FishOilBlog.com

A to Z:

A Fish Oil Research Guide

A to Z

Fish Oil Research Report

Clinical studies suggest that omega-3 fatty acids may be very helpful in treating a variety of health conditions.*Please see disclaimer at the end of this guide!* Evidence is strongest for heart disease and related health issues, but the range of possible uses for omega-3 fatty acids include:

ADD/ADHD
AMD
Alzheimer's Disease
Angina
Anxiety
Arrhythmia
Arthritis/Joint Pain
Asthma
Atherosclerosis
Autism
Back/Neck Pain
Bipolar Disorder
Breast Cancer
Cancer (General)
Cervical Cancer
Cholesterol, High
Chronic Bronchitis
Chronic Pain
Circulation, Poor (PAD)
Cognitive Function
Colon Cancer
Congestive Heart Failure
Crohn's Disease
Cystic Fibrosis
Dementia
Depression
Diabetes
Dry Eye Syndrome
Eating Disorders
Emphysema
Eczema
Epilepsy
Fertility
Heart Disease
Hearing Loss Due to Age
High Blood Pressure
Huntington's Disease
Infant Development
Inflammation
Inflammatory Bowel Disease
Kidney Disorders
Learning Disabilities
Low Birth Weight
Low Metabolism
Lung Cancer
Lupus
Memory/Cognition
Menopause Symptoms
Menstrual Cramps
Multiple Sclerosis
Osteoporosis
Obesity
Pancreatitis
Parkinson's Disease
Periodontal Disease
Pregnancy/Postpartum Depression
Prostrate Cancer
Psoriasis
Raynaud's Disease
Schizophrenia
Stroke
Substance Abuse
Sunburn/Burns
Ulcerative Colitis
Violent Behavior/ Aggression
Weight Loss/Control
Wrinkles/Skin Health

ADD/ADHD

Children with ADD/ADHD may have low levels of certain essential fatty acids (including EPA and DHA) in their bodies. In a clinical study of nearly 100 boys, those with lower levels of omega-3s demonstrated more learning and behavioral problems (such as temper tantrums and sleep disturbances) than boys with normal omega-3 levels. In animal studies, low levels of omega-3 fatty acids have been shown to lower the concentration of certain brain chemicals (such as dopamine and serotonin) related to attention and motivation.

A clinical study used omega-3 and omega-6 fatty acid supplementation in 117 children with ADHD. They study found significant improvements in reading, spelling, and behavior in the children over the 3 months of therapy. Another clinical study found that omega-3 fatty acid supplementation helped to decrease physical aggression in school children with ADHD. More studies, including comparisons with drug therapies (such as stimulants), should be performed.

Double blind studies have showed “medium to strong treatment effects of omega 3 fatty acids on symptoms of ADHD” after administering amounts around 1 gram for three to six months.

- http://www.ncbi.nlm.nih.gov/pubmed/18448859
- http://www.ncbi.nlm.nih.gov/pubmed/16777670
- http://www.ncbi.nlm.nih.gov/pubmed/17629918
- http://www.ncbi.nlm.nih.gov/pubmed/17435458
- http://www.ncbi.nlm.nih.gov/pubmed/15867048
- http://www.ncbi.nlm.nih.gov/pubmed/20146180
- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2773803/
- http://www.ncbi.nlm.nih.gov/pubmed/18072818
- http://www.nutritionj.com/content/6/1/16
- http://www.ncbi.nlm.nih.gov/pubmed/8778886
- http://www.nimh.nih.gov/health/publications/attention-deficit-hyperactivity-disorder/complete-index.shtml

AGE-RELATED MACULAR DEGENERATION (AMD)

A number of studies show that a diet high in omega-3 fatty acids may delay or prevent the onset of AMD. A questionnaire administered by the National Eye Institute to 3,000 people over the age of 49 found that those who consumed more fish in their diet were less likely to have macular degeneration than those who consumed 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 higher intake of fish in their diets were less likely to have this particular eye disorder. Another larger clinical study confirms that EPA and DHA from fish, 4 or more times per week, may reduce the risk of developing macular degeneration. Another study conducted by the NEI also found that omega-3s slowed or even reversed AMD lesions in mice.

- http://www.eurekalert.org/pub_releases/2009-06/tuhs-ofa061809.php
- http://ajp.amjpathol.org/cgi/content/abstract/175/2/799

ALLERGIES

Studies indicate that fish oil might be helpful in preventing allergies from developing in the first place. One-year-olds whose mothers had ingested fish oil during pregnancy and breastfeeding had considerably fewer allergic reactions than children whose mothers did not take this supplement, according to a study from Linköping University. Omega-3s alleviate inflammation, a primary response in any allergic reaction. If you are lacking in the essential Omega 3 fatty acids then you are more likely to suffer from allergies in general.

- http://www.liu.se/news-and-events/news/1.11355?l=en
- http://www.ncbi.nlm.nih.gov/pubmed/14657879

ALZHEIMER'S DISEASE

There is substantial evidence that Alzheimer's patients have significantly lower blood levels of DHA, a main component of fish oil, than do normal patients. Studies have also

shown that regular fish consumption is associated with a substantially reduced risk of developing Alzheimer's disease and dementia. Researchers now report that supplementation with DHA-rich fish oil does slow down the progression of milder forms of the disease.

And, in one study, omega-3 supplementation showed improvements in mood, cooperation, appetite, sleep, ability to navigate in the home, and short term memory in 49 Alzheimer's patients, leading researchers to conclude that it improved their overall quality of life.

- http://newsroom.ucla.edu/portal/ucla/Diet-Rich-in-Omega-3-Fatty-Acid-5448.aspx?RelNum=5448
- http://web.mit.edu/newsoffice/2007/alzheimers-1126.html
- http://archneur.ama-assn.org/cgi/content/abstract/63/10/1402
- http://www.ncbi.nlm.nih.gov/pubmed/9003975
- http://www.ncbi.nlm.nih.gov/pubmed/17442823
- http://www.ncbi.nlm.nih.gov/pubmed/17442823

ANGINA

(see also* CONGESTIVE HEART FAILURE, ARRYTHMIA*)

Preliminary studies report reductions in angina associated with fish oil intake. While better research is necessary before a firm conclusion can be drawn, Greek researchers report that fish oil supplementation (10 grams/day) reduced the number of attacks by 41% in men suffering from angina. Another study showed a reduction in angina attacks supplementing with 2 grams a day.

- http://www.ncbi.nlm.nih.gov/pubmed/17398308

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- http://www.ncbi.nlm.nih.gov/pubmed/15038833
- http://www.ncbi.nlm.nih.gov/pubmed/7985829

ANXIETY

Preliminary research shows that fish oil may help you to cope with mental stress and anxiety. A study from the medical journal Diabetes & Metabolism found that a diet rich in omega-3s kept cortisol and adrenaline levels from getting out of control. Another study found that omega-3s seem to lower cortisol levels, reduce anxiety and improve test anxiety responses. Another seems to point to omega-3s providing protection against the potential development of stress-related diseases, such as ulcers. There also appears to be an association between omega-3 deficiency and Social Anxiety Disorder.

- http://www.em-consulte.com/article/80212
- http://www.ncbi.nlm.nih.gov/pubmed/16243493
- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC538287/
- http://www.ncbi.nlm.nih.gov/pubmed/10419086
- http://www.ncbi.nlm.nih.gov/pubmed/10683816
- http://www.ncbi.nlm.nih.gov/pubmed/19906519

ARRHYTHMIA

There is promising evidence that omega-3s may decrease the risk of cardiac arrhythmias, the main factor in sudden cardiac death. This is one proposed mechanism behind the reduced number of heart attacks in people who regularly ingest fish oil.

- http://www.ncbi.nlm.nih.gov/pubmed/12540389
- http://www.ncbi.nlm.nih.gov/pubmed/18360184
- http://www.ncbi.nlm.nih.gov/pubmed/16267249
- http://www.ncbi.nlm.nih.gov/pubmed/18556107

ARTHRITIS/JOINT PAIN

Several articles reviewing numerous studies in this area conclude that omega-3 supplements reduce tenderness in joints, reduce pain intensity and decrease morning stiffness. At least 2 clinical trials concluded that arthritis patients who took fish oils could eliminate or sharply reduce their use of NSAIDs and other arthritis drugs. In addition, laboratory studies suggest that diets rich in omega-3s (and low in the inflammatory omega-6s) may benefit people with other inflammatory disorders, such as osteoarthritis. In fact, several test tube studies of cartilage-containing cells have found that omega-3s decrease inflammation and reduce the activity of enzymes that destroy cartilage. Researchers are careful to point out studies in this field are evolving and offer promising therapies for the future.

- http://www.ncbi.nlm.nih.gov/pubmed/15133890?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/17335973?dopt=Citation
- http://www.ncbi.nlm.nih.gov/pubmed/7490601
- http://www.ncbi.nlm.nih.gov/pubmed/2857265
- http://www.ncbi.nlm.nih.gov/pubmed/12115185
- http://www.ncbi.nlm.nih.gov/pubmed/20877766

ASTHMA

Researchers at the University of Sydney have found that children who regularly eat fresh, oily fish have a 4x lower risk of developing asthma than do children who rarely eat such fish. A number of clinical trials have examined the effects of omega-3 supplementation on asthma, and, while evidence that omega-3 supplementation decreases the clinical severity of asthma has been inconsistent, there is some evidence that omega-3s can decrease the production of inflammatory mediators in asthmatic patients and reduce bronchial inflammation. Previous research has demonstrated that omega-3s have a protective effect on exercise-induced bronchoconstriction (EIB) in elite athletes. Data suggests that omega-

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3s may very well represent a potentially beneficial nonpharmacologic intervention for asthmatic subjects with EIB.

- http://www.ncbi.nlm.nih.gov/pubmed/9551739?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/10732825?dopt=Abstract
- http://content.karger.com/produktedb/produkte.asp?typ=fulltext&file=000170386
- http://www.ncbi.nlm.nih.gov/pubmed/11153584
- http://www.ncbi.nlm.nih.gov/pubmed/1834587
- http://www.ncbi.nlm.nih.gov/pubmed/16424411

ATHEROSCLEROSIS

There is good evidence that omega-3s found in fish oil can help prevent, treat and even reverse atherosclerosis by preventing the development of plaque and blood clots. Recent research concludes that perhaps the most important effect of fish oils, when it comes to preventing cardiovascular disease, is their ability to stabilize atherosclerotic plaque (heart attacks are now believed to involve the rupture of this plaque).

Danish researchers now report a direct correlation between high blood levels of C-reactive protein (CRP) CRP levels and severity of atherosclerosis. They also suggest that CRP levels can be kept in check by frequent consumption of fish or fish oils.

- http://www.ajcn.org/cgi/content/abstract/90/1/49
- http://www.nextbio.com/b/search/article.nb?id=12583947&q0=Philip%20C%20Calder&t0=author
- http://www.psy.au.dk/da/person/pub/au01_2009_82520030-2f1e-11de-aee0-000ea68e967b/person/trine.madsen@rn.dk/

AUTISM

The prevalence of autistic spectrum disorders (ASD) such as autism and Asperger's syndrome (ASP) has increased dramatically over the past 10 years and may now affect as many as 6 out of every 1000 children under the age of 5 years. There is some evidence that ASD may involve a fatty acid imbalance in the neuronal membranes. A group of Scottish researchers has found that a deficiency in EPA and DHA, the main components of fish oil, is clearly linked to ASD.
In addition to anecdotal evidence that children with autism may benefit from supplementation with fish oils, a recent double-blind, placebo-controlled trial provides preliminary evidence of this. Both stereotypy (ritual, repetitive movements) and hyperactivity scores decreased significantly in the group of children treated with fish oil.

- http://www.ncbi.nlm.nih.gov/pubmed/19307110
- http://www.ncbi.nlm.nih.gov/pubmed/11487301
- http://www.ncbi.nlm.nih.gov/pubmed/16920077
- http://www.ncbi.nlm.nih.gov/pubmed/15301788

BACK/NECK PAIN

In a study conducted by the University of Pittsburgh Medical Center, 125 people with spine pain who normally took anti-inflammatory drugs were surveyed to see how omega-3 capsules would affect their discomfort. Participants took 2.4g of omega-3s along with their regular NSAIDs for 2 weeks. After this, they were given 1.2g of omega-3s per day and asked to stop taking their NSAIDs.

At the end of the study, 60% of participants noted a reduction in their pain levels. In fact, the omega-3 supplements were so effective, 59% of participants indicated that they'd discontinued their use of NSAIDs altogether while 88% said they planned to continue with the omega-3 supplements. The study's authors noted that omega-3s have a well

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established anti-inflammatory mechanism. No side effects were noted during the study.

- http://www.ncbi.nlm.nih.gov/pubmed/16531187

BIPOLAR DISORDER

Research shows a robust relationship between greater seafood consumption and lower prevalence rates of bipolar disorders. In a clinical study of 30 people with bipolar disorder, those who were treated with EPA and DHA (in combination with their usual mood stabilizing medications) for 4 months experienced fewer mood swings and recurrence of either depression or mania than those who received placebo.

- http://www.ncbi.nlm.nih.gov/pubmed/10232294
- http://ajp.psychiatryonline.org/cgi/content/abstract/160/12/2222
- http://www.ncbi.nlm.nih.gov/pubmed/17194275
- http://www.ncbi.nlm.nih.gov/pubmed/16928441
- http://www.ncbi.nlm.nih.gov/pubmed/14638594

BREAST CANCER

Women who regularly consume foods rich in omega-3 fatty acids over many years may be less likely to develop breast cancer. In addition, the risk of dying from breast cancer may be significantly less for those who eat large quantities of omega-3 from fish and brown kelp seaweed (common in Japan). This is particularly true among women who substitute

fish for meat. According to researchers, the balance between omega-3 and omega-6s appears to play an important role in the development and growth of breast cancer. One study found omega-3 supplementation to possibly impair angiogenesis, a prerequisite for tumor growth and metastasis. Further research is still needed to understand the effect that

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omega-3s may have on breast cancer prevention and treatment. Researchers do speculate that omega-3s, in combination with other nutrients (namely, vitamin C, vitamin E, beta-carotene, selenium, and coenzyme Q10) may prove to be of particular value for preventing and treating breast cancer.

- http://www.ncbi.nlm.nih.gov/pubmed/12416257?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/14583770?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/11142082?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/11857389?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/19566923
- http://www.ncbi.nlm.nih.gov/pubmed/20932327

CANCER (General)

A number of studies explore the role of omega-3 fatty acids in cancer prevention and treatment. To date, the most well researched areas include breast, cervical, colon, prostate, and lung cancers. While some certainly question the strength of evidence in support of fish oil as a viable treatment option, others blame inconsistent dosage and purity of supplements used for any variances in the literature.

- http://www.aacr.org/home/public—media/aacr-press-releases.aspx?d=1683
- http://www.ncbi.nlm.nih.gov/pubmed/18953447
- http://www.ncbi.nlm.nih.gov/pubmed/16123006
- http://www.ncbi.nlm.nih.gov/pubmed/12416257
- http://www.ncbi.nlm.nih.gov/pubmed/17607361
- http://www.ncbi.nlm.nih.gov/pubmed/14583770
- http://aje.oxfordjournals.org/content/166/10/1116.full
- http://www.ncbi.nlm.nih.gov/pubmed/19566923
- http://www.ncbi.nlm.nih.gov/pubmed/16345754

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- http://www.ncbi.nlm.nih.gov/pubmed/11857389
- http://www.ncbi.nlm.nih.gov/pubmed/11142082
- http://www.ncbi.nlm.nih.gov/pubmed/15189118
- http://www.ncbi.nlm.nih.gov/pubmed/17914160

CERVICAL CANCER

A study that tested omega-3 fish oil (DHA specifically) on cervical HPV-induced pre-cancerous cells found that the fish oil inhibited the growth of these cells.

- http://carcin.oxfordjournals.org/cgi/content/full/20/2/249
- http://www.ncbi.nlm.nih.gov/pubmed/8076361

CHOLESTEROL (HIGH)

EPA and DHA, the omega-3s in fish oil, have been reported in several large clinical studies to reduce LDL (or "bad") cholesterol and triglyceride levels. Another study on the benefits of EPA was published in The Lancet in March 2007. This study involved over 18,000 patients with unhealthy cholesterol levels. The patients were randomly assigned to receive either 1,800 mg a day of EPA with a statin drug or a statin drug alone. The trial went on for a total of 5 years and concluded that those patients in the EPA group had not only lowered levels of LDL but superior cardiovascular function, as well.

Omega-3 fish oils appear to be beneficial for raising the "good" (HDL) cholesterol, too. In a small study, researchers found that 4.5 grams of fish oil supplements had a significantly positive effect on HDL. Interestingly, the researchers noted that fish oil plus exercise did

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not need to go hand and hand. Instead, the two treatments work independent of one another.

- http://www.ncbi.nlm.nih.gov/pubmed/17398308
- http://www.ncbi.nlm.nih.gov/pubmed/19201689
- http://www.ncbi.nlm.nih.gov/pubmed/19589957

CHRONIC BRONCHITIS

(see also* CHRONIC OBSTRUCTIVE PULMONARY DISEASE*)

Chronic Obstructive Pulmonary Disease (COPD) is the #5 cause of death in the world, and includes diseases like emphysema and chronic bronchitis. A 2-year study on the effects of fish oil for COPD has found promising results. People with COPD, who hadn't smoked in 6 months, were given omega-3 supplements and then were compared to a placebo group. The omega-3 group not only had less inflammation in their lungs, but also walked the farthest in the 6-minute walking fitness test.

- http://www.ncbi.nlm.nih.gov/pubmed/18842931
- http://content.nejm.org/cgi/content/abstract/331/4/228

CHRONIC PAIN

Chronic pain is frequently associated with inflammatory conditions. Due to the way in which inflammation affects the expression of pain, omega-3 fatty acids are believed to offer viable treatment outcomes. Researchers believe the positive effects of omega-3s on pain management may be more valuable to women, who seem to have a higher prevalence for chronic pain disorders. Much of the evidence for this claim has been derived from

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omega-3s role in the production of anti-inflammatory eicosanoids.

- http://www.ncbi.nlm.nih.gov/pubmed/20837187
- http://www3.interscience.wiley.com/cgi-bin/fulltext/122209383/PDFSTART

CIRCULATION (PERIPHERAL ARTERIAL DISEASE)

People who have heart and circulation (cardiovascular) problems and Peripheral Arterial Disease often have thicker, more viscous blood. Poor peripheral circulation is also universal in diabetes, being intimately involved with the development of cardiovascular disease. Omega-3s may help those with PAD by thinning viscous blood, and improving endothelial function and vasodilation (widening of blood vessels).

- http://linkinghub.elsevier.com/retrieve/pii/S0261561407002038
- http://jn.nutrition.org/cgi/content/full/137/4/973?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=DHA&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&sortspec=relevance&resourcetype=HWCIT
- http://dvr.sagepub.com/cgi/content/abstract/4/2/89

COGNITIVE FUNCTIONING

It is widely accepted that cognitive functioning is heavily dependent on omega-3 intake during earlier stages of development. However, there is also evidence for this link during later stages of development, too. In one study, researchers investigated the role of EPA, ALA, and DHA on the cognitive functioning of 280 middle-aged participants. Five distinct measures of cognitive functioning were measured, including: vocabulary, reasoning, mental flexibility, working memory, and non-verbal reasoning. DHA, but not EPA or ALA was related to the five measures, suggesting that DHA does in fact play a role in cognitive functioning during later development.

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- http://www.ncbi.nlm.nih.gov/pubmed/20181791
- http://www.ncbi.nlm.nih.gov/pubmed/20303394

COLON CANCER

Omega-3s may have a role in colorectal cancer prevention. Experimental data have shown benefits of omega-3s in reducing tumor growth and inhibition of metastasis (the spread of tumors to other parts of the body).

- http://www.aacr.org/home/public—media/aacr-press-releases.aspx?d=1683
- http://cebp.aacrjournals.org/content/16/2/314

CONGESTIVE HEART FAILURE

Several well-conducted randomized controlled trials report that in people with a history of heart attack, regular consumption of oily fish or fish oil/omega-3 supplements reduces the risk of non-fatal heart attack, fatal heart attack, sudden death, and all-cause mortality (death due to any cause). Most patients in these studies were also using conventional heart drugs, suggesting that the benefits of fish oils may add to the effects of other therapies. The strongest evidence of a cardio-protective effect of omega 3s appears in patients with established cardiovascular disease and following a heart attack – with up to a 30% reduction in cardiovascular-related death.

- http://circ.ahajournals.org/cgi/content/full/106/21/2747
- http://www.ncbi.nlm.nih.gov/pubmed/18757090?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/18757089?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/15963403?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/18757087?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/19789394?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/19660687

CROHN'S DISEASE

The effects of omega-3s on inflammation may be beneficial for those with Crohn's disease, when added to standard therapy. The results of a recent double-blind, controlled study also indicate that omega 3 fatty acids are safe and may be effective for the maintenance of remission in CD. Enteric-coated omega-3 fish oil capsules are best for those treating Crohn's, as the coating ensures that the capsule will not be digested until reaching the small intestine (and thus, not causing any gastric upset).

- http://www.ncbi.nlm.nih.gov/pubmed/17443620
- http://www.ncbi.nlm.nih.gov/pubmed/18254120
- http://www.ncbi.nlm.nih.gov/pubmed/20926865

CYSTIC FIBROSIS

In one recent study, researchers were able to conclude that long-term supplementation with EPA + DHA decreases inflammation and the need for antibiotics in children with CF. Researchers at the University of Sydney also found that daily supplementation with fish oil capsules alleviated many of the symptoms of cystic fibrosis.

- http://pen.sagepub.com/cgi/content/abstract/27/1/52
- http://www.ncbi.nlm.nih.gov/pubmed/7923869

DEMENTIA

(see also* ALZHEIMER's *and* MEMORY/COGNITIVE FUNCTION*)

Studies show that omega-3s may help in maintaining adequate cognitive functioning and possibly in preventing or delaying the onset of dementia. Omega-3 consumption also appears to decrease risk of dementia – in one well-known study, men and women in the highest quartile of plasma DHA content had a 47% decreased risk of developing all-cause

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dementia and a 39% decreased risk of developing Alzheimer's disease when compared to those in the lower three quartiles.

- http://www.ncbi.nlm.nih.gov/pubmed/15883362
- http://www.ncbi.nlm.nih.gov/pubmed/18548175
- http://www.ncbi.nlm.nih.gov/pubmed/17101822
- http://www.ncbi.nlm.nih.gov/pubmed/11201991
- http://www.ncbi.nlm.nih.gov/pubmed/9392577

DEPRESSION

Studies suggest an inverse association between seafood consumption and national rates of major depression. Several small studies have found omega-3 levels to be lower in individuals suffering from depression.

In a collaborative trial among subjects admitted to an emergency room with deliberate self harm researchers found that 2 g/d of omega-3 fatty acids reduced future suicidal thinking, anger and depression scores while improving positive outlooks to life. A 2007 meta-review analyzed 10 double-blind trials and concluded that, while more large-scale, well-controlled trials are needed, the results of their analysis showed significant antidepressant efficacy of omega-3s.

Additionally, results of a recent pilot study suggest that omega-3 fatty acid supplementation may have utility in treating children with major depression. Health benefits of omega-3s may be especially important in patients with psychiatric disorders, due to high prevalence rates of smoking and obesity and the metabolic side effects of some psychotropic medications.

Given the research results thus far, the American Psychiatry Association recommends that all adults should eat fish high in omega-3s at least 2 x week, and patients with mood,

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impulse control or psychotic disorders should consume 1g/day of EPA + DHA. A supplement may be useful in patients with mood disorders (1-9g/day). Use of more than 3g/day should be monitored by a physician.

- http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2805%2979168-6/fulltext
- http://www.ncbi.nlm.nih.gov/pubmed/16741212
- http://www.ncbi.nlm.nih.gov/pubmed/12888186
- http://www.ncbi.nlm.nih.gov/pubmed/12445491
- http://www.ncbi.nlm.nih.gov/pubmed/17267926
- http://www.ncbi.nlm.nih.gov/pubmed/1264032
- http://www.ncbi.nlm.nih.gov/pubmed/17685742
- http://www.ncbi.nlm.nih.gov/pubmed/19752840
- http://www.ncbi.nlm.nih.gov/pubmed/19587361
- http://www.ncbi.nlm.nih.gov/pubmed/12505817?
- http://www.lipidworld.com/content/3/1/25
- http://www.ncbi.nlm.nih.gov/pubmed/12816769
- http://www.ncbi.nlm.nih.gov/pubmed/17194275

DIABETES

Individuals with diabetes tend to have high triglyceride and low HDL ("good" cholesterol) levels. Omega-3 fatty acids from fish oil can help lower triglycerides (by as much as 25%) and apoproteins (markers of diabetes), and raise HDL, so people with diabetes may benefit from eating foods or taking supplements that contain DHA and EPA.
A study that followed 5,103 women diagnosed with type 2 diabetes, but free of cardiovascular disease or cancer at the start of the study, found that higher fish intakes were associated with significantly decreased risks of heart disease over a 16-year follow-up period. The American Diabetes Association recommends that diabetic individuals

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increase omega-3 fatty acid consumption by consuming two to three 3-oz servings of fish weekly.

- http://www.ncbi.nlm.nih.gov/pubmed/9589230
- http://www.ncbi.nlm.nih.gov/pubmed/17541540
- http://www.ncbi.nlm.nih.gov/pubmed/16960167
- http://www.ncbi.nlm.nih.gov/pubmed/15460168
- http://www.ncbi.nlm.nih.gov/pubmed/12668520
- http://www.ncbi.nlm.nih.gov/pubmed/19447387

DRY-EYE SYNDROME

Evidence shows that women with a higher intake of omega-3s appear to have a lower risk of Dry-Eye Syndrome than do women with a lower intake. Early research also shows that omega-3 supplementation helps to alleviate dry eye symptoms and improve ocular health in general.

- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2646454
- http://www.ncbi.nlm.nih.gov/pubmed/16210721
- http://www.ncbi.nlm.nih.gov/pubmed/17075501

EATING DISORDERS

Clinical studies suggest that men and women with anorexia nervosa have lower than optimal levels of polyunsaturated fatty acids, including omega-3s. To prevent the complications associated with essential fatty acid deficiencies, some experts recommend that treatment programs for anorexia nervosa include PUFA-rich foods such as fish and organ meats. Additional research suggests that individuals with anorexia lack a specific neurotransmitters in the hypothalamus. Omega-3 supplementation may be able to induce the production and release of this neurotransmitter.

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- http://www.ncbi.nlm.nih.gov/pubmed/15085553
- http://journals.lww.com/co-clinicalnutrition/Abstract/2005/07000/Omega_3_fatty_acids_and_anorexia.11.aspx

EMPHYSEMA

(see also* CHRONIC BRONCHITIS*)

Adequate dietary intake of omega-3s may promote respiratory health and lessen the effects of oxidative stress, such as that from smoking. A large-scale study included 8960 people, 55% of which were former smokers and 45% current smokers. Researchers found that present or former smokers who ate four servings of fish per week had about half the risk of developing chronic bronchitis as did smokers who only ate 0.5 serving or less per week. Heavy fish eaters had only one third the risk of getting emphysema as did smokers who ate little fish. Eating four servings of fish per week corresponds to a daily intake of about 480 mg of fish oils (EPA and DHA). The researchers conclude that a high dietary intake of fish oils (n-3 fatty acids) may protect cigarette smokers against chronic obstructive pulmonary diseases.

- http://www.ncbi.nlm.nih.gov/pubmed/17475634
- http://www.ncbi.nlm.nih.gov/pubmed/18820272

ECZEMA

A diet rich in omega-3 polyunsaturated fatty acids can help eczema sufferers reduce the severity of their symptoms.

- http://www.wiley.com/bw/journal.asp?ref=0007-0963
- http://www.ncbi.nlm.nih.gov/pubmed/19114399

EPILEPSY

One of the most common neurological conditions in the world is epilepsy. Although this condition can be successfully treated with medications, and in some cases surgery, there is a high prevalence for sudden premature death. Some researchers believe the increased risk for death is associated with heart abnormalities. For this reason, omega-3 has been considered as a possible complementary treatment. One study, published in the Brazilian Journal of Biology found that fish oil supplements may not only reduced the risk for sudden death, but may also reduce the incidence of seizures all together.

- http://www.ncbi.nlm.nih.gov/pubmed/20730355

FERTILITY

Omega-3 composition is an important component of fertility in men. A study involving over 80 males, confirmed that infertile males have low concentrations of omega-3s. Current animal models show that DHA supplementation is able to fully restore fertility and sperm motility in males. More research is still needed to determine if the same is true for humans.

Research also indicates that omega-3 levels, and more specifically the prostaglandins that are created following consumption, seem to be related to female infertility. In a study with 45 infertile females, both DHA and EPA were significantly reduced.

- http://www.ncbi.nlm.nih.gov/pubmed/19666200
- http://www.ncbi.nlm.nih.gov/pubmed/19690334
- http://www.ncbi.nlm.nih.gov/pubmed/19330610

HEART DISEASE

(see* also ATHERSCLEROSIS, CONGESTIVE HEART FAILURE, HIGH CHOLESTEROL *and* HIGH BLOOD PRESSURE*)

Higher consumption of fish has been associated with a lower risk of coronary heart disease in both men and women. Clinical evidence suggests that EPA and DHA found in fish oil help reduce risk factors for heart disease, including high cholesterol and high blood pressure. There is also strong evidence that omega-3s can help prevent and treat atherosclerosis by inhibiting the development of plaque and blood clots, each of which tends to clog arteries. Clinical studies of heart attack survivors have found that daily omega-3 fatty acid supplements dramatically reduce the risk of death, subsequent heart attacks and stroke.

- http://www.ajcn.org/cgi/content/abstract/76/2/326
- http://www.ncbi.nlm.nih.gov/pubmed/3990713
- http://www.ncbi.nlm.nih.gov/pubmed/7635594
- http://www.ncbi.nlm.nih.gov/pubmed/11939867
- http://www.ncbi.nlm.nih.gov/pubmed/16401768

HEARING LOSS (AGE-RELATED)

Existing evidence shows there is a link between age-related hearing loss and omega-3 fatty acids. Findings published in the American Journal of Clinical Nutrition suggest this link is quite strong indeed. In a study with nearly 3,000 participants, researchers found that consuming just two servings of fish per week was associated with a 42% decreases risk of developing age-related hearing loss.

- http://www.ncbi.nlm.nih.gov/pubmed/20534742
- http://www.ncbi.nlm.nih.gov/pubmed/20424800

HIGH BLOOD PRESSURE

Several clinical studies suggest that diets or supplements rich in omega-3s lower blood pressure significantly in individuals with hypertension and that DHA may have greater benefits than EPA. An analysis of 17 clinical studies using fish oil supplements found that supplementation with 3 or more grams of fish oil daily can lead to significant reductions in blood pressure in individuals with untreated hypertension. At this high dose level, there is an increased risk of bleeding; therefore, a qualified health care provider should be consulted prior to starting treatment with supplements.

- http://circ.ahajournals.org/cgi/reprint/88/2/523/
- http://hyper.ahajournals.org/cgi/reprint/34/2/253/
- http://www.ncbi.nlm.nih.gov/pubmed/17898501
- http://www.ncbi.nlm.nih.gov/pubmed/17548718

HUNTINGTON'S DISEASE

Huntington's disease is a genetic condition resulting in behavioral, learning, and muscular problems that eventually lead to premature death. Research at this time is in it's infancy, however, scientists are increasingly interested in the role of omega-3 fatty acids. It is now know that individuals with this disorder have lower levels of fats in areas of the brain associated with the genetic mutation. Huntington's disease is also associated with insulin resistance. For these two reasons, new treatments have involved the omega-3 fatty acids derived from marine sources.

- http://www.ncbi.nlm.nih.gov/pubmed/20802793
- http://www.ninds.nih.gov/disorders/huntington/huntington.htm

INFANT EYE/BRAIN DEVELOPMENT

DHA makes up 15-20% of the cerebral cortex and 30- 60% of the retina so it is absolutely necessary for normal development of the fetus and baby. Because the last trimester of pregnancy is a critical period for the accumulation of DHA in the brain and retina, preterm infants are thought to be particularly vulnerable to adverse effects of insufficient DHA on visual and neurological development. Early developmental deficiencies in DHA and EPA may lower serotonin levels at critical periods of neurodevelopment. Prenatal DHA availability also appears to decrease likelihood of childhood allergies and have an effect on motor skill quality, cognitive development and behavior/hyperactivity later in the life of the child.

- http://www.ncbi.nlm.nih.gov/pubmed/11724460
- http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2807%2960277-3/fulltext
- http://www.journals.elsevierhealth.com/periodicals/ysiny/article/PIIS1084275601900934/abstract
- http://www.ncbi.nlm.nih.gov/pubmed/12079857
- http://www.ncbi.nlm.nih.gov/pubmed/12949309
- http://www.ncbi.nlm.nih.gov/pubmed/10835071
- http://www.ncbi.nlm.nih.gov/pubmed/18091766
- http://www.ncbi.nlm.nih.gov/pubmed/17074476
- http://www.ncbi.nlm.nih.gov/pubmed/19489765
- http://www.ncbi.nlm.nih.gov/pubmed/16242603
- http://www.ncbi.nlm.nih.gov/pubmed/12630150
- http://www.ncbi.nlm.nih.gov/pubmed/12509593

INFLAMMATION

It's widely believed that American diets are too high in omega-6fatty acids and that this ratio is to blame for many inflammatory diseases such as arthritis, irritable bowel syndrome, and asthma.

Evidence for this claim comes from the fact that eicosapentaenoic acid (EPA) compete with arachidonic acid (AA) to produce eicosanoids. Both animal and human studies support the hypothesis that a diet high in omega-3s can reduce an over-active immune response.

- http://www.jacn.org/cgi/content/full/21/6/495
- http://www.ncbi.nlm.nih.gov/pubmed/8759934
- http://www.ncbi.nlm.nih.gov/pubmed/12936918
- http://www.ncbi.nlm.nih.gov/pubmed/15485592

INFLAMMATORY BOWEL DISEASE

(see* CROHN'S DISEASE, ULCERATIVE COLITIS*)

The prevalence of inflammatory bowel disease has risen dramatically in developed countries in recent decades. Many researchers strongly believe that stress, and its effects on the immune system are to blame. In some individuals, it appears as though the over-use of antibiotics, combined with deficiencies in omega-3 fatty acids are to blame for an increased risk for the disease. Newer studies suggest that a diet high in omega-3 fatty acids may be particularly beneficial for children who are at high risk for developing the disease.

- http://www.ncbi.nlm.nih.gov/pubmed/20926864
- http://www.ncbi.nlm.nih.gov/pubmed/19077484
- http://www.ncbi.nlm.nih.gov/pubmed/10620003

KIDNEY DISORDERS

IgA nephropathy is a fairly common kidney disorder, caused by an inflammation in the network of blood capillaries that filter waste products from the blood. The cause of IgA nephropathy is not clear, but progressive renal failure may eventually develop in 15-40% of patients. While more research is necessary, several small studies show a low dose of omega-3s to slow the progression of renal disease.

Researchers at Emory University have found that dialysis patients who reported eating fish at least once in a 3-day period were about half as likely to die during the 3-year study period, as were patients who did not report any fish consumption. Another study shows fish oil to be effective in reducing blood clots in dialysis patients.

- http://www.ncbi.nlm.nih.gov/pubmed/7935657?dopt=Abstract
- http://www.ncbi.nlm.nih.gov/pubmed/15462115?dopt=Citation
- http://www.ncbi.nlm.nih.gov/pubmed/12963947
- http://www.ncbi.nlm.nih.gov/pubmed/11752036

LEARNING DISABILITIES

Omega-3 fatty acids offer a promising complementary approach to standard treatments for dyslexia and dyspraxia, or developmental coordination disorder. Studies have shown improved dark adaptation , motor skills, reading skills, motor-perceptual velocity and general learning.

- http://www.ncbi.nlm.nih.gov/pubmed/10617990
- http://www.ncbi.nlm.nih.gov/pubmed/16777670
- http://www.ncbi.nlm.nih.gov/pubmed/15867048
- http://www.ncbi.nlm.nih.gov/pubmed/18158838

LOW BIRTH WEIGHT

Inadequate omega-3 intake could be a risk factor for low birth weight. In a study of nearly 9,000 pregnant women, researchers found women who ate fish once a week during their first trimester had 3.6 times less risk of low birth weight and premature birth than those who ate no fish. Low consumption of fish was a strong risk factor for both preterm delivery and low birth weight. Another very recent study concludes that among low fish-eating pregnant women, fish intake in the third trimester was closely associated with lower birth weight.

- http://www.bmj.com/cgi/content/abstract/324/7335/447
- http://www.ncbi.nlm.nih.gov/pubmed/17957193
- http://www.ncbi.nlm.nih.gov/pubmed/12103448

LOW METABOLISM

(see also* OBESITY, WEIGHT LOSS/CONTROL*)

According to the National Institutes of Health, omega-3s are healthy fats that trigger “I’m full” signals to the brain and help quash hunger signals. Fish oils, which are rich in omega-3s, can positively influence metabolism, with regular consumption reducing an individual’s risk for becoming obese In animal studies, omega-3s stimulate the secretion of leptin, a hormone that helps regulate metabolism.

- http://www.ncbi.nlm.nih.gov/pubmed/9129504
- http://www.ncbi.nlm.nih.gov/pubmed/19079834
- http://ajpregu.physiology.org/cgi/content/abstract/288/6/R1682

LUNG CANCER

Currently, most of the research in this field is based on animal models. Several researchers have observed a reduction in lung tumors by 80% or more. There has been only one study involving a human participant. The participant, diagnosed with stage 4 lung cancer, saw his symptoms completely reversed following a 12-week fish oil diet high in omega-3s and low in omega-6s.

- http://www.ncbi.nlm.nih.gov/pubmed/18479809
- http://www.ncbi.nlm.nih.gov/pubmed/16434631
- http://www.ncbi.nlm.nih.gov/pubmed/19838940
- http://www.ncbi.nlm.nih.gov/pubmed/16201843

LUPUS

Omega-3s decrease the risk of coronary artery disease and may also protect against irregular heartbeats and help lower blood pressure. For these reasons, omega-3s are important for women with lupus, who are at a 5-10x higher risk for heart disease than the general population. In addition to the cardiovascular benefits, several studies have also found a significant improvement in a number of the symptoms of active lupus, with study participants reporting an improvement in quality of life and an overall feeling of improved health.

- http://www.ncbi.nlm.nih.gov/pubmed/17875549
- http://www.ncbi.nlm.nih.gov/pubmed/1877851
- http://www.ncbi.nlm.nih.gov/pubmed/17875549

MEMORY/COGNITIVE FUNCTION

(see also* ALZHEIMER'S DISEASE *and* DEMENTIA*)

Consuming fish at least 1x a week is associated with a 10% per year slower rate of cognitive decline in elderly people. Accelerated cognitive decline and mild cognitive impairment (MCI) correlate with lowered tissue levels of DHA/EPA, and studies show that omega-3 supplementation has improved cognitive function. (Deficits in DHA are also associated with neurodegenerative diseases such as Alzheimer's.) In a brand new study, EPA significantly improved memory function in rats.

- http://www.rush.edu/webapps/MEDREL/servlet/NewsRelease?ID=700
- http://www.ajcn.org/cgi/content/abstract/80/6/1650
- http://www.ncbi.nlm.nih.gov/pubmed/19022980
- http://www.ncbi.nlm.nih.gov/pubmed/18573585

MENOPAUSE SYMPTOMS

Omega-3s ease psychological distress and mild depressive symptoms often suffered by menopausal and perimenopausal women, according to researchers at Université Laval's Faculty of Medicine. Women with hot flashes also noted that their condition improved after supplementation with omega-3s.

- http://www.ncbi.nlm.nih.gov/pubmed/19034052
- http://www.ncbi.nlm.nih.gov/pubmed/19116322

MENSTRUAL CRAMPS (DYSMENORRHEA)

Omega-3s have anti-inflammatory effects and may relieve dysmenorrhea (painful menstrual cramps) by affecting the metabolism of prostaglandins — natural substances

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that seem to play a central role in menstrual discomfort — and other factors involved in pain and inflammation. Evidence also shows a higher intake of marine, omega-3 fatty acids correlate with milder menstrual symptoms. The most significant improvements were seen when fish oil was used in conjunction with vitamin B12.

- http://www.ncbi.nlm.nih.gov/pubmed/8623866
- http://www.ncbi.nlm.nih.gov/pubmed/8701537
- http://www.ncbi.nlm.nih.gov/pubmed/7588501

MULTIPLE SCLEROSIS

Multiple sclerosis is neurological condition that attacks the nervous system. Areas affected are wide ranging and include: brain, spinal cord, and optic nerves. Due the number of systems affected by this condition, symptoms and individual experiences are often varied. However, most experts agree that MS is an auto-immune disorder, meaning it attacks the individual's immune system. Myelin, a protective substance that covers the nerve fibers in the brain is often compromised in patients with MS. As a result,

connections between regions of the brain become difficult to maintain. Additionally, the compromised myelin becomes vulnerable to attack by the body's on immune system. Naturally, research in this area is highly focused on reducing pro-inflammatory factors. Treatment options are desultory at best; however evidence in support of fish oil is mounting.

One recent study evaluated participants with MS after receiving 9.6 grams of fish oil per day for three weeks. The researchers concluded that this dose was enough to reduce the adverse immune response associated with this disease.

- http://www.ncbi.nlm.nih.gov/pubmed/19171471
- http://www.nationalmssociety.org/about-multiple-sclerosis/index.aspx

OSTEOPOROSIS

Clinical studies suggest that omega-3s help increase levels of calcium in the body, deposit calcium in the bones, and improve bone strength. Studies also suggest that people who are deficient in certain essential fatty acids (particularly EPA from fish oil and GLA, an omega-6 fatty acid) are more likely to suffer from bone loss than those with normal levels of these fatty acids. In a study of women over 65 with osteoporosis, those given EPA and GLA supplements experienced significantly less bone loss over 3 years than those who were given a placebo. Many of these women also experienced an increase in bone density.

- http://www.ncbi.nlm.nih.gov/pubmed/9932142
- http://www.ncbi.nlm.nih.gov/pubmed/18508495
- http://www.ncbi.nlm.nih.gov/pubmed/12798656
- http://www.ncbi.nlm.nih.gov/pubmed/12020975
- http://www.ncbi.nlm.nih.gov/pubmed/11207457

OBESITY

(see also* LOW METABOLISM *and* WEIGHT LOSS/CONTROL*)

In 69 overweight patients being treated for hypertension, a weight-loss program incorporating daily fish meals rich in omega-3s (3.65 g) was more effective than either measure alone at improving metabolism and dyslipidaemia (high cholesterol, high blood triglyceride levels).

- http://www.ncbi.nlm.nih.gov/pubmed/10539741

PANCREATITIS

Individuals with severe acute pancreatitis often experience a significant reduction in immune response. There is promising evidence that omega-3 supplements may be able to increase this function after only 5 days of continued therapy. Because IL-10 levels are indicative of immune functioning, it is most frequently studied. In a small pilot study, researchers noted “A significant IL-10 increase was associated with the administration of omega-3 FAs ($p = 0.04$, vs omega-6 FAs group). Monocyte HLA-DR expression improved in both groups after 5 days of PN treatment”. This has obvious implications for individuals who are either recovering from, or anticipating surgical interventions.

- http://www.ncbi.nlm.nih.gov/pubmed/19568921

PARKINSON’S DISEASE

Omega-3s may protect the brain against Parkinson’s Disease, according to a recent study by Université Laval researchers. This study is the first to demonstrate the protective effect of a diet rich in omega-3 fatty acids against Parkinson’s.

The scientists exposed mice to either a control or a high omega-3 diet from two to twelve months of age and then treated them with a neurotoxin commonly used as an experimental model for Parkinson’s. They found that high doses of omega-3 given to the

experimental group completely prevented the neurotoxin-induced decrease of dopamine that ordinarily occurs. Since Parkinson’s is a disease caused by disruption of the dopamine system, this protective effect exhibited could show promise for future research in the prevention of Parkinson’s disease.

- http://www.ncbi.nlm.nih.gov/pubmed/18032633

PERIODONTAL DISEASE

There is ample evidence suggesting that insufficient levels of DHA may be linked to periodontal disease. In a study containing over fifty participants in their late seventies, researchers found that those with the lowest amounts of DHA were 1.5 times more likely to suffer periodontal events.

- http://www.ncbi.nlm.nih.gov/pubmed/20097537
- http://www.ncbi.nlm.nih.gov/pubmed/16759817

PREGNANCY/POSTPARTUM DEPRESSION

(see also* INFANT EYE/BRAIN DEVELOPMENT*)

The mother is the sole source of omega-3s for the fetus. Omega-3 supplementation results in modest increases in length of gestation, especially in women with low omega-3 intake. In women with higher-risk pregnancies, omega-3 supplementation reduced the risk of premature delivery.

Numerous studies have found a positive association between low omega-3 levels and a higher incidence of maternal depression, with some finding that omega-3 supplementation may have therapeutic benefits on depression during pregnancy. The most recent studies indicated that positive benefits are more likely seen in women who supplement with higher doses of DHA & EPA (closer to 2 grams) and begin supplementing earlier in their pregnancy.

Early developmental deficiencies in DHA and EPA may also result in lower serotonin levels at critical periods of the infant's neurodevelopment.

- http://www.ncbi.nlm.nih.gov/pubmed/17307104
- http://www.ncbi.nlm.nih.gov/pubmed/1349049

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- http://www.ncbi.nlm.nih.gov/pubmed/8305926
- http://www.ncbi.nlm.nih.gov/pubmed/19289957
- http://www.ncbi.nlm.nih.gov/pubmed/17299499
- http://www.ncbi.nlm.nih.gov/pubmed/16777665
- http://www.ncbi.nlm.nih.gov/pubmed/18370571
- http://www.ncbi.nlm.nih.gov/pubmed/19699836
- http://www.ncbi.nlm.nih.gov/pubmed/20925595

PROSTATE CANCER

Laboratory and animal studies indicate that omega-3s may inhibit the growth of prostate cancer. Similarly, studies suggest that a low-fat diet with the addition of omega-3s from fish or fish oil help prevent the development of prostate cancer. More research in this area is needed, but a more recent study concludes that omega-3s may enhance the response of prostate cancer to ablation therapy and slow tumor progression.

- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC243830
- http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1890998.
- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2572247
- http://www.ncbi.nlm.nih.gov/pubmed/16123006

PSORIASIS

Several studies have shown that oral supplementation with fish oils benefits psoriasis patients (with one study showing improvement with topical application). In one study, after 8 weeks' treatment, there was a significant lessening of itching, erythema, and scaling in the active treatment group, with a trend towards an overall decrease in body surface area

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affected. No change occurred in the placebo group. The general health-promoting features of fish oil could provide an ideal adjunctive therapy for psoriasis.

- http://linkinghub.elsevier.com/retrieve/pii/S0190962298701148
- http://www.ncbi.nlm.nih.gov/pubmed/2893189
- http://www.ncbi.nlm.nih.gov/pubmed/2667615

RAYNAUD'S DISEASE

Omega-3 fatty acids are known to have beneficial effects on aspects of coagulation and circulation. These beneficial effects could be therapeutically useful to someone with Raynaud's disease. A study found that consumption of omega-3s provided substantial increases in the time interval before the onset of Raynaud's episodes and improved tolerance to cold. These results suggest that supplementation with omega-3 fatty acids from fish oils can be an important part of therapy programs for Raynaud's.

- http://content.nhiondemand.com/psv/view-abs.asp?fnid=109174&absid=102952

SCHIZOPHRENIA

Preliminary clinical evidence suggests that people with schizophrenia may experience an improvement in symptoms when given omega-3s. One benefit of omega-3s is helping the brain to repair damage by promoting neuronal growth and protects against the loss of cerebral tissue.
While the clinical studies are somewhat inconclusive, in that some participants saw improvements and others didn't, a very new study examined the effects of fish oil in protecting against schizophrenia and it had a significantly positive impact.

The researchers treated half of the participants (81 at-risk youths w/ family history, all of

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whom had shown early signs of schizophrenia) with fish oil for 3 months, while the other half took a placebo that appeared to be fish oil. A year after prescribing fish oil or placebo, the researchers found that "...3% of those who had taken fish oil supplements had developed schizophrenia. This compared with 28% of those who had swallowed the placebo."

- http://www.ncbi.nlm.nih.gov/pubmed/12837515
- http://www.ncbi.nlm.nih.gov/pubmed/14638594
- http://www.ncbi.nlm.nih.gov/pubmed/12513945
- http://www.ncbi.nlm.nih.gov/pubmed/18180425
- http://www.ncbi.nlm.nih.gov/pubmed/16777669

STROKE

Several studies have shown that regular fish consumption helps protect against stroke caused by plaque buildup and blood clots in the arteries that lead to the brain. In fact, eating at least 2 servings of fish per week can reduce the risk of stroke by as much as 50%. Omega-3s promote blood coagulation and inhibit thrombosis (blood clots) and may thus decrease the risk of ischemic stroke (stroke caused by a blood clot).

- http://www.ncbi.nlm.nih.gov/pubmed/11176840
- http://www.ncbi.nlm.nih.gov/pubmed/12495393
- http://www.ncbi.nlm.nih.gov/pubmed/15668367
- http://www.ncbi.nlm.nih.gov/pubmed/12624561

SUBSTANCE ABUSE

A new study has found that omega-3 fatty acids found in fish oil decrease feelings of anxiety in substance abusers, adding to the mounting evidence that fish-oil-derived fatty

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acids can improve well-being. Because there is a strong association between anxiety disorders and substance use disorders and because substance abusers have poor dietary

habits, researchers investigated the theory that omega-3 supplements would decrease anxiety in a group of substance abusers.
Another study showed that low levels of DHA could possibly predict relapse among cocaine and alcohol dependent subjects over the course of two years.

- http://www.ncbi.nlm.nih.gov/pubmed/19219668
- http://www.ncbi.nlm.nih.gov/pubmed/14500111

SUNBURN/BURN

Omega-3s have been used to reduce respiratory distress, inflammation and promote wound healing in burn victims. Animal research indicates that omega-3 fatty acids help

promote a healthy balance of proteins in the body — protein balance is important for recovery after sustaining a burn. Further research is necessary to determine whether omega-3s benefit people in the same way.

Some researchers also believe that protection against harmful UV rays (the major cause of skin disorders such as sunburn, photodamage, and nonmelanoma skin cancer) can be obtained from dietary means, in addition of course to sunscreen. Two studies conclude that omega-3s provide dietary protection by reducing sensitivity to UV rays and contributing to maintenance resistance as part of lifelong protection.

- http://www.ncbi.nlm.nih.gov/pubmed/15189118
- http://www.ncbi.nlm.nih.gov/pubmed/17914160

ULCERATIVE COLITIS

Some studies have found that omega-3 fatty acids, found in fish oil capsules, may reduce inflammation in people with ulcerative colitis and enable patients to decrease their dose of steroid medication commonly used to treat the condition. Enteric-coated omega-3 fish oil capsules are probably best for those treating ulcerative colitis, as the coating ensures that the capsule will not be digested until reaching the small intestine (and thus, not causing any gastric upset).

- http://www.medpagetoday.com/tbindex.cfm?tbid=847
- http://www.ncbi.nlm.nih.gov/pubmed/2109004
- http://www.ncbi.nlm.nih.gov/pubmed/1553930

VIOLENT BEHAVIOR/AGGRESSION/ROAD RAGE

There is intriguing evidence that road rage and other acts of impulsive violence, as well as simple hostility, could be fueled in part by a lack of omega-3s, especially DHA. Clinical intervention trials and animal studies indicate that increasing dietary intakes of omega-3s and reducing linoleic acid intake may reduce aggressive and violent behaviors. Lower DHA

levels have also been associated with higher release of a hormone that increases fear and anxiety, which are components of defensive and violent behavior.

In a double-blind, placebo-controlled trial on young adult male prisoners, dietary supplementation with vitamins and minerals, as well as fish oil (80 mg per day EPA and 44 mg per day DHA) and evening primrose oil, resulted in 26% fewer disciplinary offenses in the supplemented group compared to placebo and 35% fewer disciplinary offenses in the supplemented group compared to the baseline frequency.

- http://www.ncbi.nlm.nih.gov/pubmed/12091259

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- http://nidb.nih.gov/search/searchreport.taf?projectbib=Y&ipid=34727&rpid=
- http://www.ncbi.nlm.nih.gov/pubmed/16777665
- http://www.ncbi.nlm.nih.gov/pubmed/12957349
- http://www.ncbi.nlm.nih.gov/pubmed/14679363
- http://www.ncbi.nlm.nih.gov/pubmed/15576068

WEIGHT LOSS/CONTROL

Studies at the University of South Australia have found that taking omega-3 fish oil combined with moderate aerobic exercise boosts weight loss. Omega-3s also reduce insulin resistance.

Over a period of 12 weeks, researchers gave omega-3s to a group of obese adults daily, along with supervised moderate aerobic exercise 3x a week. The researchers compared the results of this group with other groups that were not given omega-3s. The group that had the omega-3 fish oil lost significantly more weight, particularly around the abdominal region, than the people who'd not taken omega-3s. They concluded that omega-3s activate the enzymes responsible for burning fat, and combined with exercise and increased oxygen intake, they increase the metabolic rate, burning more fat.

In another study, study participants given omega-3s burned about 26% more calories a day than those not given fish oil.

- http://www.ajcn.org/cgi/content/abstract/85/5/1267
- http://www.ncbi.nlm.nih.gov/pubmed/19037880
- http://www.ncbi.nlm.nih.gov/pubmed/10539741
- http://www.ncbi.nlm.nih.gov/pubmed/19037880
- http://www.ncbi.nlm.nih.gov/pubmed/20029635
- http://www.ncbi.nlm.nih.gov/pubmed/9129504
- http://www.ajcn.org/cgi/content/full/85/5/1267

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- http://www.ncbi.nlm.nih.gov/pubmed/10539741
- http://ajpregu.physiology.org/cgi/content/abstract/288/6/R1682
- http://www.ncbi.nlm.nih.gov/pubmed/19079834

WRINKLES/SKIN HEALTH

(see also* SUNBURN/BURN*)

UV rays from the sun are one of the main culprits in producing wrinkles. In a recent study, researchers applied EPA, one of the omega-3 fatty acids in fish oil, to human skin cells. They then applied UV radiation to the skin cells to simulate the effects of sun exposure, which results in wrinkles and sagging of the skin. They concluded from the study that fish oil is "a potential agent for the prevention and treatment of skin aging."

- http://www.jlr.org/cgi/content/abstract/M500105-JLR200v1
- http://www.ncbi.nlm.nih.gov/pubmed/12133200

IMPORTANT, PLEASE READ!

The information provided here is for informational purposes only and is not intended as a substitute for advice from your physician or other health care professional. You should not use this information for diagnosis or treatment of any health problem. You should consult with a health care professional before starting any diet, exercise or supplementation program, before taking any medication or if you suspect you might have a health problem. And of course, you should never stop taking any medication without first consulting your physician!