OMEGA-3 INTAKE— ITS IMPACT ON HEALTH AND MUSCLE

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Omega-3 fatty acids have been shown to aid in eye, heart, brain, and joint health, but research is also indicating its impact on muscle (1,3,8,10).

WHAT ARE OMEGA-3 FATTY ACIDS?

Omega-3 fatty acids, a form of polyunsaturated fat, are essential for healthy diets. Omega-3s are vital for health and impact many functions within the body, such as building cell membranes and decreasing inflammation (7,12). While inflammation is a standard part of the body's immune response, studies show that it can prompt a multitude of severe conditions, including arthritis, cardiovascular diseases, various type of cancers, and autoimmune diseases (7,12,18). The other form of polyunsaturated fat are known as omega-6 fatty acids. Omega-6s have positive roles in the body; however, omega-6s tend to promote inflammation (7). The ratio of omega-6:omega-3 should be around 2:1 but most Americans consume 10 – 25:1 due to the abundance of refined vegetable oils (e.g., corn, safflower, sunflower, and soy) (4,14,22).

FISH-BASED OMEGA-3S VERSUS OTHER OMEGA-3 SOURCES

There are three essential types of omega-3 fatty acids that come from foods. These are alpha-linolenic acids (ALAs), eicosapentaenoic acids (EPAs), and docosahexaenoic acids (DHAs). Once ALAs are consumed, the body converts them into EPAs and DHAs, the two kinds of omega-3s that can be utilized easily and used by the body. However, only about 5 – 10% of ALA can be converted into these functional forms (6). Good sources of ALAs include flax oil, flaxseeds, chia seeds, nut oil, soybeans, kale, spinach, and grass-fed dairy and meats. The most abundant sources of EPAs and DHAs are typically fish and fish oil supplements.

BALANCING OMEGA-6S AND OMEGA-3S

Since most people consume more omega-6s than omega-3s, one approach to restoring the equilibrium of omega fatty acid levels is to decrease the intake of omega-6s and increase the intake of good sources of omega-3 fats. Here are some suggestions to accomplish this:

1. Replace oils like soy, corn, and safflower with flax oil, olive oil, or canola oil
2. Eat meats and eggs that are from grass-fed sources
3. Add chia and flax seeds to shakes, smoothies, baked goods, and salads
4. Eat wild caught fish over farmed fish

HOW DO EPA AND DHA AFFECT ATHLETIC PERFORMANCE?

There are several ways in which EPA and DHA can affect athletic performance, including muscle growth, muscle soreness and inflammation, and decelerating muscle loss.

MUSCLE GROWTH

Besides the importance of exercise and nutrition, fish oils may play an important role in muscle growth. Research has indicated that

omega-3s, in conjunction with an anabolic stimulus, can enhance insulin sensitive aspects of protein metabolism (9,11,15). This may lead to an increase in protein synthesis and muscle size.

REDUCE MUSCLE SORENESS AND INFLAMMATION

Omega-3s have also been shown to increase blood flow to muscles throughout exercise, diminish muscle soreness, lower inflammation, and enhance range of motion after training (10,16,19). Increased levels of inflammation negatively impact insulin sensitivity and metabolic benefits. If inflammation lingers too long, it can harmfully impact tissue repair and recovery (2,19,21).

DECELERATE MUSCLE LOSS

During extended periods of rest, omega-3s may decrease the rate of muscle and bone loss. This is very important for individuals who have major injuries that require long-term recoveries (5,16).

PROPOSED DAILY INTAKE OF OMEGA-3S

- The United States Food and Drug Administration recommends an intake up to 3 g of omega-3s per day as safe (17).
- The American Heart Association suggests eating fish that are high in omega-3s twice a week (12). Additionally, they recommend consuming about 0.5 g per day for people without coronary heart disease, 1 g per day for people who have coronary heart disease, and 2.4 g per day for those who need to improve blood lipid levels (e.g., triglycerides, cholesterol, high-density lipoprotein, and low-density lipoprotein) (12).
- It is recommended to avoid dosages over 3 g a day due to possible thinning of the blood. It is best to seek out a qualified medical professional's advice if considering taking more than the recommended dosage.
- For anyone using cholesterol lowering medicine, nonsteroidal anti-inflammatory drugs (NSAIDs), blood sugar lowering medications, or blood thinning medications, medical advice should be sought out prior to supplementation.

CONCLUSION

Omega-3 fatty acids are essential for a healthy nutritional regimen. The balance between omega-3s and omega-6s are critical for optimal health. Most individuals consume too much omega-6s and too little omega-3s. Omega-3 fatty acids not only have positive impacts on the eyes, heart, brain, and joints, but also on muscle tissue. Omega-3 is a very important nutrient that can help an individual achieve optimal health and performance.

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ABOUT THE AUTHOR

Dawn Weatherwax is a Registered Dietitian with a specialty in Sports Nutrition and is the Founder of Sports Nutrition 2Go. She is also a Board Certified Specialist in Sports Dietetics, which is the premier professional sports nutrition credential in the United States. In addition, she is an athletic trainer and a Certified Strength and Conditioning Specialist® (CSCS®) from the National Strength and Conditioning Association (NSCA). Therefore, she brings a comprehensive and unique understanding of an athlete's body and its nutritional needs to those interested in achieving specific performance goals and optimal health. She is also the author of "The Official Snack Guide for Beleaguered Sports Parents" and "Complete Idiot's Guide to Sports Nutrition," as well as a contributing author for "Unique Considerations for the Female Athlete."

TABLE 1. POTENTIAL SIGNS OF OMEGA-3 DEFICIENCY

SIGNS OF OMEGA-3 DEFICIENCY
Bumps on the back of arms
Cracking and peeling fingertips
Dry eyes, mouth, and skin
Excessive thirst
Flaky scalp
Slow-growing or dull fingernails
Stiff or painful joints
Yearn for fatty foods

TABLE 2. TOP 5 SUGGESTED OMEGA-3 FATTY ACID FOODS

FOOD SOURCE	AMOUNT OF OMEGA-3S (IN MG PER 3-OZ SERVING)
Sardines	1,950
Salmon (wild)	1,060
Tuna, albacore (canned)	900
Mussel	700
Rainbow trout	630