Omega-3 Supplementation in the Prevention and Treatment of Muscle Loss

By American Journal of Clinical Nutrition

Omega-3 is an essential fatty acid that is deficient in the diets of many Americans. In the late 1970s, scientists learned that the native Inuits in Greenland, who consumed a diet very high in omega-3 fatty acids, had surprisingly low rates of heart attacks. Since that time, more than 4,500 studies have been conducted in an attempt to understand the beneficial roles that the omega-3 fatty acids play in human metabolism and health. Docosahexaenoic acid (DHA) is the longest and most unsaturated of the omega-3 fatty acids. DHA is one of the most abundant fatty acids in the brain. In the fetus and young infant, DHA is essential for proper growth and development of the brain, nervous system, and for the retina of the eyes. Breast-feeding is extremely important because an infant receives DHA from its mother's milk. Cow's milk and infant formulas do not contain DHA. In Europe, law mandates that infant formulas must contain DHA.

Sarcopenia is the degenerative loss of muscle mass and strength of the body associated with aging. It begins after 40 years of age and accelerates after 75 years of age. Inactivity is one the main risk factors in causing this condition.

The objective of a study published in the American Journal of Clinical Nutrition was to evaluate the effect of omega-3 on the rate of muscle protein synthesis. The scientists recruited 16 healthy older adults who were randomly assigned to receive 4 grams daily of omega-3 or corn oil for eight weeks. The rate of muscle protein synthesis was evaluated at baseline and at the end of the trial. The results were corn oil supplementation had no effect on muscle protein synthesis and omega-3 was found to increase the rate of muscle protein synthesis. The authors concluded “Omega-3 fatty acids stimulate muscle protein synthesis in older adults and may be useful for the prevention and treatment of sarcopenia.”1

1 Smith GI, Atherton P, Reeds DN, et al. Dietary omega-3 fatty acid supplementation increases the rate of muscle protein synthesis in older adults: a randomized controlled trial. Am J Clin Nutr. Feb2011;93(2):402-12.