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

<table>
<thead>
<tr>
<th>Recommended Carbohydrate Intake (g/kg/day)</th>
<th>Activity Duration</th>
<th>Activity Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 7</td>
<td>60 minutes</td>
<td>Moderate*</td>
</tr>
<tr>
<td>6 to 10</td>
<td>1 to 3 hours</td>
<td>Moderate to High**</td>
</tr>
<tr>
<td>10 to 12</td>
<td>4 to 5 hours</td>
<td>Moderate to High**</td>
</tr>
</tbody>
</table>

*Brisk walking at 3.5 mph

**Running at 5 mph

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

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

## Pre-Run Meals

<table>
<thead>
<tr>
<th></th>
<th>Day Before</th>
<th>Race Day</th>
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</thead>
<tbody>
<tr>
<td>Morning Run/Race</td>
<td>Carb-based lunch, dinner, and bedtime snack</td>
<td>Light snack/breakfast</td>
</tr>
<tr>
<td>Afternoon Run/Race</td>
<td>Carb-based dinner</td>
<td>Carb-based breakfast and light lunch</td>
</tr>
<tr>
<td>Evening Run/Race</td>
<td>Carb-based meals</td>
<td>Carb-based breakfast and lunch with light snack before event</td>
</tr>
</tbody>
</table>

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 weight

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

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

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
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

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

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, cookied
- 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
References

## Endurance Athlete Nutrition Needs

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
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<tbody>
<tr>
<td>Calories</td>
<td>19-26 kcal/lb of body weight</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>7-10 g/kg of body weight</td>
</tr>
<tr>
<td>Protein</td>
<td>1.2-1.4 g/kg of body weight</td>
</tr>
<tr>
<td>Fat</td>
<td>20-30% of total calorie needs</td>
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</table>