FCS3-590

Cooperative Extension Service

Seafood: Are You Reeling in the Benefits?

Seafood includes a large group of marine animals that live in the sea, fresh water, lakes, and rivers. Fish such as salmon, tuna, trout, and tilapia, along with shellfish such as shrimp, crab, and oysters, are included in this group.

Seafood is an important part of a balanced diet because it contains high-quality protein, good fats called omega-3 fatty acids, and other nutrients. However, many of us do not include enough seafood in our diets to get the full range of benefits.

Why Should We Eat More Seafood?

Provides a rich supply of nutrients

Seafood is a good source of protein; vitamins A, D, B12, and E; and minerals such as calcium, iron, iodine, selenium, and zinc (Table 1). In addition, seafood is a food source of omega-3 fatty acids, and unlike fatty meat products, it is low in saturated fat.

Table 1. Vitamins and minerals in seafood.

Vitamin or Mineral	Benefits
B-complex vitamins	Development of nervous system
Vitamin D	Bone development and maintenance of strong bones
Vitamin A	Vision and healthy skin
Selenium	Antioxidant protection against cell damage
Zinc	Cell growth and immune system health
Iodine	Thyroid gland function
Iron	Red blood cell production
Calcium	Bone and teeth development, muscle contraction and relaxation, and blood clotting

Improves heart health

Seafood contains omega-3 fatty acids, a unique type of polyunsaturated fat that may play a role in reducing heart disease. Omega-3 fatty acids can make blood less likely to clot and block blood vessels, and they also decrease triglycerides and increase HDL levels. Seafood (especially oily fish) contains two main dietary sources of omega-3 fatty acids called eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

Scientific evidence shows eating 8 to 12 ounces of a variety of seafood each week provides 250 milligrams per day of EPA and DHA. These omega-3 fatty acids are associated with reduced cardiac deaths among individuals with pre-existing cardiovascular disease and prevent heart disease in individuals without a current heart problem.

Promotes healthy brains and eyes in children

DHA is needed to form the brain and other parts of the nervous system for the fetus and until the second year of a child's life.

Improves memory

DHA is present in the nerve endings in your brain. Eating patterns that are rich in fish that contain omega-3 fatty acids (DHA) improve memory and prevent the onset of dementia.

Recommendation

Currently, most Americans eat 3.5 ounces of seafood a week. Because of the many heart-health benefits of fish, the American Heart Association recommends at least two servings of seafood a week. They encourage eating oily fish such as mackerel, lake trout, herring, sardines, and salmon in particular, because they contain the highest amounts of omega-3 fatty acids.

Are There Risks Related to Consuming Seafood?

Some fish, such as king mackerel, shark, and swordfish, are consistently high in mercury, which can harm the nervous system of a fetus or young child. Certain other fish, including canned light tuna, are also occasionally high in mercury.

Women who are pregnant or breastfeeding should consume 8 to 12 ounces of seafood a week. Due to their methyl mercury content, white albacore tuna should be limited. Avoid tilefish, swordfish, shark, and king mackerel.

Handle fish with care to prevent cross contamination of bacteria from other foods. Fish spoils quickly, so store fresh fish at 40 degrees Fahrenheit and frozen fish at 0 degrees Fahrenheit or below. Cook fish to an internal temperature of 145 degrees Fahrenheit.

Most research shows that the benefits of including seafood in the diet far outweigh the risks. Most commonly eaten seafood in the United States presents little risk while offering many healthy and nutritional benefits. Proper handling, storing, and cooking of seafood could reduce the food contamination risk.

How Should I Buy Seafood?

- Buy from a reputable source like grocery stores and seafood markets.
- Buy fresh seafood only when it has been properly cooled below 40 degrees Fahrenheit. Canned seafood does not require refrigeration.
- Buy fish when flesh looks shiny and firm and is not separated from the bone, and the odor should be fresh, not overly "fishy."
- Buy precooked fish when wrapped properly and separated from the fresh fish. The fresh fish can contaminate the precooked fish.
- Avoid frozen fish with ice crystals, because this is a sign of thawing and refreezing.
- Pick up seafood toward the end of a shopping trip to ensure it stays at the proper temperature and is separated from other groceries.

How Should I Store Seafood?

- Refrigerate or freeze immediately after buying.
- Store fresh seafood at or below 40 degrees Fahrenheit (Table 2).
- Use airtight containers for storage.
- Store frozen seafood at or below 0 degrees Fahrenheit.
- Store cooked fish in the refrigerator for up to three to four days.
- Use or freeze before the expiration date; toss any seafood that has expired.

How Should I Prepare Seafood?

- Thoroughly wash hands, utensils, plates, and cutting boards that have been exposed to raw seafood.
- Defrost frozen seafood in the refrigerator, under cold running water, or in the microwave. Never defrost at room temperature on the countertop.

Table 2. Seafood cold storage.

Preparation	Type or Description	Refrigerate (40°F)	Freeze (0°F)
Fresh	Fish	1-2 days	2-6 months
	Shellfish	1-2 days	3-6 months
Frozen	Fish and Shellfish	3-4 days	3 months

Source: USDA Food Safety and Inspection Service

How Should I Cook Seafood?

- Cook fish to 145 degrees Fahrenheit, or until it is opaque and flakes easily.
- Pregnant women, older people, young children, and people with a weakened immune system should not eat raw seafood such as:
  - Raw fish
  - Raw shellfish
  - Seafood ordered undercooked or "rare"

Mediterranean Salmon

Yield: 4 servings
Preparation time: 5 minutes
Cook time: 20-25 minutes

Ingredients

- 4 salmon fillets (about 4 ounces each)
  Note: Remove skin before or after cooking, but before eating.
- 2 tablespoons olive oil, divided in half
- 1 tablespoon fresh dill, chopped
- ½ lemon, juiced
- ¼ teaspoon salt
- ¼ teaspoon black pepper for fish
- 1 ounce cherry tomatoes, halved
- 2 potatoes, cut into cubes
- ¼ cup pitted kalamata olives
- ½ teaspoon Italian seasoning
- ¼ teaspoon black pepper for potatoes
- ½ cup feta cheese
- ½ lemon, sliced into 4 wedges

Instructions

1. Preheat the oven to 400 degrees Fahrenheit.
2. Lightly coat a baking sheet with cooking spray.
3. Use 1 tablespoon of olive oil to lightly cover the salmon fillets. Sprinkle each fillet with dill, lemon juice, salt, and pepper.
4. Place the fillets on half of the baking pan.
5. In a large bowl, combine tomatoes, potatoes, olives, Italian seasoning, pepper, and 1 tablespoon of olive oil. Toss to combine.
6. Spread the vegetables evenly across the remaining half of the baking pan.
7. Roast salmon and vegetables for 20-25 minutes, stirring the vegetables halfway.
8. Serve salmon and vegetables topped with feta cheese, kalamata olives, and remaining half of the lemon, cut into wedges.

Nutritional analysis per serving: 380cal, 30g protein, 23g carbohydrates, 19g fat, 85mg cholesterol, 530mg sodium

Recipe available online at:
https://foodashealthalliance.ca.uky.edu/mediterranean-salmon

Fish Tacos

Yield: 4 servings
Preparation time: 7-10 minutes
Cook time: 5-10 minutes

Ingredients

- 1 red onion, chopped
- ½ cup cilantro, chopped
- 1 cup packaged coleslaw mix
- 4 tilapia fillets, or any white fish (about 4 ounces each)
- 8 small corn tortillas
- 1 teaspoon chili powder (more or less to taste)

Instructions

1. Clean and chop onion and cilantro. Mix in a bowl with coleslaw mix and set aside.
2. Coat the baking sheet with cooking spray. Lightly sprinkle fish fillets with chili powder and place on the baking pan.
3. Place in the oven about 6 inches from the broiler and cook for approximately 3 to 4 minutes, or until fish is fully cooked. You will know the fish is done when it "flakes," or pulls apart easily when separated with a fork.
4. Lightly fry tortillas on an oiled griddle or skillet, or heat tortillas in the microwave oven for just a few seconds until softened and hot.
5. Fill tortillas with fish and coleslaw mixture and fold in half. Serve with salsa and citrus slices, if desired.

Nutritional analysis per serving (2 tacos):
169 calories, 14g carbohydrates, 23g protein, 3g fiber

Recipe available online at:
https://www.myplate.gov/recipes/supplemental-nutrition-assistance-program-snap/fish-tacos

"Catch of the Day" Burger

Yield: 6 servings
Preparation time: 1.5 hours
Cook time: 6 minutes

Ingredients

- 1½ pounds boneless white fish
- 3 eggs, beaten
- ⅓ cup grated Parmesan cheese
- 1 tablespoon parsley, chopped
- 1 clove garlic, finely chopped OR ½ teaspoon garlic powder
- ½ teaspoon salt
- ¼ teaspoon black pepper
- ½ cup panko breadcrumbs
- ¼ cup vegetable oil
- 6 toasted whole wheat buns
- ⅛ cup tartar sauce (optional)

Instructions

1. In a two-quart saucepan, add 1 quart of water and bring to a boil.
2. Place fish fillets in the boiling water. Cover and return to a boil. Immediately lower heat and simmer for 7 to 10 minutes or until the fish flakes apart easily with a fork.
3. Drain the water from the pan. With a fork, flake fish into small pieces.
4. In a medium bowl, combine eggs, cheese, parsley, garlic, salt, and pepper. Add to the fish and stir just until blended.
5. Chill in refrigerator for at least one hour. Shape chilled mixture into 6 patties and roll in breadcrumbs.
6. In a large skillet, over medium heat, heat the oil until it shimmers. Carefully place fish patties in pan.
7. Cook the patties for 3 minutes on each side or until browned, turning only once. Drain on paper towels.
8. Serve on toasted buns with tarter sauce or catsup, as desired.

Adapted from "Fish and Game Cookbook," Bonnie Scott, 2013.

Nutritional analysis per sandwich:
520 calories, 41g carbohydrates, 36g protein

Recipe available online at:
https://www.planeatmove.com/recipes/recipe/catch-of-the-day-burger/

References

American Heart Association. (2021, November 1). Fish and Omega-3 Fatty Acids. Accessed at https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/fats/fish-and-omega-3-fatty-acids.

Bastin, S. (2020, October). Recommended Food Storage Times, University of Kentucky Cooperative Extension Service. Accessed at http://www2.ca.uky.edu/agc/pubs/FCS3/FCS3595/FCS3595.pdf.

Klemm, S. (2022, June). Brain Health and Fish. www.eatright.org; Academy of Nutrition and Dietetics. Accessed at https://www.eatright.org/health/essential-nutrients/fats/brain-health-and-fish.

Mendivil C. O. (2021). Fish Consumption: A Review of Its Effects on Metabolic and Hormonal Health. Nutrition and Metabolic Insights, 14. https://doi.org/10.1177/11786388211022378.

United States Department of Agriculture and U.S. Department of Health and Human Services. (2020, December). Dietary Guidelines for Americans, 2020-2025. 9th Edition. Accessed at DietaryGuidelines.gov.

United States Environmental Protection Agency. (2024, January). EPA-FDA Advice about Eating Fish and Shellfish. Accessed at https://www.epa.gov/choose-fish-and-shellfish-wisely/epa-fda-advice-about-eating-fish-and-shellfish.

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