

Reducing Your Risk for Type 2 Diabetes: The Power of Food¹

Elena Torna, Jodi Fitzgerald, Danielle Nelson, Madison Woodard, and Jeanette Andrade²

Overview of Diabetes

Type 2 diabetes is a medical condition where your body does not use insulin (a hormone) properly (American Diabetes Association, n.d.). This results in hyperglycemia, or too much glucose (sugar) in your blood. Over 1 in 10 adults have Type 2 diabetes and 1 in 3 adults have pre-diabetes (Centers for Disease Control and Prevention 2020). Diabetes is the 7th leading cause of death among adults (Xu et al. 2018).

High blood glucose over time increases the risk for:

- Heart disease
- Kidney disease
- Nerve damage
- Lower-extremity amputations
- Blindness

This publication describes the modifiable risk factors for type 2 diabetes and tips to reduce your risk for diabetes.

Risk Factors for Developing Diabetes

Being Overweight or Obese

Being overweight or obese increases your risk for diabetes. Discuss your current weight and how your weight has changed over time with your healthcare provider. Losing just 7% of your body weight can cut your risk of type 2 diabetes in half (Knowler et al. 2002). Your waist circumference is also important. Keeping your waistline less than 35 inches for women and less than 40 inches for men lowers the risk of diabetes (National Heart, Lung, and Blood Institute, n.d.).

Dietary Habits

Dietary habits may contribute to risk of diabetes (Liu et al. 2018; Malik et al. 2010; Sami et al. 2017), especially if you consume:

- High amounts of added sugars (e.g., cakes, candy, sugar-sweetened beverages such as soda, sweet tea, and sports drinks)
- Low amounts of fruits and vegetables, legumes, and whole grains
- High amounts of saturated fats, which are typically from animal sources including meat and dairy

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2. Elena Torna, graduate student, Food Science and Human Nutrition Department; Jodi Fitzgerald, MD; Danielle Nelson, MD, MPH, assistant professor and assistant medical director, University of Florida Department of Community Health and Family Medicine; Madison Woodard, undergraduate student, Food Science and Human Nutrition Department; and Jeanette Andrade, assistant professor and director, MS-DI program, Food Science and Human Nutrition Department; UF/IFAS Extension, Gainesville, FL 32611.

Lifestyle

Lifestyle behaviors may increase your risk for diabetes include:

- Drinking more than 1 alcoholic beverage per day for women or more than 2 per day for men.
- Lack of physical activity such as walking, running, or swimming less than 150 minutes per week.
- Smoking (Campagna et al. 2019).

Beverage amounts equal to one serving (USDA 2015):

- 5 ounces of wine
- 12 ounces beer
- 8 ounces of 7% alcohol malt liquor
- 1.5 ounces of distilled spirits or liquor

Reduce Your Risk for Diabetes

A healthy lifestyle can reduce your risk for type 2 diabetes and help those with diabetes live a healthier life. Start today with these tips!

1 Focus on maintaining a healthy weight or losing weight gradually toward your optimal weight range.
Skip the diets! Focus on making lasting lifestyle changes that you can continue for life.

2 Follow the Diabetes Meal Plate (Hamilton 2015) for maintaining blood glucose levels.
A diet high in unrefined carbohydrates (whole grains, vegetables, beans) and fiber (found only in plant foods) can help you improve your blood glucose levels (McMaken and Shah 2017). Fill $\frac{1}{2}$ of a 9-inch plate with nonstarchy vegetables such as leafy greens or carrots, $\frac{1}{4}$ with whole grains or starchy foods such as peas or potatoes, and the remaining $\frac{1}{4}$ with lean proteins such as chicken or beans. Have a piece of fruit and dairy on the side. For further inspiration see the recipe ideas below.

3 Exercise can improve your blood glucose levels.
Include at least 30 minutes of moderate physical activity at least 5 days per week. Try to include strength training (weights, yoga, resistance bands) 2–3 times per week.

4 Be sure to talk with your doctor about your goals and plans for change.
Your doctor may need to adjust your medications as you make lifestyle changes.

5 Aim to sleep 7–9 hours each night.
People who sleep for at least 7 hours per night maintain their body weight and have better control of their blood glucose levels (Watson 2015).

6 Start simple. Set a goal each week to make small changes towards health.
Try a goal such as eating at least one piece of fruit or $\frac{1}{2}$ cup of beans daily for a week.

Breakfast Ideas

Breakfast Smoothie

Recipe by author Madison Woodard

Prep time: 5 minutes

Cook time: 0 minutes

Servings: 4 servings

Carbohydrates: 26 g/serving

(\$1.26 per serving based on national retailer's prices)

Ingredients:

- 2 cups of frozen sliced bananas (2 large bananas)
- 2 cups of frozen whole strawberries (about 16)
- 3 cups of chopped spinach (prechopped)
- 2 cups 2% milk

Directions:

(bag preparation for multiple servings)

1. Line baking sheet with parchment paper. Evenly spread out 2 cups of sliced bananas. Place in freezer for about 2 hours or until completely frozen. Repeat with strawberries.
2. Next, take 4 quart-size freezer bags and write the date.
3. Add ½ cup of frozen bananas slices, ½ cup of frozen strawberries, and a handful of spinach.
4. Be sure to squeeze out as much air as possible before sealing the bag to prevent freezer burn. Seal and place in freezer.

(for single serving)

1. Empty the contents of one smoothie bag into a blender.
2. Add ½ cup of milk.
3. Blend on high for about 1 minute or until everything is completely blended.

Nutrition Facts	
servings per container	
Serving size	(273g)
Amount per serving	
Calories	140
% Daily Value*	
Total Fat 3g	4%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 10mg	3%
Sodium 75mg	3%
Total Carbohydrate 26g	9%
Dietary Fiber 3g	11%
Total Sugars 17g	
Includes 0g Added Sugars	0%
Protein 6g	
Vitamin D 0mcg	0%
Calcium 181mg	15%
Iron 1mg	6%
Potassium 598mg	15%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Triple Berry Oatmeal Cups

Recipe modified from Healthy Liv: <https://www.healthy-liv.com/mixed-berry-baked-oatmeal-cups/>

Prep Time: 10 minutes

Cook time: 20 minutes

Servings: 12 oatmeal cups

Carbohydrates: 20 g/serving

(\$0.36 per serving based on national retailer's prices)

Ingredients:

- 1 medium-ripe banana
- 2 large eggs
- 1 teaspoon vanilla extract
- ¼ cup honey
- ½ cup 2% milk
- 1 tablespoon canola oil
- 2 cups quick-cooking oats
- 1 teaspoon baking powder
- 1 teaspoon ground cinnamon
- 1 ½ cup mixed frozen berries
- ⅛ teaspoon salt

Directions:

1. Preheat oven to 350°F and spray muffin tin with nonstick spray. Set aside.
2. Place ripe banana in a medium-size bowl and mash. Then, whisk in eggs, vanilla extract, honey, and 2% milk.
3. Then, in a large bowl, mix together oats, baking powder, cinnamon, and salt.
4. Combine wet ingredients with dry ingredients and then add in the canola oil and mix again. Finally, add berries and mix until combined.
5. Transfer batter to muffin tin, filling each muffin to the top.
6. Bake at 350°F for 18–20 minutes.

Nutrition Facts	
servings per container	
Serving size	(70g)
Amount per serving	
Calories	120
	% Daily Value*
Total Fat 3g	4%
Saturated Fat 0.5g	3%
Trans Fat 0g	
Cholesterol 30mg	10%
Sodium 45mg	2%
Total Carbohydrate 20g	7%
Dietary Fiber 1g	4%
Total Sugars 9g	
Includes 6g Added Sugars	12%
Protein 3g	
Vitamin D 0mcg	0%
Calcium 48mg	4%
Iron 1mg	6%
Potassium 179mg	4%

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Spinach and Tomato Omelet

Recipe by author Madison Woodard

Prep time: 5 minutes

Cook time: 8 minutes

Servings: 1 omelet

Carbohydrates: 8 g/serving

(\$1.56 per serving based on national retailer's prices)

Ingredients:

- 2 eggs, lightly beaten
- 1 medium tomato, chopped
- ½ cup fresh spinach, chopped

Directions:

1. Spray large skillet with cooking spray. Pour eggs into into skillet and heat at medium to high heat. Add chopped tomato and spinach evenly over eggs.
2. Allow eggs to cook until completely set, around 5–8 minutes.
3. Use spatula to flip sides of eggs into an omelet and transfer to large plate.

*To add more flavor, add parsley or any desired herbs. Serve with 2 slices of whole wheat toast for carbohydrates.

Nutrition Facts	
servings per container	
Serving size	(295g)
Amount per serving	
Calories	180
	% Daily Value*
Total Fat 10g	13%
Saturated Fat 3g	15%
Trans Fat 0g	
Cholesterol 370mg	123%
Sodium 160mg	7%
Total Carbohydrate 8g	3%
Dietary Fiber 2g	7%
Total Sugars 5g	
Includes 0g Added Sugars	0%
Protein 15g	
Vitamin D 2mcg	10%
Calcium 87mg	6%
Iron 3mg	15%
Potassium 639mg	15%

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3-Ingredient Banana Pancakes

Recipe from author Madison Woodard

Prep time: 5 minutes

Cook time: 10 minutes

Servings: 4 pancakes

Carbohydrates: 14 g/serving

(\$0.34 per serving based on national retailer's prices)

Ingredients:

- 4 large eggs
- 2 large ripe bananas
- 1 teaspoon cinnamon

Directions:

1. Using a fork, mash bananas in a medium-size bowl. Mash until there are no lumps.
2. Whisk in eggs and cinnamon until eggs are completely beaten.
3. Heat a large pan over low-medium heat. Spray pan with cooking spray.
4. Once the pan is evenly heated, add ½ cup of batter to the pan. Cook 3–4 minutes on both sides until the bottom is golden. Ensure pancakes are cooked through.

*Add 2 tablespoons of peanut butter for protein, if desired!

Nutrition Facts	
servings per container	
Serving size	(110g)
Amount per serving	
Calories	130
	% Daily Value*
Total Fat 5g	6%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 185mg	62%
Sodium 70mg	3%
Total Carbohydrate 14g	5%
Dietary Fiber 2g	7%
Total Sugars 7g	
Includes 0g Added Sugars	0%
Protein 7g	
Vitamin D 1mcg	6%
Calcium 37mg	2%
Iron 1mg	6%
Potassium 283mg	6%

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Lunch Ideas

Turkey Chili

Recipe modified from Food Faith and Fitness: <https://www.foodfaithfitness.com/no-bean-low-carb-keto-turkey-chili/>

Prep time: 10 minutes

Cook time: 60 minutes

Servings: 6 servings

Carbohydrates: 7 g/serving

(\$2.59 per serving based on national retailer's prices)

Ingredients:

- 1 ½ pounds 93% lean 7% fat ground turkey
- 1 yellow onion, diced
- 1 green pepper, diced
- 1 jalapeño, diced (optional)
- 1 clove garlic, minced
- ¼ cup tomato paste (unsalted)
- 15 ounces canned, low-sodium, diced tomatoes
- 2 cups water
- 2 tablespoons chili powder
- 2 teaspoons ground cumin

Directions:

1. Add ground turkey, onion, and green pepper to a large deep pot and cook over medium heat, breaking up the turkey as it cooks. When turkey is cooked through, drain any fat from pan.
2. Add the jalapeño, garlic, tomato paste, diced tomatoes, water, chili powder, cumin, and stir.
3. Bring to a boil and reduce to a simmer. Simmer for at least 20 minutes, preferably an hour for the best taste and texture.

*If you want to make this a vegan chili and to increase carbohydrates, replace the ground turkey with 2 15-ounce cans of kidney beans!

Nutrition Facts	
servings per container	
Serving size	(314g)
Amount per serving	
Calories	200
	% Daily Value*
Total Fat 10g	13%
Saturated Fat 2.5g	13%
Trans Fat 0g	
Cholesterol 85mg	28%
Sodium 170mg	7%
Total Carbohydrate 7g	3%
Dietary Fiber 2g	7%
Total Sugars 3g	
Includes 0g Added Sugars	0%
Protein 23g	
Vitamin D 0mcg	0%
Calcium 67mg	6%
Iron 2mg	10%
Potassium 509mg	10%

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Mexican Chicken Wraps

Recipe by author Madison Woodard

Prep time: 20 minutes

Cook time: 10 minutes

Servings: 4 servings

Carbohydrates: 47 g/serving

(\$1.87 per serving based on national retailer's prices)

Ingredients:

- 1 pound cooked skinless chicken breasts, shredded
- 1 tablespoon olive oil
- 15-ounce can low-sodium black beans (rinsed and drained)
- ¼ cup chopped jalapeño peppers (optional)
- 1 teaspoon chili powder
- 1 teaspoon ground cumin
- ½ teaspoon garlic powder
- ½ teaspoon dried ground oregano
- 8 6" corn tortillas

Directions:

1. To make shredded chicken, oil and heat a large pan and place chicken in the skillet. Add ¾ cup of water, cover skillet with a lid, and cook for 7–10 minutes, ensuring that the center of the chicken is 165°F. Remove chicken from pan and shred. You can shred using two forks to pull apart the meat.
2. In a large mixing bowl, combine all remaining ingredients and mix well.
3. Spread out the tortillas. In the center of each, add ½ cup of the filling mixture. Add jalapenos, if desired, and roll up.

*If interested, for a low-carb option, serve in a wrap style on a piece of romaine lettuce.

Nutrition Facts	
servings per container	
Serving size	(281g)
Amount per serving	
Calories	430
% Daily Value*	
Total Fat 9g	12%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 130mg	43%
Sodium 200mg	9%
Total Carbohydrate 42g	15%
Dietary Fiber 8g	29%
Total Sugars 0g	
Includes 0g Added Sugars	0%
Protein 45g	
Vitamin D 0mcg	0%
Calcium 51mg	4%
Iron 3mg	15%
Potassium 724mg	15%

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Dill-Yogurt Chicken Sandwich

Recipe by authors Jeanette Andrade and Madison Woodard

Prep time: 5 minutes

Cook time: 1.5–2 hours

Servings: 4 servings

Carbohydrates: 27 g/serving

(\$2.31 per serving based on national retailer's prices)

Ingredients:

- 1 pound skinless chicken breasts
- ½ cup 0% plain Greek yogurt
- 1 teaspoon dried dill
- ½ teaspoon onion powder
- ½ teaspoon garlic powder
- 4 100% whole wheat English muffins

Directions:

1. Place chicken breasts in a slow cooker.
2. Turn to high and cook for 1.5–2 hours until chicken breasts have fully cooked.
3. Remove and use 2 forks to shred. Place in refrigerator to cool.
4. Mix Greek yogurt, dill, and the onion and garlic powders with a spoon in a medium-sized bowl. Cover bowl with aluminum foil and place in refrigerator.
5. Once chicken has cooled, place 3 ounces (size of medium-sized palm) on the English muffin. Spread 1 tablespoon of Greek yogurt spice mix on other half of the English muffin. Place that English muffin half on the half with the chicken and enjoy!

*Need vegetables? Add some spinach or romaine lettuce to the sandwich. Serve with a side of chopped carrots and celery sticks.

Nutrition Facts	
servings per container	
Serving size	(217g)
Amount per serving	
Calories	340
% Daily Value*	
Total Fat 5g	6%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 135mg	45%
Sodium 320mg	14%
Total Carbohydrate 27g	10%
Dietary Fiber 0g	0%
Total Sugars 3g	
Includes 2g Added Sugars	4%
Protein 47g	
Vitamin D 0mcg	0%
Calcium 136mg	10%
Iron 3mg	15%
Potassium 613mg	15%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Chicken Taco Soup

Recipe modified from Kitchn: <https://www.thekitchn.com/recipe-chicken-taco-soup-248133>

Prep time: 5 minutes

Cook time: 4 hours

Servings: 4 servings

Carbohydrates: 7 g/serving

(\$1.87 per serving based on national retailer's prices)

Ingredients:

- 1 pound chicken breast
- ½ cup diced yellow onion
- 4 cloves garlic, minced
- 1 tablespoon cumin
- ½ teaspoon chili powder
- ½ teaspoon paprika
- 2 tablespoons lemon juice
- 1 tablespoon lime juice
- 2 cups low-sodium chicken broth

Directions:

1. Add the chicken, onion, garlic, cumin, chili powder, paprika, lemon juice, lime juice, and chicken broth in a slow cooker.
2. Cover and cook on low for 4 hours.
3. Remove chicken from slow cooker and shred with two forks.
4. Add the chicken back to the slow cooker and use a ladle to dish out the soup.

*Add crackers or break up 2 hard corn tortilla shells into the soup for more carbohydrates.

Nutrition Facts	
servings per container	
Serving size	(278g)
Amount per serving	
Calories	220
% Daily Value*	
Total Fat 4.5g	6%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 120mg	40%
Sodium 110mg	5%
Total Carbohydrate 7g	3%
Dietary Fiber 1g	4%
Total Sugars 2g	
Includes 0g Added Sugars	0%
Protein 38g	
Vitamin D 0mcg	0%
Calcium 35mg	2%
Iron 1mg	6%
Potassium 624mg	15%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Chicken Curry

Recipe modified from 4 Sons 'R' Us: <https://4sonrus.com/quick-easy-greek-yogurt-chicken-curry/>

Prep time: 15 minutes

Cook time: 12–16 minutes

Servings: 8 servings

Carbohydrates: 4 g/serving

(\$1.59 per serving based on national retailer's prices)

Ingredients:

- 2 pounds skinless chicken breast
- 1 ½ tablespoons olive oil
- ½ cup chopped yellow onion
- 1 teaspoon ground ginger
- 2 tablespoons minced garlic
- 2 tablespoons curry powder
- ½ cup plain Greek yogurt (low-fat)
- ¾ cup low-fat canned coconut milk
- 1 15-ounce can low-sodium canned tomatoes
- ½ cup roughly chopped cilantro
- 1 cup water
- 1 tablespoon lemon juice (optional)

Directions:

1. Cut chicken into 1-inch chunks.
2. In a skillet, sauté onion, ginger, and garlic in oil until onions are nicely translucent, about 3 minutes.
3. Add curry powder and a few tablespoons of water to help the spices sauté. Cook the spices on low, adding in a few tablespoons water until fragrant (about 1 minute).
4. Add chicken and cook for 5–7 minutes or until chicken is cooked thoroughly.
5. Then add yogurt, coconut milk, lemon juice, and fresh herbs to mixture. Stir well to combine.
6. Lastly, add water and stir well.
7. Let the mixture come to a simmer and continue cooking for at least 3–5 minutes. Stir in the tomatoes and remove from skillet. Sprinkle with any remaining cilantro and serve.

*Serve with ½ cup brown rice for more carbohydrates.

Nutrition Facts	
servings per container	
Serving size	(223g)
Amount per serving	
Calories	250
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 2.5g	13%
Trans Fat 0g	
Cholesterol 130mg	43%
Sodium 75mg	3%
Total Carbohydrate 6g	2%
Dietary Fiber 1g	4%
Total Sugars 3g	
Includes 0g Added Sugars	0%
Protein 39g	
Vitamin D 0mcg	0%
Calcium 52mg	4%
Iron 1mg	6%
Potassium 551mg	10%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Italian Stuffed Peppers

Recipe modified from Cookin Canuck: <https://www.cookincanuck.com/italian-vegetarian-stuffed-peppers/>

Prep time: 15 minutes

Cook time: 2 hours and 30 minutes

Servings: 6 servings

Carbohydrates: 13 g/serving

(\$2.21 per serving based on national retailer's prices)

Ingredients:

- 1 pound 93% lean 7% fat ground turkey
- ½ medium yellow onion, chopped
- ½ large carrot
- 1 ½ cloves garlic, minced
- ½ tablespoon Italian seasoning
- ½ cup uncooked brown rice
- 1 tablespoon tomato paste (unsalted)
- ½ teaspoon black pepper to taste
- 6 green peppers
- 1 cup water
- ½ cup tomato sauce (low-sodium)

Directions:

1. Arrange a rack in the middle of your oven and preheat to 375°F degrees.
2. Cut off the tops of the green peppers. Remove and discard any seeds and membranes from the insides. Cut a small flat piece off the bottom of each pepper to prevent them from falling over while cooking.
3. In a large bowl, combine ground turkey, onion, carrot, garlic, Italian seasoning, rice, tomato paste, and pepper. Mix well. Stuff each pepper very full and arrange them in a large pot standing up.
4. Pour tomato sauce over the peppers. Add more water if needed; there should be enough water to come about halfway up the peppers.
5. Cover the pot with a lid or aluminum foil and bake for 1 ½ hours covered. Remove the lid and continue to bake for another 45 minutes to an hour uncovered. The green peppers are ready when you insert a fork in a pepper and it goes easily through the pepper skin and the turkey, and the rice is cooked.

Nutrition Facts	
servings per container	
Serving size	(292g)
Amount per serving	
Calories	170
	% Daily Value*
Total Fat 7g	9%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 55mg	18%
Sodium 70mg	3%
Total Carbohydrate 13g	5%
Dietary Fiber 3g	11%
Total Sugars 5g	
Includes 0g Added Sugars	0%
Protein 16g	
Vitamin D 0mcg	0%
Calcium 40mg	4%
Iron 2mg	10%
Potassium 511mg	10%

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Grocery List for all above Recipes

Produce

- Bananas
- Carrots
- Cilantro
- Garlic cloves
- Green peppers
- Jalapeños (optional)
- Spinach
- Tomato
- Yellow onions

Refrigerated/Frozen Goods

- Chicken, boneless/skinless breast
- Eggs
- Frozen strawberries
- Frozen mixed berries
- 93% lean 7% fat ground turkey
- 0% fat plain Greek yogurt
- 2% milk

Bottled/Canned/Dry Goods

- Brown rice
- Corn tortillas
- 100% whole wheat English muffins
- Canned low-sodium black beans
- Canned low-sodium diced tomatoes
- Lemon juice
- Lime juice
- Low-sodium chicken broth
- Low-fat canned coconut milk
- Low-sodium tomato sauce
- Rolled oats
- Tomato paste (unsalted)

From Your Pantry

- Baking powder
- Canola oil
- Chili powder
- Cinnamon
- Curry powder
- Dried dill
- Dried oregano
- Garlic powder
- Ground cumin
- Ground ginger
- Honey
- Italian seasoning blend
- Olive oil
- Onion powder
- Paprika
- Black pepper
- Salt
- Vanilla extract

For further recipes or meal plan ideas, check out:

American Diabetes Association <https://www.diabetesfoodhub.org/>

USDA ChooseMyPlate <https://www.choosemyplate.gov/eathealthy/budget/budget-recipes>

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