

## Nutrition for Power Events

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## Challenges to an Athlete's Diet

- Hectic schedules
- Little knowledge about:
  - Basic nutrition
  - Grocery shopping
  - Food preparation
  - What to choose when eating out
- Good nutrition isn't always a priority



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## High Intensity Training

- Changes in CHO metabolism
  - Increased resting glycogen
  - Reduced rate of glycogen utilization
  - Some have found increases in fatty acid oxidation
- Similar changes to those found in endurance athletes; however the differences is the amount of calories expended
  - 2.5 hour interval workout vs 10 hour endurance workout--150 calories vs. 1552 calories

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# Carbohydrates



- Primary energy source for muscles and brain
- During exercise:
  - Reach muscles quickly to replenish stores
  - Delay fatigue and boost performance
  - Lower rating of perceived exertion
  - Enhance mental skills
- Eat more rice, pasta, potatoes, whole grain bread, cereal, fruit, vegetables, rather than candy, cookies, soda (lower glycemic index foods)



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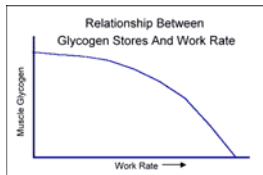
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## Glycogen Stores During Stop and Go Sports




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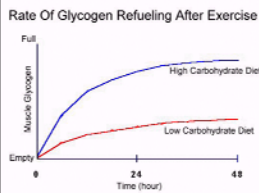
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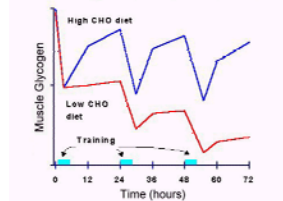
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## Carbohydrates and Glycogen



High Carbohydrate Diet Promotes Daily Recovery Of Muscle Fuel Stores




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## Glycogen Restoration

- Normally takes 24 to 36 hours to replace muscle energy (glycogen)
- By consuming carbohydrates immediately post exercise (w/n 30 minutes) can be reloaded in 12 to 16 hours
- Research found 4 parts CHO's and 1 part Pro helps reload
- Latest studies either CHO or CHO + P will work

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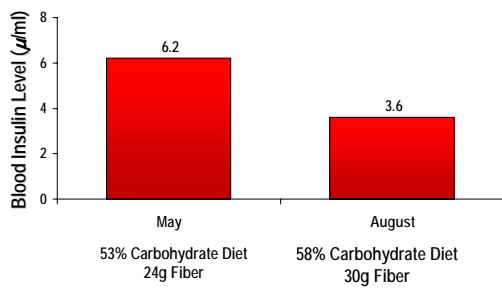
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High-Carbohydrate Diet Decreases Insulin Level in Elite Athletes



Adapted from: Tegelman, et al. *Metabolism* 45: 435-41, 1996.

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## Low Carb Diets and Weight Loss

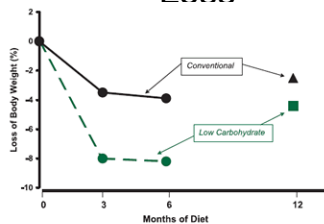


Figure 1. Comparison of body weight loss with low-carbohydrate and conventional diets. Data for 0, 3, and 6 months represent the combined means of results published in Behm et al. (2003) and Foster et al. (2003); only the subjects of Foster et al. (2003) continued the diets for 12 months. Differences between the two diets were statistically significant after 3 and 6 months, but not after 12 months.

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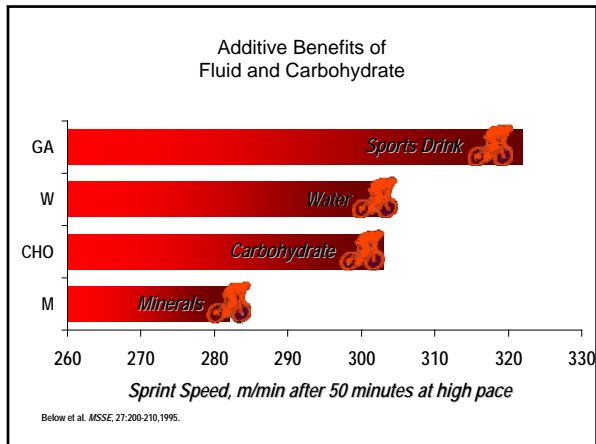
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### Protein

- Protein role in the body is to build and repair muscles and tissues
- Eating more protein than the body can use does not increase muscle strength or size
  - Stored as fat
- Eat Protein throughout the day-not just one meal
- Examples: meat, poultry, fish, eggs, dairy, nuts, soy foods

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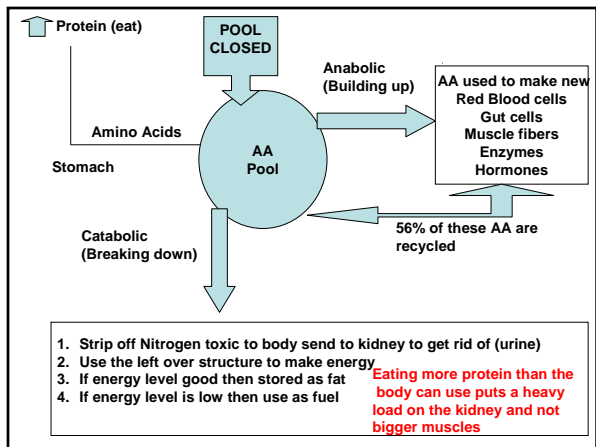
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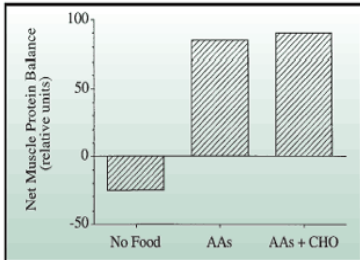
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### Pattern of change in muscle protein balance following heavy resistance exercise




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### Protein Requirements

- 1.2-1.7 grams of protein per kilogram of body weight
  - 200lb/2.2= 90.9kg x 1.5g=136 grams of protein per day
- >2.0 is more than what the body can use
- Protein requirements do go up when carbohydrate consumption is down
  - Rather than eat more protein here should make sure CHO consumption is adequate

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### Fats

- Stored fat helps power long-endurance activity
- Fat transports certain vitamins and provides essential fatty acids
- Most athletes need to reduce fat intake
  - Fat contains the most calories
- Examples: oils, butter, margarine, salad dressings, full fat milk and dairy products, high fat meats, bacon, sausages etc



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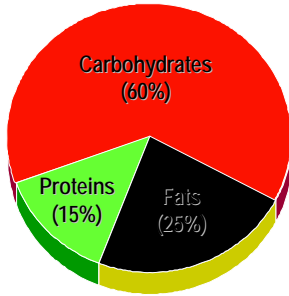
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## What Should Athletes Eat




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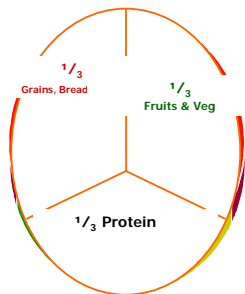
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## Use a modified Peace Sign




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## HEAT ILLNESS IS IN THE HEADLINES



### Coroner Says Heat Was Factor in Player's Death

### Heat possible factor in prep player's death

INDIANAPOLIS (AP)—Medical examiners are trying to determine whether heatstroke caused the death of a high school football player who collapsed during practice.

An autopsy found that Travis Stowers, a 6-foot, 225-pound offensive lineman for Clinton Central High School near Michigantown, did not die from a brain aneurysm as school officials reported Wednesday, said Frances Kelly, the chief deputy coroner for Marion County.

"Right now, the main cause of death is pending," she said Thursday. "They're going to look at the heart and brain a little closer."

Stowers, 17, of Kirtland died early Wednesday in an Indianapolis hospital after collapsing the previous afternoon during practice.

"Heatstroke may have been a contributing factor," Kelly said.

Test results pointing toward a definitive cause of death might take six weeks to come back.

High temperatures reached into the 90s Tuesday afternoon in central Indiana.

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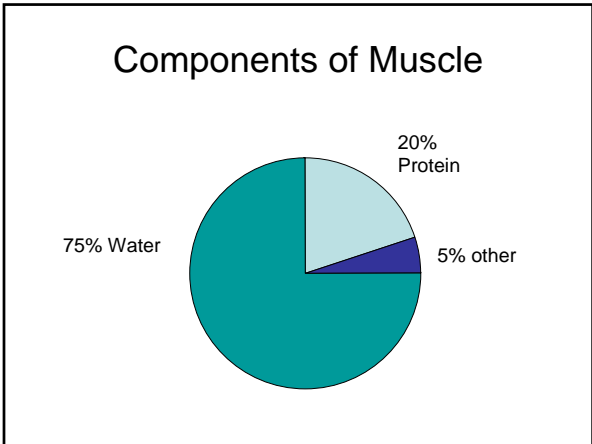
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### Dangers of Dehydration



- Fatigue
- Loss of coordination
- Increased risk of heat illness, heat stroke and even death

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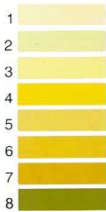
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### Monitor Fluid Loss

- Two ways:
- Weigh in before practice and after practice
  - 3 cups of fluid per pound lost
- Check the color of urine



1 - 3 = Optimally Hydrated  
 4 - 6 = Slightly dehydrated should drink more  
 6 - 8 = Dehydrated, must drink more

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## Thirst

- Thirst is not an adequate indicator of fluid needs
  - Wait to drink until you thirsty its too late
  - As little as a 2% weight loss as sweat will affect performance
  - If you drink to satisfy your thirst it's not enough

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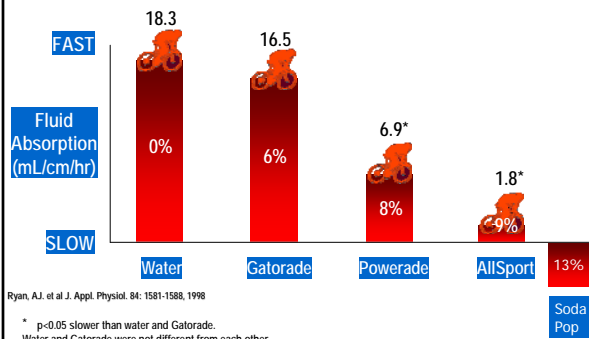
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Sport Drink Formulation Important for Optimal Fluid Absorption



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## Sodium

- Needed for CHO absorption
- Water follows CHO
- Need to be at least 100 mg sodium
- 28 grams potassium
- No carbonation
- Two concerns:
  - Whole body cramping
    - Some athletes are sodium wasters and can lose up to 2-3 tsp
  - Hyponatremia
    - loss/dilution of plasma sodium due to consuming too much water, potentially deadly

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## “Energy” Drinks: What are they

- Basically fluid and energy in one bottle
- Contain high concentration of carbohydrate
- Usually caffeine
- May contain Synephrine as Ephedra-Banned April '04



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## Budweiser's B to E

- A beer for “young adults to keep up with their social and fast paced life”
- 3.2% alcohol, raspberry flavored beer
- Caffeine, Guarana, Ginseng
- Combines an upper with a depressant
- Concerns:
  - drink more, flavoring
  - Once the upper wears off then the depressant could lower heart rate, breathing
  - Alcohol poisoning



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## Alcohol and Performance

- Most dehydrating fluid you can consume
- Negative effects on nervous system
  - depressant
- Effects up to 72 hours after drinking
- The more consumed the longer and more lasting the effects

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## Beware

- Starcaps: contain potent diuretic which is not listed on the label
- Citrus Aurantium, Zhi Shi: contain synephrine (sister product of ephedra)
- Guarana, Kola Nut and Mate: herbal forms of caffeine
- GHB/GBL (rest EZE, Nitro Blue, Remforce): central nervous stimulant can cause seizures, coma and death
- Z-mass Pm: contains anabolic steroids
- **Ask before you consume, Do Not take a chance**

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*Thank You*

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