# Endurance Athlete Nutrition

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## Benefits of Sports Nutrition

- Enables harder and longer training
- Delays onset of fatigue
- Enhances performance
- Promotes optimal recovery
- Improves body composition and strength
- Enhances concentration
- Improves immune function
- Reduces risk of injury
- Reduces cramping and other side effects of training

## Primary Goals of Sports Nutrition

- Maintain hydration
- Fuel to optimize performance
- Promote rapid recovery

## General Endurance Training Nutrition

- Carbohydrate: found in grains, fruits, legumes, and vegetables; dairy can also be a source
    - Provide energy; primary fuel source for most activities
    - Primary food source of vitamins, minerals, antioxidants, and fiber
    - Carbohydrate quality matters
    - Plan carbs first when meal planning
    - Intake during training is usually around 50-70% of kcal
    - Carb calories = 4 kcal/g
- Protein: found in meats primarily but it is also found in ALL other foods except fruits
    - Primary source of amino acids for tissue repair, enzyme function, and hundreds of other messengers
    - Provides some energy
    - Plan protein second when meal planning
    - Recommended intake is around .8 g/kg; most people get more than necessary
- Fat: found in plant sources such as nuts, avocado, olives, and coconut as well as animal sources such as meats, eggs, and dairy
    - Provides energy; slower release
    - Important for brain, hormone, and joint function
    - Recommended intake is right around 10-20% of kcal of which <10% of kcals should come from saturated fat
    - Fat sources matter
        - Plant vs animal
        - Poly- and monounsaturated fat vs saturated
    - Fat calories = 9 kcal/g

### Example 2400 kcal/day for a 110 lb. athlete

- CHO: 2400 x .7 = 1680 / 4 = 420 g CHO
- PRO: 110 / 2.2 = 50 kg x .8 = 40 g PRO/day = 160 kcal
- FAT: 2400 – 1840 = 560 kcal / 9 = 62 g FAT; 560 / 2400 = 23%

## The Week Before the Event: Carb Loading

| Approach Type | Carbohydrate Regimen | Example: 110 lb athlete |
|---|---|---|
| TAPER: light training 3-5 days prior to event | 80% of kcal | 2400 x .8 = 1920 / 4 = 480 g |
| REST: no training 1-2 days prior to event | 90% of kcal | 2400 x .9 = 2160 / 4 = 540 g |

Carbohydrates that are more quickly absorbed support better carb loading: white rice, white pasta, white bread?, potato, and banana. Grains and fruits will be your primary sources as they are naturally fat free; high fiber vegetables can be problematic during this time as such high volumes are needed. As carb percentage rises, protein and fat decrease.

## Pre-Event

- Meal 4 hours before event consists of:
  - .5 – 2 g/lb CHO
  - .1 - .2 g/lb PRO
  - Minimal FAT
- 15 – 30 minutes prior to event: 30 – 60 g CHO
  - From liquid or fruit
  - Combined glucose and fructose
- Hydration: recommended 16-24 oz fluid before an event

## Event Fueling

- Short events need little if any fuel; longer events need more:
  - 1 – 2.5 hours: 30 – 60 g CHO/hour
  - >2.5 hours: 80 – 90 g CHO/hour
- Easy event foods:
  - 10 twists of hard, plain, salted pretzels: 60 g CHO
  - 30 oz sport drink: varies but around 50 g CHO
  - Sports gels: vary with contents
- Consume gradually throughout the race
- Fuel storage in the body
  - Muscle glycogen storage gets used up with every training session or competition
  - Small reserve of glycogen in the liver is used and depleted next
  - When fuel stores are gone, body is forced to slow down or stop known as BONKING or HITTING THE WALL
- Event hydration: alternate between water and sports solutions

## Post-Event

- Eat within 30 minutes of event
  - For moderate training and events, repeat intake after 2 hours

    - For intense training and events, repeat every hour for 3 hours
- Reload carbohydrate fuel stores with carbohydrate foods; this is what fuels the next event
    - Half gram/lb simple carbohydrates
    - Simple carbs are faster at restoring glycogen
    - Especially important if you are exercising again within 24 hours
    - Example: 110 lb athlete needs 55 g CHO
        - 1 medium apple and 1 granola bar = ~45 g CHO
        - 1 medium banana and 1 blueberry muffin = ~50 g CHO
- Repair and rebuild muscle tissue with protein foods
    - 10 – 20 grams in addition to carbohydrate foods
    - Can go as high as carbohydrate recommendation
- Rehydrate: 16 ounces per pound lost during exercise/event

## Hydration

- Calculate your sweat rate
    - Weight before exercise – weight after exercise then convert to fluid oz; add the loss to any fluids consumed in event then divide by number of hours
    - Example: 110 lb – 108 lb = 2 lbs converted to 32 oz; if 24 oz fluid is consumed in event 24 + 32 = 56 divide by 1.5 hours = 37 oz/hour
- Sweat rates can change with temperature and humidity
- Hydration zone: stay within 2% of body weight to prevent dehydration or over hydration
    - Example: 2% of 110 = 2.2
        - 110 – 2.2 = 107.8
        - 110 + 2.2 = 112.2
- Thirst is the beginning stage of dehydration; do not wait until you are thirsty to hydrate during an event

## Electrolytes

- Sodium is key
- Other minerals are beneficial: potassium, magnesium, phosphorous, etc.
- Helps prevent dehydration
- Protects against overhydration

## Caffeine

- Readily absorbed
- Peaks at about 60 minutes
- 50-100 mg is best
- Why:
    - Increases fat burning thus sparing glycogen stores
    - Increases excitability of muscles
- Caution:
    - GI distress
    - Headaches
    - Elevated blood pressure
- Know event regulations
- Most effective if body has been caffeine deprived

*For more information and to personalize your performance nutrition, contact Kari Collett, RDN, LDN, CLT at A to Zinc Nutrition, LLC. www.AtoZincNutrition.com or 320.310.7211.*