



Fueling the Competitive Swimmer for Optimum Performance

Ben Freeman PT, MPT, CSCS

Peak Energy Performance Therapy

[Overview]

- How this information will help your swimmers
- Review of nutritional basics
- Nutritional timing
 - Pre/Post Workout
- Hydration
- Foods to include

[Understanding Nutritional Basics]

- Fats (Lipids)
- Protein
- Carbohydrates
 - Glycogen
- Electrolytes
- Water

[Fat (Lipids)]

- The most energy dense macronutrient
- Important for cell membranes
- Essential for nervous system insulation
- Cushions organs
- Necessary for the transport of Vitamins A,D,E,K
- Body can store unlimited amounts of fat

[Protein]

- Vital for antibody production for immune system
- Enzyme production for required chemical reactions
- Component of structural hormones used to build muscle
- Source of fuel when muscle glycogen stores are depleted

[Carbohydrates]

- Provides energy to cells
- Facilitate fat metabolism
- Spare muscle protein
- Necessary for brain function

[Glycogen (The essential carb)]

- Primary source of energy for exercise
 - Glycogen availability is the primary limiting factor in exercise bouts lasting 60 min or longer
 - (Bergstom et al)
- Stored in the liver and skeletal muscle
- Extensively branched chain of Glucose molecules
- 155 lb swimmer stores approximately 40-50g in liver and 350g in muscle
 - Total 1600 cal stored in muscle when full

[Electrolytes]

- Minerals used within cells
- Sodium, Potassium, Magnesium
- When electrolytes are lost through sweat, the blood concentrations of sodium decrease
- Sodium loss can be a potential cause of muscle cramping

[Water]

Dehydration of only 2% bodyweight loss can cause decreases in performance (Kreider et al)

- Water should be the drink of choice for the first hour of practice
- Loss of water through sweat decreases plasma volume and increases the load on the heart
- Overheating begins to take place when the body is dehydrated

[Nutrient timing]

- Not only is it what you eat, but, when you eat that counts
- Like thirst, hunger is not a good indicator of nutritional needs
- Athletes perform better when they focus on solid nutritional principles throughout training, not just for specific events.
- Don't experiment with foods prior to events
- Eat before bed, especially when there is morning practice

[Pre-workout]

- 1.2 g/kg Carbohydrate 2-3 hours before practice
 - 120lb = 66g = 264 calories
 - 135lb = 74g = 296 calories
 - 150lb = 82g = 328 calories
 - 32 oz Gatorade contains 56g carbs
- Ingest 15-25 g Protein
 - Ensure, Boost, Power Bar Recovery, Nuts, PB&J
- Hydrate with water
 - 24-32 oz prior to practice
- Advocate eating in class

[Post-workout]

- Post Workout: CHO 1.0-1.5 g/kg*hr for 4 hours
PRO
- Muscles convert CHO into glycogen up to 3 times faster following exercise
- Glycogen storage is greatest in the first 30-45 min
- Carbohydrate/Protein Ratio (3:1-5:1)
 - Chocolate Milk, Power Bar Recovery, Muscle Milk
- The added protein also stimulates muscle protein synthesis

Good Food Choices for Practice

- Water
- Full strength Sports Drinks
- Energy bar with protein
- Half a deli sandwich or PB & J
- Fruit and nuts
- Trail Mix
- Dry cereal
- Bread
- Smoothies
- Chocolate Milk or similar recovery drink

[General Guidelines]

- Swimmers need more calories
 - Complex Carbohydrates
 - Depending on intensity of workouts the range should be between 8-12 g/kg of body weight
 - Protein
 - Strive to consume 1.5-2.0 grams/kg of body weight
- Snack often and definitely before bed
- Keep a water bottle with you at all times
- Fuel up on carbs for 4 hours following workout
 - 1.0-1.2 g/kg/hr
 - 135 lb (61 kg) swimmer would need 61-73 g of Carbs every hour for 4 hours
- Eat carbs to increase blood sugar the morning of a meet

[Remember This]

- Timing is critical
 - Fuel up prior to performance
 - Don't wait to refuel after practice
- Increase Protein
- Increase Carbs
- Minimal Fat (not fat free)
- Stay hydrated
- Snack often
- Don't experiment with new foods the day of a meet



Ben Freeman PT, MPT, CSCS
9896 Rosemont Ave
Suite 201
Lone Tree, CO 80124
303-991-3020
benfreeman@peakenergypt.com

PEAK ENERGY
Performance Therapy, P.C.

Physical Therapy • Massage Therapy • Sports Performance