

An abstract graphic on the left side of the slide. It features several stylized human figures and hands in warm colors like yellow, orange, and red. One figure at the top has a thought bubble above its head. Another figure below it has its hand raised. The background is a grid of colored squares and circles. 

# 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.

# WHY IS NUTRITION IMPORTANT?

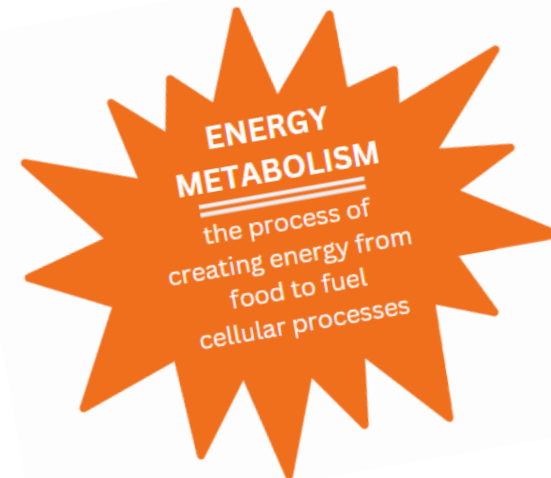
## **Nutrition, noun**

the process of providing or obtaining the food necessary for health and growth



The foods we eat...

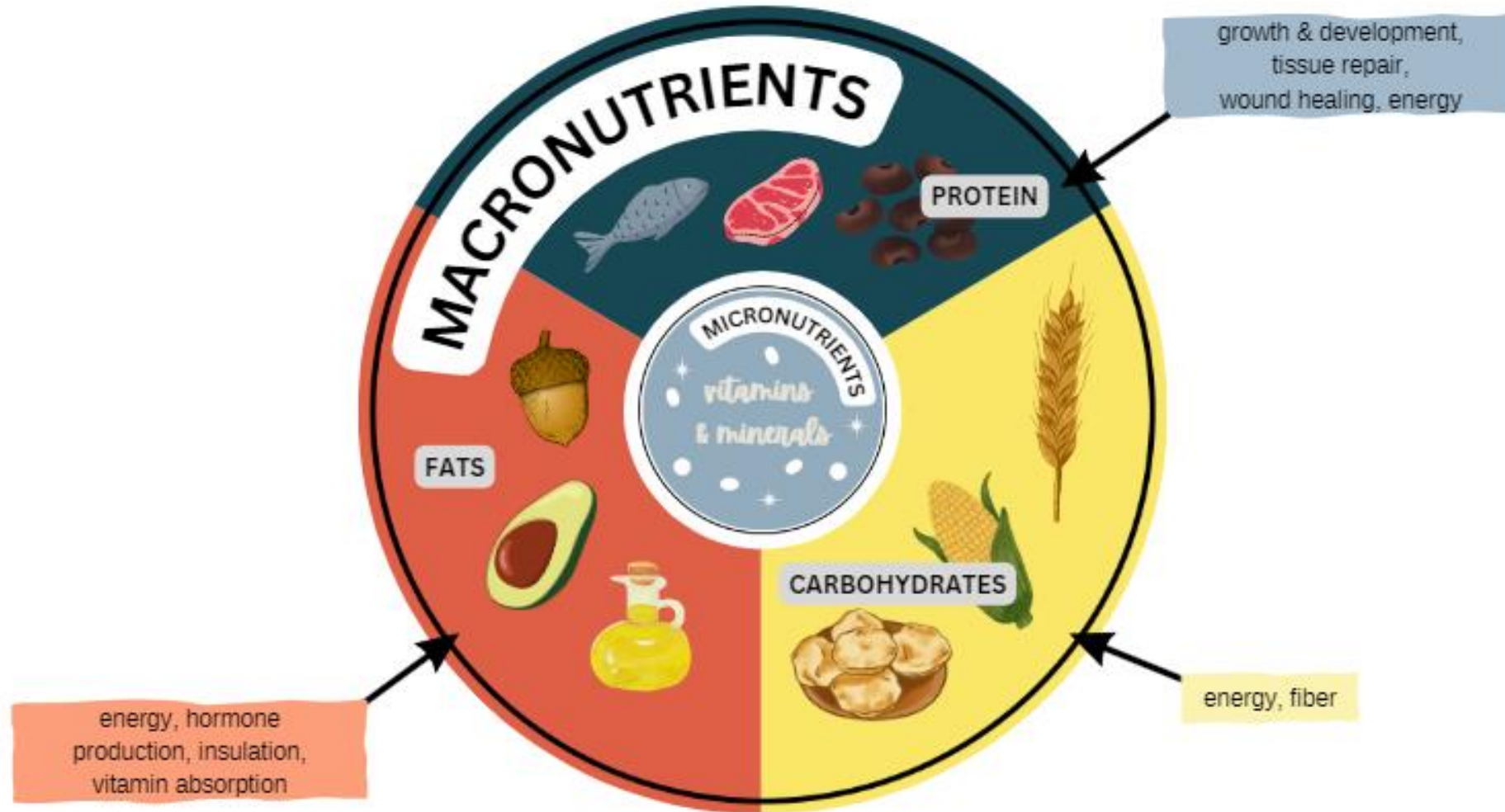
- 1) help fuel our muscles before and during exercise,
- 2) facilitate the repair process after strenuous activity, and
- 3) help promote overall health and wellness.





# THE BASICS

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# CARBOHYDRATES

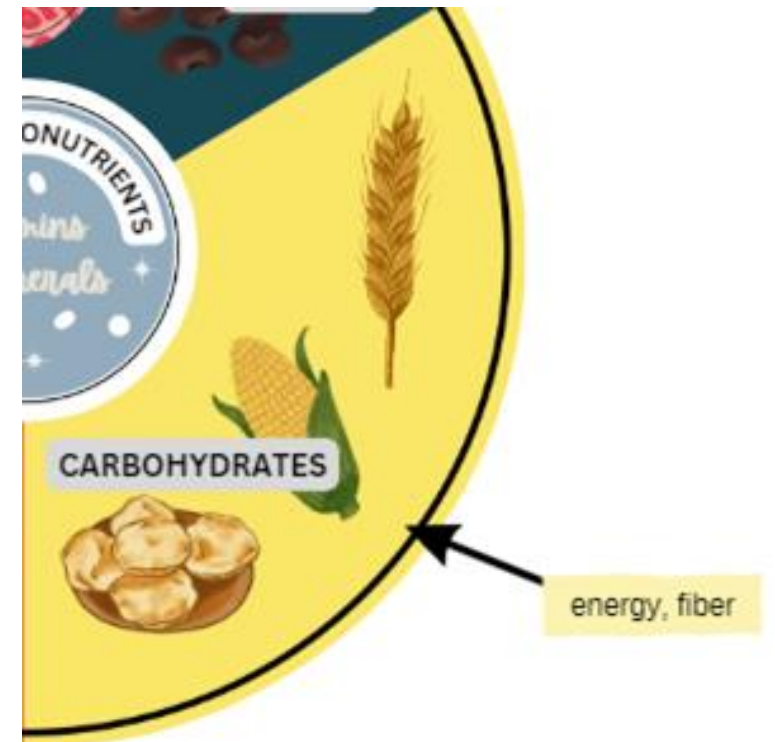
**Carbohydrates are the preferred fuel source for our brain, muscles and nervous system.**

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** incre.

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	





# 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.



4 to 24hrs before activity	→	meal that includes 3-6oz of lean protein	
1 to 4hrs before activity	→	1-2oz of lean protein, if necessary (focus on carbs)	
during activity	→	no recommendations to include protein or BCAA supplements	
2 to 3hrs after activity	→	meal or snack that includes 15-25g protein	

Maintaining appropriate calorie intake ensures minimal protein breakdown.

More protein is **not** always better – too much can cause dehydration, kidney injury and fatigue.

# FATS

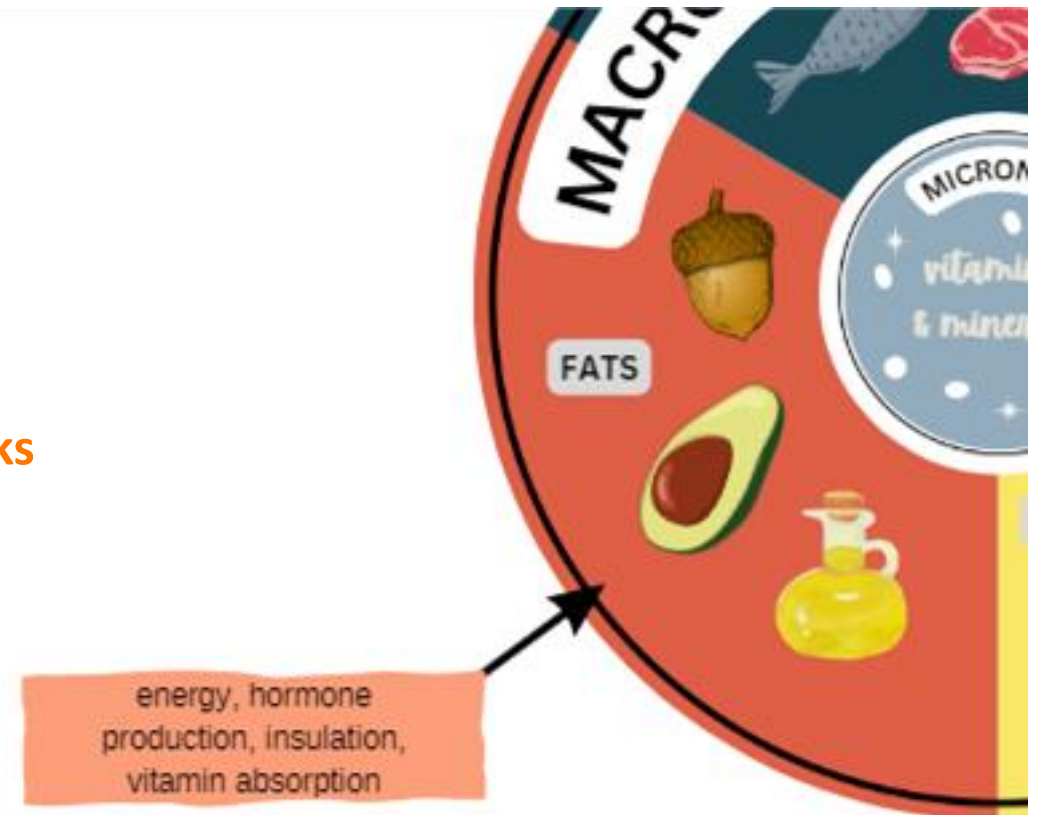
**Fats are the primary energy source for light- to moderate-intensity exercise.**

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

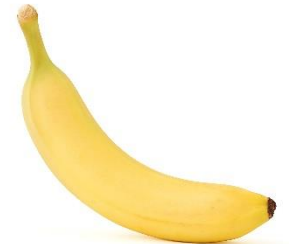
**>2 hours  
before event**

- **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.*



# HOW TO MAINTAIN

**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.

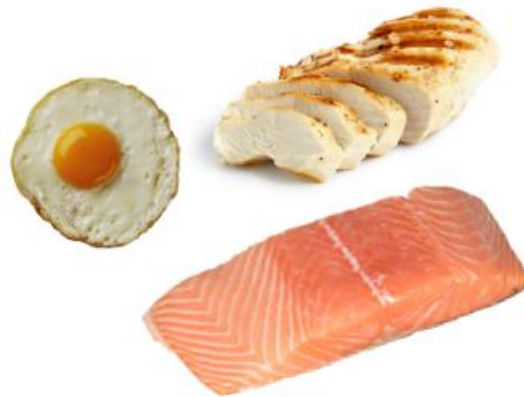
# HOW TO RECOVER

**Refuel, repair, rehydrate.**

**CARBOHYDRATES**



**PROTEIN**

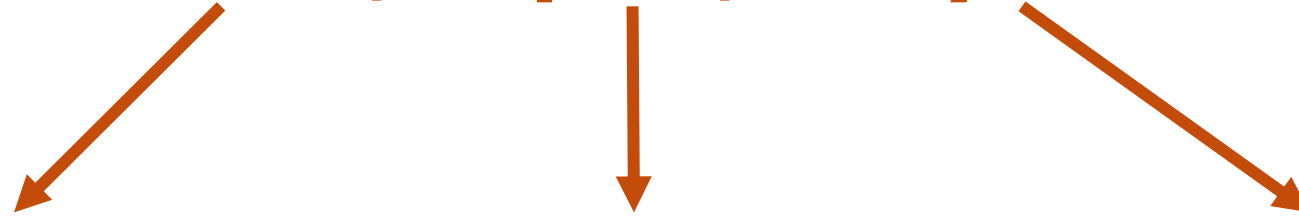


**FLUIDS**



# 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

# CREATING A NUTRITION PLAN

**There is no one-size-fits-all.**

What to consider:

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

## BREAKFAST

- greek yogurt parfait  
hard boiled egg  
coffee

## PRE-WORKOUT

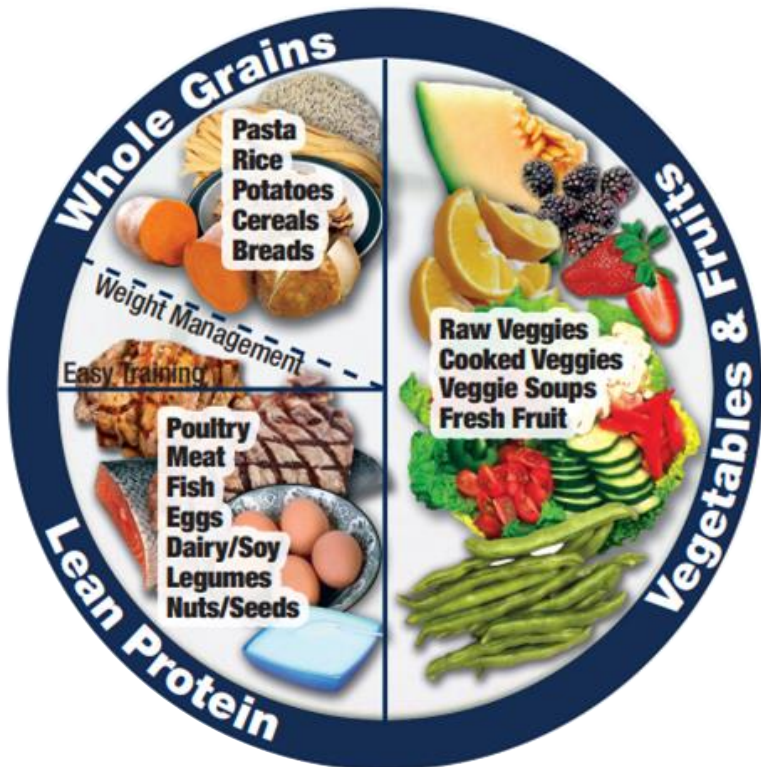
- banana  
protein bar  
sports drink

## LUNCH

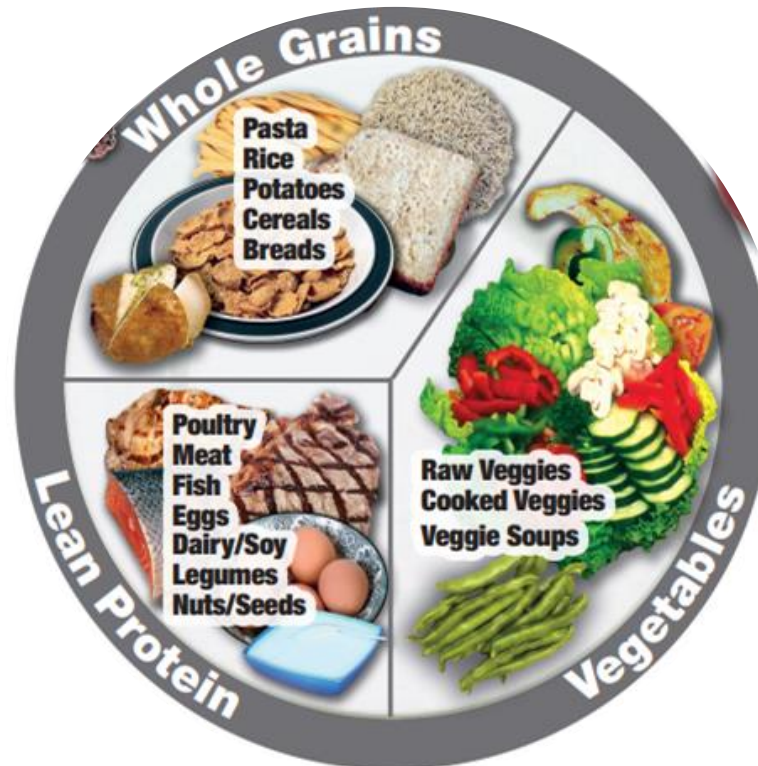
- pasta salad  
chicken breast  
apple  
water

Meal Plan

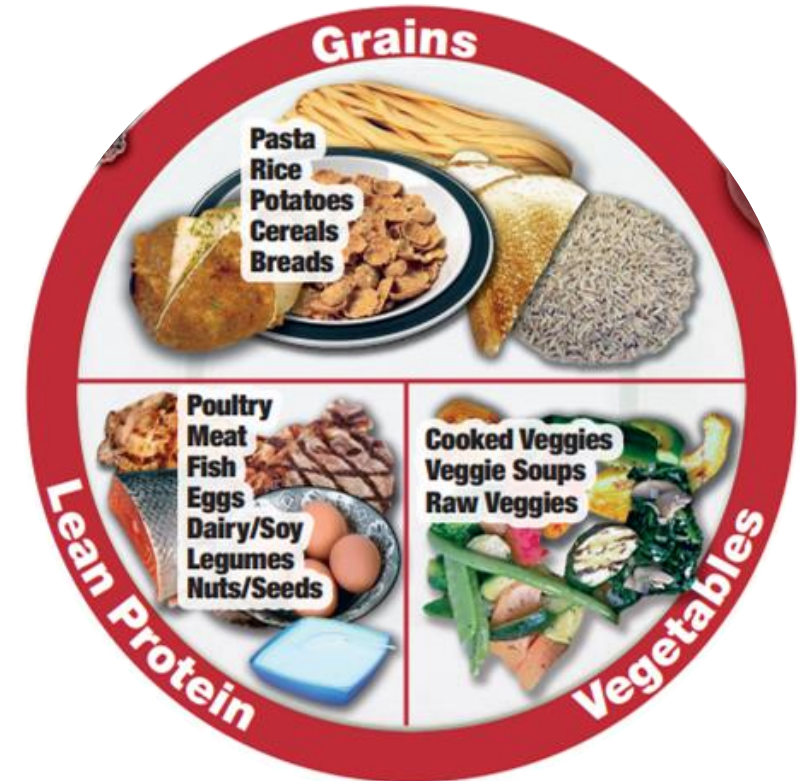
# DIFFERENT PLATES FOR DIFFERENT ATHLETES



LOW INTENSITY TRAINING



MODERATE INTENSITY TRAINING



HIGH INTENSITY TRAINING

# CREATING A NUTRITION PLAN

**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?

# TRACKERS

- **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

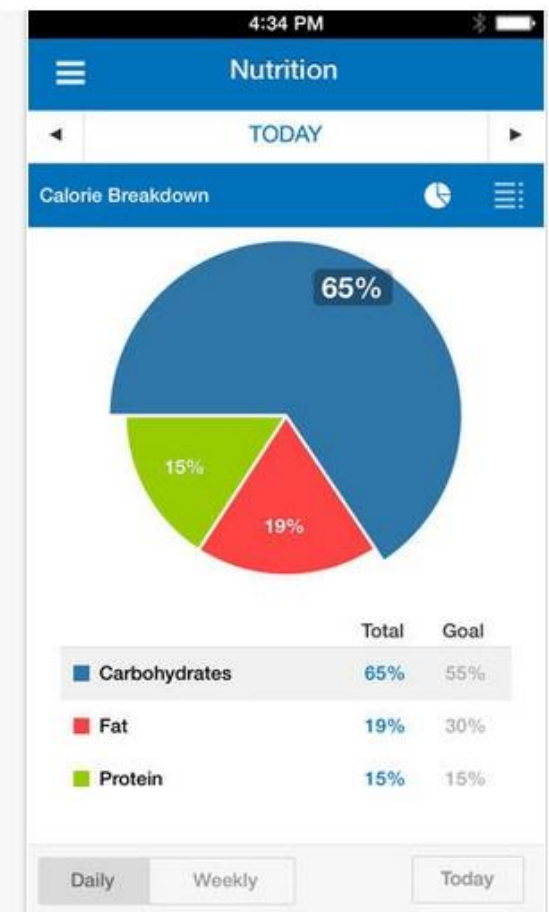
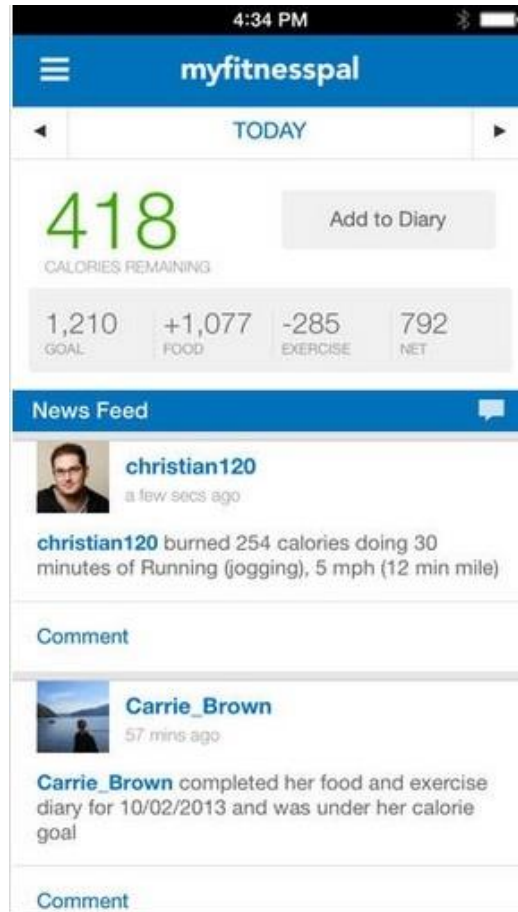
The screenshot displays the Cronometer mobile app interface. On the left is a dark navigation menu with the following items: Dashboard, Diary, Trends, Foods, Settings, Plans, Help, and About. Below the menu are buttons for 'Download on the App Store' and 'GET IT ON Google Play', along with social media icons for Twitter, Facebook, Instagram, and YouTube. The main content area features a top navigation bar with 'FOOD', 'EXERCISE', 'BIOMETRIC', and 'NOTE' tabs. Below this is a text input field for adding items to the diary. The 'Energy Summary' section shows three donut charts: Consumed (0 kcal), Burned (1348 kcal), and Remaining (1348 kcal). The 'Macronutrient Targets' section lists Energy (0.0 kcal / 1786 kcal), Protein (0.0 g / 111.6 g), Net Carbs (0.0 g / 200.9 g), and Fat (0.0 g / 59.5 g), all at 0% completion. The 'Nutrient Targets' section shows a 'SUGGEST FOOD' button. The 'Nutrition Scores' section shows 'All Targets' at 0% and two specific scores: 75% for Immune Support and 65% for Bone Health. A promotional banner for 'Cronometer Gold' is visible, with an 'UPGRADE' button.



# 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





# GROCERY SHOPPING

# 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

Brown Rice

Bananas

Bell Peppers

Chicken

Ground Turkey

Electrolyte Drink Mix

Peanut Butter

Beef Jerky

String Cheese

Grocery List

# 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

- 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

Whole Grain Bread

Bananas

Green Beans

Chicken

Lunch Meat

Electrolyte Drink Mix

Peanut Butter

Jelly

Yogurt

# 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



# HELPFUL RESOURCES

**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

## NIH Dietary Supplements for Exercise and Athletic Performance Fact Sheet

<a href="#"><u>Creatine</u></a>	Helps supply muscles with energy for short-term, predominantly anaerobic activity	Numerous clinical trials generally showing a benefit for high-intensity, intermittent activity; potential variation in individual responses  <b>Research findings:</b> 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	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)  <b>Reported adverse effects:</b> Weight gain due to water retention; anecdotal reports of nausea, diarrhea, muscle cramps, muscle stiffness, heat intolerance
<a href="#"><u>Deer antler velvet</u></a>	Contains growth factors (such as insulin-like growth factor-1 [IGF-1]) that could promote muscle tissue growth	Few short-term clinical trials that show no benefit for physical performance  <b>Research findings:</b> No evidence for improving aerobic or anaerobic performance, muscular strength, or endurance	Safety not well studied  <b>Reported adverse effects:</b> Hypoglycemia, headache, edema, and joint pain (from prescription IGF-1); banned in professional athletic competition
<a href="#"><u>Dehydroepiandrosterone (DHEA)</u></a>	Steroid hormone that can be converted into testosterone and estradiol	Small number of clinical trials that show no benefit for physical performance	Safety not well studied; no safety concerns reported for up to 150 mg/day for 6–12 weeks  <b>Reported adverse effects:</b> Over several months, raises



Top

# QUESTIONS TO ASK BEFORE SUPPLEMENTING

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?
6. How much does the product cost? Is it worth the price? Can I afford it?



# RECAP



# OBJECTIVES

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# QUESTIONS?

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