

CEC ARTICLE 1, 2011: Omega- 3 Fatty Acids and the Aging Adult.

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Omega-3 fatty acids are essential fatty acids (EFA) that are necessary for human health but cannot be made by the human body. Therefore, they must be supplied by the foods we eat. Their importance in the function and growth of the body begins in the womb and remains a critical element of health as we age. Omega-3 fatty acids are essential for brain and neural development and for retinal development of the eye for proper vision development in the infant. Research shows that it then plays an important role in lowering the risk of many chronic diseases we face, as we get older. By getting the proper amounts and ratios of these fatty acids, we can take proactive steps to aging healthfully.

Omega- 3 fatty acids and another essential fatty acid, Omega- 6 fatty acids, are long chain polyunsaturated fatty acids. EFAs support the cardiovascular, reproductive, immune, and nervous systems. The human body needs EFAs to manufacture and repair cell membranes, enabling the cells to obtain optimum nutrition and expel harmful waste products. While both are not synthesized by the body and must be provided by food, the typical American diet has an improper ratio of the two.

The recommended ratio of these fatty acids is between 1:1 and 1:4 but we see a ratio of up to 1:25, meaning people are getting 25 times the amount of Omega- 6 fatty acids than Omega 3's. This improper imbalance is linked with serious health conditions, such as heart attacks, cancer, insulin resistance, asthma, lupus, schizophrenia, depression, accelerated aging, stroke, obesity, diabetes, arthritis, ADHD, and Alzheimer's Disease, all which can become increasingly big problems as we get older.

Because we tend to get plenty of Omega 6's in our diets, we need to determine the best way to increase our intake of Omega 3's. Omega 3's are found abundantly in fatty fish, such as salmon, tuna, halibut, mackerel, lake trout, herring, sardines, albacore tuna. They are also found in flaxseeds, walnuts, hemp seeds, soybeans and some dark green leafy vegetables. The following table shows some common foods and the amounts of Omega 3's found in them.

Food	Quantity	Omega 3 Fatty Acids (g)
Flaxseed oil	1 tablespoon	7.196
Flaxseeds	1 tablespoons	3.510
Salmon Oil	1 tablespoon	4.767

Salmon	4 ounces	2.090
Cod Liver Oil	1 tablespoon	2.664
Walnut Oil	1 tablespoon	1.404
Walnuts	¼ cup	2.270
Dried Butternuts	1 ounce	2.441
Soybeans	1 cup	1.030
Sardines	3.25 oz	1.360
Tuna (Fried / Cooked)	100 gm	1.664
Broccoli	1 cup	.200
Cauliflower	1 cup	.210
Halibut	100 gm	.520
Basil (Chopped)	2 tablespoons	.0166
Spinach (Cooked)	1 ounce	.104
Rainbow Trout	4 ounces	1.175
Herring (Salted)	100 gm	.920
White Fish	100 gm	.450
Wheat Germ Oil	1 tablespoon	.932
Tofu	4 oz	.360
Egg Yolk (Dried)	1 ounce	.159

For healthy adults with no history of heart disease, The American Heart Association recommends eating fish at least 2 times per week. While obtaining these fatty acids from food is the preferred method, as it is with all nutrients, Omega 3 fatty acid supplements are becoming more and more popular as a way to increase consumption of this essential fatty acid. Increasing our consumption can be beneficial with many chronic diseases including, but not limited to, the following:

1.) Heart disease

Clinical evidence of the benefits of proper omega -3's consumption is strongest for heart disease and problems that contribute to heart disease. One of the best ways to help prevent heart disease is to eat a diet low in saturated fat and to eat foods that are rich in monounsaturated and polyunsaturated fats (including omega-3 fatty acids). Clinical evidence suggests that the two omega-3 fatty acids found in fish oil, EPA and DHA (eicosapentaenoic acid and docosahexaenoic acid) help reduce risk factors for heart disease, including high cholesterol and high blood pressure.

Fish oil has been shown to lower levels of triglycerides (fats in the blood), and to lower risk of death, heart attack, stroke, and abnormal heart rhythms in people who have already had a heart attack. Fish oil also appears to help prevent and treat atherosclerosis (hardening of the arteries) by slowing the development of plaque and blood clots, which can clog arteries.

Large population studies suggest that getting omega-3 fatty acids in the diet, primarily from fish, helps protect against stroke caused by plaque buildup and blood clots in the arteries that lead to the brain. For adults with coronary heart disease, The American Heart Association recommends an omega-3 fatty acid supplement (as fish oils), 1 gram daily of EPA and DHA. It may take 2 - 3 weeks for benefits of fish oil supplements to be seen.

2.) High cholesterol

People who follow a Mediterranean-style diet tend to have higher HDL or “good” cholesterol levels, which help promote heart health. Several studies have shown that fish oil supplements reduce triglyceride levels. Walnuts (which are rich in alpha linoleic acid or LNA, a type of omega-3 fatty acid) have been reported to lower total cholesterol and triglycerides in people with high cholesterol levels.

For adults with high cholesterol levels, The American Heart Association recommends an omega-3 fatty acid supplement (as fish oils), 2 - 4 grams daily of EPA and DHA. It may take 2 - 3 weeks for benefits of fish oil supplements to be seen.

3.) High blood pressure

Several clinical studies suggest that diets or fish oil supplements rich in omega-3 fatty acids lower blood pressure in people with hypertension. Clinical studies using fish oil supplements found that taking 3 or more grams of fish oil daily may reduce blood pressure in people with untreated hypertension.

4.) Diabetes

People with diabetes often have high triglyceride and low HDL” good cholesterol” levels. Omega-3 fatty acids from fish oil, can help lower triglycerides and apoproteins (markers of diabetes), and raise HDL. However, another type of omega-3 fatty acid, ALA (alpha-Linolenic acid), from flaxseed, for example, may not have the same benefit as fish oil. Some people with diabetes cannot efficiently convert it to a form of omega-3 fatty acids that the body can use.

5.) Arthritis/ Rheumatoid arthritis

Most clinical studies examining omega-3 fatty acid supplements for arthritis have focused on rheumatoid arthritis (RA), an autoimmune disease that causes inflammation in the joints. Omega- 3 fatty acids reduce the tenderness and inflammation in the joints.

They also inhibit the activity of the enzyme responsible for destruction of cartilage. It is important to get omega 3 fatty acids and not omega 6 fatty acids, as omega 6 fatty acids are responsible for inflammation.

A number of small studies have found that fish oil helps reduce symptoms of RA, including joint pain and morning stiffness. One study suggests that people with RA who take fish oil may be able to lower their dose of non-steroidal anti-inflammatory drugs (NSAIDs). Clinical trials have looked at the pain relieving effects of omega-3 fatty acid supplements in people with RA and the results suggest that omega-3 fatty acids, along with conventional therapies such as NSAIDs, may help relieve joint pain associated with these conditions.

6.) Osteoporosis

Some studies suggest that omega-3 fatty acids may help increase levels of calcium in the body and improve bone strength. They also suggest that people who don't get enough of some essential fatty acids are more likely to have bone loss than those with normal levels of these fatty acids. In a study of women over 65 with osteoporosis, those who took an omega-3 supplement had less bone loss over 3 years than those who took placebo. Many of these women also experienced an increase in bone density.

7.) Alzheimer's Disease

Because Omega -3's are highly concentrated in the brain and appear to be important for cognitive (brain memory and performance) and behavioral function, they have been shown to slow the progression of the disease or prevent it from happening.

8.) Macular Degeneration

In a study of people over the age of 45, those who ate more fish were less likely to have macular degeneration (a serious age-related eye condition that can progress to blindness) than those who ate less fish. Similarly, a clinical study comparing 350 people with macular degeneration to 500 without the eye disease found that those with a healthy dietary balance of omega-3 and omega-6 fatty acids and more fish in their diets were less likely to have macular degeneration.

9.) Stroke

Large population studies suggest that getting omega-3 fatty acids in the diet, primarily from fish, helps protect against stroke caused by plaque buildup and blood clots in the arteries that lead to the brain.

10.) Obesity

Omega-3 's reduce the risk of becoming obese and improve the body's ability to respond to insulin by stimulating the secretion of leptin, a hormone that helps regulate

food intake, body weight and metabolism, and is expressed primarily by adipocytes (fat cells).

The importance of omega- 3 fatty acids are so great that we really need to focus on incorporating more into our diet to reap the benefits of them, so cook up some salmon tonight!

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Questions:

- 1.) Omega 3 Fatty acids are what type of fatty acid?
- 2.) What does "Essential" Fatty Acid Mean?
- 3.) Name two Omega- 3 fatty acids.
- 4.) What is the proper ratio of Omega 3 fatty acids to Omega 6 fatty acids?
- 5.) What are the main roles that Omega- 3 fatty acids play in the body?

15.) Name the 4 body systems that EFA's support.

16.) What hormone does Omega-3 fatty acids stimulate and what is its role in obesity?