The Importance of Nutrition in Extreme Sports

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Nutrition Knowledge

• Survey of Athletes

• Most nutritious carbohydrate
  • 63% chose an apple while 37% chose French fries

• Good source of protein
  • 63% chose chicken, while 37% chose oatmeal

• Food Groups
  • 95% identified the food groups, but only 45% could identify foods from the group
Nutrition Practices

- 30% of athletes skip breakfast
- 25% skip lunch
- 86% eat at fast food restaurants each week
- 82% of male track, basketball, and football teams could not identify the fuel sources in the muscles
Athletes who skip meals and only eat one meal per day have higher body fat.

Deutz et al, 2000 Med Sci Sports Exerc 32(3) 659-68

Effects of skipping meals

- Higher body fat: Fatigue, lethargic
- Lower body fat: More energy throughout the day
Recovery Nutrition

• Normally takes 24 to 36 hours to replace muscle energy (glycogen)

• Consuming carbohydrates immediately post exercise (w/n 30 minutes) and again at 2 hours post an athlete can reload the muscles in 12 to 16 hours

• Snack should be mostly carbohydrates and some protein
  – (.75-1.0 g CHO/KG and 0.5 g PRO/kg bw)

• Recovery shake, chocolate milk, smoothie, peanut butter sandwich, energy bar, yogurt, turkey sandwich, string cheese and crackers
Protein consumption post exercise

• Study fed isolated egg protein in graded doses from 0-40g after resistance exercise
• MPS showed a graded increase from 0-20g and despite doubling the protein intake to 40g there was no difference in MPS
  – Consuming 10-20 grams of protein is sufficient to stimulate muscle protein (excess protein is oxidized)
    • 3 ounces of chicken, beef, pork, fish
  – Need to consume the protein 5-6 times throughout the day to maximize muscle protein synthesis

  – Chronic protein consumption in excess of this rate could actually lead to shutting down the body’s ability to make new muscle protein

• Consumption should begin as soon as possible after exercise to enhance the rate

Recovery Nutrition

• Not all athletes need to practice recovery nutrition
  – Off season athletes or a marathoner for example

• Replace fluids and electrolytes that are lost during exercise
  – Consuming rehydration beverages and salty foods as subsequent meals/snacks will help replace fluids and electrolytes
Fluids and Hydration

- **Pre-exercise**
  - Drink 2 to 3 cups of fluid 2-3 hours before
  - Drink 1-1.5 cups of fluid 10 to 15 min prior to exercise
  - This will optimize hydration and allow enough time for excretion of any excess fluid

- **During exercise**
  - Drink enough fluid to maintain weight during the workout or competition
  - 6-12 ounces every 15-20 minutes

- **Post exercise**
  - Drink 3 cups of fluid for each pound lost
  - Restore weight before next workout/game
Sport Drink Formulation Important for Optimal Fluid Absorption

Ryan, AJ. et al J. Appl. Physiol. 84: 1581-1588, 1998

<table>
<thead>
<tr>
<th>Drink</th>
<th>Fluid Absorption (mL/cm/hr)</th>
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</thead>
<tbody>
<tr>
<td>Water</td>
<td>0%</td>
</tr>
<tr>
<td>Gatorade</td>
<td>6%</td>
</tr>
<tr>
<td>Powerade</td>
<td>8%*, p&lt;0.05 slower than water and Gatorade. Water and Gatorade were not different from each other.</td>
</tr>
<tr>
<td>AllSport</td>
<td>1.8*</td>
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</tbody>
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* p<0.05 slower than water and Gatorade.
Supplements

• 27-33 billion dollars spent on dietary supplements
• Over 50% of Americans take supplements
• Regulated differently than drugs
• Dietary Supplement Health Education Act (DSHEA)
  – manufacturer is responsible for ensuring that a dietary supplement or ingredient is safe before it is marketed.
  – manufacturers do not need to register their products with FDA nor get FDA approval before producing or selling dietary supplements
The U.S. Food and Drug Administration today issued warning letters to ten manufacturers and distributors of dietary supplements containing dimethylamylamine, more popularly known as DMAA, for marketing products for which evidence of the safety of the product had not been submitted to FDA.

Also referred to as 1,3-dimethylamylamine, methylhexanamine, or geranium extract, the ingredient is in dietary supplements and is often touted as a "natural" stimulant.

The companies receiving warning letters and their product names are:

- **Exclusive Supplements:** Biorhythm SSIN Juice
- **Fahrenheit Nutrition:** Lean Efx
- **Gaspari Nutrition:** Spirodex
- **iSatori Global Technologies, LLC:** PWR
- **Muscle Warfare, Inc.:** Napalm
- **MuscleMeds Performance Technologies:** Code Red
- **Nutrex Research:** Hemo Rage Black
  - Lipo-6 Black Ultra Concentrate
  - Lipo-6 Black
  - Lipo-6 Black Hers Ultra Concentrate
  - Lipo-6 Black Hers
- **SEI Pharmaceuticals:** MethylHex 4,2
- **SNI LLC:** Nitric Blast
- **USP Labs, LLC:** Oxy Elite Pro, Jack3D
“Energy” Drinks: What are they

- Basically fluid and energy in one bottle
- Contain high concentration of carbohydrate
- High concentration of caffeine and may be in the form of guarana, mate, Kola nut
- Add ginseng as it boosts the stimulus effect
- May also contain derivatives of synephrine
- Not formulated for athletes
- May see liver and kidney dysfunction
USADA’s Supplement 411

• [http://www.usada.org/supplement411](http://www.usada.org/supplement411)

• [http://www.truesport.org/resources/publications](http://www.truesport.org/resources/publications)

• **Office of Dietary Supplements (NIH)**
Thank You