Several studies have indicated an inverse relationship between the consumption of fish containing the omega-3 fatty acids as eicosapentaenoic acid (EPA, 20:5n-3) plus docosahexaenoic acid (DHA, 22:6n-3) and the risk of cardiovascular disease (CVD) and cardiac death. Numerous intervention trials indicated that higher intakes of DHA plus EPA can favorably influence several risk factors for CVD and fatal heart attacks including reductions in fasting triglyceride levels in the circulation, lowering of the triglyceride:HDL-cholesterol ratio, lowering of blood viscosity, reduction in blood platelet reactivity and other thrombogenic risk factors, plus effects on numerous non-conventional risk factors which are not routinely measured in the public health care system. The latter include a favorable influence of omega-3 fatty acid intakes (as DHA plus EPA) on postprandial lipemia (carbohydrate-induced blood fat surges after a meal), heart rate variability, arterial compliance, lowering of the resting heart rate, as well as anti-arrhythmic affects. Recent evidence also suggests a stabilizing influence of fish-derived omega-3 fatty acids on pre-existing atherosclerotic plaques.

Data from the MRFIT study have indicated that increasing intakes of DHA/EPA (combined) up to approximately 650-700 mg/day are associated with overall reductions in all-cause as well as coronary disease-related mortality. The latter intake corresponds to approximately 4-5 fatty fish dishes per week and is in the range (650mg/day of DHA/EPA combined) as recommended daily intakes for healthy individuals by ISSFAL workshop at the NIH in 1999. Considering that the average per capita intake of omega-3 fatty acid (as DHA plus EPA) is approximately 130-150 mg/day in North America, current intakes are approximately one-fifth of those targeted as desirable for the general population for overall heart health. The American Heart Association has now advised two fish servings/week for healthy individuals free of CVD which would provide approximately 250-300 mg per day (avg.) of DHA/EPA.

The GISSI-Prevenzione Study has reported that, over and above the clinical use of appropriate pharmaceutical therapeutics plus a Mediterranean-type diet including some fish, supplementation with 900 mg/day of DHA/EPA (omega-3) could reduce sudden cardiac death by approximately 45% in patients having experienced a prior myocardial infarction (whereas vitamin E supplementation was without effect).

Population studies have indicated that those with lower levels of DHA or DHA/EPA (combined) in their blood lipid, due to lower intakes, were at a significantly greater risk for coronary heart disease, fatal ischemic events, and sudden cardiac death.

The recently-released American Heart Association Guidelines for healthcare professionals have
included the following recommendations with respect to omega-3 fatty acid supplements. 'Consumption of one fatty acid meal per day (or alternatively, a fish oil supplement) could result in an omega-3 fatty acid intake (i.e. EPA and DHA) of ~900mg per day, an amount shown to beneficially affect coronary heart disease mortality rates in patients with coronary disease'. Current intakes of DHA + EPA are approximately one-sixth of the aforementioned target of 900 mg/day. The current 'nutrition gap' for DHA + EPA (omega-3) intakes in North America and in most countries can be alleviated by increased fish consumption, encapsulated supplements, or selected functional foods.

A recent review of various studies has indicated that consuming fish as a source of omega-3 fatty acids (DHA + EPA) is inversely related to the risk of stroke, particularly ischemic stroke. Those consuming 5 or more servings per week had a 31% overall reduction relative to those eating fish less than once per month. Five servings per week is estimated to provide average intakes of DHA + EPA of 650 mg/day. It is possible that other components in fish other than DHA/EPA may offer benefits independent of or synergistic to DHA + EPA. More detailed information on research related to DHA + EPA for cardiovascular health and various risk factors for CVD including blood triglyceride-lowering, etc. can be found within the [four sections linked at the bottom of the article](#).

Despite regular recommendations from various governmental and other health agencies for the public to increase their intakes of fish as a source of DHA + EPA, North Americans consume approximately only one fish serving every 7-10 days because of concerns with environmental contaminants, taste, bones, convenience, etc. Thus, non-fish foods will become increasingly important as sources of these nutrients. Such foods as omega-3 (DHA + EPA)- containing shell and liquid eggs as well as DHA-enriched milk, cheese, ice cream, yogurts, breads, cereals, are being launched into the marketplace which should aid in closing the 'nutrition gap' for better cardio health and disease prevention/management.


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2) Cardiovascular Disease (CVD) and Mortality: Population Studies
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