Top performing athletes fuel their bodies with proper nutrition. Use this guide to dial in your nutrition, and feel and perform better than ever.

Please note that the following information was adapted from government dietary recommendations and sport nutrition research. All dietary changes should be approved by your physician.

by Traci Carson
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Let’s Talk Basics

As a competitive athlete, you may wonder how your nutrition needs differ from your less active peers. Regardless of activity level, many nutrient recommendations are similar; however, an athlete’s protein and, most importantly, carbohydrate needs can be significantly higher.

The 5 essential nutrient groups:

Macronutrients:
1. Carbohydrates
2. Protein
3. Fat

Micronutrients:
4. Vitamins
5. Minerals

* Water is an added essential nutrient for athletes!

Energy for the Body: The Three Macronutrients

Only macronutrients (carbohydrates, protein, and fats) provide your body with energy, while micronutrients (vitamins and minerals) are essential for optimal health and absorption of macronutrients.

- Carbohydrates provide the body with 4 calories per gram of energy.
- Fats provide the body with 9 calories per gram of energy.
- Proteins provide the body with 4 calories per gram of energy.

Carbohydrates, or carbs, are the body’s main, and most important, source of energy for the body. When you exercise, carbs are the first nutrient that can be converted to energy. For this reason, it is incredibly important for an athlete to eat an adequate amount of carbs every day. When the body runs out of carbs to use for energy it must resort to burning fats and protein; however, burning fat is a very slow process and will not provide you with the immediate energy needed to perform your best during a game or practice. In a similar way, you do not want the body to burn protein, because this results in muscle loss and does not provide the body with fast acting energy.
- **Carbohydrates:**
  - The body converts carbohydrates into glucose, or blood sugar, which can then be used as immediate energy. There are very limited sources of carbohydrate stores in your body, so athletes must replenish these stores after every workout. There are two types of carbs, simple and complex.
    - Simple carbs include both natural and processed sugars. Foods with natural sugars include fruits and dairy products like milk, while items with processed sugars include candy and most types of sports drinks.
    - Complex carbs include whole grain breads and cereals, vegetables, and legumes (such as beans and peanuts).

- **Fats:**
  - Fats are essential for proper development and help the body absorb vitamins (micronutrients). It is important to include healthy fats in your diet. Dietary recommendations regarding fat have waivered over the past several years, but fats should not be highly restricted from an athlete's diet. There are a few different types of fats, and some provide a greater benefit to your body than others.
    - Fats to include in your diet: Oils (olive, canola and coconut oil). Nuts (almonds, walnuts, cashews, etc.) are also a great source of healthy fats (and protein!)
    - Fats to consume in moderation: Saturated fats (butter), and trans fats (commonly found in fried foods and processed snack foods like cookies and crackers).

- **Protein:**
  - Most athletes have heard that eating protein is important for muscle building and recovery, but protein is equally as important for building and maintaining strong skin and bones. Protein is built from amino acids, some of which are made by the body, but essential amino acids can only come from food sources.
    - It is important to understand the difference between complete and incomplete protein sources.
      - Foods that provide complete protein, or all the amino acids that we need, include meat and fish. Supplements, like whey protein powders, offer a complete source of protein and are quickly absorbed by the body, making them great for post-workout recovery.
      - Foods that provide incomplete protein, meaning that they lack one or more essential amino acids include nuts, eggs, beans, yogurt, and milk. When eating incomplete proteins, you must combine a variety of
incomplete protein sources to get all the necessary amino acids to make new protein (that builds and maintains muscle!).

- Example: If you choose not to eat meat/fish, you would need to eat a combination of veggies and dairy to ensure that you consume all essential amino acids.

**General Serving Size Recommendations Per Day**

Before reading the following section, it is important to remember that these are only general guidelines and suggestions. Nutrition needs will vary for every athlete, based on sport and training intensity, but we hope that this information can provide you with a good starting point.

The following was adapted from the USDA food pyramid by Brown University. Ranges provide options based on an individual athlete’s goals and sport demands,

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Female Athlete (servings per day)</th>
<th>Male Athlete (servings per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td>9-15</td>
<td>11-18</td>
</tr>
<tr>
<td>Vegetables</td>
<td>3+</td>
<td>3+</td>
</tr>
<tr>
<td>Fruits</td>
<td>3-5</td>
<td>4-8+</td>
</tr>
<tr>
<td>Dairy**</td>
<td>3+</td>
<td>3-4+</td>
</tr>
<tr>
<td>Protein/meat</td>
<td>2 (=6 oz total)</td>
<td>3 (=7-11 oz total)</td>
</tr>
<tr>
<td>Fats***</td>
<td>20-35% of total calories</td>
<td>20-35% of total calories</td>
</tr>
</tbody>
</table>

**Most students need ~1000 mg per day of calcium, a little more than 3 servings of dairy products (or calcium fortified substitutes)**

***Olive oil, canola oil and other oils from plants, nuts, and seeds are the heart-healthiest sources of fat, but animal fats like butter and higher-fat dairy choices can also be part of a healthy diet when used in moderation.
Specifics: Kick Your Nutrition Up a Notch

This section was written for the athlete that is interested in a more specific approach to nutrition. The preceding section (Basics: General Serving Size Recommendations Per Day) is a great starting point. Once you have become familiar with those basic recommendations, the following information may be helpful (especially for athletes trying to gain or cut weight in a healthy way). You should always consult a nutrition professional and/or physician before altering your diet.

How Many Calories Do I Need?

A calorie is a unit of energy that measures how much energy a certain food provides the body. Everyone must eat a certain number of calories to survive and maintain proper body function. Athletes are unique because they burn a significantly higher number calories than the average person; therefore, an athlete’s body requires more calories (or energy) to function properly. It is important to fuel your body with enough calories to feel energized and recover properly. To do this, you must first determine the number of calories your body needs.

How do you find this number? There are several ways to do this, but we offer one simple formula. Calculate your Basal Metabolic Rate (BMR) and multiply this number by a variable based on your level of activity (see Step 2). Your BMR is the hypothetical number of calories your body needs to keep your current body weight the same as it is right now.

Step 1: Calculate Your BMR

**Women:** BMR = 655 + (4.35 x weight in pounds) + (4.7 x height in inches) - (4.7 x age in years)

**Men:** BMR = 66 + (6.23 x weight in pounds) + (12.7 x height in inches) - (6.8 x age in years)

Use this online [BMR Calculator](#)!
To determine your total daily calorie needs based on your stage of training (i.e. pre-season, in-season, off-season), multiply your BMR (the number found in step 1) by the appropriate activity factor:

- If you are lightly active (light exercise/sports 1-3 days/week): Calories = BMR x 1.375
- If you are moderately active (moderate exercise/sports 3-5 days/week): Calories = BMR x 1.55
- If you are very active (hard exercise/sports 6-7 days a week): Calories = BMR x 1.725
- If you are extra active (very hard exercise/sports & physical job or 2x training): Calories = BMR x 1.9

Example Calculation:
Gender: Male
Height: 6’ 0”
Weight: 180 lbs.
Age: 17

STEP 1: BMR= 66 + (6.23 x 180 pounds) + (12.7 x 70 inches) - (6.8 x 17 years old)
BMR= 1,961 calories

If this same athlete is a football player that is going through pre-season two-a-days, the following activity factor (see Step 2) can be used to find total calorie needs:

STEP 2: Calories= BMR x Activity Factor
Calories= 1,961 x 1.725

Calories= 3,383 ← Total calories needed per day

This athlete should aim to consume 3,383 calories each day, as suggested by the Harris Benedict formula.

Finding your approximate calorie needs does take some effort, but dialing in your nutrition can make a huge difference in your athletic performance!

Does this seem too complicated? Contact Traci for help: traci@scoutforce.com

How Many Grams of Carbohydrates Do I Need?

- Food sources of carbohydrates include breads, cereals, rice, pastas, bagels, fruits, dairy products, potatoes, candy, fruit drinks/ades, sodas, and baked desserts.
Generally, carbohydrates should make up **40-65%** of an athlete's total food consumption.

**How Many Grams of Protein Do I Need?**

- Food sources of protein include meat, poultry, fish, eggs, nuts, milk, and small amounts exist in grain products.

- Generally, protein should make up **20-35%** of an athlete's total food consumption.

**Recommended Daily Intake of Protein (Male and Female)**

- Fairly inactive - 0.4g protein/lb body weight
- Competitive endurance athlete - 0.5 to 0.6g/lb body weight
- Competitive sports which emphasize building muscle mass - 0.6-0.7g protein/lb body weight
- Maximum usable amount of protein per day - 1.0g/lb body weight

Under these guidelines, a 170 lb. male athlete endurance athlete (i.e. cross country, swimming, etc.) should consume 85-102 grams of protein every day, while an athlete of the same weight that is trying to gain muscle mass should consume 102-119 grams.

**How Many Grams of Fat Do I Need?**

- Fats are found in foods such as nuts, oils, and higher fat dairy products, as well as baked goods and salad dressings.

- Fats play a very important role in your body and should not be severely restricted. Fats don't make you “fat,” instead they allow the body to develop properly and recover as needed. Here are some of the main reasons why we need to eat fat:
  - Fat protects your internal organs from trauma
  - Is essential for absorbing the fat-soluble vitamins (A, D, E and K) from your diet
  - Is necessary to help your body manufacture hormones
  - Maintains healthy skin and shiny hair
- Provides a necessary energy source that is hard to find in protein and carbohydrates (gives you over twice the energy per gram, see page 2)

- Athletes involved in sports that emphasize a low body weight or a particular body image must be aware of negative consequences that can result from restricting fats. Eating a diet very low in fat, for an extended period of time, can result in consequences such as fat soluble vitamin deficiency disorders, loss of skin tone and hair health, poor quality of membranes necessary in the nervous system, and female health issues. It can also increase the severity of mood disorders, such as anxiety and depression.

- General recommendations suggest that fats should make up about **20-35%** of total calories per day.

Under these recommendations, the 170 lb. male athlete, will consume enough grams of fat to compliment his total daily energy needs based on the demands of his sport. To find this number, the athlete would follow the following calculation: ((Total daily calorie requirement x (.20 to 35)= total grams of fat per day))

**Determining Daily Calories Based on Your Goals:**

**Maintaining Weight**

Athletes wishing to remain at their current weight can aim to consume the number of calories determined from steps 1 and 2 above. The Harris Benedict equation provides athletes with an estimation of total daily calorie needs. Based on this number, athletes will have a starting point for measuring energy intake. Adjustments should be made based on individual needs and unique circumstances.

**Gaining Weight**

For athletes involved in sports that emphasize strength and size, gaining muscle mass may be your goal. Athletes transitioning from high school to collegiate level sports may find that their future teammates and competition are significantly larger than them. In order to be competitive at the next level, athletes can focus on adjusting their nutrition and workouts to attain their goal of gaining strength and size.
The common suggestion for healthy weight gain is adding 500 extra calories of food each day. This addition can result in a one pound gain of body mass per week, because 3,500 calories equals one pound (7 days x 500 calories = 3,500 calories).

### Cutting Weight

Athletes involved in sports that promote a lean body mass and emphasize aesthetics may feel pressured to lose weight or fit a certain stereotype. All athletes perform their best at a body weight that is healthy for them, and this weight is unique to each individual. Athletes should not undertake weight loss on their own, and it is important to always put your health first. Losing a large amount of weight can have a negative impact on your health and athletic performance, especially when it occurs quickly. These consequences can be both long and short term. Female athletes must be extra cautious of the impact that weight and body fat loss can have on their feminine health.

If you are under proper guidance and supervision, weight loss is recommended by adding extra training and/or reducing calorie intake. The general suggestion is to cut 500 calories from your diet each day (at most!), while not engaging in extra cardiovascular exercises, OR adding approximately 30 minutes of cardiovascular training and reducing calories by 250 each day.

Remember that weight loss does not always make you a more effective athlete. When weight loss happens quickly, muscle loss typically occurs along with fat loss. Losing muscle can hurt your athletic performance. In some cases, weight control may be necessary for participation in a sport (i.e. wrestling, rowing, and weightlifting); however, all weight loss efforts should be carefully planned and approved by a doctor and/or nutritionist.

### Nutrient Timing
Knowing when and what to eat before, during, and directly after a game or workout can help you feel energized and ensure proper muscle recovery. Some athletes prefer not to eat before a training session or competition, but, as mentioned before, topping off your carb stores can keep you energized and improve your game. Try the following recommendations and see how you feel!

**Before a Workout**

Typically, a pre-workout meal or snack should consist mainly of carbohydrates and protein. Remember, that out of the three macronutrients, carbohydrates are most quickly converted to usable energy during exercise.

**About 3-4 Hours Before a Workout:**

- Eat a meal with carbohydrates and a moderate amount of protein. This meal should be low in fat because it tends to slow down digestion and prevent carbohydrates from being quickly converted to energy.
  - Example meals:
    - Cereal with low-fat milk
    - Smoothie with fruit and yogurt
    - Peanut butter and jelly sandwich
    - Chicken with rice
    - Pasta with ground turkey meatballs

**About 1-2 hours Before a Workout:**

- Consume a fast digesting carb snack, such as fruit. Eating a large meal this close to a workout can leave you feeling full and sluggish as food continues to digest during your game or practice.
  - Example snacks:
    - Banana
    - Apple
    - Dried fruit
    - Gatorade
During and After a Workout

During a long workout, it can be helpful to consume fast digesting carbohydrates for extra energy. After a workout it is important to consume a high amount of carbohydrates and a moderate amount of protein for optimal muscle growth and recovery.

Mid-Workout
- Sports drinks and fast digesting carbohydrates can give your body an extra boost during long training sessions or games.
  - Example:
    - Gatorade
    - Powerade
    - Sport gels
    - Dried fruit

Post-Workout
- This is the time to consume about 30-40% of your daily carbohydrates. At this time, your body will use carbohydrates in the best way possible, to repair and grow muscle instead of storing it as fat. Protein is another important component of this after workout meal. Similar to the pre-workout meal, fats should remain very low, so that carbohydrate and protein nutrients can be quickly absorbed by the body.
  - Example meals:
    - Oatmeal and whey protein
    - Sweet potato and chicken
    - Rice and beef/chicken with salsa
    - Pasta and chicken
    - Pancakes and eggs

Rest of the Day
- The remainder of the day, meals should be higher in healthy fats and natural protein sources. At these meals, carbohydrates are no longer the main focus, as they are no longer used as optimally by the body. Outside of the “workout window” (the hours right before, during and after a workout), carbohydrates are less likely to be used to repair muscles, and more likely to be stored as excess energy. This doesn’t mean you should avoid carbohydrates, but simply that carbohydrates are more “useful” to the body right before a workout and especially in the several hours following exercise.
  - Example Meals:
    - Eggs and bacon
    - Turkey burger and veggies cooked in a healthy oil
    - Salad with chicken, avocado, and oil and vinegar dressing
Suggested Food Sources

**Carbohydrates**

High-GI Carbohydrates- Best immediately before and/or during a workout
- Gatorade
- Fruit
- Juice
- Applesauce
- Energy bars

Low-GI Carbohydrates- Best to consume throughout the day
- Rice
- Oatmeal
- Potatoes
- Whole grain bread
- Pasta
- Cereal

Veggies- Eat as often as possible in meals/snacks that are not consumed directly during a workout. Try adding 1 cup to your meals.
- Broccoli
- Spinach
- Lettuce
- Onions
- Tomatoes
- Peppers
- Asparagus
- Green Beans
- Squah
- Zucchini
  (Plus many more!)

**Healthy Fats**
- Coconut oil
- Olive oil
- Nuts
- Nut butters
- Avocado
Lean Protein
Fish
Seafood
Chicken breast
Turkey breast
Beef
Steak
Eggs/egg whites
Whey Protein
Sample Days

The following meal plans offer examples of what a day of healthy eating could look like for the athletes mentioned. These sample plans exist to serve as a reference for how to put together nutritious meals, every individual will require their own unique plan that is right for them.

Plan #1

Athlete Stats:
- Gender: Female
- Height: 5' 8"
- Weight: 148 lbs.
- Sport: Rowing
- Goal: Gain strength

<table>
<thead>
<tr>
<th>Training Days= 2,322 cals</th>
<th>Carbs (260g)</th>
<th>Fat (77g)</th>
<th>Protein (148g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meal 1- Breakfast</td>
<td>Large apple, spinach</td>
<td>1.5 T coconut oil</td>
<td>2 eggs, 3T egg whites</td>
</tr>
<tr>
<td>Meal 2- Lunch</td>
<td>Broccoli, carrots</td>
<td>1 avocado</td>
<td>4oz. chicken breast</td>
</tr>
<tr>
<td>Meal 3- Pre-workout</td>
<td>2 pieces toast</td>
<td>1 T peanut butter</td>
<td>3 oz. Turkey breast</td>
</tr>
<tr>
<td>Meal 4- During/post</td>
<td>1c oatmeal, dried fruit</td>
<td>none</td>
<td>Whey protein</td>
</tr>
<tr>
<td>Meal 5- Post-post</td>
<td>Sweet potato, banana</td>
<td>2 T almonds</td>
<td>Greek yogurt</td>
</tr>
</tbody>
</table>

Plan #2

Athlete Stats:
- Gender: Female
- Height: 5' 3"
- Weight: 160 lbs.
- Sport: Soccer
- Goal: Weight loss
Training Day = 1,731 calories

<table>
<thead>
<tr>
<th>Meal 1 - Breakfast</th>
<th>Carbs (151g)</th>
<th>Fat (65g)</th>
<th>Protein (136g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 apple</td>
<td>2T Peanut butter</td>
<td>2 eggs, 100g egg whites</td>
<td></td>
</tr>
<tr>
<td>Meal 2 - Lunch</td>
<td>2C broccoli</td>
<td>1T Coconut oil</td>
<td>4oz. lean beef</td>
</tr>
<tr>
<td>Meal 3 - Pre</td>
<td>Banana</td>
<td>2T almonds</td>
<td>4oz. chicken</td>
</tr>
<tr>
<td>Meal 4 - During/post</td>
<td>Sweet potato, 1C Carrots</td>
<td>none</td>
<td>Whey protein</td>
</tr>
<tr>
<td>Meal 5 - Post-post</td>
<td>3/4C Oats</td>
<td>2T Almonds</td>
<td>1c Greek yogurt</td>
</tr>
</tbody>
</table>

Plan #3

Athlete Stats:
Gender: Male
Height: n/a
Weight: 180 lbs.
Sport: Football
Goal: Maintain current weight

Training Day = 2,785 calories

<table>
<thead>
<tr>
<th>Meal 1 - Breakfast</th>
<th>Carbs (270g)</th>
<th>Fat (109g)</th>
<th>Protein (180g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large apple, spinach</td>
<td>2T Peanut butter</td>
<td>4 eggs, 3 egg whites</td>
<td></td>
</tr>
<tr>
<td>Meal 2 - Lunch</td>
<td>1C Broccoli, spinach</td>
<td>2 T Coconut oil</td>
<td>5oz. lean beef</td>
</tr>
<tr>
<td>Meal 3 - Pre-workout</td>
<td>Banana</td>
<td>½ avocado</td>
<td>5oz. chicken</td>
</tr>
<tr>
<td>Meal 4 - During/post</td>
<td>1C Oats, dried fruit</td>
<td>none</td>
<td>Whey protein</td>
</tr>
<tr>
<td>Meal 5 - Post-post</td>
<td>Sweet potato, banana</td>
<td>2T Almonds</td>
<td>1.5C Greek yogurt or 5 oz. lean protein</td>
</tr>
</tbody>
</table>
Suggested Resources

Sports Nutrition:  
http://www.brown.edu/Student_Services/Health_Services/Health_Education/nutrition_&_eating_concerns/sports_nutrition.php

Athlete Nutrition: Eat to Compete in High School  
https://www.powerbar.com/nutrition-in-training/eat-to-compete-high-school

Food and Fitness:  
http://kidshealth.org/teen/food_fitness

Case, Israetal, and Hoffmann. Renaissance Periodization. RPStrength.