NUTRITION FOR THE ATHLETE

BASIC ATHLETIC PERFORMANCE NUTRITION GUIDELINES

Disclaimer

The writing and information that follows is not intended for the prevention or treatment of a disease; and should not be used in place of treatment or advice from a qualified medical professional. It is purely a presentation of scientific findings that should be used for informational purposes only. The guidelines set forth are to be pursued only at the sole discretion and risk of the reader. The author assumes no liability for the consequences of dietary changes; this is purely an educational manual.

BASIC NUTRITION GUIDELINES

Sound sports performance nutrition requires the utilization of a proper ratio of fat, carbohydrate, protein, and water intake so that the following may occur:

- Full recovery from each training or practice session so that the optimal benefits may be achieved from each session.
- Optimal performance achievement in all practice, training, and competition sessions
- An increased level of energy throughout the day and during practice / training sessions
- A much lower incidence of missed practice or training sessions due to illness
- Proper hydration to ensure optimal performance and decreased risk of injury in all practice and training sessions

Identifying what nutrients, you need to consume and what foods to eat in order to attain those nutrients are essential in ensuring your recovery from training. This is also essential to help yourself reach your body's peak performance by achieving maximum benefits from training. Nutritionally sound sports nutrition requires the proper ratio of intake of fats, carbohydrates, and proteins (macronutrients) as well as water.

Nutrition Made Easy

What is nutrition?

Nutrition is the process of providing or consuming the food necessary for health, function, and growth. Nutrition, and the nutrients consumed, is the building blocks of life. Making smart choices about the foods you eat can have a lasting impact not only on your sporting career but also on your overall health later as an adult. It can be a key to avoiding obesity, illness, and many of today's most widespread chronic diseases. Sport nutrition is the study of nutrition as it relates to athletic performance. Good sport nutrition means getting the right amount of nutrients from healthy foods in the right combinations at the right times. This includes the type and quality of all foods and liquids ingested by an athlete and is more critical for performance and recovery. Sport nutrition typically deals with more vital nutrients for athletes such as vitamins and minerals, fats, carbohydrates, and proteins.

Why are vitamins and minerals important?

Vitamins and minerals, also called micronutrients, play an important role in energy production, cardiorespiratory health, bone health, and immune function. They assist in the repair of injured muscles and the recovery from exercise. The higher demands of micronutrient are on an athlete's body, the greater the supply needs to be. Athletes must consume greater amounts of vitamins and minerals needed to build and repair lean muscle tissue and assist in the facilitation of the body's metabolic functions. The most common vitamins and minerals found to be necessary but limited in athletes' diets are vitamin B, C, D, E, calcium, potassium, iron, zinc, and magnesium. Restricted diets, weight loss diets, and unbalanced diets with little fruit and vegetable place greater risk for athletes to not get adequate nutrients. This can be a major factor in limiting an athlete's growth, recovery, and overall performance. Finding a good multivitamin will help most athletes deficiency but like all supplements should not be used as a replacement for natural food.

What is fat?

In terms of sport performance, fat is the body's fuel source for light to moderate intensity exercise and spares carbohydrate for longer bouts of exercise. The recommended fat intake is 20-30% of total calories or about .25-.50 grams per pound of body weight.

Example: A 200lb athlete would need from 50-100 grams of fat per day.

Adequate fat in the diet is important for meeting increased needs of athletes. The type of fat is as important if not more important than the amount of fat in an athlete's diet. Steer clear of saturated fats (bad fat) and consume unsaturated, monounsaturated, and polyunsaturated fats (good fats). We will cover options in a later section.

What is carbohydrate?

Carbohydrate's primary role in the body is to serve as an energy source. This is an athletes' primary source of fuel and energy throughout the day, during practice and in games. This is the most important of the macronutrients for any athlete. Without proper amount of carbs, you will feel sluggish and lethargic and have trouble finishing practice and games. The recommended intake of carbohydrates is 2.5-3.5 grams per pound of bodyweight.

Example: A 200lb athlete would need 500-700 grams of carbohydrates per day.

Not all carbohydrates are created equal. Some carbs release sugar into the blood stream quicker than others. The ability of foods to quickly raise blood sugar levels is known as glycemic index (GI). When blood sugar rises rapidly the body produces the hormone insulin. The insulin rapidly lowers blood sugar to combat the spike and ultimately promotes fat storage. When blood sugar drops, energy levels drop and the ability to train and compete at optimal levels significantly decrease.

What is protein?

Protein is needed to build and maintain muscles, form blood cells, and maintain immunity. Protein will only be used to build muscle if enough carbohydrate calories are consumed during a weight resistance exercise program. Without adequate calories from carbohydrates protein is used as fuel. Athletes should consume .05-1.0 grams per pound of bodyweight.

Example: A 200lb athlete would need 100-200 grams of protein per day.

Approximately 30- 60 grams of carbohydrates and 20-30 grams of protein should be consumed within 30 minutes to one-hour post exercise or practice. Consuming both will restore lost carbohydrates from your muscles and increase rebuilding broken down muscles.

What is water?

Water is the most indispensable and abundant nutrient available to everyone. Although not all water is consumable, by the marvels of modern-day filtration, it has become safer and easier to drink most tap water. Water makes up about 60% of a human being's body weight. Water acts as a medium for the body's traffic of nutrients and waste products. Water dissolves the majority of nutrients that are required by the cells. Water also acts as a natural cleanser to the body, as it mixes with waste from the kidneys to become urine. Examples of symptoms of decreased water are: cramping, light-headedness, headaches, increased stress on the kidney.

An athlete should be consuming approximately 4 – 6 pints (1 pint = 16 US fluid ounces) of water daily to maintain water balance. An easy solution is to fill a plastic 1 gallon milk container with water and consume it all during the day; refill it at night before you go to sleep so it will be cold by morning. In addition, an athlete should weigh themselves prior to exercise and again after exercise. For every pound of weight lost during that exercise session, that athlete needs to drink one pint of water; so, if you lose three pounds, you need to drink three pints.

HYDRATION TIPS

Good hydration provides a performance benefit to all athletes. It is essential for optimal muscle functioning. In a dehydrated state, muscle contractions can be much slower and weaker than if they were properly hydrated. The fluid an individual consumes is what transports the much-needed nutrients that are ingested to the muscles. Proper hydration is the number one defense against muscle cramps and strains. The following guidelines will help you stay hydrated for optimal performance.

DO NOT let thirst be your indicator of fluid replacement.

Thirst usually kicks in when your body has already lost 2% of its fluids (about 1 -2 liters of body water). At this point, you are already well on your way to dehydration. You need to make fluid replacement a habit and you need to consume more fluid than your thirst indicates.

Get hydrated BEFORE your workout, not during or after.

Pay extra attention to your hydration if you have been outside or working for the better part of the day.

•BEFORE: Drink fluids liberally (as much as you want) up to one hour prior to workout.
•DURING: Drink 6 – 12 oz. of fluid for every 10 -15 minutes.
•AFTER: Drink 20 oz. of fluid for every pound of body weight lost during the workout.

Use water or sport drinks (PowerAde, Gatorade) for fluid replacement.
*Avoid alcohol and caffeine as they will dehydrate your body
*Lightly salt your food in extremely demanding hydration situations (pre-season camp)

Early signs of dehydration

Fatigue or weakness, muscle cramping, loss of appetite, headaches, heat intolerance, light-headedness or disorientation, dark urine with a strong odor, and a dry cough are all early signs of dehydration.

Dehydration can cause serious heat illnesses, such as heat stroke and heat exhaustion with the early signs and symptoms of dehydration as well are the more serious symptoms such as flushed skin, chilled feeling, tingling arms, and stoppage of sweating.

Aim to drink a gallon of water per day!

A great idea is to bring a water bottle, or a milk jug filled with water with you throughout the day to ensure an adequate supply of water at all times for your body.

How do I find the total calories I need?

In order to get your recommended caloric intake, follow the equations below:

LOWER TOTALS:
Fat: (.25 x bodyweight) x 9 = _____ calories from fat
Carbohydrate: (2.5 x bodyweight) x 4 = _____ calories from carbs
Protein: (.50 x bodyweight) x 4 = _____ calories from protein
Total Calories: _____ calories

HIGHER TOTALS:
Fat: (.50 x bodyweight) x 9 = _____ calories from fat
Carbohydrate: (3.5 x bodyweight) x 4 = _____ calories from carbs
Protein: (1.0 x bodyweight) x 4 = _____ calories from protein
Total Calories: _____ calories

So, for our 200lb athlete the caloric needs would be between 2850-4500 calories. The lower of the two totals from above should be used on lighter training days or when you're out of season. The higher of the two totals should be used on heavier training days such as two a day practices or when offseason training is very intense.

How do I apply this to my sport and season?

In Season and Post Season Play

Caloric demands are extremely high with practice, lifting, conditioning, and playing games. Make sure your caloric intake is high enough to give you fuel and energy needed to compete at optimal levels. One good thing about in season is you are able to fall into a routine and plan a nutritional schedule around school, practice, weights, and studying. Be proactive in your planning taking snacks with you to school to eat between classes. In season is not the time to try losing or gaining weight. Coming into the season you should be at your optimal competing weight and should try to maintain that weight throughout the competitive months. On game days try to eat 3-4 hours before competition with some lean proteins and carbohydrate rich foods like wheat breads, pastas, potatoes, and rice. If you can, try to eat a high carbohydrate snack (banana and Gatorade) 20-30 minutes before game time and at half time to keep energy levels high and combat dehydration. Recovery is a high priority during the season and post season. Consume .50 grams per pound of bodyweight in carbohydrates and at least 20 grams of protein immediately following your game. If you play an outdoor sport, you must focus on hydrating before games and re-hydrating your body post game by drinking 32-64 oz. of water.

Offseason

The needs of each individual will change. Practices will not be as common (if at all) and strength and conditioning demands will be high, so energy, protein, and nutritional recovery are demanding. The offseason is a great time to increase muscle mass and/or decrease body fat (metabolically impossible to do both at the same time). Some may try to bulk up and gain weight, others may try to shed some pounds, while others are happy with their current weight and will try to monitor body composition. Have a plan and know how to get there in your offseason. Plan out your meals based on nutritional needs and caloric content. Stick with appropriately healthy foods listed in the sections below to ensure the proper weight management for your goals.

Preseason

Needs in preseason will differ from sport to sport. Outdoor sports are typically harder on the body in terms of keeping the body fueled and properly hydrated. Intense heat generally can make an athlete not feel hungry but eating and refueling is a must. During practice drink several ounces of water every 15- 20 minutes. For each pound of bodyweight lost in practice requires 20-24oz of fluid and 1 gram of sodium to replenish what was lost. Choose options like fruits and vegetables that are high-fluid foods with pretzels, crackers, and nuts to add some sodium for snacks. Remember to consume recovery foods such as bagels, berries, or protein shakes within 60 minutes immediately following practice (if you're unable to eat within that time frame it is okay, just make sure to eat within 4 hours for optimal benefits).

Maintaining lean mass and weight may be difficult for some so target calorically dense foods such as guacamole, cheeses, milk, and peanut butter – to name a few – to help increase your caloric intake. If gaining too much weight is a concern then focus on dark green leafy veggies, lean meats grilled or baked, with high fiber whole wheat breads, rice, or whole grain pasta.

FOOD CHOICES

GOLD, SILVER, BRONZE

On High Energy Training Days, you want your plate to be filed with gold and silver choices. On inactive or low energy days try to stick to reduced total calories and gold level food choices. If you're trying to gain weight eat more of the gold and silver choices. Take a quality protein supplement (approved by your parents, coaches, and medical expert) in addition to your meals to help get adequate amount of calories. Losing body fat will require you to stay with gold choices. Limit silver and avoid bronze choices. **Do not skip meals!** Be sure to eat breakfast, lunch, and dinner. Snack should include gold choice proteins, limit silver choices, and avoid bronze food altogether.

Gold Choices

Gold Fats

- Focus on unsaturated fats (mono, poly unsaturated, Omega 3 and 6) and avoid saturated fats.
- Olive Oil
- Coconut Oil
- Peanut Oil
- Fish (salmon, tuna, tilapia)

Gold Proteins

- Proteins with the highest protein and lowest amount of fat.
- Roast Turkey
- Lean Roast Beef
- Steak Filet
- Baked Fish
- Skim Milk
- Non-fat and low-fat yogurt
- Beans and peas (legumes)
- Egg Whites

Gold Carbs

- Produce the lowest glycemic response and are low in fat.
- Squash
- Asparagus
- Cucumbers
- Green Beans
- Broccoli
- Spinach
- Mushrooms
- Onions
- Pears Plums

Silver Choices

Silver Fats

- Have high amounts of “good” fat and limited “bad” fat
- Avocado
- Black olives
- Nuts and Nut Butters (Peanuts Almonds Walnuts)
- Egg yolk
- Soybeans
- Seeds (sunflower, flaxseed)

Silver Proteins

- Proteins with high amounts of protein with moderate amounts of fat
- 85-92% Lean Beef
- Trimmed Choice Steak (Sirloin)
- Trimmed Pork Chops
- Baked chicken strips
- 2% Milk
- Nut Butters (peanut butter, almond butter)
- Whole Eggs

Silver Carbs

- Produces moderate glycemic responses. Consume more of these within one hour of weights or practice to restore energy levels, enhance recovery
- Raisin Bran Cereal
- Whole Wheat Pasta
- Whole Grain Bread
- Brown or Wild Rice
- Baked Potatoes
- Sweet Potatoes
- Corn, Carrots
- Grapes, Apples, Bananas

Bronze Choices

Bronze Fats

- Avoid fats that are high in saturated fat and cholesterol. Generally, these fats are hard at room temperature.
- Beef fat
- Pork fat
- Butter Shortening
- Stick margarine

Bronze Proteins

- Lower in protein content and higher in fat
- Hot Dogs
- Fried Chicken
- Fried Fish
- Whole Milk
- Processed Meats

Bronze Carbs

Produce the highest glycemic response and may have high fat content. You may eat small amounts of these occasionally immediately after demanding practice or high activity days if gaining weight in the offseason.

- Candy
- *Pretzels and crackers (good for post practice)*
- Cookies, Cakes
- Sugary Cereal
- Donuts
- White Bread
- White Rice
- French Fries
- Mashed potatoes
- Soft Drinks

SAMPLE MEAL PLANS

Weight Gain Meal Plan

BREAKFAST	SNACK 1	LUNCH	SNACK 2	DINNER	SNACK 3
•4-5 Eggs (whites or whole) •3 Slices of wheat toast/jelly •1-2 Cups of cereal •2 Cups of milk •1 Cup of juice •1-2 Fruits	•2 Fruits	•2 Large turkey sandwiches •2 Fruits •1 Pasta •1 Cup vegetable •2 Cups of milk	•1 Can of tuna •1-2 Fruits •1 Cup of milk	•1-2 Chicken, beef, or fish •1 baked potato •1 Cup of vegetables •3 slices of whole grain toast •2 Cups of milk	•1 turkey sandwich (turkey, whole grain bread, mustard) •1 fruit •2 Cups of 2% milk

Weight Loss Meal Plan

BREAKFAST	SNACK 1	LUNCH	SNACK 2	DINNER	SNACK 3
•1 apple •1 slice of whole-wheat toast with sugar free jam •1 Cup of Raisin Bran cereal •1 Cup of skim milk	•1 medium handful of almonds •1 Fruit	•1 piece of chicken breast •1 medium baked potato •1 small pat of margarine •1 apple •Water	•1 Sugar free yogurt	•1 Chicken, lean beef, or fish •2 Cups of vegetables •2 Cups of skim milk •Water	

Weight Maintenance Meal Plan

BREAKFAST	SNACK 1	LUNCH	SNACK 2	DINNER	SNACK 3
•1 apple •2 Cups of Raisin Bran, •1 Cup of 2% Milk •1 piece of wheat toast with jelly •1 Cup of OJ	•1 Fruit	•1 piece of baked chicken •1 Cups of noodles/pasta •1 Cups of peas/green beans •1 Cup of Skim milk •Water	•2 Fruits •1 medium handful of almonds	•1 Chicken breast •1 medium baked potato •2 Cups of Mixed Veggies •1 pat Margarine •2 Cups of salad •Unsweetened Tea	

Daily sample menus of caloric intakes of 1,200 kcals (caloric reduction) / 2,000 kcals / 3,000 kcals / 4,000 kcals are available upon request. Please consult your family doctor before any alteration of your daily diet.

BODY COMPOSITION

Although we may not appreciate it when it accumulates in certain areas of our bodies, such as our thighs and abdomen, fat is a vital part of our energy supply, especially when we're not able to get enough food. The book 'Concepts of Fitness and Wellness' states that fats are a necessary component of our daily nutrition. Fats are needed for healthy cellular function, energy, cushioning for vital organs, insulation, and for food flavor. The authors of the book also discuss how fat storage is categorized. "Fat storage in the body consists of two types of fat: essential and nonessential fat. Essential fat is the minimal amount of fat necessary for normal physiological function. For males and females, essential fat values are typically considered to be 3% and 12%, respectively. Fat above the minimal amount is referred to as nonessential fat. It is generally accepted that an overall range of 10-22 percent for men and 20-32 percent for women is considered satisfactory for good health.

A body composition within the recommended range suggests a person has less risk of developing obesity-related diseases, such as diabetes, high blood pressure, and even some cancers." The minimum percentage and range of essential fat for a female is naturally greater than a male because of fat deposits in breasts, uterus, and sex-specific sites. "The reason for this difference is that women at some point in their lives may nourish a fetus and then a baby from their own reserves, so women have to stock energy in the form of fat in anticipation of future pregnancies and must stock even more energy during the last two trimesters of pregnancy" (Delavier).

Calculating Lean Body Mass & Fat Mass from % Fat.

- % Fat * Total Body Weight = Fat Mass
- Total Weight – Fat Mass = Lean Body Mass
- *Example: If I was 10% fat at 200 lbs. What is my fat mass? What is my lean body mass?*
- .10 (% Fat) * 200 lbs (Total Body Weight) = 20 lbs (Fat Mass)
- 200 lbs (Total Body Weight) – 20 lbs (Fat Mass) = 180 lbs (Lean Body Mass)

Weight Gain & Weight Loss

Weight gain and weight loss is a simple matter of caloric balance – if you take in more calories than you burn, you gain weight; if you burn more calories than you take in, you lose weight.

Weight Gain

The goal is to gain lean body mass (muscle). To accomplish this, an athlete should stay on the high end of the caloric equation listed above (2 grams of protein & 10 grams of CHO/kg body weight) and participate religiously in strength and conditioning program in order to build muscle. As body weight increases, increase the calories by following the equation using the new body weight. Once the desired body weight is achieved, return to the middle range of calories to maintain your hard-earned muscle mass. Try adding calories to your diet with these easy steps:

1. Add one extra egg and slice of toast w/ jam to your breakfast – 230 kcals
2. Add a snack of juice and fig newtons (12 per package) – 1100 kcals
3. McDonalds shake (it's low fat, so enjoy) – 390 kcals
4. Add small items to each meal, i.e. extra potato, apple, banana, or similar item you like. Over the day, the calories will add up
5. Bake large meals, i.e. lasagna on the weekends and freeze it – then during the week it can be microwaved and served in minutes

Weight Loss

The goal is to lose fat mass. There are 3,500 kcals for every pound of fat. So, to lose a pound of fat, you must lose 3,500 kcals. That means if you lost 500 kcals every day, you would lose a pound of fat in a week (500 x 7 = 3,500). The easiest and fastest way to accomplish this is to increase your activity level by 250 kcals by participating in sustained activities such as stairmaster, running, swimming, cycling, or activities you enjoy and will do. In addition, make small changes in your diet in order to reduce your caloric intake products – small changes are easier to achieve and maintain.

HEALTHY WEIGHT GAIN TIPS

- The essence of weight gain is consuming more calories throughout the day than you expend.
- A gain in lean body mass of 1 pound per week is a realistic goal.
- Never skip a meal, especially breakfast. Try to eat every 2-3 hours.
- Eat frequently. Shoot for 4-6 meals per day.
- Increase your lean protein intake. Consume foods such as chicken, turkey, and low-fat dairy.
- Drink at least a gallon of water per day.
- Eat five servings of fruits and vegetables per day.
- Eat a nutritionally sound snack before bed.
- Get at least 8 hours of sleep per night.
- Consume the right kinds of fat. Fats from non-animal sources, such as nuts and olive oil, are fats you should include in your diet. Avoid animal fats, as these fall into the category of saturated fats.
- Add extra snacks to your diet. Good snacks include skim milk, fruit, raw vegetables, trail mix, yogurt, and string cheese.
- Use a meal replacement shake such as Gatorade Nutrition Shake. These are best used for post workout nutrition and times when you may have to eat on the run.
- Try adding powdered milk to the milk you normally drink.
- Cook hot cereals with milk instead of water.
- Choose dense cereals such as granola, grape nuts, and wheat chex. Avoid sugary cereals such as fruit loops, cocoa puffs, or captain crunch.
- Try topping your cereal with fruits such as raisins or bananas.
- Spread peanut butter on your toast.
- Use whole wheat bread when you make sandwiches.
- Eat nutritionally sound desserts. Some examples are fruit, yogurt, and chocolate milk.

HEALTHY WEIGHT LOSS TIPS

- Weight loss is simply expending more calories throughout the day then you take in. Any food in excess, good or bad, is stored in the body as fat.
- Weight loss of more than one pound per week is not recommended and will negatively affect performance.
- Perform low intensity extended duration exercise, such as brisk walking.
- Drink a minimum of a gallon of water per day. Drink water instead of soft drinks or other beverages containing lots of sugar.
- Eat 4-6 smaller meals throughout the day as opposed to 2-3 large meals.
- Never skip breakfast and avoid eating a lot after dinner if at all.
- Avoid simple sugars. Get your carbohydrates from high fiber foods such as whole wheat bread and vegetables.
- Avoid all fried foods. These foods are high in saturated fat and calories.
- Avoid high fat dairy products. Use skim milk, egg whites, and low-fat cottage cheese instead.
- Eat chicken or turkey instead of red meat. Bake or grill your meat instead of frying it.
- Avoid high fat sauces and dressings. Red sauce is a better choice than white or cream sauces. Use low fat salad dressing.
- Eat fruit in place of ice cream, cake, or other sugary deserts.

NUTRIENT TIMING

Timing is "vital for athlete's ability to optimize and promote the optimal recovery from the exercise stress. Nutrition helps increase muscle strength, lean body mass, and stimulate muscle growth. Proper timing of the nutrition can activate natural anabolic agents (muscle building agents) within the body."

THREE PHASES

Energy Phase: 10 min prior and during workout; i.e. CHO drinks, Gatorade

- Increase nutrient delivery to the muscles and spare muscle glycogen and protein
- Limit immune system suppression
- Minimize muscle damage
- Set nutritional stage for faster recovery following workout

Anabolic Phase: Within 30-45 min after workout; i.e. Protein shakes, chocolate milk

- Shift metabolic machinery from a catabolic state to an anabolic state
- Speed elimination of metabolic wastes by increase muscle blood flow
- Replenish muscle glycogen stores
- Initiate repair and set the stage for muscle growth
- Reduce muscle damage and bolster the immune system

Growth Phase:

Rapid Segment: 4 hours after workout; full meal

- Maintain increase in insulin sensitivity
- Maintain the anabolic state

Sustained Segment: 16-18 hours post workout

- Maintain positive nitrogen balance and stimulate protein synthesis
- Promote protein turnover and muscle development

Source: Nutrient Timing: The Future of Sports Nutrition, John Ivy, PhD, & Robert Portman, PhD.

NUTRIENT TIMING

Meal Frequency

You must eat at least 3 meals a day. 6 meals a day are optimal. Try to avoid going more than 3 or 4 hours without eating. Make sure you drink plenty of fluids with each meal. This should keep you from eating massive amounts of food at one sitting and keep your metabolism running smoothly.

Example:

- 7:00am – Breakfast / 1 pint fluid
- 10:00am – Snack / 1 pint fluid
- 1:00pm – Lunch / 1 pint fluid
- 4:00pm – Snack / 1 pint fluid
- 5:00pm – Workout / 3 pint fluid
- 6:30pm – POST WORKOUT NUTRITION!!!
- 7:00pm – Dinner / 1.5 pint fluid
- 10:00pm – Snack / 1 pint fluid

POST WORKOUT NUTRITION

Post Workout recovery quite possibly could be one of the most crucial steps in assuring yourself that all the hard, dedicated work completed during a training session is turned into gains for yourself. The post workout meal must be consumed as soon as possible after a workout (no longer than a half hour). If you fail to feed your body within the time frame, or this "window of opportunity," the following is more than likely to take place:

- Prolonged muscle soreness and fatigue
- Poor performance in subsequent training sessions
- Symptoms of over-training (loss of appetite, loss of motivation, inability to sleep, irritability, depression, breakdown of immune system, difficulty concentrating).
- Minimal, if any, gains in lean body mass
- Loss of muscle mass and decreased in metabolic rate

To ensure that these do not occur, you must do the following immediately after each and every workout. We are looking to ingest high GI carbs (refer to section on CHO) immediately after to replenish glycogen stores and within 2 hours of completion of exercise, ingest low GI carbs to completely replenish our stores.

- Rapidly replenish low glycogen stores in muscles
- Rapidly decrease muscle protein breakdown
- Rapidly prompt an increase in muscle protein synthesis

This can be accomplished by consuming calories with a 3:1 ratio of CHO:Protein immediately following the training session. Throughout the day, you should strive to take in 2 grams of protein for every kilogram of bodyweight (1 kilogram = 2.2 pounds), not only to ensure recovery, but to promote and increase lean body mass.

POST WORKOUT NUTRITION

Example:

Body Weight	Carbs Needs	Protein Needs
• 150	105g	35g
• 175	120g	40g
• 200	135g	45g
• 225	150g	50g
• 250	165g	55g
• 275	180-195g	60-65g
• 300	195-210g	65-70g

The post workout carbs can come from supplements (Gatorade, PowerAde) or real food (graham crackers, pretzels, bagels, breakfast bars, English muffins, waffles, pancakes, cold whole or multi grain cereals, and fresh fruit).

The post workout protein can come from supplements (protein bars, Protein shakes) or from real food in the form of lean protein sources.

PRE-COMPETITION NUTRITION

The pre competition meal is extremely important to athletes so as to ensure peak performance during athletic competition. The nutrition should give the athlete the necessary energy and hydration in order to perform at the highest levels during and throughout the entire competition. Also, the nutrition should keep the athlete from hunger sensations during the competition. The following guidelines will help you plan for your pre competition meal so that you may get the best possible performance out of your body when it matters most.

- Eat the meal at least three hours before the competition
- Eat high starch foods: CHO should make up about 2/3 of your meal
  -Example of starch foods are: spaghetti and all pastas, ravioli, breads (rolls, whole or multi-grain sliced breads, bagels), rice (brown or whole grain), potatoes (russet and sweet), pancakes, cereals (hot and cold) and crackers. Fresh vegetables, fresh fruit, and low-fat granola bars are also great for a pre competition meal.
- Limit fats and oils
- Restrict high sugar foods
- Avoid foods and drinks that contain caffeine
- Avoid foods that produce gas (certain raw vegetables, certain fruits, or certain beans, and high fiber foods)
- Avoid foods that may cause acid reflux (spicy foods)
- Avoid drinking carbonated beverages
- Avoid eating foods that are unfamiliar to you and that your body is not accustomed to digesting
- Drink plenty of fluids with this meal

The pre competition meals are extremely important but understand that it will not work miraculous events for the athlete during the competition. The pre competition meal, along with sound nutritional habits in the days, weeks and months leading up to the competition will create the best possible state for the athlete to perform in.