Nutrition for Endurance

1. Purpose
   a. Nutrition Indicators – Training for a competition or regular physical activity that involves high levels of endurance and physical strain on the body.
   b. Criteria to Assign the Diet – Current diet plan/menus, work out schedule and goal dates.
   c. Rationale for Diet - To exercise consistently, you need to provide a good supply of high-quality energy to your working muscles. The easiest way to do this is to eat a variety of high-quality foods throughout the day and stay properly hydrated.

2. Population
   a. Overview – For athletes who are focusing on achieving maximum performance and endurance.
   b. Disease Process – During prolonged exercise, energy is provided by the muscle glycogen stores, which directly depend on the amount of carbohydrates ingested. Dietary carbohydrates keep the body from undergoing early muscle fatigue and hypoglycemia during exercise. A lack of body protein in prolonged exercise can degrade the muscle, which is why it is crucial to supply the body with the amino acids needed during the recovery phase.
   c. Biochemical and Nutrient Needs – Carbohydrates: The main source of energy. Protein: Essential to growth and repair of muscle and other body tissues damaged during intense physical activity. Fat: A source of energy, also important in relation to fat soluble vitamins. Minerals: Those inorganic elements occurring in the body and which are critical to its normal functions. Vitamins: Water and fat soluble vitamins play important roles in many chemical processes in the body. Water: Essential to normal body function

3. General Guidelines
   a. Nutrition Rx - The pre-exercise meal should consist of easily digestible foods high in complex carbohydrates, such as pasta, breads, fruits and vegetables. Select a small amount of lean meat such as chicken or fish, and experiment with what works best for you. Eat a small snack and drink some water a half hour before you get going. You should also start drinking water before your workout so you've consumed about 6-12 ounces in the hour before your workout. Proper hydration during exercise depends upon the intensity and duration of exercise, the fitness of the athlete, and weather conditions. In order to simplify the recommendations, a good starting point is to drink 8-10 fl oz of water every 15 min during exercise. If exercising longer than 90 minutes, drink 8-10 fl oz of a sports drink every 15 - 30 minutes. Exercising for more than about 90 minutes usually requires that you replenish lost carbohydrates. After your workout, drink enough water to replace water lost through sweat. The best way to determine this is by weighing yourself before and after exercise. For every pound of body weight lost, you'll need to consume about 3 cups of fluid. The post-exercise meal should be eaten within two hours of a long or intense workout in order to replenish glycogen stores for continued exercise. While research shows eating 100-200 grams of carbohydrate within two hours of
endurance exercise is essential to building adequate glycogen stores, eating a combination of both carbohydrate and protein seems to be an even better option. Studies have found that a 4:1 ratio of carbohydrate to protein seems to be the ideal combination of nutrition

b. Adequacy of Nutrition Rx - For every physical activity, the body requires energy and the amount depends on the duration and type of activity. For endurance, a diet should be carefully planned, and success of performance will vary depending on how well a diet is planned and followed.

c. Goals – To ensure peak performance during physical activity and to maintain health and proper body function of the individual pre, during, and post exercise.

d. Does it Meet DRI – When following a carefully planned diet for individual performance, it should meet all DRIs.

4. Education Material

a. Nutrition Therapy – Diet manuals and sample menus for training athletes. List of foods that are recommended for endurance and foods to avoid. Tips on how to stay hydrated and good sources of dietary carbohydrate, fat, and protein. Information on the dangers of training without adequate nutrition and diet.

b. Ideas for Compliance – Use of a diet journal that tracks meals and fluids during the day, as well as times of meals and workouts (and workout duration). Follow up meetings to ensure that all nutrient levels are being met in order to ensure maximum performance.

5. Sample Menu

a. Foods Recommended – Quinoa, leafy greens, wild salmon, oatmeal, brown rice, sprouted grain bread, red cherries, kale, lowfat milk, bananas, soy, green tea, whole-wheat pasta.

b. Foods to Avoid - Foods that have a lot of fat such as fried foods, certain meats, candy bars, potato chips and doughnuts will be harder to digest. They should be avoided on the day of hard training and/or competition. The body cannot perform at its maximum if all the blood is going to the digestive organs instead of the working muscles.

c. Example of a meal plan – Breakfast: Oatmeal with lowfat milk, Orange juice, Banana. Post-workout: Peanut butter and small bagel, Fruit yogurt, Grape juice. Lunch: Chicken salad sandwich on whole grain bread, Carrot and pepper sticks, tortilla chips, red cherries, Lowfat/nonfat milk. Snack: Dry cereal mixed with raisins and peanuts, Peach. Dinner: Pasta with meat sauce, Italian bread, Salad with veggies / lowfat dressing, Steamed broccoli and cauliflower, Frozen yogurt / strawberries

6. Websites

a. Organizations with Websites –
http://ironman.com/
http://www.pao.org/
http://www.ncaa.org/
http://acsm.org/

b. Government Websites
7. References

a. Journal articles references


