

## Role of Omega-3 Fatty Acids in Human Health

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### Introduction

The majority of the fats required by the human body can be synthesised from other fats or raw materials. Omega-3 fatty acids, on the other hand, are not in this category (also called omega-3 fats and n-3 fats). These are necessary fats, which the body cannot produce on its own and must obtain from food. Fish, vegetable oils, nuts (particularly walnuts), flax seeds, flaxseed oil, and green vegetables are all high in Omega-3. What distinguishes omega-3 lipids from other fats? They are found in cell membranes all throughout the body and have an impact on the function of the cell receptors in these membranes. They serve as a starting point for the production of hormones that control blood clotting, arterial wall contraction and relaxation, and inflammation. They also bind to receptors that control genetic function in cells. Omega-3 fats have been proven to help prevent heart disease and stroke, may help regulate lupus, eczema, and rheumatoid arthritis, and may play protective roles in cancer and other illnesses, all of which are likely related to these effects.

Omega-3 fats are a type of polyunsaturated fat that has a lot of health benefits. There are three major omega-3 fatty acids *viz.* Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA) are mostly found in fish, they are known as marine omega-3s. The most prevalent omega-3 fatty acid in most Western diets is alpha-linolenic acid (ALA), which can be found in vegetable oils and nuts (especially walnuts), flax seeds and flaxseed oil, green vegetables, and some animal fat, particularly from grass-fed animals. The human body primarily uses ALA for energy, with very little conversion to EPA and DHA.

The strongest evidence for omega-3 fats' health benefits comes from studies on heart disease. These lipids appear to aid the heart in maintaining a constant rate rather than veering into a potentially catastrophic irregular rhythm. Arrhythmias like this are responsible for the majority of the 500,000+ cardiac fatalities that occur each year in the United States. Omega-3 fats also lower blood pressure and heart rate, enhance blood vessel function, lower triglycerides, and may reduce inflammation, which is linked to the development of atherosclerosis in higher dosages.

The effect of fish or fish oils on heart disease has been studied in several big trials. Heart attack survivors who took a 1-gram capsule of omega-3 fats every day for three years were less likely than those who took a placebo to have a repeat heart attack,

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stroke, or die of sudden death in the Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto Miocardio (known as the GISSI Prevention Trial). Shockingly, the chance of abrupt cardiac death was lowered by half. Participants in the more recent Japan EPA Lipid Intervention Study (JELIS) who took EPA along with a cholesterol-lowering statin were less likely than those who took a statin alone to have a major coronary event (sudden cardiac death, fatal or nonfatal heart attack, unstable angina, or a procedure to open or bypass a narrowed or blocked coronary artery).

The majority of Americans consume considerably more omega-6 fatty acids than omega-3 fatty acids. Some specialists have suggested that a larger diet of omega-6 fats could cause health concerns, both cardiovascular and otherwise, however this has yet to be proven in humans. The ratio of omega-6 to omega-3 fats, for example, was not connected to the risk of heart disease in the Health Professionals Follow-up Study since both were beneficial. Many more human studies and trials back up omega-6 fats' cardiovascular advantages. Although many Americans would benefit from increasing their omega-3 fat consumption, there is evidence that omega-6 fats can have a good impact on cardiovascular risk factors and help to prevent heart disease. Researchers are examining a different kind of balance, this time the impact of marine and plant omega-3 fatty acids on prostate cancer. The Health Professionals Follow-up Study and other studies have found that men who eat a diet high in EPA and DHA have a lower risk of developing advanced prostate cancer than men who eat a diet low in EPA and DHA. At the same time, some studies, although not all, reveal that men who consume a lot of ALA have a higher risk of prostate cancer and advanced prostate cancer (mainly from supplements).