

# Nutrition

for Sport and Exercise, Third Edition

Marie Dunford  
J. Andrew Doyle



10

## Diet Planning: Food First, Supplements Second

# Learning Objectives

- Explain how energy intake and nutrient density are fundamental to diet planning
- Discuss the risks and benefits of caffeine and alcohol use by athletes
- Discuss the role of supplementation in an athlete's diet, and summarize the safety and effectiveness of popular supplements

# Diet

- A diet is a pattern of eating
  - Everybody is on a “diet”
- Athletes should match dietary intake to training
- Minimally processed foods are encouraged because of their nutrient content

# 10.1 Energy: The Basis of the Diet Planning Framework

- Humans are designed to be biologically active
  - Active individuals need more kcal
  - Higher caloric diets make it easier to obtain needed nutrients
  - Caloric need for athletes can range considerably
- Energy needs will vary with training cycle
  - Usually lowest in the “off-season”
  - High volume training periods can substantially increase need
  - Daily intake of no less than 30 kcal/kg is not typically recommended

# A Dietary Prescription

- Helps athletes consume the proper amount of macronutrients within energy needs
  - Consider carbohydrates and proteins first
  - Fats
  - Add in discretionary calories (alcohol)

# A Dietary Prescription – Weight loss for athletes

- “Discretionary calories” reduced
- Mild to moderate reduction in dietary fat
- Increased energy expenditure
- Larger deficits make it difficult to train
- Individualized diet plan needed

# A Dietary Prescription - Weight gain for athletes

- Goal is usually a 500 kcal per day increase
  - Increasing portion sizes and eating often
- Difficult for underweight athletes to increase weight
- Individualized diet plan needed

# Consuming Nutrient-Dense Food

- Relatively high concentrations of nutrients compared to kcal
  - Most fruits and vegetables
  - Whole grains, beans, legumes
  - Lower fat meat, fish, poultry, and dairy products
  - Not necessarily low in kcal (e.g., nuts)
- Low nutrient dense foods
  - Sugar
  - Alcohol
  - When sugar and fat are added, nutrient density typically declines



# Consuming Nutrient-Dense Food

**Table 10.2** Nutrient Density of Skim and Whole Milk

Nutrient	Skim milk, with nonfat milk solids added (8 oz)	Whole milk, 3.3% milk fat (8 oz)
Energy (kcal)	91	146
Protein (g)	9	8
Carbohydrate (g)	12	11
Fat (g)	<1	8
Cholesterol (mg)	5	24
Calcium (mg)	316	314
Iron (mg)	0.12	0.12

oz = ounce; kcal = kilocalorie; g = gram; mg = milligram

Skim (nonfat) milk is more nutrient dense than whole milk.

# “Empty” Calories

**Table 10.3** Nutrient Density of Sugar and Alcohol

Nutrient	White (table) sugar (1 tablespoon)	Distilled alcohol, 100 proof (1 fluid oz)
Energy (kcal)	45	82
Protein (g)	0	0
Carbohydrate (g)	12	0
Fat (g)	0	0
Calcium (mg)	<1	0
Iron (mg)	0	0.01
Thiamin (mg)	0	0
Vitamin C (mg)	0	0
Vitamin E (mg)	0	0
Folate (mcg)	0	0

oz = ounce; kcal = kilocalorie; g = gram; mg = milligram;  
mcg = microgram

Sugar and alcohol have a low nutrient density because they contain kilocalories but few or no nutrients.

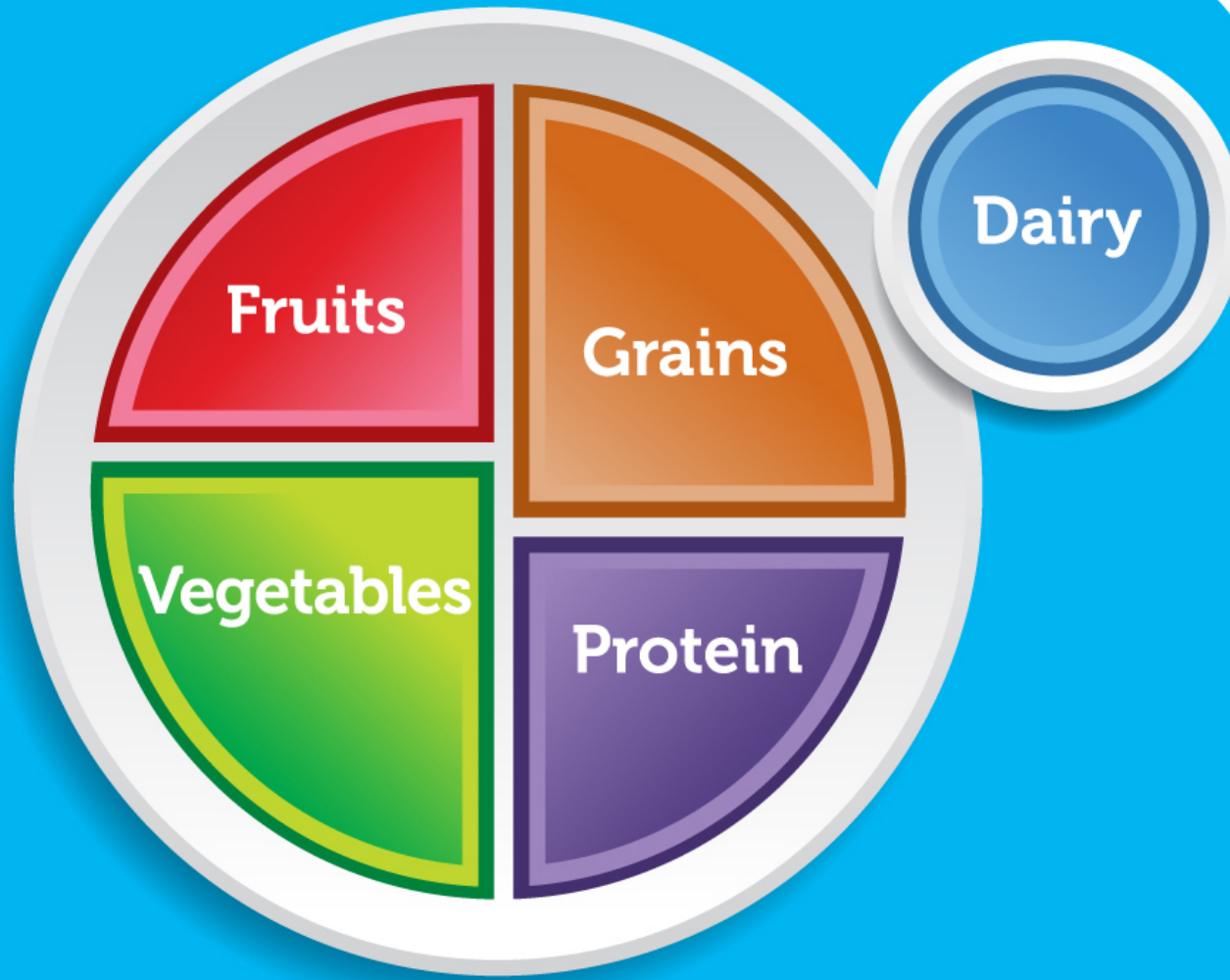
# Consuming Nutrient-Dense Food

- It is a challenge to consume a nutritious diet when low-nutrient-dense foods are inexpensive, widely available, highly advertised, and tasty



# 10.2 Translating Nutrient Recommendations into Food Choices

- Guidelines for meal planning
  - Food Intake Patterns (MyPlate)
  - Especially useful for those with little knowledge of nutrition
  - Public domain information
- Individualizing a diet plan
  - The key to diet planning
  - May involve a new dietary pattern
  - May involve modification of current diet



Choose **MyPlate**.gov

# Translating Nutrient Recommendations into Food Choices

- Many athletes learn to cook so that they can prepare foods that are nutritious and tasty



## 10.3 The Risks and Benefits of Caffeine and Alcohol Consumption

- Caffeine
  - Legally and socially acceptable stimulatory drug
  - Considered safe at low doses, but does have side effects
  - May be a banned substance at certain urinary concentrations

# The Risks and Benefits of Caffeine

- Generally considered safe but, addictive
- Side effects
  - Increased blood pressure at rest and during exercise
  - Increased heart rate
  - Gastrointestinal distress
  - Insomnia



# The Risks and Benefits of Caffeine

- Moderate doses of 200 – 300 mg/day are recommended
  - Doses greater than 500 mg may result in irritability, anxiety, headaches, etc.
  - Moderate doses in athletes do not negatively affect hydration status
  - Use in hypohydrated athletes is a concern

# The Risks and Benefits of Alcohol

- Ethanol consumption described as “drinking”
  - One drink is defined as:
    - ½ oz ethanol
    - ~3 to 4 oz wine
    - 10 oz wine cooler
    - 12 oz beer
    - 1 ½ oz hard liquor
- Moderate consumption is defined as:
  - Up to 1 drink per day for women; up to 2 drinks per day for men
- Contains 7 kcal/g

**Table 10.5** Caloric Content of Alcohol-Containing Beverages

Beverage	Serving size (oz)	Energy (kcal)*
Beer, light	12	110
Beer, regular	12	150
Beer, stout	12	190
White wine	5	90
Red wine	5	100
Liqueurs	1.5	190
Wine cooler	10	150
Whiskey, vodka, tequila, gin, or rum, 80 proof	1.5	100
Champagne	4	85
Margarita (tequila, triple sec, lime juice)	4	170
Singapore sling (gin, lemon juice or sour mix, club soda, cherry brandy, grenadine)	8	230
Tequila sunrise (tequila, orange juice, grenadine)	5.5	190

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oz = ounce; kcal = kilocalorie

\*Energy content will vary depending on the brand or the proportion of ingredients in mixed drinks.