

Omega-3

Fatty Acids: Fish for Your Health

What are omega fatty acids?

Omega-3 and omega-6 fatty acids are distinct families of polyunsaturated fatty acids that are essential for human growth and development and for many aspects of health. Not to be confused with the type of fat stored for energy, these fats have very important functions in our cells. Each family has specific functions that cannot be replaced by each other or other types of fats.

Our bodies can't make omega-3s or omega-6s. They come from our food:

- Omega-3 – found in fish, seafood, and some seeds (walnuts and flax)
- Omega-6 – found in plants (vegetable oils, meats)

Why are omega fatty acids so important?

Both families of fatty acids are critical to maintaining our health. Our bodies are designed to work with nearly equal proportions of omega-3s and omega-6s. However, we are now eating 10–25 times more omega-6s than omega-3s.

This dietary imbalance can set the body up for conditions linked to cardiovascular disease, stroke, diabetes, osteoporosis, and many others. Because having an overabundance of omega-6s can be responsible for many of these disorders, increasing intake of omega-3s and decreasing omega-6s will diminish the potential for many chronic disorders.

How do we get omega-3 fatty acids?

There are three main omega-3 fatty acids in foods, and our bodies need all three:

- Alpha-linolenic acid, or ALA, is the only omega-3 found in plants. Good sources include oils from flax, canola, soy, and walnuts.
- Eicosapentaenoic acid, or EPA, is found almost exclusively in fish and seafood.
- Docosahexaenoic acid, or DHA, is found almost exclusively in fish and seafood.

Although EPA and DHA are made from ALA, this process is very inefficient in humans, especially in infants. Thus DHA and EPA must come from our food.

How Can Omega-3s Benefit You?

- **Omega-3s reduce deaths from heart disease, especially sudden deaths.** Research indicates that survivors of heart attacks who consume as little as 1 gram of omega-3s from fish (DHA and EPA) reduce their mortality rate to one-half the mortality rate of those who do not consume these fatty acids.
- **Omega-3s decrease chronic inflammation and reduce the chance of having a stroke.** People who consume ocean fish at least once a week have a 30% less chance of having a stroke compared to people who eat fish less than once a month.
- **Omega-3s are essential for mental health.** Low DHA levels are associated with depression, memory loss, dementia, and visual problems and are linked to low brain serotonin levels, which can lead to depression, suicide, and even violence.

Omega-6s compete with omega-3s for incorporation into all cell membranes. Consuming high amounts of omega-6s and low amounts of omega-3s has been associated with many diseases and disorders, including the following:

- Cardiovascular disease
- Formation of blood clots and strokes
- Inability to regulate lipid levels
- Poor immune function and autoimmune diseases
- Diabetes
- Osteoporosis
- Chronic inflammation
- Respiratory diseases
- Visual problems
- Cancer
- Abnormal neuronal development
- Numerous brain disorders, including depression and tendencies toward violence
- Allergies
- Arthritis
- Gastrointestinal disorders



**Eat more fish and less trans fats,
animal fats, and vegetable oils!**

The American Heart Association recommends that people eat at least two servings of fatty fish a week to maintain DHA levels.



Pregnant or breastfeeding?

For baby (before and after birth):

- DHA is critical for brain development and function and is important for development of the retina of the eye and the developing vascular system.
- DHA makes up to 97% of the omega-3 fatty acids of a newborn baby's brain, and the DHA content of the infant's brain triples during the first 3 months of life.
- DHA and, to a lesser extent, EPA are needed for proper learning, visual function, and other neurofunctions.
- No other fatty acid can make up for the lack of DHA.
- Research indicates that breast-fed babies with the highest DHA levels have cognitive and IQ advantages.
- DHA is the most abundant omega-3 long-chain fatty acid in breast milk.
- DHA levels in the breast milk of U.S. women are among the lowest in the world. Make sure you're getting enough.
- Not all infant formulas contain omega-3s, so read the labels.

For moms:

- During pregnancy, DHA from mom is transferred to baby. If mom has low DHA levels, her DHA levels may become depleted, increasing her risk for many disorders, including postpartum depression. In the United States, 15%–20% of women are affected by postpartum depression.
- The Child Health Foundation recommends that pregnant and nursing women should supplement their diets with 1000 mg/day of omega-3s that contain balanced ratios of EPA and DHA.

Fish Type	DHA and EPA Content, mg/4-oz serving	No. of Servings That Provide 1750 mg/week
Light Canned Tuna	150–300	6–12
White Canned Tuna	1000	2
Fresh Tuna	150–1700	1–12
Sardines	1100–1600	1–2
Salmon, Pink and Sockeye	700–900	2–3
Salmon, Atlantic and Chinook	1200–2400	1–2
Anchovies, Herring, Shad	2300–2400	1
Mackerel, Atlantic and Pacific	1350–2100	1–2
Oysters, Pacific	1550	1
Mussels, Blue	900	2
Flounder, Plaice, and Sole	350	5
Catfish	100–250	7–18
Cod, Atlantic and Pacific	200	9
Tilapia	150	12
Shrimp	100	18

Data from the U.S. Department of Agriculture and the U.S. Department of Health and Human Services *Dietary Guidelines for Americans*, 2010. See more at www.cnpp.usda.gov/DGAs2010-PolicyDocument.htm

Should you worry about mercury?

Pregnant and Nursing Moms. The U.S. Food & Drug Administration (FDA) recommends that pregnant and nursing moms eat up to 12 oz of fish weekly for the health of their babies but not eat the four fish that are highest in mercury: swordfish, shark, tilefish, and king mackerel. FDA also recommends checking local advisories for varieties of fish you catch yourself.

Young Children. Because brains are still developing at this age, FDA recommends that young children eat a variety of fish but not swordfish, shark, tilefish, or king mackerel.

Everyone Else. Eat ocean fish! There are no recommendations to avoid any ocean fish. Dark and oily fish provide the most omega-3s, but eating a variety of ocean fish will provide balanced nutritional benefits and please your palate.

For more information on nutrition and fish, visit net-effects.und.edu.

This public awareness effort was sponsored by the National Oceanic and Atmospheric Administration Fisheries Service Pacific Islands Regional Office (Cooperative Agreement No. NA09NMF4520176), the U.S. Department of Energy's National Energy Technology Laboratory (Cooperative Agreement No. DE-FC26-08NT43291), and the Energy & Environmental Research Center's Center for Air Toxic Metals® at the University of North Dakota.

