FUELING WITH CARBOHYDRATES

What are carbohydrates?

Carbohydrates are one of your body's main sources of energy. They are a vital macronutrient (providing 4 calories per gram), which gives your body the fuel it needs to live, think, go to school, run, jump, lift, and more! In fact, your brain and central nervous system's preferred source of energy is carbohydrates. Without them, athletes can suffer from fatigue, low energy, and decreased mental acuity.

TWO TYPES OF CARBOHYDRATES

Complex Carbohydrates:

Complex carbohydrates are made up of glucose (sugar), starch, and fiber; they break down at a slower rate than simple carbohydrates. Because of this, they enter your bloodstream slower and help prevent dramatic blood sugar spikes and drops, giving you sustained energy for longer periods of time.

Sources of complex carbohydrates include:

- Whole grains
  - » Whole wheat, oats, quinoa, couscous, farro, barley, buckwheat, and brown rice
- Starchy vegetables
  - » Potatoes, yams, corn, sweet potatoes, peas pumpkin, and winter squash (butternut, acorn, and spaghetti squash)
- Beans and legumes

Simple Carbohydrate:

Simple carbohydrates are a type of carbohydrate that breaks down at a faster rate and is used as a quick source of energy for the body. Around the time of exercise, this helps give the body quick fuel, but when eaten in abundance over the course of the day, simple carbohydrates have the ability to cause spikes and drops in blood sugar because they digest so quickly. This can have negative effects on your energy levels.

Sources of simple carbohydrates include:

- Sports drinks and sports foods
  - » Gels, energy blocks, and chews
- Sweeteners
  - » Honey, syrup, maple syrup, and agave nectar
- Sugar-sweetened beverages and snacks
- Candy

Created by: Amy Goodson, MS, RD, CSSD, LD

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Why do you need carbohydrates?

Think of carbohydrates to your body like gas to a car; it's what makes it go. Carbohydrates fuel all forms of exercise, but play a major role in fueling high-intensity exercise like heavy weight lifting, sprinting, and high-intensity team sports like football, volleyball, basketball, soccer, hockey, and more.

You store carbohydrates in your muscle and liver; the compound that is stored is called glycogen. Unfortunately, you do not have unlimited stores of carbohydrate or glycogen, which means you have to fuel and refuel often. As an athlete, your goal is to keep your glycogen stores as full as possible by eating carbohydrates at each meal and snack. This will help you have the energy you need when you step on the field, court, course, or go to the weight room. Without adequate carbohydrate stores, you are likely to fatigue faster at practice and in a game or competition.

Before a workout, consume complex carbohydrates which provide long-lasting energy to sustain you through the first 60-90 minutes of exercise.

During a workout, simple carbohydrates can help sustain energy levels throughout longer bouts of exercise, especially those over 90 minutes. Simple carbohydrates like sports drinks, chews, blocks, and fruit digest quickly and can be used as a fast-acting source of energy for working muscles.

After a workout, carbohydrates are essential to help your body refuel your glycogen or energy stores. This helps with recovery and will start the process of getting you ready for the next workout or competition.

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How much carbohydrate do you need per day to fuel activity?

The amount of carbohydrate needed to adequately fuel your body is based on the type of exercise you do and your body weight (in kilograms). To convert your weight into kilograms, take your weight in pounds and divide by 2.2. Next, multiply your weight in kilograms by the carbohydrate recommendation for your sport or activity as shown in the box to the right.

Carbohydrate Needs Calculation:

Weight _____ lbs / 2.2 = _____ kg

Weight _____ kg

x

carbohydrates recommendation _____ gm/kg

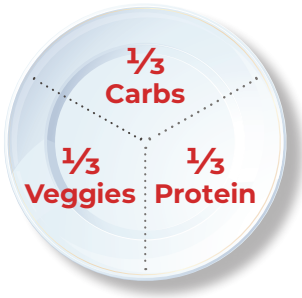
(see chart below for recommendation)

= _____ gm of carbohydrates per day

Carbohydrate Recommendations (per day)	Type of Activity/Sport
3-5 gm/kg body weight	Skill-based athletes, athlete in off-season looking to lean out
5-7 gm/kg body weight	General athlete training needs and team sports
6-10 gm/kg body weight	Endurance sports and activity
8-12 gm/kg body weight	Ultra-endurance sports and activity

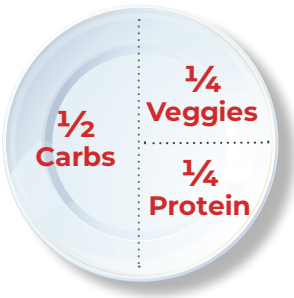
HOW DO YOU SHAPE AN ATHLETE'S PLATE WITH CARBOHYDRATES?

Regular Training Day



If it is a regular training day, make **⅓ of your plate complex or whole grain carbohydrates** at each of your meals. Examples include oatmeal at breakfast, rice at lunch, and pasta at dinner.

Competition Day



If it is a competition day, a day where you are training twice, or a day with extended practice times, then make **½ of your plate complex or whole grain carbohydrates.** This will help provide more energy for greater amounts of activity.

Thomas, Travis D et al. (2016). Med Sci Sports Exerc. 48(3):543-568.
Nutrition and Athletic Performance Position Stand

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