

The Ultimate Athlete Success Guide

PERFORMANCE NUTRITION

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PERFORMANCE NUTRITION GUIDE

Nutrition is an area where you can get a huge advantage on your competition if you're willing to follow the principles laid out for you in this guide. Many people these days put more thought into the kind of gas they put in their cars than the kind of fuel they put in their bodies, but you're an athlete and you have to be different.

There is no doubt that the foods you choose to put in your body can have a dramatic impact on how you perform on the court but even more than that, the foods you eat affect not just how you perform but how you look and how you feel.

Most athletes your age don't pay a whole lot of attention to nutrition. They eat fast food instead of health food and just look for the most convenient place to eat between games. This is a huge mistake and one you cannot make if you want to be the best.

Eating for performance does take extra work. It takes planning and dedication but eating healthy doesn't have to mean eating the same old bland food over and over again. Today more and more companies are offering healthy foods that also taste great and are convenient and easy to make. You don't have to sacrifice taste for performance you simply have to plan ahead and pack and prepare foods that are healthy and taste great.

Use this guide to learn how to put the power of nutrition to work for you. You'll find lists of energy packed foods along with the key points you need to know to maximize your performance. Don't let the media advertisements for weight loss products influence how you eat. You are an athlete, you need to eat to perform your best and you need to make smart food choices, you can't eat the same as someone who is overweight and on a diet.

Eating right can be the difference between winning and losing and is your chance to get the advantage on your competition. If you are willing to make the right food choices and follow the principles laid out for you in this guide I guarantee you will feel the difference on the court and have the energy to perform your best when you need it most while others get tired and make mistakes.

Success Tip: Always Keep Learning

While this guide on nutrition will teach you all the nutrition basics you need to know to maximize your performance on the court, there is always more to learn. There are many good books on the subject you can read to learn more about sports nutrition but I highly recommend picking up a copy of Dr. Susan Kleiner's book "Power Eating" available on amazon.com or at your local bookstore. It's an excellent resource filled with recipes and nutrition tips for success.

FOOD IS FUEL

Start with the basics

As a volleyball athlete, you have the power to improve your performance through the foods you eat. This manual will help guide you in making smart nutrition choices throughout the club season. The stress you endure through the long season and school increases your nutrition needs. You must have plenty of the right food at the right times to compete at your highest level and play up to your potential. If you follow these simple nutrition guidelines, you will improve your performance on the court and have the energy you need to play your best.

EAT at the right times

Maximize your energy stores and your performance by taking in carbohydrate and protein foods every 3-4 hours during the day (see RECOVERY for more information).

EAT the right foods

Carbohydrates are your major source of fuel. They fuel your muscles for performance. Athletes need high quality carbohydrates throughout the day to maintain energy stores. Without plenty of carbohydrates, you will feel fatigued and will not be able to perform at your best on the field or in the classroom.

EAT high quality protein

Consume protein throughout the day like chicken, fish, turkey, eggs, tofu, low-fat dairy, beans, and lean beef (top round, sirloin, and filet).

DRINK plenty of fluids

Dehydration causes fatigue, cramping, and a decrease in performance. Drink water, milk, juice and sports drinks at regular intervals throughout the day.

LIMIT fat intake

Fat takes a long time to break down and be converted to energy. Moderating your fat intake (especially around training and competing times) will help you perform better.

Make WEIGHT CHANGES in the off season

Eating too few calories can decrease your metabolism, decrease your strength, and be detrimental to your performance. If you need to lose body fat, consult your sports nutritionist (or this manual) for an eating plan to suit your needs.

Be AWARE

The media presents a picture that the “average American” needs to cut back on food/carbs/fat. You are not “average” and as an athlete your needs are unique and exceed the needs of other non-athletes. Don’t follow the masses, take care of your needs as a student athlete and commit to fueling your body with proper nutrition!

ENERGY REQUIREMENTS: It's all about calories

How many calories do I need?

Calorie needs vary from athlete to athlete and from day to day. Males may need more calories than women. You may have a higher metabolism and that increases your needs. Calculating a range of calories for yourself can be helpful in meeting your goals. Caloric needs should be met with high-energy, nutrient-dense foods. An athlete engaging in high-intensity activity (volleyball, basketball, swimming, running etc.) needs 3,000-6000 more calories per day to maintain weight. A simple estimation of calorie needs for an athlete is as follows:

Training	Calories (Calories/lb)	Carbohydrates (Grams/lb)	Proteins (Grams/lb)	Fats
Mild	12-14	2.0-3.0	.45	Balance of Energy for All training levels
Moderate	15-17	2.0-3.0	.5-.75	
Heavy	18-24	3.0-4.5	.7-.8	
Very Heavy	24-29	4.5-5.5	.8-.9	

Example:

A 160 lb female athlete training during the volleyball season (heavy) needs how many calories each day?

$$160 \text{ lb} \times 20 \text{ calories/lb} = 3200 \text{ kcal each day}$$

This athlete needs to eat 3200 kcal each day to keep her body weight at 160 lbs. If she wants to gain more lean muscle mass, she must eat more food (approx. 500 calories extra). If she wants to lose body fat, she must eat less food (approx. 250-500 calories less).

Use the chart above to determine how many calories you should be eating each day. Remember that the more active you are the more calories you will need to eat to maximize your performance. On days when you practice and/or workout you should use the "heavy" calorie numbers. On tournament weekends when you will be playing several games over the weekend you should use the "very heavy" numbers to determine your calorie needs.

To use the formula simply multiply your bodyweight by the numbers in each column to determine how many calories as well as grams of proteins, carbs, and fats. Remember this is a rough estimate but try not to ever let yourself eat less than the recommended calories if you want to play your best.

CARBOHYDRATES: The energy provider

What are they for?

Carbs are an athlete's primary source of energy. They provide working muscles the energy they need to jump, run, lift and play volleyball. High performance athletes must make sure they are taking in plenty of carbohydrates. Carbohydrates are stored in the muscle and the liver as glycogen; like an internal storage locker for energy! Your glycogen stores will be depleted during workouts, practices, and games and they **must be replenished**. If you forget to replace your glycogen stores, you will not have enough energy the next day and you will not play your best in the next game.

Choose these HIGH CARB FOODS

- Whole Grains:** oatmeal, 100% whole grain breads, whole wheat or corn tortillas, whole wheat bagels and English muffins, pasta, brown rice, low-sugar cereals (All-bran, Cheerios, Total, Kashi, Wheat Chex, Wheaties, Raisin Bran, Smart Start, Basic 4, Blueberry Morning)
- Fruits:** (fresh and canned in own juice) and 100% fruit juice
- Vegetables:** broccoli, spinach, carrots, green beans, tomatoes, asparagus, bell peppers, cauliflower, celery, eggplant, mushrooms, onions, winter squash, zucchini, lettuce (romaine, green or red leaf), etc.
- Starchy vegetables:** red or sweet potatoes, yams, corn, green peas, and beans (refried, kidney, black, pinto, chili, etc.)
- Dairy:** yogurt, low fat cheeses (like mozzarella cheese sticks) 1%, nonfat or skim white or chocolate milk, cottage cheese, pudding

Why limit "refined/processed" foods?

Processing removes a lot of the nutrition (fiber, vitamins and minerals) from food. High sugar foods provide little nutrition and can cause extreme highs and lows in blood sugar. Extreme highs and lows will be detrimental to performance. High sugar foods also cause cavities, and no one has time (or money) for cavities!

Advanced Info

Carbohydrate intake should be from **2.0-5.0 g/pound** body weight. **2.0-3.5 g/lb** for athletes who train less than 1 hour daily at a moderate intensity. **3.5-5.5 g/lb** for athletes who train hard daily and need to maximize daily glycogen recovery.

PROTEINS:

The muscle re-builder

Proteins help re-build and repair the body's tissues. Muscle tissue depends on protein to repair the damage done during exercise.

High quality, lean choices of meat/protein are listed below. Making lean choices will provide you with the ingredients you need for re-building your muscle. Each ounce of meat will provide you with approximately 7 grams of protein (ex. 4 ounces of chicken breast = 28 grams of protein).

Choose these LEAN PROTEIN SOURCES

- Beef:** Ground Sirloin, Filet, Round, and Lean Ground Beef (96% lean)
- Fish:** all fish (not fried)
- Chicken/Turkey:** skinless ~ (grilled, baked, broiled)
- Pork:** Center Cut, Lean
- Eggs:** 1 yolk/day plus egg whites/egg substitutes
- Veggie Burgers:** Boca/Morningstar Farms, GardenBurger
- Sausage/Hot Dogs:** Use only low-fat versions)
- Deli Meats:** Lean Turkey, Ham, or Roast Beef
- Soy Products:** Tofu, soy milk, edamame (soy beans)
- Dairy:** 2% sliced cheese (Kraft), parmesan cheese, low fat cream cheese, part skim mozzarella, skim or low-fat milk, yogurt

Limit or Avoid Medium and High Fat Sources of Meat/Protein:

Pork/Sausage/Hot Dogs: ground pork, spareribs, regular hot dogs

Fish: Any fish that is fried

Cheese: American, Blue, Swiss, mozzarella, and most deli cheese

Other: Luncheon style meats like bologna, pastrami, salami, and pepperoni

Sausage: Polish, Italian smoked

Other Beef: T-bone, ribeye, porterhouse, ground beef 85% or 80% lean, rib roast

FAT:

Essential, but in moderation

What is FAT for?

Fat performs a variety of functions in the body. It is an energy source, transports fat soluble vitamins, protects our organs and also provides an ingredient to make hormones. A performance enhancing diet should contain 15-30% of total calorie intake. In grams, just multiply your caloric intake by 15-30% and divide by 9.

Example: 4000 kcal diet X 25% (.25) = 1000 calories / 9 cal/g = 110g/day

Not all fats are created equal...

Limit/Avoid		Include a little	Include the most	
Saturated Fat	Hydrogenated Fat (trans fat)	Poly-Unsaturated Fat	Omega-3 fatty acids	Monounsaturated Fat
Animal foods such as meat & poultry, whole & reduced-fat dairy products, and butter. Coconut, palm oil	Chips Cookies Most snack foods and commercially baked goods made with “partially hydrogenated oil” Margarine	Corn oil Safflower oil Soybean oil Sunflower oil	Flaxseed Fatty fish • Salmon, • Trout, • Halibut • Albacore • Tuna) Walnuts Tofu Soy nuts	Canola Olive oil Olives Peanut oil Avocados Almonds Macadamia nuts Pistachio nuts Cashews Sunflower seeds

Reminders about fat intake:

- Remember that saturated fat (from animals), hydrogenated fat (trans-fats), coconut, and palm oils increase risk of cardiovascular disease.
- Monounsaturated, omega-3 fatty acids, and polyunsaturated fats can decrease risk of cardiovascular disease.
- Try to trim all fat and/or skin from beef and chicken breast before cooking
- Limit or avoid foods that are fried, creamy salad dressings, mayonnaise, gravy, butter and margarine.
- Most fast food items are extremely high in fat, so make healthy choices (see fast food page)

RECOVERY NUTRITION

To recover from the high demands of strenuous exercise/training/playing, you should **refuel your muscles with high carbohydrate foods within 15-30 minutes of exercise**. Remember, carbohydrates are the gasoline for your body. They keep your body's fuel tank FULL. You will recover faster and minimize fatigue. Make sure to plan ahead to have the right foods available when you need them.

Common refueling mistakes:

- **Greasy, fatty foods** ~ donuts, burgers, pastries, nachos, fries, chips, and other high fat choices **WILL NOT** refuel your body and can inhibit performance. Many also lack nutrition.
- **Too much PROTEIN** ~ by filling up on steak, chicken, rather than adding potato, pasta, rice, and whole wheat bread at dinner time. Remember, protein can help with recovery, but will not help restore glycogen (your gas tank) if quality carbohydrate foods are not available.
- **TOO FEW Calories** ~ this is very common amongst weight conscious athletes. They may mistakenly believe carbohydrates are “fattening” and may refuel with protein rich cottage cheese, tuna, turkey and fish. The rest of the diet (salads and vegetables) offers too few carbohydrates to replace depleted glycogen stores. Performance will suffer.

An optimal recovery diet is especially important if you train or compete more than once a day. The following tips can help you design an effective recovery diet into both your daily training program and after game/event meals.

MAXIMIZE YOUR HIGH PERFORMANCE RECOVERY:

- Eat a high carb snack within 15-30 minutes of training/playing
- Follow up with a high carbohydrate meal within 1 hour of training
- High Performance combination recovery meals/snacks
 - Bowl of cereal, low fat milk, and fruit (breakfast)
 - 2 slices of wheat bread and fruit
 - Pasta, rice, potato, or bread with protein at dinner
 - Yogurt and Fruit or Pretzels (small bag)
 - Energy Bar
 - Smoothie

Determining Your Carbohydrate Needs after Exercise

You must eat your required amount to fully replace carbohydrate stores.

Body Weight	Carbs (grams)
120 lb	55
140 lb	64
160 lb	73

Common Carbohydrate Foods for Recovery

Food	Amount	CHO (g)
Rice, cooked	1 cup	50
Pasta, cooked	1 cup	34
Bagel	1	50
English muffin	1	30
Oatmeal, regular	1 cup	24
Raisin Bran	1 cup	42
Grape nuts	1 cup	89
Low-fat granola cereal	1 cup	85
Whole-wheat bread	1 slice	12
Granola bar (NV)	1 pkg	30
Fig Newton	1	11
Kashi Go Lean	¾ cup	30
Raisins, seedless	½ cup	59
Grapes	1 cup	37
Banana	1	30
Potato, mashed	1 cup	35
Corn	1 cup	42
Baked beans	1 cup	52
Milk, skim or 1%	1 cup	12
Frozen yogurt, low fat	1 cup	34
Pudding, chocolate	1 cup	60
Low-fat vanilla shake	1 serving	72
Gatorade	8 oz	14
Cranberry juice box	1 cup	36
Power bar	1 (63g)	41
Crunchy granola bar	1 (46g)	16
Chewy granola bar	1 (28g)	21
Builder Bar	1	30
Cliff Bar	1	52
Harvest Bar	1	45
Met-Rx High Protein	1	57
Protein Plus Power Bar	1	40

**** Food in bold letters can be packed in your bag, no excuses!**

FLUID REPLACEMENT

Fluid replacement is one of the most important factors affecting exercise performance. While many coaches, trainers, and athletes of today are becoming more knowledgeable about the roles that fluid plays, it is often an overlooked component of competition.

Sweating is the primary way in which the body cools itself during exercise. When more fluid is lost through sweating than is replaced by drinking, we become dehydrated.

Why not rely on thirst alone?

Unfortunately, for athletes, your body's thirst mechanism can be an unreliable signal to drink because exercise can blunt thirst. Plan to drink before you are thirsty. By the time your brain signals thirst, you may have lost 1% of your body weight, which is the equivalent of 1½ pounds of sweat for a 150 lb. person. This 1% loss corresponds with the need for your heart to beat an additional three to five times per minute. A 2% loss can significantly hurt your performance, and can lead to heat exhaustion or eventually heat stroke. To be safe, it's smart to always drink enough to quench your thirst, plus a little more.

Avoiding Dehydration

Ideally, pre- and post-exercise body weights should be the same, indicating that intake has equaled output. This is rarely the case, however. Remember that weight loss during exercise represents **fluid loss and not fat loss**; the following recommendations should be followed to minimize dehydration:

- ◆ Weigh yourself before and after exercise. For every 1 lb lost, drink 2 cups (16 oz) of fluid.
- ◆ Always drink fluids before, during, and after exercise.

How Much Fluid	When
Up to 3 cups (24 oz) of fluid	2 hours before competition or practice
2 cups (16 oz), 15-30 minutes pregame	Pre-Game
1 cup (8 oz) every 15-20 minutes	During Event
2 cups (16 oz) of for every 1 lb of lost body weight	Post-Game
½ your body weight in ounces (example: if 160 lbs., drink 80 oz. water/day)	Daily

ON THE ROAD:

Performance nutrition while traveling

Travel can be tough on athletes. It can be difficult when you're on the go for tournaments and games far away from home, but how you eat on the road can dramatically affect your performance on the court. With some planning and dedication you can make your travel as healthy as when you are home.

Remember: Eating healthy will enhance your performance. Be a WINNER!!

TIPS for EATING ON THE ROAD:

- ✓ **Keep WATER with you at all times.** Plane and bus travel tends to dehydrate our bodies. Dehydration = poor performance. Carry your water bottle and fill it up.
- ✓ **USE CAUTION if carbo-loading before your competition.** It may make you feel heavier due to the water that is stored with glucose (carb) in the muscle. For most sports, carb loading will not help. Eat your normal high carbohydrate diet (plenty of grains, fruits and veggies). Remember that BIG pasta/pizza meals can be high in fat and that will not help your sport. If you want to splurge, do it after your big WIN!
- ✓ **Make HEALTHY choices.** Choose baked or grilled foods not fried, limit sweets (*notice* limit not eliminate), and avoid heavy cream sauces.
- ✓ **EAT FREQUENTLY throughout the day.** Eating every 2-3 hours will keep you fueled! Small high-energy snacks such as those listed below will give you the energy you need to play at the top of your game and are quick and easy to make and take you with you when you're on the run.
- ✓ **Stay on SCHEDULE.** Following your normal routine will help you perform at your peak. Eat, drink and sleep according to your normal routine.
- ✓ **EAT a high carb, low fat BREAKFAST.** Remember to fuel your body in the morning with plenty of high quality foods that will digest easy.

Following the tips above will help make sure your body is able to perform at its best when you need it to. Although it's easy to consume sweets and junk food when you're out on the road, you have to give yourself every advantage possible and not let taste and convenience get in the way of your performance. Stick to the guidelines above and you'll have a guaranteed edge on your competition and play your best all game and all tournament long.

PACK YOUR SNACKS

Simple and quick snacks to take with you

Eating frequently throughout the day is the best way to rev up your metabolism, as well as stay fueled for competition. Snacking between meals can increase your energy levels and improve performance.

Add these snacks to your shopping list and take them with you on the road to practice and games. They can also make quick and convenient snacks between games at tournaments.

- Sandwich:** lean turkey, ham, roast beef, or chicken breast on 2 slices of whole grain bread. Light on mayo and mustard.
- Peanut butter and jelly** (use all fruit jelly) on whole wheat bread
- Energy Bars:** Cliff Bar, Builder Bar, Balance, or Zone Bar
- Whole wheat crackers** (i.e. Multi-grain wheat thins, Kashi Crackers)
- Beef jerky**– dried, in bags – about ¼ bag at a time
- Nuts**– ~15 cashews, almonds, peanuts, pistachios yields ~100 calories
- Small cup of cottage cheese**– can add fresh fruit and/or sunflower seeds
- Fresh fruit, with a source of protein and/or fat**- nuts, cheese, peanut butter
- Baked chips with salsa**– top with a little 2% shredded cheddar for more protein
- Tortilla Roll-Up**- on whole wheat tortilla with turkey, ham, roast beef, chicken
- Fun treats** – Small bag peanut M&M’s, or 2 Fun Size candy bars
- “No Sugar Added” Applesauce** (Mott’s or Treetop) with 1Tbl of Peanut Butter
- Yogurt** (ex. Blue Bunny Light or Carb Freedom) with 1Tbl of Peanut Butter
- Boost, Ensure, Carnation Instant Breakfast Drink**
- Hummus and veggies**

HOMEMADE ENERGY BARS:

3 cups natural peanut butter
3tbl honey
1 packet non-fat dry milk
¼ raw sunflower seeds
½ cup dried fruit
Mix all together, spread evenly
Cut into even squares

HIGH PERFORMANCE SMOOTHIE:

8-12oz of Skim or 1% Milk or Yogurt
2 T of peanut butter or scoop protein
Frozen Fruit (Banana or strawberries)
Blend with Ice and serve.

RESTAURANT GUIDE

Common fast food meals contain 1200-2200 calories per meal. Making smart selections when eating at your favorite fast food restaurant can help you stay lean, fast and strong. Check before you go to see what local fast food restaurants might be in the area if you know you're going to be in a new city and make sure you know ahead of time what foods are smart choices for each restaurant as listed below. In WA all fast food restaurants are required to list calories and fat so ask to see that at any new restaurant.

Be sure to make smart substitutions to avoid eating a high calorie/fat meal. Choose a salad with light or low fat dressing, or order only small fries. Drink Water or Unsweetened Tea with meals.

Burger King	Hamburger no mayo BK Broiler- no special sauce Chicken Whopper Jr. – no mayo Whopper Jr. – no mayo Chicken Caesar or Garden Salad Light or fat-free Dressing
McDonald's	Small Hamburger Grilled Chicken Sandwich-no mayo Grilled Chicken Salad-fat free dressing Egg McMuffin Caesar Salad Chef Salad
Taco Bell	Bean Burrito Regular Soft Taco/Chicken Soft Taco
Wendy's	Chili – larger or small Grilled Chicken Sandwich- no mayo Grilled Chicken Salad Spring Mix Salad/Mandarin Chix Salad Hamburger- no mayo
Subway	All low fat subs Light mayo, baked chips, with water Add all vegetables
Taco Del Mar	Naked Burrito Soft Tacos Black or Whole Beans
Azteca	Chicken (Pollo) or Beef (Carne) Asada Whole (not refried) beans Chicken Enchiladas Fajitas (hold the sour cream & cheese)

SUPPLEMENTS

Supplements for athletes have become a hot topic in recent years in the news media and many student athletes have come to believe they need to latest and greatest supplements if they want to improve their strength, power, and performance. The truth is that no supplement can take the place of a high quality diet and most young student athletes will play their best simply by eating enough of the right foods at the right times.

There are a few supplements that can help make sure you get the nutrients you need, but remember to focus on following all the principles in this guide first and foremost and don't forget that supplements are not meant to replace the food you eat, they are only meant to help you get all the nutrients your body needs as an athlete.

Multivitamin/Multimineral

Even if you are eating a wide range of foods each day, it's still possible to be lacking in certain vitamins and/or minerals. Taking a high quality multivitamin/multimineral is an insurance policy and helps protect your body against the possibility of nutritional deficiencies. Be wary of low quality cheap multivitamins as they are not absorbed very well and thus aren't utilized by the body properly.

Whey Protein Powder

Getting enough protein through your food alone can be difficult with you hectic school and volleyball schedule. If you are able to eat all the quality whole foods your body needs you can get by without added protein, but many athletes have a hard time eating quality protein throughout the day. Use the chart on page 4 to determine your protein needs. Whey protein powder provides several health benefits and makes it quick and easy to ensure your body gets the daily protein it needs. A daily power shake including protein and fruits is a delicious and nutritious way to get in quality calories. There are several high quality protein powders that also taste great on the market today to choose from. Check online to find literally thousands of quick and easy to make high performance smoothies you can make in less than 5 minutes.

Omega 3s

Found abundantly in fish, omega 3 fatty acids have become an important area of research in recent years because of their wide ranging health benefits. Two specific omega 3s known as EPA and DHA have been shown in studies to lower cardiovascular risk factors, improve mood, reduce joint pain, increase metabolism, and more. Unfortunately, unless you're eating 5-7 servings of fish per week, it can be difficult to get enough omega 3s in your diet. Supplementing with high quality fish oil is an important and easy way to increase your intake of omega 3 fatty acids. For volleyball players getting enough fish in their diet or adding extra fish oil can help prevent inflammatory problems like tendonitis. Make sure to only use high quality brands like Nordic Naturals or Carlsons.

Vitamin C

A powerful antioxidant, Vitamin C has been extensively studied and helps protect the body from the dangers of free radicals. Antioxidants are vital for overall health and wellness as well as slowing the aging process. A diet rich in a variety of fruits and vegetables each day including citrus fruits is your best way to ensure you are getting enough antioxidants. If you aren't eating enough fruits and vegetables, taking an additional 500-1000mg per day of supplement Vitamin C can help make sure you are getting your daily requirements of this important vitamin.

Sports drinks

Sports drinks are also effective supplements for athletes. Using fluid -electrolyte replacers during workouts will assist with hydration and maintaining energy levels throughout an intense workout. High-carbohydrate beverages and nutritional shakes are convenient, portable ways of consuming extra carbohydrates or as snacks before and after workouts or competitions.

Vitamin E

There is a lot of excitement in sports research about antioxidants – beta carotene, vitamin C, vitamin E, and the minerals selenium, copper, zinc, and manganese. Antioxidants help fight free radicals, chemicals produced naturally by the body that can cause irreversible damage to cells. Free radicals can leave the body vulnerable to advanced aging, cancer, cardiovascular disease, and degenerative diseases like arthritis. Ironically, among the many factors that increase free radical production, exercise is one

Antioxidants may reduce exercise-related free radical damage. By far the most promising studies on antioxidants and exercise have centered on vitamin E. But because the primary source of vitamin E in our diets is vegetable oils, nuts, seeds, and wheat germ, anyone following a low fat diet naturally has a low intake of vitamin E.

A supplement of 100 to 400 IUs of natural vitamin E per day (d-alpha tocopherol) is adequate to cover any increased needs due to intensive exercise. As for the other important antioxidants mentioned above, a plant-based diet abundant in grains, fruits and vegetables will do the trick.

Iron

The major role of iron is to combine with protein to make hemoglobin, the protein that carries oxygen in the blood from the lungs to the tissues. Iron is also necessary for the formation of myoglobin, found only in muscle tissue. Myoglobin transports oxygen to muscle cells to be used in the chemical reaction that makes muscles contract. When iron is in short supply, tissues become starved for oxygen. Athletes tire easily and recover more slowly. The best dietary sources of iron are lean meats, green leafy vegetables, and fortified grains and cereals. Because many athletes trying to maintain body weight eat inadequate amounts of iron-rich foods, supplementing the diet with 15 mg of iron daily may be beneficial.

Calcium

Calcium is responsible for conducting nerve impulses, helping muscles contract, and moving nutrients into and out of cells. 99% of the body's calcium is stored in the bones and teeth. When inadequate amounts of calcium are available to support these functions from the diet, the deficiency is made up by removing calcium from the bones. This ultimately results in brittle bones, or osteoporosis.

The chief sources of calcium in the diet are milk and other dairy products. If athletes are lactose-intolerant they should use enzyme-replacement products such as Lactaid or DairyEase. Athletes should consume 1000 mg of calcium every day through either food or supplement, or a combination of both.

Glucosamine/Chondroitin Sulfate

The combined supplement of glucosamine sulfate and chondroitin sulfate is being sold as an arthritis cure. In fact, although the research is ongoing, there is good initial evidence that this supplement does help relieve the pain and ease the movement of arthritis sufferers. One study of athletes with cartilage damage in their knees showed that 76% had complete resolution of symptoms and resumed full athletic training after 140 days of supplementation. More research is needed in this area, but supplementation with these compounds looks promising.

Post Workout Smoothies

One of the most important times to make sure your body gets all the high energy nutrients it needs is right after strenuous exercise such as practice, games, or workouts. In this post-exercise state, your body is likely depleted of its energy stores and in order for it to start rebuilding as fast as possible it needs a quick supply of carbs and proteins to get the rebuilding machinery going. Failing to provide your body with the calories it needs can slow down your recovery and hinder your performance. This becomes especially important after games when you have another game in the same day.

A good general rule of thumb is 4:1 carbs to proteins immediately following exercise. Make sure to pick high quality carbs and proteins from the foods provided in this guide in the section on recovery. A great source of post workout nutrition is chocolate milk because it naturally contains this importation ratio and tastes great. You can also find many great recipes online for post workout smoothie shakes.