

Sports Nutrition

Discipline which Nutritional requirements
of Sports persons

Nutritional Requirements in Various Sports Disciplines

Performance Influencing Factors

Genetics

Training and Conditioning

Nutrition

Determinants of the Athlete's Energy Requirements

During intense exercise

Carbohydrate stored in muscles and liver (glycogen) is predominant fuel source

During prolonged exercise

Fat stores are predominant fuel source

Fitness level of the athlete

Well trained endurance athletes burn fat more efficiently, sparing limited glycogen stores

Carbohydrates

Major fuel source for exercising muscle

Athletes should ingest 6 to 10 gm/kg/day

60 to 70% of total calories should come from carbohydrates

Complex carbohydrates (starches) are preferable

During exercise

Athletes should consume 25 to 30 gm of carbohydrate for every 30 minutes of exercise

Athletes should drink 6 to 8 ounces of water or sports drink for every 10 to 15 minutes of exercise

Carbohydrates

After exercise

Athletes should consume 1.0 to 1.5 gm/kg immediately post exercise and again one hour later

To replace muscle glycogen stores

To prevent gradual depletion of muscle glycogen stores over time caused by repetitive daily bouts of heavy exercise

To decrease muscle breakdown

Why Complex Carbohydrates?

Compared to ingesting simple carbohydrates, ingesting complex carbohydrates:

Increases muscle glycogen stores better

Improves performance and delays fatigue

Promotes faster stomach emptying

Causes less stomach upset and indigestion

Leads to lower blood sugar and insulin levels

Provides other beneficial nutrients

- Fiber, vitamins and minerals

Pre-exercise Meal

Importance

Less hunger before and during exercise

Maintains optimum glycogen stores

Recommendations

Emphasize complex carbohydrates (starches)

- 1 to 4 gm/kg about 1 to 4 hours prior to event
- Consume less closer to event

Avoid high fat and high protein foods

- Slower gastric emptying can cause stomach upset

Avoid high fiber or gas forming foods

- Can lead to crampy abdominal pain

Protein

Athletes require more protein than non-athletes

12 to 18% of total calories should come from protein

Protein intake should be tailored to type of training

- 1.2 to 1.4 gm/kg/day recommended for endurance athletes
- 1.7 to 1.8 gm/kg/day recommended for strength athletes

Adequate calorie intake is just as important as adequate protein intake for building muscles

Too much protein intake can be bad

Excess protein calories are stored as fat

Excess protein intake can lead to dehydration and may contribute to kidney problems

Fat

Major source of energy

25 to 30% of total calories should come from fat

Less than 10% of total calories should come from saturated fats

Cholesterol intake should be less than 300 mg/day

Average American diet provides 37% of total calories from fat

Vitamins and Minerals

Essential nutrients

Human body needs these to produce energy

No evidence in U.S. studies that taking vitamin and mineral supplements improves athletic performance

Vegetarian athletes are at risk for being deficient in vitamins B12, D, riboflavin, iron, zinc and calcium

Athletes who are strict vegetarians should take a multivitamin to prevent deficiencies and a calcium supplement (1000 mg/day) to help prevent bone loss

ENERGY ALLOWANCE RECOMMENDATIONS FOR DIFFERENT CATEGORIES OF SPORTS

Type of Activity	Average body weight	Kcal/ day
POWER EVENTS OF SUPER HEAVY WT	100+	7000
POWER EVENTS OF HIGHER WT CAT	80-90	6000
ENDURANCE EVENTS	65	5200
TEAM EVENTS AND POWER EVENTS OF MIDDLE WT	65	4500
EVENTS OF LIGHT WEIGHT	60	3600
SKILL GAMES	60	3000

Conclusions

Nutrition plays an important role in an endurance athlete's ability to perform

Proper nutrition in combination with sound and proven training techniques can help endurance athletes to maximize their genetic abilities

Professionals in the community need to be resources of good information for athletes, parents and coaches

Physicians

Athletic trainers

Nutritionists/Dieticians
