

## WESLEYAN UNIVERSITY STRENGTH & CONDITIONING PROGRAM

### NUTRITIONAL STRATEGIES FOR ENHANCING PERFORMANCE & RECOVERY FROM EXERCISE

Given the emphasis on winning and achievement, many athletes in training are searching for the ultimate method or ingredient to provide that extra winning edge over their opponents. One key factor leading to better athletic performance:

#### \* DIET

**PURPOSE:** Any individual can perform a hard workout once or even a few times. The individual (athlete) who can recover from a hard session, and continue to come back to work hard again and again is the one who gets the most accomplished!!

The demands of training can take a toll on the body. What you eat and drink before, during, and after training or competition will determine how quickly you will recover from your training and will prepare you for your next training session or competition. Appropriate intake and replacement of **fluids, carbohydrates, proteins, fats, and electrolytes** will aid in performance enhancement and optimum recovery from training.

#### GENERAL METHODS TO ENHANCE PERFORMANCE & RECOVERY

- **Eat smaller more frequent meals throughout the day (7 meals daily)**
  1. **Breakfast**, 2. Mid-morning snack; 3. **Lunch**; 4. Pre-practice fuel; 5. Post-practice fuel; 6. **Dinner**; 7. Evening Snack (U Mass-Amherst-NCAA Wrestling Handout, Nancy Clark lecture 3/27/03)
- **Best energy boosters** are breakfast and lunch (Nancy Clark-Sports Nutritionist 3/27/03 lecture)
- **Eat most of your calories during the day.** Eat larger and more frequently earlier in day and taper off as you move into the evening (see first bullet point)
- **Be responsible and accountable! Get up and eat breakfast everyday. CHO, PRO, FAT in each meal (eggs, rye toast, oatmeal, juice, milk, etc...).** This starts your day!
- **Snack between meals** such as a piece of fruit (banana). A small glass of skim milk would be ideal for protein (yogurt, CHO/PRO shake, water, bagel w/ peanut butter,)
- **Be responsible and accountable!** Eat lunch! Vegetables, whole wheat/rye bread, turkey sandwich, pastas are good choices. Avoid high fat foods like red meat, Taco Bell, Burger King, etc.... Also avoid mayonnaise and dressings.
- **Snack prior to practice** such as a piece of fruit (apple, banana), bagel, roll, nutri-grain bar, applesauce, whole wheat crackers, graham crackers, fig bars, grapes, cheese
- **Snack after practice-take advantage of the “CHO Window”.** Your body is a sponge for simple CHO's to replace the glycogen lost in the workout (2 power bars or 1 ½ bananas, box of raisins, full strength Gatorade or powerade) 75 g of CHO immediately after practice, 75 g of CHO in the 2<sup>nd</sup> hour, eat a regular type dinner during this time (John Underwood Talk 9/13/04, Lake Placid Olympic Training Center Physiologist).
- **Be responsible and accountable!** Eat dinner, high carbohydrates, but do not cut out all fats! Fats are still needed, but you want and need high test fuel going into your body and not low-test.
- **Have a small snack after dinner and prior to bedtime.** Be smart. Frozen yogurt, oatmeal cookies, skim milk, fruit, cho/pro shake. An ice cream sundae, wings, or pizza will not be appropriate choices.
- **Eating on the run:** make smart decisions if you cannot prepare your own food. If you must eat fast food, analyze what it is you are eating. A question to ask your self when eating fast food is, “Is 75% of what I am about to eat fall into the bottom half of the food pyramid?” This will enable you to make smarter choices or more common sense solutions such as:
  - \*Arby's light chicken deluxe, Subway turkey sandwich, BK broiler (Burger King chicken sandwich), McDonald's grilled chicken sandwich-Remove additional condiments like mayonnaise & cheese
- **Do not drink (alcohol) when you are in training. 14 days of training are wiped out with only 1 night of drinking** (John Underwood Talk 9/13/04, Lake Placid Olympic Training Center Physiologist).

## MIND AND BODY RECOVERY

- **Ice immediately after practice or training.** Use ice treatments for body parts, which are sore or tender. Preventative medicine.
- **Use a hot-tub/whirlpool, steam room possibly,** if available, a few hours after practice. This will aide blood flow and circulation. **DO NOT USE A HOT TUB (HOT WATER) WITH AN ACUTE INJURY!** Always ice an acute injury for 24-72 hours.
- **Massage.** Especially knots/spasms. One of the best recuperative measures. Ice cup massages for neck, shoulder, and back strains are very effective for acute injuries, foam rollers, tennis balls, or massage sticks work well on spasms.
- **Adequate sleep** (8 hrs. optimal). First 90 minutes of sleep is essential for 2 key hormones (Growth and Testosterone). Enhance bone growth, muscle tissue growth, and aid in recovery. More than 8 hours sleep and your body begins to atrophy and weaken.
- **Stretch.** Typically it is wise to use for dynamic stretches/movement stretches such as lunges, inchworms, soldier walks, etc... in the warm-up and static/hold stretches in the cool-down. Stretch while changing in the locker room. Stretch prior to and after practice or training. Stretch in the shower, pool, whirl pool or while at home watching T.V.
- **Post exercise cool-down.** Low-level activity rids the body of lactic acid and other waste products. The activity must be low and continuous. (i.e. light jogging, cycling, walking)
- **Treatments.** See the sports medicine staff and treat your injury **2-3 TIMES PER DAY!!** This will heal you much faster than wanting or hoping the injury will heal it self or go away.

### SIGNS OF INAPPROPRIATE RECOVERY: Be aware, BUT DO NOT OVER ANALYZE

- General tiredness of body
- Inability to loosen up (may be 1 body part or whole body)
- “Knot” in muscle(s), spasms
- Loss of appetite
- Failure to sleep, restlessness, light sleep, desire to sleep during day as opposed to night
- Increase in resting heart rate
- Sense of “Heavyness” of body part(s). (i.e. Legs)
- “I don’t care” attitude
- Chronic soreness
- Many “small” nagging injuries
- Irritability easily

## SPECIFIC METHODS TO ENHANCE PERFORMANCE & RECOVERY

### FLUID INTAKE:

- After training or a competition, your first priority should be to replace fluids. If you wait until you are thirsty it is too late! At this time you are already dehydrated. Hydrate before, during, and after your workouts and throughout the day. Water is essential for temperature control, energy production, and waste elimination. Avoid alcohol/high caffeine drinks. Avoid ice tea, coffee, Coke, Mountain Dew, Pepsi and others. These drinks cause dehydration, which further tears your body apart. DRINK WATER, WATER with lemon, or caffeine free drinks. Muscles are approximately 70-80% water. If you must consume any of these types of drinks, hydrate with 3-4 cups of water. Remember, you have the rest of your life to party. You will only have **THIS ATHLETIC OPPORTUNITY ONCE!!** **“To fall as a direct result of undermining your own success is unacceptable” –John Underwood-Olympic Training Center Physiologist.** An easy method to check your hydration status each day is to check the color of your urine. It should be clear, pale yellow like lemonade. If it is cloudy, dark yellow similar to apple juice, then you are most likely dehydrated. To prevent dehydration drink water throughout the day, 8 cups minimum (1 cup=8 oz.). **If you like fruit juices and such, be cautious in terms of the sugars in these drinks. Added sugar in drinks will slow down absorption into the body. Think about diluting your juices and Gatorade type drinks with water before workouts and go full strength juice, Gatorade, powerade, etc.. to restore glycogen levels after the training or workout** (John Underwood Talk 9/13/04, Lake Placid Olympic Training Center Physiologist)

### FLUID INTAKE BEFORE, DURING, & AFTER TRAINING:

- Drink 16 oz (2 cups) 2 hours prior to exercise
- Drink 4-8 oz (1/2 to 1 cup) of fluid every 15 minutes during exercise to offset any losses occurred
- The amount of fluid needed to replace your losses is determined by how much weight you lost (body weight loss). For every pound lost you should consume 16 oz.=1 lb. of fluids (water, sports drinks, juices). In addition foods high in water content are great such as fruits, vegetables, and soups. After working out, beverages containing some sodium are more effective than plain water in recovering from dehydration. Monitor your body weight. Sudden decreases in body weight are a sign of inappropriate fueling. Re-fuel, hydrate and eat more. Not wanting to eat is a sign of overtraining. Do not enhance the effects by not eating and re-hydrating!!

### CARBOHYDRATES:

When you consume carbohydrates (CHO), the body breaks them down into glucose molecules, which are absorbed into the blood and transported to the muscle. CHO stimulates the action of insulin (hormone that transports glucose from the blood into the muscles to be utilized for energy). The brain and muscles utilize glucose as a fuel source. To maintain blood glucose and glycogen stores in the muscles, you must regularly replenish your glucose supply by consuming (CHO) in beverages and food. Your daily diet should consist of 55-75% of calories coming from CHO or **(600g = 2400 calories) of CHO a day** to replenish glycogen stores.

Other research suggests an intake of 6-11 grams of CHO per kg of body weight. To find out what your caloric needs for CHO is utilize the formula below:

Body weight/2.2=Your body weight in kilograms (kg)

1 pound=2.2 kg

i.e. 150 lbs/2.2=68 kg

I need between 6-11g of CHO per day per kg of body weight (68 kg x 8g CHO=544 G of CHO needed each day).

1 g of CHO >yields 4 calories, 544 g x 4=2176 calories from CHO each day

**CARBOHYDRATE SOURCES:** (Bread, rolls, bagels, cereal, potatoes, pasta, rice, fruits, vegetables, salad, pancakes, glucose polymerized drinks-fructose & maltodextrin)

### **NUTRITIONAL TIPS JUST BEFORE & AFTER TRAINING:**

- 40-50 grams of CARB'S (150-200 Kcal) and 5-10 grams of PRO 35min. to 1hr. prior to workout. This has an anticatabolic effect (ANABOLIC). Increase gains over time!!
- Same immediately after workout. The first 30 minutes are essential to replenish carbohydrate stores. 2 hours post workout you need at least 120 grams of CARB'S (480 Kcal) and 40 grams of PRO (160 Kcal). This increases insulin, which increases replenishing of nutrients to muscles!!
- Get carbohydrates 5 or 6 times daily! Eat breakfast such as a piece of fruit, bagel, cereal. Add skim milk for your source of protein. An ideal situation would be to eat CHO every 2 hours for 6-8 hours (.5 g of CHO per lb of body weight). This would bring you to your total of 600 g of CHO per day

### **PROTEIN:**

Protein is extremely important for building and repairing body cells. Protein requirements vary depending on the intensity of training. Protein requirements for athletes are between **.5 to .7 g per pound of body weight**. Another way to look at it would be **1.2g-3.0g of PRO per kg of body weight**. You can use the formula above to calculate your PRO requirements per day. Choose between **(.5-.7g per lb)** or **(1.2-3.0g per kg)** when calculating your PRO intake needs.

150 lbs x .7g PRO=105g x 4cal (1 g of PRO >yields 4 calories)=420 calories from PRO each day

**OR**

Body weight/2.2=Your body weight in kilograms (kg)

1 pound=2.2 kg

i.e. 150 lbs/2.2=68 kg

68 kg x 1.2 g of PRO=82 g of PRO per day

1 g of PRO >yields 4 calories, 82 g x 4=328 calories from PRO each day

Protein intake in excess of the above, recommended allowances is usually not necessary and does not seem to show any further benefits in strength or endurance training. Too much protein will put additional stress on the kidneys acting in a dehydrating fashion. Also, the excess protein not needed is converted to fat and stored. Protein should be 12-15% of an overall daily diet.

**PROTEIN SOURCES:** (Meats-chicken/fish, beef, yogurt, milk, frozen yogurt, cheese, egg whites, beans, broccoli)

### **FATS:**

Fats are an important part of the overall diet. Fat is essential for insulation, protection of organs, an energy source in long duration activities, and numerous other essential functions (i.e. female menstruation). Large amounts of fat are stored in adipose (fat) tissue and within muscle fibers in the form of triglycerides. These fat stores are utilized to provide energy at a relatively slow rate. During low intensity exercise (i.e. walking, light jogging, long distance running) a higher percentage of energy will come from fat stores (triglycerides). The energy provided by both CHO and Fats enable PRO to be utilized for body repair and regeneration. Less than 30% of your total calories should come from fat.

## **ELECTROLYTES:**

Sweating is the bodies' mechanism for cooling the body down. When you sweat, you lose water and minerals called electrolytes. Electrolytes help maintain fluid balance among the cells in the body. Replacement of water and electrolytes are essential for hydration after and before each training session. Sodium is an electrolyte that is lost in sweat. One pound of sweat contains 400-700 mg of sodium. During 3 hours of hard exercise in the heat, it is easy to lose 1,800-5,600 mg of sodium. Under normal exercise conditions, you may not come close to depleting the body's sodium stores due to the average American diet containing high sodium levels.

Potassium is another electrolyte important for fluid balance. One pound of sweat contains 80-100 milligrams of potassium. During a 2-3 hour workout you may lose between 300-800 mg of potassium. Potassium can be replaced by eating foods and beverages rich in potassium.