Chapter 1

Introducing the Glycemic Index and How to Use It to Lose Weight

In This Chapter

- Surveying the ins and outs of the glycemic index
- Looking at how using the glycemic index can help you lose weight
- Recognizing that the glycemic index "diet" isn't like diets you've tried before
- Reviewing the additional benefits of following a low-glycemic diet

The glycemic index was first introduced in the early 1980s as a way for people with diabetes to achieve tighter blood sugar control and improve their overall health. Only 62 foods were part of the original glycemic index research. Fast forward to today, and you find that hundreds of foods have now been tested. Companies are even working to develop lower-glycemic foods to meet growing consumer demand.

In this chapter, I review the research behind the glycemic index and explain how adding more low-glycemic foods to your diet can help you lose weight, embrace a healthier lifestyle, decrease your risk of heart disease, manage your blood sugar, increase your energy levels, and improve your mood. Sure, all of that may sound too good to be true, but the scientific research is clear: Looking beyond total carbohydrate content of foods into how different foods affect blood sugar and insulin levels opens up a doorway into good health.

Getting to Know the Glycemic Index

The *glycemic index* is a scientific way of looking at how the carbohydrates in foods affect *blood glucose,* or blood sugar, levels. Scientists know that all carbohydrates raise blood sugar, but the glycemic index takes this understanding one step further by figuring out how much a specific food raises blood sugar.

When you use the glycemic index to plan your meals and snacks, you're following a glycemic index diet. It's not a "diet" in the sense that there are specific meal plans you need to follow, lists of foods to eat and foods to avoid, and other types of rules that are all too familiar to people who've tried various weight-loss diet plans. Instead, the glycemic index gives you a method for selecting foods that meet your specific needs and desires.

You know those overlay maps, where you start with a very basic map, add an overlay with more detail, then add another overlay with yet more detail, and so on until you have a complete picture of a specific area? Think of using the glycemic index in a similar way.

- The first "overlay" is basic meal planning. Your body tells you it's hungry and wants food.
- Next comes the layer of basic nutrition, which is all about balance. Your meal needs to include protein (chicken, fish, lean red meat, soy products, eggs, nuts/seeds), vegetables, and starch (potato, pasta, rice, bread) to keep your body happy. If you throw in a glass of milk and some fruit on the side, your body will be even happier.
- Finally, you add in the glycemic index for a complete picture. Because the glycemic index applies solely to foods that contain carbohydrates, it applies only to the vegetable, starch, milk, and fruit portions of your meal. Theoretically you already have an understanding of these foods' nutritional values. The glycemic index completes the picture by telling you how these foods will impact your blood sugar, which affects everything from your energy level to your food cravings.

Now that you have a basic understanding of the glycemic index, check out the following sections for the scoop on how it's measured and how an added bit of information makes it even more valuable.

Measuring the glycemic index

The glycemic index ranks foods on a scale of 0 to 100 based on how quickly they raise blood sugar levels. Foods that raise blood sugar quickly have a higher number, whereas foods that take longer to affect blood sugar levels have a lower number.

To measure the glycemic index of a food, a specific weight of the digestible carbohydrates in the food (usually 50 grams, which is about 4 tablespoons of sugar) is fed to at least ten different people who volunteer for the study. Their blood sugar levels are measured every 15 to 30 minutes over a two-hour period to develop a blood sugar response curve. The blood sugar response of each food is compared to that of a test food, typically table sugar (glucose), which is assigned the number 100. The responses for each test subject are averaged, resulting in the glycemic index number for that food.

Every individual person may have a slightly different glycemic (blood sugar) response to foods, which is why the tests use a number of volunteers and average their results together.

The information on glycemic index (GI) lists is divided into three basic categories so you don't have to get caught up in numbers and can instead focus on the primary goal of the glycemic index — choosing foods that keep your blood sugar levels more even, resulting in longer-lasting *satiety* (the feeling of fullness) and improved health. Here are the three categories:

- GI of 55 or less = low
- GI of 56 to 69 = medium
- GI of 70 or more = high

Introducing the glycemic load

Putting a numerical value on how various carbohydrate-containing foods affect blood sugar levels — the glycemic index — is great. However, the glycemic index is calculated using a standard weight of food, usually 50 grams. A food's glycemic index actually changes based on the amount of it that you eat, which is why a standard weight amount is always used when calculating the glycemic index. In real life, you don't always eat a standard amount of food. Sometimes you may eat two bowls of cereal at breakfast; other times you may eat one. Occasionally you want second helpings of pasta or an extra roll at dinner. You know what it's like.

The glycemic index is calculated not only for a specific weight of food but also for eating just that one food. That's great for researching how one particular food affects blood sugar levels, but what happens when you eat more than one food at a time, such as a peanut butter sandwich with a glass of milk and an apple?

This is where a little something called the glycemic load becomes important. I cover glycemic load extensively in Chapter 4, but here are the basics: The *glycemic load* applies the glycemic index to the amount of food you're actually going to eat, or to the total amount of carbohydrate-containing foods in a meal or snack. To calculate the glycemic load (GL), multiply the glycemic index (GI) of a food by the amount of carbohydrates in the food and then divide by 100. For example, 1 cup of watermelon has a GI of 72 and contains 10 grams of carbohydrates. $72 \times 10 = 720$, and $720 \div 100 = 7$, the glycemic load of 1 cup of watermelon. If you eat two cups of watermelon, use this calculation: $72 \times 20 = 1{,}440$; $1{,}440 \div 100$ = a GL of 14.

What if you eat a turkey sandwich with two pieces of bread and drink one cup of fat-free milk? A slice of white bread has a GI of 70, and each slice contains 15 grams of carbohydrates. One cup of fat-free milk has a GI of 32 and

contains 13 grams of carbohydrates. The GL for this meal is 44 (70 + 32 = 102; 102 × 43 = 4,386; 4,386 ÷ 100 = GL of 44).

Just like the glycemic index, glycemic load levels are divided into three categories:

- GL of 10 or less = low
- GL of 11 to 19 = medium
- GL of 20 or more = high

A basic guideline is to keep your total daily glycemic load under 100. In this case, if you're eating three meals per day and each meal has about the same glycemic load, you'll go over the ideal total maximum of 100. To prevent yourself from going over, choose to balance a higher-glycemic meal with a lower-glycemic one or swap out a higher-glycemic food for a lower-glycemic one to reduce a meal's overall glycemic load.

A brief history of the glycemic index

In 1981, scientists at the University of Toronto conducted groundbreaking research on the blood sugar effects of 62 different types of foods containing carbohydrates: vegetables, fruit, milk, legumes, and breakfast cereals. They found significant differences between different types of carbohydrate-containing foods, which led them to suggest using the glycemic index as a way to classify carbohydrate foods by how quickly they raise blood sugar levels. The glycemic index was first used as a way of helping people with diabetes control their blood sugar levels, moving beyond simple carbohydrate counting. Over the years and with more research, the glycemic index has become an important nutrition tool for several other chronic conditions, including Polycystic Ovary Syndrome (PCOS), metabolic syndrome, and diabetes.

Jennie Brand Miller, of the University of Sydney's Human Nutrition Unit, is one of the recognized leaders in glycemic index research. She's the lead author of the authoritative *International Tables of Glycemic Index* published by the *American Journal of Clinical Nutrition.* Her group continues to test the glycemic index of a wide variety of different foods so that consumers, health professionals, and scientists can know exactly how different foods influence blood sugar.

Australia and Canada continue to be leaders in testing large numbers of foods to help consumers more easily choose low-glycemic foods. Australia started the GI Symbol Program in 2002 to clearly identify proven low-glycemic foods. Canada, Australia, and the United Kingdom have approved the GI Symbol for use on food labels, making it easy to find low-glycemic foods in these countries. The United States has adopted a seal from an accredited testing organization; food companies can have their foods tested by the organization and can use the Low Glycemic Seal if their foods pass the test. For more information on this seal program, head to Chapter 10.

How Does the Glycemic Index Work for Weight Loss?

What does every traditional weight-loss diet have in common? Each one promotes its own twist on losing weight, but at the end they all come down to one truth — eat fewer calories. I'm not going to argue with that. Paying attention to the amount of calories you consume and increasing the number of calories you burn each day through exercise and just moving around is crucial for achieving and maintaining a healthy weight.

If counting calories was all you needed to do to lose weight, I could theoretically eat candy bars all day and lose weight as long as I kept under my daily calorie limit. However, there's more to weight loss than just counting calories. Choosing healthier foods that provide energy and promote a strong, fit body is just as important as sticking to a calorie goal.

The glycemic index is a tool you can use as part of your overall weight-control and healthy-eating strategies. Why? Because the glycemic index goes beyond calories; it encourages you to look at the way foods are digested and metabolized in your body and what impact that has on your body weight and how full you feel after eating. If biology and chemistry weren't your strong points in school, don't worry. The glycemic index puts all the science together into a list of foods categorized by their effect on blood sugar and insulin.

Use a glycemic index list as a weight-loss tool by selecting low-glycemic foods or balancing out a high-glycemic food choice with a lower-glycemic one. There's no one right way to do this. Nor is there a black-and-white approach where you're either "on" or "off" the diet. Just use the information in the glycemic index list to add additional healthy benefits to your food choices.

The sections that follow delve into the three factors— blood sugar, carbohydrates, and insulin — that combine to make the glycemic index effective for weight loss. (***Note:*** If weight loss is your primary goal, flip to Chapter 3 for more information on incorporating the glycemic index as a weight-loss strategy.)

Getting the 411 on blood sugar

Why all the fuss about blood sugar? Well, blood sugar is the primary energy source for every cell in the human body, especially brain cells. Blood sugar is the energy that powers your body, just like gasoline is the energy that powers your car. Although many people may falsely believe that any blood sugar is a bad thing, your body actually works hard to maintain even blood sugar levels to promote optimal health. The human body produces insulin to lower blood

sugar levels and another hormone, called *glucagon,* to help raise blood sugar levels. Normally, blood sugar stays in the range of 70 to 140 milligrams of blood sugar per deciliter of blood (abbreviated 70–140mg/dL), no matter how much sugar or carbohydrates you eat — or don't eat.

Hypoglycemia, or low blood sugar, occurs when blood sugar levels drop below 70mg/dL. Symptoms of hypoglycemia include blurry vision, a shaky feeling, and confusion. At the other end of the spectrum, *hyperglycemia,* or high levels of blood sugar, happens when the body doesn't produce enough insulin or when insulin isn't working the way it's supposed to. The symptoms of hyperglycemia — increased thirst and increased urination are two of the more common ones — are sometimes tough to spot. Many people have elevated blood sugar levels for months or even years before they're actually diagnosed with diabetes. Such chronically high levels of blood sugar not only damage blood vessels but also play a role in the progression of heart disease.

People with diabetes occasionally experience hypo- or hyperglycemia. Even people without diabetes may have fluctuations in blood sugar levels that leave them feeling tired or out of sorts. Using the glycemic index to choose your foods will help you keep your blood sugar levels within a healthy range. Chapter 2 covers the role of the glycemic index in managing healthy blood sugar levels in more detail.

Using the glycemic index to lose weight can be especially helpful for people with insulin resistance (a common precursor of Type 2 diabetes). With insulin resistance, your body produces plenty of insulin, but your muscles resist the action of insulin, preventing it from doing its job (meaning your body holds onto blood sugar instead of getting rid of it). Your body keeps making more insulin in an attempt to lower blood sugar levels, and you're stuck in a vicious cycle of insulin resistance that can lead to weight gain. Follow a low-glycemic diet, and you get a cascade of beneficial effects: Your blood sugar level doesn't rise as high, which means your body doesn't need to produce as much insulin, which in turn helps your muscles use blood sugar and insulin more effectively. (Check out Chapter 5 for more about insulin resistance and the glycemic index.)

Understanding the role of carbohydrates

Food is made up of three macronutrients that contain calories:

- **Carbohydrates:** The body's primary fuel source, providing energy for the brain, muscles, and organs.
- **Protein:** The building block of body tissues. Rarely used for energy because it has other, more valuable uses.
- **Fat:** Provides energy, but only when you've used up carbohydrates (that's why reducing body fat stores and losing weight is so tough).

Health experts recommend that 40 to 60 percent of a person's total calorie intake should come from carbohydrates. Admittedly, that's a wide range, but that range exists for several reasons. Active people need more carbohydrates to fuel their muscles, and children and adolescents need carbohydrates to fuel growth. On the other hand, people who are sedentary need smaller amounts of carbohydrates.

Because carbohydrates are the body's primary source of energy, it makes sense that just about every food group contains some carbohydrates. Fruits, vegetables, and grains are the primary sources of carbohydrates in foods, although milk, yogurt, and legumes also contain carbohydrates. The only food groups that contain no carbohydrates are animal meat and fat such as butter, margarine, and olive oil.

Whenever I talk about the glycemic index, I'm really talking about foods that contain carbohydrates. Plenty of misconceptions about carbohydrates are floating around, with some people thinking that all carbs are bad and that you should throw out the whole lot if you're trying to lose weight. Not true! Carbohydrates are an essential nutrient, and by using the glycemic index, you can choose foods that contain carbohydrates yet help you meet your weight goals.

The glycemic index helps you move beyond simply paying attention to the amount of carbohydrates you consume and gives you more specific information about how different types of carbohydrate-containing foods metabolize in your body and raise blood sugar levels. Because of the glycemic index, scientists know that foods that contain the same amount of total carbohydrate but have different glycemic index numbers will raise blood sugar levels differently.

Here's an example: 1 cup of dark cherries and one medium ear of sweet corn both contain 15 grams of carbohydrates. If you only count carbohydrates, you'd expect both the cherries and the corn to raise your blood sugar levels equally, right? Go one step further and look at the glycemic index of the foods individually. The glycemic index of 1 cup of dark cherries is 63, whereas the sweet corn has a glycemic index of 48. Now you know that the sweet corn will cause a lower rise in blood sugar and insulin levels compared to the same amount of carbohydrates in the cherries. The calories are almost the same — 73 in the cherries and 84 in the sweet corn. The important difference when it comes to weight control is the foods' glycemic index numbers: The lower the glycemic number, the lower the blood sugar response and required amount of *insulin* (a storage hormone that makes weight loss difficult). Use Appendix A to quickly look up the glycemic load of your favorite foods and find lower-glycemic foods to replace higher-glycemic ones when necessary.

Seeing how insulin plays a part

Insulin is a hormone secreted by a group of cells within the pancreas (called the *islet cells,* just in case you were wondering) whenever you eat foods that contain carbohydrates. As the carbohydrates are digested and metabolized into blood sugar, your pancreas notices a rise in blood sugar levels and sends out insulin. Insulin allows blood sugar to move into each and every cell to provide them with necessary energy. Think of it as the key that unlocks the door into the cells for blood sugar to enter. If you don't have enough insulin production, you effectively starve to death even though you eat a lot of food because blood sugar can't get into the cells to provide energy.

People with Type 1 diabetes inject themselves with insulin so as not to starve their cells of energy. People with Type 2 diabetes often make plenty of insulin, but for some reason their insulin doesn't work effectively. Think of this insulin resistance as trying to use your house key to start your car: The key won't fit into the keyhole, and the car won't start.

Insulin plays other important roles within the body, and here's where its role in weight management is crucial. Insulin stimulates *lipogenesis,* which is the process of converting blood sugar to fatty acids that can then be stored as body fat for later use as fuel. Fatty acids are like your body's energy storage locker. When you run low on available blood sugar for energy, your body can use those stored fatty acids for energy. However, insulin also makes that breakdown process exceedingly difficult. In short, high levels of insulin make it easier to gain weight and more difficult to lose it.

Putting it all together

Blood sugar, carbohydrates, and insulin all come together to affect body weight. Carbohydrates are digested and metabolilzed into blood sugar. Rising levels of blood sugar cause the pancreas to produce insulin. Higher levels of insulin then promote body fat storage.

If you want to lose weight, you can try following a low-carb diet to interrupt this process, but that drastic move really isn't a solution because your body needs the nutrients found in foods that contain carbohydrates.

A smarter choice for weight loss is to use the glycemic index to make sound decisions about which carbohydrate-containing foods you're going to eat. That way you stay satisfied longer; you get the benefit of fiber, vitamins, and minerals from carb-containing foods; your blood sugar levels stay even; your body produces less insulin; and you lose weight!

Moving beyond Traditional Diet Plans

Forget the traditional food lists and stringent calorie requirements. That's right. Chuck 'em out the window! The low-glycemic way of eating isn't a diet in the traditional sense — it's a lifestyle change. A low-glycemic "diet" is about listening to and working with your body to achieve long-term weight-loss (and health!) success. When you commit to this way of eating, you discover more about the foods you eat. You also realize that you can still enjoy food while making the best choices for weight loss and your overall health. The following sections help get you thinking about the glycemic index diet as a lifestyle change rather than a traditional diet plan.

Embracing lifestyle change and abandoning the temporary diet

Even though losing weight isn't easy, keeping the weight off is even more difficult. It doesn't matter what type of "diet" people follow; after one year, most folks gain back about 50 percent of the weight they lost. Yet some people are able to lose significant amounts of weight and keep it off. Individuals who embrace a low-glycemic diet as a way of life rather than a temporary diet can be among the latter group.

The National Weight Control Registry tracks people who've lost at least 30 pounds and kept it off at least five years. It has found that many people don't follow a specific diet plan. Sure, they make changes to their eating habits and activity levels, but not as part of a set "diet." Instead, they make gradual changes that they incorporate into their lives and that they keep on doing even after they've achieved their weight-loss goals.

Lifestyle change, not a temporary diet, is the key to enjoying a healthy weight for the rest of your life. Just think of these differences between the two:

- A diet is when you follow a set meal plan developed by someone famous who wrote a book; lifestyle change is when you swap a candy bar for a piece of fruit as a midmorning snack and brown-bag your lunch instead of zipping through the fast food drive-through.
- A diet is when you eliminate specific foods because they're too high in fat, calories, or carbohydrates; a lifestyle change is when you gradually eat fewer of these foods on a weekly basis.
- A diet is when you follow a low-carb meal plan that lists foods to eat and foods to avoid; a lifestyle change is when you swap a lower-glycemic food for a higher-glycemic food a couple times each day.

According to the available scientific literature, people lost more weight on a low-glycemic eating plan (one where they didn't have to count calories or measure out food portions) than on a high-protein eating plan. They also lowered their cholesterol levels.

Focusing on the positives — like all the great health benefits you receive just by following a low-glycemic diet — makes lifestyle changes a bit easier to make. Chapter 20 includes a list of those benefits as well as additional suggestions for making successful lifestyle changes.

Tossing strict rules out the window

If you've been around the dieting block a time or two, you're well aware that diets are full of rules. They instruct you on what you can eat, when you can eat it, and how much of it you can eat. They tell you when to exercise, how much to exercise, and what type of exercise you should do to burn the most calories. They make you count calories, fat, fiber, carbohydrates, or a combination of all four.

The glycemic index diet is different, largely because it's not really a diet. It's actually just a different way of choosing your foods. When you follow a low-glycemic diet, you can forget about rules and traditional dieting phases and get back to what eating is all about — enjoying food that tastes good and is good for you.

One of the best things about low-glycemic foods is that they fill you up so you're not searching through the cupboards looking for something to eat every couple hours. That's because low-glycemic foods have a lower energy density, which I explain in more detail in Chapter 7. Foods with a lower energy density provide fewer calories yet still fill you up. Low-glycemic foods also have less of an effect on blood sugar, require less insulin (so you aren't overworking your pancreas — the organ that supplies insulin), and keep you from experiencing the dramatic rise and consequent fall of blood sugar that leaves you feeling hungry, tired, unfocused, and even irritable.

By choosing low-glycemic foods, you'll naturally eat fewer calories, feel fuller for longer, and lose weight. Granted, you probably won't lose 5 pounds in a week, but that's okay because you're in this for a lifetime, not a week. If you lose 2 pounds per month, that's still 24 pounds in a year. Who wouldn't love to lose 24 pounds while still enjoying meals and snacks?

Planning, cooking, and enjoying healthy meals

Eating should be an enjoyable experience, not one during which you have to agonize about every single aspect of a meal. When you follow a low-glycemic lifestyle, you're not eliminating the foods you enjoy. Instead, you're creating balance in your diet through moderation in your food choices, which means you may still have that high-glycemic cookie once in a while but when you do you're choosing more low-glycemic foods throughout the day to balance it out.

The key here is to enjoy food. I want you to enjoy your meals, savor your foods, and look forward to mealtimes. If you enjoy your food choices, you're more likely to continue with this healthier way of eating. Sure, you may be able to tolerate a bland, low-calorie diet for a few days or weeks. But over time food *has* to taste good or else you're simply not going to put up with it. You don't need to worry about that with the glycemic index diet, though, because you're eating foods you already enjoy!

With just a small amount of thought, you can easily and quickly plan satisfying meals that will help you lose weight. Use Appendix A to identify lower-glycemic foods you already enjoy or as a way to find lower-glycemic swaps for higher-glycemic favorites. Also check out Chapter 9 for a bevy of healthy-eating strategies.

If you love to cook, check out the delicious and satisfying recipes in Part IV. I've included everything from quick-and-easy breakfasts and lunches to satisfying dinners and even snack and dessert recipes. Leery of diving into new-to-you recipes and prefer to rely on your old stand-bys? Good news! You can still enjoy them thanks to the recipe makeovers in Chapter 15 that convert family favorites into their lower-glycemic counterparts.

Making exercise a part of your life

I like to encourage my clients to think about activity and exercise like brushing your teeth. You brush your teeth at least once every day, right? You may not like brushing your teeth, but you do it because you don't want to get cavities, you like the way your breath smells afterward, and you don't want to walk around with mossy teeth. The benefits of exercising regularly are just as important as those of brushing your teeth daily, perhaps even more so if you're looking to lose weight.

To lose weight long-term, you need to be in energy balance — something that's difficult to achieve when you focus on food intake alone. That's why exercise is so important to weight-loss efforts (not to mention the huge benefit exercise has on overall health!). To lose weight in a healthy way, you can't just keep cutting back on the amount of calories you consume. You need to get up and burn calories through movement (which stimulates your metabolism hours after you exercise; see Chapter 8 for details).

If the word *exercise* makes you think of sweaty gyms, loud music, and instructors who yell at you to do things that hurt, try thinking of exercise as activity and movement instead. Dancing, gardening, puttering around in the garage, walking, biking, sledding, and playing hopscotch with your kids all fall into the activity-and-movement category. Countless other things do too. See for yourself in Chapter 21, which offers guidance on making daily exercise a part of your life, just like brushing your teeth.

Looking at Other Benefits of a Low-Glycemic Diet

Research continues to accumulate showing the health benefits of eating a low-glycemic diet. At this point, health professionals see the value in following a low-glycemic diet, along with other healthy nutrition guidelines such as consuming less saturated fat and cholesterol, choosing high-fiber foods, and maintaining a lower sodium intake. In addition to weight loss, a low-glycemic diet has been connected to better blood sugar and insulin control, disease prevention, increased energy, and improved mood. The next sections delve into these added benefits in detail.

Just because a food is low-glycemic doesn't mean it's healthy, and just because a food is high-glycemic doesn't necessarily mean it's an unhealthy food choice. The glycemic index is one additional tool for healthy meal planning, not the only tool. So don't forget all you know about good nutrition.

Better blood sugar and insulin control

The American Diabetes Association acknowledges that low-glycemic foods that are also high in fiber and a good source of nutrients can be part of an overall healthy diet. Including low-glycemic foods within an overall carbohydrate budget can provide additional blood sugar–control benefits because eating lower-glycemic foods helps keep blood sugar levels under better control and decreases the need for insulin.

Society now knows that Type 2 diabetes develops gradually over time, and physicians are encouraged to notice when blood sugar levels start creeping up. *Prediabetes* is defined as a fasting blood sugar between 100 and 126 milligrams of glucose per deciliter of blood (mg/dL). When your fasting blood sugar climbs above 126mg/dL, you've moved from prediabetes into actually having diabetes. The American Diabetes Association estimates that 57 million people have prediabetes, and the majority of them will eventually be diagnosed with actual diabetes. Following a low-glycemic diet can help you lose weight and decrease your blood sugar levels so you never move into the diabetes range. Flip to Chapter 22 if you want more information on the glycemic index and chronic diseases such as diabetes. (Want more info on insulin resistance and the glycemic index? Head to Chapter 5.)

Individuals with diabetes aren't the only people who can benefit from using the glycemic index to manage blood sugar and insulin levels. Women with Polycystic Ovary Syndrome (PCOS) also benefit from following a low-glycemic diet. Researchers estimate that approximately 25 percent of women of reproductive age have PCOS, a condition that causes insulin resistance. Eating low-glycemic foods to reduce blood sugar and insulin levels is one extremely effective treatment for PCOS. (Check out Chapter 22 for more about following a low-glycemic diet if you have PCOS.)

A good nutrition strategy for anyone who wants to lower his blood sugar and insulin levels is to first look to the total carbohydrate content in foods. Strive to maintain an even carbohydrate intake at meals and snacks. Incorporating low-glycemic foods helps provide additional blood sugar–control benefits because higher-glycemic foods raise blood sugar levels faster and require more insulin to process.

Disease prevention

A large review of 37 scientific studies on the effects of the glycemic index and glycemic load on disease prevention shows that following a low-glycemic diet independently reduces a person's risk for Type 2 diabetes, coronary heart disease, gallbladder disease, and breast cancer. Choosing a low-glycemic diet that's also high in fiber is even more protective.

Scientists believe that choosing an overall low-glycemic diet that also contains protective amounts of vegetables, fruits, and minimally processed whole grains appears to protect against heart disease. When it comes to heart disease, following the standard recommendations from the American Heart Association is crucial: Choose foods that are higher in fiber and monounsaturated fat, enjoy seafood that contains beneficial omega-3 fatty acids more often, and decrease the amount of saturated fat, trans fats, cholesterol, and sodium that you consume. Fortunately, low-glycemic fruits, vegetables, legumes, and

whole grains already meet these heart-healthy nutrition guidelines, so simply incorporating a variety of these low-glycemic goodies into your diet each day can help protect you from heart disease.

The reason for the benefit of a low-glycemic diet rests on lower blood sugar levels and a decreased need for insulin. When blood sugar levels increase, the body produces more insulin to join with blood sugar and transport it into cells to provide energy. At the same time, elevated insulin levels lead to inflammation within the blood vessels, and this inflammation plays a role in the development of plaque. Plaque inside arteries narrows blood vessels and causes them to be less elastic, which can increase blood pressure levels or even lead to heart attack or stroke.

Heart disease is the culmination of a series of several events. Decreasing your risk of heart disease requires an interwoven web of strategies, including using the glycemic index within the framework of other nutrition and exercise recommendations to promote a healthy heart and cardiovascular system.

Can a low-glycemic diet also help prevent cancer? Scientists know that the traditional Mediterranean diet, which is based on vegetables, olive oil, seafood, and minimally processed grains, helps prevent several types of cancer. Turns out the Mediterranean diet is also a low-glycemic way of eating. Teasing out which specific nutrients or eating habits cause or prevent cancer is a complex endeavor, and the research often shows conflicting results. Larger long-term studies are necessary before scientists can truly understand the role the glycemic index plays in the development of cancer, but right now it's a good bet that choosing a low-glycemic diet, in conjunction with other protective eating habits, will give you added protection against developing cancer.

Increased energy

Knowing which foods to eat before, during, and after exercise based on their glycemic index level helps athletes maximize their energy and recovery time. Even if you're not a world-class athlete, or even a weekend athlete, understanding how the glycemic index of foods affects your energy levels can help you stay alert and focused throughout the day. The human body digests and metabolizes low-glycemic foods slowly, thereby providing a continued amount of energy for working muscles. High-glycemic foods, on the other hand, are quickly digested, meaning their carbohydrates are readily available to power hard-working muscles.

Start your day with a breakfast that's built on lower-glycemic foods to provide longer-lasting energy and wake up your brain. Serve a low-glycemic breakfast cereal (such as rolled oats), top it with some fruit, and pour a glass

of fat-free milk for a balanced, low-glycemic breakfast that'll give you sustained energy throughout the morning. (If you ever wondered why a breakfast of sweetened cold cereal and fruit juice led to an energy crash and spike in appetite midmorning, now you know why: You chose higher-glycemic foods, which only provide energy for a short period of time.)

Instead of relying on caffeine or high-glycemic processed foods at lunch to boost your energy, build a balanced lunch around low-glycemic foods such as legume-based soups (lentil, black bean, split pea) or tossed salads that include legumes (garbanzo beans, kidney beans, or edamame are great choices). Or try spreading hummus on a slice of whole-grain bread topped with lean turkey and as many vegetables as you can pile on. You'll find that eating a low-glycemic noontime meal means you don't find yourself yawning and falling asleep midafternoon due to a drop in blood sugar levels. Plus you won't find yourself staring at the vending machine, trying to decide which candy bar will give you energy without expanding your waistline.

Improved mood

People really are what they eat in the sense that some foods can build a sunny disposition and other foods can bring you down faster than the drop of a rollercoaster. One of the most important neurotransmitters that determines mood is *serotonin.* High levels of serotonin boost one's mood, decrease food cravings, and promote restful sleep. Low serotonin levels have the opposite effect, making you feel tired, cranky, and out of sorts. The amount of serotonin in your bloodstream and brain is strongly linked to the foods you eat, especially to foods that contain carbohydrates. Once again, the type of carbohydrate-containing food you choose is crucial. Eating sugary foods when you're stressed causes a quick release, which feels great at the time but not so great when your blood sugar and serotonin levels come crashing down shortly afterward.

Does this sound familiar? You're feeling tired and cranky midmorning at work (probably because you skipped breakfast and relied on a sugary coffee to get you going) so you grab a donut, bagel, or cookie and drink a sugary beverage for energy. You love the quick mental boost, but 30 minutes later you feel shaky, tired, and out of sorts — again. You've just experienced the effects of serotonin levels rising and falling firsthand. Replace those high-glycemic foods with low-glycemic choices, however, and you get a slow, sustained release of insulin that keeps your blood sugar levels even, followed by a gradual rise in serotonin. No rapid rise and no rapid crash of serotonin levels means you have a sunny, even mood all morning.

Can you guess the low-glycemic food?

I'll be honest: Identifying low- and high-glycemic foods just by looking at a list of foods is difficult. Now that you know some of the basics about the glycemic index and how scientists calculate it for different foods, here's a chance to test your knowledge. Remember that a food with a low glycemic index has a value of 55 or less and a food with a high glycemic index has a value of 70 or more.

Directions: Read through the following list of foods and identify which ones are low-glycemic and which are high-glycemic. Check your answers at the end of this sidebar.

1. Baked beans with BBQ sauce, canned
2. Gatorade
3. Instant hot chocolate mix, made with water
4. Orange juice from concentrate
5. Fresh orange juice
6. Corn tortilla
7. Italian bread
8. Kellogg's All-Bran Fruit 'n Oats
9. Kellogg's All-Bran Flakes
10. Post Grape-Nuts
11. Instant oatmeal, made with water
12. Chocolate cake with chocolate frosting
13. Plain waffle
14. Vanilla ice cream
15. Tapioca pudding
16. Chocolate milk
17. Vitasoy Ricemilk
18. Yoplait No-Fat French Cheesecake Yogurt
19. Banana
20. Pineapple pieces, canned in fruit juice
21. Linguini
22. Gluten-free pasta
23. Uncle Ben's Converted White Rice
24. Uncle Ben's Ready Rice Whole Grain Medley
25. Peanut M&M's
26. Jelly beans
27. Microwave plain popcorn
28. Grape jelly
29. Mashed potato
30. Baked potato
31. Baked sweet potato

1. Low 2. High 3. Low. 4. Low 5. Low 6. Low 7. High 8. Low 9. High 10. High 11. High 12. Low 13. High 14. Low 15. High 16. Low 17. High 18. Low 19. Low 20. Low 21. Low 22. High 23. Low 24. Low 25. Low 26. High 27. High 28. Low 29. High 30. High 31. Low