

## **NUTRITION PROGRAM**

The philosophy of the Nutrition Program of the Sports Medicine Division of the USOC is not to prescribe diets but to educate the athlete so he/she can make appropriate dietary choices in all situations (while traveling, etc.). Dietary modifications and/or recommendations are based on the athlete's normal diet; therefore, diet analysis serves as an important tool.

Diet records, diet analysis results, information from the athlete, and recommendations to the athlete are confidential information. Other medical-related information (lab results, medical treatment, etc.) are conducted as necessary and information returned to the athlete under medical supervision.

Diet analysis (computer or manual) does not constitute nutrition/diet counseling by itself. To be of most value to the athlete, the analysis of the athlete's diet must be interpreted by a professional nutrition staff member or person with qualifications in nutrition counseling.

Computerized diet analysis and counseling is provided as requested and scheduled. When requests outnumber resources, priority is given in the following order: Olympic/Pan Am Sport Organizations NGB camps; OTC/OEC permanent resident athletes; and individual athletes in Olympic/Pan Am Sport Organizations training at OTC/OEC. Diet analyses for athletes at Lake Placid and San Diego OTCs and the OEC are provided as requested by their respective Clinical Services staff and counseling provided by appropriate nutrition professionals in the local area.

The USOC nutrition staff provides lectures and symposiums at the Colorado Springs OTC. Local sports nutrition professionals are also available to assist with lectures and counseling on an as needed basis.

Through the Sports Nutrition National Referral Network, sports nutrition professionals can be identified to serve as a group or individual resource for athletes and coaches at other training locations throughout the U.S.

The USOC nutrition staff also works with the various OTC/OEC Food Services in nutrition education and food availability.

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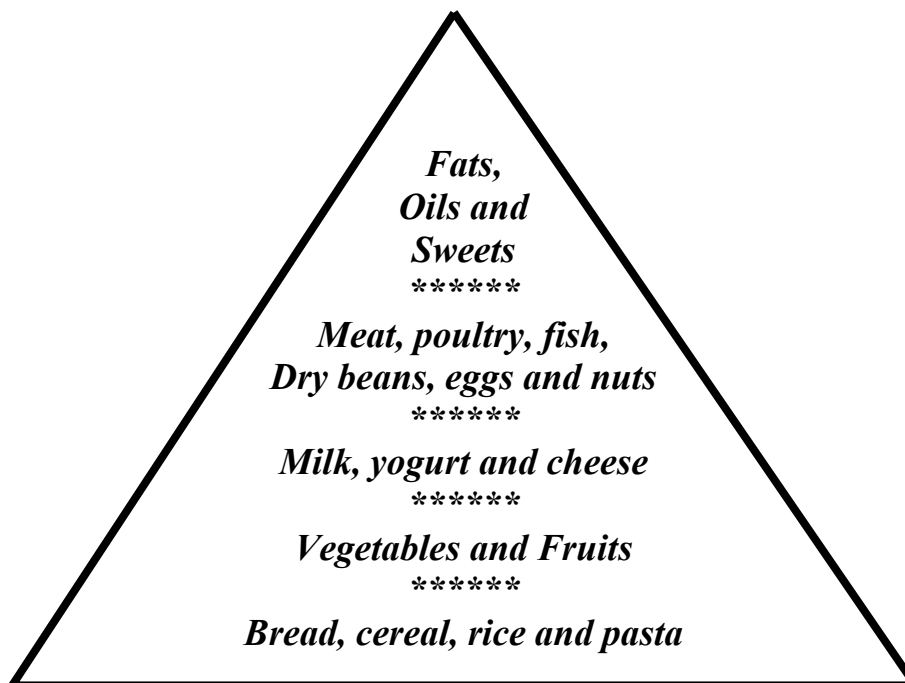
Zoning in on the Diet That's Right for You

Dribbling for the basketball player, agility for the hockey player, sprinting for the long jumper--these are fundamental skills. One fundamental skill of nutrition is giving your body the nutrients it needs. Without strong fundamental skills in your sport, every part of performance suffers. It's the same with nutrition. Without the fundamentals, your nutrition game plan is built on shaky ground.

### **What's the Best Way for an Athlete to Eat?**

There is no one right way to eat. The best diet for you is one that meets your unique needs. And your needs depend on your age, gender, body size, training, sport and food likes and dislikes. There is one rule, though. Your best diet gives your body what it needs: the 50-plus nutrients along with the oodles of other helpful substances in foods.

Athlete or not, the Food Guide Pyramid shows one example of how much and what kind of foods to choose to get the nutrients you need. You'll see the Pyramid printed on bread wrappers, cereal boxes and the like. The Pyramid divides foods into five groups:



Each food group provides specific nutrients. Eating foods from all food groups each day covers your bases. Breads, cereals, rice and pasta provide carbohydrate to the diet. So do fruits and vegetables. Meat, poultry, fish, dry beans, eggs and nuts are major contributors of protein, iron and zinc. Dairy products give us protein, carbohydrate and calcium.

Not only is it important to eat foods from all food groups, it's important to eat a variety of foods within each food group to make sure you get all the needed nutrients. In other words, eating three servings of potatoes won't give you as many vitamins and minerals as eating one serving each of carrots, broccoli and potatoes.

The tip of the pyramid is labeled fats, oils and sweets and states "use sparingly." The recommendation to use fats, oils and sweets sparingly is based on concerns about excess calorie intake in non-active Americans. The more active you are, the more calories you burn, and the more calories you burn, the more you can eat from the tip.

### How Many Servings

How many servings you eat from each food group will depend on how many calories you need. The table shows the minimum recommended servings in the first column. As a general rule of thumb, your diet is adequate in vitamins and minerals if you eat at least the minimum number of servings from each food group. But to get enough calories, protein and carbohydrate, most athletes need more than that. Here are examples of servings at various calorie levels.

	<b>Minimum Servings</b> <b>1,600 calories</b>	<b>2,800 calories</b>	<b>3,600 calories</b>	<b>5,000 calories*</b>
Bread, cereal, rice and pasta	6	11	14	18
Vegetable	3	5	7	10
Fruit	2	4	5	7
Milk, yogurt, cheese	2	3	4	6
Meat, poultry, fish, eggs, dry beans, and nuts	5 oz	7 oz	9 oz	14 oz
Added fats and oils	25 g (5 tsp)	32 g (6 ½ tsp)	42 g (8 ½ tsp)	49 g (10 tsp)
Added sugar	11 tsp	18 tsp	24 tsp	28 tsp

\*This chart represents a high carbohydrate, low fat diet. As you can see, the servings become unreasonable at 5000 calories. It's hard for even the biggest eating machine to down 17 servings of vegetables and fruits in a day! Usually athletes who require higher calorie diets eat more fats, oils and sugars to get the extra calories.

## What's a Serving?

A serving is not necessarily a helping. A helping is the amount you eat. A helping is much bigger than a serving in many cases. Here are the defined servings of each of the food groups:

Bread:	1 slice bread, 1 small muffin, or dinner roll.
Cereal:	1 ounce ready-to-eat cereal or ½ cup cooked cereal
Pasta and rice:	½ cup cooked
Raw leafy vegetables (lettuce):	1 cup
Other vegetables:	½ cup
Fruit:	1 medium apple, banana or orange or ½ cup
Juices:	¾ cup
Milk:	1 cup
Yogurt:	1 cup
Cheese:	1 1/2 to 2 ounces
Meat:	2-3 ounces cooked
Equivalent to 1 ounce of meat:	1 egg, ½ cup dried beans, cooked; 2 tbsp. peanut butter

## Fluids

Another important part of the athlete's diet, perhaps the most important, is not highlighted in the Food Guide Pyramid. That is fluid. You need enough fluids to replace the amount you sweat off each day. Eight glasses may be enough for non-athletes, but you'll need much more than that to stay hydrated.

## That's it?

Like the fundamental skills for your sport, the fundamentals of nutrition are not new and perhaps not very interesting, but can be hard to master. Once you have mastered the fundamentals of nutrition, you are ready to move on to things you may find more interesting, like precompetition eating, changing body composition and improving endurance. These things are important, but by focusing on the fundamentals first, you build a solid nutrition foundation.

Calories...yawn. Seems like something your great aunt Molly might worry about, not an active athlete like you. But knowing about calories is a fundamental skill of your nutrition game plan. Calories are to your body what gas is to your car—no gas, no go!

How many calories you need each day depends a lot on your body composition and how physically active you are. The more muscle you have, the more calories you burn. Muscle cells are calorie-burning factories. So a person with 170 pounds of muscle burns more than a person with 120 pounds of muscle. The more physically active you are, the more your muscles work, and that burns even more calories.

The chart below gives you an idea of how many calories per pound you burn in a day at different activity levels.

<b>Activity Level</b>	<i>Calories per Pound per Day</i>	
	<b>Male</b>	<b>Female</b>
Sleeping, resting	11	10.5
Very Light	14	13.5
Light	17	16
Moderate	18.5	17
Heavy	22.5	20

Sitting, standing, driving are very light activities. Things like walking, bowling, and golfing are light. Fast walking, cycling, dancing, jogging, swimming, tennis and weightlifting would fall under moderate. Examples of heavy are walking uphill with a load, basketball, climbing, football, soccer, bicycle racing and marathon running.

To estimate how many calories you burn in a day, multiply your weight, in pounds, by one of the factors that best describes your activity level. A common tendency is to overestimate your activity level. For example, being heavily active for just an hour or two out of the day would not put you in the heavy category for the whole day. Use the factor that describes what you do most of your waking hours.

Example: Chris weighs 170 pounds and trains for a few hours on most days. The rest of the day is spent walking to class, sitting in class, studying, working as a waiter and sleeping. Chris would be in the light category. His calorie estimate is  $170 \times 17 = 2,890$  calories per day.

Using a mathematical formula to figure how many calories your body burns in a day gives you a ballpark estimate. Your calories might be much higher or lower, depending on how intensely you train, how much muscle mass you have, how many hours you sleep, and even how much you fidget.

Since this isn't math class, just remember this. The exact number of calories you burn doesn't matter. Whether you burn 2000 calories or 5000 calories, the best gauge of calories is your weight. Changes in your body weight over several weeks reflect your calorie intake. If you eat more calories than you burn, the calories are stored as fat or muscle and you gain weight. If you eat fewer calories than you burn, your body burns its own fat or muscle and you lose weight. If you are eating the number of calories equal to the number you burn; you stay at the same weight.

**Note:** It is important to match your calorie intake to your body composition goal. If you want to gain muscle mass, you need to eat more calories. If you want to lose body fat, you need to eat fewer calories.

Getting the right number of calories seems like it should be a no-brainer, but it is a difficult fundamental skill to master. In fact, eating too many calories or not eating enough calories is one of the most common problems for athletes. Having a general idea of how many calories you need is a fundamental nutrition skill.

# EATING ON THE FAST TRACK

Gotta eat, but don't have much time?

Quick service restaurants, vending machines and convenience stores are a reality for many athletes. Is eating "fast food" a nutritional catastrophe? No, it's possible to eat a balanced diet when "eating on the go," but it takes some planning.

To find out if your diet is heading in the right direction on the fast track, [take this quiz](#).

Most of my meals contain at least three different foods	True	False
Over the course of a week, my meals consist of at least 10 different foods	True	False
I plan what I'm going to eat before I get hungry	True	False
I keep non-perishable foods with me so I'm never caught without food if I'm hungry	True	False
I make sure I get at least 6 servings of breads and cereals each day	True	False
I try to choose foods based on what else I've eaten that day so I can round out what my body needs	True	False
I try to get at least 3 servings of milk, yogurt or cheese at meals or snacks each day	True	False
I keep water, juice, milk or other beverages close at hand throughout the day	True	False
I make sure I eat at least 2 servings of meat, poultry, fish, dairy products, legumes, eggs or nuts each day	True	False
I eat at least 5 servings of fruits and vegetables each day	True	False



**Give yourself 5 points for each statement you marked "true."**

- 45 to 50 You have mastered eating on the go
- 30 to 40 You are avoiding major hazards
- 20 to 25 High risk for nutritional derailment
- < 20 Warning! Nutrition catastrophe!

In the world of nutrition nirvana, food choices would always be based on what's "good for us." In reality, research shows that most of us make food choices based on preference, cost and availability. In other words – tasty, affordable, convenient foods tend to be the mainstay of many diets.

But making food choices based *only* on these criteria can lead to "nutritionally challenged" diets. Making sure your body gets its share of the essential nutrients takes effort, but that's what athletes need to do. Your choices determine whether your diet stays in balance when eating on the fly.

# *EATING ON THE ROAD*



*Sports Medicine  
Division*

Studies have shown that even athletes who have fantastic diets when at home don't eat as well when they travel. It can be hard to get the variety of high-carbohydrate, low-fat nutritious foods you need without eating too many calories, but it is possible to eat right while on the road.

Eating right while traveling, however, takes planning. It won't just happen. Finding out what type of foods restaurants serve, packing meals and snacks to take along, knowing what to buy at "quick stop" stores and knowing what to order at quick-service and sit-down restaurants can help you get the high-performance diet you need.

If you will be eating in restaurants, call ahead and find the ones that will meet your needs. Check with the host team, the tournament sponsors, or others you know in the area to find out which restaurants are close by. By contacting these restaurants ahead of time, you will be able to find out which ones:

- serve foods high in carbohydrate and low in fat
- will make special meals (substitute menu items as requested)
- will prepare foods especially for you (broiling instead of frying)

Whether eating at a sit-down or quick-service restaurant, some things you can do to lower the fat in your diet include:

- avoid cheese, mayonnaise and special sauces on sandwiches
- order salads without bacon bits or olives
- use lemon juice, low-calorie dressing, or smaller amounts of regular dressing
- skip gravies, sauces and fried items
- drink low-fat or skim milk instead of whole milk

Also, knowing which terms mean that food has been prepared by a low-fat method is important. Some low-fat terms are:

- steamed
- broiled, dry broiled
- roasted
- poaches
- in its own juice (au jus)
- grilled

It is easy to get bored while traveling, and it's common to relieve the boredom by eating. But snacking on high-fat, high-calorie foods can diminish the benefit of a high-performance diet.

-Bringing your own food along can guarantee you'll have the foods you need or can simply serve as an emergency backup. High-carbohydrate, low-fat items that are easy to pack include:

- peanut butter and jelly sandwiches
- muffins with jam or jelly
- cereals or cereal bars
- bagel, pita or pocket bread
- fig bars, oatmeal cookies, animal crackers
- pretzels
- celery and carrot sticks
- bottled or canned fruit juices
- fresh fruit
- banana or pumpkin bread
- rice or wheat cakes
- popcorn - no butter
- dried fruit (raisins, banana chips)
- yogurt
- pudding cups
- applesauce
- whole grain crackers

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# ESCAPING CONSTIPATION



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If you're an athlete who travels from city to city or country to country to train or compete, you may suffer from constipation from time to time. Although it is a common problem, there is much confusion as to what it is, how to avoid it, and how to treat it.

## **What is constipation?**

Being able to go to the bathroom is more than just for comfort. You need regular bowel movements so your body can get rid of waste products.

Knowing if you are constipated is simply a matter of knowing if you are going to the bathroom less often than usual. There is no simple rule as to what is normal. For some athletes, having three bowel movements a day is normal, and for others it is three a week.

Other symptoms of constipation include not being able to go to the bathroom when you feel like you need to. Having to strain when you go to the bathroom or having cramps or gas can also be symptoms.

## **How to avoid constipation**

The easiest way to avoid becoming constipated is to:

- never rush through a bowel movement
- keep training as close to normal as possible,
- eat high-fiber foods such as fruits, vegetables and whole grain cereals
- drink plenty of water or fruit juice
- stay away from laxatives and antacids (in the long run they can cause more harm than good)

Staying active helps to keep your intestines working as they should. So whether you are flying, riding in a bus or driving a car, try to make time to stand up and walk around the cabin, up and down the aisle or make a stop along the road and walk for a little while.

But staying active isn't enough to help you stay regular. Your diet also plays an important role in your ability to avoid becoming constipated. By including whole grains, fruits and vegetables and fluids in your diet your body is better able to get rid of its waste.

Some high-fiber foods include:

#### **Grains**

- popcorn
- wheat bread
- rye crackers

#### **Legumes**

- pinto beans
- split peas
- lentils

#### **Vegetables**

- potatoes, with skin
- spinach
- peas
- corn

#### **Fruits**

- bananas
- oranges
- prunes

The fiber you add to your diet works, in part, by absorbing water to make larger, softer stools which pass more easily. But eating a lot of fiber and not drinking enough water can cause a ball in your stomach instead of passing through. So be sure to **DRINK AT LEAST eight, 8-ounce glasses of water**--more if you sweat heavily.

There are times, however, when you may be tempted to turn to laxatives to get rid of your constipation--don't. Using laxatives can cause more problems than they cure. This is because they can become addictive and eventually cause changes in the bowel itself, leading to difficulty going to the bathroom at all.

### **How to treat constipation**

Even if you do everything right, you can still become constipated. If this happens, first try eating more whole grains, fruits and vegetables. Also, adding 2 teaspoons of unprocessed bran to your meals may help relieve the problem--be sure to drink plenty of water.

Other ideas for treating constipation include:

- getting more rest to reduce stress
- drinking more water and less coffee, tea, alcohol,
- staying away from tobacco, including chewing tobacco

#### **Remember:**

You don't have to have a bowel movement every day if that isn't normal for you. "Normal" bowel movements vary from three times a day to three times a week. But if your normal pattern changes, check your diet, avoid laxatives and antacids, and try to stay as active as possible. If the problem doesn't get better, if your stool is black or has blood in it, be sure to see either your family or team doctor.

# FAST FOODS



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Thanks to fast-service restaurants, you can get a meal almost anywhere at any time. Just because these meals are fast and convenient doesn't mean they are not nutritious. All foods including the foods listed in this handout have nutrients your body needs.

What you have to remember is that you are what you eat. It's what you eat every day that will affect your health and performance. If you eat a lot of your meals at fast-service restaurants, you might not be getting enough fruits, vegetables or milk in your diet. Ordering salads, fruit juices and milk when you are out, or making sure to include these in your diet when you're at home, can help you maintain a balanced diet.

Be sure to request nutrition information sheets from the fast-service restaurants you eat at regularly. Many of the restaurants also provide nutrition on their web sites. Using the information on the charts can help you watch the number of calories, amount of fat, carbohydrate and protein you are eating at these restaurants. **However, keep in mind - though these numbers are accurate at this printing, restaurants are continually changing selections which could alter the numbers.**

**To determine the percentage of calories from fat in a food, multiply the grams of fat in that food by 9. Then divide that number by the total number of calories in that food.**

For example:

Food X has 350 calories and 15 grams of fat.

$$\begin{aligned} 15 \text{ grams of fat } \underline{15 \times 9} &= 135 \text{ calories from fat} \\ \underline{135 \div 350} &= .39 \end{aligned}$$

Therefore, 39 percent of the calories in food X are from fat.

Arby's Type of Food	Calories	Protein (gm)	Carbohy- drate(gm)	Fat (gm)
Beef' n Cheddar	487	25	40	28
Grilled Chicken Deluxe	430	23	41	20
Italian Sub	675	30	46	36
Regular Roast Beef	388	23	33	19
Super Roast Beef	523	25	50	27
Lt.Roast Beef Deluxe	296	18	33	10
Lt.Roast Turkey Deluxe	260	20	33	7
Breaded Chicken Fillet	536	28	46	28
Curly Fries	300	4	38	15
Garden Salad	61	3	12	.5

Most current information from Arby's: 1/95.

**Burger King**

Type of Food	Calories	Protein (gm)	Carbohydrate(gm)	Fat (gm)
CROISSAN'WICH w/Sausage, Egg & Cheese	530	18	23	41
French Toast Sticks	440	7	51	23
Hashbrowns, small	240	2	25	15
Cheeseburger	360	21	27	19
Double Cheeseburger	580	38	27	36
Hamburger	320	19	27	15
Whopper Junior	400	19	28	24
Whopper Sandwich	660	29	47	40
Whopper with Cheese	760	35	47	48
Double Whopper with Cheese	1010	55	47	67
Chicken Sandwich	710	26	54	43
Chicken Tenders (8 pcs)	350	22	17	22
BK Broiler Chicken Sandwich	530	29	45	26
BK Big Fish Sandwich	720	23	59	43
French Fries, medium, salted	400	3	50	21
Onion Rings, medium	380	5	46	19
Dutch Apple Pie	300	3	39	15
Vanilla Shake (Medium)	430	13	73	9
Strawberry Shake (Medium)	550	13	104	9

Most current nutrition information from Burger King: 8/98

**Dairy Queen**

Type of Food	Calories	Protein (gm)	Carbohydrate(gm)	Fat (gm)
DQ Homestyle Hamburger	290	17	29	12
DQ Homestyle Cheeseburger	340	20	29	17
DQ Ultimate Burger	670	40	29	43
Hot Dog	240	9	19	14
Chili 'n' Cheese Dog	330	14	22	21
Chicken Breast Fillet Sandwich	430	24	37	20
Grilled Chicken Sandwich	310	24	30	10
Onion Rings	320	5	39	16
French Fries, medium	440	5	53	23
Medium Vanilla Cone	330	8	53	9
Buster Bar	450	10	41	28
Medium Misty Slush	290	0	74	0
Banana Split	510	8	96	12
Medium Chocolate Sundae	400	8	71	10
Medium Yogurt Cone	260	9	56	1
Medium Choc. Sandwich Blizzard	640	12	97	23

Most current information from Dairy Queen: 1999

<b>Taco Bell</b>				
Type of Food	<b>Calories</b>	<b>Protein (gm)</b>	<b>Carbohy- drate (gm)</b>	<b>Fat (gm)</b>
Taco	170	10	12	10
Soft Taco	210	11	20	10
Bean Burrito	370	13	54	12
Burrito Supreme	430	17	50	18
Mexican Rice	190	5	23	9
Chalupa Supreme/Chicken	360	17	28	20
Gordita Supreme/Beef	300	17	27	14
Breakfast Cheese Quesadilla	380	15	33	9
Tostada	250	10	27	12
Mexican Pizza	540	20	42	35
Taco Salad w/salsa	850	30	69	52
Nachos	320	5	34	18
Nachos BellGrande/Chicken	740	23	82	36
Cinnamon Twists	180	1	25	8

Most current information from Taco Bell: 1998

<b>McDonald's</b>				
Type of Food	<b>Calories</b>	<b>Protein (gm)</b>	<b>Carbohy- drate(gm)</b>	<b>Fat (gm)</b>
Hotcakes (plain)	340	9	58	9
Bacon, Egg & Cheese Biscuit	470	18	36	28
Egg McMuffin	290	17	27	12
Hamburger	260	13	34	9
Cheeseburger	320	15	35	13
Big Mac	560	26	45	31
Quarter Pounder w/cheese	530	28	38	30
Grilled Chicken Deluxe	440	27	38	20
Chicken McNuggets, 6 piece	290	18	15	17
Fish Filet Deluxe	560	23	54	28
Crispy Chicken Deluxe	500	26	43	25
Garden Salad	35	2	7	0
Grilled Chicken Salad Deluxe	120	21	7	1.5
French Fries, small	210	3	26	10
Baked Apple Pie	260	3	34	13
Apple Danish	360	5	51	16
Lowfat Apple Bran Muffin	300	6	61	3
Vanilla Shake, small	360	11	59	9

Most current information from McDonald's: 8/98



<b>Pizza Hut</b>				
Type of Food	Calories	Protein (gm)	Carbohydrate(gm)	Fat (gm)
Big New Yorker Supreme	459	10	44	22
Personal Pan Pizza (Whole)	670	29	73	29
Bread Stick (1)	130	3	20	4
Stuffed Crust, Cheese	445	22	46	19
Thin & Crispy Cheese	243	11	27	10
Thin & Crispy Pepperoni	235	10	27	10
Thin & Crispy Italian Sausage	325	14	28	18
Thin & Crispy Veggie Lovers	222	9	30	8
Pan Cheese	361	13	44	15
Pan Pepperoni Lover's	370	13	44	16
Pan Italian Sausage	415	15	45	20
Pan Supreme	300	13	32	13
Pan Veggie Lovers	333	11	46	12

*Data based on 1 slice medium pizza*

**Most current information from Pizza Hut: 10/97**

<b>Wendy's</b>				
Type of Food	Calories	Protein (gm)	Carbohydrate(gm)	Fat (gm)
Single Hamburger w/everything	420	25	37	20
Breaded Chicken Sandwich	440	28	44	18
Grilled Chicken Sandwich	310	27	35	8
Chicken Nuggets (5 pcs)	230	11	11	16
Baked Potato w/sour cream & chives	380	8	74	6
Chili, small	210	15	21	7
French Fries, Med.	390	5	50	19
Deluxe Garden Salad	110	7	9	6
Salad Dressing (Red. Cal Italian)	40	0	2	3
Frosty Dairy Dessert, small	330	8	56	8

**Most current information from Wendy's: 2/98**

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# FAT FACTS

Today, many athletes want to avoid fat -- both on their bodies and in their diet. All the gloom and doom written about fat implies there is nothing good about it. But fat does have benefits. In fact, as an athlete, you need fat -- both on your body and in the food you eat.

The goal is making sure you have the right amount of fat. Not too much and not too little. Once you achieve the appropriate amount of fat, trying to reduce body fat or dietary fat will not help. In fact, not having enough body fat or dietary fat can cause problems.

## ***Body Fat – How much?***

There is no such thing as the ideal percentage of body fat for a particular sport. Due to genetics and other factors, you may perform your best at a body fat much different than other athletes in the same sport. Athletes need to determine their ideal body fat levels based on their performance -- not on the levels of other athletes.

It is becoming more and more common for physicians and sports medicine professionals to not recommend a specific percentage of body fat, but instead, use a range or a sum of skinfold measurements. Genetics, age, and level of training influence your body composition. The best thing for you to do is determine where you perform your best and maintain that level. Striving for a body fat percentage that is too low can cause performance and health problems.

## ***Dietary Fat – How much?***

The Sub-Committee on Nutrition of the United Nations, of which the World Health Organization is a member, recommends that the lower limit of fat intake be 15% of calories for most adults. Women of reproductive age should consume at least 20% of their calories as fat. The upper limit of fat intake recommended for active people is 35%. It is important to understand that these recommendations are averages over the day or week, not for each meal or not an individual food.

Research shows that international elite athletes eat diets ranging from 15% to 49% of calories from fat or 1.1g to 4.3g per kilogram body weight. These wide

ranges reflect the diverse needs and dietary practices of successful athletes.

By having adequate fat in the diet, athletes who expend a lot of energy can get the calories they need in less food. It can be difficult for an athlete who needs 5,000 to 6,000 calories a day to eat the large amount of food needed on a diet low in fat.

### ***Types of dietary fat:***

All types of fat, saturated, monounsaturated and polyunsaturated, have this in common - - they have nine calories per gram. Although they are the same in calories, each type of fat is unique. It is important to include different types of fat in the diet because each type of fat has different functions in the body, such as hormone production and cell-wall structure.

### ***Cholesterol:***

Cholesterol is a fat-like substance found in blood and tissues in the human body. It is needed for many body processes. Cholesterol is also found in some of the foods we eat. The amount of cholesterol in the diet may have little bearing on the amount of cholesterol in the blood. The body makes about 80 percent of the cholesterol found in the blood. For the most part, it is genetics, the total amount of fat, and the type of fat eaten that determines our blood cholesterol levels, not how much cholesterol we eat. Some saturated fats tend to increase blood cholesterol more than other types of fats, so health authorities recommend that 10 percent or less of fat intake be from saturated fat. The remainder should come from monosaturated fat and polyunsaturated fat.

### ***What does body fat do?***

- Body fat serves as source of stored energy.
- The layer of fat just under the skin helps control body temperature within the range necessary for life.
- A layer of fat tissue surrounds vital organs and protects them from shock and injury, a function very important to athletes in contact sports.
- Fat insulation surrounds nerve fibers and is necessary for transmission of nerve impulse.
- Fat is a vital part of cells and is necessary to move nutrients into and out of cells.

### *What does dietary fat do?*

- Fats give food its taste. For example, the only difference between skim and whole milk is the amount of fat they contain. If all the fat is taken out of beef, chicken, lamb, and goat meat, it is impossible to taste the difference among them.
- Fats cause food to stay in the stomach longer, helping us feel full longer without getting hungry. This is why having some fat in the diet helps when we try to lose weight.
- Fats are a concentrated source of energy. For those who need more calories, fat provides those calories in a smaller amount of food. Without fat in our diet, some athletes would not be able to eat all of the food it would take to get the calories needed.
- Our bodies need fat to absorb and use fat-soluble vitamins -- vitamins A, D, E and K.
- Linoleic acid, a type of fat, is necessary for growth and reproduction, and it helps protect us from excessive loss of water and damage from the sun's radiation. It has to be supplied in foods we eat, because our bodies cannot make it.

The chart below gives examples of total daily calories, the number of grams of fat per day needed to equal 30 percent of those calories and the number of grams of saturated fat needed to equal 10 percent.

Calories	Grams of Total Fat	Grams of Saturated Fat
1200	40	13
1600	53	18
2000	67	22
2400	80	27
2800	93	31
3200	106	36
3600	120	40
4000	133	44
4400	147	49
4800	160	53
5200	173	58

## FACTS TO REMEMBER

- You need a certain amount of fat in your diet and on your body. The goal is determining the right amount of fat.
- There is no ideal body fat percentage for a particular sport. You should determine where you perform your best and maintain that level.
- International authorities recommend 35% of calories as fat for physically active people. Fifteen percent of calories from fat is the lower limit recommended, except women of child bearing age should not eat less than 20% of calories from fat.
- Of the fat calories, it is recommended that 10 percent be from saturated, and the remainder from monounsaturated and polyunsaturated fats.
- The recommended fat intake is an average for the day - not for each meal or for an individual food.
- Cholesterol and dietary fat are not the same thing.

### *Fat Content in Various Foods*

		Total Fat	Polyunsaturated	Monounsaturated	Saturated
		(g)	(g)	(g)	(g)
<b>Chicken/White Meat</b>					
Roasted Breast, skinless	1/2 each	3	1	1	1
Fried Breast	1/2 each	18	4	8	5
<b>Chicken/Dark Meat</b>					
Roasted Drumstick, skinless	2 pieces	5	1	2	1
Fried Drumstick	2 pieces	23	5	9	6
<b>Beef</b>					
Lean Ground Beef	3 oz	8	0	3	3
Round Steak	3 oz	3	1	1	1
Sirloin Steak	3 oz	7	0	3	3
<b>Fish</b>					
Fish Sticks	3 oz	10	3	4	3
Baked Salmon	3 oz	7	3	2	1
Tuna/water	3 oz	3	1	1	1
<b>Pork</b>					
Lean Pork Chop	3 oz	7	0	3	2
Lean Ham	3 oz	4	0	2	1
Bacon	3 pieces	9	1	5	3

**Mixed Items**

Taco	1 each	11	1	5	5
Beef & Bean Burrito	1 each	9	1	4	4
Pepperoni Pizza	2 pieces	15	-	-	7
Spaghetti w/Meat Sauce	8 oz	5	1	2	2

**Cheese**

Cottage Cheese, 2%	1/2 cup	2	0	1	1
Cheddar Cheese	1 oz	9	0	3	6
Mozzarella Cheese	1 oz	5	-	-	4

**Oils**

Olive Oil	1 Tbsp	14	1	10	2
Corn Oil	1 Tbsp	14	8	3	2
Butter	1 Tbsp	12	0	3	7
Margarine	1 Tbsp	11	4	5	2
Light Spread	1 Tbsp	6	2	2	1

**Salad Dressing**

Ranch	1 Tbsp	5	3	1	1
Italian	1 Tbsp	7	4	2	1
French	1 Tbsp	6	3	1	1

**Bakery Items**

Muffin, large	1 each	8	1	3	3
Brownie (2" Square)	1 each	10	3	4	3
Chocolate Chip Cookie, large	1 each	9	-	-	3
Glazed Doughnut	1 each	14	2	8	4

*Prepared by the International Center for Sports Nutrition for the U.S. Olympic Committee Sports Medicine Division, Revised 1999.*

# FAT—HOW LOW CAN YOU GO?

How much fat should you eat? To answer that question, you'll need to consider your health profile as well as your training. Follow this chart:

My family members have heart disease and/or I have high blood cholesterol	
YES	NO

**Your category: Low Fat Diet.**

See the chart on the back.  
Check with your doctor or nutritionist for specific information about how much and what kinds of fat your diet should have, based on your health history.

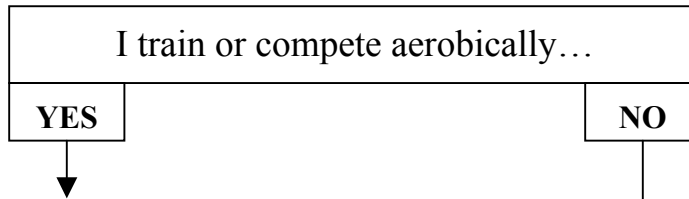
I need to lose body fat	
YES	NO

I eat a high fat diet now	
YES	NO

**Your category: Low Fat Diet.**

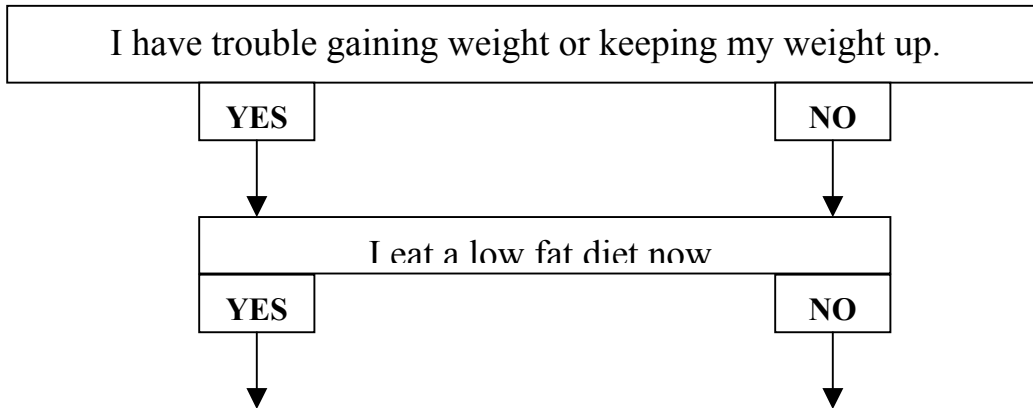
See the chart on the back.  
Decreasing fat may help you decrease total calories.  
Be careful not to replace fat calories with calories from other foods. To lose body fat you need to decrease TOTAL calories.

**I train or compete aerobically more than 60 minutes per day.**  
Examples of aerobic activity are running, swimming, biking or other non-stop activities. More intense stop-start training like drills, sprints, metabolics, scrimmages, plyometrics, and weight lifting are not aerobic.



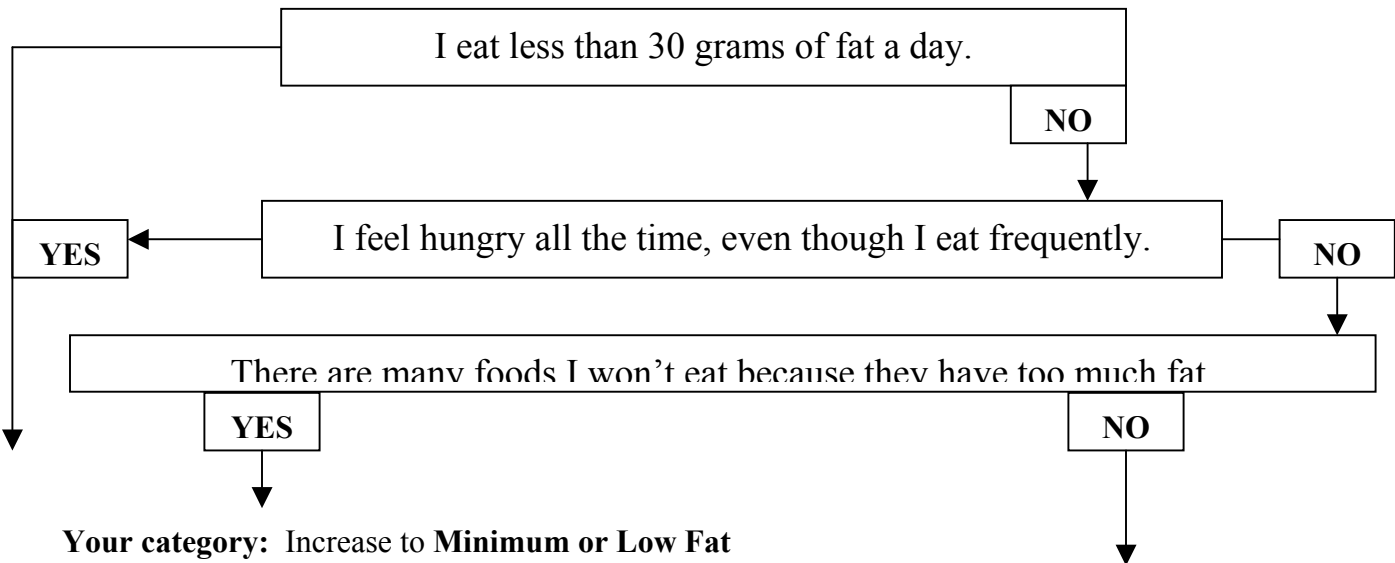
**Your category: Low or Moderate fat.**

Aerobic exercise increases your carbohydrate needs. If you currently eat a high fat diet, you may need to decrease fat and increase carbohydrate intake.



**Your category: Moderate fat.**

If you have trouble keeping your weight up, the problem is inadequate calories. One easy way to get more calories is to add fat to your diet. And it doesn't have to be a big increase.



**Your category: Increase to Minimum or Low Fat**

Just as too much fat can be a problem, not eating enough fat can be a problem too. A fat-deficient diet can lead to increased blood cholesterol, nutrient deficiencies, inadequate calorie intake, a weak immune system, and decreased hormones. The chart below shows you how much fat a healthy, high performance diet contains.

If you answered "no" to all of these questions, you do not need to worry about changing your fat intake.



## Fat in a Healthy, High Performance Diet

<b>Calories</b>	<b>Minimum Fat Fat, grams</b>	<b>Low Fat Fat, grams</b>	<b>Moderate Fat Fat, grams</b>
2000	33	67	78
2400	40	80	93
2600	43	87	101
3000	50	100	117
3500	58	117	136
4000	67	133	155
4500	75	150	175
5000	83	167	194

*Prepared by the U.S. Olympic Committee Sports Medicine Division and the International Center for Sports Nutrition. ©1999 U.S. Olympic Committee*

# *How much body fat? It depends...*

## **... on performance**

No one percentage of body fat is right for everyone, even teammates or opponents in competition. Body fat varies from person to person and often changes during the season compared to off-season. The average body fat for 18-24 year olds is 20-25% for women and 13-16% for men. The average body fat percent of athletes sometimes runs lower because of genetics and training, but body fat levels of successful athletes vary a lot. A professional hockey team averaged 10%, with a range from 8% to 15%. And the percent body fat of an elite female volleyball team ranged from 13% to 26%, averaging 19%. The right level for you is where you feel and perform your best.

## **...on the sport**

Body fat affects some sports more than others. For example, athletes in sports with light weight classes like rowing, wrestling and judo often maintain a low body fat to make the weight class. Gymnasts and figure skaters strive to maintain low body fat for agility and appearance. However, many positions in many sports do not require a low body fat, and a low body fat can actually be detrimental. Being heavier can help athletes avoid getting pushed around on the field or floor, and propel speed in sports like skiing.

## **...on genetics**

Genetics has a lot to do with how much fat we store, and everything to do with where we store it. You can't change your body's tendency to store more or less body fat in certain places—thighs, stomach, or hips. And you can't change your body type. Bodies come in three basic shapes: ectomorph, mesomorph or endomorph. Ectomorphs tend to be lean and slightly muscular. They usually don't carry excess body fat. Mesomorphs are naturally muscular and strong, with a long torso and full chest.

Mesomorphs can increase muscle size quickly. Endomorphs have a stocky build, with wide chest and hips and short bones. Endomorphs tend to gain weight easily and body fat loss is more difficult than it is for the other body types.

## **...on maturity**

Full-term babies are born with body fat, lots of it, and it is critical to support growth. Body fat generally decreases during childhood, until puberty. Then, as females go through puberty they gain an average of 35 pounds, and males gain about 45 pounds. Girls tend to deposit more of this weight as fat tissue, whereas boys usually gain more muscle than fat. A woman's natural increase in body fat is an essential part of maturing.

## **...on health**

Too little body fat is a health problem because body fat has many important functions. For one, it stores energy that the body uses during training, studying, watching TV and sleeping. The layer of fat under the skin insulates the body and helps maintain body temperature. Fat tissue surrounds vital organs and protects them from shock and injury. It enables nerve transmission and is a vital part of every cell.

Having several of the following symptoms or behaviors might indicate that an athlete's body fat is too low:

- Chronically restricts calories
- Loses or doesn't gain strength and endurance
- Gets sick or injured easily
- Feels tired, even with enough sleep
- Feels cold often, even when others don't
- Has irregular or absent periods

## **Bottom line**

How much body fat should an athlete have? No chart holds the answer. Performance, not percent, tells athletes whether they have the right level of body fat.

*H:Share/Nutrition/How Much Body Fat*

*Prepared by the U.S. Olympic Committee Sports Medicine Division and the International Center for Sports Nutrition. ©2000 U.S. Olympic Committee*

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**“Is it bad to eat late at night?”**

**“How long before a game should I eat?”**

**“Is it good to eat a lot of small meals?”**

*Some of the most common questions about nutrition relate to timing of eating. Here are some quick answers to your questions about when to eat.*

## **Time of Day**

Will all calories you eat after 6 p.m. turn to fat? Does breakfast have to be at 7 a.m. and lunch at noon? No. Time of day doesn't matter, as long as your body gets the nutrients and calories it needs.

The recommendation to not eat late at night is aimed at curbing couch potato behavior like downing a bag of chips during ER or polishing off a sundae with Seinfeld reruns.

Research shows that many people who eat too much, eat many of their calories in the evening hours. If you overeat, no matter the time of day, the extra calories are stored as fat.

But eating at night is a must for many athletes whose schedules don't fit into conventional meal times. For example, if you practice until 7 p.m. and don't have an appetite until 10 p.m., then it is wise to eat a late meal. Otherwise, you deprive your body of needed nutrients and inhibit recovery.

The most important thing is to get the nutrients you need even if it's late in the day.

## **Eating Before Practice/Competition**

Rule #1 is that there are no rules except “know yourself.” A common recommendation is to eat 2 to 4 hours before an event. This time frame allows most of the food to be emptied from the stomach, while not leaving you overly hungry.

But don't bet your game-winning socks that there's any magic to that range. Successful athletes have been known to break world records a few minutes after a full meal. Others prefer not eating at all before morning practices or competitions.

Finding the right timing for you is an individual matter. As you experiment with different time frames, keep a log of when and what you ate and document how you felt. Athletes will fall on both ends of the extremes, from those who need a long period of time between eating and activity and those who prefer to have a full stomach, and at every point in between.

As you determine your comfort zone by trial and error, here are a few tips.

Consider allowing at least three to four hours between a meal and practice/competition if you:

- ⌚ Participate in a contact sport with high risk of injury or likelihood of being hit in the stomach.
- ⌚ Lose your appetite or feel nauseous shortly before training or competition. Eating before your stomach gets “tight” allows you to get the calories you need and can prevent vomiting related to nervousness.
- ⌚ Get diarrhea shortly before or during the event. Nerves often make the digestive system “speed up.” Eating can stimulate the bowels even more. Spacing your meal well ahead of the event will help you avoid an untimely trip to the restroom.
- ⌚ Exercise in the heat. Dehydration increases likelihood of stomachaches, gas or stomach cramping.
- ⌚ Participate in a high intensity sport with a lot of running or jumping, for example, cross country running, soccer, volleyball or basketball. While some can handle a full stomach with no problem, the jarring taken by the body increases the risk of stomach discomfort.

Some athletes who participate in long events (tournaments, double-headers, all-day meets) like to eat shortly beforehand and continue snacking during competition to keep energy high and prevent hunger.

Eat as close as 30 minutes before competition and eat during competition if you:

- ⌚ Feel uncomfortably hungry during the event. Hunger pangs can distract you from the task at hand.
- ⌚ Have a tendency to feel shaky or weak during the event. These can be symptoms of low blood sugar.
- ⌚ Participate in an endurance event and want to increase the carbohydrate available for energy.

### **Eating After Practice or Competition**

The importance of eating after a workout is to get your body ready for the next practice or competition. For most athletes, eating a balanced meal soon after the activity helps guarantee getting enough fluid and calories for recovery.

Be careful if you are dehydrated, though. Putting food or a high calorie fluid in a dehydrated body can cause you to get sick. If you’re dehydrated, drink first, then eat.

### **How Many Times a Day**

Eating three square meals may be a tradition in the U.S. but this pattern doesn’t always fit the needs of athletes. Some athletes need to eat small amounts frequently because of busy schedules and not wanting to be full right before a workout.

Research at the International Center for Sports Nutrition shows that most elite athletes eat a minimum of four times a day (counting meals and snacks) and many eat up to nine times a day.

While frequent eating is not a problem, the other end of the spectrum is. It is difficult to get the nutrients you need and maintain mental alertness if you eat only one or two times a day.

Timing of eating is important, but the timing that is best for you is an individual matter depending on your schedule, your training, your sport and your body.

# *Iron: There's More To It Than Pumping It*

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Consider yourself healthy and strong? Most athletes are. But to stay that way, you have to do more than just pump iron. You have to make sure you're getting iron in your diet. Chances are, you or someone on your team is not getting enough iron. Estimates are that up to 25% of all teenage girls have iron deficiency. But it's not just a female problem. Growing guys are at risk too.

## **Why is iron important?**

Not getting enough iron can turn even the strongest athlete into a weakling. What's more, iron deficiency also hurts your mental performance.

## **How does iron affect my performance?**

Iron's main job is carrying oxygen in your blood. It's in a molecule called hemoglobin, which gives your blood its bright red color. Hemoglobin is like a magnet for oxygen, taking it from your lungs and releasing it to your muscles, brain and other tissues. When iron is in short supply, you make less hemoglobin, so you don't get as much oxygen. Your muscle and brain functions go downhill in a hurry without enough oxygen. Think of the last time you were out of breath and panting for air. Lacking iron is like having your tissues gasp for air and not getting what they need.

Besides delivering oxygen, iron has other jobs. Iron-containing enzymes unleash energy in your muscles. In other words, that lunch you ate can't be turned into energy for your muscles unless you have enough iron in your body.

## **What happens if I don't have enough iron?**

Having less iron in the body than you should is called iron deficiency. Iron deficiency can lead to the more severe stage called anemia. Athletes who are anemic experience decreased physical performance, headaches and insomnia. They often feel tired, cold, weak, dizzy and short of breath, and they look pale. Learning can also suffer. This can show up as lower test grades.

Millions of Americans battle iron deficiency, but it is totally preventable—just make sure you get enough iron.

## **How do I know if I'm getting enough iron?**

The only way to know if you have an iron deficiency is with a blood test your doctor or health clinic can run. But you can take preventive measures against iron deficiency by eating a diet with adequate iron. Many athletes eat diets low in iron. In fact, estimates are that 40% of Americans don't get enough iron. Females need about 15 mg/day of iron and males need 10-12 mg/day. The table shows iron content and availability of various foods.

## IRON CONTENT OF SELECTED FOODS

### Heme Sources of Iron

Food (3 oz, cooked, lean only)	Total Iron (mg)	Available Iron (mg)	Calories (kcal)
<b>Beef</b> Liver, pan fried	5.34	.60	184
Chuck, arm pot roast, braised	3.22	.48	196
Sirloin, broiled	2.85	.42	177
Roundtip, roasted	2.50	.38	162
Ground, lean, broiled	1.79	.27	231
<b>Pork</b> Shoulder, blade, Boston, roasted	1.36	.15	218
Tenderloin, roasted	1.31	.15	141
Ham, boneless, 5-11% fat	1.19	.14	140
Loin chop broiled	.78	.09	196
<b>Chicken</b> Liver, simmered	7.2	.81	134
Leg, roasted	1.11	.17	187
Breast, roasted	.88	.13	142
<b>Turkey</b> Leg, roasted	2.26	.34	168
Breast, roasted	.99	.14	126
<b>Fish</b> Tuna, light meat, canned	2.72	.31	111
White meat, canned	.51	.06	116
Halibut, dry heat	.91	.10	119
Oysters, 6 medium, raw	5.63	.63	58
Shrimp, moist heat	2.63	.30	84



## Nonheme Sources of Iron

<b>Food</b>	<b>Total Iron (mg)</b>	<b>Available Iron (mg)</b>	<b>Calories (kcal)</b>	
<b>Cereals</b>	Raisin bran (enrich), dry, 2 C.	4.5	.23	120
	Corn flakes (enrich), dry, 1 oz.	1.8	.09	100
	Shredded wheat, dry, 1 oz.	1.20	.06	102
<b>Grains</b>	Bagel, 1	1.8	.09	163
	Whole wheat bread, 1 sl.	1.0	.05	78
	White rice (enrich), cooked, 2 C.	.9	.05	99
	White Bread (enrich), 1 sl.	.7	.04	76
<b>Fruits</b>	Apricots, dried, 7 halves	1.16	.06	58
	Prunes, dried, 3 medium	.84	.04	60
	Raisins, 2 Tbsp.	.38	.02	56
	Banana, 1 medium	.35	.02	105
<b>Vegetables</b>	Potato, baked w/skin, 1 medium	2.75	.14	220
	Peas, cooked, 2 C.	1.26	.06	63
	Spinach, raw, 2 C.	.76	.04	6
	Broccoli, raw, 2 C.	.39	.02	12
<b>Beans/ Legumes</b>	Kidney beans, canned, 2 C	1.57	.08	108
	Chickpeas, canned, 2 C.	1.62	.08	120
<b>Molasses</b>	Cane, blackstrap, 1 Tbsp.	5.05	.25	47

*Adapted from: Iron in Human Nutrition. National LiveStock and Meat Board, Chicago, IL, 1990.*

### Two kinds of iron

How much iron your body absorbs depends on the food. Foods like meat, fish and poultry contain the kind of iron called heme, as in hemoglobin, as in the kind in your body. It is absorbed much better than the non-heme iron (not from hemoglobin) in bread, cereal, fruits, vegetables and pasta.

For example, referring to the table, a 3 ounce portion of ground beef has about the same total iron as a bagel, but your body gets three times more iron from the hamburger.

### Some foods help your body absorb iron

Non-heme iron can be absorbed better by eating it with vitamin C-rich foods. Foods high in vitamin C include orange juice, tomatoes, grapefruit and melons.

### Some foods inhibit iron absorption

Certain substances in food decrease how much iron gets absorbed from your intestine into your body. For example, tannins in tea and polyphenols in coffee inhibit absorption of iron when these beverages are consumed with a meal. Even though many vegetables and whole grains are loaded with iron, the

phytates, oxalates and fiber in these foods block much of the iron from getting into your body.

If you aren't getting enough iron, adding iron-rich foods to your diet can help prevent problems of iron deficiency. Whether you're eating it or pumping it, iron helps you perform your best.

### **Iron supplement controversy**

Some athletes, in an attempt to make sure they are reaping the benefits of iron, take iron supplements. However, in the absence of iron deficiency anemia, taking iron supplements can be dangerous, because too much iron can be as bad as too little. Excessive iron is dangerous for people who have a silent disease called hemochromatosis, which causes the body to store too much iron. Also, supplemental iron can be dangerous for individuals with sickle cell trait or thalassemia. Iron supplementation

# *Lose the Fat, Keep the Muscle*



*Sports Medicine  
Division*

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So you want to lose body fat and keep or gain muscle. Here's what you need to do: burn more calories than you take in, eat enough protein and lift weights.

## **LOSE THE FAT**

The first secret to losing body fat is simple...burn more calories than you take in. Body fat is your holding tank for energy. In fact, each pound of it holds 3,500 calories. Body fat accumulates when you eat more calories than your body burns, and is withdrawn when you eat fewer calories than your body burns. But hold back on your instinct to really cut back on calories to lose the fat quickly. A crash diet guarantees you'll lose muscle. The best way to drop fat while you keep the muscle is to take in fewer calories, burn more calories, or both.

### **Take in fewer calories**

- Have a daily plan for eating. Going longer than 4-5 hours without eating can lead to overeating later on, so plan on eating at least four times per day. Figure out where and when you will eat. If you'll be eating on the go, pack the food and drinks that you'll need. Don't leave your eating to chance.
- Cut down on portion size of foods and drinks. Take just a little bit less or leave  $\frac{1}{4}$  to  $\frac{1}{2}$  of the helping on your plate/in the glass. Using smaller glasses, cups, bowls and plates can help you reduce portion size.
- If you drink regular soft drinks, choose soft drinks that have no calories instead.
- Start meals with fresh fruits, raw vegetables, tossed salad (go easy on the dressing) or broth-based soups. These foods can help fill you up without giving you a lot of calories.
- Drink plenty of water.

If these tips are not working for you, you may need to visit with a nutritionist or dietitian. She/he may ask you to write down what and how much you eat and drink for a few days. Recording what you eat and drink is sometimes the best way to figure out how to decrease your calorie intake.

### **Burn more calories**

Some athletes have maxed out on training, so they can't reasonably burn more calories through physical activity without overtraining or hurting their performance. But some athletes can. You'll burn far more with cardiovascular workouts like running, cycling, rowing, stair climbing, spinning and other exercises where you move your legs rhythmically and constantly.

Moving more in everyday activities is also important. Do you sit a lot? Take the car instead of walk? Veg out in front of the TV? Take elevators and escalators instead of stairs? Adding more activity to your daily routine can burn up calories, and you'll hardly notice doing it.

### **Should I follow a certain diet?**

There are as many “good diets” as there are athletes. You might choose to follow a structured diet plan or just fine-tune what you eat now. The best diet for you is one you can follow and that gives your body the nutrients it needs. It’s critical to maintain a balanced diet that has enough calories, protein and other nutrients to support training, aid recovery, and help you resist illness and injury. Athletes who consume less than 1,800 calories per day have more difficulty getting the needed nutrients to support health and training and may want to consider taking a multivitamin-mineral supplement.

### **KEEP THE MUSCLE**

The next secret to keeping or building muscle while losing fat is to eat enough protein so your body doesn’t draw from its own muscle tissue. A daily level of 1.5 grams of protein per kg body weight, or .68 gm per pound is enough if at least 2/3 of your protein is from animal sources like meat, poultry, fish, milk, cheese, yogurt or eggs. If you get most of your protein from breads, cereals, beans, nuts and peanut butter, you’ll need even more—go for 2.0 grams per kg.

The third secret to losing fat and keeping (or increasing) muscle is to stick to an appropriate, supervised resistance-training program. If you don’t stimulate your muscles by lifting progressively heavier weights, they won’t grow. Seek the advice of a strength and conditioning expert at a local health club or gym.

### **When can I start?**

Because most athletes don’t have the time or energy to focus on dietary changes and extra training during the season, the best time to lose body fat is usually off-season or between seasons. Give yourself plenty of time to meet your goal. If you are burning 500 calories a day more than you’re eating and drinking, you’ll lose about 1 pound per week. Larger athletes, with more body fat to lose, can shoot for faster rates, say, 2-3 pounds per week. But pushing for faster weight loss can all but guarantee muscle loss. One way to know whether you’re losing fat and keeping muscle is to have your body fat measured. But, you can also tell by the way your clothes fit and the way you look and feel.

*H: Share/Nutrition/Lose Fat Keep Muscle*

# **MENSTRUAL PROBLEMS IN ATHLETES**



Sports Medicine  
Division

**This information sheet was developed to provide you with information for safe athletic competition and training as well as good health after your competitive years are over.**

**What are the menstrual problems that can effect exercising females?**

**Under normal circumstances, most women have ten to twelve menstrual periods each year. *You have a menstrual problem (or dysfunction) if you:***

- have never had a period by age 16 (delayed menarche)
- have only four to six periods per year (oligomenorrhea)
- have two or fewer periods per year (amenorrhea)

These problems can occur for many reasons. In athletes, they can occur because there is not enough of a hormone, called estrogen, produced by the body. One of the important functions of estrogen is to help maintain healthy bones. Studies tell us that very low body fat, inadequate diet, and the physical stress of training may contribute to low estrogen levels in female athletes.

**What athletes are at risk?**

Any female may be at risk. The sports that stress appearance or slimness (gymnastics, ballet, figure skating and diving) seem to be especially likely to cause problems. Endurance sports (running, swimming and cycling) may also put you at risk.

**What is osteoporosis?**

Osteoporosis is a state of decreased bone mass. In normal females, maximal bone density is reached between the mid 20's and mid 40's. After this, there is a natural, gradual loss of bone mass. Low estrogen levels can cause this loss of bone mass to occur much too early. Athletes in whom this has occurred are at greater risk for stress fractures. Over the long term, they may also be more likely to fracture their hips, vertebrae (bones in the spine) and wrists. It is important to diagnose osteoporosis as early as possible since it's not easily reversible once the process has begun.

**What can be done about menstrual problems in athletes?**

If you fall into any of these categories of menstrual dysfunction listed above, you should consult with your physician. Sometimes, correcting nutritional shortcomings and perhaps changing your training regimen can correct these problems. Your physician may wish to do some tests to evaluate you for this condition.

*Prepared by the U.S. Olympic Committee Sports Medicine Division and the International Center for Sports Nutrition.  
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# *SUCCESSFUL FORMULA FOR GAINING MUSCLE MASS*



*Sports Medicine  
Division*

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Adding muscle mass is hard work. To get the most benefit from your hard work, you need to do three things: train right, get enough rest and eat right.

## **Follow a Good Training Program**

Muscle growth results from progressive resistance training. The resistance program for building muscle generally includes two to four sets of 8-12 repetitions. To prevent injuries and maximize your efforts, practice safe and correct lifting techniques. Guidance by a professional trained in strength and conditioning can help.

## **Get Enough Sleep**

Muscles tend to “grow” during rest, and especially during sleep. A hormone in your body that spurs muscle growth, called growth hormone, is highest when you sleep.

Getting enough sleep isn't easy. Saying no to going out, turning down extra hours at work, missing your favorite show, and doing homework early are the types of sacrifices you may have to make in order to get the rest you need.

Needs for sleep vary from person to person. Nine hours a night on weeknights and more on weekends is a good place to start. Signs that you are getting the right amount of sleep are that you fall asleep easily at night and wake up in the morning without an alarm clock.

## **Follow a Good Nutrition Program**

The first nutrition goal is to eat enough calories to promote muscle growth. To build about 1 pound of muscle in a week, most athletes need 300-400 extra calories a day. You may need slightly more or less.

To know if you are eating the right amount, monitor your weight and body composition. Gaining ½ to 1 pound per week is a sign that you are eating the right amount. Faster weight gain might mean that you are eating too much, causing excess fat gain. If you can, have your body composition checked each time you add 5-10 pounds. Your calorie intake is on target if the measurement shows that most or all of your weight gain is lean tissue.

The second nutrition goal is getting enough protein. Research shows athletes need more than non-athletes do. The US Olympic Committee's protein guideline for athletes in heavy training is 1.2 to 2.0 grams per kilogram of body weight per day. One kilogram equals 2.2 pounds so a 220-pound athlete weighs 100-kg. A 100-kg athlete would require 120 to 200 grams of protein per day. An athlete weighing 75-kg, or 165-pounds, would need 90 to 150 grams of protein per day.

Protein is important, but don't ignore carbohydrate. After intense strength training, eating carbohydrate to replenish the muscle glycogen may help you recover faster and train harder. Aim for a carbohydrate intake of at least 5 grams per kilogram. That translates to 2.3 grams per pound.

The attached menu shows an example of a well-balanced, high calorie diet that provides generous amounts of protein and carbohydrate.

### **Eating Habits that Work**

Here are some tried and true nutrition techniques to put on lean mass:

- Eat at least five times a day, such as three meals and two snacks. Eating this often takes some planning. Stock your backpack, locker or glove box with convenient, non-perishable snacks like bottled drinks, cereal bars, raisins, trail mix, dried fruit, peanut butter crackers, peanuts, muffins, bagels, canned or fresh fruits, sport bars, or liquid meals.
- Eat many different foods. It's easy to get burned out on eating extra calories if you limit yourself to just a few foods.
- Eat breakfast, even if it's a shake that you drink while you dress, and even if it means setting your alarm a few minutes earlier. On days when you can sleep in, set your alarm to get up to eat something, then go back to bed.
- Drink high calorie, nutrient-rich beverages like shakes, smoothies or commercial liquid meals.

### **The Successful Formula**

Your secret to success starts with a well-designed training program. Next in line is getting enough rest. Finally, you need a nutrition program to support your training and muscle growth. With these factors in place, you have the successful formula for gaining muscle mass.

## High Calorie High Protein Menu

Amount	Food Item	Calories	Protein (g)	Carbohydrate (g)	Fat (g)
<b>BREAKFAST</b>					
1 1/2 cups	Raisin Bran Cereal	300	9	70	2
1 1/2 cups	2% milk	182	12	18	7
1 cup	Orange juice	114	0	27	0
1	Banana	109	1	28	1
1 slice	Toast with margarine and honey	120	2	18	5
<b>SNACK</b>					
1 cup	Grapes	114	1	28	1
<b>LUNCH</b>					
1/2 10" pie	Thick crust pizza, cheese	489	24	76	11
1 oz	Mini carrots dipped in 2 tbsp. ranch dressing	181	0	4	18
16 oz.	Vanilla Milkshake	308	12	55	5
<b>SNACK</b>					
1	Peanut Butter and Jelly sandwich	380	13	51	15
1 1/2 cups	Chocolate Milk (2%)	268	13	39	8
<b>DINNER</b>					
7 oz	Round Steak	357	63	0	10
1/2 cup	Broccoli with cheese sauce	84	5	6	5
1 large	Baked potato with 2 tsp. margarine	213	3	34	8
1 slice	Toasted Garlic Bread	190	4	25	8
2 cups	2% milk	243	16	23	9
1 cup	Peaches in heavy syrup	194	1	52	0
<b>SNACK</b>					
1	Tuna Salad Sandwich	289	18	32	10
1 cup	Grape juice	154	1	38	0
<b>TOTAL</b>					
		4289	198	624	123
Percent of total calories		40	(18%)	(58%)	(26%)



# THE POWER OF PLACEBO

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Joe hated lifting weights. He began taking a supplement that the national champions used. Joe believed it helped him in the weight room. He had record gains during off-season conditioning. Laboratory analysis of the supplement showed it was only sand.

You have sprained your ankle. The pain is so severe that you become convinced something far more serious is wrong. Your physician, in whom you have complete confidence, thoroughly examines the sprain, takes an x-ray, assures you that it is only a sprain and that the pain should diminish. As you leave the office, the pain doesn't seem to be as bad.

These situations are explained by the placebo effect. A placebo can be anything from a behavior (wearing lucky socks), a substance (pill) or a suggestion (advice from an expert). It is something that you or I *believe* will help or harm us. Placebo is Latin for "I shall please."

Research has shown that a placebo can affect colds, asthma, pain, high blood pressure, heart disease, and even sports performance.

In the past, the word placebo had negative connotations-- quackery, deception, or lacking authenticity. Placebos were sugar pills prescribed by doctors to appease bothersome patients who weren't really sick. People thought that placebo meant that it wasn't real. However, it is now known that *placebos can actually cause physical changes*.

Placebos might affect athletic performance by influencing physical change directly, or simply by motivating the athlete to train harder and eat better. Placebo effect may explain part of the disagreement between what science says should happen and what really happens.

Athletes may swear by a supplement (for example, amino acids) or a practice (for example, nose strips for breathing better). Scientists would say those things have no scientific merit. The reality is, if the athlete strongly believes the supplement or practice works, if it is taken away, performance will drop. Why? Placebo effect—the athlete's beliefs were causing real physical changes.

The number of people who respond to a placebo varies greatly. Commonly, 1/3 of any group is thought to respond to placebo, but research has shown the response rate can vary from zero to 100%.

Placebo effect can help or hinder athletes. It is helpful when it aids performance and is without risk. It can be detrimental when too much importance is placed on a placebo instead of skill, talent, training and mental preparation.

Understanding that the placebo phenomenon is at work during every aspect of your training and competition can help you use the power of placebo to help, not hinder your performance.

Have you ever had a day when you skipped lunch, and then felt weak and lightheaded at practice or training? Have you ever run low on energy during a game, long match or competition because there was nothing around that you wanted to eat? While traveling to a competition, have you eaten food that you usually don't eat and ended up with a stomachache? If you answered yes to any of these, you already know that leaving nutrition to chance can hurt up your performance. Carrying food with you is one solution to these and other common nutrition problems. World-class athletes have long known that a backpack, gym bag or locker can make a great training table.

## **1. What To Pack**

Basically, the food has got to be sturdy, ready to eat, and not need refrigeration. We're not talking gourmet meals, but with some planning you can get the energy you need to perform your best.

## **2. Carbohydrate To Go**

Carbohydrates provide fuel for your muscles to work long and hard. High carbohydrate foods and beverages, like breads, muffins, crackers, rolls, doughnuts, bagels, candy, chips, cookies, granola bars, pretzels, popcorn, cookies, cereal, soft drinks, juice and so forth are a cinch to pack, and available from most vending machines and convenience shops. Most athletes don't have a problem getting enough of these foods.

But other carbohydrates, like fruits and vegetables, are sometimes more difficult to get unless you pack them. Fruits and vegetables are full of the vitamins and minerals that help your body recover from training, and help keep you from getting sick. Pack pieces (apples, pears, bananas, oranges, peaches), sealed containers (applesauce, fruit cocktail, peaches, pears, mandarin oranges, pineapple) or bags (grapes, carrots, celery) of fruits and vegetables in your backpack, bag or locker.

That was easy. The biggest stumbling block for most athletes is, what *else* to pack. After all, athletes cannot live on carbohydrates alone.

## **3. Packable Protein**

Make sure your portable training table contains food rich in protein. Protein helps repair and build your muscles to help you increase your strength when you train hard. Here are some protein-rich foods to pack.

- Peanut butter, on bread or as a dip for carrots or celery
- Canned tuna, chicken, salmon, sardines
- Beef jerky
- Sealed cheese sticks or cheese slices
- Liquid meals in a can or carton, like Boost or Ensure
- Peanuts, walnuts, almonds, cashews, and other nuts
- Sunflower seeds
- High protein sport bars

If you have a tote with an ice pack or access to a refrigerator, you can pack deli meats, yogurt, cottage cheese, hard-boiled eggs, and other refrigerated protein-rich foods. You can get sick from eating meat, dairy products and eggs that have been at room temperature for more than about two hours. It's not uncommon to eat spoiled food because it doesn't always have a bad taste or smell. Many a great athlete has had a performance ruined because of food poisoning. This can be avoided by keeping your cold foods cold.

#### **4. Beverages On The Move**

Don't overlook the obvious. Drinking a variety of beverages over the day helps keep you hydrated. Bottled water, sport drinks, juices and soft drinks are easy to carry, but milk can be more difficult to keep close at hand. If you have a tote with an ice pack, round out your beverage choices with white or chocolate milk.

#### **5. What About Days Of Competition**

On competition days, the nutrition goals are to eat enough to feel comfortable, and most importantly, to get enough fluid so that you are hydrated. Pack foods that you usually eat, that agree with you, and that you like. Your eating during a day of competition should be routine and predictable, and carrying food with you makes that a no-brainer.

One very important thing about carrying food with you is that you are in control of what and when you eat. For example, during games, long matches, or competitions, many athletes don't like to eat large precompetition meals, but instead like to graze, eating every few hours. One way to pack for this is to put your day's worth of food in individual bags and eat one item every hour or two between sets, games, innings, periods, quarters and so forth. For example, you might pack a handful of grapes in one bag. In another bag you might put a cup of cereal; in another, 4 graham crackers; in another, ½ peanut butter sandwich, and so forth.

#### **6. How Much**

A common mistake is not packing enough food. If your day is full from dawn til dusk (or later) and you need to carry food for the whole day, forget the little brown bag. In fact, you may need to dedicate an entire backpack or gym bag to food and drinks to make sure you get enough.

#### **7. Take Charge Of Your Eating**

When you meet your opponent, you want the advantage. Part of that advantage lies in not leaving your nutrition to chance. Turning your backpack, gym bag or locker into a training table puts you in control.

***H:Share/Nutrition/Backpack***

# STRUGGLING TO MAINTAIN WEIGHT

It's a common situation. You work hard during the off-season to put on lean mass, only to see it slip away during the season. You can probably think of many reasons for the weight loss – like “too busy to eat” or “not hungry.” No matter what your reasons are, losing weight boils down to one thing: you are consuming fewer calories than you burn.

There are no easy ways to get the calories you need. In fact, it is the hardest part of the season for many athletes. But if you are dedicated to it, and if you make eating as much of a commitment as any other part of your training, you can hang on to that hard-earned weight.

**Three basic habits will help you keep your weight up:**

Eat at least five times a day.

Eat high calorie foods.

Get enough sleep.

That short list makes it look easy, but you know it's not. Hectic schedules and other situations get in your way of following through with these habits. Identify and rank the following situations that get in your way.

**A** = **big problem**  
**B** = **medium problem**  
**C** = **not a problem**

**Situation:** **It's expensive to buy enough food**

**Solution:** It costs money to eat a high calorie diet, no doubt about it. If money is a big problem, you may have to sacrifice convenience. For example it's cheaper to blend your own shake than to buy a liquid supplement and a peanut butter sandwich costs a fraction of a sports bar. It can also be cheaper to eat at home than to eat out.

**Situation:** **Don't like to cook**

**Solution:** If you hate to cook, don't. There are plenty of ways to get the calories in without measuring, mixing or major clean up. No-muss, no-fuss options are cold cereal with milk, microwave meals/snacks, ice cream shakes, sandwiches or canned fruits, main dishes and soups.

**Situation:** **No food around when I need to eat**

**Solution:** The only way you'll be able to eat five or more times a day is to keep food handy all the time. Stock your cupboards, locker, bag and glove box with foods that won't spoil, break or melt. Ideas are nuts, dried fruit, canned or bottled beverages, bars, and boxed crackers.

**Situation:** **Don't like to eat breakfast**

**Solution:** Not being hungry is a common reason athletes give for skipping breakfast. If you aren't hungry for traditional breakfast fare, eat or drink whatever sounds good to you. Calories are the priority, and it doesn't matter if they come from cold burritos or hot pancakes. If it's the full feeling that you don't like, pass on the solids and try drinking juice or breakfast drinks. Liquids tend to empty from your stomach faster than solids. It might take some time to get used to eating first thing when you get up. Increase the amount gradually.

Besides not being hungry, not having time for breakfast is a common problem. Sparing a few minutes can be difficult, but here's something that might convince you to set the alarm a few minutes earlier. Sleep experts say you need nine hours of sleep a night. Nine hours from a 24-hour day leaves you 15 waking hours to eat five times. That translates to eating every three hours. If you wait several hours after waking to eat, you would have to eat about every two hours to get what you need - a deal-breaker for most busy athletes.

**Problem:** **No time to eat when balancing classes, working, studying, training and competing**

**Solution:** No time to eat really means you don't have food readily available. If you have a non-stop day ahead of you, pack a big bag of foods for the day that don't need to be refrigerated. Eating on the run takes resourcefulness, but isn't impossible.

**Problem:** **Not hungry - I feel nauseous after I eat**

**Solution:** One of the causes of no appetite and nausea is being dehydrated. Make sure you stay hydrated by drinking enough fluids to replace sweat losses. Weigh before and after practice to see how much water you lose from sweating. For each pound of sweat loss, you need to drink at least 1 pint (16 ounces) of fluid.

Maybe you've been told to drink a lot of water to stay hydrated. It's great advice; but other beverages also provide the water you need. Drinking a variety of calorie-containing beverages gives you the water AND the extra calories you need to maintain your weight. Did you know that milk and juice are about 89% water?

**Problem:** **I'm eating all I can, but it's still not enough**

**Solution:** One way to boost calories without eating more food is to add calories to foods and beverages you already consume. For example, fat adds calories to foods without adding bulk. Check to see if the foods you eat are low fat or fat free. If so, replacing them with foods that have fat can help increase your calorie intake.

Another tip to increase your calorie intake is eating several different foods at a meal or snack. Research shows that individuals will eat more if a variety of foods are set before them. For example, you'll likely eat more total calories if you have three things at a meal instead of just one thing. And avoid having the same food over and over again. You'll get "taste fatigue", a fancy term to mean you'll get bored with it. You may LOVE pizza, but research shows that if you had to eat it every day, you would eat less and less of it.

So much for trying to increase your input - how about **decreasing** your output. If you are a calorie-burning machine, one way to downshift is to make sure you get enough sleep. You burn fewer calories during sleep than any other time of day.

**Problem:** **I have no idea why I lose weight**

**Solution:** One way to hone in on what you could change is to write down what you eat and drink, and how much you sleep for three days. Check it to make sure you are eating frequently, eating high calorie foods, and getting enough sleep.

Maximizing your calorie intake and getting enough sleep are ways to tackle your struggle with weight loss. Once you've figured out what gets in your way of eating and sleeping enough, determine what changes will work for you. Most importantly, follow through with the changes. Persistence is a key to successfully maintaining weight.

# TRAVELER'S DIARRHEA



Sports Medicine  
Division

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## WHAT IS TRAVELER'S DIARRHEA (TD)?

TD is a condition that can cause pain in your stomach, gas, cramps, and frequent bowel movements (loose stools). Most of the cases are very mild and don't last very long. It can, however, interfere with your training and competition.

## WHAT CAUSES TD?

Bacteria, viruses and protozoa are the organisms that cause TD. This simply means that these organisms can contaminate or get into food and water and cause you to have a problem. Not washing your hands well can also be responsible for causing TD. Everything you touch, as well as shaking peoples' hands can be a source for spreading these organisms.

## HOW CAN I AVOID TD?

Since contaminated food and water can cause TD, you need to be very careful of what you eat and drink. Choose eating places that are well known or recommended by reliable people like hotel managers, coaches or people who have been to the area before. The U.S. Embassy is also a good place to get information about restaurants and water conditions. Also, whenever you can, avoid food sold on street corners or open air markets. Be very careful at buffets, especially outdoors. Make sure the foods served are kept cold.

You also need to be careful about the amount and type of food you eat while you are away. Try to keep your eating habits as close to normal as possible. If you don't usually eat fruit, don't overdo it with fruit when you travel. Eating too much of any food, even if it is a type of food you eat all the time, increases your chances of having diarrhea.

## WHAT TYPE OF FOODS SHOULD I EAT?

Cooked foods are the best choice because the cooking process kills most organisms that can cause diarrhea. Well cooked vegetables and meats that are well done are good choices. Milk and milk products can be a little risky because they require pasteurization and complete refrigeration. Milk products may be safe at first class hotels. Also, fruits that can be peeled, like oranges, grapefruit and bananas are safer because the part you eat is naturally protected by the skin. It is recommended that you peel the fruit yourself.

**Remember:**

- EAT FOODS YOU ARE USED TO
- DON'T OVEREAT
- EAT COOKED FOODS

**WHAT ABOUT THE WATER?**

Drink only bottled water, juices or soft drinks without ice cubes. This way you are sure nothing has been added to the drink. Don't use the ice, since ice may be from a contaminated source. Be careful not to swallow any water if you are swimming or showering. Swimming pools that are well chlorinated are probably safe.

**WHAT SHOULD I DO IF I THINK I HAVE TD?**

If you should develop diarrhea, stop eating solid foods until the gas, cramps and stomach pains go away. If available, drink large amounts of an electrolyte or fluid replacement drink with bottled water. Otherwise drink bottled water and juices. Carbonated drinks should be kept to a minimum. Your body is trying to cleanse itself, so don't take medications which might stop the diarrhea. If the diarrhea persists for more than 48 hours see a doctor.

# ***WATER: The Athlete's Most Important Nutrient***

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Forget about every other question that you have about nutrition until you've figured out how to stay hydrated. Being smart about water intake can separate good performance from great performance.

You are mostly water. In fact, if you took the water out of a 180-pound lean body, there would be about 55 pounds left. Because your muscles, your brain, your blood and sweat are mostly water, your body doesn't work like it should when it doesn't have enough water. You don't think as clearly, your endurance is compromised and your heart works harder.

When you're severely dehydrated, sweating stops and your body overheats. The result-fatigue, weakness, dizziness, and collapse, or worse. In fact, every year, deaths in young healthy athletes are linked to severe dehydration.

## **Sweat It Out**

Sometimes you don't even see sweat, like when you swim. But you sweat whenever your body heats up from working out. Sweat is your body's cooling system. Evaporation of sweat from your skin cools you down.

When you sweat, you lose water from your body and that water must be replaced. Replacing the water takes a plan.

### ***Dehydration:***

*A shortage of  
water in the body*

### **Don't Rely on Thirst**

You might be thinking, "What's the big deal? Won't drinking when I'm thirsty guarantee that I'm hydrated?" Surprisingly, no. During exercise, for reasons not totally understood, humans don't drink enough to prevent dehydration. You need to drink before you're thirsty and keep drinking after you no longer feel thirsty.

## **Drink It In**

Forget about the old rule of drinking 8 glasses per day. You probably need more than that on most days. Counting how many glasses you drink is only one way of keeping track of what you need.

A better way of making sure you're hydrated is to check your body weight before and after practice. For accuracy, weigh in minimal clothing if there's privacy, and afterwards, change out of the sweaty clothing before you weigh. The weight lost during practice or competition is not



fat, it's water loss.

One pint of water weighs one pound. To replace the water, drink one pint of fluid for every pound you lost. (One pint = 16 ounces = 500 ml = ½ liter). It is critical to replace the water loss as quickly as possible. Before your next workout, your weight should be back up to normal.

If you can't check your weight, pay attention to your body for signs of dehydration. Your mouth should not be dry. Your urine should be lemon-colored most of the time.

More than one episode of dark yellow urine is a warning sign that you don't have much reserve. (Exception: Vitamin supplements can turn your urine yellow-orange, even if you are hydrated.) Loss of appetite, stomachaches, and muscle cramps can be other warning signals of dehydration.

### **When?**

Drink before, during and after working out. Drink a pint or so of fluid a few hours before exercise. This will help make sure you are hydrated and give you enough time to urinate if you need to beforehand.

Keep drinking during exercise. And don't worry about getting too much fluid. If you're sweating, your body needs a constant supply. Your stomach might gurgle, but your body will absorb and use the fluid. Feeling sick and cramping have been blamed on too much water when in fact, stomachaches and muscle cramps are usually signs of not drinking enough fluid.

Drinking fluids after workouts is extremely important. Even when drinking fluids during a workout, many athletes become dehydrated. Athletes working out in the heat for several hours can lose 10 pounds. That's more than a gallon of water.

### **What Should I Drink?**

Your body needs water. But remember water comes in all sizes, shapes and colors. Milk is 90% water. Juice and most soft drinks are 89% water, sport drinks are 94% water, and even pizza is 50% water. And it all counts. Nearly everything that passes your lips provides water for your body, and in fact, research shows that most hydration happens at meals from the combination of food and beverages.

Research also shows that we tend to drink more if the fluid is flavored and if a variety of fluids are available.

### **Keys to Hydration**

When you have figured out how to stay hydrated, especially when you sweat heavily, you have accomplished the single most important performance-enhancing aspect of nutrition.

*Water is your most important nutrient.*

#### ***Hydration Tip:***

*Fill your water bottle  
and keep it in plain  
sight so you  
remember to drink it.*

## Water Content of Common Foods and Drinks

Item.....	Water content, approximate
Diet soft drinks, tea, coffee .....	99%
Sport drinks .....	94%
Milk .....	90%
Soup .....	90%
Soft drinks, soda pop, juice .....	89%
Yogurt .....	80%
Corn.....	76%
Baked potato .....	74%
Cooked rice .....	73%
Cooked pasta .....	66%
Taco.....	59%
Chicken .....	54%
Ground beef.....	53%
Pizza.....	50%

# *WHAT DO I EAT BEFORE I COMPETE?*

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Ask a dozen successful athletes what they eat before a competition and chances are you'll get a dozen different answers. The "secret" of what to eat and what not to eat before a competition is no secret at all. You must simply find a way of eating that works for you—and stick to it.

The precompetition meal used to hold the spotlight in terms of how it could enhance performance. Now we know that the foods you eat every day to support your training do far more to enhance your performance than the foods you eat right before you compete. From a nutrition standpoint, there is little you can do in the few hours before an event that will drastically improve your performance. Here's the best the precompetition meal can do for you: help you stay hydrated, top off your carbohydrate stores, provide blood glucose and leave you feeling physically and psychologically comfortable.

## **Considerations for Food Choices**

There are no hard and fast rules for all to follow when choosing the precompetition meal. One consideration is your sport or event. If you are preparing to compete in an aerobic endurance event, such as a marathon, a triathlon, distance cycling or cross-country skiing, it may help you to "top off" the energy stores in your body with a high carbohydrate meal. Athletes who participate in sports like soccer, distance swimming, volleyball, basketball and hockey may also benefit from including carbohydrate foods and drinks in the pre-event meal. For power and sprint athletes, like football players, sprinters, baseball and softball players, the primary purpose of the precompetition meal is to provide some of the fluid and energy you'll need to stay comfortable and hydrated during the event.

While carbohydrate foods like pastas are often considered the cornerstone of the precompetition meal, it is important to note that other foods can be included in the pre--event meal. In fact, a high carbohydrate meal like a dish of pasta leaves some athletes satisfied, but a high carbohydrate, low fat meal leaves others uncomfortably hungry before competition. Some athletes find they are more satisfied and more ready to compete after the more traditional "meat and potatoes" meal.

The precompetition meal can't make a superhuman out of a mere mortal, but it can have devastating negative effects if the meal gives you an upset stomach. Practical approaches to the precompetition meal can help you avoid unwanted side effects like cramps, gas and diarrhea.

## **Handling the Butterflies**

The adrenaline that flows when you are pumped before a game or a competition is a great performance booster, but these stress hormones can have a negative influence on your digestive tract. Nervous tension can have a definite effect on how well food digests. Some athletes feel nauseous, some get diarrhea. Knowing how your body reacts to precompetition jitters will influence your food choices. For example, if you get diarrhea, you may need to decrease fiber and spicy foods the day before and the day of competition. If you get nauseous, you may find that meal-replacement drinks, shakes, or smoothies digest better than solids.

## Keep it Simple

Two simple rules will help you avoid disastrous side-effects of precompetition eating:

1. Eat foods you like.
2. Eat the same kinds of foods you eat all the time.

The precompetition meal is not an experiment. It should be like a pair of old shoes...familiar and comfortable. Choose foods that you like, foods that you normally eat and foods that you tolerate, even when you're stressed. The day of competition is not the time to try a new food or beverage. This can be challenging when you're on the road, so plan ahead and make sure you'll have the foods you like available, even if it means packing your own cooler.

What, where, and when you eat the precompetition meal should be fairly consistent. Successful athletes often make precompetition eating part of the ritual of mental and physical preparation that occurs before the event.

If you have not yet determined your game plan for precompetition eating, start by writing down what you eat before and how you feel after several competitions. Make changes until you have figured out what works for you.

The precompetition meal can hinder your performance if you eat something that doesn't agree with you. It can help your performance if it leaves you physically ready and mentally prepared. These psychological and the physical aspects of the precompetition meal are important, but will never outweigh the long-term nutritional, physical and mental preparation required for top performance.

It's often said that athletes need a certain percentage of dietary fat, carbohydrates and protein. But there is a problem with that approach. The problem is this – it assumes that we all need the same percentages. It assumes that we are all genetically and physically the same; that we all participate in the same sport, have identical training programs, and identical lifestyles.

Of course we are each unique. Using percentages is not individualized enough to meet the needs of different athletes.

How can you find a diet that works for you **and** meets your needs? Read on.

### **Protein**

Do athletes need more protein than couch potatoes? Yes. Research shows that 1.5 gm protein per kilogram body weight (about 0.68 gm/pound) provides adequate protein for most athletes.

About twice the level recommended for non-athletes, this amount of protein takes into account the additional protein needed for long workouts and resistance training. Table 1 shows other factors that increase an athlete's protein needs. Table 2 gives you an example of how you can calculate your daily protein needs.

**Table 1: Factors Increasing Athletes Protein Needs:**

- Eating no animal protein (vegan diet)
- Low calorie intake
- Growing taller

**Table 2: Determining Daily Protein Requirements**

To get your estimated daily protein requirement:  
Multiply your body weight (in pounds) by 0.68 grams

$$\text{_____} \times 0.68 = \text{_____} \text{ grams}$$

This is the average amount of protein you should eat each day. Meeting this number exactly every day is not necessary. Some days will be higher, and some lower.

### **Carbohydrates**

Have you heard about “glycemic index”? Based on this grading system, carbohydrate foods are classified as high glycemic index if they make your blood sugar increase quickly, and as low glycemic index if they make

your blood sugar increase slowly. It has been proposed that everybody should eat mostly low glycemic index

foods, like dried beans, fresh fruits and veggies and stay away from high glycemic foods like pasta, bagels, potatoes, breakfast cereal and bread. What gives?

The effect food has on your blood sugar can be important if you have diabetes. But for athletes who don't have diabetes, it is less important.

The most important thing for athletes is to get the right **amount** of carbohydrate, from many foods, to support their individual training. Both high glycemic index and low glycemic index carbohydrates provide energy for high intensity workouts.

How much carbohydrate do you need? There's no exact number of grams or no "magic" percent, but there are some guidelines:

**Moderate Amount:** 5 grams per kilogram body weight per day (2.3 grams per pound).

If your workouts are plyometrics, drills, sprints, weight lifting or skill training, your carbohydrate needs are moderate. Also, if your workouts include less than an hour of aerobic training (running or biking), you have moderate carbohydrate needs.

**High Amount:** 8 to 10 grams per kilogram body weight per day (about 3.6 to 4.5 grams per pound).

You have high carbohydrate requirements if you are running, biking, swimming, skiing, climbing, rowing or doing other aerobic workouts for more than 60 minutes on most days.

#### Another Example:

Let's say you run about two miles per day, work on fundamentals in practice, and lift weights four days per week. You would fall in the moderate category, needing about five grams carbohydrate per kg or 2.3 grams per pound.

**Multiply your weight in pounds x 2.3 grams**

\_\_\_\_\_ pounds x 2.3 = \_\_\_\_\_ grams carbohydrate per day.

The attached food list gives carbohydrate and protein content for common foods.

So what would happen if you ate more protein than needed and less carbohydrate? The body is very adaptable. Most likely, some of the protein would be burned for energy. If there were still extra protein hanging around that could not be used for muscle growth and repair, it would be converted to fat.

#### **Conclusion**

Running out of steam before practice is over? Check your carbohydrate intake. Not making strides in the weight room? Check to see if protein is in short supply.

**Forget percentages.** Knowing how many grams of protein and carbohydrate you need based on your body weight and training is a fundamental step toward reaching your peak performance.

## Protein/Carbohydrate Guide

### Protein

These foods – in the amounts shown – have 20-25 grams of protein:

- Hamburger – 1 small
- Steak – 3 oz
- Pork chop – 1 small
- Tuna – 3 oz
- Turkey – 3 oz
- Chicken – ½ breast

These foods – in the amounts shown – have 7-8 grams of protein:

- Yogurt – 6 oz
- Nuts – 1 oz
- Sunflower seeds – 1 oz
- Peanut butter – 2 tablespoons
- Legumes (pinto beans, kidney beans, etc.) – ½ cup
- Egg – 1 large
- Milk – 1 cup
- Cheese – 1 oz

These foods – in the amounts shown – have 2-3 grams of protein:

- Bread – 1 slice
- Bun – ½
- Rice – 1/3 cup
- Ready-to-eat cereal – ¾ cup
- Bagel – ½ (small)
- Pasta – ½ cup
- Potato – 1 medium
- Vegetables – ½ cup

### Carbohydrate

These foods – in the amounts shown – have 15 grams of carbohydrate

- Bread – 1 slice
- Bagel – ½
- Tortilla – 1
- Waffle – small
- Breakfast cereal – ¾ cup
- Corn or peas – ½ cup
- Non-starchy vegetables – 1 ½ cups
- Popcorn – 3 cups
- Chips – 15
- Pinto, kidney or white beans – ½ cup
- Yogurt, fruit-flavored – 3 oz
- Cantaloupe, honeydew, or watermelon – 1 cup
- Apple, banana, orange or peach – 1 small
- Crackers – 6
- French fries – 16-25
- Taco shell – 2
- Small muffin
- Cookies – 2 small
- Small potato
- Fruit, canned – ½ cup
- Berries – 1 cup
- Juice – ½ cup
- Milk – 1 cup