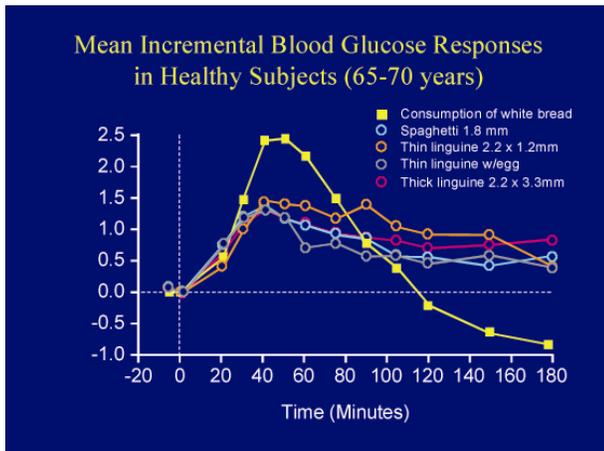


Glycemic Index & Glycemic Load

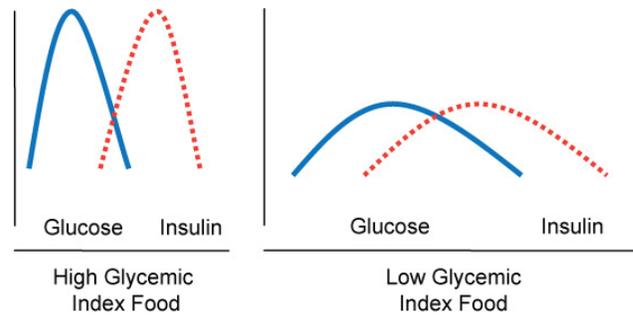
What is the glycemic index?

The glycemic index of a food refers to the effect the food has on the body's blood sugar levels. Blood sugar levels are raised after you eat foods containing carbohydrates (sugars and starches). Various carbohydrate-containing foods affect blood sugar levels differently. The glycemic index compares the rise in blood sugar level after eating a particular food to a reference food, often the sugar, glucose. (Glucose is a very basic sugar and not the same as table sugar). One of the foods that is often used as an example is white bread. It has a relatively high glycemic index of 70, when compared to glucose, which has an index of 100.



Why is the glycemic index important?

The higher the rise in glucose in the blood stream, the more insulin is produced to store it. Over time this can lead to higher insulin levels that can result in inflammation, weight gain and resistance to insulin's ability to store sugar. The end result can be the progression to type II diabetes.



How can I use the glycemic index to improve my health?

By making careful food choices, you can influence your hunger and energy as well as blood sugar levels, cholesterol and triglyceride levels. If you have problems controlling how much food you eat, have hypoglycemia, diabetes, or high triglyceride cholesterol levels, paying attention to the glycemic index in your food choices will be helpful.

What are some guidelines to follow in using the glycemic index?

If you think that considering glycemic index in your diet would be helpful, follow these guidelines.

1. Eat low and medium glycemic index foods like beans, oatmeal, and whole grain pasta regularly but in moderate quantity. Eat high glycemic index foods like bread, bagels, English muffins, baked potato, and snack foods rarely and only in very small quantities.
 - Use beans (e.g., ranch beans or lima beans) as a side dish instead of rice or potatoes. Use beans as a snack food instead of chips, crackers or rice cakes. For example eat hummus with raw vegetables.



Glycemic Index & Glycemic Load

- Cook pasta to the *al dente* state. *Al dente* translates from Italian as “to the tooth.” It refers to pasta cooked only until it offers slight resistance when bitten into, not soft or overdone. Serve one cup cooked pasta with at least one cup vegetables and a sauce of your choice.
 - Focus on lower glycemic index fruits like apples, pears, berries, and citrus more than higher glycemic index fruits like pineapple and raisins. Remember that the sugar in fruit is also combined with fiber which helps slow down the absorption of sugar into the blood stream. So, eating a fruit or vegetable is much better than eating a “white food” or sugar (high fructose corn syrup or sweets) that is not combined with fiber.
 - If you eat cereal, choose one with a low glycemic index such as All Bran or oatmeal.
 - Eat sugary foods like candy, soda and other sweetened beverages in small quantities and with a meal.
 - A helpful rule is the “80-20” rule. Eighty percent of the time eat multi-colored whole foods rich in fiber, and twenty percent of the time, you can treat yourself to foods you enjoy.
2. Eat smaller, more frequent meals.
- Try including a snack both mid-morning and mid-afternoon.
 - Have a moderate sized lunch. Routinely have smaller dinners, like a salad, bowl of soup, or small portion of fish, chicken or meat and vegetables.

What is considered high and low glycemic index values?

A high glycemic index may be considered to be a number between 70 and 100; medium, between 50 and 70; and low, under 50.

Glycemic Index Reference Range

- High Glycemic Index 70-100
- Moderate Glycemic Index 50-70
- Low Glycemic Index <50

What is the glycemic index of common foods?

Remember that glycemic index can only be measured on foods that contain carbohydrates. Glycemic index values have not been determined on all foods; however, more complete lists can be found in the resources listed on page 4. The reference food for the table below is glucose.

| FOOD | GLYCEMIC INDEX |
|--------------------------|----------------|
| BREADS | |
| Bagel | 72 |
| Kaiser roll | 73 |
| White bread | 70 |
| Whole wheat bread | 69 |
| Sourdough bread | 52 |
| Whole grain pumpernickel | 46 |
| CEREALS | |
| Corn flakes | 83 |
| Rice Krispies | 82 |
| Grapenuts flakes | 80 |
| Total | 76 |
| Cheerios | 74 |
| Puffed wheat | 74 |
| Shredded wheat | 69 |
| Grapenuts | 67 |
| Cream of wheat | 66 |
| Oatmeal | 61 |
| Special K | 54 |
| All bran | 42 |
| GRAINS | |
| Instant rice | 87 |
| Millet | 71 |
| White rice | 56 |
| Brown rice | 55 |
| Bulgur | 48 |
| Converted rice | 47 |
| Barley | 25 |



Glycemic Index & Glycemic Load

| SNACKS | |
|-------------------------|-----|
| Rice cakes | 82 |
| Jelly beans | 80 |
| Soda crackers | 74 |
| Corn chips | 72 |
| Chocolate bar | 68 |
| Rye crisp bread | 63 |
| Power Bar | 57 |
| Popcorn | 55 |
| Potato chips | 54 |
| Peanuts | 14 |
| PASTA | |
| Spaghetti | 41 |
| Whole wheat spaghetti | 37 |
| BEANS | |
| Baked beans | 48 |
| Chickpeas | 33 |
| Cooked beans | 29 |
| Lentils | 29 |
| Soy beans | 18 |
| VEGETABLES | |
| Baked potato | 85 |
| Beets | 64 |
| New potato | 62 |
| Sweet corn | 55 |
| Sweet potato | 54 |
| Carrots | 49 |
| Green peas | 48 |
| FRUIT | |
| Watermelon | 72 |
| Pineapple | 66 |
| Raisins | 64 |
| Mango | 55 |
| Orange juice | 52 |
| Canned peach | 47 |
| Orange | 43 |
| Unsweetened apple juice | 41 |
| Apple | 36 |
| Pear | 36 |
| Peach | 28 |
| Grapefruit | 25 |
| MILK AND YOGURT | |
| Chocolate milk | 34 |
| Low fat fruit yogurt | 33 |
| Skim milk | 32 |
| Whole milk | 27 |
| SUGARS | |
| Glucose | 100 |
| Honey | 58 |
| Sucrose (table sugar) | 65 |
| Fructose | 43 |

What is glycemic load?

The glycemic load (GL) is a more accurate tool to assess the impact of eating carbohydrates. It gives a more complete picture than does glycemic index alone because it includes the amount of carbohydrate in a serving. A GI value tells you only how rapidly a particular carbohydrate turns into sugar. It doesn't tell you how much of that carbohydrate is in a serving of a particular food as does GL. You need to know both things to understand a food's effect on blood sugar. That is where glycemic load comes in. The carbohydrate in watermelon, for example, has a high GI. But there isn't a lot of sugar in a serving of watermelon, since most of it is fiber and water. Thus watermelon's glycemic load is relatively low. A GL of 20 or more is high, a GL of 11 through 19 is medium, and a GL of 10 or less is low.

Foods that have a low GL almost always have a low GI. Foods with an intermediate or high GL range from very low to very high GI.

| Glycemic Load | |
|--------------------------|-------|
| • High Glycemic Load | >20 |
| • Moderate Glycemic Load | 11-19 |
| • Low Glycemic Load | ≤10 |

How can I keep this simple?

Most people won't have the patience to look up a number for each of the food groups. But if you follow the recommendations below, you will change your diet resulting in the health benefits of a low glycemic index and load diet without having to look up a bunch of numbers. A GL of 20 or more is high, a GL of 11 through 19 is medium, and a GL of 10 or less is low.



Glycemic Index & Glycemic Load

- Eat multi-colored whole foods that were recently alive.
- Limit “white” foods such as fluffy white bread, bagels, pasta and potatoes.
- Combine fiber (fruits and vegetables) and protein (beans and nuts) with your carbohydrates (sugar) with each meal.
- Take time and enjoy each bite of your food and recognize when you are full so you don’t consume too many calories.

The information in this handout is for general education. Please work with your health care practitioner to use this information in the best way possible to promote your health and happiness.

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Where can I learn more information?

More information on glycemic index can be found in *The “New” Glucose Revolution* by Jennie Brand-Miller, Thomas M.S. Wolever, Stephen Colagiuri and Kaye Foster-Powell and the website www.mendosa.com/gilists.htm

Other good web sites for tables that include glycemic index and load values include:

<http://www.glycemicindex.com/> (University of Sydney’s Website)

<http://diabetes.about.com/library/mendosagi/ngilists.htm>

http://www.health.harvard.edu/newsweek/Glycemic_index_and_glycemic_load_for_100_foods.htm

NOTES