NUTRITION FOR ADAPTIVE ATHLETES

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OBJECTIVES

By the end of this presentation, you will be able to:

1. **Identify** the role of macronutrients in energy metabolism and their optimal consumption periods around training.

2. **Create** a nutrition plan based on your activity and training intensity.

3. **Assemble** a grocery list based on your personal needs as an athlete.
Nutrition, *noun*
the process of providing or obtaining the food necessary for health and growth

The foods we eat...
1) help fuel our muscles before and during exercise,
2) facilitate the repair process after strenuous activity, and
3) help promote overall health and wellness.
THE BASICS

MACRONUTRIENTS

- PROTEIN: growth & development, tissue repair, wound healing, energy
- FATS: energy, hormone production, insulation, vitamin absorption
- CARBOHYDRATES: energy, fiber

MICRONUTRIENTS: vitamins & minerals
Carbohydrates are the preferred fuel source for our brain, muscles and nervous system.

Carbohydrates provide energy for anaerobic activity and help spare muscle tissue.

Diets **moderate to high in carbohydrates** are optimal for daily training.

Carbohydrate needs **increase as training intensity and volume increase**.

- **24hrs before activity**: high carbohydrate meals and snacks
- **30min to 4hrs before activity**: easy to digest, low fiber, high carbohydrate snacks
- **during activity**: 30-60 grams glucose per hour for activity lasting >1hr
- **15-30min after activity**: moderate to high carbohydrate meal or snack PLUS protein
Proteins provide structure to muscles and other tissues, help regulate cell function, and assist in maintaining fluid balance (among other things).

Athletes have higher protein needs than sedentary individuals.

Maintaining appropriate calorie intake ensures minimal protein breakdown.

More protein is not always better – too much can cause dehydration, kidney injury and fatigue.
Fats are the primary energy source for light- to moderate-intensity exercise.

Fats are also important for protection, insulation and vitamin absorption.

Focus on more unsaturated fats and less saturated fats.

There are no proven benefits to eating high-fat meals or snacks before, during, or immediately after exercise.

Fat helps with satiety, so some athletes may find benefits from eating a small amount of fat prior to activity (peanut butter & banana).
FUELING, MAINTAINING, RECOVERING
HOW TO FUEL

>2 hours before event
- Larger snack or small meal high in carbohydrates with protein + fluids
  - Examples: Fruit smoothie with protein powder, Greek yogurt parfait, banana with peanut butter and chocolate milk, chicken and rice, pasta with meat sauce

1-2 hours before event
- Smaller carbohydrate-rich snack + fluids
  - Examples: banana, granola bar, pretzels, energy/protein bar + water or sports drink

<1 hour before event
- Fluids
  - Easy-to-digest sports nutrition products such as gatorade, powerade, pedialyte, Liquid IV, etc.
Carbohydrates are the main fuel source for muscle contraction.

Consume 30-60 grams carbohydrates per hour for activity >1 hour.

- 12-16oz sports drink: 21-28g CHO
- 1 pack energy gels or chews: 20-40g CHO
- 1 cup pretzels: 23g CHO
- 1 medium banana: 28g CHO
**HOW TO RECOVER**

**Refuel, repair, rehydrate.**

**CARBOHYDRATES**
Consume a carbohydrate-rich snack or meal within 30-60 minutes after exercise and again around 2 hours after exercise.

**PROTEIN**
Consume 15-30 grams of high-quality protein at least 2 hours after exercise.

**FLUIDS**
Drink at least 24oz fluids after exercise. You may need more fluid for high-intensity activities. Fluids with sodium and electrolytes help rehydrate better than plain water.
HOW TO RECOVER

Refuel, repair, rehydrate.

CARBOHYDRATES

PROTEIN

FLUIDS
HOW TO RECOVER

Refuel, repair, rehydrate.
CREATING A PLAN
## CREATING A PLAN

### CHECKLIST FOR SUCCESS

#### BEFORE ACTIVITY
- >4hrs before: balanced meal with carbohydrates, lean protein and healthy fats
- >2hrs before: carbohydrate-rich meal or large snack
- 1-2hrs before: smaller carbohydrate-rich snack
- adequate hydration with water or sports drink

#### DURING ACTIVITY
- Water and/or sports drinks as-needed to maintain hydration
- 30-60 grams carbohydrates per hour for activity >1 hr

#### AFTER ACTIVITY
- <60min after: carbohydrate-rich meal or snack
- <2hrs after: protein-rich meal or snack
- Adequate hydration with water or sports drink
There is no one-size-fits-all.

What to consider:

- Goals.
- Taste preferences.
- Amount and intensity of activity.
- GI considerations.
- Access to food.

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BREAKFAST
- greek yogurt parfait
- hard boiled egg
- coffee

PRE-WORKOUT
- banana
- protein bar
- sports drink

LUNCH
- pasta salad
- chicken breast
- apple
- water
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DIFFERENT PLATES FOR DIFFERENT ATHLETES

LOW INTENSITY TRAINING

MODERATE INTENSITY TRAINING

HIGH INTENSITY TRAINING
Not sure where to start? Complete a one-week food and activity journal!

Track all foods, drinks, and activity for at least one week.

Review your habits. Ask yourself the following questions:

1. Am I fueling properly in the days and hours leading up to my activity?
2. Am I well-hydrated when I start my activity?
3. Am I fueling and hydrating during my longer activities?
4. Am I refueling with carbohydrates within 60min of the end of my activity?
5. Am I eating enough protein after my activity to repair and rebuild my muscles?
• **CRONOMETER**  
  (website + mobile app)  
  - Free with option to pay for an ad-free experience  
  - Track food, liquids, exercise and biometrics (weight, labs, mental health)  
  - Ability to enter macronutrient targets
TRACKERS

- **MYFITNESSPAL** (mobile app)
  - Free with option to pay for an ad-free experience
    - Paid subscription allows for more in-depth nutrient analysis
  - Track food, liquids, exercise
  - Community with news feed
FOR ALL ATHLETES...

• Ingredients to make balanced meals with high quality carbohydrates, proteins, and fats

• Easy-to-consume carbohydrate-rich foods

• Enjoyable snacks

• Sports drinks or drink mix

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Grocery List

- Brown Rice
- Bananas
- Bell Peppers
- Chicken
- Ground Turkey
- Electrolyte Drink Mix
- Peanut Butter
- Beef Jerky
- String Cheese
FOR THE ENDURANCE / ULTRA-ENDURANCE ATHLETE...

• Extra high calorie needs
• Easy-to-consume/ easy-to-carry carbohydrate-rich foods
• Sports drinks or drink mix
• Carbohydrate-rich, high calorie snacks

Grocery List

- Oats
- Bananas
- Green Beans
- Chicken
- Canned Tuna
- Electrolyte Drink Mix
- Sports Gels
- Peanut Butter
- Breakfast Cookies
FOR THE STRENGTH / POWER ATHLETE...

- **Specific calorie needs** for gaining, maintaining, or losing weight
- Easy-to-consume carbohydrate-rich foods
- Sports drinks or drink mix
- **High-quality snacks** to bring to competition

<table>
<thead>
<tr>
<th>Grocery List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Grain Bread</td>
</tr>
<tr>
<td>Bananas</td>
</tr>
<tr>
<td>Green Beans</td>
</tr>
<tr>
<td>Chicken</td>
</tr>
<tr>
<td>Lunch Meat</td>
</tr>
<tr>
<td>Electrolyte Drink Mix</td>
</tr>
<tr>
<td>Peanut Butter</td>
</tr>
<tr>
<td>Jelly</td>
</tr>
<tr>
<td>Yogurt</td>
</tr>
</tbody>
</table>
GROCERY SHOPPING - TIPS

- Plan ahead
- Don’t go to the grocery store hungry
- Buying frozen fruits, vegetables, and meats can be just as healthy
- No need to avoid the middle isles – they've got important foods too
- Organic does not mean more nutritious
NUTRITION
SUPPLEMENTS
DO I NEED TO TAKE SUPPLEMENTS?

**Dietary supplement**: a product intended to supplement the diet and are different from conventional food. Typically consumed as a pill, table, powder, or liquid.

**Things to note:**
- Dietary supplements do not have to undergo testing to prove safety or efficacy before entering the market.
- Dietary supplement labels are not regulated by the FDA.
VERIFICATION SEALS

Look for these labels when considering purchasing supplements
Unsure of where to find credible nutrition information? Check out these websites!

- **NIH Dietary Supplement Fact Sheets**
  - Fact sheets on dietary supplements/ingredients

- **NIH Dietary Supplements for Exercise and Athletic Performance Fact Sheet**
  - General information on supplementation for athletes as well as a list of ingredients often found in supplements recommended to athletes

- **US Anti-Doping Agency**
  - General information on nutrition for athletes plus additional information on harmful/illegal substances sometimes found in nutrition supplements
<table>
<thead>
<tr>
<th>Supplement</th>
<th>Description</th>
<th>Research Findings</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creatine</td>
<td>Helps supply muscles with energy for short-term, predominantly anaerobic activity</td>
<td>Numerous clinical trials generally showing a benefit for high-intensity, intermittent activity; potential variation in individual responses</td>
<td>Few safety concerns reported at typical dose (e.g., loading dose of 20 g/day for up to 7 days and 3–5 g/day for up to 12 weeks)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research findings: May increase strength, power, and work from maximal effort muscle contractions; over time helps body adapt to athlete-training regimens; of little value for endurance sports</td>
<td>Reported adverse effects: Weight gain due to water retention; anecdotal reports of nausea, diarrhea, muscle cramps, muscle stiffness, heat intolerance</td>
</tr>
<tr>
<td>Deer antler velvet</td>
<td>Contains growth factors (such as insulin-like growth factor-1 [IGF-1] that could promote muscle tissue growth</td>
<td>Few short-term clinical trials that show no benefit for physical performance</td>
<td>Safety not well studied</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research findings: No evidence for improving aerobic or anaerobic performance, muscular strength, or endurance</td>
<td>Reported adverse effects: Hypoglycemia, headache, edema, and joint pain (from prescription IGF-1); banned in professional athletic competition</td>
</tr>
<tr>
<td>Dehydroepiandrosterone</td>
<td>Steroid hormone that can be converted into testosterone and estradiol</td>
<td>Small number of clinical trials that show no benefit for physical performance</td>
<td>Safety not well studied; no safety concerns reported for up to 150 mg/day for 6–12 weeks</td>
</tr>
<tr>
<td>(DHEA)</td>
<td></td>
<td></td>
<td>Reported adverse effects: Suppression of the pituitary axis</td>
</tr>
</tbody>
</table>
1. What benefits am I looking to receive?
2. What does the research say?
3. Is the product third-party tested?
4. Are there potential adverse effects or safety concerns? Do the benefits outweigh these concerns?
5. Does the product contain a substance that is banned in my sport/activity?
RECAP
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QUESTIONS?
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