

the science behind low-carb success



If you could ask a caveman what he ate yesterday, you'd quickly find out that a low-carbohydrate diet is nothing new. There is little doubt that the Paleolithic diet consisted primarily of meat, vegetables, nuts, fruits, and berries. It's true that we don't have records showing how these foods were balanced, but common sense tells us that once an animal was caught and cooked, it yielded a greater number of servings than cavemen could possibly have gathered and consumed from locally available and seasonal vegetables and fruits. Add to this the fact that refined grains, soft drinks, and candy bars were unavailable, and we can safely assume that the invention of the low-carb diet took place long before people began to read about it.

Doctors began to pay formal attention to the effect of carbohydrate restriction in the 1920s, when this diet was used as a treatment option for people with intractable

epilepsy. Another 30 to 40 years later, the first public hype about the health benefits of higher-protein, lower-carbohydrate meals hit the United States. In the 1960s, Dr. Irwin Stillman touted this eating plan in a widely read book and on late night TV. In the 1970s, Dr. Robert Atkins popularized this eating plan when he publicly defied conventional medical wisdom with his "diet revolution."

The 1980s and 1990s brought several variations on the low-carb theme, including the Scarsdale Diet, The Zone, Sugar Busters, Protein Power, and the Carbohydrate Addict's Diet. Technically, all of these low-carb diets work. People lose weight on them. They might even be able to keep the weight off for a time. However, many of these diets are impractical because they require you to suddenly eliminate your favorite foods—even some of the healthy ones. And some of these low-carb diets are nutritionally inadequate or nearly impossible to sustain over a lifetime.

Our plan takes a whole new approach by starting with your current eating patterns and your degree of motivation for change. Unlike a strict diet that forces you to empty your fridge and cupboards into the trash, smart low-carb eating includes many of your favorite foods such as pasta, grains, and even potatoes. No food is completely off-limits. The plan can be started immediately or gradually adopted over time. It is a plan that you can live with for good.

Our approach also incorporates new research that helps explain why low-carb eating reduces weight. We take into account all the beneficial aspects of the carbohydrate-controlled plans that have come before. But more important, we include the key elements of calorie control; glycemic index; unsaturated versus saturated fat; the nutritional benefits of whole, natural foods; and the flexibility to choose from each of the major food groups.

Another unique part of the smart low-carb approach is that it addresses food triggers. Regardless of how nutritious and/or low in carbohydrates a food may be, if it somehow triggers you to overeat, reaching a healthy weight and overall good health might be an endless struggle. We show you how to identify and manage potential food triggers so that you can achieve your weight-loss goals and reach optimal health.

WHAT'S A CARBOHYDRATE?

Eating smart does not mean avoiding carbohydrates altogether. We're not about to tell

you that carbohydrates are evil. The fact is, you can't live without them. Carbohydrates are one of three basic macronutrients needed to sustain life (the other two are protein and fat). But eating too many carbohydrates—especially refined carbohydrates—can cause you to gain weight and can adversely affect your health. Numerous studies demonstrate the relationship of these less-healthy carbohydrates to type 2 diabetes, heart disease, and some kinds of cancer. It's true that eating too much of any food can cause weight gain and increase disease risk, but there's more to the story when it comes to carbohydrates.

Carbohydrates encompass a broad range of sugars, starches, and fibers. There are two general classes of carbs—refined and unrefined. Refined carbohydrates are essentially refined sugars and refined flours. Unrefined carbohydrates are the kind found in whole grains, beans, fruits, and many vegetables. Generally speaking, refined carbohydrates are less healthy for our bodies and unrefined carbohydrates are more healthy. Here's a list of foods classified as refined or unrefined carbohydrates.

Refined Carbohydrates

Table sugar	Maple syrup
Soft drinks	Sweetened yogurt
Any ingredient ending in “-ol,” such as sorbitol	Any ingredient ending in “-ose,” such as dextrose

Unrefined Carbohydrates

Vegetables	Buckwheat
Beans	Quinoa

Peas	Tapioca
Milk	Plain yogurt
Fruit	Fruit juice
Amaranth	Whole grains (wheat,
Arrowroot	oats, barley, rye)
Potatoes	Whole-grain breads,
Sweet potatoes	cereals, and pastas

Unrefined carbohydrates are usually more healthy because they include two kinds of fiber, soluble and insoluble. Fiber is extremely important for weight management because it makes you feel full so you don't overeat, and it helps to slow down your body's absorption of carbohydrate foods. Good sources of soluble fiber include citrus fruits, apples, dried peas, beans, oatmeal, and oat bran. It helps to stabilize blood sugar levels and may help reduce the risk of heart disease. Good sources of insoluble fiber are whole grains, wheat bran, broccoli, carrots, asparagus, and pears. Combined with soluble fiber, insoluble fiber helps maintain good bowel function. Because these fiber-rich foods are so important to a satisfying weight-loss plan, we've included a wide variety of them in this book.

CARB METABOLISM: THE GLYCEMIC INDEX

If you want to lose weight and keep it off, it's important to know how various foods will affect your energy levels and your waistline. Here's how it works: All carbohydrates, including the lactose in milk, the starch in a bagel, and the sucrose in table

sugar, are eventually converted by your body into glucose (blood sugar), which is our primary source of energy. One hundred percent of the carbohydrate you eat turns into glucose, but only 58 percent of the protein and about 10 percent of the fat you eat is converted to glucose. For this reason, carbohydrate-containing foods are often regarded as energy foods. It also takes your body longer to convert protein into glucose and still longer to convert fat into glucose. Carbohydrates take a fraction of the time. That's why people with diabetes carry sugar pills or drink orange juice if they begin to feel weak. That's also why if you are feeling hungry and pop a piece of gum or candy into your mouth, the hunger quickly disappears for a while. You are raising your blood sugar (glucose).

Now it gets really interesting. Although all carbohydrates are converted to glucose and raise your blood sugar, not all are converted at the same rate. In the early 1980s, researchers began to study this phenomenon. You might think that all refined carbohydrate foods raise blood sugar quickly and all unrefined carbohydrate foods raise it more slowly. However, researchers demonstrated that this isn't always the case. They developed a number system called the glycemic index (GI), which ranks carbohydrate-containing foods according to how quickly they raise your blood sugar within a 2- to 3-hour period after eating. The glycemic index goes from 1 to 100, with the highest ranking of 100 assigned to pure glucose. The higher the GI, the

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I Did It!

Jeanne Bennett

Jeanne had a bicycle accident that led to years of medical problems and weight gain. None of the diets she tried worked very well, until she started reducing her intake of sugar and flour. Then she lost 44 pounds and kept it off for 4 years and counting.

“I was always thin and healthy. I could eat anything I wanted without ever gaining weight. That was my life before age 30. Then a bicycle accident marked the beginning of several physical and medical problems. I also had two children and was a stay-at-home mom.

“After recovering from the accident, I sent my second child off to kindergarten, and I was ready to return to the workplace. When I started assembling my wardrobe, I realized that I had gained almost 50 pounds! My life was loaded with stress and constant change



Weight lost: 44 pounds

Time kept off: 4 years

Weight-loss strategies: Reduced carbohydrate intake, ate smaller portions

Weight-maintenance strategies: Avoids foods containing sugar, eats whole grains instead of refined, does aerobic and strength-training exercises 3 times a week

around this time. I completed my master's degree in speech/language pathology, went through a divorce, remarried, moved to a different town, and started a new job. Food was the only constant in my life! It was my comfort—and most likely my downfall because I usually ate quick, unhealthy meals on the run.

“My weight-loss efforts were always thwarted by medical problems, too. I was diabetic, had high cholesterol, could not get a good night's sleep, and suffered with arthritic pain. By the time I reached my fifties, I was desperate. As my doctor put it, ‘You have dodged a lot of bullets!’ I was motivated to do more than dodge bullets. But I had no idea how to help myself. I only knew that all of the diets, sleep aids, and pain relievers that I tried were merely temporary bandages on the symptoms rather than a cure for the underlying problems.

“I had managed to lose about 10 pounds on my own when my doctor referred me to a dietitian to develop a sound eating plan. That was when I really began to lose weight and keep it off. During my very first visit, the dietitian carefully listened to me, took a complete health and diet history, and gave me a plan of action. First, we had to know what I was eating every day. I soon realized that I had been eating way too

much food (about 2,500 calories a day) and far too many foods high in white sugar, white flour, and other refined carbohydrates. Best of all, I learned that even though several physical and medical problems had resulted in my present health profile, I could take control. I could get healthy and I could lose weight.

“Over the next several months, I avoided eating foods high in refined sugar and refined flour. Instead, I began to eat more vegetables, lots of lean protein foods like fish, chicken, lean cuts of beef and pork, beans, and some fresh fruit. My quality of life changed dramatically. I lost another 34 pounds in 4 months and my blood sugar levels normalized, my cholesterol came down, my arthritis pain was gone, and I got more sleep. I was so much happier! I had accomplished a significant lifestyle change—not a diet, but a way of eating and living that was right for me.

“Now I'm in my late fifties and I no longer feel like I am ‘dodging bullets.’ It's more like I have been armed with understanding and the tools that I need to live a more healthy life. I watch my carbohydrate intake, eat the foods that are healthy for my body, and exercise three times a week. I know I still have progress to make. But I'm much more motivated now that I've found a plan that works.”

quicker the food breaks down and increases blood sugar after you eat it. The lower the GI, the more gradually the food is absorbed and the more slowly it raises your blood sugar. Foods ranked 55 or below are considered low GI because they only cause a little blip in blood sugar. Foods ranked 56 and over are considered high GI because they can spike your blood sugar, or send it soaring.

As a rule of thumb, choose more low-GI foods to help you lose weight. But don't avoid all high-GI foods. For instance, oatmeal has a "high" GI of 59, but its soluble fiber makes it a healthy food, so there's no reason to avoid it. Likewise, a chocolate bar has a "low" GI of 49, but that doesn't mean you should load up on chocolate—the extra calories and saturated fat will sabotage your weight-loss efforts.

To tell whether a high-GI or low-GI food is a healthy choice, take into account the other nutrients in the food. For example, whole wheat bread and white bread have similar GIs. But whole wheat bread is the healthier choice because it contains extra fiber and other important nutrients that white bread lacks. By the same token, brown rice is more nutritious than white, and whole wheat pasta is more healthy than white pasta. Surprisingly, potato chips have a somewhat low GI, but they're not the healthiest snack choice due to their high calorie and low nutrient content. Peanuts or a plum would make a more nutritious snack.

Smart-Carb Insider Tip

STAY FOCUSED

Keep your eye on the big picture. When you can, look at your eating plan for the week. Will you be going out to eat? Do you have a special luncheon to attend? A reception of some sort? Will you be traveling? Decide when you will be able to make smart choices and when you're likely to throw caution to the wind. Some foods may be more important than others to your enjoyment of life. For instance, if you have lunch planned at your favorite restaurant, avoid carbohydrates that morning and indulge in that deep-dish pizza you dream about come lunchtime. Or if there's a cake you simply must have for dessert one night, plan on eating just a salad, protein, and vegetables for that evening's dinner. Then enjoy your dessert. These occasional indulgences are crucial to maintaining a smart eating plan.

If you do choose to eat a high-GI food, try combining it with a low-GI food in the same meal or combining it with foods higher in protein or fat. This will slow down the rate at which the high-GI food raises your blood sugar. For instance, high-GI oatmeal could be balanced with a topping of low-GI milk and/or nuts. Again, no foods should be completely avoided. Variety, balance, and moderation are the keys to a smart eating plan. Occasional indulgences are important, too.

Here's a snapshot of low-GI and high-GI foods. See "The Glycemic Index" on page 8 for a detailed ranking of foods and their GI scores.

Low-GI Foods

Breads: Pumpernickel, sourdough

Grains: Barley, parboiled rice, bulgur, kasha

Pasta: Angel hair, linguine, and other thin strands; bean threads (cellophane noodles); whole grain spaghetti

Cereals: Rice bran, unsweetened high-fiber (all bran) cereals

Vegetables: All, except those listed as high GI

Fruits: Cherries, grapes, apples, peaches, pears, plums, strawberries, oranges, dried apricots

Snacks: Cheese, nuts, olives

Protein foods: Unsweetened peanut butter, beans, eggs, unsweetened soy milk

Miscellaneous: Low-fat yogurt, foods sweetened with sucralose, saccharin, fructose, or aspartame

High-GI Foods

Breads: Whole wheat bread, corn bread, all baked goods made with white flour

Cereals: Old-fashioned oats, corn and most corn products, some rice products, millet, some dry cereals

Pasta: All thick shapes such as ziti, penne, and rigatoni

Fruits: Watermelon, raisins, pineapple, cantaloupe, very ripe banana

Vegetables: Parsnips; potatoes (especially instant mashed potatoes), including French fries, fresh mashed

potato, baked russet potato; corn, beets, carrots

Snacks: Corn chips, tortilla chips, pretzels, rice cakes

Alcohol: All beer, all liquors and wine, except red wine

Miscellaneous: Foods sweetened with a lot of sugar, honey, molasses, corn syrup, glucose, or dextrose

KEEP INSULIN IN CHECK

So what's the real problem with eating lots of high-GI foods? A little hormone called insulin, which is a good guy in moderation, but not in excess. Whenever carbohydrate foods are broken down into glucose in your body, glucose stimulates the release of insulin by the pancreas. The function of insulin is to grab the glucose and deliver it to your body's cells. Then your cells convert the glucose to energy or store the glucose as fat if there is already more than enough glucose to meet current energy requirements.

More important, though, are your insulin levels. When your blood sugar soars, so does your insulin. Eating high-GI foods causes your insulin levels to go up or spike, which researchers say may increase your risk of diabetes, heart disease, and possibly cancer. Your body has a very precise means of regulating how much sugar stays in your bloodstream and how much gets into your cells. If you eat excessive amounts of quickly absorbed carbohydrates, you upset your body's precise bal-

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THE GLYCEMIC INDEX

Choosing foods with a low glycemic index (GI) can help you lose weight. That's because low-GI foods are slowly digested and help prevent the spikes in blood sugar that can cause food cravings and lead to weight gain. Low-GI foods have a ranking of 55 or lower. High-GI foods have a ranking of 56 or higher. If you choose a high-GI food, try to combine it with a low-GI food or a food that is high in protein or fat. This will slow the absorption of the high-GI

food and prevent your blood sugar from rising rapidly. Foods printed in green are high-GI foods that you need not avoid; these foods, such as carrots and watermelon, contain important nutrients besides carbohydrates. Foods printed in red are low-GI foods that are best eaten sparingly; these foods, such as potato chips, are high in fat or calories—and don't offer much else nutritionally. See page 3 for more details on the glycemic index.

Food	GI	Food	GI	Food	GI
Baked Goods		Cereals		Pastas	
French bread	95	Puffed rice	88	Brown rice pasta	92
Waffle	76	Corn flakes	84	Gnocchi	68
Graham cracker	74	Puffed wheat	74	Boxed macaroni and cheese	64
Kaiser roll	73	Cream of Wheat	70	Rice vermicelli	58
Bagel	72	Shredded wheat	69	Durum spaghetti	55
Melba toast	70	Quick-cooking oats	66	Cheese tortellini	50
White bread	70	Old-fashioned oats	59	Linguine	46
Corn tortilla	70	Oat bran	55	White spaghetti	41
Whole wheat bread	69	All-Bran	42	Meat-filled ravioli	39
Taco shell	68	Grains		Whole grain spaghetti	37
Angel food cake	67	Instant rice	91	Vermicelli	35
Croissant	67	Millet	71	Fettuccine	32
Stoned wheat thins	67	White rice	68	Bean threads	26
100 percent whole rye bread	65	Cornmeal	68	Legumes	
Rye crispbread	65	Couscous	65	Fava beans	79
Bran muffin	60	Brown rice	55	Canned kidney beans	52
Whole wheat pita	57	Buckwheat	54	Canned baked beans	48
Oatmeal cookie	55	Bulgur	48		
Pumpnickel bread	41	Parboiled rice	47		
		Pearled barley	26		

FOOD	GI	FOOD	GI	FOOD	GI
Canned pinto beans	45	Orange juice	57	Beet	64
Black-eyed peas	42	Mango	55	Boiled new potato	62
Canned chickpeas	42	Banana	53	Fresh corn	59
Chickpeas	33	Kiwifruit	52	Sweet potato	54
Lima beans	32	Grapefruit juice	48	Yam	51
Yellow split peas	32	Pineapple juice	46	Green peas	48
Butter beans	31	Orange	43	Tomato	38
Green lentils	30	Grapes	43	Snacks and Misc	
Kidney beans	27	Apple juice	41	Pretzel	83
Red lentils	26	Apple	36	Rice cake	82
Soybeans	18	Pear	36	Vanilla wafers	77
Dairy and Ice Creams		Strawberries	32	Tortilla chips	74
Tofu frozen dessert	115	Dried apricots	31	Corn chips	72
Ice cream	61	Peach	28	Table sugar	65
Sweetened, fruity yogurt	33	Grapefruit	25	(sucrose)	
Skim milk	32	Plum	24	Popcorn	55
Whole milk	27	Cherries	22	Potato chips	54
Artificially sweetened, fruit-flavored yogurt	14	Vegetables		Chocolate	49
Fruits		Parsnip	97	Chocolate-covered peanuts	32
Watermelon	72	Baked potato	85	Soy milk	31
Pineapple	66	Instant mashed potato	83	Peanuts	14
Cantaloupe	65	French-fried potato	75		
Raisins	64	Pumpkin	75		
		Carrot	71		
		Fresh mashed potato	70		

NOTE: Vegetables not appearing in this table are all low-GI foods.

SOURCE: "International Table of Glycemic Index," as it appears in *American Journal of Clinical Nutrition* and *The Glucose Revolution* by Thomas Wolever, M.D., Ph.D.

ance of blood sugar, which puts you at risk for these diseases.

By eating less of the quickly absorbed carbohydrates, keeping moderate amounts of lean proteins and healthy fats in your diet, and getting a reasonable amount of physical activity, you set the stage for safe and effective weight loss. These strategies form the basis of the smart low-carb approach in this book. Put the emphasis on unrefined carbohydrate foods, and you will get more fiber, vitamins, and minerals to help slow the absorption of carbohydrates into your bloodstream. Slow, gradual absorption will prevent your body from producing excess insulin and prevent sudden or excessive drops in blood sugar. As a result, you experience less hunger and are less likely to get sudden urges for sweets or extra portions.

We've talked with hundreds of people who found that this type of eating satisfaction is what really helped them to keep the weight off and stay healthy. Janet Lasky lost more than 155 pounds and has kept it off for 8 years. "I feel wonderful now!" she explains. "My doctor discontinued my blood pressure medication; my blood sugars are within normal range despite my being diagnosed with diabetes years ago; and unlike earlier readings, my cholesterol now stays well below 200. What I like best about this approach is that I don't ever feel deprived or like I am on a diet."

Alice Cooper adopted the smart low-carb approach, dropped 30 pounds, and has kept it off for 4 years. "'Happy' does not describe how I feel these days," she says. "I

don't have nearly as many cravings. My desire for foods has changed."

WHY DOES LOW-CARB WORK?

As in so many areas of nutrition, some controversy surrounds the low-carb approach. Most health professionals agree that this eating strategy results in sustainable weight loss, but the reasons why are hotly contested. To the person who loses weight, keeps it off, and stays healthy in the long run, it may not matter what the reason is. Invariably, though, once you begin shedding pounds, an inquisitive relative, friend, or coworker is going to ask why you think it works.

Proponents of the low-carb approach usually base their reasoning upon a comparison between how the body metabolizes carbohydrates and how it breaks down proteins and fats, as explained above. Simply put, eating too many carbohydrate grams may increase insulin to such a high level in overweight people that more glucose becomes available to the cells than the body needs for energy. The excess glucose gets turned into fat. Consequently, blood sugar goes down because the glucose is going into the body's cells as fat. And when your blood sugar begins to drop, you feel hungry. If, like many Americans, you eat a lot of refined carbohydrates such as soft drinks and candy bars—or even pretzels and crackers—you are feeding a vicious cycle in your body that never really satisfies your hunger because you get only short-term re-

SUGAR ADDICTION: IS IT POSSIBLE?

Science hasn't found that sugar is addictive in the way that nicotine or even alcohol can be. However, many people claim to be addicted to sugar (and carbohydrates). Here's some support for the theory. Sugar and alcohol do have something in common. They both release a brain chemical called serotonin, which makes you feel calm and relaxed. In our frenzied world, who wouldn't want to eat more of something that relieves stress? It's extremely interesting, too, that there is frequently alcoholism in the families of people who claim to be addicted to sugar. A study done in the Addiction Program at the Royal Ottawa Hospital in Ontario even found a distinct subgroup of alcohol-dependent subjects who craved carbohydrates during sobriety.

Here's another possible explanation: When refined carbohydrates raise your blood sugar levels, these carbohydrates can stimulate the release of feel-good brain chemicals called endorphins. As with serotonin, it's natural for the body to want more and more endorphins to continue that good

feeling. These explanations of sugar addiction are far from clear. The point is that some researchers believe that psychological processes are at the heart of both food cravings and addiction.

Recent research suggests that there may be a genetic explanation for your sweet tooth. Using data from the Human Genome Project, two separate research teams identified a gene that appears to regulate a sweet receptor on the nerves in your taste buds. Decreasing this gene's activity may help people control cravings for sweets.

What can you do today to stop cravings? Try replacing sugary foods or refined-carbohydrate foods with higher-protein foods for a few days. You may experience some fatigue early on, like many of the people we talked with who tried this trick. They described this temporary fatigue as sugar withdrawal. If you stick with the protein foods for more than a week, you may find, like they did, that you can break your sugar "addiction."

lief. Plus, most refined carbohydrate foods are low in fiber. As mentioned earlier, eating fiber-rich foods gives you a sense of fullness. On the other hand, eating low-fiber simple carbohydrate foods leaves you feeling constantly hungry. This cycle may help to explain why sugar seems to have an addictive quality and how carbohydrate-rich meals may lead to excess weight.

As much sense as this explanation may make to you, skeptics of reduced-carbohy-

drate plans claim that this is not the whole story. They agree that reducing carbohydrates reduces insulin levels; however, they argue that the only reason low-carb eating works is that it diminishes hunger for some people, and they eat less. They remind us that the extra protein and fats in these diets also help satisfy hunger longer. The bottom line, according to skeptics, is that people lose weight on low-carb diets not because carbohydrates are reduced, but because protein

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I Did It!

Lindsay Dooley

Lindsay was overweight for as long as she can remember. After adopting a low-carbohydrate diet in her teens, she got active in sports and dropped four dress sizes.

“From the time I entered kindergarten, I was always called a chunky girl. When I hit puberty around age 13, I mysteriously gained 30 pounds. It was a mystery because I didn’t change the types or amounts of foods I was eating, nor the amount of exercise I was doing. I just gained weight. My mother tried her best to help me shed the excess pounds. She put me on a low-fat diet that limited my intake to 20 fat grams a day. When that approach failed, she took me to a doctor. He told her not to worry about my size (a women’s 20!) and to quit focusing on diets. He warned her that she could cause me to have an eating disorder. For the next year, I went back to eating what I wanted to. I can



Weight lost: 40 pounds

Time kept off: 4 years

Weight-loss strategies:

Avoided refined carbohydrates and trigger foods, strength trained, played volleyball

Weight-maintenance strategies: Controls carbohydrate intake, swims, stays active

remember having tremendous cravings for pasta with butter and salt. I rarely, if ever, ate sweets because I had been diagnosed with hypoglycemia (abnormal blood sugar) at age 4. My mom told me that when I was a toddler, she could give me an ice cream cone and I would be sound asleep in less than half an hour. To this day, sugar puts me right to sleep—usually for a 10-hour stint!

“Between the ages of 14 and 15, I gained another 50 pounds. Yes, 80 extra pounds in just 2 years! You can imagine what that did to my self-esteem at that critical time in my life. I became extremely depressed. Sometimes I sought solace in front of the television with any kind of food. Sometimes I would be so upset that I’d go without eating for 1 to 2 days. My depression worsened and my waistline spread as my mother searched for a doctor who could understand the weight problem.

“Finally, a doctor gave me antidepressants, which made me feel better, and identified that I had insulin resistance and several trigger foods. He advised me to eat a lower-carbohydrate diet and avoid my

trigger foods, including wheat, milk, beef, and eggs. Within 2 weeks of this new eating plan, I lost 8 pounds and immediately began feeling better. After avoiding my trigger foods for 3 months, I was able to reintroduce beef and milk into my diet every 4 days. (If I eat beef 2 days in a row, I have terrible insomnia.) I admit, the plan was somewhat difficult to follow at first. But that’s only because it was different from what I was used to. I soon began to adore vegetables in salads and stir-fries. Any time I had a food craving or felt deprived, I reminded myself about how much better I was feeling by not eating those foods. I also realized that if I ate the foods that weren’t right for my body, I would be depriving myself of feeling and looking my best. I steadily lost about 32 more pounds and felt better and better. My energy was so great that I joined the volleyball team at school.

“I am graduating high school this year. I can’t wait to pick out my graduation dress—especially since it will be at least four sizes smaller than the size I once wore!”

and fat are increased and total calories are reduced.

There's no doubt that total calories and portion control are key factors in any long-term weight-loss plan. Here's some very basic weight-loss science: One pound of fat equals 3,500 calories. For every 3,500 calories you cut out of your diet or burn off through physical activity, you will lose 1 pound. Seems simple. But if you've ever tried a rapid weight-loss diet, you know there's more to it than that. Cutting too many calories too quickly makes your body go into starvation mode, and then your body hangs on to every calorie and bit of stored fat it can. That's why rapid weight-loss diets don't work. People regain weight on them.

A few studies provide insight into why "calories in versus calories out" may oversimplify the route to successful weight loss—especially with regard to carbohydrates. Researchers at the Albert Einstein College of Medicine in the Bronx, New York, looked at caloric intake of overweight

teenagers following a low-carbohydrate plan compared to that of teens on a low-fat plan over a period of 12 weeks. Although the teenagers on the low-carb plan ate an average of 600 calories more per day than the other teens, they lost an average of 11 pounds more. The teens on the low-fat plan ate fewer calories but lost an average of only 10 pounds, while those on the low-carb plan ate more calories and lost around 20 pounds. This study suggests that calories are not the only deciding factor in weight loss.

Another study found that a low-carb diet may lead to more sustainable weight loss and better health in the long run. Researchers at the University of Illinois compared the widely recommended United States Department of Agriculture (USDA) diet (high carbohydrate) to a lower-carbohydrate diet that is very similar to the one recommended in this book. Interestingly, both diets had the same number of calories. In the study, 24 midlife women above ideal weight ate 1,700 calories a day for 10

HIDDEN ROADBLOCK to weight loss

ALCOHOL

Carbohydrate foods form the basis of most alcoholic beverages, including the grains in beer and whiskey and the fruit in wine. Alcohol supplies mostly empty calories, and it can cause spikes in blood sugar levels. So it could be holding you back from losing the weight you'd like to lose. Surprisingly, the morning after having a drink with dinner, the scale may show that you lost up to a pound. But within a day or two, most folks regain the weight—and sometimes extra. If you drink alcoholic beverages, try slowly decreasing the amount to see if a little less alcohol might help you lose a little more weight. Or choose drinks lower in carbohydrates. One ounce of hard liquor has only trace carbs; 1 glass of table wine has about 2 grams of carbs; and one 12-ounce bottle of beer has 13 grams of carbs. The worst choice is rum and cola, which has nearly 40 grams of carbs.

weeks. One group ate according to the USDA food guide pyramid (55 percent carbohydrates, 15 percent protein, and 30 percent fat). The other group ate a lower-carbohydrate, higher-protein diet (40 percent carbohydrates, 30 percent protein, and 30 percent fat). After 10 weeks, the women in both groups lost about 16 pounds. But the women on the lower-carbohydrate diet had a more healthy weight loss. They lost about 12 pounds of body fat and just over 1 pound of muscle mass. Those who followed the USDA diet lost only 10 pounds of body fat and a surprising 3 pounds of much-needed muscle mass. Muscle mass is important because once you lose it, your body is less able to burn calories. The women on the low-carb diet lost very little muscle mass compared to the women on the USDA diet. This means that the low-carb, high-protein diet was almost twice as effective for long-term weight loss because the women who followed this diet were more efficient at burning calories. The women on the low-carb diet also had increased levels of beneficial thyroid hormones at the end of the study, suggesting that their metabolisms went up—another plus for burning calories. One more bonus for the low-carb diet: The women following this plan experienced a sharp reduction in triglycerides (fat in the blood) and a slight increase in high-density lipoprotein (HDL, the beneficial type of cholesterol), which improved their overall heart health.

These studies coincide with our clinical observations of hundreds of low-carb

clients over the years. Norma Gates was steadily gaining 10 pounds a year for over a decade. She cut back on refined sugar and refined flour—all junk food—lost 44 pounds, and has kept it off for 3½ years so far. “Within a few weeks of eating fewer refined carbs, I felt like I had broken my carbohydrate addiction. The food cravings finally subsided,” she says. “I no longer put my head on the kitchen table right after dinner or make my way to the den to lie on the couch, and I have newfound pleasures in life besides just food.”

How It Came to This

There’s no doubt that eating lower-carbohydrate foods—and especially reducing refined carbohydrates—can help you lose weight and stay healthy. Maybe this phenomenon can be explained simply. Perhaps our bodies are just not used to metabolizing so many refined carbohydrate foods.

Data from the USDA show that per capita soft-drink consumption has increased by almost 500 percent over the past 50 years. According to USDA reports, 74 percent of adolescent boys and 65 percent of adolescent girls now drink at least one sugar-sweetened soft drink every day. In fact, nondiet soft drinks are the number-one source of added sugars in the American diet. According to government statistics, the average woman consumes 19 teaspoons of added sugar each day, while the average man eats 28 added teaspoons, or roughly 68.5 pounds of sugar per year. How much

should we be eating? Experts recommend that people who eat the average 2,000-calorie daily diet get no more than 10 teaspoons of added sugar a day. But USDA surveys show that the average American in 1998 was consuming about 20 teaspoons of added sugar every day—twice the amount.

This liberal consumption would be of no concern if sugar had a nutrient value similar to that of vegetables, protein foods, or other nutrient-dense foods. The problem is that sugar is not endowed with significant amounts of any nutrients. It provides you with only empty calories. The following chart shows just how many foods are loaded with teaspoon upon teaspoon of refined sugars. Keep in mind that many low-fat foods are sky-high in sugar because sugar is often added to these foods to replace the flavor lost when fat is removed. Overconsumption of these low-fat products helps to explain why low-fat dieting is not necessarily the answer for everyone.

FOOD	SUGAR (TSP)
Orange soda, 12 oz	13
Cinnamon bun, large	12
Brownie, 2.5–3.5 oz	10
Cola, regular, sweetened, 12 oz	10
Ice cream, 1 cup (not fat-free, with milk sugars)	10
Cheesecake, plain, 4 oz	9
Chocolate shake, 10 oz	9
Ginger ale, 12 oz	8
Chocolate bar, 2 oz	7

FOOD	SUGAR (TSP)
Pastry, bun-type	7
Pie, fruit, double crust, 4 oz	7
Cake, frosted, 1/16 of 13" x 9" cake	6
Doughnut, yeast, glazed	6
Iced tea, sweetened, 16 oz	6
Angel food cake, 1/12 tube cake	5
Chocolate chip cookie, 2 medium	5
Muffin	5
Canned fruit, heavy syrup, 1/2 cup	4
Croissant	4
Dry cereal, frosted, 3/4 cup	4
Chocolate milk, 1 cup	3
Gingersnap cookie, 4 medium	3
Jam, 1 level tablespoon	3
Toaster pastry, frosted	3
Jelly, 1 level tablespoon	2.5
Canned fruit, clarified juice, 1/2 c	2
Bread, 1 slice	0
Canned fruit, water-packed, 1/2 c	0
Oatmeal, plain, 1 cup	0

Some more stats: According to the Bureau of the Census and the U. S. Department of Commerce, the per capita consumption of wheat flour increased by 34 pounds within a 27-year period from the early 1970s to the late 1990s. In that time period, wheat consumption reached a peak of 150 pounds per person in the United States.

Refined wheat consumption is of some concern because refined wheat lacks fiber and has a high glycemic index. For instance, white bread and pure table sugar each have a high GI of 65 to 70, and both are quickly turned into glucose and quickly raise your blood sugar.

These statistics shed some light on the continually rising obesity rates in the United States and worldwide. In 1999, 61 percent of Americans aged 20 and older were overweight. Ten years earlier, 56 percent of American adults were overweight. Ten years before that, only 47 percent were overweight. The number of overweight or obese American adults, teens, and children has been steadily increasing for 30 years, concurrently with our increased consumption of refined-carbohydrate foods like soda, white bread, cookies, and cakes.

If, like many Americans, you eat a lot of foods containing white flour or added sugars, you may have found one of the keys to lasting weight loss: Eat fewer refined-carbohydrate foods. Instead, eat more unrefined-carbohydrate foods like whole grains, beans, vegetables, and fruits; more lean protein foods; some fruits; and some healthy fats. Yes, fats. Don't be scared off by them. Dietary fats may not be as bad for you as you think. In 1998, researchers from the Harvard School of Public Health concluded that dietary fat does not appear to be the primary cause of the prevalence of excess body fat in our society and that a

reduction in fat will not solve the problem. The fact is, fats make up most of the structure of the body's cell membranes. They play a vital role in the process of cellular communication. Fats also contain essential fatty acids that are important for the body's formation of eicosanoids, which regulate blood pressure, assist in blood clotting, help regulate body temperature, control pain and inflammation, and manufacture hormonelike substances. The fatty acids are called essential because all but two cannot be made in our bodies. We have to get them from the foods we eat. If you want to lose weight, it's important to include enough fat in your diet. See page 25 for more details on the healthy fats that help to promote weight loss and peak physical condition.

COUNTERING THE LOW-CARB CONCERNS

Research and clinical observations have convinced us that a smart low-carb eating plan can help you lose weight and prevent disease. But you may still have some concerns. Here are the answers to the health questions that have been raised by doctors, nutritionists, and other skeptics of lower-carbohydrate diets.

Q: Does restricting carbohydrates reduce energy and cause fatigue?

A: Not likely. Only two out of several hundred people we spoke with complained about

fatigue after the first few days of changing their diets. Some folks experience fatigue during the first 1 to 3 days. This may be the result of withdrawal from refined sugar, refined wheat, or other foods that the body may have been accustomed to digesting frequently. Yes, energy production is the main function of carbohydrates. However, you will get plenty of energy from the carbohydrates you do include on this plan as well as from the proteins and fats. Fatigue and energy loss are often signs of low blood sugar, and the smart low-carb approach keeps your blood sugar levels stable.

Q: Will eating more protein and fewer carbohydrates damage my kidneys?

A: Probably not. If you've never had a kidney problem, you probably don't need to worry about the warnings that eating more protein and fewer carbohydrates will wear out your kidneys. There is no research confirming this potential danger—even in people who consume three times the recommended amount of protein. Do pay attention to the warning if you already have kidney disease. A higher protein intake may be dangerous if your kidneys are not functioning properly. If you're unsure whether your kidneys are healthy, consult your doctor before changing your diet.

Q: Won't eating more fat raise my cholesterol and triglycerides and increase my risk of heart disease?

A: Quite the opposite. We have all been brainwashed into believing that eating foods with any type of fat will cause elevated chole-

sterol in everyone who eats them. However, saturated fat is the real culprit in increased heart disease risk. We've talked with several people who regularly ate foods high in mono- and polyunsaturated fats while reducing their carbohydrate intake—and their total cholesterol has actually come down. Most people who eat fewer carbohydrates find that their triglyceride levels go down and their good HDL cholesterol goes up. Here's a possible explanation: Fat is stored in our bodies in the form of triglycerides. It's known that excess insulin causes excess triglycerides. A high carbohydrate intake requires lots of insulin to metabolize the extra carbohydrates. As the insulin goes up, so do triglycerides. Likewise, as insulin levels come down on a reduced-carbohydrate plan, so do triglycerides. The bottom line is that a reduced-carbohydrate eating plan may help reduce your risk of heart disease because it brings down your insulin levels and your triglycerides. Just to be sure, the smart low-carb approach in this book recommends limiting saturated fat and instead focusing on foods such as oils, nuts, and olives that are rich in healthy fats.

Q: Will everyone's blood lipids respond the same way to reducing carbohydrates and increasing protein and fat?

A: Most likely. Almost everyone who has followed the smart low-carb eating plan has witnessed dramatic reductions in triglycerides and significant increases in good HDL cholesterol. Of course, everyone is a little different. There may be a very small percentage of the population whose

lipid levels respond negatively to the moderate increase in dietary fat that accompanies this reduced-carbohydrate plan. If you're concerned that this may be you, talk with your doctor before you begin, then ask her to check your blood fats 8 weeks later.

Q: Will eating more protein increase my risk of heart disease?

A: On the contrary—the science says otherwise. A study at the Harvard School of Public Health looked at 80,082 women aged 34 to 59 without any previous indication of heart disease. When all other risks for heart disease were controlled for, and irrespective of whether the women were on high- or low-fat diets, the results showed that both animal and vegetable proteins contributed to lower risk of heart disease. Researchers concluded that replacing refined carbohydrates with protein may reduce heart-disease risk.

Q: Can a reduced-carbohydrate/higher-protein plan lead to osteoporosis?

A: This is one warning we may need to heed. Increased protein makes the blood more acidic. The body responds by releasing calcium from the bones in an effort to bring the pH to a more alkaline level. However, if you eat lots of vegetables, you will minimize this problem because vegetables make the body more alkaline. Keep in mind that too little protein (which may be the case for people following a low-fat diet) can also be harmful to the skeleton. To safeguard against osteoporosis risk, the eating plans in this book set an upper limit on protein

intake and boost vegetable consumption considerably.

Q: Does the plan in this book contain all the nutrients I need to protect my bones?

A: Yes. These eating plans are high in calcium-rich foods like cheese, dark green leafy vegetables, almonds, Brazil nuts, salmon, sardines, and calcium-fortified soy products. Plus, we recommend that you eat a wide variety of foods and take a daily multivitamin. There are many other nutrients that play a role in bone health, including magnesium, vitamin D, vitamin C, vitamin K, zinc, boron, lysine, potassium, and silicon. Hormonal balance and physical activity are important factors, too. If you're in doubt, ask your doctor whether a supplement is right for you.

Q: I have heard that you can eat more meat on a reduced-carbohydrate plan. I am concerned about eating more meat than I am used to eating because I've also heard that there is a link between meat and cancer. Is this true?

A: We have read similar studies! Just keep this motto in mind: Moderation in all things. Scientists still do not fully understand all of the causes of cancer. Some of the facts we have are that 1) toxins that might cause cancer are stored in fat; 2) nitrates and nitrites usually found in smoked, cured, or pickled meats or fish form cancer-causing nitrosamines; 3) blackened or charred meats, fish, or poultry contain substances known to cause cancer; 4) there may be estrogens in the fat portions of meat that may

raise estrogen levels in the body and contribute to estrogen-dominance-type cancers.

These are all valid concerns. However, we recommend several steps to minimize their impact. Eating lots of vegetables and some fruits will supply important antioxidants that help protect us from cancer. Also, remember that the body has a wonderful built-in detoxification system in the liver. Eating a wide variety of whole foods as this plan encourages will supply nutrients that support liver function. Cruciferous vegetables such as broccoli, cauliflower, brussels sprouts, kale, cabbage, and others are particularly helpful. Keep in mind, too, that this book recommends eating more protein, but not necessarily more meat. If you prefer not to get your protein from meat, there are plenty of recipes and suggestions in this book for getting protein from beans, nuts, and

other nonanimal sources. See also the cancer-reducing cooking tips on page 56.

Q: Is my breath going to smell funny on this diet, and should I expect to be constipated?

A: No. The ketone breath associated with low-carbohydrate diets is not a problem on this plan because the carbohydrates are not as restricted. This book advocates a smart lower-carbohydrate approach avoiding refined carbohydrates, but not the severe carbohydrate restriction that triggers ketosis. Also, the liberal use of high-fiber vegetables in our plan as well as high-fiber whole grains and fruits will ensure that you are not constipated. On the contrary, most people have found that the extra fiber improves regularity. It also reduces hunger because it makes them feel more full.