Nutrition

All aspects of sports conditioning are important for maximum physical development. Nutrition is one component most programs overlook. The following section will provide information to change dietary habits. The diet provides sufficient nutrients and energy for intense physical activity. Applied nutrition is the key. This process has a positive effect on body composition and maximizes the benefits of physical training.

Lower body fat increases mobility. Excess weight in the form of fat reduces speed and endurance. Nutrition is one of the key factors in lowering fat and stabilizing or increasing muscle tissue.

During training, the chemical and structural changes in the body are associated with diet. The body must recuperate between workouts to reach higher levels of fitness. Often the lack of progress or "staleness" during training can be related to poor nutritional lifestyle and not the training program.

As stated previously, a balanced diet is achieved by modifying current eating habits. The diet should approximate 50-60 % carbohydrates, 15-20% fat, and 20-25% protein. The following are guidelines to achieve this combination. After each guideline there is an explanation of why it is important.

Dietary Guidelines

A. **Eat three meals with calories evenly distributed throughout the day. There should be an addition of one or two snacks when extra caloric intake is needed.**

Physical Factors:

1. Helps to maintain muscle tissue
2. Promotes body fat reduction
3. Reduces sluggishness and the onset of fatigue

It is important to keep food intake at a constant level through out the day. Skipping meals will not replace all the energy stores in the muscle. At the same time, there may be less muscle growth.

Secondly, an evenly distributed caloric intake through the day keeps the body's ability to burn calories elevated. Skipping meals to lose weight is counter productive and will not allow for progress in the training program.

A. Cut Down on Foods that are High in Fat

1. Red meats (steak, hamburger, franks, luncheon meats, etc.)
2. Pork products (bacon and sausage)

3. Whole milk, ice, cream and cream sauces
4. Cheese and cheese sauces
5. Butter or margarine
6. Mayonnaise or Miracle Whip
7. Oils of all kinds (used in cooking or in salads)
8. Salad dressings
9. French fries or other forms of fried potatoes such as chips

A Diet High in Fat Can Lead to:

1. Chronic exhaustion
2. Irritability
3. Restlessness
4. % Fat increases
5. Muscle tissue decreases

A diet, which is high in fat and low in carbohydrates, slows the process of energy storage in the muscle. If this continues there will be less fuel for high intensity activity.

B. Eating Habits to Lower Fat Intake

1. Buy lean cuts of meat and trim all of the excess fat (flank steak or London broil)
2. Keep meats to moderate servings. When possible substitute fish and poultry for meat.
3. Don't fry foods: bake, broil, boil, poach, steam, barbecue, or microwave.
4. Use all fats sparingly (oils, butter, margarine, mayonnaise, and miracle whip).
5. Use sparingly all dairy products that are packed in oil.
6. Avoid use of products that are packed in oil.
7. Substitute foods that will help to lower your fat intake:

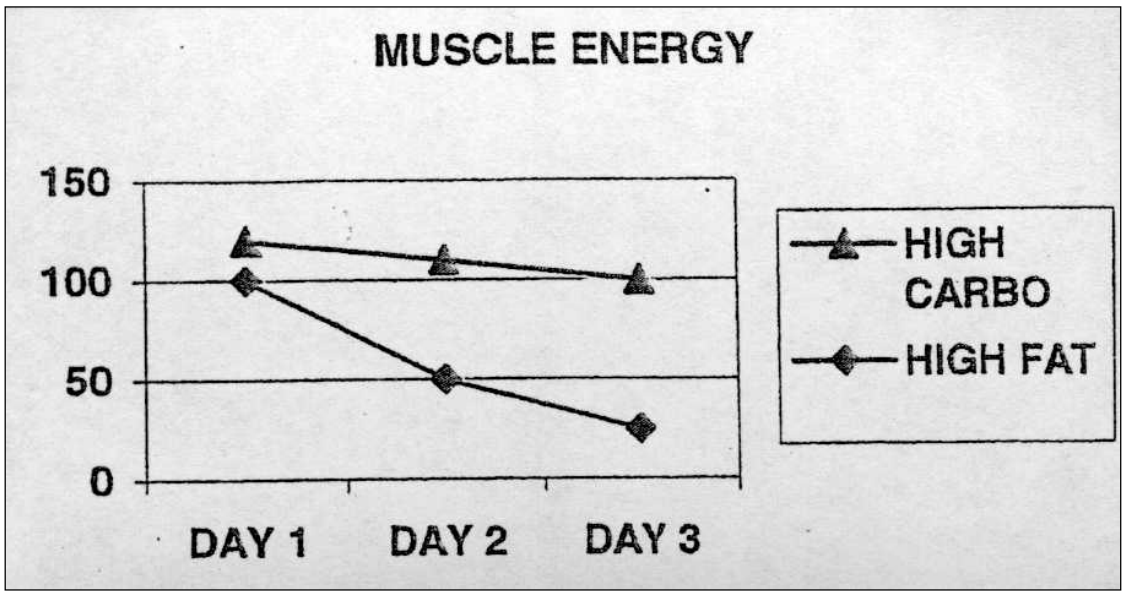
a.) Low-cal salad dressing, no oil salad dressing
b.) Low-cal mayonnaise
c.) Low-cal margarine
d.) Skim or low-fat milk products (ice cream, yogurt, etc.)
e.) Tuna packed in water

8. Buy low-fat products in general.

C. Increase Intake of Carbohydrates early

The importance of carbohydrate energy during exercise must be emphasized. Athletes need carbohydrates to be stored in muscle in the form of glycogen to fuel the muscle during activity. With training, eventually muscle glycogen stores will be depleted with a risk of dehydration. Some of the symptoms will be low energy levels, muscle fatigue, and possible cramping. Muscles do not store great quantities of glycogen and this fuel must be restored everyday along with fluids. Glycogen depletion, or "bonking," causes the muscles to feel stiff and tired. Carbohydrates are the major source of food that replenishes glycogen. The graph that follows is an example of exercise that is performed on successive days and the amount of muscle glycogen restored when comparing a HIGH CARBOHYDRATE to a HIGH FAT DIET. Notice on DAY

THREE the amount of glycogen remaining in the muscle when eating a diet higher in carbohydrates.



It is best to consume normal servings during meals of those carbohydrates that are low to moderate on the glycemic index scale while minimizing those carbohydrates that are considered high. The glycemic index of a food is how it's ingestion effects blood glucose fluctuation. The lower the glycemic index, the slower these carbohydrates breakdown, slowly releasing glucose into the bloodstream. Food items with higher glycemic indexes breakdown quickly during digestion and release glucose into the blood stream rapidly. There is evidence that following intense exercise the higher glycemic index carbohydrates will result in greater glycogen replacement in the muscles and assist with energy recovery. The athlete may experience a slight weight increase. This is due to newly stored muscle glycogen that is also stored with water. Again, this helps the athlete with energy levels and hydration when making these changes. waste products. This can cause severe water imbalance and promote muscle cramping.

GLYCEMIC INDEX[8]			
LOW		MODERATE	
Barley Kernel Bread	Rice Brand	Sponge Cake	Basmati Rice
Skim Milk	Apple (whole/juice)	Corn Tortilla	SNICKERS Bar™
9-Grain Bread	Peaches (fresh)	Brown Rice	Kiwifruit
Plums	Lentils	Green Peas	Oat Bran Cereal
ALL BRAN™ Cereal	Tomato Soup/Juice	Cracked Barley	Bulgur
Barley , Boiled	Apricots (dried)	Sweet Potato	Banana
Yogurt (all types)	Pears (fresh)	Brown Rice	7-Grain Bread
Grapefruit/Oranges	Brown Rice	Mango	Grapes
Beans (all types)	Chickpeas/Hummus	Pita Bread White	Durum Spaghetti
Peanuts/Cashews		MULTI-BRAN CHEX™	Oat Bran Bread
		Buckwheat	Linguine
		Orange/Grapefruit	Sweet Corn
		Juice Oatmeal Cooked	100% Whole Wheat Bread
HIGH			
Angel Food Cake	Cornmeal	Watermelon	Molasses
Doughnut	Couscous	Pancakes	Baked/Mashed Potatoes
Hard Candy	Corn Chips	Honey/Syrups	Soda (sugared)
Bagel, White	Croissant	English Muffins	Pretzels
Cornflakes	Glucose	Waffles	Sports Drinks
TOTAL™ Cereal	Sucrose	White Bread	POP-TARTS™
Raisin Bran Cereal	Barley Flour Bread	Corn Bran Cereal	SPECIAL K™ Cereal
Shredded Wheat	CHEERIOS™	CRISPIX™ Cereal	Rye Flour Bread
Raisins	CREAM OF WHEAT™	RICE KRISPIES™	CORN CHEX™ Cereal
GRAPE-NUTS™	Millet Soda Crackers	Cereal	SNACKWELLS™

Physical Factors:

1. Increased energy storage in muscle
2. Protein sparing effect for growth and repair of muscle
3. Prolonged endurance

A. Protein Intake Should Be Evenly Distributed Throughout the Day From Low Fat Sources

Many athletes will eat high amounts of protein at one meal without considering other times of the day. It is important to consume quality sources throughout the day. It is recommended that .45 to .70 grams per day of protein are sufficient for every pound of body weight.

High levels of dietary protein may increase the tendency accumulate body fat. Also the breakdown of excess dietary protein produces an increase in urinary water loss to remove excess waste products. This can cause severe water imbalance and promote muscle cramping.

The Following Are Good Sources of Protein:

Poultry	Chicken Breast	Turkey Breast	
Fish	Catfish	Lobster	Shrimp
	Cod	Orange Roughy	Sole
	Flounder	Pollock	Snapper
	Haddock	Salmon	Tuna, Packed in water
	Halibut	Scallops	
Dairy	Cottage Cheese, Lowfat, 1% fat		Skim Milk
	Egg Beaters, No Fat		Yogurt, Low Fat
	Egg Whites, Cooked		
Meats	Beef, Lean		Lamb, Lean
	Canadian Bacon		Pork, Lean
	Ham, Lean		Veal

E. Refined Sugars Should Not Replace Balanced Meals
(Sweets, Soda, Candies, Cakes, etc.)

Physical Factors:

1. Foods that are high in refined sugar have low vitamin and mineral content.
2. Many sweets are also high in fat (cakes, cookies, pies, etc.).

. Sweets that are high in fat are not good sources of carbohydrates for replenishing muscle energy stores

F. Increased Consumption of Fruits, Vegetables and Juices

Dietary Factors:

1. High in vitamins and minerals
2. High water content
3. Good source of carbohydrates

G. Water Intake Should be Six to Eight Glasses a Day

Effects of Dehydration:

1. Fatigue
2. Deterioration in performance
3. Increase in body temperature
4. Muscle pulls

Because of tension, anxiety and sweat losses, thirst is an inaccurate indicator of fluids needed during competition. Fluid intake before and during the event will not fully replace fluid losses, but partial replacement reduces the risk of overheating. The athlete should continue to drink at frequent intervals after the event until the weight has been regained. Athletes should be encouraged to weigh themselves before and after training to determine the amount of fluid that needs to be replaced. For every pound of body weight lost during exercise, 16 to 20 ounces of fluids should be consumed. Many of the sports drinks are useful because they contain sugar combinations that assist muscle glycogen repletion as well as small amounts of salt that promotes more efficient rehydration.

A 3% weight loss leads to impaired performance; a 5% loss can result in some signs of heat exhaustion; a 7% loss may produce hallucinations and put the individual in the danger zone.

H. Intake of Alcohol Should Be AVOIDED

I. Negative Effects:

1. Alcohol consumption can lead to uncontrollable body fat increases.
2. Reaction time, hand-eye coordination, accuracy and balance
3. Impaired body temperature regulation
4. Decreases strength, power, local muscular endurance, speed, and cardiovascular endurance
5. Dehydration
6. Muscle pulls
7. Hinders muscle growth.