

Clinical and Scientific Studies

Heart and Cardiovascular System Health

Omega-3 may help increase the flexibility of the red-blood-cell membranes, thus making the blood less sludgy and more fluid. This not only helps maintain healthy circulation everywhere in the body, including the brain, but may make it easier for the heart to do its job of continuous pumping.

Numerous studies have found that a diet that includes a serving of fatty fish, especially those rich in Omega-3, provide a health benefit to the heart and cardiovascular system. And even a diet that includes a fish serving only once per week has been shown to provide this benefit. In a 1998 study of 20,551 male physicians aged 40 to 84 years, and published in the Journal of the American Medical Association, it was found that eating fish at least once a week helped to maintain a healthy heart and cardiovascular system when compared to those who only ate fish less than once a month.

Another study published in the same journal in 1995 found similar results: researchers found that the intake of just one portion of fatty, Omega-3-rich fish per week helped people maintain a healthy heart when compared to controls, even after adjusting for age, smoking, family history of heart attacks, hypertension, diabetes, obesity, physical activity, education, and cholesterol level. The researchers believe that consumption of fatty fish, fish oil, or linolenic acid increases the levels of the Omega-3 fatty acids, EPA and DHA, in the membranes of the red blood cells, and confers the healthy heart benefits. This was confirmed by blood samples taken from the comparative groups.

Mental and Nervous System Health

The most polyunsaturated of the Omega-3 fatty acids (DHA) makes up a large portion of the gray matter of the brain. The fat in your brain is the type that forms cell membranes and plays a vital role in how our cells function. Neurons in the brain, the cells that transmit chemical messages, are also rich in Omega-3 fatty acids. In fact, there's more DHA in our neurons than in our red blood cells. DHA is also found in high quantities in the retina, the light-sensitive part of the eye. A typical Western diet, however, generally is deficient in Omega-3 fatty acids, especially DHA.

Research in the last few years has revealed that diets rich in Omega-3 fatty acids may help promote a healthy emotional balance and positive mood, and may help us maintain a healthy mental status in later years. Researchers speculate that a diet rich in the Omega-3 fatty acid DHA, found in fish oil, may help promote a healthy emotional balance and positive mood in part because DHA is a main component of the synaptic membranes in the brain. (American Journal of Clinical Nutrition, Vol. 62, July 1995, pp. 1-9.)

Researchers in another study found that people with a healthy emotional balance and positive mental outlook tended to have higher levels of DHA in their red blood cells. (Biol Psychiatry 1998; 43(5): 315-9.)

A Danish team of researchers compared the diets of 5,386 healthy older individuals and found that the more fish in a person's diet, the longer the person was able to maintain a healthy mental status. (Ann Neurol 1997; 42: 776-82.)

Joint Health

Omega-3 fatty acids may serve to block some of the body's processes that limit joint health and freedom of movement. More than a dozen studies in the last 10 years have found that a diet with a more balanced intake of Omega-3 to Omega-6 fatty acids may help maintain healthy joints. Researchers point out that humans evolved on a diet which had an approximately 2:1 ratio of Omega-6 to Omega-3 fatty acids. Modern diets not only contain a vast excess of Omega-6 fatty acids (50 times more than required), but also have a highly unfavorable 25:1 ratio of Omega-6 to Omega-3 fatty acids. Some researchers feel that there is now enough evidence to recommend that joint health can be enhanced through the emphasis of a diet high in Omega-3 fatty acids as found in fish oil and Omega-3 rich seeds and vegetables, and through the avoidance of foods rich in Omega-6 fatty acids. (British Journal of Rheumatology, Vol. 36, May 1997, pp. 513-14 editorial) *

Immune System Health

A healthy immune system is one that knows "when to attack, what to attack, and when to hold back". A few studies have found that a diet enriched with Omega-3 fatty acids may help you maintain a healthy immune function. For instance, in cultures of normal human blood, only blood incubated in the Omega-3 fatty acid, DHA, significantly decreased the amount of white blood cell surface molecules needed in the immune response of normal, healthy humans. (American Journal of Nutrition, 1996, 126: 603-610.)*

Pregnancy and Neonatal Health

There is accumulating scientific evidence to demonstrate the importance of Omega-3 in the development of the unborn child in the womb and the newly born infant. Required throughout pregnancy, the Omega-3 fatty acids are particularly important during the last 3 months and during early infancy for the proper development of the brain, eyes and nervous system. Since the unborn baby cannot make its own Omega-3, its' needs must be met by its' mother. To ensure an adequate supply of Omega-3, evidence suggests that a women should eat oily fish several times a week or take a daily fish oil supplement early in pregnancy or even before conception. Omega-3 supplementation while breast- feeding results in Omega-3-enriched milk, which passes to the baby.

Researchers at the University of Milan report that infants whose formula contains long-chain polyunsaturated fatty acids (especially DHA) have healthier brain development than children who did not receive DHA in their formula. The observation supports earlier findings that there is a direct correlation between the DHA concentration in the red blood cells of infants and their visual acuity. The researchers recommend that infants who are not breast-fed be fed a DHA-enriched formula. The researchers report that breast milk already contains the fatty acids necessary for healthy brain development. (The Lancet, Vol. 346, September 2, 1995, p. 638.)

Researchers also believe that breast-fed infants may develop higher intelligence. A meta-analysis of 11 published studies reported in the American Journal of Clinical Nutrition (October, 1999) showed a 60% gain in intelligence in breast fed infants over those who were formula-fed, measured by IQ scores. The researchers suggest that the higher IQs are attributable to the nutritional value of breast milk, which contains certain Omega-3 fatty acids such as DHA. These Omega-3 fatty acids have been associated with brain development and are not found in most formulas. All the studies the researchers examined were "retrospective," analyzing the IQ development of babies who were breast-fed. However, the superior performance of breast-fed babies could be due to other factors, including the fact that women who breast-feed their babies tend to be of a higher socioeconomic class.

The content of the Omega-3 fatty acid, DHA, of women who were pregnant for the first time and their children was found to be higher than those who had previously been through 1 to 6 pregnancies. Additionally, the DHA level in the umbilical cord of first-born infants was found to be higher than in children whose mothers had been pregnant before. This study provides evidence that with each subsequent birth, mothers may need to supplement their reserves of DHA. (European Journal of Clinical Nutrition, 1997, 51: 548-53.)

Skin Health

We all desire clear, youthful skin that radiates health and vitality. But, many of us think that healthy skin comes from creams and lotions. The fact is, the food we eat has a major impact on skin condition. Your skin is the largest organ in your body, protects underlying tissues, and plays a major role in temperature regulation, immunity and metabolic functions. The best diet for healthy looking skin emphasizes plenty of fruits and vegetables, and minimal amounts of saturated fats (found mostly from animal products). Drinking eight glasses a day of water (more if you exercise regularly) is also essential to maintaining skin health.

Omega-3 fatty acids are another component for healthy skin cells, and daily dietary intake is suggested for optimum skin health. Around each and every cell in the skin is a membrane that normally keeps moisture inside the cell. Omega-3 fatty acids form a part of the skin's cell membrane, and help keep it moist and strong. They do this by encouraging the production of strong collagen and elastin fibers, and may help the skin to look younger for longer.

Research suggests that Omega-3, along with vitamins A, D and E, and the mineral zinc, may help protect teenage skin from simple acne, spots, blackheads and whiteheads when combined with other healthy diet measures such as eating plenty of fruits and vegetables, drinking sufficient quantities of water (8 glasses per day) and regular exercise.*



"The Food and Drug Administration (FDA) today announced the availability of a qualified health claim for reduced risk of coronary heart disease (CHD) on conventional foods that contain eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) **Omega-3** fatty acids."

"Typically, EPA and DHA **Omega-3** fatty acids are contained in oily fish, such as salmon, lake trout, tuna and herring. These fatty acids are not essential to the diet; however, scientific evidence indicates that these fatty acids may be beneficial in reducing CHD".

(<http://www.fda.gov/bbs/topics/news/2004/NEW01115.html>)



"Because of the beneficial effects of **Omega-3** fatty acids on risk of coronary artery disease as well as other diseases such as inflammatory and autoimmune diseases, the current intake, which is generally low, should be increased."

"A growing body of evidence indicates that foods rich in **Omega-3** polyunsaturated fatty acids, specifically EPA and DHA, confer cardioprotective effects beyond those that can be ascribed to improvements in blood lipoprotein profiles."

"**Omega-3** fatty acids may prevent sudden death and fatal cardiovascular events by regulating the heartbeat and preventing irregular rhythms associated with sudden death. Cold-water fish such as salmon, tuna and mackerel are good sources of **Omega-3** fatty acids". (<http://www.americanheart.org/presenter.jhtml?identifier=3014425>)



"The White House's Office of Management and Budget (OMB) requested the Health and Human Services (HHS) and the Department of Agriculture (USDA) to promote the consumption of **Omega-3** fatty acids.

OMB requested HHS consider incorporating this advice in its Dietary Guidelines for Americans, scheduled for a 2005 release, and that USDA update its 1992 Food Guide Pyramid with this recommendation." (<http://www.whitehouse.gov/omb/pubpress/2003-13.pdf>)

The New York Times

"Research in a number of disciplines shows that lack of **Omega-3** may play a role in a number of modern maladies, including depression, heart arrhythmia, irritable bowel syndrome and rheumatoid arthritis."

"When compared with premature babies given standard preterm formula, those who received formula fortified with DHA showed gains in visual acuity for about four months." (<http://www.nytimes.com/>)



"Because fish oil has anti-inflammatory actions, its use has been proposed in patients with several inflammatory diseases..." (<http://content.nejm.org/>)



"A diet enriched with **Omega-3** fatty acids, as found in fish oil, may reduce the risk of breast cancer in women." (<http://dgsom.healthsciences.ucla.edu/>)

JAMA

The Journal of the American Medical Association

"Compared with women who ate fish less than once per month, those with higher intake of fish had a lower risk of total stroke..." (<http://jama.ama-assn.org/cgi/search?fulltext=omega+3>)

TIME

"...a growing body of evidence collected over the past 30 years suggests there's something special about fish. In particular, fish contain nutrients called **Omega-3** fatty acids ...that seem to promote cardiovascular health" (<http://www.time.com/time/>)

Newsweek

"The brain is an astonishing 60 percent fat, and it needs **Omega-3** to function properly"

HARVARD
MEDICAL SCHOOL



"**Omega-3** fatty acids were well tolerated and improved the short-term course of illness in this preliminary study of patients with bipolar disorder."

HealthScout

"Experts say the likely reason fish protects women is the concentration of **Omega-3** fatty acids, nutrients that prevents the formation of clots, mostly by making blood less 'sticky'."