

Nutrition Series - Part 1

Fueling

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Nutrition Basics

Three macronutrients give your body energy to perform

1. Carbohydrates
2. Protein
3. Fat

80/20 Rule

- 80% of the time focus on quality food choices or eating for your goal
- 20% of the time can “splurge” and eat for pleasure

Fueling Goal:

- Eat small, frequent meals to keep energy level up
- Example: Breakfast - Snack - Lunch - Post-Workout Snack, Dinner

Carbohydrates

Purpose: Body's choice of fuel for energy and fuel for brain

50-65% of calories should come from carbohydrates or 7-10 g carb/kilogram of body weight ^{1,3-4,6}

Types of Carbohydrates:

- Simple/Fast: jelly, honey, cookies, juice, hard candy, white bread
- Complex/Slow: wheat bread, whole grain cereal, oatmeal, fruit, beans, vegetables

Whole grains and wheat food items, fruits and vegetables, dairy

Sport drinks, gels, goos, gummies, and blocks

Carbohydrate Choices

Why Choose Grains?

- High in carbohydrates, high in fiber, B vitamins, provides lots of energy

Carbohydrates should make up the biggest part of your diet.

Best Choices include:

- Wheat bread, oat bread, wheat bagels, wheat English muffins, wheat tortillas
- Cereals (Total, Shredded Wheat, Cheerios, Granola)
- Oatmeal
- Brown Rice, Wheat or Multi-grain pasta
- Wheat crackers/whole grain granola bars
- Oranges, Berries, Sweet Potatoes , Dates, Raisins, Apples, Bananas

Individual Carbohydrate Prescription

Recommended Carbohydrate Intake (g/kg/day)	Activity Duration	Activity Intensity
5 to 7	60 minutes	Moderate*
6 to 10	1 to 3 hours	Moderate to High**
10 to 12	4 to 5 hours	Moderate to High**

*Brisk walking at 3.5 mph

**Running at 5 mph

Resource: Rosenbloom CA, Coleman EJ, eds. ***Sports Nutrition: A Practice Manual for Professionals***. 5th ed. Sports Cardiovascular and Wellness Nutrition Dietetic Practice Group. Chicago, IL: American Dietetic Association; 2012. Physical activity. ChooseMyPlate.gov website. <http://www.choosemyplate.gov/physical-activity-what-is>. Updated June 10, 2015. Accessed January 6, 2016.

Protein

Purpose: Helps to build and repair muscles, promotes hair and nail growth, boost immunity

1.2-1.4 g/kg body weight per day

Lean Meat (Chicken, Fish, Turkey, Lean Beef, Lean Pork)

Eggs and egg whites

Low-fat dairy products

Whey protein powders

Nuts, seeds, beans, peanut butter have some protein

Fat

Purpose: Provide energy, protect organs, keep body warm

20-30% of calories should come from fat

Saturated Fats - “Bad Fats”

- Fried foods, packaged foods, cream-based foods

Unsaturated Fats

- Peanut butter, avocado, nuts, seeds, olive/canola oil, flaxseed, fatty fish (salmon, tuna)

Eating Before the Run

Run > 45-60 minutes or doing a Temp/Speed workout → pre-run fuel is important

Have a high carbohydrate meal 2-3 hours before run **OR** small high-carb snack 30 minutes before run

For longer runs, consider to start fueling the day before

- No need to increase calories → balance the meal so carbohydrates are bulk of lunch and dinner (have lunch be bigger and smaller dinner to promote digestion)

Morning of long run/race → fuel 2-3 hours before and have 300 calories before and at least 10 oz of fluid 2 hours before

Pre-Run Meal Timing

Time Allowed For Digestion of Food

- 3-4 hours for a large meal to digest
- 2-3 hours for a smaller meal to digest
- 1-2 hours for a blended or liquid meal
- < 1 hour for a small snack

Prerun Fueling

Duration/Type of Run	How Much To Eat	When to Eat
Up to 75 minutes	100-200 calories (high carb, low fat, low fiber)	30-60 minutes before
>75 minutes	300 calories	60 minutes before
Speed Runs	High carb meal 100-200 calorie (high carb snack)	2-3 hours before for meal 30 minutes before for snack

Pre-Run Meals

	Day Before	Race Day
Morning Run/Race	Carb-based lunch, dinner, and bedtime snack	Light snack/breakfast
Afternoon Run/Race	Carb-based dinner	Carb-based breakfast and light lunch
Evening Run/Race	Carb-based meals	Carb-based breakfast and lunch with light snack before event

Tips for Eating during the Taper

As number of miles decrease during taper period → a runner should cut back 100 calories for each mile decrease

- About 17-26 calories per pound of body weight⁴

Some weight gain is expected during taper as glycogen (storage form of carbohydrates) increases ⁴

- 3 ounces of water are stored with every 1 ounce of carbohydrate stored ¹

Typical runner will require at least:

- 375-450 g carbohydrate, 60-90 g of fat, and 80-110 g protein in weeks leading up to event ⁴

Carbohydrate Loading

- Consume 3-5 grams of carb per pound of body weight (6-10 g/kg body weight)
- Equals about 60% of calories from carbohydrate
- 3 days prior to race day

Weight	Total Grams Carb/day	Target Grams Carbs per 5 hour period (7 AM-Noon, Noon-5PM, 5PM-10PM)
100 lb	300-500 g	100-175 g
125 lb	375-625 g	125-210 g
150 lb	450-750 g	150-250 g
175 lb	525-875 g	175-290 g

Examples of High Carbohydrate (about 50 grams) choices:

- 2 cups of Wheaties
- 4 Nature Valley Granola Bars
- 1 Bagel
- 2 Bananas
- 2 cups Orange Juice
- 2 apples
- 1 large baked potato
- 1 cup pasta, cooked
- 1 cup rice, cooked
- 1 cup flavored yogurt with 3 graham cracker squares

Eating On the Run

- Hydrate every 15-20 minutes with 4-10 oz of fluid
- Food/drinks high in carbohydrate
 - Avoid fat, protein, fiber as this slows digestion and increased time for fuel availability
- Recommend to eat during run if >1 hour
 - 100-300 calories of carbohydrates per hour after first hour of exercise
 - ACSM guidelines are 30-60 grams of carbohydrate per hour after first hour or 25-30 grams every 30 minutes
 - Up to 60 grams of carbohydrate for events lasting 2-3 hours
 - If working out for less than 1 hour, should be fine with water during run provided that you ate carbs beforehand

Examples of Snacks While Running

- Peanut butter crackers
- Peanut butter jelly sandwich
- Dried fruit (raisins, figs, dates)
- Energy Bar
- Bagel
- Gummy candies, sport beans, goos, gels, blocks
- Pretzels
- Bananas
- Honey sticks
- Sport Drinks

Post-Run Nutrition

Three R's of Recovery

1. Replenish
 - Replenish carbs used as fuel
2. Repair
 - Eat protein to repair damaged muscle tissue
3. Rehydrate
 - Drink fluids

Eating for Recovery

2 Hour Recovery Time Frame

1. 0-45 minutes
 - a. Best time for a snack (aim for 100-400 calories)
 - b. Muscle is more sensitive to absorb nutrients and start repairing damage done during exercise
2. 45 minutes - 2 hours
 - a. Aim for a meal or larger snack within 2 hours after event
 - b. 3:1 carbohydrate to protein ratio meal

The 2 hour window is the key time to consume carbs, protein, and fluids to replenish and refuel

Post Run Eating

- How many Carbs?
 - Divide body weight in half to determine grams of carb needed
 - Example : 120 lb person needs 60 grams after
- How much protein?
 - About 10-20 grams post-workout
- Carbohydrate-Protein Recovery Choices:
 - Fruit yogurt, chocolate milk, cereal with milk, turkey on bun, chicken with rice and vegetables, spaghetti with meat sauce
 - If on the road: trail mix, bagel with peanut butter, energy bar with 3:1 carbohydrate to protein ratio

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Endurance Athlete Nutrition Needs^{1,3-4,6}

Calories	19-26 kcal/lb of body weight
Carbohydrates	7-10 g/kg of body weight
Protein	1.2-1.4 g/kg of body weight
Fat	20-30% of total calorie needs