Power Back Diet

Diet Nutrition Summary for Athletes

Live the LIFE OF AN ATHLETE
EAU CLAIRE COUNTY

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"WHAT YOU PUT IN YOUR BODY IS WHAT YOU WILL GET OUT OF IT... "

Start with that simple statement and remember it every time you think about eating some junk food, grease, sugar, or prefab microwave meals.

"Some years ago I had a highly successful wrestling coach ask me if I could help his top ranked program with some dietary advice. He recounted a story of finding his top athlete who had just barely made weight in the locker room eating a bag of Boston Crème donuts and washing them down with a quart of cola. Unfortunately, that pre-match meal was not going to have any positive effect on performance."

– Olympic Trainer, John Underwood

1 can of cola =
150
CALORIES

4 donuts =
840
CALORIES

Nutritional value for sport =
0

It is nearly impossible to monitor and control all nutritional aspects of food choice and diet. To be fueled and have the nutrients to perform at optimal levels, there are many givens. Educating yourself as much as possible in the science of nutrition will improve your success rate.

It is important to practice proper methods of nutrition:

- Provides the vitamins, minerals, and nutrients critical to repairing after a workout
- Improves performance
- Improves how you feel

The Power Back Diet for athletes simplifies nutritional goals and presents them in a way that is easy to implement, immediately.

Proper nutrition improves performance while alcohol, tobacco, and other drugs impedes performance in many ways

Improper diet will:

- decrease your level of performance;
- delay recovery;
- greatly reduce the quality of your training.

In training, the body will require much greater energy sources than those less active. This means you need extra feedings. Snacks keep the energy systems ready to train and leave the body with enough energy to recover. When an athlete is training, the body is in a constant state of repair. Most athletes are also growing, which also requires incredible amounts of energy. There is also the ongoing process of maintaining and repairing muscle mass to remain structurally capable for the requirements of your sport.

Most athletes training at a high level must take some food into the body every four hours. This maintains the blood sugar levels needed to fuel the brain and muscles. In turn this will reduce the amount of stress hormone from being released. The stress hormone tears down muscle capacity. If the blood glucose levels reach critical low levels, nearly every measurable parameter of body and brain function rapidly declines.

Even borderline low blood sugar levels negate most training effects!

Healthy snacks between meals will fuel your brain and muscles.

YOU CANNOT RUN ON EMPTY

A couple fig bars, a handful of raisins, some fruit gummies, dried fruit, a couple bites of a power bar, or a few sips of watered down Gatorade or fruit drink can keep your blood sugar level up and you alert and physically responsive. Remember, your brain and muscles run off the blood sugar levels. Prior to training or competing you should get these levels up and keep them up. Use 4-6 ounces of a sports drink about an hour prior to competition or training to ensure proper blood sugar levels.

During training or competing, mix glucose sport drinks half and half with water. This is for two purposes:

1. Sports drinks tend to be very sweet.
2. The water will keep your hydration level up while the sport drink will keep your blood sugar levels up.

You need not gulp or consume large volumes of this drink, rather just sip it. Remember even between matches, races, bouts of work, sets of intervals it is important to maintain these hydration and glucose requirements or you will crash!

If you have special dietary needs, you will need to consult a medical professional and adjust your diet accordingly.

PRINCIPLES OF GOOD NUTRITION

Four Food Groups

Athletes can achieve a balanced diet by eating foods from the four basic food groups. Table 1 (pg. 8) lists the minimum number of servings from each food group for each day.

Meat Group: includes high protein foods:

- Meats
- Poultry
- Eggs
- Fish
- Legumes

Choose lean meats, fish, and poultry (without skin) to help keep your fat intake low. Remember to keep portion sizes moderate.

Dairy Group: is rich in protein, calcium, and other nutrients needed for healthy bones and muscles. Choose products labeled "low-fat" or "non-fat" to get the full nutritional value without the extra fat calories found in whole milk products. Calcium deficiencies lead to stress fractures and minimal bone density. Since the vast majority of bone density and skeletal formation is laid down during the late teen to early adult years, it is critical that calcium is available in the diet. Even if an individual increases calcium intake in later years, the damage is irreversible.

Many athletes have mentioned that they are lactose intolerant. Most have self-diagnosed this condition as a result of perhaps using a dairy-based product prior to a workout or competition and experiencing a gastro–intestinal problem before, during or after.[1]

Nearly 14% of today's military enlistees suffer a stress fracture during basic training, presumably related to calcium deficiency.[2]

[1] A randomized trial of Lactobacillus acidophilus BG2FO4 to treat lactose intolerance, Saltzman et al,1999

[2] Prevention of Lower Extremity Stress Fractures in Athletes and Soldiers: A Systematic Review Jones et al, 2002

Rather than revisit the timeline for causative effects, athletes simply give up dairy products. At the very least, calcium supplements must be used to offset the deficits for growth and physical work.

Fruit/Vegetable Group: includes fresh, frozen, canned, and dried fruits and vegetables and juices. Fruits and vegetables are loaded with vitamins and minerals and fiber. Foods in this group are mostly composed of carbohydrates. According to Harvard School of Public Health, fruits and vegetables with more color contain more nutrition.[1] Try to put together colorful salad combinations.

Grain Group: is the main source of complex carbohydrates and fiber.

- Oats
- Rice
- Wheat
- Breads
- Cereals
- Pasta/Noodles

	Serving Size
Meat	5–7 oz/day
Milk	1 cup
Fruit	1 medium size piece of fruit
	½ cup of juice
Vegetable	½ cup cooked or one cup raw
Grain	1 slice of bread
	1 cup of cereal
	½ cup pasta

[1] Food Guide Pyramid 1992

CALORIES

A "calorie" is a unit used to describe the energy content of foods. You can use caloric content of foods to plan an appropriate calories per-day diet. During heavy training, you need more fuels to burn and must increase the caloric content of your daily diet. The food you eat is that fuel. When you take in more food calories than you use, those extra calories are stored as fat, and you gain weight. When you take in fewer calories than you use, the calories stored in fat are burned, and you lose weight. Losing weight gradually helps assure that mostly fat will be lost. Losing weight too quickly will cause you to lose muscle and water in addition to fat, sapping your strength and endurance in the process. Gradual weight loss is best accomplished by combining your training with a slight reduction in food intake.

Remember, your body requires a certain amount of energy and nutrients just to keep you alive and healthy. Daily metabolism adjusts to function for daily tasks requires lots of energy. For this reason, your caloric intake should never fall below 1,700–2,000 calories per day.[1] Athletes who participate in weight-restricted sports like wrestling, compromise their training and competitive abilities because they are simply out of fuels. In planning your diet estimate how many calories you need each day. Caloric needs differ from athlete to athlete, sport to sport, and training phase to training phase depending upon body size, activity level, and many other factors.

Eating fast food is a huge problem for any athlete because:[1]

- They barely qualify as foods
- Fat contents are very high
- One meal provides enough calories for the entire day
- Body fat levels are increasing in athletes in all sports
- Fast food provides little energy

Even once in 10 days is too often to eat fast food!

[1] Food Guide Pyramid 1992

FAT

Despite societal issues with overweight and obesity in America, you must have some fat in your diet. Often, fat-obsessed athletes are greatly at risk for problems of overtraining.

No fat = no hormones to train...

Many of the hormones needed to train and recover come from fat. Fat should make up about 20–30% of the calories you consume.[1] Most of the fat we consume is:

- Naturally found in foods (meats, nuts, and dairy products)
- Added during the preparation of food (e.g. fried foods)
- Found in margarine, peanut butter, and salad dressings

Hormones come from fat. Athletes who are so fat conscious that they minimize their fat intake too much may have extremely low hormone levels. Although they are lean, they experience many symptoms of Overtraining Syndrome[2]:

- Fatigue
- Irritability
- Sleep disorders
- Appetite suppression
- Recovery delays

When your stored muscle fuels are used up, fat is the most valuable fuel source. This occurs 30–40 minutes into a workout or competition involving intermittent high energy bursts such as intervals, plyometrics, lifting, sprints, etc., and 60–90 minutes during steady state energy output such as a long aerobic run or bike.[3]

[1] Food Guide Pyramid 1992

[2] Overtraining Syndrome- Copyright ©1998 Mark Jenkins, MD

[3] Wilmore, J.H. and Costill, D.L. Physiology of Sport and Exercise: 3rd Edition. 2005. Human Kinetics Publishing.

PROTEIN

Protein is used for growth and repair of all the cells in your body. It also determines how much muscle mass you can maintain. Often, over the course of a long season, a wrestler may get thinner and thinner. If protein is not restored you lose mass, you lose structural power and strength, you thin out and become weaker.

Good sources of protein are:

- Meat
- Fish
- Poultry
- Beans
- Nuts

Keep in mind, nuts are high in fat and so should be eaten only in small quantities. Your diet should provide 10–30% of its calories from protein.[1] The typical American diet provides more than enough protein, so you don't need to worry too much about your protein intake. Include a quality source of protein with each meal and mini-meal or snack every three to five hours. Be consistent with your nutritional goals. Include a quality protein source regularly. **Missing a protein source at one meal is not going to doom your efforts. Likewise, consuming a quality protein, once, is not going to make a significant impact on your development. Consistency is crucial.**

Select a protein about the size of the palm of your hand and include it at each meal or mini-meal/snack.[2]

[1] Tarnopolsky, M.A., Atkinson, S.A., MacDougall, J.D., Chelsey, A.,Phillips, S., & Schwarcs, H.P. (1992). Evaluation of protein requirements for trained strength athletes. Journal of Applied Physiology. 73: 1986–1995.

[2] palm of hand-United States Department of Agriculture Healthy Lunchtime Challenge, 2013

Platinum level athletes understand that one night of binge drinking wipes out the impact of two weeks of training.[1]

1st Choice Proteins:

- Whey Protein
- Fish
- Protein Powders
- Eggs/ Egg Whites
- Low-Fat Dairy Products
  - Yogurt
  - Chocolate
  - Milk
  - Cheese
  - Cottage
  - Cheese

2nd Choice Proteins:

- Turkey
- Chicken
- Duck

3rd Choice Proteins:

- Lean Beef
- Lean Pork
- Lamb

[1] A Comparative Case Study of Enzymatic Activity, Training Effect and Alcohol Ingestion on an Elite Level Athlete John Greig Underwood American Athletic Institute 2004

The body is a smart organism that, when sent the right signals (progressive workouts/ competitions) and given the right recovery tools (rest and proper nutrition), can rebuild itself to a higher level of capability.

PRACTICE, WORKOUT, COMPETE. PRACTICE, WORKOUT, COMPETE.

For the competitive athlete, this may be the typical scenario during the season. Include a long school day, attention to homework, poor diet, and less-than perfect sleep habits, and you have a potential disaster on your hands.

Practice, workouts, and games stress the body physically. Although each of these components is needed to compete successfully, the actions performed during these events traumatize the body. At the molecular level, muscle tissue is broken down, pulled, strained, frayed, some even broken down for fuel. The joints and connective tissue around the muscle are bruised, inflamed, and swollen. Blood plasma is 'thinned-out' and vital organs, like the heart, kidney, and lungs, the respiratory, hormonal, and central nervous systems, are stressed to the max. The processes in muscle repair and rebuilding must be constant. The body is not a machine that just takes 'wear and tear', and slowly breaks down over the years.

Think of the practices, workouts, and games as the catalyst for making the body faster, bigger, and stronger. When proper recovery strategies are taken, these stresses are rewarded positively. If the body does not have the right nutrients available for repair, however, the stresses of the practices, workouts, and games negatively affect the body.

WARNING: In rare cases, people experience an extreme reaction following the intake of carbohydrates in the hour prior to exercise. Please plan accordingly to your individual needs.

Smokers get sick more often because their immune system is lowered. This means you won't perform as well and even miss competitions![1]

Repeated trauma and less-than-optimum recovery tactics manifest themselves as overtraining: the body starts to break down; performance declines, and susceptibility to injury increases. Recent human performance studies prove that protein taken in a usable liquid form is both needed after training and is necessary to maximize training effect, decrease intramuscular damage, and speed recovery.[2]

Protein delivers all of the raw ingredients needed by the body for repair. When proteins are digested, our bodies break them down into amino acids that the body can use to rebuild itself and recover. Inferior protein sources and inadequate intake of other protein and nutrients, such as carbohydrates, cause the body to use protein as fuel instead of for repair. This will lead to overtraining and degeneration: not optimal performance conditions.

You won't get fat by eating one unhealthy meal.
You won't get lean eating one healthy meal.
You are what you repeatedly do.
Maintaining a Healthy Body is a **lifestyle.**

[1] US Department of Health and Human Services, 2010, How tobacco smoke causes disease: the biology and behavioral basis for smoking-attributable disease: a report of the Surgeon General. Centers for Disease Control and Prevention, USA

[2] Elliot et al., 2006; Wilkinson et al., 2007, Tipton et al., 2004; Tipton et al., 2006, Fouillet et al., 2002

PROTEIN AND GAINING MUSCLE MASS

Mass equals power equals everything! The most significant factor in your athletic performance besides your condition is to put on muscle mass.[1] Every pound of new muscle mass allows greater capacity for work in speed, power, endurance, skills, and structural integrity. The more mass you have, the more power to move your skeleton and produce force. In order to gain new muscle mass, you need protein available in your diet.

Many athletes and coaches are misled into thinking you simply just eat more protein with meals. However, this is not the case. It is not about loading your plate with huge amounts of protein or eating a 24-ounce steak. It is more successful to have more protein feedings during the waking hours than to increase the grams of protein per meal.

Muscle Mass Gain Formula

Athletes that want to "bulk up" need:

1. A well designed resistance training program
2. A high-energy diet that provides adequate protein
3. Consistency

High School athletes lose between 15% and 30% from their overall performance when they drink alcohol.[2]

[1] International Society of Sports Nutrition position stand: creatine supplementation and exercise Buford et al, 2007

[2] American Athletic Institute study, 2008

The human body can utilize only about 30g of protein at a time.[1]

If you eat a 24-ounce steak, most of it will be deposited as fat because you cannot uptake that huge amount of protein or metabolize it into any form of fuel.

You need to eat just enough protein but not too much. If you gain 10 pounds and eight pounds is fat and two pounds is muscle, have you really helped yourself as an athlete? You might as well strap on eight pound ankle weights during a competition. By eating protein and training hard, you can reverse this and gain eight pounds of muscle and two pounds of fat. Now you are a leaner, faster, and stronger athlete! Some feedings require solid protein, some require fast (liquid) protein, and some require both varieties.

Available protein + Available hormones = New mass

This makes you a leaner, stronger, and more capable athlete.

TIMING OF PROTEIN FEEDS: Five to Six times per day

7 a.m. – 30g protein shake
11 a.m. – Lunch with 40g of some type of chicken, lean beef or fish
3 p.m. – Protein Bar and Whey Protein 30g
5 p.m. – Post-Training nutritional Whey Protein 30g + 75g Carbohydrates
7 p.m. – Dinner with 40g of chicken, lean beef or fish

[1]Am J Clin Nutr. 2009.

VITAMINS AND MINERALS

If you eat a balanced diet from the four basic food groups, you will consume all the vitamins and minerals your body needs.[1]

Including ample portions of fresh fruits and vegetables in your diet will help ensure an adequate intake of vitamins and minerals.

Vitamin and mineral supplements are usually unnecessary, but if you like to have the added "insurance" of taking a supplement, choose a vitamin and mineral supplement that does not exceed 100% of the Recommended Daily Allowance (RDA) for each nutrient.[1]

Iron: If you don't have iron, you are doomed. It is responsible for the oxygen dynamics in human muscle.[2] Take one iron pill (ferrous sulfate or gluconate) with vitamin C or orange juice, (Sunday night) once per week prior to bed. Never take iron with calcium or dairy products. (Prevents it from binding to blood cells) Remember: more is not better with iron.

Zinc: Zinc is critical in sweat loss sports. Low zinc levels have the same symptoms as Chronic Fatigue Syndrome.[3] Take when training in very hot or humid conditions when fluid loss is increased.

B Vitamins: B vitamins are extremely important for endurance athletes as they help: the body release energy from protein, fats, and carbohydrates; build body tissue; and increased metabolism.[4] B1, B2, B3, B5, B6 and B12 can commonly be found in:

- Meats
- Whole grains
- Leafy green vegetables
- Bananas
- Dairy products

[1] US Food and Nutrition Board (FNB) of the National Academy of Sciences.

[2] Iron Biology in Immune Function, Muscle Metabolism and Neuronal Functioning, John L. Beard, 2001

[3] In chronic fatigue syndrome, the decreased levels of omega-3 poly-unsaturated fatty acids are related to lowered serum zinc and defects in T cell activation, Maes et al, 2005

[4] Oregon State University (2006).

The B-complex vitamins are critical to optimizing recovery from high-level training.

- Thiamine (B1)
- Riboflavin (B2)
- Niacin (B3)
- Pantothenic acid (B5)
- Pyridoxine (B6)
- Folic acid Biotin

Endurance athletes should take B-complex vitamins.

These vitamins are essential for:

- Providing energy
- Repairing muscles
- Eyesight
- Muscle tone
- Liver function
- Recovery

Athletes who lack B vitamins have reduced high-intensity exercise performance and are less able to repair damaged muscles or build muscle mass than their peers who eat a diet rich with B vitamins.[1]

Even a small B vitamin deficiency can result in reduced performance and recovery.[2] Individual B vitamin requirements vary and may depend up- on: the type and intensity of exercise; the amount of nutrients lost through sweat, and urine; and individual differences in diet.

The USRDA (United States Recommended Daily Allowance) for B vitamin intake may be inadequate for athletes, especially when food and diet are often lacking in nutrition.

Those most at risk for the B vitamin deficiencies include athletes who are limiting calories or have specialized, consistent or restricted eating plans.[2] Wrestlers are notoriously low on B's.

Smoking leads to easy bruising and can cause strains, sprains and fractures.[2]

[1] Oregon State University study published in the International Journal of Sport Nutrition and Exercise Metabolism, 2006

[2] Vitamin and mineral status: effects on physical performance, Lukaski, 2004

Sources for B Vitamins	
Whole and enriched grains	Cheese
Dark Green Vegetables	Chicken
Nuts	Turkey
Milk	Fish
Yogurt	

Athletes who have poor or restricted diets should consider taking a multivitamin/mineral supplement.

Elite athletes should take B vitamin supplements, as they truly are the catalysts for recovery in the human body.

Alcohol consumption on a regular basis elicits an effect on the diuretic hormone, which increases the urination rate greatly. This in turn results in loss of the water-soluble vitamins that leach out of the body.

It takes 3-4 days to regain the vitamins alcohol depletes if an individual is taking supplements or eating a diet source rich in B vitamins.[1]

Without B5 you cannot produce testosterone at levels needed for training or recovery.

A side effect of B vitamins is that they change the color of your urine to bright yellow in a matter of minutes. Literally your urine is the color of a highlighter... Don't be alarmed. It simply gets into your system quickly. It may also create a surge of energy/alertness if taken prior to bedtime.

B vitamin-depleted athletes exhibit many of the symptoms of overstraining, overtraining, or even Chronic Fatigue Syndrome. If you ever experience a period of training where you feel exhausted every day despite taking all proper recovery methods, try B Vitamins. **It can literally be a shot in the arm and could save your entire season.**

[1] Goldberg, et al.; January 2001 "Staying Healthy with Nutrition"; Elson M. Haas, M.D.; 2006

MAGNESIUM

Magnesium regulates more reactions than any other mineral. It is also responsible for two of the most important cellular functions: **energy production and cellular reproduction.**[1]

- Important factor in muscle relaxation and heart health
- Allows nerves to send messages in the brain and nervous system
- Aids and regulates the body's use of calcium and other minerals
- Assists in bone and teeth formation
- Regulates the metabolism of nutrients such as protein, nucleic acids, fats, and carbohydrates
- Regulates cholesterol production and helps modulate insulin sensitivity
- Assists in energy production, DNA transcription, and protein synthesis[2]
- Maintains the structural health of cell membranes throughout the body
- Allows the Central Nervous System to recover from physical and mental stress

Taking 450 mg of magnesium and 30 mg of zinc daily can increase testosterone levels, needed for training and recovery, up to 30%.[1]

Athletes receiving the magnesium had 2.5 times greater muscle strength gains than a placebo group.[2]

8-10 hours of sleep per night is necessary to repair muscles and keep brain signals to your body moving fast.[3]

[1] Effects of a Novel Zinc-Magnesium Formulation on Hormones and Strength, Brilla and Conte, 2012

[2] Medicine & Science in Sports and Exercise. 31: S123, 1999.

[3] National Sleep Foundation 2006

VITAMIN C

Vitamin C is important for connective tissue repair.[1] Although beneficial for athletes participating in a variety of sports, Vitamin C is especially important to athletes whose training causes the most connective tissue damage. As an antioxidant, it may help reverse some oxidative damage that can result from exercise. This damage, caused by free radicals, may interfere with the cells' ability to function normally and is believed to play a role in many different health conditions, including the aging process, cancer, and heart disease.[1]

Vitamin C promotes a healthy immune system. There is a 12-hour window after training when you are highly susceptible to sickness/ illness.

Research has shown that taking 400 to 3,000 mg of vitamin C per day for several days before and after intense exercise may reduce pain and speed up muscle strength recovery.[2]

Vitamin C is known to help boost the immune system, but it also can help reduce muscle soreness after strenuous activity-soreness that is a common problem for endurance athletes in training. Vitamin C also can help the absorption of iron. Foods high in vitamin C include:

- Citrus fruits
- Green vegetables
- Berries

Look for Vitamin C supplements without extra fillers.

Smoking kills more Americans each year than alcohol, cocaine, crack, heroin, homicide, suicide, car accidents, fires, and AIDS combined.

[1] NUT026 Rev. 6/98 CLINICAL NUTRITION INSIGHTS 1997 Advanced Nutrition Publications Schwarz RI, et al. Third Conference of Vitamin C 1987;498:172-84 Niki E. Interaction of ascorbate and alpha-tocopherol. Third Conference on Vitamin C 1987;498:187-98.

[2] Effects of antioxidant supplementation on the aging process, Fusco et al, 2007

[3] Improving the Health of United States Children: The Need for Early Interventions in Tobacco Use, Glynn, 1993

VITAMIN D

Vitamin D can help to maintain bone strength while maintaining nervous system and heart health. Good sources of Vitamin D include:

- Eggs
- Fish
- Butter
- Natural sunlight

Vitamin D supplements are available, but are not necessary usually for those who eat a healthy diet and who are regularly exposed to the sun.[1]

VITAMIN E

Vitamin E is an important vitamin for endurance athletes. It can help prevent the depletion of omega-3 fatty acids and the destruction of good body tissue resulting from training.[2] Good sources of vitamin E include:

- Nuts
- Leafy vegetables
- Vegetable oil

Vitamin E supplements are not necessary usually for people with healthy diets.

People who use chewing tobacco get sick more often than those who don't.[3]

[1] Sunlight and vitamin D for bone health and prevention of autoimmune diseases, cancers, and cardiovascular disease, Holick, 2004

[2] Omega-3 fatty acids and athletics, Simopoulos, 2007

[3] Daily Use of Smokeless Tobacco: Systemic Effects, Neal L. Benowitz, MD et al, 1989

EATING BEFORE TRAINING OR COMPETITION

When you eat often can be as important as what you eat.

When you eat a regular meal, food stays in the stomach for about 3 hours. The food then moves into the small intestines then the large intestines. Food takes 10 to 20 hours to pass through the body. Nutrients are absorbed at this time. As a result, meals are best eaten three to four hours before competition. For athletes too nervous to consume solid foods before competition, special sports nutrition supplements may be an option. Carbohydrate supplements and liquid-nutrition supplements can be taken up to one hour before training or competition. You should experiment with such products to make certain that you do not experience discomfort.

A properly formulated sports drink can be consumed before, during, and following training or competition to help minimize dehydration and provide a source of energy to working muscles. If there is nothing in your gastro-intestinal tract, there are no nutrients leaching into your bloodstream and energy systems will simply run out over time. The nutritional timeline requires on-going food in for energy out.

In Between Rounds/Games

As soon as you finish a match, round game, or heat, you should take in some glucose (from watered-down Gatorade or Powerade). Consume at least 10 ounces and some simple carbs (fig bars, power bar, fruit, raisins, bananas) as soon as possible, within minutes.[1]

Many sporting competitions involve multiple games; a series of heats and finals in the same day, or over consecutive days, and/or flexible start times. Whatever the scenario, meeting your nutritional needs to compete at your best means considering a number of key factors:

- Develop a competition day nutrient planning timeline.
- Start with breakfast and take into consideration any opportunity for ingestion, digestion, and activity.
- Expect the unexpected.
- Plan for the worst-case scenario.
- Ensure you have access to foods and liquids.

[1] Siu PM, Wong SH. Use of the glycemic index: effects on feeding patterns and exercise performance. J Physiol Anthropol Appl Human Sci. 2004

SUGGESTED FOOD CHOICES

Before exercising:

- have a carbohydrate-rich meal or snack 2-4 hours before exercise
- Include a small amount of fast protein 4-6 ounces (whey) but not too much.

To avoid being hungry during a long tournament, plan for a larger snack or small meal at a strategic time, such as the longest expected break. Practice your competition eating strategies in training so that you can be confident of avoiding stomach upsets on competition day. In a tournament situation this may not always be practical. The breaks between events may not be long enough for a meal or large snack to be digested. You do not want too much food in your stomach and upper intestines, as this requires blood flow that will prevent it from being shunted to the extremities and working muscles. Plan to "graze" throughout the day on lots of small nutritious snack foods. Individual tolerance varies, however, so use the following as a guide.

Time Before Exercise: 3-4 hours

Food:

- Peanut Butter & Jelly and glucose sport drink
- Baked potato with cheese filling and Fruit Juice
- Honey on toast
- Breakfast cereal with milk
- Bread with banana
- Fruit salad with fruit-flavored yogurt
- Pasta or rice with a low-fat sauce
- Yogurt with granola
- Non-acidic fruit (peaches, pears)
- Milk shake or fruit smoothie
- Sports bar (check labels for carbohydrate and protein content)
- Cereal/Fig bars

To maintain proper blood sugar: You need glucose (comes from carbohydrates), Not from sweets.[1]

[1] William D. McArdle, Frank I. Katch, Victor L. Katch (2006). Exercise physiology: energy, nutrition, and human performance (6 ed.). Lippincott Williams & Wilkins. p. 12

CHALLENGES WITH FOOD AVAILABILITY

Typically, sporting venues provide a limited selection of foods and fluids, and many are not conducive to athletic diet or nutrition. Try to find out in advance what will be offered to avoid any bad food choices on competition day. The safest option is to take your own food supplies:

- Consider food freshness, refrigeration needs, and perishability.
- Fragile food such as sandwiches and fruit should be kept cool and in a protective container – no one likes a warm, soggy sandwich or a squashed banana!

Robust food options that can be stored at environmental temperature include:

- Sports gels
- Sports bars
- Raisin bread
- Scones
- Fruit gummies
- Raisins
- Fig bars
- Cereal bars
- Dried fruit
- Canned fruit
- Rice cakes

Flavor fatigue: your exercising muscles aren't the only things that get tired, vary your food selection!

It's always a good idea to pack a variety of foods, including a bit extra. You may change your mind about what you want or you may need to plan to include some salty foods in your tournament eating pattern, but not too much. Options include:

- Sandwiches or peanut butter
- Dried biscuits
- Soup
- Low-fat two-minute noodles
- Salted or sweetened peanuts

Liquid meal supplements empty quickly from your gut, decreasing the likelihood of stomach upset.

Liquid supplements provide valuable nutrients such as carbohydrates and protein for refueling and recovery between events.

CHALLENGES WITH HYDRATION

Preventing dehydration is a key to sustained performance, especially when competing for long periods and in multiple events over one or many days.

For every 2% you dehydrate you lose 10% in performance across all physiological systems. If you lose even minimal body fluids, fatigue is on the way![1]

Tips for maintaining hydration in tournament situations include:

- Start exercise well hydrated.
- Drink plenty of fluids from the time you wake up and keep drinking water all day.
- Sip, don't gulp!
- Steady drinking throughout the day/night will have you better prepared than drinking large amounts of fluid irregularly.
- Include carbohydrate-rich beverages such as sports drinks to continually top up carbohydrate stores and maintain fluid balance.
- "Still" beverages (e.g. sports drinks, water) may be better tolerated than carbonated drinks, especially if you are required to compete at short notice.
- Always have drink bottles handy for regular fluid consumption.
- Keep fluids cool with ice **(alternatively, freeze drinks the night before allowing them to defrost slowly over the day of competition)**.

[1] J Athl Train. 2006; 41(1): 36–45.Dehydration and Symptoms of Delayed-Onset Muscle Soreness in Normothermic MenMichelle A Cleary,* Michael R Sitler,† and Zebulon V Kendrick

AVOID DEHYDRATION AS A WEIGHT CONTROL MEASURE

Dehydration reduces every physiological capacity for performance. Weight loss in wrestlers usually occurs in a short period and consists primarily of water loss.

Unfortunately, when you rehydrate after weigh-in, your body absorbs water at a relatively slow rate: only about two pints per hour. It takes up to 48 hours for the water balance in your tissues to be restored.[1] The ill effects of dehydration include:

- Decrease in muscular strength and endurance
- Decrease in blood flow to muscle tissues
- Impaired ability to properly regulate your body temperature

Athletes should avoid the following weight loss schemes:

- Taking diuretic drugs (water pills), which can negatively affect your heart and kidney function
- Sitting in a steam room or sauna
- Exercising in a plastic suit

Weight loss through dehydration is strongly discouraged because it can cause rapid dehydration and heat stroke, which may be fatal.[2]

Post weigh-in feeding considerations:

- 4-6 ounces of whey protein
- 4-6 ounces of glucose sport drink
- Carbohydrate meal (solid or liquid)
- Non-acidic juice
- Banana
- Toast with butter and jelly/honey
- Peaches

[1] J Athl Train. 2006; 41(1): 36–45.Dehydration and Symptoms of Delayed-Onset Muscle Soreness in Normothermic MenMichelle A Cleary,* Michael R Sitler,† and Zebulon V Kendrick†

[2] Heat Illness in Athletes, Coris et al, 2004

MAINTAINING IDEAL WEIGHT

Once an appropriate and realistic competition weight has been established and achieved, nutrition emphasis should be on maintaining and stabilizing weight to achieve peak performance.

- Following the Food Guide Pyramid, choose a training diet that is high in complex carbohydrates (55-60% of total energy) moderate in protein (20%), and low in fat (20-25%).
- Drink to stay hydrated and replace sweat lost from exercise.
- Before a match, consume a high-carbohydrate, easily digested meal.
- Eat or drink carbohydrates to replenish glycogen after practice or matches.
- Maintain strength and energy by avoiding weight cycling or rapid weight loss.
- Eat small-to-moderate sized meals every 3-4 hours to avoid "crashing" and help maintain steady glucose levels. This will help control appetite and reduce binge eating.

If you train early in the morning, you should opt for a light snack about an hour before exercise, such as fruit or a cereal bar plus fluid on the way to training. Make up for your smaller carbohydrate intake by consuming carbohydrates during the event or just after the training session.

By 2030, more than 50% of residents in over 39 states could be obese. The U.S. government predicts a 42% obesity rate nationwide.

FAQs

What if I am too nervous to eat?

You will perform better when you are well fueled and well hydrated. Experiment to find a routine that works and foods that are safe and familiar to you. Liquid meal supplements such as Power Bar Protein Plus powder provide an alternative for anyone who has difficulty tolerating solid foods pre-exercise. You also may find that foods such as cereal bars and sports bars can be eaten if you nibble them slowly over the hours leading up to your competition.

Should I avoid carbohydrates one hour before exercise?

Most athletes are able to consume carbohydrates in the hour before exercise without affecting performance, and in some cases it can even improve the outcome of the session. A small percentage, however, experience a drop in blood glucose levels and symptoms such as fatigue, shakiness and dizziness after consuming carbohydrates immediately before exercise. This reaction is a response to the increase in carbohydrate use that occurs after carbohydrate intake, associated with a rise in the levels of the hormone insulin.

What are the priorities for recovery nutrition?

Recovery is a challenge for athletes who are undertaking two or more sessions each day, training for prolonged periods, or competing in a program that involves multiple events. Between each work out, the body needs to adapt to the physiological stress. Correct planning of the workload and the recovery time adaptation allows the body to become fitter, stronger, and faster.

MULTIPLE COMPETITIONS OR ALL DAY NUTRITIONAL REQUIREMENTS

Many athletes are competing at levels that may require multiple competitions in one day or over the course of several days. It is very difficult for many to maintain good nutritional status for a prolonged time. It is critical to have a good plan or random performance sets in, based on random energy levels available from nutritional deficits.

Sleep helps secure memory and learning, plus mental and physical performance, which all together help you perform at your highest potential.

Athletes who drink are more tired. Alcohol disturbs a person's sleep cycles, thereby reducing the body's recovery ability.

PRACTICAL EXAMPLE: SWIM MEET

7:00 am	**Breakfast:** cereal + low-fat milk + slice of toast with jam
9:00 am	**Warm up:** race 50 m freestyle heats; Drink at least 1 cup of glucose-based sport drink and water in the half hour before race.
10:00 am	**Break:** fruit smoothie/ banana + water and sports drink
11:00 am	**Warm up:** race 50 m backstroke.
11:30 am	**Recovery:** warm up and race 50 m freestyle final
Lunch	**Break:** Power Bar, ham sandwich + fruit (raisins, pineapple)
1:30 pm	**Warm up:** race 100 m medley
3:00 pm	**Break:** Power Bar or cereal bar + sports drink
4:00 pm	**Warm up:** race 4X50 m freestyle relay. Remember fluids between races
4:30 pm	**Recovery**: warm up and race 4X50 m medley relay. Don't forget post- race recovery nutrition regimen. Fig bars and sports drinks will help to replenish carbohydrates until you get home for dinner.
6:00 pm	**Dinner:** chicken + rice Whey Protein /real meal

Preparing for a competition or tournament involves putting the basics of sports nutrition into practice. Planning ahead will help you have a successful competition and avoid food-related stresses on the day(s) of competition. Don't forget fluids as part of your plan!

IMMEDIATE TIMING OF NUTRITIONAL RECOVERY

Read this carefully

- As soon as you finish training or competing, you need to refuel your energy depleted muscles.
- Without refueled muscles, optimal performance is compromised.
- There is a very important timing and nutritional window for recovery to take place.
- Recovery nutrition is a huge factor in determining whether training effect has occured.

Athletes who failed to take in any nutrients immediately after training:[2]

- Risk the majority of training effect in their muscles.
- Experienced significant increases in intramuscular damage.

The group that took in nutrients had huge gains in muscle strength, muscle fiber size, actual muscle size (hypertrophy), and minimized muscle damage by as much as 83%.[3]

Waiting to take in nutrients after training will compromise training effect.[1]

[1] Protein timing and its effects on muscular hypertrophy and strength in individuals engaged in weight-training Matthew Stark, Judith Lukaszuk, [...], and Amanda Salacinski

[2] M. Beelen, Burke, L.M., Gibala, M.J., and van Loon, L.J.C. Nutritional strategies to promote postexercise recovery. International Journal of Sport Nutrition and Exercise Metabolism. 2010

[3] Saunders, J.M, Kane, D.M & Todd, M.K. (2004) Effects of a carbohydrate –protein beverage on cycling endurance and muscle damage. Medicine &Science in Sports & Exercise, 36 (7), pp 1233 -1238

Athletes who drink regularly are twice as likely to be injured (54% injury rate) as non-drinkers (24%).[1]

The three steps described in the table below work together. Skipping a step will reduce the impact of your training.

- Maximize your potential within 5 minutes of competing.
- An additional 150g of carbs (at a minimum) must be consumed within the next hour to refuel your body, which would be part of an actual meal.[3]
- If you wait over an hour after training to take in any nutrients your workout will have been for nothing.[2]
- Alcohol decreases the rate at which your body is able to absorb nutrients and use them as fuel for up to 36 hours after binge drinking.[1]

	Action-Repair Muscles	Suggestion	Reason
Step 1	Release insulin	Drink 4-6 oz of Gatorade or fruit punch	Start the refueling process
Step 2	Take in liquid protein	Drink 12-16 oz of low-fat chocolate milk	Optimize training effect
Step 3	Take in 75 g of Carbohydrates	Eat two hand- fuls of raisins or 2-3 fig bars	Gain conditioning

[1] Relationships Between Nutrition, Alcohol Use, and Liver Disease, Lieber, 2004

[2] NCAA Football Injuries Prevalence Study

[3], J.M, Kane, D.M & Todd, M.K. (2004) Effects of a carbohydrate –protein beverage on cycling endurance and muscle damage. Medicine &Science in Sports & Exercise, 36 (7), pp 1233 -1238

FAST PROTEIN AND QUICK MUSCLE RECOVERY

Consuming a liquid form of protein like low-fat chocolate milk or a whey protein shake post-workout maximizes training effect, minimizes muscle damage, and helps your muscles recover faster.[1]

While many athletes only take protein after a workout, combining carbohydrates with a post-workout whey protein shake yields better results than a protein shake alone. This is why we suggest including 75 grams of carbs as part of the post-training nutritional recovery regiment.

Besides powdered mixes from a canister, whey protein often can be found in a variety of other sources. Including:

» Yogurt

» Energy bars

» Dairy-based beverages

These are quick and convenient snacks that provide exceptional dietary nutrition. They are also terrific snacks to get you through the day because whey protein provides a feeling of fullness.

Low-fat chocolate milk helps the body recover after workouts by building up protein levels in the muscles.

REFUEL with CHOCOLATE MILK

The Official Beverage of NH High School Athletics

[1] Elliot et al., 2006; Wilkinson et al., 2007, Tipton et al., 2004; Tipton et al., 2006, Fouillet et al., 2002

Ideas for snacks providing carbohydrates, and carbohydrate-protein combinations.

Carbohydrate-Protein Snacks
250-300 ml liquid meal supplement
1-2 sports bars (check labels for carbohydrate and protein content)
1 large or 2 small cereal bars + 200 g carton fruit-flavored yogurt
1 bread roll with cheese/meat filling + large banana
2 crumpets with thick spread peanut butter + 200 ml low-fat milk
250-300 ml milk shake or fruit smoothie
1 large bowl (2 cups) breakfast cereal with milk
220 g(3 slices) of toast
300 g (bowl) fruit salad with 200 g fruit-flavored yogurt
300 g (large) baked potato + cheese filling + glass of milk

Carbohydrate (CHO) - Recovery Snacks
700-800 ml sports drink
60-70 g packet of jelly beans
A slice of toast/bread with jam or honey or banana topping
3 fig bars (80g)
1 cup vegetable soup + large roll
300 g rice
100 g pancakes (2 stack) + 30 g syrup
2 sports gel packets
500 ml fruit juice or sport drink
300 ml carbohydrate loader drink
2 cereal bars
115 g (1 large or 2 small) muffins, fruit buns or scones
300 g (large) baked potato

It is important for athletes to avoid the common restrictive eating patterns prior to competition, followed by binge eating afterwards. This pattern is detrimental to both athletic performance and psychological well-being.

Athletes who are in tune with their body needs are much more likely to be successful and enjoy competing to their full potential.

These are given suggestions for nutrition that can help you have more energy and be a better athlete.

The rest is mostly up to you! Unlock your potential with

power back nutrition.