YOU CAN’T OUT TRAIN POOR NUTRITION

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Matt Luongo, RD
mluongo@vt.edu
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College athletes are a unique population that have higher than average needs when it comes to nutrition. They require more calories and energy overall, and their bodies are put through much more stress than non-athletes. They are at a higher risk for illness, injury, fatigue, cognitive impairments, dehydration, and more, all of which can be improved or avoided with proper nutrition. Nutrition has been shown through much research to have a great impact on body composition, recovery, health, and performance. By choosing the right foods at the right time, you can help your body to recover faster, heal sooner, and train harder for longer.

As an athlete at this level, small improvements in performance can help you gain the advantage you need over your opponent to get to the ball faster, jump higher, and play longer. Here to help you navigate the messy waters of nutrition information in the news and media are Sports RDs.

Sports Registered Dietitians (RDs) are a group of professionals that study nutrition for health and wellness and specifically how it effects athletic performance. The Sports RD working at Radford is a great resource for all athletes. The services provided by the Sports RD are listed here:
-- Individual assessments
-- Nutrition therapy for conditions such as diabetes, disordered eating, digestive trouble, and more
-- Supplement management and safety
-- Grocery store and dining hall assistance
-- Weight and body composition change goals
-- Food allergy and intolerance guidance
-- Meal planning and cooking tips

Matt Luongo, RD is your current Sports RD. Contact info is on the front page. Please feel free to email with questions or to set up an meeting any time!
Hydration is one of the most basic sports nutrition and general health concepts. Just about every metabolic process in our body uses water, and of course we lose a lot through sweat. The negative effects of dehydration include fatigue, cramping, headaches, and trouble focusing which can all impair athletic performance.

When we think about hydrating we usually focus on drinking water. However, by adding high water content foods such as fruits, vegetables, applesauce, yogurt, salsa, etc into our diet we are greatly improving our water intake.

Now let’s talk about sweat… Have you ever come home from practice and noticed a dry white substance on your arms, face, and neck? This is dried salt. It is important that you take time to notice what type of sweater you are. Do you lose a lot of salt? Do you sweat more heavily than others? These factors affect how you need to hydrate. Athletes do not need to shy away from salty foods. In fact, you should try and have them regularly to replace the salt lost in sweat and because eating salty foods makes you thirsty which means you will be drinking more water.

A few more facts and about hydration:

• Once you start to feel thirsty you are **already dehydrated** – don’t wait for thirst, just drink!
• Invest in a nice water bottle or write your name on one provided by athletics and keep it with you (and filled up)
• Try to drink most of your fluids during the DAY as drinking at night will cause you to wake up to pee and recovery will suffer from poor sleep
• Urine the color of lemonade is great, darker means you need to drink more
• Caffeine and alcohol will dehydrate you, so make sure water is also being consumed
Macronutrients: Carbs, Protein, and Fats

Carbohydrates – like the gas in our cars carbs are the energy that keep us going

**Whole grains**: contain more fiber, B vitamins, magnesium, and many other nutrients when compared to processed grains

**Sugar**: all carbohydrate foods are broken down into sugar, but the more complex (ie whole grain bread vs a cupcake) the carbohydrate is, the slower it will be digested to allow for sustained energy

**Fruits/Veggies**: both fruits and vegetables contain carbohydrates (more in fruits) and are a great choice because they also have high water content and tons of nutrients

**Dairy**: dairy products are a perfect balance of carbohydrates and protein which is why they make great recovery options

Protein – building blocks for many tissues, including muscle

**Animal protein**: all animal proteins are complete proteins which means they contain all the amino acids (what protein is made of) that we need

**Plant protein**: plant proteins are missing certain amino acids which makes them incomplete proteins, but they do not have the saturated fat and cholesterol found in animal proteins

**Nuts**: nuts contain protein and healthy fats

**Healthy fats**: the top images show healthy fats which help with inflammation, immunity, and brain health

**Other fats**: the bottom images show fats that do not benefit our health or performance and should be limited
Food not only gives us the materials to fuel our bodies, but it also gives us the tools to use those materials. In order for us to use the carbs, proteins, and fats we eat, we must also have the vitamins and minerals available to keep metabolism working. There are a variety of different vitamins and minerals with some of the most “popular” or well-known being the B-vitamins, iron, calcium, vitamin D, vitamin C, among others. All of the many micronutrients (called “micro” because we need much less of them than the “macro” nutrients discussed on the previous page) work along with enzymes in our body to help break down foods into usable parts: sugar, amino acids (building blocks for proteins), and fatty acids.

A deficiency of any of these micronutrients can lead to a number of different concerns that affect health and performance. For example, a common deficiency among female athletes (and some men) is iron. Iron is responsible for bringing oxygen through our bodies to all the different tissues, including our muscles. During training, a lack of iron will lead to quicker fatigue, general fatigue during the day, headaches, feeling cold, and more. It is important for any athlete feeling these symptoms to get a quick blood test for their iron levels.

In order to ensure you are getting a good variety of nutrients, you must have a good variety of foods in your diet. **Different color foods are higher in different nutrients, so try and have several colors every day.** There are plenty of resources online that have lists of produce in season, and these can be very helpful to keep variety in your diet without going over your budget.

For dietary supplement safety please refer to page 10.
Pre-Exercise Fuel

An easy way to think about sports nutrition is the concept of “book-ending your workouts”. This is to mean that your workout is the “books” and your fuel is the book-ends that are before and after the “books”. When you have a 2 hour training session, your body is using carbohydrates and fats that are stored away. However, by consuming some carbohydrates before training, you are going to be able to use those immediately and spare some of the stored energy.

Carbohydrates are the main focus of pre-exercise fuel as they are the quickest of the macronutrients to break down into usable energy. However, whole grains that have fiber in them will take longer to digest than more basic carbohydrates. For example, a whole wheat roll will take longer than a packet of fruit snacks, so the fruit snacks will be better for quick energy right before or during a training session.

**Quick Energy Examples:**
Toast with jelly or honey, fruit snacks, 100% juice, energy chews, fruit without skin, half bagel with cream cheese, crackers, pretzels

Pre-exercise should also be a time when you are focusing on fluids and electrolytes (sodium, potassium). If you only have a few minutes before training, then you want to avoid dairy, but water, PowerAde, Gatorade, 100% juice, and other fluids are great.

A few things you want to avoid before training are:
-- Fats (fried foods, baked goods, biscuits, etc)
-- Caffeine
-- Energy drinks (which do not provide real energy, they just stimulate our central nervous system short-term) that can be dangerous for health
-- Too much protein because it will not digest very quickly
-- Dairy products that will cause nausea
Recovery Nutrition

Back to our concept of “book-ending your workouts”, recovery nutrition is what we focus on after training. Practicing good recovery can help you train harder for longer, avoid fatigue as the week goes on, and meet your body composition and weight goals.

There are a few things that are vital in practicing good recovery nutrition. First, what you’re choosing to eat or drink, and second, when you are consuming it. Ideally, **you want to have your recovery nutrition no more than 45 minutes after a work out ends.** This window of time is when your body is going to be most efficient in absorbing nutrients. As far as your choice of food or drink you want to aim **for at least 20 grams of protein, 30-40 grams of carbohydrates, fluids, electrolytes, and maybe some healthy fats.**

Alcohol after training can negatively impact recovery, and this will be discussed in more detail later.

If your workout is right before a meal, then that meal can become your recovery as long as it is well balanced. Most athletes do not need to use supplements and can meet all of their protein and nutrient needs just by eating a balanced diet with variety. Focusing too much on supplements and nutrition products can leave out a lot of important nutrients found only in foods.

Something many athletes experience after a hard workout is a lack of appetite. This is very common, and on these days choosing liquid recovery options can help to get the nutrients in quickly without feeling uncomfortable and full. If you wait too long after a workout, then you will miss the 45 minute window and you will be starving when hunger hits which can make good food choices difficult.

**Easy Recovery Examples:**

Recovery shakes, chocolate milk, regular milk, protein smoothie, high performance meal (see page 9), trail mix with dried fruit or cereal, Greek yogurt with granola, sandwich with protein, pasta with grilled chicken or meat sauce
Building a High Performance Plate

1. Choose a lean protein
   - Examples: Chicken breast (light meat), pork

2. Choose a whole grain carb
   - Examples: Brown rice, whole wheat bread, quinoa

3. Add color
   - Make sure you choose a variety of colors from day to day to ensure a nutrient-dense meal.
   - Examples: Vegetables, fruits, and legumes

4. Add healthy fats and fluids
   - Fruits and vegetables should be a part of every meal.
   - Examples: Olive oil, avocado

Tips:
- Choose whole grains for most of your carbs.
- Choose lean protein sources for more muscle.
- Choose fresh, whole foods over processed or packaged items.
Inflammation and Injury

Recovery Nutrition focuses on rebuilding the muscles that you have warn out during workouts, practices, and games. INJURY NUTRITION focuses on rebuilding tissues, bones, muscles and everything else involved in healing.

**What Your Body Needs**

**Calories:** The first couple weeks after a big injury require high energy intake even without a lot of working out. Your metabolism is increasing as your body tries to heal. Reducing calories too much can lead to slower healing.

**Fats:** Omega-3 fatty acids found in fish, walnuts, and pumpkin seeds have anti-inflammatory actions to help reduce inflammation. Other healthy fats in other nuts, avocado, oils, and more are also beneficial in healing.

Try to **limit the saturated fats** in your diet from things such as baked goods, fast food, fried food, chips, etc which can slow healing and lead to eventual weight gain.

**Fruits and Veggies:** Produce is packed with antioxidants and phytochemicals that help in a number of ways to keep cells and tissues healthy and heal well.

**Others:** Fluid and zinc intakes are also important in proper healing.

### Best Foods vs. Worst Foods

<table>
<thead>
<tr>
<th>Best Foods</th>
<th>Worst Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Fats in salmon, tuna, nuts, olive oil, and canola oil</td>
<td>Alcohol slows recovery/healing and causes dehydration</td>
</tr>
<tr>
<td>Antioxidants and phytochemicals in colorful fruits and veggies</td>
<td>High saturated fat diet with fast food, a lot of chips/snacky foods</td>
</tr>
<tr>
<td>Lean protein in low fat dairy, lean meats, egg whites, and beans</td>
<td>Very low fat diets limit healthy fats and fat soluble vitamins</td>
</tr>
<tr>
<td>Yogurt helps keep intestinal health with probiotics</td>
<td></td>
</tr>
<tr>
<td>Iron and zinc from lean meats, beans, and yogurt</td>
<td></td>
</tr>
</tbody>
</table>
**Alcohol and Performance**

**The Basics**
1 gram of alcohol = 7 calories (1 drink has about 14 grams = 98 calories)
ZERO nutritional value
Easily turned into fat stores, especially when consumed in excess

**General Metabolism:**
The liver, which normally maintains our blood sugar, focuses on the alcohol instead
→ Decreased energy availability
Muscles have trouble absorbing glucose to turn into energy stores
→ We are unable to replenish energy stores after training or games

**Sleep and Recovery:**
-- Less Hgh (human growth hormone) is produced after drinking
-- Sleep cycles are affected up to 6 hours after drinking
-- Less testosterone is produced
-- Reduced ability to rebuild muscle and store energy

**Injury and Illness:**
-- Alcohol reduces cognitive function, balance, and ability to control motor functions—a recipe for injuries!
-- Injury rates for drinkers are more than twice as high as rates for non-drinkers
-- Alcohol lowers the immune system (so does hard training… this can be double trouble) leading to frequent illness or trouble getting healthy
-- Alcohol slows the rate of injury healing

**In the Classroom:**
-- Shortened attention span for up to 48 hours after drinking
-- 5+ drinks in one night can affect the brain and body for up to 3 days
-- Drinking 5+ drinks 2 nights in a row can affect the brain & body for up to 5 days

**Performance:**
-- Decreased strength output for up to 36 hours
-- Training or playing hung-over will reduce abilities and performance every time
-- Eat balanced meals rich in carbohydrates and moderate in lean protein and fat to supply your body with energy and nutrients to build lean tissue.
-- Include an extra 500-1,000 calories a day above current calorie needs by adding snacks or increasing portion sizes.
-- Fuel strength training sessions with foods containing carbs and protein to provide energy for muscle contraction, spare protein from use for energy, and supply amino acids for building and repair.
-- Eat every 3 to 4 hours to ensure optimal nutrient availability.
-- Maximize “eating opportunities”: Think ahead and always have snacks available in your backpack or locker room.
-- Make the most of high-calorie liquids: chocolate milk, 2% or whole milk, 100% juices, PowerAde, Gatorade, smoothies
-- Make time for breakfast: Don’t sleep through your meals! If you do, make sure you eat something right when you wake up. Breakfast can be a peanut butter sandwich or left over pizza, whatever you have time for – but get something in!
-- Pay special attention to eating a high-energy snack or meal before workouts and a recovery snack afterwards. Coming into workouts with fuel in your system helps you work harder and meet your goals faster!

### High Calorie Snacks

<table>
<thead>
<tr>
<th>Snack Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 cups of a homemade chocolate milkshake</td>
</tr>
<tr>
<td>3 cups of cranberry grape juice</td>
</tr>
<tr>
<td>4 fig bars and 2 cups of apple juice</td>
</tr>
<tr>
<td>1 piece of cheese pizza and 2 cups grape juice</td>
</tr>
<tr>
<td>2 peanut butter sandwiches and 1 cup of chocolate milk</td>
</tr>
<tr>
<td>8 packaged cheese crackers with peanut butter and 2 cups 2% milk</td>
</tr>
<tr>
<td>1 granola bar, ¼ cup raisins, and 2 cups pineapple juice</td>
</tr>
<tr>
<td>1 cup of fruit yogurt, 4 graham crackers, and 1 banana</td>
</tr>
<tr>
<td>1 turkey sandwich and 1 cup chocolate milk</td>
</tr>
<tr>
<td>2 cups of granola cereal and 1 cup 2% milk</td>
</tr>
<tr>
<td>2 packets of instant breakfast drink (Carnation) with 2 cups of 2% milk</td>
</tr>
<tr>
<td>1 bagel with peanut butter and jelly and a banana</td>
</tr>
<tr>
<td>1 ham and cheese sandwich and 2 cups orange juice</td>
</tr>
</tbody>
</table>

### Choose these nutrient & calorie dense foods often:

- Peanut butter
- Avocados/Guacamole
- Olives
- 2% milk
- Olive oil or canola oil
- Milkshakes & smoothies
- Bagels
- 100% fruit juice
- Trail mix
- Cheese & crackers
Set realistic goals. Quick weight loss (more than 2 pounds per week for most) can often result in loss of muscle tissue or water weight, not fat weight.

Don’t diet. Athletes don’t maintain a healthy lifestyle by dieting but by learning how to eat healthfully week after week.

Eat every 3-4 hours. This allows your body to be well-fueled and prevents “starvation” feelings that make it hard to choose healthier options.

Write it down. Start a food log and write down what, where, and when you eat. Don’t leave anything out! Even if it’s just a bite of something. Often these “bites” can add up if they’re sweets…

Make sure you’re eating enough protein. Protein helps maintain muscle while losing weight and also helps you feel full. Protein foods to include are meat, fish, chicken, turkey, eggs, milk, yogurt, cheese, cottage cheese, nuts, or beans.

Know what you’re eating. Have a general idea of the calorie content in your foods. Many are surprised that typical muffins contain 600 calories and restaurant entrees are well over 1,000 calories.

Tips

-- Eat something within 1 hour of waking up to fuel your body and wake up your metabolism.
-- Aim for a whole grain carbohydrate or fruit and lean protein…Think bagel with peanut butter, yogurt and fruit, energy bar and banana, etc.
-- Choose water, unsweet tea, flavored waters, lightly sweetened lemonade, G2, Propel, etc. outside of practice
-- Pack in vitamins, minerals, antioxidants, and fiber (all nutrients that are vital for athletic performance) and moderate calories by choosing a fruit and/or veggie every time you sit down to eat something.
Food Log Example

-- Be as detailed as possible! The more detail and honesty, the more help the sports RD can give
-- Don’t change anything. Eat like you normally would.
-- Record the *portion size* of your foods. Example: 1 cup of cereal with ½ cup milk -- this means you may need to measure some things!
-- Record the time of each meal.
-- Record brand names if there is one.
-- Record things like *whole wheat bread* or *white bread* not just bread.
-- Record all of your fluids.
-- Record WHERE you’re eating these foods: example: cooked at home, Applebee’s, Dalton, etc

<table>
<thead>
<tr>
<th>Breakfast: Time: 6:30am</th>
<th>Date: 7.10.2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbohydrate</strong></td>
<td><strong>Protein</strong></td>
</tr>
<tr>
<td>½ cup granola</td>
<td>1 cup Greek yogurt</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lunch: Time: 12:15pm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbohydrate</strong></td>
</tr>
<tr>
<td>2 slices wheat bread 1 bag pretzels</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dinner: Time: 6pm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbohydrate</strong></td>
</tr>
<tr>
<td>1.5 cups wheat pasta 1 wheat roll</td>
</tr>
</tbody>
</table>

Snacks: include time next to snack

<table>
<thead>
<tr>
<th>Carbohydrate</th>
<th>Protein</th>
<th>Fruit/Vegetable</th>
<th>Liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td>~20 wheat thins (2pm) Bag of popcorn light butter (9:30pm)</td>
<td>Peanut butter (10am) Cheese stick (2pm)</td>
<td>Banana (10am)</td>
<td>Fruit punch Gatorade (2pm)</td>
</tr>
</tbody>
</table>
Dietary supplements are intensely marketed towards athletes and active people. In college athletics, the need to have an edge on your opponent often drives us to try anything. Because supplements are so poorly controlled, it is difficult to know if the ingredients on the bottle are really what’s inside the bottle and if the product even does what it claims…

Although some dietary supplements - such as whey protein, creatine, branch chain amino acids - have solid research supporting their use, there are many more that lack this evidence. In addition, just because there is solid evidence does not mean we should all take those supplements. 99% of college athletes that plan ahead with fueling and make nutrition a priority can meet all of their needs with food alone. There is no evidence showing that supplements are better than food, and if anything, they lack a lot of high performance components that we find in foods.

**Supplement Safety Tips:**

1. If the supplement makes very broad or impressive claims, then they are probably not true.
2. The NCAA does not approve any supplements. Do not let a sales person convince you that they do.
3. NSF certification means that the product has been tested and confirmed to only have in the bottle what is listed in the ingredients (meaning it is not tainted with anything not listed).
4. The FDA does not get involved in dietary supplements until AFTER negative side-effects, illness, or death has occurred.
5. Claiming ignorance for a failed drug test will not save you. You are responsible for everything you take.

If you have questions about a supplement, then please contact your Sports RD for a recommendation.