

# Fueling Trojan Athletes



 Cass Health

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# Fueling Tennis Players

Tennis is a high-intensity sport that requires short bursts of activity. Most points in tennis last fewer than 10 seconds, but there are only 25 seconds of rest between points and 90 seconds between games, so a strong endurance base is needed for competitive tennis. Analyses of tennis matches show that the sport requires about 300 to 500 bursts of energy over the course of a match. Quickness and agility are the hallmarks of a good tennis player.

The longest tennis match on record lasted 11 hours over 3 days. While that is unusual, men's matches can last 3 to 4 hours over 5 sets. Fueling strategies for tennis players should focus on making sure carbohydrates are available to fuel training and competition, having courtside snacks and fluids to sustain players through long matches, and staying well hydrated, especially when playing in hot, humid environments.

## Fueling Strategies

Tennis players practice for hours at a time. Most of the competitive season starts in the early spring and goes through the summer. However, competitive tennis can be played almost year-round on indoor courts or by traveling to the southern hemisphere, where the seasons are reversed. Tennis players burn 5 to 11 calories per minute playing singles and 3½ to 7½ calories per minute playing doubles. Calorie needs depend on age, gender, and hours spent training and conditioning and practicing on the court. Some teenaged and young adult tennis players may need 5,000 to 7,000 calories per day.

The nutrients that provide energy (calories) are carbohydrate, protein, and fat. The amounts of each nutrient you need to fuel your practice and competition are given below.

## Carbohydrate

Carbohydrate should make up most of your diet. During intense training periods, eat 2.3 to 3.26 grams of carbohydrate per pound of body weight per day (5 to 7 grams per kilogram). For example, a 150-pound tennis player would need 345 to 480 grams of carbohydrate a day. On less intense training days or when sidelined by injury, you only need 1.4 to 2.3 grams of carbohydrate per pound (3 to 5 grams per kilogram). Active young children need less carbohydrate than older children, so the lower end of the ranges is recommended.

Choose high-quality carbohydrate foods such as whole grain breads and cereals, rice, pasta, starchy vegetables, whole or dried fruit, and low-fat milk and yogurt. Eat fewer refined carbohydrates and sweets such as pastries, cookies, cakes, candy, sugar-sweetened soft drinks, fruit drinks, tea, and specialty coffee drinks.

These foods have 15 grams of carbohydrate:

- 1 slice bread
- 6-inch tortilla
- ½ cup corn
- ½ cup mashed potatoes
- ½ medium baked or sweet potato
- 1/3 cup rice
- 3 cups popcorn
- 1 small apple
- 15 grapes
- 2 tangerines
- 2 tablespoons raisins
- ½ cup orange juice
- 3 cups green beans
- 1¼ cups milk or yogurt

## Protein

Protein provides the building blocks for muscle mass and for healthy growth and development. You need 0.6 to 0.8 grams per pound (1.3 to 1.8 grams per kilogram). For example, a 150-pound tennis player would need 90 to 120 grams of protein a day. Eating more protein than the recommended amount will not build muscle faster or add extra muscle mass.

Choose lean protein foods such as lean beef and pork, chicken, turkey, fish, eggs, and low-fat dairy foods. Nuts are a good source of protein and contain healthy fats. Eat fewer high-fat protein foods such as regular burgers, brisket, ribs, sausage, and full-fat cheeses and dairy foods.

These foods have 7 grams of protein:

- 1 ounce cheese
- 1 ounce beef, pork, chicken, turkey, or fish
- ¼ cup cottage cheese
- ½ cup black beans or kidney beans
- 1 whole egg
- 2 tablespoons peanut butter
- 1 cup milk or plain yogurt

## Fats

There is no specific recommendation for fat for tennis players, but healthy fats should be a part of every athlete's diet. Healthy fats include

olives and olive oil, nuts and nut butters, avocado, and vegetable oils (such as canola oil). Fat has more calories than carbohydrate or protein. Healthy fats can help add calories for tennis players who want to gain weight.

## What Should Tennis Players Eat Before and After a Workout?

When possible, eat 3 to 4 hours before a hard practice or competition. Aim for a low-fat meal with about 200 to 300 grams of carbohydrate and 30 grams of lean protein. This will ensure you have enough fuel on board but will leave time for your stomach to empty before you play. A turkey sub sandwich with baked chips and a side of fruit or a grilled chicken wrap on a flour tortilla with pretzels and fruit juice or low-fat milk are examples of meals that will meet the energy demands of a long practice or match.

If there is not enough time to eat 3 to 4 hours before practice or competition, eat a snack 1 to 2 hours before exercise. Good choices include a small bagel with peanut butter, a granola or cereal bar, cheese and crackers, cereal and milk with banana, or yogurt. If there is less than 1 hour before exercise, liquid meals may be the best option. Sports drinks or a low-fat liquid meal replacement are good choices.

For practices or matches longer than 1 hour, pack courtside snacks. Eating small amounts of carbohydrate-rich foods and staying hydrated can improve the quality of the tennis stroke in the final stages of matches that last longer than 2 hours. Try to eat 25 to 30 grams of carbohydrate every hour. Good choices for snacks include sports drinks, which provide carbohydrate, fluid, sodium, and potassium; peanut butter sandwiches; pretzels; string cheese; trail mix; dried fruit; orange slices; baked chips; smoothies; or 100% fruit juice.

After practice, recover with a carbohydrate- and protein-rich snack. Carbohydrate replaces muscle glycogen (carbohydrate stored in muscles) that was lost during a long practice or match, and protein helps muscle protein repair. Good choices include a turkey or grilled chicken sandwich, a slice of cheese pizza, low-fat chocolate milk, cottage cheese and fruit, or cheese and crackers. If you are practicing or competing the next day, start your recovery within 30 minutes after training. If the following day will be a rest day, add recovery foods to your next meal.

## Vitamins and Minerals

Tennis players can get all the vitamins and minerals they need by making healthy food choices and eating a variety of foods. Have at least 5 servings of fruits and vegetables each day. Adding berries to breakfast cereal, dried fruit to trail mix, frozen fruit to plain or vanilla yogurt, side salads with meals, vegetables on sandwiches, and salsa on baked potatoes and snacking on fresh fruits and vegetables will help you get all the nutrients you need.

Female tennis players should pay extra attention to choosing iron-rich and calcium-rich foods. These nutrients are needed in larger amounts, especially during teen years. Lean beef in a stir-fry, dark-meat chicken or turkey, kidney beans and black beans, and breakfast cereals fortified with iron are good choices. For calcium, choose low-fat milk (cow's milk or soy, rice, or almond milk), low-fat cheese, yogurt, almonds, leafy green vegetables, orange juice with added calcium, or smoothies made with milk or yogurt.

## Hydration Strategies: What Should Tennis Players Drink?

Tennis is usually played outdoors in hot, humid conditions. A 1% body weight loss (1½ pounds in a 150-pound athlete) can impair the body's ability to cope with the stress of exercise and a loss greater than 1% can impair a tennis player's ability to achieve peak performance.

Water is best for most athletes. Plan to drink about 2 cups (16 ounces) of water 2 to 3 hours before a workout or match. Then drink 1 cup (8 ounces) of water 10 to 20 minutes before a match. Most workouts are long and strenuous, so drink about 1 cup of fluid every 10 to 20 minutes during your workout. Keep a sports bottle filled with water courtside and try to drink about 5 ounces (1 gulp is about 1 ounce) at every changeover. If you don't like the taste of plain water, slice up lemons or limes to drop into your water bottle for a refreshing taste.

Sports drinks are a good choice when you have long, hard workouts or have long matches or multiple matches during a tournament with little time to recover. Stick to the basic tried-and-true sports drinks such as Gatorade or PowerAde, because they provide a good balance of carbohydrate, sodium, and potassium to replace losses. Follow the same drinking schedule as for water, but also listen to your body. Drink when you are thirsty and monitor how much you urinate and the color of your urine. If you are urinating frequently throughout the day and your urine is a light-straw color, you are probably drinking enough fluids.

## Frequently Asked Questions

*Some high-profile professional tennis players have adopted a gluten-free diet. Will switching to a gluten-free diet improve my performance?*

A gluten-free diet is necessary for those athletes who have an intolerance to gluten (a protein found in wheat and some other grains). However, there is no evidence that adopting a gluten-free diet improves your ability to play tennis. One potential risk of following a gluten-free diet is lack of carbohydrate, because gluten-containing foods are the staples of most athletes' diets. There is no reason to avoid gluten if you do not have a medical condition that requires a change in diet.

*I cramp up when I play long matches in the heat and my coach suggested I eat a banana to help with the cramps but it has not helped me.*

*Are there any strategies to help with cramping?*

Reasons for cramping and strategies to avoid cramping are not completely understood, but many tennis players find relief by increasing water and sodium intake. Sports drinks contain some sodium, but that might not be enough to prevent cramping. Some players respond to a mixture of ½ teaspoon salt and 32 ounces of sports drink consumed before and sipped on during the match. Off the court, people who cramp up can try to increase salty food and fluids. Tomato juice, pretzels, soup, and pickles are all high in sodium.

*What are some good resources for nutrition and tennis?*

The best resource is a registered dietitian nutritionist, especially one who specializes in sports nutrition.

*Information from the Academy of Nutrition and Dietetics Nutrition Care Manual.*





# Food Basics

## **The Basics**

- Eat breakfast every day.
- Drink plenty of water.
- Eat five servings of fruits & veggies.
- Eat lean protein with meals and snacks.
- Choose foods that help you feel your best.
- Tune into your body's cues for when you're thirsty, hungry, and full. Respect your body by meeting its needs.
- Plan ahead for meals and snacks.

## **Parent's or Caregiver's Role**

- Choose and purchase the food.
- Provide regular meals with snacks.
- Eat together as often as possible.
- Encourage cooking and preparing food together.

## **Athlete's Role**

- Choose if they are going to eat.
- Determine how much to eat.
- Stop eating when they are full.
- Decide how fast/slow they will eat.

# Hydration

Staying hydrated is a key ingredient to keeping your body healthy and safe during intense exercise. Dehydration can increase your risk of injury or cause serious heat illnesses.

## WATER BASICS

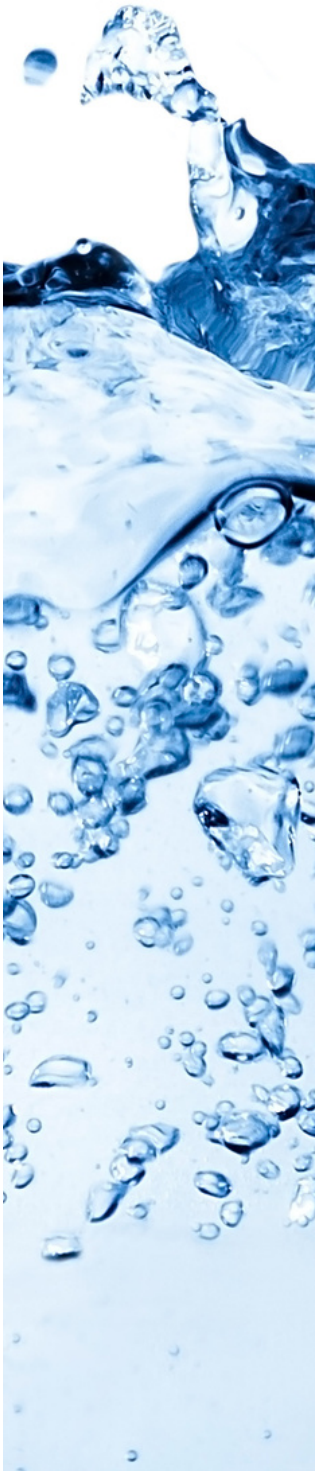
- ✓ Check your urine and aim for clear to light yellow.
- ✓ If you're thirsty, you're already dehydrated.
- ✓ Aim for 80-120 ounces of fluid each day, or 1/2 to 1 ounce per pound of body weight
- ✓ Drink 8-12 ounces of water every 20 minutes during activity
- ✓ Don't over do it.

## WHEN TO CONSIDER A SPORTS DRINK

- ✓ Exercise is longer than an hour
- ✓ Intense workouts
- ✓ Practicing or playing in high humidity & heat
- ✓ Excessive sweating

## WARNING SIGNS OF DEHYDRATION

- Intense thirst
- Exhaustion
- Increased temperature
- Fast heart rate
- Fast breathing
- Confusion
- Fainting or feeling dizzy
- Cramping
- Headaches
- Dark urine



# Calories: How much should an athlete eat?

Active teenagers need lots of fuel to get them through the day. On average ...

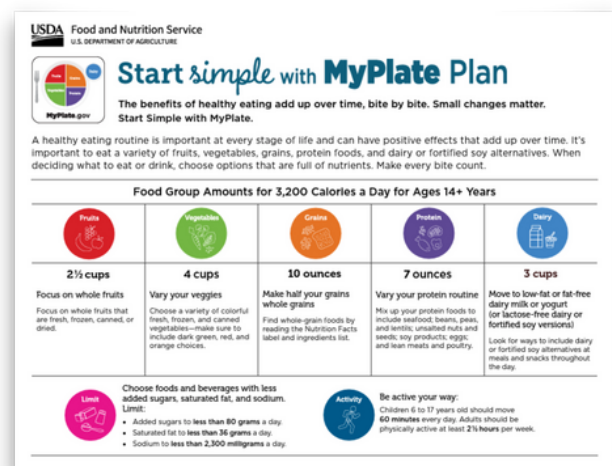
- Boys need 3,000 to 4,000 calories a day.
- Girls need 2,400 to 3,000 calories a day.

Teen athletes benefit from eating regularly (every few hours) and incorporating a mix of carbohydrates, fats, and protein every time they eat.

## MyPlate Plans

For a more personalized plan, we recommend using the tools on MyPlate.gov. With their planning tool, you'll enter your age, sex, weight, height, and level of physical activity. A food plan will then be calculated that you can view online or download and print. It's important to remember that every body is different and you may need more calories on very active days, and less on other days. The MyPlate Plan is a great starting point and should be used along with your own body's needs and hunger cues.

- Start at [myplate.gov/myplate-plan](http://myplate.gov/myplate-plan).
- Click on **Start**.
- Enter your age, sex, weight, height, and level of physical activity.
- Click **Calculate food plan**.
- Click on the calorie amount calculated to view and then download a MyPlate plan for that amount of daily calories.



# How Teen Athletes Can Build Muscles with Protein

Article from eatright.org — Academy of Nutrition and Dietetics

Eating protein doesn't equal big muscles. Instead, muscle growth is a complex process that relies on adequate consumption of protein and calories, hormones the body produces, including human growth hormone and testosterone, and a healthy dose of physical activity. Here are a few facts and tips to keep in mind before you amp up your protein in search of a new physique.

## Work Builds Muscle

Although eating protein doesn't build muscle on its own, the presence of protein in an athlete's eating pattern is important. Believe it or not, when you exercise, such as lifting weights or running, some of your muscle cells break down. Protein from food helps repair this damage from exercising and builds up more muscle, making them stronger.

## Strike a Balance

While protein is important for building new muscles, **eating the right amount of protein** [and at the right time] **is key**. Consuming more protein than your body needs may translate to excess calories that must be stored, usually in the form of fat. Too little protein consumption means your body has to supply it itself, which can result in muscle breakdown and loss. When you eat a balanced diet that includes enough calories and carbohydrates, your body won't use protein as a calorie source — it will spare it to build muscles and repair them when needed.

## How Much Protein Is Enough?

Young athletes need slightly more protein than their peers who aren't athletes. Protein needs are based on age, sex, body weight and stage of development, with teens needing between 10 to 30% of their daily calories from protein. Although an individual's exact needs will vary, the Recommended Dietary Allowance (RDA) provides a good reference for how much of a certain nutrient a healthy individual needs in a day. The RDA for protein is 46 grams for teenage girls and 52 grams for teenage boys per day.

Most athletes are able to meet these protein requirements and then some. In fact, studies show that young athletes consume two to three times the RDA for protein! Although athletes may have higher protein needs than their peers, contrary to popular belief, consuming large amounts of protein does not build additional muscle.

One strategy that may provide an advantage, though, focuses on timing. Studies now show that it is not just the total protein intake for the day that counts for athletes. The body can best build and maintain muscles when protein is divided relatively evenly throughout the day. To do this, include a source of protein at each meal and snack. [Our Athletic Trainer recommends about 20g of protein within 30 minutes post-exercise.]

## The Best Protein Sources

Many foods contain protein, but high-quality protein comes from beef, poultry, fish, eggs, milk and dairy products, soy and soy products. Including a variety of plant-based sources of protein, such as beans, nuts, and seeds throughout the day can also help to meet protein requirements.

## Beware of Protein Supplements

Some athletes wonder about using a protein supplement such as protein powder or a high-protein drink. Overall, this isn't necessary and even might be dangerous. Using protein supplements may lead to excessive protein intake, taxing the kidneys and promoting dehydration. Plus, the risk for contamination with steroids, hormones or other unwanted ingredients is real, as the safety of dietary supplements is largely left to manufacturers.

The good news? You can meet your protein needs with food alone! Just be sure to eat a serving of protein, like the ones above, at each meal and snack.



# Foods that Fuel

## Lean Meats

- Boneless chicken breast\*
- Fish (cod, salmon, tuna)\*
- Lean beef (steak, burger)\*
- Turkey\*
- Pork\*
- Eggs or egg whites\*

## Dairy

- Low-fat milk\*
- Low-fat yogurt\*
- Greek yogurt\*
- Cheese\*
- Low-fat cottage cheese\*

## Grains

- Whole wheat or whole grain bread items like bagels, tortillas, pitas, English muffins
- Oatmeal\*
- Whole grain pasta
- Whole wheat crackers
- Brown rice
- Quinoa\*
- Whole wheat or whole grain cereals

## Beans, Nuts & Seeds

- Edamame\*
- Black beans\*
- Chickpeas\*
- Lentils\*
- Nuts and seeds\*
- Tofu\*
- Nut butters\*



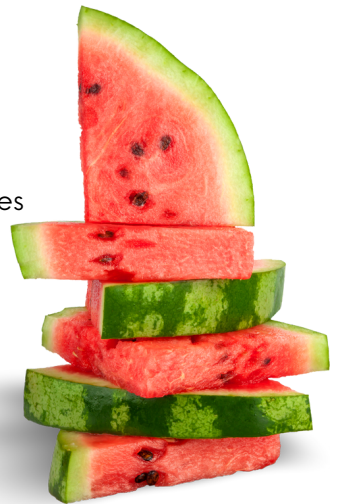
## How much protein do I need to eat?

For very active teens who are looking to build muscle mass, aim for 1/2 to 1 gram of protein per pound of body weight.

\*Foods that are good sources of protein.

## Fruits & Vegetables

- |                   |               |                          |                  |
|-------------------|---------------|--------------------------|------------------|
| • Apples          | • Carrots     | • Lettuce, spinach, kale | • Sweet potatoes |
| • Apricots        | • Cauliflower | • Oranges                | • Tomatoes       |
| • Avocados        | • Celery      | • Peaches                | • Watermelon     |
| • Bananas         | • Cherries    | • Pears                  | • Zucchini       |
| • Berries         | • Corn        | • Peppers                |                  |
| • Broccoli        | • Cucumbers   | • Pineapple              |                  |
| • Brussel sprouts | • Grapes      | • Plums                  |                  |
| • Cantaloupe      | • Green beans | • Potatoes               |                  |



## Smoothies: A Great On-the-Go Option

Start with a cup of liquid like water or milk...

- Add a cup of frozen fruit you like, such as:
  - Blueberries, strawberries, or blackberries
  - Banana
  - Mango
  - Peaches
- Consider adding healthy fats like avocado, peanut butter, or almond butter.
- Consider adding in a vegetable like spinach, kale, tomato, or carrot.
- Blend together, adding ice or liquid as needed.

## Ideas for Items to Have on Hand

- Chicken salad
- Egg salad
- Pre-made sandwiches
- Beef or turkey sticks
- Tuna packets
- Premade salads
- Peanut butter

## Snack Ideas for Busy Days (Perfect for a backpack!)

- 100% juice boxes
- Trail mix
- Peanut butter crackers
- Granola bars
- Dried fruit
- Applesauce pouches
- Almonds
- Peanuts
- Cashews



# Healthy Snacks to Refuel

The best sports recovery snack choices for youth athletes are the foods that they are familiar with and that they tolerate. Serving a combination of carbohydrate-rich foods with protein will help prevent muscle soreness and prepare your child for their next practice or competition. A meal or snack will also help youth athletes to refuel and rehydrate their body after intense activity. Healthy snack combinations include the following:

$\frac{3}{4}$  cup low-fat yogurt +  
 $\frac{1}{2}$  cup granola +  
 $\frac{3}{4}$  cup frozen peaches

Trail mix made with:  
1 ounce beef jerky +  
1 ounce dried pineapple +  
 $\frac{1}{2}$  cup ready-to-eat cereal

1 cup low-fat chocolate milk +  
8 graham crackers

1 apple +  
2 tablespoons of  
peanut butter

12 whole wheat tortilla chips +  
 $\frac{1}{2}$  cup black bean and corn salsa

1 cup ready-to-eat cereal +  
1 cup low-fat milk

1 ounce pretzels +  
1 ounce raisins

6 wheat crackers +  
1 ounce summer sausage +  
1 ounce low-fat cheese

1 fruit and nut granola bar +  
3 ounce applesauce pouch

Fruit smoothie made with  
 $\frac{3}{4}$  cup low-fat yogurt +  
1 small banana  
 $\frac{1}{2}$  cup low-fat milk

12 wheat crackers +  
 $\frac{1}{4}$  cup avocado +  
1 low-fat mozzarella string cheese

1 mini bagel +  
2 tablespoons cream cheese +  
1 cup low-fat milk

$\frac{1}{2}$  cup cooked oatmeal +  
1 cup blueberries +  
2 tablespoons nuts

1 whole wheat English muffin +  
2 tablespoons peanut butter +  
1 tablespoon fruit preserves

2 tablespoons hummus +  
1 cup raw veggies such as carrots,  
broccoli, cauliflower

1 medium orange +  
1 hard-boiled egg

6 wheat crackers +  
 $\frac{1}{3}$  cup tuna salad

1 eight-inch tortilla +  
2 ounces sliced turkey

Information from the Academy of Nutrition and Dietetics Nutrition Care Manual



# Building Good Habits

In addition to good nutrition habits, athletes also need to develop good habits for recovery in between practices and competition.



## **Sleep**

- Aim for 8 hours of sleep every night to help your body recover from practices and competition.
- Create a healthy routine each night to help yourself fall asleep.
  - Turn off electronics like phones, laptops, and TVs a half hour to hour before bed.
  - Use the time before bed for self-care like stretching, journaling, or reading.
  - Stick to a regular bedtime and wake-up time.
  - Avoid or cut back on caffeine.

## **Cool-Downs, Massage, & Stretching**

- Don't skip the cool down at the end of a workout.
- Use a foam roller or tennis ball to massage muscles.
- Stretching — both static and dynamic — can help you reduce soreness and may help prevent injuries.
- Keep ice packs (or bags of frozen peas) on hand. When needed, apply the ice for 20 minutes at a time.
  - You can also make an ice pack by mixing one cup of rubbing alcohol with three cups of water and freezing in a plastic freezer bag.

## MEAL PLANNING TIPS

- Start by checking the refrigerator, freezer, and pantry to see what you already have on hand.
- Look at the calendar and determine when and where you'll eat your meals, and make note of any special events or considerations that you'll need to plan around.
- Check out the weekly grocery ads to see what's on sale and in season.
- Review your meals and see if there is something from each of the food groups in most of your meals. This is the simplest way to make sure your meals are healthy.
- If you have extra room in your grocery budget, try to stock up on the pantry items you use regularly.

What do I already have at home?

|                         | Monday  | Tuesday   | Wednesday   | Thursday  | Friday  |
|-------------------------|---|---|---|---|---|
| <b>Breakfast</b>        |   |   |   |   |   |
| <b>Snack</b>            |   |   |   |   |   |
| <b>Lunch</b>            |   |   |   |   |   |
| <b>Snack</b>            |   |   |   |   |   |
| <b>Dinner</b>           |   |   |   |   |   |
| <b>Did I include...</b> | <ul style="list-style-type: none"> <li>• Grains</li> <li>• Veggies</li> <li>• Fruits</li> <li>• Dairy</li> <li>• Protein</li> </ul> | <ul style="list-style-type: none"> <li>• Grains</li> <li>• Veggies</li> <li>• Fruits</li> <li>• Dairy</li> <li>• Protein</li> </ul> | <ul style="list-style-type: none"> <li>• Grains</li> <li>• Veggies</li> <li>• Fruits</li> <li>• Dairy</li> <li>• Protein</li> </ul> | <ul style="list-style-type: none"> <li>• Grains</li> <li>• Veggies</li> <li>• Fruits</li> <li>• Dairy</li> <li>• Protein</li> </ul> | <ul style="list-style-type: none"> <li>• Grains</li> <li>• Veggies</li> <li>• Fruits</li> <li>• Dairy</li> <li>• Protein</li> </ul> |

GROCERY LIST

FRUITS & VEGETABLES

MEAT

FISH & SEAFOOD

DAIRY

BREADS

CANNED GOODS

FROZEN GOODS

RICE & PASTA

CONDIMENTS

SNACKS

BEVERAGES

OTHER