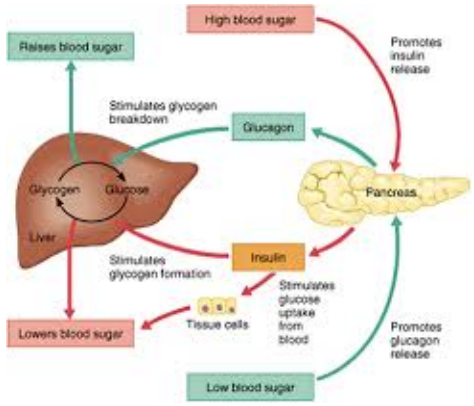
Blood Sugar Management

What is Blood Sugar and Why is it Important?

Blood glucose, more commonly referred to as blood sugar, is the amount of sugar found in our blood. It comes from the foods we eat, primarily carbohydrates, that are broken down into glucose and released in the bloodstream. It's also our body's major energy source. However, having too much blood sugar can result in what's called a blood sugar spike. Much like a rollercoaster, a blood sugar spike will cause blood sugar to rise rapidly, followed by a crash at the end. This often accounts for feeling sluggish and tired after eating foods high in sugar or overconsumption of carbohydrates. The repeated process of blood sugar spikes and crashes can result in fatigue, hunger cravings, increased urination, and skin infections. In the long term, the results include inflammation, weight gain, and increased risk for heart disease, diabetes, stroke, and liver disease. The goal is to stay off the blood sugar roller coaster and keep your blood sugar and mood stable without repeated rises and crashes.



How We Breakdown Carbohydrates for Energy

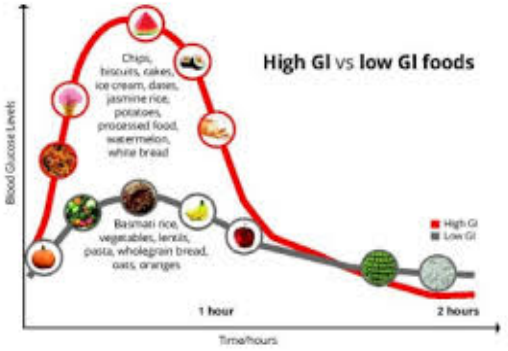
- After eating, our blood sugar begins to rise, triggering the release of insulin, a hormone produced by our pancreas.
- Insulin acts as the key that allows blood sugar to enter our cells to be used for energy or stored for later use.
- As our cells absorb more blood sugar, levels begin to fall in the bloodstream. This fall in blood sugar triggers the release of glucagon, another hormone produced by the pancreas, that stimulates the release of stored sugar in the liver.
- The coworking relationship between insulin and glucagon helps maintain the balance of blood sugar in the body.

Simple Vs. Complex Carbohydrates

Carbohydrates have commonly been classified as either 'simple' or 'complex' based on their structure. Simple carbohydrates are made of one or two sugars (mono or disaccharides). They are easily digested and used for energy due to their simple structure. However, this often leads to a quicker rise in blood sugar, which we know has a variety of negative effects in the long and short term. Complex carbohydrates, on the other hand, have more complex structures, consisting of three or more sugars (oligo and polysaccharides). Most complex carbohydrates contain fiber, vitamins, and minerals, making them take longer to digest, slowing the blood sugar spike, and keeping our numbers more stable. In some cases, there can be a complex carbohydrate, such as white bread or potatoes, that contain mainly starch and little fiber which will still result in a high blood sugar spike. A more precise way to determine a food's effect on our blood sugar is to look at the glycemic effect.

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The Glycemic Index



The Glycemic Index, prioritizes the amount of fiber in carbohydrate foods, which determines how quickly our blood sugar rises after eating. Foods are ranked from 1-100, with 55 or less being considered low-glycemic food, 56-69 being medium, and 70-100 ranking as a high-glycemic food. Foods with a high glycemic index, such as ice cream or white bread, are lower in fiber and digested quickly and therefore raise blood sugar rapidly. Foods with a low glycemic index, such as non-starchy vegetables and whole grains, take longer to digest and result in a much slower increase in blood sugar. Foods with low glycemic index have been proven to assist with weight loss by promoting a feeling of fullness and slowing digestion, and helping to control or prevent the progression of diabetes. Diets with an emphasis on high glycemic load foods are associated with increased risk of developing type 2 Diabetes and heart disease. Below is a chart of low, medium, and high glycemic index foods. Many factors can affect a food's glycemic index including processing, ripeness, cooking methods, and fiber content. The majority of vegetables are considered non-starchy and will help lower blood sugar, therefore are not included on this list of carbohydrates.

Food Types	Low Glycemic Index (choose most often)	Medium Glycemic Index (choose less often)	High Glycemic Index (choose least often)
Fruit	Apples, bananas (green), berries apricots, grapefruit, oranges, cantaloupe, honeydew, mangoes prunes, pears, plums, pomegranates, prunes	Bananas (ripe),cherries, cranberries, grapes, pineapple kiwis, raisins, figs	Bananas (over ripe), watermelon
Starchy Vegetables	Sweet potato (boiled), peas, winter squash	Beets, corn (fresh), parsnips, white potatoes (cooked and then cooled), sweet potato (steamed)	White potatoes, canned corn, sweet potatoes (baked, roasted, fried)
Grains	Barley, rye, bulgur, quinoa, mung bean noodles, Al-dente pasta	Basmati rice, brown rice, couscous, rice noodles, cornmeal, wild rice	Jasmine rice, white rice, sticky rice, millet
Legumes	Black beans, lentils, black-eyed peas, chickpeas, pinto beans, kidney beans, lima beans, snow peas, hummus, green beans, mung beans, edamame	Baked beans (canned)	
Breads	Mixed grain breads, spelt, sourdough, whole grain tortillas	Whole grain breads, pita, pumpernickel, rye, roti	White bread, whole wheat bread, naan, bagels,

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			croissants,
Cereal	All Bran cereal, Oat bran, steel cut oats	Oats, cream of wheat (regular)	Corn flakes, corn chex, bran flakes, puffed wheat cereal, cream of wheat (instant), Rice Krispies, Special K, refined breakfast cereals
Dairy	Cow milk (skim, 1%, 2%, whole), soy milk, almond milk, low-fat cheeses, yogurt		Rice milk
Sweets and Baked Goods	Stevia, dark chocolate, sorbet (sugar-free), sherbert	Honey, Maple syrup, sorbet with sugar	Corn syrup, rice syrup, molasses, chocolate syrup chocolate bars, cakes, cookies, donuts, icecream

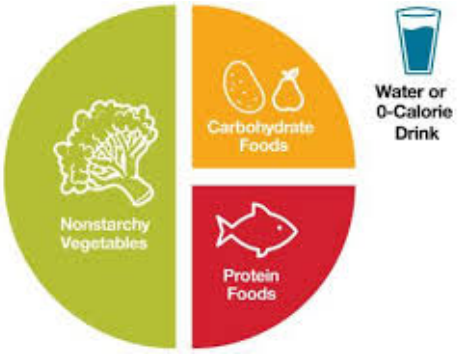
Meal Planning Tips to Lower Glycemic Index of your Meals

- **Cook your pasta Al-dente and do not overcook.**
- **Try high fiber grains such as barley and bulgur, and legume based pastas such as chickpea, black bean, or lentil**
- **Swap half your high GI grains for lower GI grains. For example, instead of having 1 c. white rice, have ½ c. white rice mixed with ½ c. black beans**
- **Lower the glycemic load of foods such as rice and potatoes by cooking and cooling before eating.**

What Else Can We Do to Improve Our Blood Sugar?

In addition to choosing the correct foods, several other factors can affect our blood sugar including timing of meals, portion sizes, limiting added sugars, and physical activity. Let's take a look at some ways we can further manage our blood sugar and prevent the roller coaster effect.

The Plate Method



The Plate Method is a helpful tool to use at mealtimes to assist with portion control by ensuring you are eating a variety of foods to build a balanced plate. By pairing slow digesting foods such as non-starchy vegetables, protein, and healthy fats with faster digesting carbohydrate sources, our blood sugar rises less quickly. To follow The Plate Method, simply fill ½ your plate with non-starchy vegetables such as broccoli, asparagus, cucumbers, salad, etc. Fill ¼ the plate with carbohydrate sources including starchy vegetables such as potatoes, whole grains, or beans and lentils. Finally, fill ¼ the plate with a source of protein such as chicken, beef, fish, eggs, etc. Milk and dairy products are served on the side of the plate-try to choose low-fat dairy options. Healthy fats can be used for cooking

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and condiments in the Plate Method by adding things like olive oil, nut butters, and avocados. Fruit is another food choice to be served on the side-try to choose lower sugar fruit options such as berries and apples to help balance blood sugar.

Limiting Added Sugars

In the standard American diet, most people consume more added sugars than they realize. For disease management and overall health, it is important to limit the intake of added sugars in our diet. Added sugars, for the most part, provide little nutritional value. They often provide empty calories and can contribute to inflammation, weight gain, and development of chronic diseases. Make sure to check your nutrition label for packaged foods and drinks to check for any added sugars. The limit for women is 6 teaspoons or 25 grams per day and 9 teaspoons or 36 grams per day for men. Added sugars can commonly be found in popular products such as energy drinks, juice, tea/coffee beverages, yogurts, candy, icecream, breakfast cereals, and granola bars. In the ingredients list, there can be several different names for added sugar such as high fructose corn syrup, molasses, cane sugar, raw sugar, syrup, honey, or fruit concentrates. At the end of the day, these all break down to added sugar in the same way. In order to better manage your blood sugar, limit desserts to special occasions and do not waste empty calories on added sugars.



More Tips to Manage Blood Sugar

- **Keep your meals consistent and try to eat around the same time every day, this helps keep blood sugar stable by allowing your body to get used to a regular intake of fuel.**
- **Take a 10 minute walk after your heaviest meal of the day-walking and physical activity in general can help lower blood sugar. The effects of walking can last 60-90 minutes after a meal.**
- **Start your day with a savory meal-this can set the tone of what you crave the rest of the day. Starting with a savory breakfast vs. a sweet one can help prevent a blood sugar crash later in the day and diminish sugar cravings**
- **Start your meal with a high fiber starter such as a salad or veggies, especially before eating higher carbohydrate dishes like pizza or pasta-High fiber foods can help slow digestion and lower the blood sugar spike**
- **Focus on what you can add to your plate instead of what you need to take away to make meals more enjoyable-Think of ways you can add more fiber to your plate to make meals balanced and still enjoy the foods you like to eat such as rice or pasta dishes.**
- **When eating dessert, make sure you have it at the end of the meal and not as a stand alone snack-it is better for your blood sugar to eat sweets after you've already had a balanced meal including fiber, protein, healthy fats that will assist in slowing digestion.**

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