

YOUTH SPORT NUTRITION



Intermountain[®]
Sports Medicine

**Guide for fueling
athletic performance**

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INTRODUCTION

Adolescent athletes have different nutrient needs than adults due to puberty, growth, and development. An active boy looking to gain weight could need anywhere from 3,000-5,000 calories each day, and an active girl may need between 2,000-3,500 calories each day. If you have questions about specific calorie and nutrition needs, please reach out to a sports dietitian for an individual consultation.

Proper fueling is essential for maximizing athletic performance. Managing a balanced intake of carbohydrates, protein, and fats, along with appropriate hydration techniques, is the key to success for any athlete. This guide will help you understand how food and hydration choices impact your athletic performance.



THE MACRONUTRIENTS

Carbohydrates (Carbs)

are the body's preferred source of fuel during exercise, which means they are a very important nutrient for athletes. A diet that is too low in carbohydrates can lead to chronic fatigue and poor athletic performance. Focus on including carbohydrates from a variety of sources, including whole grains, fruit, beans, and dairy.



Protein has many functions in the body, but for athletes, it is most known for its role in building and repairing muscle tissue. It is not a main energy source for the body, so it is needed in smaller amounts than carbohydrates.



Fat provides flavor and texture to foods, while also being an important calorie contributor for growing and developing athletes. Fat is needed to absorb certain nutrients and produce hormones. It also cushions internal organs and is an energy source for low intensity exercise and exercise lasting longer than 90 minutes. Unsaturated fats found in nuts, seeds, avocado, olives, fatty fish, and olive oil provide an anti-inflammatory effect for joints and tissues. Choose these fats more often than sources of saturated fat found in animal products, processed foods, and fast food.



FUELING FOR PERFORMANCE BEFORE:

Why:

- Top off energy stores
- Fuel to work muscles
- Maximize performance

When:

- Time food intake around workouts and competition
- Meal: 3-4 hours before training or race
- Snack: 1-2 hours before training or race

What:

- Choose nutrient-rich foods
- Meals: high in carbohydrates, moderate in protein, low in fiber and fat
- Snacks: easy to digest carbohydrates low in protein and fat, no fiber

Examples:

Meal:

- 2 pieces of toast with jelly, a banana, and 2 eggs
- Turkey & cheese sandwich with pretzels and hummus
- 3 ounce chicken breast, pasta, green beans, and a roll

Snack:

- Apple or banana with peanut butter
- Granola bar (not a "protein bar")
- Bagel with jelly or honey
- Graham crackers
- Pretzels
- Applesauce
- Fruit cup

FUELING FOR PERFORMANCE DURING:

Why:

- Maximize performance
- Prevent fatigue

When:

- Exercise lasting longer than 90 minutes
- During halftime

What:

- Easy to digest carbohydrates, low in protein and fat, no fiber

Examples:

- Chewy granola bar
- Fig Newtons
- Banana
- Orange
- Pretzels
- Jellybeans
- Peanut butter and jelly on white bread
- Sports drink
- Applesauce
- Rice cakes
- Fruit leather
- Raisins
- Fruit snacks



Eating a well-balanced diet that contains all the macronutrients is important to maintain health and for optimal athletic performance.

FUELING FOR PERFORMANCE AFTER:

Why:

- Repair and rebuild muscle
- Replenish and refuel carbohydrate stores
- Rehydrate and recover the immune system

When:

- Snack: within 15-60 minutes
- Meal: within 1-2 hours

What:

- Snack: high in carbohydrates, moderate in protein, avoid high fat and sugary foods
- Meal: include carbohydrate, protein, and healthy fat

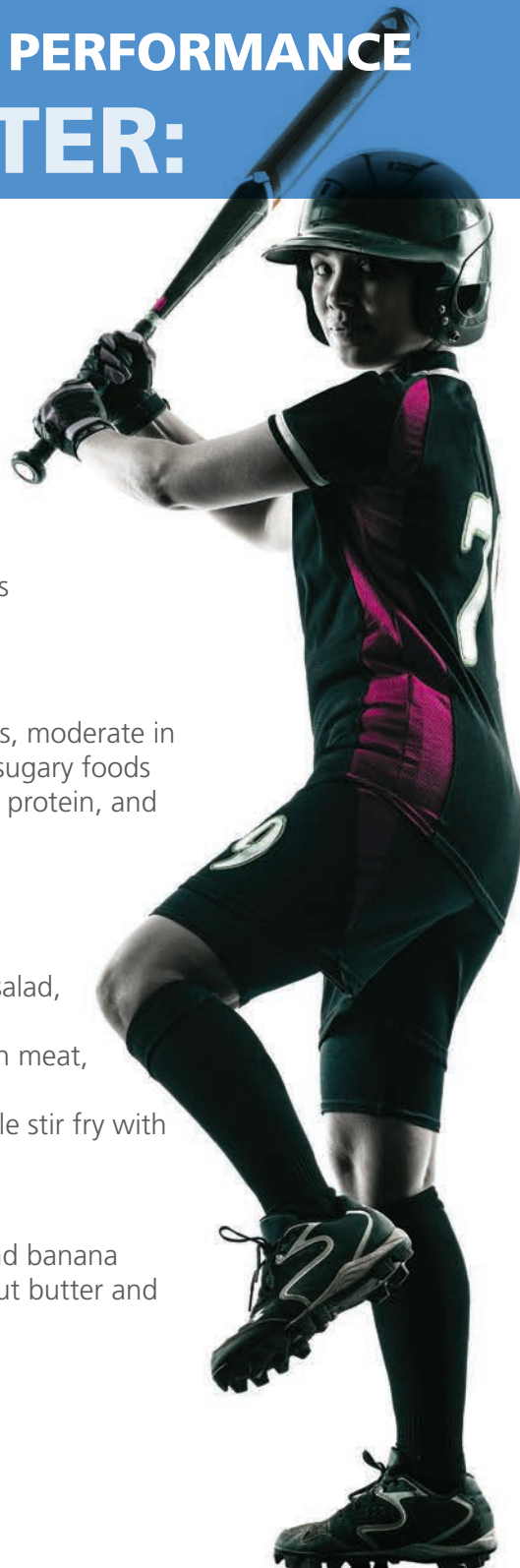
Examples:

Meal:

- Grilled chicken with pasta, salad, and fruit
- Burrito with rice, beans, lean meat, and guacamole
- Chicken/steak/pork vegetable stir fry with noodles or rice

Snack:

- Bagel with peanut butter and banana
- Chocolate milk with a peanut butter and jelly sandwich
- Granola bar and fruit
- Trail mix



SLEEP

Many youth athletes are sleep deprived. In order to physically grow and reach peak athleticism, athletes should focus on proper quantity and quality of sleep. Youth athletes should aim for 8 to 10 hours of sleep each night—this amount allows the body to grow, and also repairs and rebuilds muscles after practice and competition.

Ways to Improve Quality of Sleep

1. Avoid screen time 1-2 hours before bed or dim the screen light.
2. Implement a relaxing bedtime routine (warm showers, reading, or music).
3. Go to bed and wake up at the same time each day.
4. Take 20- or 90-minute naps during the day. 20-minute naps prevent entering a sleep cycle, and 90-minute naps complete one sleep cycle. Prevent napping later than 5 pm if you are not getting enough sleep.
5. Quiet, cool, dark room with no light source present.
6. Avoid stimulating activities, such as physical activity or eating, immediately before bedtime.



Nutrition consequences of sleep deprivation:

- Satiety hormone changes that increase hunger and appetite
- Impaired glucose metabolism—an important process in the body that allows muscles to get the fuel they need for optimal function
- Consumption of more total calories and less fruits and vegetables

PERFORMANCE PLATE

DIETARY SUPPLEMENTS

Calorie and nutrition needs vary depending upon intensity and phase of training.

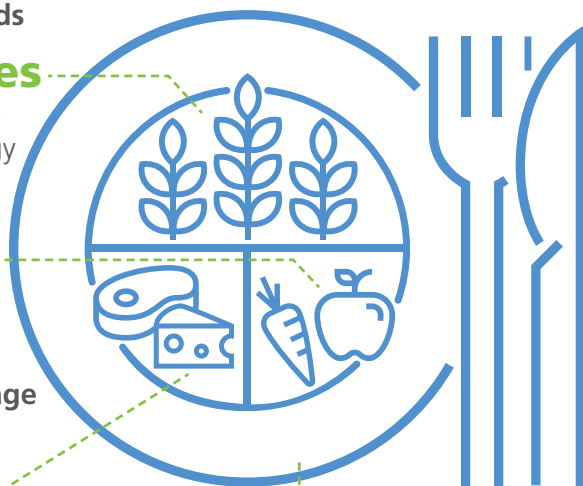
 **Healthy Fats** [nuts, seeds, oil avocado and fatty fish] Healthy fats provide a concentrated **energy** source and **essential fatty acids**

Carbohydrates
fuel muscles and are the quickest source of energy for athletes

Fruits and Vegetables
provide **nutrients** that have been shown to reduce **oxidative damage** from hard training

Protein
is essential for **building and repairing** muscle and helping to support **immune** function

Fluids [Milk, water, 100% fruit juice]
Stay hydrated by drinking fluids at mealtime and throughout the day



This plate represents an easy training day. On light training or recovery days, have a 1/4 plate of whole grains with a 1/2 plate of fruits and vegetables



What is a dietary supplement?

Dietary supplements are products used to enhance performance and/or supplement the diet. Supplement facts are not regulated by the Food and Drug Administration (FDA). Unlike foods regulated by the FDA, manufacturers of dietary supplement do not have to prove that the contents on the label are in the product. Some supplements are contaminated or intentionally spiked with illegal substance, like steroids, narcotics, or stimulants.

Some common dietary supplements include:

- Protein powder or protein bars
- Pre-workout
- Creatine
- Multi-vitamins



Food first!

Supplements should never replace food. Eating a balanced diet provides the body with all necessary nutrients. Talk with a sports dietitian at Intermountain about your current intake before deciding to take a dietary supplement.

Know the risks:

- Immediate health concerns include rapid heart rate, dizziness, fatigue, and dehydration
- College and professional sports teams test their athletes for banned substances. A positive drug test could lead to ineligibility.
- Supplements can be expensive and end up wasting money.
- Many supplements promote false claims, like increased strength, energy boosts, and faster recovery.

Look for the NSF Logo:

NSF has created the Certified for Sport program to help consumers identify products that do not contain unsafe contaminants, prohibited substances, or masking agents. Look for the NSF Certified for Sport logo on products.



HYDRATION

SPORTS & ENERGY DRINKS

Why:

Fluids help regulate:

- Body temperature (sweating cools the body)
- Electrolyte balance
- Recovery time

Dehydration puts you at risk for:

- Headaches/dizziness
- Heat illness/heat stroke
- Muscle cramping
- Decreased performance and recovery time

When:

- All day, everyday
- Not just around training or competition

Tips:

- Start by drinking half your body weight (pounds) in ounces daily, then increase depending on intensity, heat, humidity, altitude, equipment.
- Monitor urine color to determine hydration status
- Drink water, milk or 100% juice with each meal
- Carry a water bottle at school
- Drink fluids with sodium (salt) if you are a heavy sweater or prone to cramping. Consider a sports drink or a salty snack with water.

AM I HYDRATED? Urine Color Chart



You are properly hydrated

You are dehydrated

You could be very dehydrated

YOU NEED TO DRINK MORE WATER!

You are at risk for cramping and/or heat illness

What's in a sports drink?

- Fluids to aid in rehydration
- Carbohydrates for energy
- Electrolytes to replace those lost during exercise

When to use a sports drink?

- During activities longer than 90 minutes
- When training intensely in the heat
- If you sweat heavily

Bottom line about sports drinks

- Sports drinks should NOT be your go-to drink
- Focus on hydration and fueling daily for optimal performance



Negative Effects of Energy Drinks

Energy drinks are not recommended for athletes under 18, whose bodies are growing and developing. If you're feeling tired and worn out, get better quality sleep, ensure you're eating a balanced diet, and drink more water. If you need a caffeine boost, stick to natural sources such as coffee or tea. Energy drinks contain high amounts of caffeine, other stimulants, and "energy boosting" specialty ingredients. Combining an energy drink with training, heat and/or humidity, dehydration, lack of sleep, poor nutrition, and an underlying health condition can cause:

1.Mood: Too much caffeine can cause anxiety and insomnia, which can make you irritable and even affect how well you sleep at night.

2.Energy Levels: The "crash" experienced after drinking an energy drink causes fatigue and impairs your ability to perform at your best.

3.Digestion: The high caffeine and stimulant amounts in energy drinks can overpower your digestive system, leading to nausea and diarrhea.

4.Brain: High levels of caffeine can cause migraines as well as headaches if you stop using caffeine.

5.Heart: The high amounts of caffeine in energy drinks can increase heart rate and blood pressure and potentially trigger dangerous heart problems, like cardiac arrest or death.

6.Bones: Consuming high amounts of caffeine may cause the body to lose calcium, making your growing bones weaker, which increases risk of injury.



Traveling is an inevitable component of an athlete's life. Prevent yourself from being unprepared for travel (car, bus, airplane) to and from competition by packing your fuel and hydration ahead of time. Plan ahead and make a travel pack with nutrient-dense foods.

Consider:

- Choose foods you like that won't upset your stomach
- Pack a variety of foods and be sure to include both carbohydrates and protein
- For weekend events, pack a cooler to always have options available.
- Bring a large bottle of water or two on long bus rides
- If traveling by airplane, drink at least 8 ounces of fluid per hour of flight

What can I pack?

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> • Pretzels • Crackers • Trail mix • Whole or dried fruit (ex., apples, bananas, peaches, oranges) • Cereal • Nuts | <ul style="list-style-type: none"> • Nut butter packs • Granola bars • Granola • Popcorn • Applesauce • Instant oatmeal • Tuna/Salmon (foil packs) • Graham crackers | <ul style="list-style-type: none"> • Peanut butter and jelly sandwiches • Shelf-stable milk and chocolate milk (individual cartons) • Sport foods • Sport bars • Recovery and sport drink mixes |
|--|--|--|

For your cooler:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Yogurt (add granola) • String cheese • Fruit cups • Cut veggies with hummus | <ul style="list-style-type: none"> • Milk • Cottage cheese • Pasta salad • Deli sandwiches • Smoothies |
|--|---|



Apples are like mini multi-vitamins! They are high in fiber, vitamins C, A, and B, and contain various minerals such as calcium and iron. For added protein, dip slices into peanut butter.

Energy Bites:

These energy bites are a convenient and well-balanced snack to have before or after exercise. There are a variety of different ingredient combinations you can experiment with and two of those ideas are listed below.

Classic Ingredients:

- 1 cup creamy peanut butter*
- 1 cup old fashioned oats
- 1 cup wheat germ or ground flax seed
- 1 cup honey
- 1 cup mini chocolate chips

Chocolate Banana Coconut Bites:

Ingredients:

- 1 cup almond butter*
- 1 cup old fashioned oats
- 1 cup maple syrup
- 1 cup chopped banana chips
- 1 cup shredded coconut
- Roll in cocoa powder

Directions:

- Combine all ingredients in a large bowl
- Using a tablespoon, scoop about one tablespoon of the mixture and roll by hand into a ball

- Place each ball on wax paper
- Store in refrigerator or freezer

*Use SunButter if you have a peanut or tree nut allergy

Homemade Sports Drink:

Ingredients:

- Serving size 8 ounces (makes 4 servings)
- ¼ cup hot water
- ¼ cup sugar
- ¼ teaspoon salt
- ¼ cup orange juice (not concentrate)
- 2 tablespoons lemon juice
- 3 ½ cups cold water

Directions:

- Add hot water to a pitcher
- Add sugar and salt to the pitcher and stir until dissolved
- Add juices and remaining water
- Chill for 30 minutes

Adapted from Nancy Clark's Sports Nutrition Guidebook



PROPER FUELING + REST + HARD WORK = SUCCESS

NUTRIENT OF CONCERN: CALCIUM

Did you know?

- 99% of the body's calcium supply is stored in the bones and teeth
- Peak development of bone mass occurs during adolescence

Calcium tips:

- The body best absorbs calcium from dairy products (milk, yogurt, cheese).
- To calculate how many milligrams of calcium is in a product, add a zero to the %DV of calcium on the nutrition facts label.
Example: 20% DV = 200 mg calcium

| Calcium Food Sources | Milligrams (mg)* |
|------------------------------|------------------|
| 1 cup plain, low-fat yogurt | 415 |
| 1 cup Greek, nonfat yogurt | 200-300 |
| 1.5 oz cheddar cheese | 300 |
| 1 mozzarella cheese stick | 150-200 |
| 1 cup 2% milk | 290 |
| 1 cup 1% cottage cheese | 140 |
| 1 cup fortified orange juice | 300 |
| 1 cup almond milk | 450 |
| 1 cup fortified cereal | 100-1,000 |
| 1 package instant oatmeal | 150 |
| ½ cup firm, calcium set tofu | 250 |
| 1 cup cooked broccoli | 180 |
| 1 cup cooked spinach | 240 |
| ½ cup dried figs | 150 |
| 1 cup garbanzo beans | 80 |

Maximize bone health:

- Adolescent athletes need 1,300 mg of calcium each day
- Consume calcium throughout the day, because the body can only absorb 500 mg at one time
- Include vitamin D-rich foods to improve calcium absorption. Examples: eggs, fish, mushrooms, milk, and orange juice
- Calcium needs increase with symptoms of RED-S (next page) to 1,500 mg each day

Bone health facts:

- Peak bone mass for girls occurs around 19 years old and around 20-21 years for males
- Non-impact sports, such as swimming and cycling, may have a detrimental effect to bone accrual
- The lack of calcium and poor bone mineralization during puberty may permanently impact bone development and increase the risk of osteoporosis in adulthood

NUTRIENT OF CONCERN: IRON

As a growing athlete, you have an increased need for iron. Iron depletion and deficiencies result in negative effects on your muscles and heart function—which both affect performance.

How much iron do I need?

- Boys & girls ages 9-13: 8 mg per day
- Boys ages 14-18: 11 mg per day
- Girls ages 14-18: 15 mg per day

| Iron Food Sources | Milligrams (mg)* | | |
|---|------------------|----------------------------|------|
| 3 ounces beef (lean steak, roast beef, ground beef) | 3 | 1 cup cereal | 2-16 |
| 1 cup tuna fish | 2.4 | 1 cup instant oatmeal | 10 |
| 3 ounces dark-meat chicken or turkey | 1.3 | 1 cup lentils | 6.5 |
| 3 ounces halibut | 0.9 | 1 cup cooked fresh spinach | 6.4 |
| 3 ounces pork loin | 0.8 | 1 cup black beans | 4.5 |
| | | 1 cup kidney beans | 3.0 |

Absorption tips:

- Heme iron (found in meat) is better absorbed than non-heme iron (found in plants and other foods)
- Include vitamin C foods (citrus fruits, tomato, pepper, broccoli) with iron-rich foods
- Cook foods in a cast-iron skillet
- Reduce dairy, tea, and coffee consumption at iron-rich meals i.e. cereal with milk
- Iron supplements should only be taken if recommended and monitored by a doctor



UNDER-FUELING

Under-fueling, simply means you are not eating enough to match the amount of energy your body needs to be healthy. As a youth athlete, your calorie needs are at their highest due to puberty and growth spurts. Remember: energy comes from food you eat, and young athletes need more energy than non-athletes to support growth and performance.

Over time, consistent under-fueling can lead to decreased athletic performance, increased risk of injury, and various other health problems including hormonal dysfunction (low estrogen and testosterone), decreased bone mass, reduced metabolism, and impaired immunity. Eating well-balanced meals and fueling before, during, and after training and competition is the key to staying fueled and performing your best.

Make sure you are eating three balanced meals consistently throughout the day, and that means starting with breakfast.

Are you...

- Low energy and fatigued
- Constantly hungry
- Having trouble focusing at school
- Thinking about food all the time
- Getting dizzy during hard practices
- Feeling shaky
- Having frequent headaches
- Waking up hungry
- Irritable or feeling on-edge
- Girls: missing one or multiple periods

Saying YES to one or more of these questions could mean you are not getting enough calories each day.



RELATIVE ENERGY DEFICIENCY IN SPORT (RED-S)

Like under-fueling, both boys and girls can suffer from RED-S, which means you are not eating enough to match the amount of energy your body needs for optimal health, growth, and performance. However, females have a way to determine if they are meeting their energy needs: their menstrual cycle. If a female's menstrual cycle is not occurring, or is irregular, this puts the athlete at a greater risk for stress fractures, and the bone loss may be irreversible (*see the RED-S triad in the diagram below*).

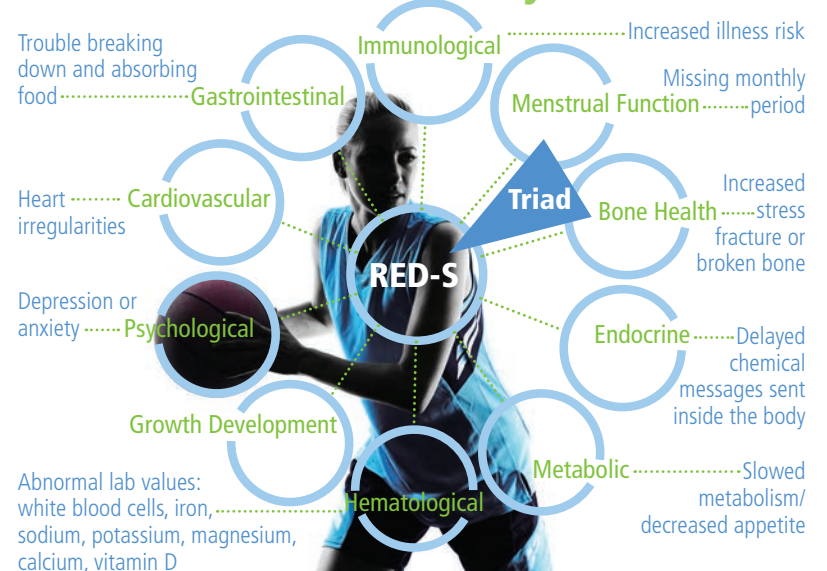
Menstrual cycle red flags:

- No period by age 15
- Less than 3-6 periods per year
- Missing 3 consecutive periods
- Cycles more than 36 days apart

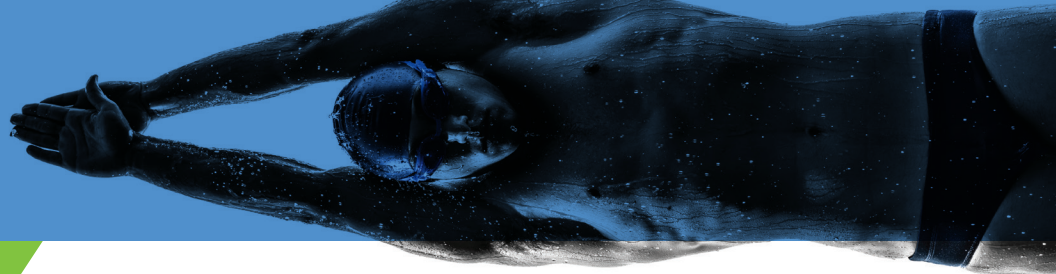
Potential performance effects:

- Decreased muscle strength
- Increased injury risk
- Decreased endurance performance
- Irritability
- Decreased coordination and concentration
- Depression
- Impaired judgement
- Decreased glycogen stores

Potential effects on the body:



PARENT GROCERY LIST



As a parent, you want to provide your growing athlete with the best fuel and the right balance of carbohydrate, protein, and fat. Having staple items at home is a simple way for parents to plan ahead. Here are some basic tips and grocery list items to get you started. However, don't forget to include foods your child enjoys.

Tips:

- Chose whole, nutrient-rich foods. These are foods that are minimally processed and will go bad soon after buying them.
- Pick whole grain products for more fiber to promote a healthier digestive system.
- Involve your athlete.
- Avoid energy drinks and sodas.
- Aim to have a minimum of 2-3 items from each food group from the shopping list below.

Shopping list:

Fruits:

- Apples
- Bananas
- Oranges
- Pears
- Grapes
- Applesauce
- Dried fruit for trail mix



Vegetables:

- Celery
- Cucumbers
- Baby carrots
- Snap peas
- Peppers
- Broccoli



Grains:

- Whole wheat bread, bagels, pita bread
- Popcorn, pretzels, crackers pita chips
- Cereal (Cheerios, Chex, Special K), Oatmeal, Granola

Healthy fats:

- Nuts (almonds, cashews, peanuts)
- Seeds (pumpkin, sunflower)
- Hummus
- Nut butter (peanut butter, almond butter, sunflower butter)

Dairy:

- Milk or soy milk
- Cottage cheese
- String cheese
- Greek yogurt



Protein:

- Beef jerky or turkey jerky
- Lunch meat
- Chicken: frozen or rotisseries
- Canned tuna or chicken
- Eggs



Other:

- Trail mix
- Sports chews or gummies
- Honey/Jam
- Bars (Kind, Bear Naked, Larabar, ProBar)
- Sports drink mix



Recipes:

High Protein Banana Pancake in a Mug (21g protein)

Serves: 1

Ingredients:

- 1 1/2 large bananas, smashed
- 2 large eggs (or 1/2 cup Egg Beaters)
- 2 tablespoon plain Greek yogurt
- 1/3 cup flour
- 1/2 teaspoon baking powder
- Various fruit and nuts to top (optional)

Directions:

- Combine smashed banana, eggs, and greek yogurt in a bowl. Mix well
- Add flour and baking powder and mix well.
- Pour batter into a large mug or bowl (at least 20 oz)
- Microwave for 3 minutes
- Top with fresh fruit and nuts to build a performance-enhancing plate!
- Tip: You can make the batter in bulk and store it in the refrigerator for 2-3 days.

Cheese Quesadillas

Serves: 1

Ingredients:

- Serves 1
- 1/2 Cup Shredded Cheddar Cheese
- 1/4 Cup Salsa
- 2 Whole Wheat Tortillas

Directions:

- Combine cheese and salsa in a bowl; mix well
- Spoon cheese and salsa onto one side of each tortilla; fold tortilla overfilling
- Microwave for 30-45 seconds; check to see if the cheese has melted, if not, microwave another 30 seconds or until cheese is melted
- Add a side of veggies, like carrots and ranch to build a performance-enhancing plate!

Easy Pita Pizza

Serves: 1

Ingredients:

- 1 pita bread or English Muffin
- Pizza Sauce: traditional red sauce or pesto
- Mozzarella cheese
- Italian spices to taste – optional

Directions:

- Spread sauce over pita or English Muffin to fully cover surface.

- Sprinkle shredded cheese and Italian spices over sauce
- Place in microwave safe plate, microwave 30-45 seconds, check to see if cheese melted, if not, microwave another 30 seconds until done
- Add a fruit or vegetable like pineapple, black olives, bell peppers, or tomatoes to build a performance enhancing plate!

Iron Powered Breakfast Cookies

Ingredients:

- 2 bananas
- 1/3 cup peanut butter
- 2/3 cup apple sauce
- 1 1/2 cup oats
- 2 Tbsp chia seeds
- 1 tsp vanilla extract

Optional: chopped nuts, raisins, cinnamon, coconut flakes, chocolate chips



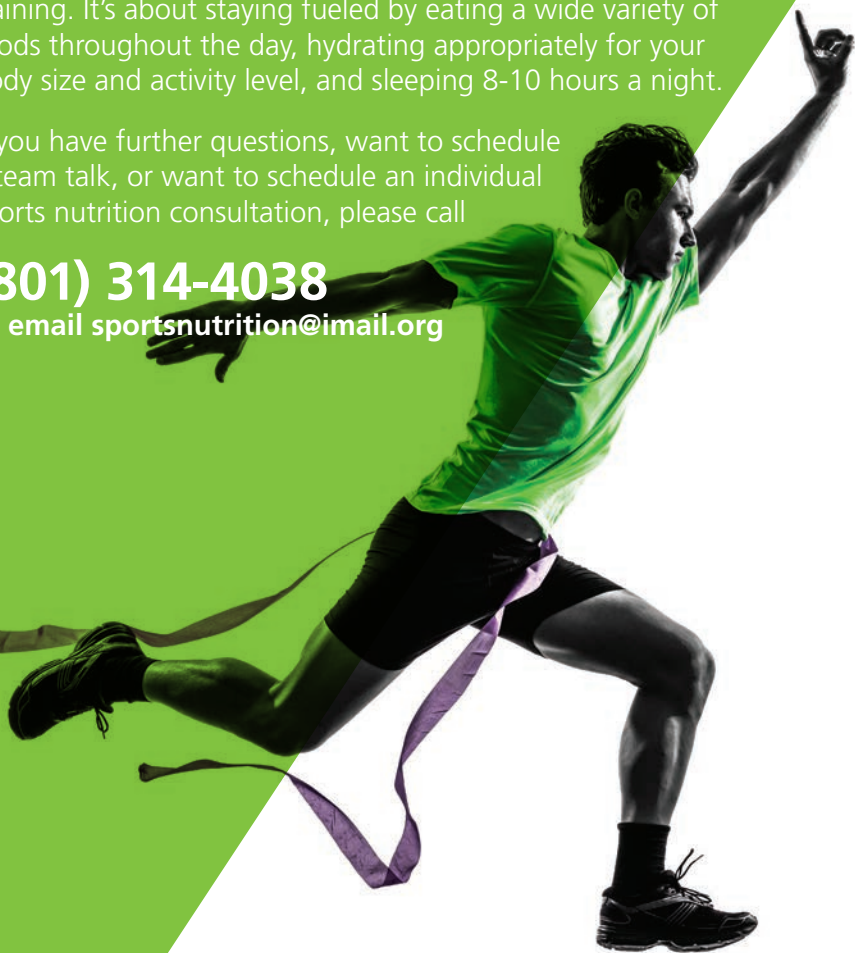
Directions:

- Preheat oven to 350 F
- Blend bananas, pb, applesauce, chia seeds, & vanilla in blender
- Combine mixture with oats and optional ingredients
- Spoon onto baking sheet and bake for 15 – 20 minutes

Being a great athlete is not only about putting time into training. It's about staying fueled by eating a wide variety of foods throughout the day, hydrating appropriately for your body size and activity level, and sleeping 8-10 hours a night.

If you have further questions, want to schedule a team talk, or want to schedule an individual sports nutrition consultation, please call

(801) 314-4038
or email sportsnutrition@imail.org



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