

**Long Beach State
Strength and
Conditioning :
Nutritional
Information for
Athletes**

2010

Athletic performance and recovery from training are enhanced by attention to nutrient intake. Optimal nutrition for health and performance includes the identification of both the quantity and quality of food and fluids needed to support regular training and peak performance. Also, a sound nutrition program can help to minimize the frequency of nagging injuries and can assist in more rapid recovery day to day and during rehabilitation. As training demands shift during the year, athletes need to adjust their caloric intake and macronutrient distribution while maintaining a high nutrient dense diet that supports their training and competition nutrient needs. Throughout the rest of this section various topics will be discussed to help aid and inform the athlete better when it comes time to make important nutrition decisions. The various topics include information on: Recommended daily requirements for Protein, Carbohydrates, Fats; Dehydration; Before, During, and After-Workout Nutrition; The Importance of Sleep; The Benefits of Breakfast; and Nutritional Supplementation.



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MACRONUTRIENT RECOMMENDATIONS

In the position of the American Dietetic Association, Dietitians of Canada, and the American College of Sports Medicine that physical activity, athletic performance, and recovery from exercise are enhanced by optimal nutrition. These organizations recommend appropriate selection of food and fluids, timing of intake, and supplement choices for optimal health and exercise performance.

PROTEIN

Protein recommendations for endurance and strength-trained athletes range from 1.2 to 1.7 g/kg (0.5 to 0.8 g/lb) body weight per day. These recommended protein intakes can generally be met through diet alone, without the use of protein or amino acid supplements. Energy intake and sufficient to maintain body weight is necessary for optimal protein use and performance.

CARBOHYDRATES

Carbohydrate recommendations for athletes range from 6 to 10 g/kg (2.7 to 4.5 g/lb) body weight per day. Carbohydrates maintain blood glucose levels during exercise and replace muscle glycogen. The amount required depends upon the athlete's total daily energy expenditure, type of sport, sex, and environmental conditions.

FATS

Fat intake should range from 20% to 35% of total energy intake. Consuming $\leq 20\%$ of energy from fat does not benefit performance. Fat, which is a source of energy, fat-soluble vitamins, and essential fatty acids, is important in the diets of athletes. High-fat diets are not recommended for athletes (1).

FOOD EXAMPLES:	
<i>MAIN-CATEGORY</i>	<i>SUB-CATEGORY</i>
PROTEIN FOODS	
*Lean red meats (93% lean, top round, sirloin)	Protein - Lean meat
*Salmon	Protein - Fish
*Omega-3 eggs	Protein - Dairy
*Low-fat plain yogurt (lactose-free if you can find it)	Protein - Dairy
*Supplemental protein (milk protein isolates, whey protein isolates, or rice protein isolates)	Protein - Powder
CARBOHYDRATE FOODS	
*Spinach	Carb - Vegetable
*Tomatoes	Carb - Vegetable
*Cruciferous vegetables (broccoli, cabbage, cauliflower)	Carb - Vegetable

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*Mixed berries (strawberries, blueberries, raspberries, etc.)	Carb - Fruit
*Oranges	Carb - Fruit
Mixed beans (kidney, navy, white, etc.)	Carb - Legume
*Quinoa	Carb - Grain
*Whole oats (large flake)	Carb - Cereal
FAT FOODS	
*Mixed nuts (a variety of different types of nuts including pecans, walnuts, cashews, brazil nuts, etc.)	Fat - Seeds and Nuts
*Avocados	Fat - Fruit
*Olive oil (extra virgin)	Fat - Oils
*Fish oil (salmon, anchovy, menhaden, krill)	Fat - Oils
*Flax seeds (ground)	Fat - Seeds and nuts

(2)

DEHYDRATION

Dehydration (water deficit in excess of 2% to 3% body mass) decreases exercise performance; thus, adequate fluid intake before, during, and after exercise is important for health and optimal performance. The goal of drinking is to prevent dehydration from occurring during exercise and individuals should not drink in excess of sweating rate. After exercise, the athlete should drink adequate fluids to replace sweat loss during exercise, approximately 16 to 24 oz (450 to 675 mL) fluid for every pound (0.5 kg) of body weight lost during exercise (1).

WORKOUT NUTRITION

BEFORE

Before exercise, a meal or snack should provide sufficient fluid to maintain hydration, be relatively low in fat and fiber to facilitate gastric emptying and minimize gastrointestinal distress, be relatively high in carbohydrate to maximize maintenance of blood glucose, be moderate in protein, be composed of familiar foods, and be well tolerated by the athlete.

DURING

During exercise, primary goals for nutrient consumption are to replace fluid losses and provide carbohydrates (approximately 30 to 60 g per hour) for maintenance of blood glucose levels. These nutrition guidelines are especially important for endurance events lasting longer than an hour when an athlete has not consumed adequate food or fluid before exercise, or if an athlete is exercising in an extreme environment (e.g., heat, cold, or high altitude).

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AFTER

After exercise, dietary goals are to provide adequate fluids, electrolytes, energy, and carbohydrates, and carbohydrates to replace muscle glycogen and ensure rapid recovery. A carbohydrate intake of ~1.0 to 1.5 g/kg (0.5 to 0.7 g/lb) body weight during the first 30 minutes and again every 2 hours for 4 to 6 hours will be adequate to replace glycogen stores. Protein consumed after exercise will provide amino acids for building and repair of muscle tissue (1).

IMPORTANCE OF SLEEP

The amount of sleep an athlete gets appears to have a large impact on sports performance.

WHY IS SLEEP SO IMPORTANT?

Researchers speculate that deep sleep helps improve athletic performance because this is the time when growth hormone is released. Growth hormone stimulates muscle growth and repair, bone building and fat burning, and helps athletes recover. Studies show that sleep deprivation slows the release of growth hormone. Sleep is also necessary for learning a new skill, so this phase of sleep may be critical for some athletes.

HOW MUCH SLEEP IS RECOMMENDED?

Sleep experts recommend seven to nine hours of daily sleep for adults, and nine to ten for adolescents and teens. The good news for most athletes is that just one sleepless night is not necessarily associated with any negative effects on performance. So, don't worry if you toss and turn the night before a big competition. One sleepless night is unlikely to limit your performance.

HOW TO USE SLEEP TO IMPROVE SPORTS PERFORMANCE?

- Make sleep a priority in your training schedule.
- Increase your sleep time several weeks before a major competition.
- Go to bed and wake at the same times every day.
- Take daily naps if you don't get enough sleep each night (3).

IMPORTANCE OF BREAKFAST

WHY IS BREAKFAST SO IMPORTANT?

After a good night's rest, your blood sugar, or glucose levels, are very low since you've been asleep without a meal for 6-10 hours. Your body is basically running on empty in the morning. Eating a big meal at breakfast time will 'break the fast' and replenish those glucose levels. Glucose is your body's source of energy.

ENERGY FOR THE BRAIN

Your brain feeds on glucose, but does not store glucose. You'll be sharper and have better

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concentration when you've had a big breakfast. If you've got important work to do in the morning, be sure to eat big so your brain isn't running on fumes.

ENERGY FOR THE MUSCLES

Glucose also feeds your muscles, so you'll feel less tired and have more energy overall, with a big breakfast. Having donuts and sugary products will give you a quick spike in glucose, followed by a large drop and then leave you hungry again to gain more weight. You don't want that. This is why it's important to eat a nutritious and healthy breakfast that is loaded with 100% whole grains, since they will digest evenly and keep you energetic throughout the day(4).

SOME IDEAS TO CONSIDER WHEN PUTTING TOGETHER BREAKFAST

1. Take your time and pace yourself when eating, if you don't want to allow time in the morning, prepare food ahead of time.
2. Include some protein dense food.
3. Eat enough food.
4. Eat real, unprocessed food.
5. Don't be afraid of vegetables, or eating "dinner food" (like chicken and salad, or turkey/vegetarian chili) for breakfast.
6. Try whole grains (real whole grains like oats, quinoa, sprouted grains, etc.)
7. Establish a routine that you can stick with (5).

NUTRITIONAL SUPPLEMENTS

SUPPLEMENTS

The NCAA warns student-athletes about the use of nutritional supplement based on several factors:

- The federal government (FDA) does not regulate supplement labeling and therefore, ingredients included in the product may not be listed on the label and/or the amount of the ingredient may be wrong.
- Student-athletes and salespeople are often unaware of the banned substances/ingredients that may be in these supplements thus cannot guarantee that they are safe.
- Athletes and coaches may be unaware that there are different names used for the same or similar products. This lack of knowledge may lead to an athlete taking a product containing banned or unsafe substances.

NCAA's policy is that ignorance is no excuse and if an athlete tests positive during an NCAA sponsored drug test thus he/she will lose one year of eligibility regardless of the source of the banned substance.

NCAA Bylaw 16.5.2g states *"An institution may provide permissible nutritional supplements to a student-athlete for the purpose of providing additional calories and electrolytes. Permissible nutritional supplements do not contain any NCAA banned substances and are identified according to the following classes: Carbohydrates/electrolyte drinks, energy bars, carbohydrate boosters, and vitamins and minerals."* Other important factors regarding nutritional supplements include:

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- ❖ Nutritional supplements containing 30% or more protein are considered muscle building and are not permissible.
- ❖ It is not permissible for an institution or an institutional staff member to sell or arrange the sale of muscle-building supplements to student-athletes.

Athletes who are taking supplements or are considering taking supplements would be well advised to see an athletic trainer, strength and conditioning coach, or call the NCAA REC hot line at 877-202-0769 or on-line at www.drugfreesport.com/REC (password= ncaa1) to find information on specific products. Athletes will never be advised that a non-regulated supplement is guaranteed to be safe and will not cause a positive result on a drug test (6).

MUSCLE MILK COLLEGIATE

The Cytosport philosophy: proper nutrition based on sound scientific principles is one of the tenets of optimum athletic performance. We have long encouraged student athletes to take responsibility for their decisions about proper nutrition, and we hope that their choices are made because they are well-informed and guided by principles of fair and equal competition. But merely encouraging today's multi-tasking, time-constrained student athlete to eat to win often isn't enough. Consuming three square meals a day that contain all the important food groups in sufficient quantities to ensure optimum nutritional support of athletic performance is often difficult-if not impossible. To help student athletes with this dilemma, Muscle Milk Collegiate provides a responsible, safe, and effective option.

DIRECTION FOR CYTOSPORT MUSCLE MILK COLLEGIATE

- Before Workouts: Drink one hour prior to workout.
- After Workouts: Drink within one hour of completing your workout.
- Prior to Bedtime: Enjoy one serving before bedtime (7).

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