________________________________________________________________________
Comments: ______________________________________________________________________________
________________________________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: __________________________________________________________
Benefits noticed from Primal efforts: __________________________________________________________
Daily highlight(s): _________________________________________________________________________
Daily needs-to-improve: ___________________________________________________________________
DAY 3 CHALLENGES

**Diet - Primal Celebration Dinner Planning:** Extend invitations to friends and loved ones for an authentic home-cooked meal on Day 6 or 7. Or, consider a potluck event where guests agree to bring Primal-approved, homemade offerings. Take your time planning a creative menu and compiling a shopping list for recipe ingredients. Purchase the foods at a convenient time over the next couple days. If you don't feel like entertaining, celebrate with yourself, significant other, or family.

**Diet - Boycott Industrialized Food:** Strive to completely avoid eating at fast food chains or any other processed or frozen meals from multinational food corporations—today, and for the duration of your 21-Day Challenge.

Today, make a specific statement in favor of your health and against the industrialization of food by planting a few seeds in your backyard garden, finding healthy local or direct-order alternatives to mainstream sources, or perhaps selling off any holdings you have in Nabisco or McDonald's!

**Exercise – Full-Length PEM Workout:** Five-minute warmup of easy cardiovascular exercise, and two sets of maximum repetitions of pushups, squats, pullups, and abdominal planks.

**Exercise/Lifestyle - Play:** Take a spontaneous play break for at least 20 minutes. Make plans for a grand play outing on Day 6—invite family/friends, schedule lessons/rentals, and make all possible advance preparations for a weekend adventure.
Day 3 Journal

Success score (1-10): __________

Primal Celebration Dinner Planning
Menu choice: _________________ Guests invited: ___________ ___________ ___________ ___________
Comments: ________________________________________________________________________________

Boycott Industrialized Food
Steps taken against industrialization of food: ________________ ________________ ________________
Hardest part: ______________________________________________________________________________
Best part: ___________________________________________________________________________________
Comments: ________________________________________________________________________________

Full-Length PEM Workout
Success Score: _________________ Location: _________________ Duration: _________________
Reps completed:
Pushups set 1: __________ set 2: __________
Squats set 1: __________ set 2: __________
Pullups set 1: __________ set 2: __________
Plank (time) set 1: __________ set 2: __________
Comments: ________________________________________________________________________________

Play
Spontaneous play session: ________________ Location: ________________ Duration: __________
Hardest part: ______________________________________________________________________________
Best part: ___________________________________________________________________________________
Comments: ________________________________________________________________________________
Steps taken toward grand play outing: ____________________________________________________________________________
Hardest part: ________________________________________________________________________________
Best part: ___________________________________________________________________________________
Comments: ________________________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: _____________________________________________________________
Benefits noticed from Primal efforts: _____________________________________________________________
Daily highlight(s): ___________________________________________________________________________
Daily needs-to-improve: ________________________________________________________________________
DAY 4 CHALLENGES

Diet – Honor Hunger: Instead of eating in a regimented pattern guided by the clock, allow hunger sensations to guide your eating habits today. See how long you can last in the morning until you detect actual hunger sensations kicking in, or until energy levels dwindle slightly. Then, enjoy a delicious Primal meal, eating enough to feel satisfied but not full. Avoid overeating by asking yourself, “am I really hungry for another bite, or have I had enough?”

Go about your day until you again notice hunger sensations, cravings, or diminished energy that requires calories. Enjoy a delicious Primal lunch or snack, then repeat the process in the evening. This exercise will help strengthen your intuitive eating habits and prepare you for the Intermittent Fasting challenges coming later, when you are more Primal-adapted.

Exercise – Aerobic Adventure: Conduct an extended duration aerobic workout at a heart rate range of 55-75 percent of maximum. Try something new—rent a stand-up paddleboard, a pair of snowshoes, inline skates, or a mountain bike. Be safe, but step outside of your comfort zone, especially if most of your aerobic exercise is on gym machines.

Lifestyle – Standup Work Station: If you are an office worker or otherwise work for long periods while seated, modify your work environment so that you can engage in periods of standing up. Grab a few reams of paper, some file boxes, or anything else handy to elevate your keyboard and monitor. If you work on a large corporate campus, you may be able to ask the facilities department to install a high shelf in your cube or office.

Try to stand up for as long as comfortably possible before returning to a seated position. Take repeated cracks at it after sufficient rest periods. If possible, remove your shoes while you stand to get a barefoot experience.

(L-R) Aaron Fox, Jaynee Higgott, and Elizabeth Kane at the Primal headquarters office in Malibu, CA. That’s quite a few paper reams and shipping boxes out of circulation, but it makes for a healthier workforce!
DAY 4 JOURNAL

Success score (1-10): __________

Honor Hunger
What times did you eat?: ________________ ________________ ________________
Hardest part: ___________________________________________________________________
Best part: _____________________________________________________________________
Comments: _____________________________________________________________________

Aerobic Adventure
Location: ____________________ Activity: ____________________ Duration: _____________
Comments: __________________________________________________________________________

Standup Work Station
Modifications made: ______________________________________________________________
Total time standing up: ______
Longest single stretch: ______
Hardest part: _____________________________________________________________________
Best part: _____________________________________________________________________
Comments: _____________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ________________________________________________
Benefits noticed from Primal efforts: ________________________________________________
Daily highlight(s): ______________________________________________________________
Daily needs-to-improve: ___________________________________________________________
DAY 5 CHALLENGES

**Diet - Modern Foraging:** Dine out for a meal or two and see how well you can stay Primal-aligned. Sharpen your assertiveness skills if you have to negotiate with the restaurant to alter their menu.

**Exercise - Abbreviated PEM Workout:** Do one or two sets of maximum reps for each of the four PEMs. After a five-minute warmup of easy cardio, go until your muscles fail on each exercise, and take enough rest between exercises to return your breathing to normal.

**Lifestyle – Active Couch Potato Rebellion:** Don’t go longer than 30 minutes today without taking a movement break between two and five minutes. If you endure a long commute, exit the expressway halfway through and romp around in a park or field for a few minutes. Even if you’re watching a good DVD, you can bust out some plank and squat sets to honor this challenge.
DAY 5 JOURNAL

Modern Foraging
Location: __________________________ Meal: __________________________
Location: __________________________ Meal: __________________________
Hardest part: __________________________________________
Best part: __________________________________________
Comments: __________________________________________

Abbreviated PEM Workout
Location: __________________________ Duration: _______________
Reps completed:
Pushups: ________
Squats: ________
Pullups: ________
Plank (time): ________
Comments: __________________________________________

Active Couch Potato Rebellion
Activity: __________________________ Duration: _______________
Activity: __________________________ Duration: _______________
Activity: __________________________ Duration: _______________
Longest sedentary period without break today: __________
Hardest part: __________________________________________
Best part: __________________________________________
Comments: __________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: __________________________________________
Benefits noticed from Primal efforts: __________________________________________
Daily highlight(s): __________________________________________
Daily needs-to-improve: __________________________________________
DAY 6 CHALLENGES

**Diet - Primal Celebration Dinner:** Shop for ingredients, prepare recipes, and enjoy your celebration. Savor every bite and establish a tradition of social gatherings and delicious food. After the meal, if weather permits, encourage everyone to take a stroll outdoors for at least 10 minutes. A leisurely evening walk promotes efficient digestion, helps relax mind and body after a busy day, and facilitates an easy transition into a good night’s sleep later in the evening.

**Exercise – Extended Duration Aerobic Workout:** Conduct an extended duration aerobic workout at 55-75 percent of maximum heart rate, lasting at least an hour and up to several hours if you have the fitness base.

**Lifestyle – Listening Challenge:** At your dinner party, conversation will likely drift to the impetus for the event and your efforts to go Primal. Challenge yourself to be an exceptional listener this evening. Instead of commanding the floor and providing a blow-by-blow of your exciting journey, continually direct the attention and dialog back to others. Focus on gathering information and insights that may help you become an effective guide and mentor for those who may someday aspire to their own 21-Day Transformation. Notice how energy and attention subtly shifts from one person to another during a gathering, and do your best to support and encourage others to communicate freely.
DAY 6 JOURNAL

Success score (1-10): __________

Primal Celebration Dinner
Guests: __________  __________  __________  __________  __________
Menu: _____________________________________________________________
Hardest part: ______________________________________________________________________
Best part: _______________________________________________________________________
Comments: _______________________________________________________________________

Extended Duration Aerobic Workout
Location: ______________________________________________  Duration: _______________
Activity: ______________________________________________  Duration: _______________
Comments: _______________________________________________________________________

Listening Challenge
Activity: ______________________________________________  Duration: _______________
Activity: ______________________________________________  Duration: _______________
Activity: ______________________________________________  Duration: _______________
Longest sedentary period without break today: ____________
Hardest part: ______________________________________________________________________
Best part: _______________________________________________________________________
Did increased awareness improve your listening skills?: ____________
Were you able to support and encourage others to communicate freely?  ____________
Comments: _______________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: _________________________________________________
Benefits noticed from Primal efforts: _________________________________________________
Daily highlight(s): ________________________________________________________________
Daily needs-to-improve: ___________________________________________________________
DAY 7 CHALLENGES

Diet – Intuitive Meals: On the heels of your well-planned dinner celebration, anything goes today. Eat whatever foods you feel like eating without regard to cultural breakfast, lunch, or dinner traditions. Perhaps you’ll want last night’s leftovers for breakfast? An omelet for dinner? Dark chocolate and macadamia nuts for a midday snack?

If you feel compelled to indulge in a non-Primal-approved old favorite, go ahead and do so. Pay close attention to how your comfort food makes your body feel, including any unpleasant after effects. See if you notice any emotional influence in your eating habits that might be compromising your health. For every bite you take throughout the day, focus on the enjoyment of the experience. Let go of any feelings of guilt, anxiety, or other negative emotions associated with eating. From now on, your job is to attain maximum pleasure from your food choices each day.

Exercise/Lifestyle - Grand Play Outing: Kayak, rock climb, bicycle, picnic, hike, play Ultimate Frisbee, horseshoe, soccer, basketball, or anything else that’s fun, active, and celebrates the great outdoors with family and friends!
DAY 7 JOURNAL

Intuitive Meals
Hardest part: __________________________________________________________
Best part: _____________________________________________________________
Comments: __________________________________________________________________________

Grand Play Outing
Location: ______________________________________________
Activity: _______________________________________________ Duration: _______________
Comments: __________________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ____________________________________________
Benefits noticed from Primal efforts: _____________________________________________
Daily highlight(s): _____________________________________________________________
Daily needs-to-improve: _________________________________________________________

Week 1 Reflections
Week 1 success score: ______
Diet success score: ______
Comments on diet challenges: _________________________________________________
Exercise success score: ______
Comments on exercise challenges: _____________________________________________
Lifestyle success score: ______
Comments on lifestyle challenges: _____________________________________________
Weekly highlight(s): __________________________________________________________
Weekly needs-to-improve: _______________________________________________________
What specific steps can you take to address your needs-to-improve list? ________________

Overall comments on week 1: ____________________________________________________
DAY 8 CHALLENGES

**Diet – No Labels Challenge:** Conventional Wisdom suggests you scrutinize the government-mandated “Nutrition Facts” labels on all packaged foods—watching your fat grams, RDA percentages, or sugar/carbohydrate ratios. As you learned in the Key Concepts, going Primal transcends most of this sugar-burner advice.

Today your challenge is to give Nutrition Facts the boot by avoiding any foods that have a label on them! Emphasize local produce, farm-fresh animal products, homemade nut butter or jerky, and other non-industrialized options. Take the challenge as far as you’d like. While no one will scorn you for eating a carrot, see if you can find fresh carrots over sliced, washed, and bagged options, and pastured eggs from a local farmer over a commercially produced carton of eggs.

**Exercise - Sprint Workout:** Scale your effort to your experience with sprinting. If this is your first attempt, try a no- or low-impact exercise and make your hard efforts about 80 percent of maximum. If you have a decent level of comfort and experience, sprint at 90 percent of maximum effort. Be sure to warm up and cool down effectively, and keep the emphasis on quality instead of quantity.

**Lifestyle - Tiptoe into the Barefoot World:** Try to go barefoot or use minimalist footwear for at least 60 minutes today. Let your feet breathe and become re-engaged in the act of walking, jogging, and supporting your standing weight. If you have no experience, start gradually by simply walking about the house barefoot. When you become comfortable, you can introduce brief bouts of barefoot workout time.
DAY 8 JOURNAL

Success score (1-10): __________

No Labels Challenge
Hardest part: __________________________________________________________________
Best part: ______________________________________________________________________
Comments: ______________________________________________________________________

Sprint Workout
Success score: __________
Location: ______________________________________________
Activity: ___________________________________ Total Duration: __________
Reps: __________ Duration or distance: ________________ Rest Interval: ________________
Comments: __________________________________________________________________________

Tiptoe into the Barefoot World
Total time spent barefoot or in minimalist footwear: __________
Longest single stretch going barefoot or in minimalist footwear (count standing or moving only, not sitting): __________
Hardest part: ______________________________________________________________________
Best part: _________________________________________________________________________
Comments: _________________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ________________________________________________
Benefits noticed from Primal efforts: ________________________________________________
Daily highlight(s): ________________________________________________________________
Daily needs-to-improve: ___________________________________________________________
DAY 9 CHALLENGES

**Diet - Track Macronutrient Intake:** It may be helpful to occasionally track your caloric and macronutrient intake with an online calculator. Most important, you must obtain adequate protein calories to preserve or build muscle tissue and keep your carbohydrate intake in line with your body composition goals: 50-100 grams per day for fat loss, and 100-150 to maintain ideal body composition.

Proceed with this exercise as follows: Write down everything you eat for an entire day. Use measuring tools (cup with ¼ marks, tablespoon, ounces scale) to obtain accurate quantities. Carry around a small notepad so you don’t forget anything. Visit paleotrack.com (my favorite of several Internet options) or fitday.com, create a free account, and begin inputting your foods into their database. After inputting all of your foods, Paleotrack will produce a simple pie chart with tabulations for daily protein, carbs, fat, and total calories. Your data will be saved in their database and you can repeat the exercise whenever you want to generate more daily reports.

**Exercise – Increase Daily Movement, Part 2:** Hopefully you’ve been making a concerted effort to leverage the challenges from Day 1 (increase daily movement), Day 2 (standup work station), and Day 5 (movement breaks every 30 minutes) to discover assorted ways to move more throughout the day. Today, I’d like you to redouble your efforts to park purposefully far away, eschew elevators and escalators, walk or cycle instead of drive, go no longer than 30 minutes without a brief movement break, stand instead of sit, take mini play breaks, and implement any other creative movement ideas into your routine.

**Lifestyle – Media Fast:** Ingest all of your news and information today during 10-minute time blocks in the morning and in the evening. Take this challenge seriously and try—just for a single day—to refrain from exposing yourself to a constant stream of distracting information and entertainment tidbits. During your 10-minute sessions, be pro-active by choosing your favorite media resources, scanning headlines quickly, and reading only stories of sincere interest to you.

This challenge may reveal how distracting a typical day might be when you fail to discipline yourself against constant and overwhelming digital stimulation. Hopefully you will build some awareness, battle against overstimulation, and sharpen your focus on peak performance tasks.
DAY 9 JOURNAL

Success score (1-10): __________

Track Macronutrient Intake
Daily protein grams: __________
Daily carb grams: __________
Daily fat grams: __________
Total calories: __________
Areas to improve: ________________________________________________________________
Worst part of results: _____________________________________________________________
Best part: _____________________________________________________________________
Comments: ____________________________________________________________________

Increase Daily Movement, Part 2
Ways you increased movement today:
1: __________________________________________________________________________________
2: __________________________________________________________________________________
3: __________________________________________________________________________________
4: __________________________________________________________________________________
Hardest part: __________________________________________________________________________
Best part: _____________________________________________________________________________
Comments: __________________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: _________________________________________________
Benefits noticed from Primal efforts: ________________________________________________
Daily highlight(s): ________________________________________________________________
Daily needs-to-improve: ___________________________________________________________
DAY 10 CHALLENGES

Diet – Eating Environment: Today you will focus on creating an optimal eating environment for all meals. No more wolfing food on the go, even if it’s Primal-aligned! Take the time to create attractive place settings and calm, quiet environments dedicated to eating only. Eliminate all distractions such as computers, television, and high-energy music. Refrain from reading newspaper or magazines while eating. Instead, focus on quiet conversation with your eating companion(s), or self-reflection if alone.

Make a concerted effort to slow the pace of your eating. Chew each bite completely to facilitate good digestion and maximum satisfaction. Taking 20-30 bites will enable the enzymes in your saliva to lubricate food for easy transportation through the esophagus, and break down macronutrients for efficient digestion in the stomach.

Exercise – Primal WOW: WOW is “Workout of the Week”, a popular theme at MarksDailyApple.com where a creative workout honoring the Primal Blueprint Fitness philosophy is suggested on a weekly basis. Today you will combine the PEM exercises with some sprinting and plyometrics to produce the following fun and challenging session. The distances and rest intervals suggested are chosen according to your fitness level.

1. Pushups (or appropriate pushup progression exercise): one set maximum reps
2. Sprint: immediately sprint 40-80 meters
3. Rest: 30-60 seconds
4. Pullups (or appropriate progression exercise): one set maximum reps
5. Bunny hops: hop (feet together for takeoff and landing) for 20-40 meters
6. Rest: 30-60 seconds
7. Squats (or appropriate squat progression exercise): one set maximum reps
8. Sprint: immediately sprint 40-80 meters
9. Plank: one set maximum time

Advanced Addition
10. Sprint/Bunny hop: After planks, immediately sprint 80 meters, hop 40 meters in opposite direction, then walk 40 meters to starting point. Rest 30 seconds, then repeat.

Lifestyle – Email Fast: Engage in email correspondence only during specified morning and afternoon time periods of 30 minutes or less. Between these efforts, disengage from your email server and pursue focused, productive tasks without succumbing to distraction. Even a heavy hitter should be able to completely canvass an inbox and reply to key messages in less than 30 minutes.

Prioritize your emails as follows: First, filter your inbox by mass-deleting any correspondence that was not solicited and/or not important. Next, overview your remaining messages to identify urgent and/or highest priority messages. A quick look at the sender, subject line or first few lines of text in preview mode will help achieve this quickly. Use software tools (star, red flag, etc.) to highlight these messages if desired, then proceed through them in approximate order of priority. Finally, handle low priority—but necessary—correspondence with succinct replies and clearly defined responses such as “yes,” “no, sorry,” or “I’ll have that for you by Friday.” This will help maintain positive working and social relationships without draining excessive time from higher priority tasks.
DAY 10 JOURNAL

Success score (1-10): ______

Eating Environment
Comments on setting: ____________________________
Comments on distractions: ____________________________
Comments on pace: ____________________________
Hardest part: ____________________________
Best part: ____________________________
Comments: ____________________________

Primal WOW
Success score: ______ Location: ____________________________ Duration: ______
Running distances (40 or 80 m): ______
Pushups: ______ Squats: ______ Pullups: ______ Plank (time): ______
Advanced options: ______
Comments: ____________________________

Email Fast
Comments on morning correspondence period: ____________________________
Comments on afternoon correspondence period: ____________________________
Suggestions implemented: ____________________________
Comments on fasting period: ____________________________
Was your communication more efficient during correspondence period knowing your time was limited? ____________________________
Did you notice any increased productivity during fasting period?: ____________________________
Any decreased productivity during fasting period?: ____________________________
Hardest part: ____________________________
Best part: ____________________________
How can you integrate the email fast concept into your daily workday? ____________________________
Overall comments: ____________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ____________________________
Benefits noticed from Primal efforts: ____________________________
Daily highlight(s): ____________________________
Daily needs-to-improve: ____________________________
DAY 11 CHALLENGES

**Diet – Create a Primal Recipe:** Concoct your own entrée of Primal fare, writing down all the ingredients and measuring portions for future reference. If the first go-round is not quite right, revise the recipe and repeat the exercise tomorrow.

**Exercise – Moderate Duration Aerobic Workout:** Go 20-60 minutes at 55-75 percent of maximum heart rate.

**Lifestyle - Work Peak Performance:** Start your workday by carefully creating a to-do list with tasks ranked in order of priority. Methodically proceed through each task with undivided attention. If a phone call brings an urgent request from your boss requiring an hour of work, revise your to-do list accordingly and stick to the renegotiated plan.

During this exercise, you may notice how easily you are pulled away from your priorities by unrelenting stimulation. Resolve to honor your to-do list for the duration of the day. While it does take a bit of extra diligence and preparation time to be proactive instead of reactive at work, building these skills can dramatically reduce stress and increase productivity.
DAY 11 JOURNAL

Success score (1-10): ________

Create a Primal Recipe
Recipe ingredients: __________________ _____________________ _____________________
Recipe instructions: _____________________________________________________________
_____________________________________________________________________________
Hardest part: __________________________________________________________________
Best part: _____________________________________________________________________
Proposed revisions (if necessary):__________________________________________________
_____________________________________________________________________________
Comments: ____________________________________________________________________

Moderate Duration Aerobic Workout
Activity: _________________ Duration: _________________ Location: __________________
Comments: ____________________________________________________________________

Work Peak Performance
Increased productivity/reduced stress from to-do list exercise: ______________________
Drawbacks/increased stress from to-do list exercise: _________________________________
Hardest part: __________________________________________________________________
Best part: _____________________________________________________________________
Elements you can integrate into typical workday: _________________________________
Overall comments: _____________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ____________________________________________
Benefits noticed from Primal efforts: _____________________________________________
Daily highlight(s): _____________________________________________________________
Daily needs-to-improve: _______________________________________________________
DAY 12 CHALLENGES

Diet – Primal Recipe, Part 2: Repeat the recipe from yesterday if you feel it requires improvement.

Diet – Go Coco-nuts: Purchase an arsenal of coconut products and prepare a coconut-focused recipe or two. Coconut oil can replace PUFA oils for cooking. Coconut flour is an excellent substitute for any flour recipe, including pancakes. Coconut milk is a delicious milk substitute, great to pour on berries, drink straight, blend into a smoothie, or agitate into a whipped cream. Coconut flakes are versatile recipe and meal accoutrements. All can be found at a decent health food store or in the ethnic foods department of a quality supermarket.

For recipes, a Primal Fuel smoothie is an easy shortcut here (since coconut milk solids form its base). The Primal Blueprint Cookbook and Primal Blueprint Quick and Easy Meals have many coconut options, and entering “coconut” into the search bar at MarksDailyApple.com will produce a handful of excellent posts with recipes.

Exercise - PEM Workout: Choose an abbreviated or full session depending on your energy and motivation level today. Go until your muscles fail on each exercise, and take enough rest between exercises to return your breathing to normal.

Lifestyle - Nurture Your Intimate and Social Circles: Schedule a family social gathering with no digital stimulation or distractions. Enjoy conversation, exercise/sports/leisure/play sessions, board games, art projects, and other endeavors that you can do together. Schedule a lunch or quick morning coffee with a business associate whom you typically interact with via digital communication. Finally, disconnect from all social media and strictly limit consumption of digital media as you did on Day 9 to allow for more meaningful and prolonged social interaction.
Primal Recipe, Part 2 (if applicable):
Changes made: _______________________________________________________
Comments: ________________________________________________________________________

Go Coco-nuts
Products used: _____________________________________________________________
Elements you will integrate into diet long term: ________________________________
Hardest part: __________________________________________________________________
Best part: ___________________________________________________________________
Comments: ______________________________________________________________________

PEM Workout
Success score: __________ Location: _______ Duration: ___________
Reps completed:
Pushups set 1: ________ set 2: __________
Snatches set 1: ________ set 2: __________
Pullups set 1: ________ set 2: __________
Plank (time) set 1: _______ set 2: __________
Comments: ______________________________________________________________________

Nurture Your Intimate and Social Circles
Intimate circle connections: _________________________________________________
Social circle connections: _________________________________________________
Hardest part: __________________________________________________________________
Best part: ___________________________________________________________________
Elements to integrate into lifestyle long term: _________________________________
Comments: ____________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: __________________________________________
Benefits noticed from Primal efforts: __________________________________________
Daily highlight(s): __________________________________________________________
Daily needs-to-improve: ______________________________________________________
DAY 13 CHALLENGES

**Diet – Top of Spectrum:** Today your challenge is to acquire a food ranked at the top of the spectrum in each food category as follows:

- Local, pasture-raised/grass-fed meat or fowl. Failing that, find some certified organic meat.
- Local, pasture-raised eggs. Failing that, find some certified organic eggs.
- Wild-caught fresh fish or oily, cold water canned fish.
- Locally grown produce. Failing that, find some certified organic produce grown domestically.
- Macadamia nuts—raw or dry-roasted.
- Domestically grown extra-virgin, first cold-press olive oil.
- Raw, fermented, unpasteurized, grass-fed dairy products (cheese, butter, cream cheese, ghee, kefir, whole milk, yogurt).
- Indulgences: if you are compelled to indulge, find some high-quality red wine and/or dark chocolate at 75 percent cacao content or higher.

**Exercise – Moderate Duration Aerobic Workout:** Conduct a moderate duration aerobic workout at a heart rate range of 55-75 percent of maximum. Explore a new exercise today, or repeat an activity you enjoyed from your aerobic adventure day.

**Lifestyle – Get Adequate Sunlight:** This challenge is ideal for the summer months with relatively strong sunlight. If this is impossible to tackle today, review the material and try the challenge when the weather allows.

Vitamin D plays a critical role in regulating healthy cellular function, yet widespread deficiency occurs in the developed world due to sedentary lifestyles and irrational fears of skin cancer. Failure to obtain the bare minimum of sun exposure and vitamin D production actually increases your risk for a variety of cancers, including melanoma! While this is a complex subject warranting deeper discussion (page 209 of the *Primal Blueprint* provides some detail), becoming familiar with the basics of safe, adequate sun exposure is a valuable component of your 21-Day Challenge.

While individual circumstances vary wildly (pigment, latitude, time of day/year, weather, ozone, altitude, surface reflectiveness), maintaining a slight tan year-round indicates that your vitamin D blood levels are adequate. When tanning is a challenge (e.g., winter), taking vitamin D supplements can help boost your levels into the target range. Contrary to Conventional Wisdom, getting adequate vitamin D from dietary sources alone is virtually impossible. Vitamin D experts recommend you obtain around 4,000 International Units (I.U.) per day, but the SAD provides only around 300 I.U. per day, and the vaunted glass of milk provides only around 100 I.U. per day. By contrast, 20-40 minutes of direct sunlight can produce around 10,000 I.U. of vitamin D, which can easily be stored in your cells for future use.

For maximum vitamin D production, expose large surface areas of your skin (arms, legs, torso) to direct sun for about half the amount of time it takes to get slightly burned. Your personal “time to burning” on a particular day is an estimate dependent upon the aforementioned variables, but trying to hit the halfway mark is a pretty low-risk endeavor. Today, try to expose as much skin as possible to the sun for a reasonable length of time, avoiding burning of course. To mitigate skin cancer concerns, cover frequently exposed, sensitive skin areas (face, neck, hands) with clothing or sunscreen.
DAY 13 JOURNAL

Success score (1-10): __________

Top Of Spectrum
Products acquired:
Meat: ____________________________ location: ________________________
Eggs: ____________________________ location: ________________________
Fish: ____________________________ location: ________________________
Macadamia nuts: __________________ location: _________________________
Extra-virgin olive oil: _____________ location: ________________________
Dairy products: __________________ location: _________________________
Indulgences: _____________________ location: _________________________
Describe the budget impact: ____________________________________________
Hardest part: __________________________________________________________________
Best part: ___________________________________________________________________
Purchases you can sustain long term: ____________________________________________
Purchases unrealistic to sustain long term: ______________________________________
Next best choice to sustain long term: __________________________________________
Comments: ___________________________________________________________________

Moderate Duration Aerobic Workout
Activity: _____________ Duration: _____________ Location: ________________
Comments: __________________________________________________________________

Get Adequate Sunlight
Was today an appropriate day to get some sun exposure?: _________________
Minutes of exposure: ______ Parts of body: _____
Hardest part: __________________________________________________________________
Best part: _____________________________________________________________________
Suggestions you can integrate long term: _________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ____________________________________________
Benefits noticed from Primal efforts: _____________________________________________
Daily highlight(s): ____________________________________________________________
Daily needs-to-improve: _________________________________________________________
DAY 14 CHALLENGES

**Diet – Sweet Spot:** Whip out your notepad and do another paleotrack.com macronutrient analysis of everything you eat, paying particular attention to hitting the Primal Blueprint Carbohydrate Curve Sweet Spot of between 50 and 100 grams of total carbohydrate intake. Accept this challenge even if you don’t have fat reduction goals, but refrain from doing any extreme workouts.

**Diet – Intermittent Fast Alert:** Tomorrow your challenge will be to Intermittent Fast from tonight’s dinner to as long as you can comfortably last without eating tomorrow. The essence of the exercise is to check how Primal-adapted you have become by following up a day of carb restriction with an Intermittent Fast. Honor the spirit of the challenges and don’t react to this advance warning by pigging out tonight!

**Exercise – Rest Day:** Take a break from exercise today, and reflect upon how planned rest periods—even if you are feeling great—are an essential element of an effective exercise program. Harness your energy for some challenging sessions coming up!

**Lifestyle - Reflection:** Take some time to comment in detail about your second week of Primal challenges.
DAY 14 JOURNAL

**Success score (1-10): __________**

**Sweet Spot Calculations**
Daily protein grams: _____
Daily carb grams: _____
Daily fat grams: _____
Total calories: _____
Areas to improve: _______________________________________________________________
Worst part of results: ____________________________________________________________
Best part: _____________________________________________________________________
Comments: ____________________________________________________________________

**Rest Day**
Comments: ____________________________________________________________________

**Summary Comments**
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: _______________________________________________
Benefits noticed from Primal efforts: _______________________________________________
Daily highlight(s): ________________________________________________________________
Daily needs-to-improve: ___________________________________________________________

**Week 2 Reflections**
Week 2 success score: ______
Days 1-14 success score: ______
Discuss how you addressed your needs-to-improve list from week 1: _____________________

Diet success score: ____Comments on diet challenges: _________________________________
Exercise success score: ____Comments on exercise challenges: _________________________
Lifestyle success score: ____Comments on lifestyle challenges: _________________________
Weekly highlight(s): _____________________________________________________________
Weekly needs-to-improve: _________________________________________________________
What specific steps can you take to address your needs-to-improve list? _________________

Overall comments on week 2: ________________________________
DAY 15 CHALLENGES

**Diet – Intermittent Fast #1:** You should be reasonably Primal-adapted at this point and able to succeed with this challenge at some level. You shouldn’t be famished upon awakening, particularly since yesterday’s challenge was to minimize carb intake/insulin production. Your fast will run from last night’s dinner for as long as you can last today without calories. When you experience strong sensations of hunger or diminished energy levels, enjoy a delicious and satisfying Primal meal.

**Exercise – Mark’s Favorite Primal Workout:** Ready for another exciting high-intensity challenge? Here’s one of my custom-designed favorites. See how you like it! Novice exercisers choose the shorter distance and easier PEM; vice-versa for advanced exercisers. Really advanced exercisers can tackle this with a weighted vest if they dare…take 30-60 second rests between exercises to catch your breath.

1. **Back slide arches/spidermans:** 25 or 50 meters, down with arches, back with spidermans.
   - Sit on ground with legs extended and back perpendicular to ground. Press down with arms and arch back until entire body is straight (like an upside-down plank position). Before landing, drive butt backward through the air to land further down the field in a sitting position, still facing backward. Once reaching the 25 or 50 meter mark, face forward (the direction you came from) and extend body into hand/feet plank position. Commence spidermans by driving right knee to right elbow, returning to plank, then driving left knee to left elbow. Do a sequence of 10 spidermans (Right+left = one), walk feet up to hand position (without standing up), then walk hands forward into another plank position. You are progressing down the field toward your original starting point! Commence a sequence of nine right/left spidermans. Repeat process, counting down to zero, and you should be near your starting mark. Fifteen-second rest before return trip.
2. **Pushups:** One set, maximum reps. Advanced exercisers can do decline pushups.
3. **Bunny hop/lunge walk:** 25 or 50 meters, down with bunny hops, back with lunge walks.
   - Thirty-second rest before return trip.
4. **Pullups:** One set, maximum reps.
5. **Stairs or Hopping drill:** Attack the stadium stairs or jump for joy (as seen in Sprint warmup photos)
6. **Plank:** Maximum time to failure at appropriate plank progression exercise.
7. **Sprint:** 2 x 50 or 75 meters. Fifteen-second rest before return trip.
8. **Squat:** One set, maximum reps. Why did I put this last? Oh man, good luck with that!

**Lifestyle – Cave Time:** Take 30-60 minutes of solo time today to disengage from digital stimulation, other people, and all other influences of the civilized world. I find a hike to be the best option, but meditating on a park bench is just fine too. Get some space, slow down your thoughts, and just relax and reflect.
DAY 15 JOURNAL

Interruption Fast #1
Duration: __________ Start time: _________ End time: __________
Hardest part: __________________________________________________________________
Best part: _____________________________________________________________________
Comments: ____________________________________________________________________

Mark’s Favorite Primal Workout
Success score: __________ Distance chosen for arch/spider and bunny/lunge: ________
Pushup style: ____ Reps: _______
Pullup reps: _______
Stairs or skipping: ____ Describe: _________________________________________________
Plank time: ______
Sprint distance chosen: ______
Squat reps: ______
Comments: ____________________________________________________________________

Cave Time
Duration: ______
Where did you go? _____________________________________________________________
Hardest part: __________________________________________________________________
Best part: _____________________________________________________________________
Comments: ____________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: _______________________________________________
Benefits noticed from Primal efforts: _______________________________________________
Daily highlight(s): ______________________________________________________________
Daily needs-to-improve: __________________________________________________________
DAY 16 CHALLENGES

**Diet – Go Local:** Strive to obtain half or more of your calories from local sources today. Hopefully you can take advantage of a farmer’s market to enjoy some great produce and animal products over the next few days.

**Exercise – Moderate Duration Aerobic Workout:** Exercise for 20-60 minutes at 55-75 percent of maximum heart rate. Note that the previous 16 days have involved a pretty ambitious Primal exercise regimen. If you have been significantly exceeding your normal level of exercise, take the rest you need to produce a strong finish over the final five days. If this means skipping today’s workout and hitting the minimum recommended range for future aerobic workouts, that’s fine.

**Lifestyle - Calm, Relaxing Evening #2:** Up the ante from your Day 2 challenge by making an even more dramatic effort to have a mellow evening. Completely refrain from screen time this evening in favor of a family board game or reading. Linger at the dinner table for conversation in true European style instead of rushing off to digital entertainment. Take an extended neighborhood stroll of 15-30 minutes to enjoy some fresh air, open space, and casual conversation or self-reflection. Get by on a minimum of artificial light after the sun sets, and get to sleep early in a dark, quiet, relaxing room.

Tomorrow, wake up as close as possible to sunrise and immediately expose yourself to direct sunlight. Choose an energizing morning ritual: breathing and stretching exercises, a brief neighborhood stroll, cold water plunge, or your Day 17 abbreviated PEM workout if you are so inclined.
**Go Local**

Estimate percentage of calories obtained locally: 

Places you shopped: 

Hardest part: 

Best part: 

Comments: 

**Moderate Duration Aerobic Workout**

Activity: 

Duration: 

Location: 

Comments: 

**Calm, Relaxing Evening #2**

Suggestions implemented: 

Hardest part: 

Best part: 

Comments: 

**Summary Comments**

Daily energy levels 1-10: 

Hunger level between meals 1-10: 

Satisfaction level with meals 1-10: 

Struggles today with Primal efforts: 

Benefits noticed from Primal efforts: 

Daily highlight(s): 

Daily needs-to-improve: 

Success score (1-10): ________
DAY 17 CHALLENGES

Diet – Modern Foraging #2: Escalate your challenge from Day 5 by eating all of your meals outside of the home and staying Primal-aligned. Seek out a new restaurant or market and navigate the offerings to create Primal meals.

Exercise – Full-Length PEM Workout: Two to three sets, maximum reps of the four PEMs. Go until your muscles completely fail on each exercise, and take enough rest between exercises to return your breathing to normal. If you are feeling a bit tired or sore, reduce this session to an Abbreviated PEM, and/or complete 75 percent of your estimated reps till failure (e.g., do 15 pushups if 20 is failure).

Lifestyle – Reach Out: Discover an open-minded and deserving family member or friend who might be receptive to going Primal and initiate some dialog about how you might help him or her. Engaging with someone about lifestyle change is a sensitive issue and must be handled accordingly. The operative word here is “receptive,” which is easy to determine in a brief conversation.

If you approach this challenge with an intervention vibe, you are likely to be rebuffed. Instead, take a casual, positive approach by inviting your friend to join you for a PEM workout, or a Primal meal at your home. You can even get them a copy of this book with an enthusiastic recommendation and invitation to discuss further. Offer information, guidance, and camaraderie on demand so your friend can control the dynamics of this journey. And hey, if no one comes to mind immediately, don’t force it. Keep this challenge in the back of your mind and try it when the time is right.
DAY 17 JOURNAL

Success score (1-10): ________

Modern Foraging #2
Location: ______________________ Meal: ________________________________
Location: ______________________ Meal: ________________________________
Location: ______________________ Meal: ________________________________
Hardest part: __________________________________________________________________
Best part: ___________________________________________________________________
Comments: __________________________________________________________________

Full-length PEM Workout
Success score: ________ Location: _________ Duration: __________
Reps completed:
Pushups set 1: ________ set 2: __________
Squats set 1: ________ set 2: ___________
Pullups set 1: ________ set 2: __________
Plank (time) set 1: _______ set 2: __________
Comments: __________________________________________________________________

Reach Out
Who did you talk to?: ________________________________
Best part: ___________________________________________________________________
Most difficult part: ___________________________________________________________
Comments: __________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ___________________________________________
Benefits noticed from Primal efforts: ___________________________________________
Daily highlight(s): ___________________________________________________________
Daily needs-to-improve: __________________________________________________________________
DAY 18 CHALLENGES

**Diet – Kitchen/Pantry Purge #2:** Take a final sweep of the premises and get rid of any non-Primal offenders still hanging around. If you are juggling the interests of a non-Primal significant other, kid(s), or roommate(s), see if you can arrange to segregate Primal and non-Primal items to specific shelves in order to sharpen your focus.

**Exercise – Moderate Duration Aerobic Workout:** Exercise for 20-60 minutes at 55-75 percent of maximum heart rate. Rest or hit the minimum if you are a bit tired or sore.

**Lifestyle – Use Your Brain:** Today you will take the initial steps to pursue a creative intellectual challenge that provides a refreshing break and balance to the responsibilities of hectic daily life. Sign up for lessons in a foreign language, a musical instrument, or dancing. Start a jigsaw or crossword puzzle right now, write a short story, or initiate a home improvement or landscaping project. Try anything else outside of your comfort zone that sounds interesting and challenging!

Also, figure out ways throughout the day to keep your brain challenged and stimulated. Replay a song on your iPod to memorize the lyrics, bust out your school yearbook and try to recall the names of long-lost fellow students, or use your head instead of a calculator to add up numbers.
DAY 18 JOURNAL

Success score (1-10): __________

Kitchen/Pantry Purge #2
Offending foods tossed: ____________________________________________
Compromises with cohabitants: ______________________________________
Hardest part: _______________________________________________________
Best part: ___________________________________________________________
Comments: _________________________________________________________

Moderate Duration Aerobic Workout
Activity: _____________ Duration: _____________ Location: ______________
Comments: _________________________________________________________

Use Your Brain
Daily challenge: ______________________________________________________
Steps taken for long-term challenge: _________________________________
Best part: _________________________________________________________
Most difficult part: ________________________________________________
Comments: _______________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: _________________________________
Benefits noticed from Primal efforts: _________________________________
Daily highlight(s): _________________________________________________
Daily needs-to-improve: ___________________________________________
DAY 19 CHALLENGES

**Diet – Go Local #2:** Strive to obtain an estimated two-thirds of your calories from local sources. Shop at the right places, eliminate processed products, and try to identify the source of everything that enters your mouth today. Keep an eye toward local in the future and see if you can maintain a high percentage of caloric intake from local sources.

**Diet – I.F. Alert:** Heads up, tomorrow your challenge will be to Intermittent Fast from tonight’s dinner to as long as you can comfortably last without eating tomorrow.

**Exercise – Sprint Workout:** Step up the intensity to between 90-100 percent of maximum effort. Go all out if you have the experience and are structurally sound enough to handle it.

**Lifestyle – Mini Play Breaks:** Take three spontaneous play breaks lasting 5-15 minutes today. Get up from your desk or out of your car and exercise your free spirit. Find a kid, animal, or co-worker and toss a ball, kick a can, or climb a fence. Look around and notice how possibilities abound—even in the drabbest of office parks or the most crowded airports!
Go Local #2
Estimated percentage of calories obtained locally: _____
Places you shopped: ____________________________________________________________
Hardest part: __________________________________________________________________
Best part: _____________________________________________________________________
Comments: ____________________________________________________________________

Sprint Workout
Success score: ______
Location: ____________________________
Activity: _______________________________________ Total duration: ______________
Reps: ______ Duration or distance: _______ Rest interval: _________
Comments: ____________________________________________________________________

Mini Play Breaks
Break #1: ______ Location: ________________________________ Duration: ____________
Break #2: ______ Location: ________________________________ Duration: ____________
Break #3: ______ Location: ________________________________ Duration: ____________
Hardest part: __________________________________________________________________
Best part: _____________________________________________________________________
Comments: ____________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ______________________________________________
Benefits noticed from Primal efforts: ______________________________________________
Daily highlight(s): ______________________________________________________________
Daily needs-to-improve: ___________________________________________________________
DAY 20 CHALLENGES

**Diet – Intermittent Fast #2:** Repeat the challenge and see if you can last any longer. Remember, this is not a pressure-packed suffer-fest, but rather a simple intuitive exercise to resist eating until you are actually hungry.

**Exercise – Extended Duration Aerobic Workout:** Conduct an extended duration aerobic workout at 55-75 percent of maximum, lasting at least an hour, and up to several hours if you have the fitness base.

**Lifestyle – 10 Primal Changes:** Compile a list of things you do today that represent a distinct transition from your pre-Primal lifestyle behaviors. For example, awakening early and getting some sunlight, eating a low insulin-producing breakfast, taking a break for movement or play, standing up while working, disciplining your use of email, moderating heart rate during an aerobic workout, dimming the lights and donning yellow lenses after dark, and so on.

Can you get the list up to 10? How about 15? 20? Enjoy the challenge and see if you can appreciate the accumulating benefits of transforming to a Primal lifestyle.
Interritent Fast #2
Duration: ______ Start time: ______ End time: ______
Hardest part: ____________________________________________
Best part: ________________________________________________
Comments: __________________________________________________________________

Extended Duration Aerobic Workout
Activity: ____________ Duration: ______________ Location: ______________
Comments: __________________________________________________________________

Primal Changes (minimum of 10)
1: ___________________________________________________________________________________
2: ___________________________________________________________________________________
3: ___________________________________________________________________________________
4: ___________________________________________________________________________________
5: ___________________________________________________________________________________
6: ___________________________________________________________________________________
7: ___________________________________________________________________________________
8: ___________________________________________________________________________________
9: ___________________________________________________________________________________
10: _________________________________________________________________________________
11: _________________________________________________________________________________
12: _________________________________________________________________________________
Hardest part: ________________________________________________
Best part: _________________________________________________
Easiest to sustain long term: _____________________________
Most difficult to sustain long term: _________________________
Comments: __________________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ____________________________
Benefits noticed from Primal efforts: ____________________________
Daily highlight(s): __________________________________________
Daily needs-to-improve: _____________________________________
Diet – Sensible Indulgences: Make a list of non-Primal foods, beverages, or habits that have been the most difficult to manage during your challenge. Still have a hankering for that morning scone at the coffee house or a late-night spoonful (or two, or twelve) of ice cream? Heighten your awareness of any shortcomings, accept them without judgment or negativity, and formulate a plan to make your indulgences more sensible.

If you are a chocoholic, can you swap out milk chocolate products for dark chocolate? Can the rich, satisfying taste of a Primal Fuel smoothie take the place of a coffee house baked good when you need a quick morning snack on the go? Can beef jerky and apple slices take the place of a commercial energy bar when an afternoon lull hits? Can you smuggle a baggie of macadamia nuts into the movies to replace absent-minded scarfing of popcorn? If these replacement suggestions don’t fly, can you in fact appreciate a slice of cheesecake once a month without feeling guilty and diving into a five-day sugar binge? Maintain a positive mindset, focus on pleasure and satisfaction, and see if you can find ways to tweak your indulgent habits without feeling deprived or frustrated.

Exercise – Full-Length PEM Workout: Complete a full-length Primal Essential Movements workout consisting of a five-minute warmup period of easy cardiovascular exercise, and two to three sets of maximum repetitions of pushups, squats, pullups, and planks.

Lifestyle – After Photo: If you are inclined, snap a progress photo to compare to the one you may have taken at the outset of the 21-Day Challenge. If you have been diligent in completing the challenges and aligned with Primal eating, you should notice some improvements in body composition.

Hopefully you will feel that the Primal 21-Day Transformation Action Items are sustainable over the coming months and years, and have confidence that you can continue to progress at a reasonable rate with body composition goals until you attain your ideal. Take a photo every 60 days to record your progress.

Lifestyle – Reflection: Take some time to comment in detail about your third week of Primal challenges and your entire 21-day journey.

CONGRATULATIONS

In completing this 21-day challenge, you have taken the major steps to reprogram your genes for a longer, fitter, leaner, happier life. Regardless of the curves life throws at you in the future, you now have an outstanding foundation of knowledge and tools to help you reach your true genetic potential.
DAY 21 JOURNAL

Sensible Indulgences
Difficult to eliminate: __________ Potential Primal swap: __________
Difficult to eliminate: __________ Potential Primal swap: __________
Difficult to eliminate: __________ Potential Primal swap: __________

Full-Length PEM Workout
Success score: __________ Location: ______________________ Duration: _______________
Reps completed:
Pushups set 1: _______ set 2: __________
Squats set 1: ________ set 2: __________
Pullups set 1: _______ set 2: __________
Plank (time) set 1: ______ set 2: __________
Comments: __________________________________________________________________________
__________________________________________________________________________________

“After” Photo
Comments: __________________________________________________________________________
__________________________________________________________________________________

Summary Comments
Daily energy levels 1-10: ______
Hunger level between meals 1-10: ______
Satisfaction level with meals 1-10: ______
Struggles today with Primal efforts: ____________________________________________________
Benefits noticed from Primal efforts: ____________________________________________________
Daily highlight(s): __________________________________________________________________
Daily needs-to-improve: ________________________________________________________________

Week 3 Reflections
Week 3 success score: __________
Discuss how you addressed your needs-to-improve list from week 2: _______________________
__________________________________________________________________________________
Diet success score: ____ Comments on diet challenges: _________________________________
__________________________________________________________________________________
Exercise success score: ______  Comments on exercise challenges: ____________________
_____________________________________________________________________________
Lifestyle success score: ______  Comments on lifestyle challenges: ____________________
_____________________________________________________________________________
Weekly highlight(s): ____________________________________________________________
_____________________________________________________________________________
Weekly needs-to-improve: ______
What specific steps can you take to address your needs-to-improve list? ____________________
_____________________________________________________________________________
Overall comments on week 3: ______________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

21-Day Transformation Summary

Overall diet success score: __________
Overall exercise success score: __________
Overall lifestyle success score: __________
Hardest parts: __________________________________________________________________
_____________________________________________________________________________
Best parts: ____________________________________________________________________
_____________________________________________________________________________
Remaining needs-to-improve items: _________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

Overall comments on 21-day challenge: ____________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________