Omega-3s in Fish May Help Slow Biological Aging

The omega-3 fats in fish oil, touted for their heart-health benefits, may have a bonus for heart patients: slowing biological aging at the cellular level. In a study of patients with stable coronary artery disease, those with the highest blood levels of omega-3s also showed the least shortening of telomeres, a sign of biological rather than chronological aging. Patients with the lowest omega-3 levels, on the other hand, had the fastest rate of telomere shortening.

Several studies have shown increased survival rates among individuals with established cardiovascular disease who consume more omega-3 fatty acids from fish. But the mechanisms underlying this protective effect are not well understood.

Telomeres are a structure at the end of a chromosome involved in the replication and stability of the chromosome. Genetic factors and environmental stresses can shorten the length of a telomere, so telomere length is becoming an emerging marker of biological age.

Ramin Farzaneh-Far, MD, of the University of California-San Francisco, and

7 Keys to Ideal Heart Health

The American Heart Association has identified seven health and lifestyle factors key to what one expert called “the fountain of youth for your heart.” Citing the importance of prevention for the long term, the AHA for the first time is making better heart health a goal in itself. By 2020, it aims to improve the cardiovascular health of all Americans by 20% while reducing deaths from cardiovascular diseases and stroke by 20%.

In a scientific statement published in the AHA journal Circulation, Donald M. Lloyd-Jones, MD, ScM, of Northwestern University and colleagues outlined seven measures of “ideal heart health” for adults. The association has dubbed these “Life’s Simple 7”:

- Never smoked or quit more than one year ago.
- Body mass index (BMI) less than 25.
- Physical activity of at least 150 minutes (moderate intensity) or 75 minutes (vigorous intensity) each week.
- Four to five of the key components of a healthy diet. (See next page.)
- Total cholesterol of less than 200 mg/dL.
- Blood pressure below 120/80 mmHg.
- Fasting blood glucose less than 100 mg/dL.

Only about 5% of Americans now meet all seven criteria. But the payoff for meeting those goals is huge, according to Clyde W. Yancy, MD, American Heart Association president: If you can reach age 50 with ideal heart health, you can probably live another 40 years free of heart disease and stroke—two of the most common killers.

“Ideal” health can be difficult to achieve, Dr. Lloyd-Jones noted, in part because genetics can play an important role in several of these factors. But he added that everyone should strive to reach an optimal level of heart health. The first step is to know your heart health numbers—cholesterol, blood pressure, glucose—and what they mean. The next step is to try to reach as close to “ideal” as you can.

An important element of the new AHA goals is that there is room for everyone to improve,” commented Alice H. Lichtenstein, DSc, director of Tufts’ HNRCA Cardiovascular Nutrition Laboratory, “whether it is going from out-of-target to close-to-target, or close-to-target to ideal. It is also helpful that in terms of food, secular trends are making it easier for everyone to reach the goals—for example, New York City’s initiative to lower the salt content of restaurant meals.” (See NewsBites, March 2010.)

To help people improve their heart health, the AHA also unveiled a new online resource, My Life

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Heart Health

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Check <www.heart.org/MyLifeCheck>. A short, confidential assessment tells where you rate on each goal, while offering tools and specific action steps to improve and track your progress.

The American Heart Association’s new definition of a heart-healthy diet identifies five measurable eating behaviors. Included, for the first time, are population-wide recommendations to cut sodium consumption to less than 1,500 milligrams per day and to limit the consumption of sugar-sweetened beverages. The new goals are based on a 2,000-calorie per day diet:

- **Fruit and vegetables**—4.5 cups or more per day. Diets high in fruits and vegetables are associated with a lower risk of cardiovascular diseases as well as risk factors such as obesity and high blood pressure.
- **Fish**—2 or more 3.5-ounce servings a week (preferably oily fish such as salmon and mackerel, high in omega-3 fatty acids). Eating fish is associated with lower risk of sudden cardiac death. Diets high in omega-3 fatty acids may also help reduce triglycerides in some people.
- **Sugar-sweetened beverages**—less than or equal to 450 calories (36 ounces) per week. Diets high in sugar tend to be high in empty calories and displace foods that contain essential nutrients. High-sugar diets, especially those high in sugar-containing beverages, are associated with obesity, and new research suggests a link with high blood pressure.
- **Fiber-rich whole grains**—3 or more 1-ounce servings a day. Whole grains are high in fiber, which helps lower cholesterol, and contain essential nutrients, such as vitamins and minerals. Diets high in whole grains have been associated with a lower risk of cardiovascular disease and are helpful for attaining and maintaining a healthy weight.
- **Sodium**—less than 1,500 milligrams per day. CDC data indicate that the lower sodium recommendation is applicable to nearly 70% of US adults.

Omega-3s

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In a study of 608 patients recruited for the Heart and Soul Study, the scientists measured telomeres in blood cells called leukocytes, both at the beginning of the study and after five years of follow-up. “By measuring telomere length at two different times,” Dr. Farzaneh-Far explained, “we were able to see the speed at which the telomeres are shortening, and that gives us some indication of how rapidly the biological aging process is taking place in these patients.”

Telomere changes were compared to blood levels of the two most important omega-3s found in fish, DHA and EPA, taken at the study’s start. Over five years, patients in the lowest one-quarter of DHA plus EPA saw more than two and a half times the telomere shortening of those with the most omega-3s. “This suggests that these patients were aging faster than those with higher fish-oil levels,” Dr. Farzaneh-Far noted.

As omega-3 levels went up, on the other hand, the odds of telomere shortening went down. The relationship remained the same even after adjusting for factors such as demographics, cholesterol levels and blood pressure.

The study wasn’t designed to prove cause and effect, so it’s possible that heart patients who eat more fish simply have other healthy habits that are responsible for combating biological aging. The researchers speculated, however, that omega-3s may protect against oxidative stress or may increase the activity of an enzyme crucial to telomere duplication.

They concluded, “These findings raise the possibility that omega-3 fatty acids may protect against cellular aging in patients with coronary heart disease.”

While it’s not clear whether these findings extend to the general population, Dr. Farzaneh-Far added that the results underscore the recommendations of the American Heart Association that patients with known coronary heart disease consume about a gram of DHA plus EPA daily. Fatty fish is the preferred source—a 3-ounce serving of cooked salmon contains about 1.5 grams of DHA plus EPA—but the association advises that fish oil in capsule form could be considered as a source of DHA and EPA in consultation with your physician.
