

# Nutrition SENSE

UNIVERSITY OF MASSACHUSETTS – DINING SERVICES

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## NUTRITION *quick tip*

Maximize your performance by consuming a wide variety of foods, adequate calories and a good exercise program.

## DIETITIAN *on duty*

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Worcester - Hillside Room

October 12  
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October 19  
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Be Smart. Eat Smart.



**Nutrition**  
UMASS AMHERST DINING SERVICES



Nutrients are  
**life-sustaining**  
substances obtained  
from **food.**

## Sports Nutrition *and Performance*

### What are nutrients?

Nutrients are life-sustaining substances obtained from food. They work together to supply the body with energy (or calories) – to build muscle, perform and maintain health.

### How does nutrition affect my performance?

Not getting enough of the nutrients that your body needs over a period of time can harm your health and hinder your performance. The effects won't be felt overnight, but eating right means that you will feel better, train harder and will be in better condition.

### What are the nutrients that I should focus on getting?

#### CARBOHYDRATES

- Carbohydrates supply the body with energy in the form of calories.
- The body's main source of energy, especially during short-term, high intensity exercise. Carbohydrates are easily digested and absorbed very quickly, thus the possibility of nausea and indigestion are decreased considerably during game time.
- The body stores carbohydrates as glycogen in the liver and muscles – but only enough for 2-3 hours of prolonged exercise. Fatigue will result once the glycogen stores are depleted.

- More than half of your calories (55-65%) should come from carbohydrates, primarily complex carbohydrates. Athletes can endure a more intense exercise program by consuming a high complex carbohydrate diet (or carbohydrates with fiber) to peak later during game time.

- Studies show most athletes eat more protein than they need and not enough carbohydrates. Without enough carbohydrates, the body burns protein, which means less protein is then available for maintaining muscle mass.

- Sources: Complex Carbohydrates: breads, pasta, rice, dried beans and peas, potatoes and grains. Simple Carbohydrates: sugar, fructose (in fruits and fruit juices), maple syrup, cakes, candy, and cookies.

#### PROTEIN

- Protein supplies the body with energy in the form of calories.
- Needed for growth and repair of body tissue and muscles.
- 15% - 20% of daily calories should come from protein.
- Athletes need slightly more protein than non-athletes. The amount is based on how much you weigh (see chart below)
- Sources: Lean meats, poultry, fish, cheese, eggs, dried peas and beans, nuts, seeds and whole grains.

#### RECOMMENDED GRAMS OF PROTEIN PER POUND OF BODY WEIGHT PER DAY\*

RDA for sedentary adult	0.4
Adult recreational exerciser	0.5-0.75
Adult competitive athlete	0.6-0.9

*\*To find the daily protein requirement, multiply the appropriate number by your weight in pounds. See back page for information on getting your own personalized dietary plan.*

## SIGNS OF DEHYDRATION

Thirst  
Irritability  
Headache  
Weakness  
Dizziness  
Cramps  
Nausea  
Decreased performance  
Dark urine  
(if not taking supplements)  
Urine with an odor



## SWEAT

*Athletes need to drink adequate amounts of fluids to replace fluid lost from sweating. Sweating is the natural process your body uses to give off the heat it generates during exercise.*

### What factors affect sweat?

- Hot, humid weather will prevent sweat from evaporating off of the skin, causing heat to build up in the body and reducing the cooling benefit of sweat. To prevent problems caused by heat and humidity, athletes should exercise at the coolest time of the day and wear the lightest clothing and equipment possible.
- Athletes need to keep the body warm in cold weather but they also need to allow the body to sweat. Dress in several layers of loose clothing to trap the warmth from your body but allow the sweat to be absorbed by the clothing. As you warm up, remove layers to avoid overheating.

Can heat and dehydration affect an athlete's performance?

- Excess heat (due to the hot, humid weather or improper body cooling) can result in dehydration, heat cramps, heat exhaustion and the most serious form of heat illness – heat stroke. Losing 2-3 % of your body weight by heat (that's 3.0 – 4.5 pounds for a 150 pound athlete) can cause a decrease in concentration, coordination, strength and stamina.
- Remember to always replace fluid lost as sweat during exercise to prevent these and other medical problems. Don't let too little water get the best of you and ruin your chances at making your grade!

## FLUID NEEDS BEFORE, DURING AND AFTER EXERCISE:

Drink on a schedule, not just when thirsty.  
Drink 10-12 cups (80-96 oz) of fluid per day.

### BEFORE EXERCISE:

Drink 1-1 1/2 cups of fluid one hour before exercise.

### DURING EXERCISE:

Drink 4-8 oz of fluid every 15-20 minutes.

### AFTER EXERCISE:

Drink 8 oz of water every 15 minutes for one hour totaling 32 ounces or until you replace the amount of water weight lost during exercise.

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## Will eating extra protein help build muscles?

Protein in excess of the Recommended Dietary Allowances (RDAs) will not increase muscle tissue growth during training. Excess protein is not recommended just before or during a game as it takes more energy to break down protein than it does carbohydrates. Excess protein not used for muscle building is either burned for energy or stored as fat. If the protein changes to fat, it can decrease the endurance of the performance during a game. Excess protein can also lead to loss in bone calcium as well as putting strain on the liver and kidneys. If a high protein diet is consumed for an extended period of time, it can eventually lead to serious liver and kidney problems in the future. An athlete's RDA for protein can be supplied by four 8 ounce glasses of milk and two four ounce servings of meat/meat alternative. Do not consume more than 50 grams of protein in one meal. It's that easy!

## FAT

- Fat supplies the body with energy in the form of calories.
- A concentrated energy source for the body, providing twice as much energy as carbohydrates and protein.  
Twenty to thirty percent of the calories consumed daily should come from fat.
- Fat is needed for growth and maintenance of body tissues. It supplies essential fatty acids (which can only be obtained from foods) and carries vitamins A, D, E and K.
- A valuable energy source for athletes involved in long events.
- Because fat is absorbed slowly and if consumed just before a game, it can cause nausea and indigestion during the performance and make one feel sluggish.
- Sources: Meat, oils, butter, margarine, cheese, nuts, seeds, and avocado.

## VITAMINS & MINERALS

- Vitamins and minerals are needed by the body in order to release the energy found in carbohydrates, protein and fat. They do not contain any calories.
- Minerals give the body structure and control many body processes.
- Minerals needed by the body include iron, calcium, zinc, potassium and magnesium.
- Iron helps supply oxygen to the muscles during exercise. Exercise can increase your iron needs.
- Low iron levels can cause fatigue and reduce endurance. For females, iron is lost during menstruation and needs to be replaced by iron-rich foods (meat, green leafy vegetables and fortified cereals). Food rich in vitamin C like citrus fruits enhance iron absorption when they are eaten together (avoiding dairy products).
- Vitamins and minerals are supplied by eating a wide variety of foods from each of the five food groups.

## Should athletes take vitamin supplements?

- Vitamin deficiencies can impair performance. There is no evidence that vitamins taken in excess of normal daily allowances will enhance performance, and may be harmful, especially the fat-soluble vitamins A, D, E and K.
- Athletes who regularly eat inadequate diets (for example, wrestlers, gymnasts, ballet dancers, etc.) may require specific vitamin supplements.
- If you want to take a supplement, try a multi-vitamin (vitamin contents should not exceed 100% of the RDA). Excess vitamins may turn your urine a darker yellow if you are taking a supplement, so don't be alarmed if this happens. It does not mean you are dehydrated.
- A physician and/or registered dietitian can help you to identify whether or not you need supplements.

## WATER

- Water is needed to help the body produce energy. One of its major functions is to regulate body temperature, especially during vigorous exercise.
- Water is the nutrient most neglected by athletes.
- Inadequate water intake impairs athletic performance and increases the risk of heat illnesses.
- Consume water frequently, before, during and after exercise (see guidelines listed in the lower left corner)
- Drink before you get thirsty!

Weigh yourself before and after a regular workout in dry clothes. For every pound of water weight lost during exercise, replace it with two cups of fluid.

## What type of fluids should one drink to replace body fluids?

- Drink cool fluids (40-50°F), as they are more rapidly absorbed before, during and after practice and competition.
- Water is the best drink if exercising for less than one hour. Carbohydrate-electrolyte drinks, such as Gatorade are great if you are exercising for more than one hour as it is absorbed into the body slightly faster than water.
- Fluids should not be more than 8-10% carbohydrates. You can always dilute the sweetened beverages.



# What to drink, when and why

DRINK	BEFORE	DURING	AFTER	REASON
Water	Yes	Yes	Yes	Water is the basic liquid your system needs.
Carbonated mineral water	Yes	No	Yes	Carbonation can cause gastrointestinal distress (bloating, gas and cramping) during an event.
Athletic Drinks* (Gatorade, ERG, etc)	Yes	Yes	Yes	Drink 10-15 minutes during and after an event to replace electrolytes and sugar, especially if it is more than an hour in length.
Cola/ Defizzed Cola	No	No	No	Has twice as much sugar as athletic drinks and may cause stomach bloating. Caffeine is a diuretic and should be avoided during practice and competition. Carbonation may cause stomach gastrointestinal distress during exercise and lack of carbohydrates limits its value after exercise.
Diet Cola	No	No	No	Carbonation may cause stomach gastrointestinal distress during exercise and lack of carbohydrates limits its value after exercise.
Fruit Juice	Yes (dilute?)	Yes (dilute?)	Yes	High sugar content may cause gastrointestinal distress during exercise if not diluted, but effects may vary depending on the individual. Sugar concentration is okay after exercise for carbohydrate replacement.
Milk	Yes	No	Yes	Milk is more a food than a drink, but skim milk is okay before and after exercise.
Coffee/Iced Tea	No	No	No	In general, coffee, teas and colas are dehydrating and should be avoided during practice and competition. However, plain (without sugar), decaffeinated beverages are a good source of fluid.
Alcohol	No	No	No	Alcohol is dehydrating and can impair muscle efficiency, judgment and coordination.

\* Experiment. Athletes/exercisers need to find out which beverage(s) work best for them. Fluids should not be more than 8-10% carbohydrates. You can always dilute the sweetened beverages.

## Nutrition Before, During And After An Event

*To maintain weight, athletes need more calories a day than non-athletes.  
To prevent dehydration, athletes need more fluids than non-athletes.*



### What should I eat before I exercise?

- Consumption of a high carbohydrate meal 3-4 hours before exercise can improve endurance and performance (*many athletes enjoy pasta before an event*).
- Eat foods and beverages to which you are accustomed, especially when you are on the road. New foods may not be well tolerated and could result in stomach discomfort such as bloating, diarrhea and cramps.
- Avoid eating large amounts of foods that just sit in the stomach and cause a heavy feeling.
- Foods that are high in fat like meat and fast foods may make you sluggish and uncomfortable and could cause nausea.
- People respond differently to pre-competition meals. Let experience be your guide.
- Consumption of simple carbohydrates like sugar, honey, candy or soft drinks before exercise does not provide the body with "quick energy." Eating simple sugars may in fact cause bloating, cramps and increased fatigue due to a quick rise and fall in blood sugar levels.
- Avoid caffeine and alcohol.
- Drink plenty of water before your event.

### Should I eat while I exercise?

- Carbohydrates are recommended for endurance athletes and if you regularly exercise for stretches of 1-3 hours. This may delay fatigue for up to 30-60 minutes.
- Eat carbohydrates at regular intervals while exercising, about every thirty minutes if you are exercising for more than one hour.
- Good carbohydrate choices include fruit, bread, rolls, nonfat yogurt, sports drinks and juice. Dilute juices with water to cut down on their high sugar concentration.
- Avoid eating foods with high sugar content, they may make you bloated and cause cramping.
- During strenuous endurance events, small amounts of juice or simple carbohydrate sources like candy may help to maintain blood sugar levels.
- Drink 4-8 ounces of water every 15-20 minutes.

### What should I eat after exercise?

- Athletes need carbohydrates to replace the glycogen used during exercise.
- The muscles store more glycogen immediately after exercise than they do later. This means more energy stores for future exercise!
- Athletes recover faster if they eat a high carbohydrate diet.
- Drink a high-carbohydrate drink such as fruit juice or a sports drink if you are thirsty and not hungry after exercise, followed by a high carbohydrate meal once your appetite returns.
- Drink 8 oz of water every 15 minutes for one hour totaling 32 ounces or until you replace the amount of water weight lost during exercise.
- Eat protein within two hours after exercising to repair minor tears in the muscles. If the tears are not repaired, it can result in a major injury.

