Performance Nutrition Handouts
Christopher R. Mohr, PhD, RD, CSSD
Mitzi Dulan, RD, CSSD

Fuel Like a Champion:
A YOUNG ATHLETE’S GUIDE ON WHAT TO EAT

“Fuel Like a Champion will give athletes, parents, and coaches both the practical and cutting-edge nutrition information young athletes need to perform their best. Just like a high-performance race car uses the best fuel available, you must eat well to reach your true potential as an athlete.”

Tony Gonzalez, Eight-Time NFL Pro Bowl, All-Pro Tight End
Sports Nutrition 101

Just like a car needs fuel, the body needs food to keep it running. A balanced diet of carbohydrate, fat, and protein provides the body with the energy it needs for optimal performance. Adequate fluid intake is another key to successful performance.

Carbohydrate
- Recommended intake of 1.8-4.5 gm/lb of body weight
- Maintains blood glucose levels
- Replaces muscle glycogen

Fat
- Recommended intake of 20-30% of total energy intake
- Intake of less than 20% does not benefit performance
- High-fat diets not recommended

Protein
- Recommended intake of ~ 0.7-0.9 gm/lb body weight
- Builds and repairs muscle tissue
- Helps boost immune system
- Helps to maintain lean body mass when losing weight

The Power of Water
- Transports glucose and oxygen to muscles
- Helps to prevent dehydration
- Regulates body temperature
- Aids in digestion of foods

Fluid Recommendations for Competition

<table>
<thead>
<tr>
<th>When to drink</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hours before</td>
<td>2 cups</td>
</tr>
<tr>
<td>10-20 minutes before</td>
<td>1 cup</td>
</tr>
<tr>
<td>Every 10-15 minutes during exercise</td>
<td>1 cup</td>
</tr>
<tr>
<td>After</td>
<td>Drink 20 oz for every pound of weight lost to optimally rehydrate.</td>
</tr>
</tbody>
</table>
Nutrition—The Winning Edge

Athletes (and non-athletes!) should choose a variety of nutrient-dense foods from the following food groups.

**Whole Grains**
- Provide energy for muscles and prevent muscle fatigue
- Whole grains and foods high in fiber help regular gastrointestinal tract
- Aim to make the majority of your grain intake from whole grains like whole wheat pasta, brown rice, whole wheat pita, whole wheat tortillas

**Vegetables**
- Provide carbohydrate (some more than others)
- Many vegetables are sources of phytochemicals
- Good source of Vitamin C, Vitamin A, and potassium
- Recommended intake: 2 1/2 cups per day

**Fruits**
- Provide carbohydrate
- Many fruits are sources of phytochemicals
- Good source of fiber, potassium, and Vitamin C
- Recommended intake: 1 1/2 cups per day

**Milk & Dairy**
- Provides protein
- Good source of calcium and Vitamin D

**Meat & Beans**
- Provides protein
- Good source of iron and zinc
- Recommended intake: varies based on body weight and goals

**Fats & Oils**
- A balanced diet is not fat-free as fat is essential for bodily functions
- Fat adds flavor to the diet
- Choose healthier fats like fatty fish, nuts, seeds, and avocados instead of trans and saturated fats (e.g. partially hydrogenated oils)
Carbohydrates

Carbohydrates play a vital role for the athlete. Maintaining an optimal intake of carbohydrates is essential for all athletes. Quality carbohydrates are:

- The primary fuel for providing energy to the muscles
- Fuel for the brain which is very important for concentration and focus.
- Vitally important for exercise recovery.
- Necessary to spare protein (muscle) – otherwise it’s burned for energy
- Packed with vitamins, minerals, and fiber.

An appropriate recovery diet allows you to maintain a good glycogen (muscle energy) content after strenuous activity. Consuming too little can impair performance by leading to poor energy, inadequate recovery and fatigue.

There is a big difference in carbohydrate, so it’s important to focus on quality and not just quantity. The majority of your carbohydrate intake should come from whole grains, beans, fruits and vegetables.

Fuel Tips

- Include whole grains with each meal
- Choose carbohydrates that have ≥ 3 g fiber & < 10 g sugar
- Include a fruit and/or vegetable with every meal and snack
- Aim for carbohydrate based products that list “100% whole grains” or “100% whole wheat” as the first ingredient on the label

Calculating approximate carbohydrate needs based upon continuous aerobic activity:

- 1.8-2.7 g/lb average daily training < 60 minutes
- 2.7-3.6 g/lb average daily training 60-90 minutes
- 3.6-4.5 g/lb average daily training > 90 minutes
### Sample Carbohydrate Food Sources

<table>
<thead>
<tr>
<th>Food</th>
<th>Amount</th>
<th>CHO (g)</th>
<th>Total Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fruit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td>1 medium</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>Orange</td>
<td>1 medium</td>
<td>15</td>
<td>65</td>
</tr>
<tr>
<td>Banana</td>
<td>1 medium</td>
<td>25</td>
<td>105</td>
</tr>
<tr>
<td>Raisins</td>
<td>1/3 cup</td>
<td>40</td>
<td>150</td>
</tr>
<tr>
<td>Apricots, dried</td>
<td>10 halves</td>
<td>20</td>
<td>85</td>
</tr>
<tr>
<td><strong>Vegetables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>1/2 cup</td>
<td>15</td>
<td>70</td>
</tr>
<tr>
<td>Winter squash</td>
<td>1/2 cup</td>
<td>15</td>
<td>60</td>
</tr>
<tr>
<td>Tomato sauce</td>
<td>1/2 cup</td>
<td>10</td>
<td>95</td>
</tr>
<tr>
<td>Peas</td>
<td>1/2 cup</td>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td>Carrot</td>
<td>1 medium</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Green beans</td>
<td>1/2 cup</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Broccoli</td>
<td>1/2 cup</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Zucchini</td>
<td>1/2 cup</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td><strong>Breads/Grains/Pastas/Starches</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whole wheat bread</td>
<td>1 slice</td>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td>Whole wheat pita</td>
<td>1 small</td>
<td>35</td>
<td>150</td>
</tr>
<tr>
<td>Whole wheat pancakes</td>
<td>4 inch</td>
<td>35</td>
<td>185</td>
</tr>
<tr>
<td>Saltines</td>
<td>5</td>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td>Graham crackers</td>
<td>2 squares</td>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>Baked beans</td>
<td>1 cup</td>
<td>50</td>
<td>260</td>
</tr>
<tr>
<td>Lentils, cooked</td>
<td>1 cup</td>
<td>40</td>
<td>230</td>
</tr>
<tr>
<td>Whole wheat spaghetti</td>
<td>1 cup</td>
<td>37</td>
<td>175</td>
</tr>
<tr>
<td>Brown rice, cooked</td>
<td>1 cup</td>
<td>44</td>
<td>216</td>
</tr>
<tr>
<td><strong>Breakfast Cereals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raisin Bran</td>
<td>3/4 cup</td>
<td>30</td>
<td>120</td>
</tr>
<tr>
<td>Cheerios</td>
<td>1 cup</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Vive</td>
<td>1½ cups</td>
<td>43</td>
<td>170</td>
</tr>
<tr>
<td>Frosted MiniWheats</td>
<td>24 biscuits</td>
<td>48</td>
<td>200</td>
</tr>
<tr>
<td>Oatmeal, dry</td>
<td>½ cup</td>
<td>27</td>
<td>150</td>
</tr>
<tr>
<td>Oatmeal, instant</td>
<td>1 packet</td>
<td>30</td>
<td>165</td>
</tr>
<tr>
<td>Cream of wheat</td>
<td>3/4 cup</td>
<td>24</td>
<td>115</td>
</tr>
<tr>
<td><strong>Beverages</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple juice</td>
<td>8 oz</td>
<td>30</td>
<td>120</td>
</tr>
<tr>
<td>Orange juice</td>
<td>8 oz</td>
<td>25</td>
<td>105</td>
</tr>
<tr>
<td>Gatorade</td>
<td>12 oz</td>
<td>22</td>
<td>90</td>
</tr>
<tr>
<td>Cola</td>
<td>12 oz</td>
<td>39</td>
<td>155</td>
</tr>
<tr>
<td>Milk, chocolate</td>
<td>8 oz</td>
<td>25</td>
<td>180</td>
</tr>
<tr>
<td>Milk, 2%</td>
<td>8 oz</td>
<td>12</td>
<td>120</td>
</tr>
<tr>
<td>Milk, skim</td>
<td>8 oz</td>
<td>12</td>
<td>90</td>
</tr>
</tbody>
</table>

©2009 Fuel Like a Champion. All rights reserved.  
www.FuelLikeaChampion.com
<table>
<thead>
<tr>
<th>Food</th>
<th>Amount</th>
<th>CHO (g)</th>
<th>Total Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sweets/Snacks/Desserts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maple syrup</td>
<td>1 tbsp.</td>
<td>13</td>
<td>50</td>
</tr>
<tr>
<td>Strawberry jam</td>
<td>1 tbsp.</td>
<td>13</td>
<td>50</td>
</tr>
<tr>
<td>Honey</td>
<td>1 tbsp.</td>
<td>15</td>
<td>60</td>
</tr>
<tr>
<td>Greek yogurt</td>
<td>6 oz</td>
<td>20</td>
<td>140</td>
</tr>
<tr>
<td>Frozen yogurt</td>
<td>1 cup</td>
<td>44</td>
<td>240</td>
</tr>
<tr>
<td><strong>Energy Bars</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clif Nectar</td>
<td>1 bar</td>
<td>27</td>
<td>160</td>
</tr>
<tr>
<td>Lara Bar</td>
<td>1 bar</td>
<td>28</td>
<td>200</td>
</tr>
<tr>
<td>Pure Bar</td>
<td>1 bar</td>
<td>26</td>
<td>200</td>
</tr>
</tbody>
</table>
**Protein**

Protein is an essential nutrient for a variety of reasons. While most focus solely on the “muscle building” effects of protein, it’s essential for:

- Physical performance because of its role in building and repairing muscles
- Improving the immune system
- Manufacturing hormones that regulate metabolism, maintain fluid balance, carry oxygen and nutrients in and out of cells
- Regulate blood clotting

When you do not consume enough calories and protein from your food, your body uses its own protein (muscles) to make up for the lack of fuel. Therefore, you may not have the energy and protein you need to perform at your best.

Recreational exercisers and athletes have higher protein needs than sedentary individuals because of increased protein breakdown and also to improve muscle protein synthesis (necessary for building muscle).

The recommended amount of protein varies for each athlete depending on current body weight, caloric intake, type, frequency, and intensity of exercise and overall goals (e.g. gain muscle mass or maintain).

Athletes who restrict calories need higher amounts of protein because they are burning protein for fuel instead of using it to build and repair tissues. Athletes need to make sure to consume enough protein and calories to fuel the body, or strength goals will be more difficult to achieve. The risk of becoming ill or injured also increases.

**Protein Recommendations**

- Recreational exerciser: 0.5-0.8 gm/lb
- Competitive athlete, adult: 0.6-0.9 gm/lb
- Growing teenage athlete: 0.7-0.9 gm/lb
- Athlete restricting calories: 0.8-0.9 gm/lb

**Fuel Tips**

**Quality Sources of Protein**

- Chicken
- Turkey
- Lean red meat
- Eggs
- Beans
- Organic milk
- Organic cottage cheese
- Cheese
- Yogurt

Based on current goals and body weight, I need approximately:

Protein needs (using values above) * Body weight (pounds) = ______ grams of protein each day.
<table>
<thead>
<tr>
<th>Protein Source</th>
<th>Amount</th>
<th>Protein (grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fish/Meats</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salmon, grilled</td>
<td>3 oz</td>
<td>23</td>
</tr>
<tr>
<td>Snapper, broiled</td>
<td>3 oz</td>
<td>23</td>
</tr>
<tr>
<td>Tuna in water</td>
<td>3 oz</td>
<td>25</td>
</tr>
<tr>
<td>Chicken breast (no skin)</td>
<td>4 oz</td>
<td>30</td>
</tr>
<tr>
<td>Pork tenderloin</td>
<td>3.5 oz</td>
<td>28</td>
</tr>
<tr>
<td><strong>Eggs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>egg</td>
<td>1 large</td>
<td>6</td>
</tr>
<tr>
<td>egg whites</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td><strong>Dairy/Non-Dairy Substitutes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1% organic milk</td>
<td>1 cup</td>
<td>8</td>
</tr>
<tr>
<td>Hemp milk</td>
<td>1 cup</td>
<td>4</td>
</tr>
<tr>
<td>Rice milk</td>
<td>1 cup</td>
<td>1</td>
</tr>
<tr>
<td>Almond milk</td>
<td>1 cup</td>
<td>1</td>
</tr>
<tr>
<td>1% organic cottage cheese</td>
<td>½ cup</td>
<td>14</td>
</tr>
<tr>
<td>Greek yogurt</td>
<td>6 oz</td>
<td>14</td>
</tr>
<tr>
<td>Hard cheese</td>
<td>1 oz/1”</td>
<td>7</td>
</tr>
<tr>
<td><strong>Soy Products</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edamame (soybeans)</td>
<td>1 cup</td>
<td>26</td>
</tr>
<tr>
<td>Tempeh</td>
<td>½ cup</td>
<td>19</td>
</tr>
<tr>
<td><strong>Beans/Legumes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most beans</td>
<td>1 cup</td>
<td>14-15</td>
</tr>
<tr>
<td>Lentils</td>
<td>1 cup</td>
<td>18</td>
</tr>
<tr>
<td>Black-eyed peas</td>
<td>1 cup</td>
<td>10</td>
</tr>
<tr>
<td><strong>Nuts/Seeds</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peanuts/almonds</td>
<td>1 oz</td>
<td>6</td>
</tr>
<tr>
<td>Cashews</td>
<td>1 oz</td>
<td>4</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>2 T</td>
<td>9</td>
</tr>
<tr>
<td>Sunflower seeds</td>
<td>1 oz</td>
<td>6</td>
</tr>
<tr>
<td>Walnuts</td>
<td>1 oz</td>
<td>7</td>
</tr>
<tr>
<td><strong>Grains (cooked)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amaranth</td>
<td>1 cup</td>
<td>9</td>
</tr>
<tr>
<td>Barley</td>
<td>1 cup</td>
<td>4</td>
</tr>
<tr>
<td>Millet</td>
<td>1 cup</td>
<td>6</td>
</tr>
<tr>
<td>Oats</td>
<td>1 cup</td>
<td>6</td>
</tr>
<tr>
<td>Quinoa</td>
<td>1 cup</td>
<td>8</td>
</tr>
<tr>
<td>Rice, brown</td>
<td>1 cup</td>
<td>5</td>
</tr>
<tr>
<td><strong>Nutritional Supplements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whey protein powder</td>
<td>1 scoop</td>
<td>25</td>
</tr>
<tr>
<td>Accelerade</td>
<td>1 cup</td>
<td>4</td>
</tr>
<tr>
<td>CherryPharm Recovery</td>
<td>1 cup</td>
<td>8</td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pasta (whole wheat-dry)</td>
<td>¾ cup</td>
<td>7</td>
</tr>
<tr>
<td>Lara Bar</td>
<td>1 bar</td>
<td>5</td>
</tr>
<tr>
<td>Raw Revolution Bar</td>
<td>1 bar</td>
<td>7</td>
</tr>
<tr>
<td>Pure Bar</td>
<td>1 bar</td>
<td>6</td>
</tr>
</tbody>
</table>
Fat intake for athletes should be about 25-30% of your total daily calories. The key, though, is to focus on the quality of the fat, not just the quantity. A diet which is high in unhealthy fats will impair your performance and contribute to many health problems including obesity and diabetes.

What are unhealthy fats?

- Saturated fats
- Trans fats

Both can lead to weight gain and health problems. These fats the high octane fuel that an athlete needs to optimize performance. Instead, they primarily come from animal products as well as processed and packaged foods. Many of these same packaged and processed foods containing partially hydrogenated oils as well, including chips, cookies, pies, and other snacks. That means they contain trans fats. Trans fats and saturated fats are like putting sludge in the engine of a race car.

On the flip side, healthy fats include containing omega 3 fatty acids which may actually help to decrease inflammation – which can help with performance. And, a added benefit is that they’ll improve health too. Let’s delve into this topic a bit further.

Omega-3’s: The Healthy Fat

While most fats are considered harmful if eaten in excess, due to their link to heart disease, obesity, and diabetes, there are others that are essential to your health. These are the Omega-3 essential fatty acids (EFA). Omega-3 EFA’s are known as polyunsaturated fatty acids – more specifically, the umbrella term omega-3 EFA’s can be “divided” into a few different types: alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA).

Omega-3’s and Health

- Inhibiting the formation of blood clots which can get stuck in blood vessels leading to the heart.
- Decreasing your risk for deadly heartbeat abnormalities.
- Lowering triglyceride (fat) levels in the blood.
- Decreasing joint tenderness and inflammation around the joint.
- Decreasing age related memory loss, cognitive function impairment, and possibly lowering the risk for Alzheimer’s disease.
- Playing a role in preventing depression—a low level of Omega-3’s has been linked to depression.
What are the best sources for Omega-3’s?

The main sources of omega-3’s are fatty fish, such as salmon or mackerel, and shellfish. **These foods contain the EPA and DHA types of omega-3’s which have been identified to be the most beneficial.**

Other sources of omega-3’s can be found in flaxseed oil, walnut oil, and soybeans. These foods contain the ALA type of omega-3’s. Although they can convert to DHA and EPA, the conversion is minimal, so focusing on fish consumption is a best bet.

### Omega 3 Fatty Acid Content of Foods

<table>
<thead>
<tr>
<th>Food Item</th>
<th>EPA grams</th>
<th>DHA grams</th>
<th>ALA grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmon (3.5 ounces)</td>
<td>0.8</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Tuna (3.5 ounces)</td>
<td>0.3</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>Swordfish (3.5 ounces)</td>
<td>0.1</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Flax seed oil (1 Tablespoon)</td>
<td></td>
<td></td>
<td>7.5</td>
</tr>
<tr>
<td>Flax seed, ground (2 Tablespoons)</td>
<td></td>
<td></td>
<td>3.5</td>
</tr>
<tr>
<td>Walnuts (1 ounce, about 14 halves)</td>
<td></td>
<td></td>
<td>7.5</td>
</tr>
<tr>
<td>Soybeans, boiled (1 ½ cups)</td>
<td></td>
<td></td>
<td>0.5</td>
</tr>
</tbody>
</table>

### Tips to boost your Healthy Fat Intake:

- Eat two servings of fish or shellfish a week.
- Use cooking methods like baking, broiling, and steaming.
- If you don’t like fish, include as many plant based sources of omega-3’s in your diet daily….one easy way is to use two tablespoons of ground flaxseed in your favorite foods. Flax seed oil can be used on soups and salads; however, it is not heat stable for cooking.
- You can take a high quality fish oil supplement daily to help meet your needs, but food is always the best bet over any supplement.
- Use raw nuts, avocados, olive or canola oil, fatty fish, and flax seed and/or oil
Fluids and Hydration

Hydration is most important component of an athletes’ diet. Making the right choices can be confusing, though.

What is a sports drink?

Sports drinks are a combination of water, carbohydrates, and electrolytes (e.g. sodium and potassium). They offer a variety of benefits:

- Provide the necessary fluids an athlete needs
- Can also help maintain stamina during training and competition
- Enhance fluid absorption in the small intestine due to the carbohydrate and sodium content
- Can have a positive effect on performance
- Enhanced taste encouraging greater hydration

Sports drinks provide calories (energy), electrolytes (sodium and potassium) and help young athletes replace fluid losses. An added benefit is they taste good so typically young athletes will hydrate better.

Fuel Tips – Hydration Danger Zone

- Athletes should weigh pre and post training to determine body weight change
- Losses during this time are fluid losses, not body fat.
- 1-2% body weight loss (~1.5 lbs in a 150 lb athlete) can negatively affect physical performance
- 2-4% loss of body weight can impair mental and physical performance
- Greater than 6% body weight loss is dangerous and can lead to heat stroke which needlessly takes the young lives of athletes every year in the US.

Warning signs of Dehydration:
- Dark urine
- Flushed skin
- Fatigue
- Light-headedness
- Loss of appetite
- Headache

How Fluid Losses can Negatively Impact Performance:
- Increase heart rate
- Decrease in cardiac output
- Decrease muscular endurance
- Increase core body temperature (makes the body work harder and increases fatigue)
- Muscle cramping from electrolyte loss (sodium and potassium)
- Decreased balance
- Reduced strength and power
- Heat exhaustion
- Heat stroke

©2009 Fuel Like a Champion. All rights reserved.
www.FuelLikeaChampion.com
Optimal Fluid Replacement with Sports Drink

- Fluids should be cooled and flavored to enhance taste and increase voluntary fluid intake.
- Fluids should contain carbohydrate to enhance performance.
- Fluids should include sodium to stimulate thirst and fluid retention.

Optimal Hydration Plan:

Hydration Plan
1. Drink 16 oz (2 cups) of fluid 2 hours before practice or game.
2. Drink 8 oz (1 cup) of fluid 10-20 minutes before practice or game. (In very hot or very cold weather you need 12-20 oz 10-20 minutes prior to practice or game).
3. Drink 7-10 oz every 10-20 minutes during exercise.
4. After practice or game drink 20 oz for every pound of weight lost. Ideally, complete rehydration within 2 hours of exercise.

- Aim to consume carbohydrates at a rate of 30-60 grams per hour.
- Don’t wait until you are thirsty, by then you have already lost 1-2% of body weight as sweat and your performance will be impaired.

A few commonly asked questions about sports drinks and fluid needs:

1. **Question: How do I pick out the best sports drink for me?**
   Choose a sports drink that is 6-8% carbohydrates or 50-80 calories per 8 oz with 120-170 mg sodium. Beverages with higher carbohydrate content (e.g. sodas, orange juice) are too concentrated and delay absorption, causing stomach pain and impaired performance. When evaluating different sports drinks, look for a sports drink that replaces body water losses, provides fuel if necessary, tastes good, and does not cause any GI discomfort.

2. **How do I know if I am drinking enough fluid during the day?**
   The most simple way to assess this to monitor urine color. It should be look like pale lemonade vs. apple juice. This can vary depending on use of supplements and medications. Thirst is not an adequate way to determine hydration status; when thirsty, the body is already mildly dehydrated. Do not use thirst as an indicator for fluid needs. Drink regularly throughout the entire day.
Vitamins and Minerals

Vitamins and minerals are necessary for virtually all reactions to occur in the body. While each has its own unique properties, they work together to ensure reactions in the body occur appropriately. Vitamins are essential molecules that cannot be made in the body and therefore, must be eaten through from foods. Vitamins and minerals do not directly supply energy – only calories can do that; however, they are both required in energy metabolism in the body.

There are essentially two categories of vitamins:

1. fat soluble
2. water soluble

<table>
<thead>
<tr>
<th>Fat Soluble Vitamins</th>
<th>Water Soluble Vitamins</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>D</td>
<td>Thiamin</td>
</tr>
<tr>
<td>E</td>
<td>Riboflavin</td>
</tr>
<tr>
<td>K</td>
<td>Niacin</td>
</tr>
<tr>
<td></td>
<td>Pyridoxine</td>
</tr>
<tr>
<td></td>
<td>Pantothenic acid</td>
</tr>
<tr>
<td></td>
<td>Biotin</td>
</tr>
<tr>
<td></td>
<td>Folic acid</td>
</tr>
</tbody>
</table>

Vitamin deficiencies reduce body function and impair health. This can also negatively affect performance. However, over consuming vitamins and minerals is also not healthy—nor will it enhance performance. It’s particularly important to note that fat soluble vitamins can all be stored in the body, increasing the likelihood of toxicity if megadoses are consumed. The water soluble vitamins on the other hand can be excreted, but still put undue stress on the body when over consumed. Both extremes can be avoided by eating a wide variety of whole foods and enough total calories. The Institute of Medicine recently released updated tables and recommendations for all vitamins and minerals. These tables are summarized below, along with food sources for each nutrient.

Whole foods are the optimal way to obtain all nutrients. Food provides much more than just a single nutrient (such as a vitamin tablet) and no pill, potion, or powder will ever give the same benefit as eating real food. Taking a basic multivitamin/mineral is suggested, though, but it should not contain 1000’s% above the RDA. Look for products that provide 100% of the RDA for all vitamins and minerals. It is to act as insurance, not replace or make up for a poor diet.
In the recently released Dietary Reference Intakes, some definitions were established that are important to discuss:

**Dietary Reference Intakes**

**Recommended Dietary Allowance (RDA):** the average daily nutrient intake level sufficient to meet the nutrient requirement of nearly all (97 or 98 percent) healthy individuals in a particular life stage and gender group.

**Adequate Intake (AI):** the recommended average daily intake level based on observed or experimentally determined approximations or estimates of nutrient intake by a group (or groups) of apparently healthy people that are assumed to be adequate-used when an RDA cannot be determined.

**Tolerable Upper Intake Level (UL):** the highest average daily nutrient intake level that is likely to pose no risk of adverse health effects to almost all individuals in the general population. As intake increases above the UL, the potential risk of adverse effects may increase.

**Estimated Average Requirement (EAR):** the average daily nutrient intake level estimated to meet the requirement of half the healthy individuals in a particular life stage and gender group.
<table>
<thead>
<tr>
<th>Mineral</th>
<th>RDA Males 19-30 years Intake/day</th>
<th>RDA Males 31-50 years Intake/day</th>
<th>UL</th>
<th>Food Sources</th>
<th>Major Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>Dairy products, meat, poultry, fish, grains, cereal</td>
</tr>
<tr>
<td>Boron</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>Potatoes, legumes, milk, avocado, peanut butter</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>Dairy products, calcium-set tofu, kale, broccoli, canned salmon with bones</td>
</tr>
<tr>
<td>Chromium (µg)</td>
<td>35</td>
<td>25</td>
<td>35</td>
<td>25</td>
<td>Some cereals, meats, fish, poultry</td>
</tr>
<tr>
<td>Copper (µg)</td>
<td>900</td>
<td>900</td>
<td>900</td>
<td>900</td>
<td>Organ meats, seafood, nuts, Seeds, whole grain products</td>
</tr>
<tr>
<td>Fluoride (mg)</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>Fluorinated water, teas, fluorinated dental products</td>
</tr>
<tr>
<td>Iodine (µg)</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>Foods of marine origin, iodized salt</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>8</td>
<td>18</td>
<td>8</td>
<td>18</td>
<td>Meat, poultry, fortified bread and grain products</td>
</tr>
<tr>
<td>Magnesium (mg)</td>
<td>400</td>
<td>310</td>
<td>420</td>
<td>320</td>
<td>Green leafy vegetables, nuts, unpolished grains</td>
</tr>
<tr>
<td>Manganese (mg)</td>
<td>2.3</td>
<td>1.8</td>
<td>2.3</td>
<td>1.8</td>
<td>Nuts, legumes, tea, and whole grains</td>
</tr>
<tr>
<td>Molybdenum (µg)</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>Legumes, grain products, nuts</td>
</tr>
<tr>
<td>Mineral</td>
<td>RDA Intake/day</td>
<td>UL</td>
<td>Food Sources</td>
<td>Major Functions</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>----</td>
<td>----------------------------------------</td>
<td>------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Males 19-30 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickel (mg)</td>
<td>ND</td>
<td>1.0</td>
<td>Nuts, legumes, cereals, chocolate milk powder</td>
<td>No clear biological function in humans</td>
<td></td>
</tr>
<tr>
<td>Phosphorus (mg)</td>
<td>700</td>
<td>4000</td>
<td>Milk, yogurt, ice cream, cheese, peas, meat, eggs some cereals, and breads</td>
<td>Maintenance of pH, storage and transfer of energy and nucleotide synthesis</td>
<td></td>
</tr>
<tr>
<td>Selenium (µg)</td>
<td>55</td>
<td>400</td>
<td>Organ meats, seafood, plants (dependent on soil selenium)</td>
<td>Defense against oxidative stress and regulation of thyroid hormone action</td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>ND</td>
<td>ND</td>
<td>Plant-based foods</td>
<td>No biological function in humans has been identified</td>
<td></td>
</tr>
<tr>
<td>Vanadium (mg)</td>
<td>ND</td>
<td>1.8</td>
<td>Mushrooms, shellfish, black Pepper, parsley, and sill seed</td>
<td>No biological function in humans has been identified</td>
<td></td>
</tr>
<tr>
<td>Zinc (mg)</td>
<td>11</td>
<td>49</td>
<td>Red meat, oysters and some Other seafood, fortified cereals</td>
<td>Component of multiple enzymes and proteins; involved in the regulation of gene expression</td>
<td></td>
</tr>
</tbody>
</table>
### Dietary Reference Intake: Vitamins
Adapted from www.nap.edu

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>RDA Intake/day</th>
<th>UL</th>
<th>Food Sources</th>
<th>Major Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males 19-30 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19-30 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>31-50 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19-30 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>31-50 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biotin (µg)</td>
<td>30</td>
<td>30</td>
<td>Liver, meats, and fruits</td>
<td>Coenzyme in synthesis of fat, glycogen, and amino acids</td>
</tr>
<tr>
<td>Choline (mg)</td>
<td>550</td>
<td>425</td>
<td>Milk, liver, eggs, peanut butter</td>
<td>Precursor for acetylcholine, phospholipids, and betaine</td>
</tr>
<tr>
<td>Folate (µg)</td>
<td>16</td>
<td>14</td>
<td>Meat, fish, poultry, enriched and whole grain</td>
<td>Coenzyme in the metabolism of nucleic and amino acids</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>14</td>
<td>breads, bread products, fortified ready to eat</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>14</td>
<td>cereals</td>
<td></td>
</tr>
<tr>
<td>Niacin (mg)</td>
<td>16</td>
<td>14</td>
<td>Meat, fish, poultry, enriched and whole grains</td>
<td>Involved with many biological reactions</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pantothenic</td>
<td>5</td>
<td>5</td>
<td>Chicken, beef, potatoes, oats, cereals, liver,</td>
<td>Coenzyme in fatty acid metabolism</td>
</tr>
<tr>
<td>Acid (mg)</td>
<td>5</td>
<td>5</td>
<td>yolk</td>
<td></td>
</tr>
<tr>
<td>B₂ (mg)</td>
<td>1.3</td>
<td>1.1</td>
<td>Organ meats, milk, bread, and fortified cereals</td>
<td>Coenzyme in reactions</td>
</tr>
<tr>
<td>(Riboflavin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B₃ (Thiamin)</td>
<td>1.2</td>
<td>1.1</td>
<td>Enriched, fortified, or whole-grain products,</td>
<td>Coenzyme in the metabolism of carbohydrates and BCAA</td>
</tr>
<tr>
<td>(mg)</td>
<td>1.2</td>
<td>1.1</td>
<td>bread, and bread products</td>
<td></td>
</tr>
<tr>
<td>A (µg)</td>
<td>900</td>
<td>700</td>
<td>Liver, dairy products, fish</td>
<td>Required for normal vision, development, and immune function</td>
</tr>
<tr>
<td></td>
<td>900</td>
<td>700</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Dietary Reference Intake: Vitamins
Adapted from www.nap.edu

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>RDA Males 19-30 years Intake/day</th>
<th>RDA Males 31-50 years Intake/day</th>
<th>RDA Females Males</th>
<th>RDA Females</th>
<th>UL</th>
<th>Food Sources</th>
<th>Major Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>B6 (mg)</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td>100</td>
<td>Fortified cereals and organ meats</td>
<td>Coenzyme in the metabolism of glycogen and amino acids</td>
</tr>
<tr>
<td>B12 (mg)</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>ND</td>
<td>Fortified cereals, meat, fish, poultry</td>
<td>Coenzyme in nucleic acid metabolism, prevents megaloblastic anemia</td>
</tr>
<tr>
<td>C (mg)</td>
<td>90</td>
<td>75</td>
<td>90</td>
<td>75</td>
<td>ND</td>
<td>Citrus fruits and many vegetables</td>
<td>Cofactor in many reactions and an antioxidant</td>
</tr>
<tr>
<td>D (µg)</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>50</td>
<td>Fish liver oils, liver, fortified milk</td>
<td>Maintain serum calcium and phosphorus</td>
</tr>
<tr>
<td>E (mg)</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>1000</td>
<td>Vegetable oils, nuts, unprocessed grains</td>
<td>Powerful antioxidant</td>
</tr>
<tr>
<td>K (µg)</td>
<td>120</td>
<td>90</td>
<td>120</td>
<td>90</td>
<td>ND</td>
<td>Green vegetables</td>
<td>involved in blood clotting</td>
</tr>
</tbody>
</table>

This handout is duplicated with permission courtesy of:

Name: ___________________________________

Contact: ___________________________________

Email: ___________________________________
Fueling On-the-Go

Student-athletes are notorious for having to eat on the road or being stranded at a complex with limited access to anything but nutritionally poor concession stand food. Use these survival strategies to keep your body in peak performance mode no matter your traveling situation.

Roadside Snacks

Pack these easy items with your travel gear to eat in-between games, heats, or on the bus/plane for a quick pick-me-up.

- String cheese
- Peanut butter and jelly
- Turkey sandwich
- Fresh or dried fruit
- Roasted, unsalted nuts
- Sliced veggies
- Energy bar
- Whole grain crackers
- Greek yogurt
- Sports drink

Concession Stand Picks

Snacks
- Ask for tortilla chips, jalapenos, and salsa instead of nachos
- Grab ‘n Go fruit (apples, bananas)
- Shelled peanuts - unsalted if possible
- Popcorn without the buttery drizzle

Meals
- Sandwiches prepared with lean meats (choose mustard over mayo)
- Pasta with marinara
- Tacos minus the heavy add-ons like sour cream – ask for a soft shell tortilla
- Grilled chicken options

Sometimes it’s just not possible to pack your own food. Plan meal choices in advance: if you know that you are going to stop at a roadside burger joint, look for healthier alternatives such as grilled chicken, baked potatoes, and chili.
A Hearty Breakfast, Made-to-Order!

Healthy hotel breakfast options include a combination of carbohydrates, protein, and a little fat.

- A bowl of oatmeal with fresh berries and scrambled eggs.
- Ham, 2 egg whites, and fresh fruit.
- Whole wheat toast with peanut butter and/or skim milk.
- Made-to-order omelet full of fresh veggies (no cheese or bacon) and a whole wheat muffin.
- Granola or whole grain cereal with a side of yogurt or fresh berries.

It’s In Your Hands

Remember:
Hotel and foodservice staff are there to please you. Don't be shy when making special requests for things like fiber-rich wheat bread or to ask for items grilled sans butter.

Just ask!
Glycemic Index

There are many mixed messages about carbohydrates; as athletes, they are important and will aid performance. Making the right carbohydrate choices needs to be the focus. One tool to make those choices is the glycemic index.

The **glycemic index is a ranking of carbohydrates based on their immediate effect on blood sugar (or glucose) levels**. High glycemic carbohydrates quickly enter the blood stream and are best used during and after exercise because the body needs to replenish glucose as quickly as possible. The remainder of the diet should focus on foods that are low to moderate on the glycemic index chart (and, subsequently, are high in fiber because fiber slows the glycemic response).

However, the **glycemic index does have limitations. It is far from a perfect tool, so it needs to be used with a grain of salt.** Here are just a few factors affect the glycemic index:

- Portion size
- Other foods eaten with the carbohydrate (e.g., a piece of bread vs. a piece of bread with butter)
- Fat and protein content in the food (e.g., ice cream has a lower glycemic index than a banana, because of the fat in the ice cream – that doesn’t make it a better food)

Here are a few common questions about carbohydrates as a whole; they are surrounded with a lot of confusion.

**What are net carbs and impact carbs?**

Amidst the negative press surrounding carbohydrates, a term has popped up that now graces the sides of many food packages—including many "energy bars." It is called 'net carbs' or 'impact carbs.' The truth is that the Food and Drug Administration has defined net carbs, impact carbs, low-carbs, reduced carbs, or even carb free. On the contrary, labeling rules exist for nutrient claims like “reduced fat” and “low-calorie” so food companies have taken the liberty to make up their own rules. Manufacturers get "net carbs" or "impact carbs" by subtracting fiber, sugar alcohols, and other carbs that supposedly have "minimal impact on blood sugar." Don't put any faith in this claim.
What are sugar alcohols?

If you’ve looked lately at the “Nutrition Facts” panel on a pack of sugar-free gum, “low carb” items, “energy” bars, or candy you may have noticed it contains “sugar alcohol.” Sugar alcohols, also know as polyols, are ingredients used as sweeteners and bulking agents. They occur naturally in foods and come from plant products such as fruits and berries. They provide fewer calories (about a half to one-third less) than regular sugar, making them an appealing substitute for food and supplement companies.

You can identify them by their name; a general rule of thumb is that if it ends in ‘ol’ it is a sugar alcohol. Common sugar alcohols include: mannitol, sorbitol, xylitol, lactitol, isomalt, and maltitol. They can be useful because they contribute less total calories than regular sugar. However, there are also some negatives associated with sugar alcohols. The most common side effect is the possibility of bloating and diarrhea when sugar alcohols are eaten in excessive amounts. There is also some evidence that sugar alcohols, much like fructose (natural fruit sugar) in fruit and fruit juice can cause a “laxative effect” which would surely have a negative effect on performance – read food labels!

Is it true that carrots, watermelons, and bananas are bad because they are high on the glycemic index chart?

It is true that these fruits and vegetable are higher than some others on the glycemic index chart. Keep in mind, though, that the glycemic index is merely a guideline. Remember the limitations listed above. First, these foods (and others) are often combined with other foods when eaten (e.g., carrots on a salad, banana on cereal, watermelon at a picnic after a meal, etc), which automatically changes the glycemic index rating. Second, each of these foods provides a tremendous amount of important nutrients (potassium, vitamin C, vitamin A, various phytochemicals, and many others). This is why the glycemic index has limitations – it is never wise to eliminate fruits or vegetables.

I have seen teammates have great results with low carbohydrate diets. It is a better idea to follow a low glycemic index diet?

Low-carbohydrate plans eliminate or drastically reduce a single nutrient source. First of all, performance will suffer if you eliminate or reduce an entire food group. Second, carbohydrates provide many nutrients that are otherwise difficult to get through the diet. The key is to eat “smart carbs” – the glycemic index is one tool that can be used, but again, it’s far from a perfect tool. High performance nutrition will allow an athlete to live normally, eat a variety of foods, and continue to practice their eating plan for life, not for just a few weeks or months.
## Categorization of the Glycemic Index (GI) of Common Food Sources

<table>
<thead>
<tr>
<th>High GI (&gt;70)</th>
<th>GI Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose</td>
<td>100</td>
</tr>
<tr>
<td>Corn flake</td>
<td>92</td>
</tr>
<tr>
<td>Honey</td>
<td>87</td>
</tr>
<tr>
<td>Potato, baked</td>
<td>85</td>
</tr>
<tr>
<td>Rice Cakes</td>
<td>78</td>
</tr>
<tr>
<td>Jelly beans</td>
<td>74</td>
</tr>
<tr>
<td>Watermelon</td>
<td>72</td>
</tr>
<tr>
<td>Bagel, white</td>
<td>72</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moderate GI (40-70)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White sugar</td>
</tr>
<tr>
<td>Snickers</td>
</tr>
<tr>
<td>Oatmeal</td>
</tr>
<tr>
<td>Raisins</td>
</tr>
<tr>
<td>Beets</td>
</tr>
<tr>
<td>Corn</td>
</tr>
<tr>
<td>Sucrose</td>
</tr>
<tr>
<td>White pasta</td>
</tr>
<tr>
<td>Whole wheat pasta</td>
</tr>
<tr>
<td>Chickpeas</td>
</tr>
<tr>
<td>Strawberries</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low GI (&lt;40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All-bran cereal</td>
</tr>
<tr>
<td>Apple</td>
</tr>
<tr>
<td>Chocolate milk</td>
</tr>
<tr>
<td>Yogurt, low-fat</td>
</tr>
<tr>
<td>Skim milk</td>
</tr>
<tr>
<td>Kidney beans</td>
</tr>
<tr>
<td>Lentils</td>
</tr>
<tr>
<td>Peach</td>
</tr>
<tr>
<td>Whole milk</td>
</tr>
<tr>
<td>Grapefruit</td>
</tr>
<tr>
<td>Peanuts</td>
</tr>
</tbody>
</table>

*Note: GI values may vary slightly from source to source.*
Pre-Competition Nutrition

For gold-medal winning performances, it is important to adequately fuel the body before, during, and after competition. Food provides the body with the energy it needs to perform its very best. Just keep in mind that to reach your true potential as an athlete you need to be eating well throughout your training and don’t wait until the day before your competition.

“One great pre-event meal cannot make up for a for a poor training diet!”

The Role of a Pre-Competition Meal

- Helps to maintain blood sugar level during exercise
- Settles the stomach and prevents hunger
- Provides carbohydrate for the muscles to use for energy
- Helps the body begin competition in a hydrated state

Guidelines for Pre-Competition Meals

- As time gets closer to the competition decrease the volume of food
- Eat high-carbohydrate, moderate protein, low-fat meal meals prior to competition
- Consume foods your body is used to—competition day is not the time to try new foods! Make sure you have tested during training.
- Limit high-fat and high sugar foods.
- Allow time for food to digest prior to competition
- Drink adequate fluids to stay hydrated

Ideas for Pre-Competition Eating

2 hours or less prior to competition

- Energy bar
- Smoothie (frozen banana with milk)
- Banana with peanut butter
- Greek yogurt

2 hours or longer prior to competition

- Oatmeal and piece of fresh fruit
- Sandwich with ham or turkey (no cheese)
- Peanut butter and jelly with glass of milk
- Whole wheat pasta with chicken and marinara

©2009 Fuel Like a Champion. All rights reserved. www.FuelLikeaChampion.com
Why are my muscles cramping?

Muscle cramping may be due to fatigue, but there may be several nutritional factors leading to muscle cramps as well.

**Lack of fluids:** Dehydration is often a major cause of muscle cramping so it is important to consume adequate fluids.

**Loss of sodium and potassium:** Sweat and other water loss may lead to electrolyte imbalances which may result in muscle cramping. It is much more common for sodium to be the culprit of muscle cramping than potassium although they are both important electrolytes. Every athlete has their own unique sweat rate and it is important to make sure you are not losing too much sodium as it can negatively impact performance. Obviously, if you aren’t in the game playing due to muscle cramps you cannot perform. If you are a heavy sweater you might try to add a little sodium to your diet. You can also eat pretzels or discuss possibly using salt tablets with a qualified sports dietitian.

**Lack of calcium.** Make sure to consume adequate calcium as it plays a key role in muscle contraction.

**Fluid Recommendations for Competition**

<table>
<thead>
<tr>
<th>When to drink</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hours before</td>
<td>2 cups</td>
</tr>
<tr>
<td>10-20 minutes before</td>
<td>1 cup</td>
</tr>
<tr>
<td>Every 10-15 minutes during exercise</td>
<td>1 cup</td>
</tr>
<tr>
<td>After</td>
<td>Drink 20 oz for every pound of weight lost to optimally rehydrate.</td>
</tr>
</tbody>
</table>

This handout is duplicated with permission courtesy of:

Name: ________________________________
Contact: ______________________________
Email: ________________________________
Tournament and Multiple Practice Day Eating Strategies

You may feel confident in your ability to practice proper nutrition on a regular basis, but are you prepared for weekend-long tournaments or two-a-days? These situations place extra demands on your body which requires you to pay even more attention to what and when you eat.

If you will be competing two days in a row, be sure to prime your body for peak performance with proper nutrition. The best foods to eat the night before a game or tournament should be the same as your goals for every dinner – the key is to make sure it is a meal you are used to eating. And this meal should be made up of whole grains, lean protein, fruits and vegetables. Here is one simple example:

- Whole wheat pasta with marinara sauce, a chicken breast chopped up and added to the pasta, along with a handful of spinach cooked into the sauce
- Remember to drink plenty of fluids so that on the day of your event you are well hydrated.

The Most Effective Warm-up: Breakfast

You know your body best and you know how much you can handle before an event. Breakfast is an important way to charge the body pre-competition and to prepare it for a full day of work. If you know that downing a pancake, bacon, and sausage breakfast right before your 7 a.m. swim meet is going to make you sick, listen to your body. It is recommended to consume a 200-500 calorie carbohydrate-rich breakfast two to four hours prior to an event. This will help you to have more energy to get through your practices or competition. Try these:

- Whole wheat bagel or toast with peanut butter
- Bowl of cereal with low-fat organic milk
- Smoothie with frozen fruit and milk
- Greek yogurt with fruit
- Oatmeal and scrambled eggs

Between Game Meals/ Snacks

Maintaining optimal energy levels can be tough when you are on a baseball field all weekend. Make sure that you have some quick, high energy snacks to eat between games so you maintain your energy levels. Even when there is a concession stand, it is usually low-quality fuel for athletes so planning ahead and packing these snacks to have on hand is always a good idea!

- Peanut butter and jelly sandwich
- Trail mix (for example: raw almonds with dried cranberries)
- Energy bar like a Clif Nectar, Lara Bar, or Pure Bar
- Fresh fruit
- Greek yogurt

©2009 Fuel Like a Champion. All rights reserved.
www.FuelLikeaChampion.com
Hydration and Sports Drinks

Whether the sun is sweltering down in the middle of an afternoon softball game or it is your second practice for the grueling two-a-days for football, hydration is a hugely important and often overlooked factor in these types of situations. Sports drinks are critical to replenish fluids and electrolytes lost through sweat. They also provide energy which can help maintain blood sugar levels between meals/snacks. Do not wait until you are thirsty since this means you are already dehydrated.

- Make sure you have a hydration plan and stick to it!
- Drink 16 oz (2 cups) of fluid 2 hours before practice or game.
- Drink 8 oz (1 cup) of fluid 10-20 minutes before practice or game. (In very hot or very cold weather you need 12-20 oz 10-20 minutes prior to practice or game).
- Drink 7-10 oz every 10-20 minutes during exercise.
- After practice or game drink 20 oz for every pound of weight lost. Ideally, complete rehydration within 2 hours of exercise.
- At least, on occasion, weigh yourself before and after your practice/competition to see how many pounds you are typically losing so you can plan your hydration plan appropriately.

Recovery

Recovery is one of the most important aspects of sports nutrition and optimal fueling for an athlete. Consuming the right mix of carbohydrates and protein post-game, practice, or exercise allows the body and its muscles to refuel and be ready for the next practice or game. Recovery is even more important when you have multiple games or practices on the same day. Make sure you drink a recovery beverage within 30 minutes following your workout or game. A great easy option is low fat chocolate milk.
Strength and Power Nutrition

“I’m a hard gainer.”

“I am taking every supplement in the book, but not gaining weight. What else do I need to take?”

“I eat a ton of protein, but am not gaining. What else should I do?”

These are familiar sounds from athletes. Eating for strength and power takes the right combination of nutrients, calories, and of course training (and recovery).

Calorie Needs

First and foremost, there are two facts with regards to gaining strength.

1. Eat more calories than the body uses to gain weight.
2. Calories for packing on lean body mass need to be high nutrient calories.

Fuel Like a Champion Habits

To eat for strength and power, there are several “Fuel Like a Champion Habits” that are important. Let’s review each of them below.

**Fuel Tip #1: Eat every couple hours.** This means dividing up your calories for the day into many (6-8) smaller meals vs. 2-3 large meals. This is a more efficient way to fuel your muscles, keep your energy levels elevated, and limit fat store. After all, the goal is gaining lean body mass, not fat mass.

**Fuel Tip #2: Include lean protein with each meal.** Protein is necessary for rebuilding, growth, and repair. Protein also helps fill you up. The key is to pick whole food options of lean protein – chicken and turkey breast, eggs, lean red meat, yogurt, cottage cheese, beans, etc rather than relying on dietary supplements.

**Fuel Tip #3: Include fruits and vegetables with every single meal.** Yes, fruits and vegetables – not, they don’t have a lot of calories, but they do have nutrients that will help you repair and fuel your muscles and mind.

**Fuel Tip #4: Eat whole foods, not supplements.** Supplements are just what the name implies – supplements to the diet. Whole foods give you much more than just a single nutrient; quality foods have a variety of vitamins, minerals, antioxidants, and other nutrients that not one single supplement can touch. Although some supplements can have a role in a healthy diet, the key is to eat foods, don’t rely on supplements.
Fuel Tip #5: Plan Ahead. Sounds like a strange tip for strength and power nutrition, but planning will allow you to accomplish all the other tips. Eating quality foods frequently throughout the day will be impossible without some thought and preparation. Giving some thought to the schedule for the day (school, work, training, etc) will provide a way to incorporate the regular feedings to fuel the body.

Fuel Tip #6: Eat the widest variety of foods available. The more varied the diet, the greater the results. The body thrives off of nutrients; giving it what it needs will enhance the results. Include a rainbow of colors daily – include a variety of lean proteins, whole grains, and healthy fats.

Fuel Tip #7: Eat to recover. Training breaks down muscle. Muscle grows during recovery. Fueling the body with the right nutrients will give muscle the best environment to repair and grow.

Fuel Tip #8: Eat Clean 90% of the Time: This gives some leeway for “dietary freedom.” Following the Fuel Tips 90% of the time will provide incredible results. Eat enough to feel comfortably satisfied, never over stuffed. Remember, the body needs to be prepared again in a few hours to fuel with the best foods possible.

Fuel Tip #9: Focus on Quality, not just Quantity. American’s are overfed, yet undernourished. Increasing calories doesn’t simply mean drinking an extra 6-pack of soft drinks each day, or eating candy bars by the dozen. Gaining quality weight can only come from quality foods – whole grains, with at least 3 grams of fiber per serving, lean protein, and healthy fats.

Following these 9 simple principles will allow you to grow stronger.
Build Muscle and Gain Weight

The key to gaining weight is combining an appropriate strength training program with a muscle building nutrition plan which means taking in EXTRA calories. It takes approximately 2500 ADDITIONAL calories to build one pound of muscle. The overall goal is to increase total calorie intake on a daily basis. Now, these additional calories should come from nutrient-rich foods instead of eating an extra meal of a high fat Big Mac and French fries. Remember, you want to put the highest quality fuel available into your gas tank to optimize your performance and this rule also applies when adding extra calories for weight gain.

You want these additional calories to come from a combination of carbohydrates (e.g. whole grains, fruits and vegetables), protein (e.g. fish, chicken, lean meats, beans, quinoa), and healthy fats (e.g. salmon, peanut butter, avocados and nuts).

Recovery and Muscle Growth

Drinking a carbohydrate/protein recover drink within 30 minutes of exercise is essential for creating the optimal anabolic environment for building muscle. It helps to minimize muscle damage, increase protein synthesis, and help keep insulin levels elevated following exercise. If you wait longer than 30 minutes to drink your recovery beverage, your anabolic advantage will steadily decline. Drink up during the 30 minute window of opportunity! Ideally, a recovery beverage should have about 3:1 carbs to protein (e.g. low-fat, organic chocolate milk, Accelerade, PureSport).

Strategies for Successful Weight Gain

1. Never skip meals. Eat several times (5-8 meals/snacks) throughout the day, for example, breakfast, lunch, dinner, morning snack, afternoon snack, pre-exercise, recovery, evening snack.
2. Aim to eat an additional 400-800 calories per day and you may need about 24-27 calories per pound to gain about 1 pound per week.
3. Sometimes you will need to eat even when you are not hungry.
4. Always have a recovery drink after training/game (e.g. Low-fat chocolate milk, Accelerade).
5. Increase lean protein (~0.91 gm/protein per pound) intake (e.g. beans, fish, chicken) and whole grain intake (e.g. whole wheat bread, brown rice, oatmeal).
6. Eat a muscle building snack prior to bedtime (e.g. Lara bar, peanut butter and jelly on whole wheat with glass of 1% organic milk, smoothie).
7. Add 1-2 muscle building smoothies per day to diet (see recipes on following page)
More Ideas for Increasing Daily Calorie Intake

1. Aim to eat ~1 cup trail mix per day. Great to take to school as snack and eat between breakfast and lunch.
2. To increase protein to meet goals you can use protein powder.
3. Add peanut butter to a protein smoothie with a banana.
4. Eat 1-2 peanut butter (natural) and jelly sandwiches on whole wheat every day.
5. Eat high calorie snack like: nuts, dried fruit, trail mix, smoothies. Jerky is also a high protein snack.
6. Increase portion sizes of lean proteins and whole grains.
7. Increase fruit intake to at least 3-5 per day.
8. Consider eating energy bar for afternoon snack: Top Picks: LARA Bars, Pure Bar, Clif Nectar Bar.

Mitzi’s Weight Gainer Smoothie
1 frozen banana (peel before freezing)
1 scoop protein powder
½ cup coconut milk
¾ cup 1% organic milk
½ cup raw cooking oats (optional)

1. Blend and enjoy!

Chris’s Weight Gainer Smoothie
2 tablespoons peanut butter (or almond butter)
2 frozen bananas (peel before freezing)
1 cup vanilla yogurt
1 cup 1 or 2% milk
1 scoop whey protein powder
½ cup whole, rolled oats

1. Blend. Add water to desired consistency and cinnamon to taste.
Endurance Nutrition

Training for an endurance sport, no matter what the distance, requires a lot of planning, training, and time. Over time, these things become like clockwork, and athletes come up with their own individual training plan that works for them. However, many athletes, from beginner to advanced are still confused about how to eat properly for these types of events. As professionals, it is important to have a basic knowledge of nutrition for triathlons or other endurance events, and understand how it differs from other types of physical activities.

General Nutrition Recommendations

The general nutrition recommendations for endurance sports are:

- 50-70% carbohydrates
- 10-20% protein
- 20-35% fat

The large range in carbohydrates depends on the distance of the endurance event. For athletes training for Ironman distance triathlons, 70% of calories from carbohydrates are the appropriate amount to adequately replenish stored carbohydrates. However, these general percentages for nutrients only work if the athlete is eating the appropriate amount of calories. To be adequately fueled for extreme amounts of exercise, the calorie recommendations are:

- 44-51 calories/kg for females
- 50-58 calories/kg for males
  ** To get pounds converted to kg, divide the athlete’s weight by 2.2

For example, a female athlete who weighs 130 pounds or 59 kilograms (kg) would need approximately 2350-3000 calories per day to fuel her activity levels and normal daily activities.

Of course these are generalizations and some athletes may need more; a simple way to monitor calorie and fuel needs is to measure body weight, recovery (are the athletes eating enough to recover), and performance.

Specific Nutrition Recommendations

Carbohydrates

To ensure the athlete has adequate stored carbohydrate and protein for endurance exercise, it is more accurate to make carbohydrate, protein, and fat recommendations based on the athlete’s weight in kg.
The current recommendation for athletes in endurance training events is approximately 8-10 grams (gm) carbohydrates per kg.

**Sample Carbohydrate Recommendations for 59 kg female in training:**

- 59 kg * 8-10 gm carbohydrates/kg = 470-590 gm carbohydrates/day

### Protein

Protein recommendations for endurance athletes are 1.2-1.4 gm of protein/kg, which can easily be reached if the athlete is consuming enough calories. It is important that these protein goals be met in order for the athlete to maintain their lean muscle mass. Protein is also extra important for endurance athletes because prolonged exercise increases the chance that the body uses some of the athlete’s protein stores for energy.

**Protein Recommendations for 59 kg female in training:**

- 59 kg * 1.2-1.4 gm/kg = 70-83 gm protein/day

### Fat

Fat recommendations for endurance athletes are just as important as carbohydrates and protein. To ensure that stored fat in muscle used in extreme endurance events are replenished, professionals need to emphasize that a low fat or a virtually fat free diet could be detrimental to performance.

**Fat Recommendations**

Depending on the amount of calories being consumed, the recommendation for daily fat intake is 1 gm-2 gm/kg. If the athlete is trying to lose weight, the amount of fat consumed will be the nutrient that is decreased, not carbohydrates or protein. The minimum level of fat for an endurance athlete in their peak training time is 1 gm/kg.
Sample Pre Race/Workout Fueling Plan for 59 kg female:

2 hours before (~117 gm carbs):
- 1 plain bagel, 4 " diameter (60 gm)
- 1 tbsp. regular jelly (17 gm)
- 2 tbsp. peanut butter (15 gm)
- 1 large banana (27 gm)
- 2 tbsp. peanut butter (15 gm)
- 12 oz. water

4 hours before (~232 gm carbs):
- 2 slices thick bread (45 gm)
- 2 tbsp. peanut butter (15 gm)
- 2 tbsp. regular jelly (34 gm)
- 1 large apple (30 gm)
- 1 6-8 oz. yogurt (35 gm)
- 1 oz pretzel sticks (50 gm)
- 12 oz. sports beverage (21 gm)

Race Day/Workout Nutrition Strategies

There are specific recommendations for the amount and type of food, fluids, and electrolytes during the race/training based on year of research.

General Recommendations (remember, each athlete is unique, so these are generalizations from research, but numbers may vary).

- **Consume 30-60 gm carbohydrates per hour.** Taking in any more carbohydrates than the recommended amounts can be too much for the body to digest at one time, leading to stomach cramps.
- **Beverages consumed during a race must be a 6-8% carbohydrate concentration.** If the concentration of carbohydrates per 8 oz is higher than that, the stomach is not able to absorb the sugar fast enough, which can lead to stomach cramping.
  - To calculate % carbohydrate solution: Find the grams of carbohydrates in the beverage and divide that number by 237 ml (amount in 8 oz.). For example, Gatorade has 14 gm carbohydrates per 1 cup, so 14/237 = 6%. On the other hand, orange juice has 28 gm carbohydrates per 1 cup, which is a 12% carbohydrate solution.
- **Fluid recommendations** should really be customized based on the athlete’s sweat rate, but a general recommendation is 6-12 oz per 15-20 min.
- Sodium is the main electrolyte lost in sweat and must be replaced during heavy endurance activities. **Depending on how heavy the athlete sweats, approximately 500-1000 mg sodium/hour should be consumed each hour.** (NOTE: If the athlete always has a white film on their clothes after exercise, they would be considered “heavy sweaters,” and should consume the higher range of sodium per hour.)
Sample During Race/Workout Fueling Plans for 59 kg female:

Goals Per Hour: 30-60 gm carbohydrates, 20-30 oz. fluids, 700 mg sodium

1. PowerGel – 25 gm carbohydrates, 200 mg sodium
   8 oz. Gatorade Endurance – 14 gm carbohydrates, 200 mg sodium
   Water – 12 oz.
   Salt tablets – 300 mg
2. Clif Bar – 45 gm carbohydrates, 130 mg sodium
   Water – 25 oz.
   Salt tablets – 600 mg
3. Banana – 30 gm carbohydrates, 0 mg sodium
   8 oz. Gatorade Endurance – 14 gm carbohydrates, 200 mg sodium
   Water - 12 oz.
   Salt tablets – 500 mg

Optimal Foods for Recovery
See nutrient timing sheet for specific recovery recommendations.

Sample Fueling Plans for Recovery

Goals for 59 kg female assuming a two pound weight loss:
- 90 gm carbohydrates in the first hour
- 45-90 gm carbohydrates each hour after up to 3 more hours
- 50 oz. or 6 oz. fluids
- 6 gm protein

1. Cornflakes (2 cups) = 50 gm carbohydrates
   Milk (1 cup) = 12 gm carbohydrates, 8 gm protein
   Banana = 30 gm carbohydrates
   6 oz. water
   Salty, high carbohydrate foods in the next 1-3 hours.
- Other great recovery foods are chocolate milk, yogurt, smoothies, pretzels and dried fruit.

These tips should help you assist athletes on adequate fueling to get them through though workouts day after day and still have the energy on race day, when it really counts!
Weight Loss 101

The bottom line for losing weight is to burn more calories than you are taking in. There are basically three ways to lose weight.

1. Eat less
2. Exercise more
3. Both

If you are an athlete who is already training extremely hard then nutrition is most likely your missing component to reaching your weight and bodyfat goals. As an athlete, you also want to make sure that while you are losing body fat that you maintain your muscle mass so it is important to follow a diet which will help you reach your goals.

Do you know how many calories are in 1 pound of fat? There are 3500 calories in one pound of fat. So, try to cut out about 250-500 calories per day to aim for a 1-2 pound weight loss every 2 weeks.

Did you know that by simply cutting out one 16 oz juice bottle of juice per day you would lose 22 pounds in one year!

A common question in sports nutrition is “how many calories do I need?”. Calorie needs can vary widely since they are based on current body weight, muscle mass, and energy expenditure as well as your current training regimen. However, for a general guideline to promote a gradual weight loss you can calculate about 12-15 calories per pound.

Example: 160 pounds X 12 calories/lb = 1920 calories per day

Tips for Normal Eating

1. Write down your food intake for 5 days and then take a look to see if there are some patterns of poor choices or excessive calorie intake.
2. Give your food full attention while eating: avoid eating while watching television or talking on the phone.
3. Avoid the all or nothing mentality of eating.
4. Restrictive eating leads to overeating.
Top 12 Strategies to Lose Weight:

1. **Avoid drinking your calories** (e.g. juice, soda, lemonade, and alcohol)...outside of sports drinks when necessary. Otherwise, stick with calorie free beverages like water and or tea and you will be surprised at how many calories you can cut.
2. **Do not skip meals.** Aim to eat every 3-4 hours so you do not become so ravenous that you overeat. A common mistake of people trying to lose weight is skipping a meals.
3. **Always start your day with a well balanced breakfast** with moderate protein and carbohydrates (eggs, ham, protein shake, and whole grain)
4. **Eat smaller portions.** Stop eating when satisfied. Not full, stuffed or sick. This is the common culprit for sabotaging weight loss efforts. You can eat too much of almost any food. Even if you are eating high fuel foods, you might be eating portions that are too large.
5. **Avoid the “Clean Plate Syndrome”.** Parents are notorious for making their children clean their plates but you should instead pay attention to your own body signals for feeling satisfied. You should always leave some food on your plate so you can be in control of your food instead of allowing it to control you.
6. **Eat more slowly.** Young athletes are often in a hurry but eating more slowly can help decrease portion sizes by allowing time for your stomach to tell your brain that you are satisfied.
7. **Always eat a source of protein at every meal** (e.g. fish, eggs, grilled chicken, turkey, tuna, beans).
8. **Focus on the foods that you need instead of the foods that you think you shouldn’t eat.**

**Snack Ideas To Satisfy**
- Peanut butter and jelly
- Non-fat or 1% cottage cheese and dried fruit
- Whole wheat pita with hummus
- Bowl of cereal with fruit and non-fat or 1% milk
- Fruit and nuts
- Greek yogurt
- 2 hard boiled eggs with baby carrots
- Apples and string cheese
- Bananas
- Edamame (soybeans)
- 1/2 ham sandwich on whole wheat bread
- 1/2 tuna sandwich on whole wheat bread
Nutrient Timing

Training is necessary for optimal performance.

Timing your nutrient intake during the recovery period, will enhance performance even more, and allow an athlete to be the best they can be. Often called “Nutrient Timing” in the sports nutrition world, it is quickly becoming one of the hottest and most research areas.

The recommendations below will allow athletes to head out to the next practice, game, or gym full of energy and ready to play or train again!

Nutrient Timing

Imagine muscles as a sponge. When a sponge is soaking wet, it cannot hold any more water. This wet sponge is like muscles that are well fueled before a workout. They are full of stored carbohydrate, called glycogen. During training, glycogen will be used for energy. Imagine this as if wringing out the sponge. When a sponge is dry, like muscles after a workout, it can then take up the most amount of water (or, in the case of muscles, glycogen). This will prepare the muscles for the next bout of training, whether it’s practice, a game, or tournament. Therefore, this timing, immediately after a workout, is necessary to “prime” the muscles for optimal performance.

The Most Important Meal of the Day

Eating after a workout is arguably the most important meal of the day and is one of the best ways to take the “post-workout blues” head on! In fact, this time is often referred to as “the window of opportunity” – this “window” last from 30-60 minutes. This is the best time to refuel working muscles so they can absorb the most nutrients, namely carbohydrates and protein.

Recovering from an exercise bout is impossible without replenishing both food and liquid to restore what was lost during exercise. It is important to eat the proper nutrients to refuel muscles and plenty of fluids to replace what was lost in sweat.

Let’s Explore the Details

The Importance of Carbohydrates

When working out, no matter what the activity, athletes will deplete a good portion of their muscle glycogen (again, the body’s storage form of carbohydrate), some protein, and, depending on the length of training, possibly some fat. During exercise, muscle glycogen is the body’s primary fuel source and needs to be replenished. The primary objective of eating carbohydrates is to replenish these glycogen stores. This is one of the few times to encourage simple carbohydrates; muscles can take up these nutrients more quickly, without being slowed by the
amount of fiber. This can come from solid foods or liquid sources. We'll show several examples of each.

**Protein is Crucial too**
Aside from foods that are high in carbohydrates, eating some protein is necessary too. Protein should make up about ½ - ¼ of the total amount of carbohydrate eaten, carbohydrates, protein can come from solid foods and/or beverages, as long as it is low in fat, as fat will slow the absorption of the much needed nutrients.

**Rehydrating the Body**
Just as eating carbohydrate and protein is important to recovery, so is replenishing the body with fluids. During exercise, athletes lose fluids through sweat. Refueling the body with fluids can help reduce prevent dehydration, which would otherwise cause fatigue and could lead to injury.

- Post-game: athletes should immediately drink at least a half-liter (approximately 2 cups) (aim for 2 - 2½ cups for every 1 lb lost) of non-caffeinated or non-alcoholic fluid
- Continue to drink fluids throughout the day.
- Urine should look like pale lemonade.

**Proper Meal Timing**
Athletes should eat their recovery food(s) as soon as possible after exercise or competition, and should wait no longer than 1 hour. This is the most critical period for the replenishment of muscle glycogen.

It is common for athletes to have a decreased appetite after training; however, if optimal performance is the goal, lack of appetite can't stop you from consuming something. It is typically easier to consume liquid as opposed to solid food if you feel full after a workout, so “liquid food” again comes out on top to assist in the recovery process. Here are some practical fuel options.

<table>
<thead>
<tr>
<th>Fuel Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Eat within 30-60 minutes after exercise. The sooner, the better.</td>
</tr>
<tr>
<td>- Focus on carbohydrates</td>
</tr>
<tr>
<td>- Include some protein</td>
</tr>
<tr>
<td>- Remember fluid intake as well – 20 oz for every 1 lb lost.</td>
</tr>
<tr>
<td>- Eat again within 1-2 hours after the initial “refueling”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practical Fuel Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Drink 1-2 cups low fat chocolate, vanilla, or strawberry milk</td>
</tr>
<tr>
<td>- Eat a bowl of cereal with low fat or fat free milk and fruit</td>
</tr>
<tr>
<td>- Enjoy a yogurt with fresh fruit</td>
</tr>
<tr>
<td>- Turkey or chicken breast sandwich</td>
</tr>
<tr>
<td>- Steamed rice with chicken and stir-fried vegetables</td>
</tr>
<tr>
<td>- Pasta with chicken, red meat, seafood and red sauce, spinach</td>
</tr>
</tbody>
</table>

This handout is duplicated with permission courtesy of:

Name: ____________________________
Contact: __________________________
Email: ____________________________
Evaluating Dietary Supplements

Ergogenic Aids are defined as “the application of a nutritional, physical, mechanical, psychologic, physiologic, or pharmacologic procedure or aid to improve physical work capacity, athletic performance, and responsiveness to exercise training.” Dietary supplements are therefore one type of ergogenic aid.

Evaluating Dietary Supplements

The dietary supplement industry is over a 23 billion dollar industry. Sorting through the advertisements and associated claims for the 29,000-plus dietary supplements available can be difficult and confusing. But if an individual is going to be ingesting something, it’s important to learn about it first. Following these six guidelines and recommendations on how to evaluate any dietary supplements on the market can make it significantly easier to make smart, healthy decisions.

1. **Are there legitimate physiological mechanisms associated with the supplement?**
   The purpose of an ergogenic aid is to enhance performance in one way or another, whether it is to allow athletes to lift more weight, run faster, or increase endurance. When evaluating the product, ask yourself, “Is it possible for the supplement to enhance the pathway from point A to point B?” For example, creatine phosphate is useful in energy reactions to regenerate ATP, the body’s “energy currency.” The next step is to consider whether the supplement in question is necessary for the reaction to occur, may enhance the speed of the reaction, or will do nothing to change what normally goes on in the body.

2. **Is this product useful for the intended sport?**
   Certain supplements are designed for high-intensity, short-duration events, such as weight lifting or sprinting. Others are designed to increase endurance. Therefore, depending on the sport one is involved in, certain supplements should not even be considered. Again using creatine as the example, it is not beneficial for long-duration, endurance-type activities, such as marathons. Using such a supplement to train or compete in these types of events would be nothing more than a waste of money.
3. Are there scientific, placebo-controlled studies to support or refute the claims being made for the supplement? Have the results been duplicated?
Dietary supplements are being developed, improved, and launched practically every single day. Unfortunately, well-conducted scientific studies take much longer than this, and in the meantime athletes are being drawn to the new products through marketing. Dietary supplements do not have to endure the same rigor as pharmaceutical agents. However, some supplements have had a number of safety and efficacy studies conducted on them. Such studies are published in peer reviewed, scientific journals. Access to thousands of well-respected journals can be found for free on PubMed, a resource of the National Library of Medicine at www.pubmed.gov.

4. Is there adequate safety data on the particular dietary supplement?
The importance of long-term health can be difficult to get across to young, otherwise healthy athletes. However, it’s vital to stress the safety concern that’s associated with dietary supplements. If the athlete’s goal is to gain lean body mass, and the supplement he or she is taking will do so at the expense of curtailing his or her adult life, it’s too high a price to pay. This caution is obviously a bit extreme, but excess stress on the kidneys, liver, and other organs can be a concern with some supplements.

5. What is the source of information regarding the dietary supplement?
Did the athlete hear about the dietary supplement in question from a friend, coach, magazine, etc? Many mainstream fitness magazines are owned by supplement companies. Therefore, it is common to read articles that are very slanted towards promoting a particular product(s). Magazines are a good way to be introduced to a product, but then the consumer must continue the investigative work to determine if there is any truth behind the supplement’s claims.

6. Is the product banned by any governing agencies?
This is of particular concern for collegiate and professional athletes. There are a number of products that are banned by the NCAA, IOC, NFL, and other organizations. Whether or not a product may work, it is not worth risking a career over. The banned supplement list should be posted so athletes know and understand what products are included on the list.

Dietary supplements are called supplements for a reason—they are intended to supplement whole foods in the diet. No dietary supplement can or will ever be able to replace what can be obtained through the diet. Consuming adequate energy and fluids should be the first concern. Dietary supplements should then fill in the very tip of the "iceberg," but only if they are proven to be safe, legal, and beneficial.
Creatine

Creatine is one of the most widely studied dietary supplements to date. A recent survey of over 1,000 high school football players showed that 30% of 12th graders used creatine. Another study of a slightly younger group of athletes, 10-18 years old, showed that nearly 9% of boys used the supplement as well – intending to either boost athletic performance or enhance appearance. There are hundreds of scientific studies measuring the effects of creatine, with positive results including:

- Increased lean body mass
- Strength gains
- Enhanced recovery

Here are the facts, plain and simple:

- Creatine is stored in the muscle
- Creatine is used as an immediate source of energy
- Storage in the muscle is limited
- Oral supplementation with creatine can increase stored creatine and may therefore boost performance

Now let's get into a bit more detail to learn more about this dietary supplement.

Here's the Skinny

Creatine is produced in the body in healthy individuals and is also consumed through the diet. It is a natural compound present mostly in skeletal muscle. Normal, healthy individuals typically eat about 2 g/day. Herring is actually the greatest source of creatine, but there are several other sources in the diet.

<table>
<thead>
<tr>
<th>Dietary Sources of Creatine</th>
<th>Fuel Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herring, Pork, Salmon, Cod, Beef, Tuna</td>
<td>Creatine monohydrate is one of the most common dietary supplements consumed. There are over 500 studies on this supplement alone. Creatine may help athletes who focus on short duration, high intensity “bursts” like football linemen, for example. Most, but not all, research suggests it is does not appear to be as effective for endurance athletes, like long distance runners or cyclists, however.</td>
</tr>
</tbody>
</table>

However, a person would have to eat a few pounds of these foods each day to consume the same amount of creatine that's consumed from the dietary supplement (~2.2 lbs of beef = 1 tsp of creatine powder = 5 grams).
Forms of Creatine and Dosing Information

Supplemental creatine is consumed as creatine monohydrate. It can be found in several different forms:

- Powder
- Liquid
- Pill
- Bars
- Gummy chews

It is typically recommended that those who use creatine go through a “loading phase,” which includes taking 5 grams of creatine, 4 times/day for 5 days. This is then followed by what is called the “maintenance” phase, of 3-5 grams daily. However, more recent research has suggested this loading phase is unnecessary and the same effects can be seen after 30 days if taking 3 to 5 grams of creatine everyday.

Safety

Like many dietary supplements, the safety of creatine has been debated. Although media reports have suggested creatine usage can lead to dehydration, cramping, kidney failure, and even cancer or death, there are no valid scientific studies to validate these reports. Research suggests that creatine is safe. In fact, one study of NCAA Division II football players found no long-term negative effects of creatine on kidney or liver function. Others have found similar results.

Summary

- Data suggests creatine may boost power and strength, cause gains in lean body mass, and improve recovery
- Creatine may cause weight gain
- There is a tremendous amount of data on the safety of creatine
- Scientific studies back up its safety and efficacy
- Creatine use is contraindicated for anyone with any pre-existing kidney disorders or diseases that may prelude kidney disorders (such as diabetes).
- Most of the research has been performed on adults (over 18 years of age), with few studies on creatine use in children under 18.
Weight Gainer and Fat Loss Supplements

Gaining weight is a formula. The goal is to gain lean body mass, yet limit fat mass.

**Proper training + extra calories + adequate rest = lean body mass gains**

The key with taking in “extra calories” however, is to make them high nutrient calories.

A few examples of high nutrient calories include:

- Raw nuts
- Milk
- Yogurt
- Lean meats
- Healthy smoothies

There are also a variety of “weight gain” formulas on the market, with sexy names like “Mass 1000, Super Gainer 2200, Mega Mass 3000”, and so on. These are dietary supplements that are promoted to increase lean body mass gains.

Reviewing the dietary supplement label on a majority of these products shows they are nothing more than very high sugar, high fat, high calorie items. While the goal is to increase calorie intake, taking in excess sugar and fat will lead to fat gains, rather than lean body mass. The costs associated with these high sugar products makes eating real food even more appealing.

A review of one popular product on the market showed that the first three ingredients on the supplement label were forms of sugar; this same product costs over $6 per serving. Athletes would get much more bang for their buck eating real foods that provide nutrients; the quality calories and nutrients in whole foods with boost performance. Eat these foods more frequently, so the body is continually fed with calories and nutrients to get the desired results.
Fat Loss Supplements

Like gaining lean body mass, fat loss is an "equation" as well.

Proper training + less calories + adequate rest = fat loss

According to the Federal Trade Commission, consumers spent approximately $35 billion on weight loss products (e.g., books, dietary supplements, weight loss franchises, etc). But just because they are easily accessible on the internet, in health food stores, convenience stores, and vitamin shops does not necessarily ensure they are safe or effective.

Here are a few important strategies to keep in mind when considering a fat loss supplement.

- Fat loss requires a reduction in calorie intake; taking a supplement will not get you those results.
- Certain supplements/ingredients may not be safe for athletes – maybe they increase heart rate, the risk of dehydration, blood pressure, etc. Taking a supplement while trying to perform can be dangerous.
- Some ingredients may be banned by certain organizations
- Recently many fat loss supplements were found to have prescription drugs in them – just because an ingredient isn’t on the label, does not mean it’s not in the bottle.
- Before/after pictures are often hype. Read the fine print that says “results came from combining diet and exercise with supplement X – results are not typical.”

Don’t believe the hype. Eat the right foods. Train properly. Be patient. You will ultimately earn the results deserved!
Energy Drinks: Powerful Energy or a Can of Bull?

There are over 600 options on the market, with names like Red Bull and Monster, Adrenaline and Full Throttle – they can be found at gas stations, coffee shops, convenience stores, and grocery stores.

Do they boost performance or do they instead shrink your wallet?

Here’s the skinny:

Energy drinks are loaded with different ingredients, which are thought to have different effects on the body. Let’s explore a few of the more common ingredients in many of the popular energy drinks.

Caffeine

The “mainstay” of energy drinks is usually caffeine – and each typically provides the same as about 1 cup of coffee (with some equal to 3 cups of coffee) or nearly double that of a 12 oz soda.

Caffeine is technically a drug. It is addicting. Relying on it for “energy” will result in continually needing more to get that same feeling. Caffeine can also:

- Increase heart rate
- Increase anxiety
- Cause insomnia (if consumed within hours before bed).

While we do know small amounts of caffeine can improve performance, it is not encouraged to overdo it – more isn’t better, and the side effects listed above become more pronounced as you increase intake. And none of those effects will help performance – in fact, they could hurt it. Many athletes report drinking several of these energy drinks daily. That can be dangerous.

Sugar

Energy drinks are usually fairly high in sugar. Sugar is a carbohydrate – yes, this too can provide energy, but it will be short lived. Sugar is in and out of the bloodstream rather quickly. The right types of carbohydrates are necessary for optimal performance; sugar is not the right type!
Taurine

Taurine is an amino acid. Amino acids are the natural building blocks of protein. Taurine is a natural part of the diet. It is isolated and concentrated so manufacturers can add high levels of this amino acid into this product (and others). Taurine plays an important role in muscle contraction (particularly the heart) and the nervous system. One study showed taurine and caffeine together increased the amount of blood ejected with each beat of the heart – caution should be practiced if an athlete were to take this prior to training for safety purposes.

B vitamins

B vitamins are found widely throughout the diet. They are necessary for converting food to energy. Adding high levels of supplemental vitamin B, however, does not cause a boost in energy, however.

Safety

It is unknown how each of these ingredients mixes together. Combining these ingredients can be compared to putting together a football team, with athletes from all over the country, and playing a game the first day the athletes meet – the outcome is unclear, just like it is with the variety of ingredients in many of these products.

If it sounds too good to be true, it is.

Summary

Real food gives the real nutrients athletes need. Food is high octane fuel for the body. With such a variety of drinks on the market, it’s impossible to summarize each ingredient in each product. Most have high levels of the ingredients listed above, but regardless of the particular ingredients added in the product, energy drinks should not be used on a daily basis as a means to provide true energy.

True energy comes from:

⇒ Adequate rest.
⇒ Sufficient recovery between training sessions.
⇒ Whole food sources of nutrients – carbohydrates, protein, and fat.

Skip the energy drinks, eat real food.
Common Sports Nutrition Questions

Q: My coach doesn’t like us to drink sports drinks because of all the sugar. Do you agree?

A: No, we commonly hear from parents and athletes that some coaches still believe sports drinks are bad for their athletes and do not allow the consumption or they think they should dilute the sports drink. This is misinformation as drinking a sports drink has a real important role in sports nutrition. It should not be diluted as the research has shown the most benefit to come from the concentration you buy it in. Consuming a sports drink during a game or practice can help to maintain adequate hydration as well as energy levels. In fact, the sugar in the sports drinks has an important role during and after exercise. As mentioned above, Sports drinks are especially beneficial for athletes training hard for multiple hours or in extreme conditions.

Q: Is pizza bad for me?

A: Pizza is one of the easiest foods to serve to a large group of people, so don’t be surprised if it shows up at the table often. While making or buying pizza it is best to cut back on the amount of cheese. A few ideas to create a healthier pizza include -- go heavy on the vegetables and even fruit, but skip the high fat meats, like sausage and pepperoni. From green bell peppers and onions to mushrooms and pineapple, restaurants are becoming more creative in their offerings. An added bonus: top it off with grilled chicken for extra protein.

Q: I drink a lot of soda, chips and fast food. Is this bad for me?

A: Your body is like a car that needs fuel to run (food being fuel). As an athlete, it is important to fuel your high-performance body with the best quality fuel out there. Soft drinks, soda and chips provide little nutrition and are high in sugar and fat. Instead, drink mostly water, organic low-fat milk, and sports drinks. Choose other high quality, nutrient-rich foods like whole grains, fruits and vegetables, fish, and lean meats such as chicken, turkey, and pork tenderloin to help you reach your goals.

Q: What is a quick and easy recovery drink?

A: Believe it or not, low fat chocolate milk is an excellent recovery drink. It has the perfect ratio of carbs to protein and offers an easy and convenient source of high quality protein. Make sure you drink it immediately following exercise to get the most benefit for recovery.
**Q: What should I eat the night before a competition?**

**A:** The best foods to eat the night before a game or tournament should be a meal with whole grains, lean protein and fruits and vegetables. For example, you could have some whole wheat pasta with marinara sauce and a chicken breast chopped up and added to the pasta. Don’t forget your protein! Eat some vegetables like carrots, broccoli or spinach and have some fruit. Don’t forget to make sure you drink plenty of fluids so that on the day of your event you are well hydrated.

**Q: Should I eat something before practice because it is right after school gets out. If so, what should I eat?**

**A:** Yes! Considering your last meal was probably around noon and the next may not be until after 6:00, your body is going to need energy for a more effective practice. Of course, you know your own body and you want to avoid cramps or feeling overly full when you start moving. Try items such as ½ PB & J, turkey or ham sandwich, low-fat string cheese with whole grain crackers, energy bar, or a banana and peanut butter. Choose something simple that you can bring and eat in the limited time between school and practice. You should experiment to see what foods work best for you by giving you the most energy and are also easily tolerated by your body.

**Q: I’ve been trying to gain some weight because I really want to play football in college. I haven’t had much success gaining weight so far, can you help?**

**A:** It is most important to remember that in order to build muscle you need to combine a good nutrition program with a proper strength training program. In order to gain one pound each week, you would need to increase your daily caloric intake by 500 calories. These calories should come from nutritious foods such as whole grains, lean meats, low-fat dairy, and fruits and vegetables. An extra 500-calorie fast food monster burger won’t put you in optimal performance shape.