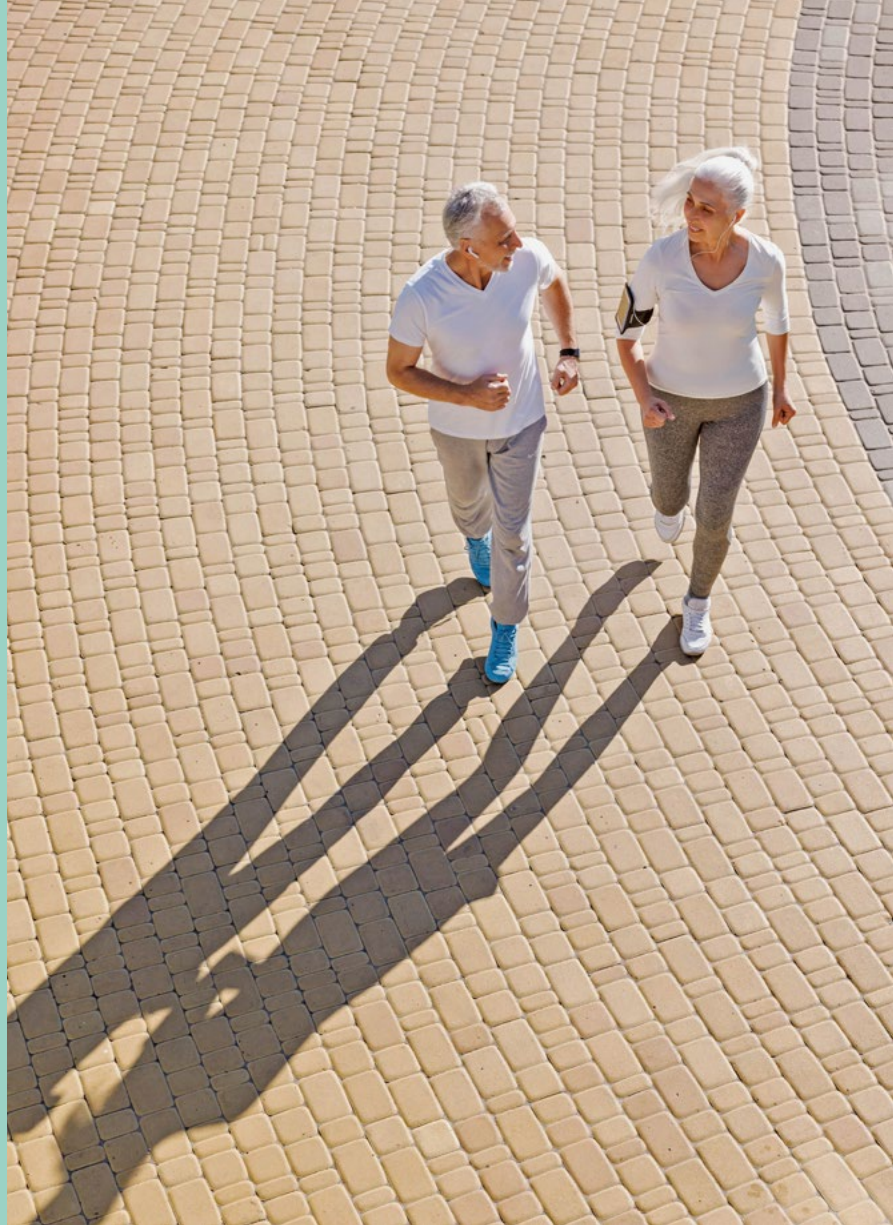
VitaCholine®

Choline: **Essential Roles** in Sports Nutrition

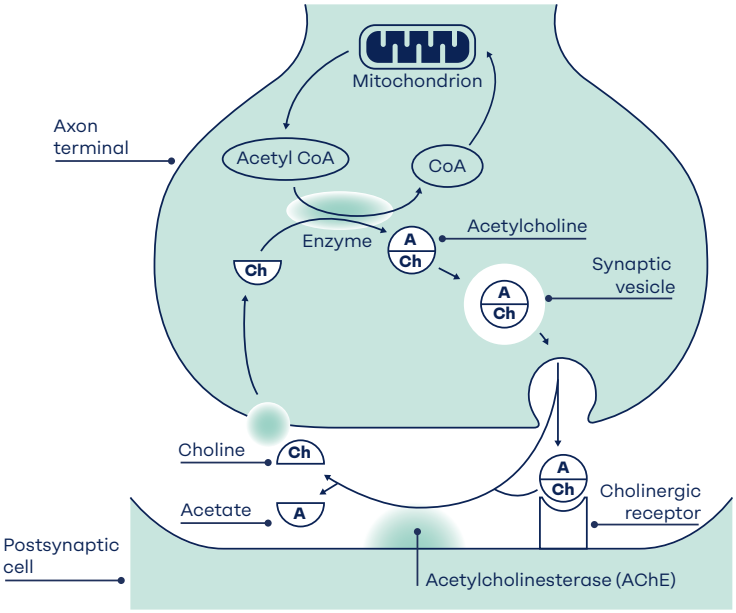


Choline is an essential nutrient for brain health, playing several critical roles. It is crucial for the development of the brain and spinal cord and serves as a key component of cell membranes in the brain, nervous system and throughout the body. It is also essential for the synthesis of acetylcholine, a primary neurotransmitter.

Choline supports muscle control and function. As a component of the neurotransmitter acetylcholine, choline is critical for the connection between your brain and muscles. In a clinical study among young adults, supplemental choline imaproved targeting and accuracy in a motoric aiming task.

Choline optimizes nitric oxide (NO), which dilates blood vessels and delivers nutrients to the muscles to aid physical exertion. Choline helps to both synthesize and preserve nitric oxide as it has a short life span and must be continually replenished.

Choline: Master of the Mind-Body Connection



6%

Just 6% of adult women and 11% of adult men in the US get enough choline from food and beverages



Choline Improves Visuomotor Performance and Accuracy

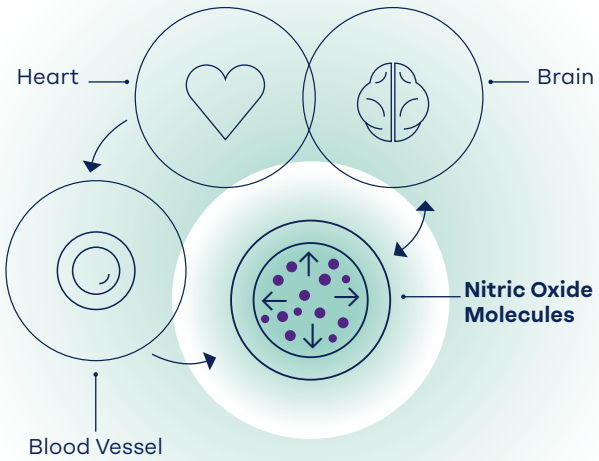


Targeting **9%** closer

2.6 x fewer misses

Source: Naber M, et al., Sci Rep 2015; 5:13188 doi: 10.1038/srep13188
* Significant difference between groups, p<0.05

Choline Aids Blood Flow to the Brain and Muscles



Sydow, Karsten & Hornig, Burkhard & Arakawa, Naoshi & M Bode-Böger, Stefanie & Tsikas, Dimitrios & Munzel, Thomas & H Böger, Rainer. (2004). Endothelial dysfunction in patients with peripheral arterial disease and chronic hyperhomocysteinemia: Potential role of ADMA. Vascular medicine (London, England). 9. 93-101. 10.1191/1358863x04vm538oa.

Choline transforms ordinary into optimized.
Choline supports physical performance by promoting endogenous nitric oxide production and the conversion of homocysteine to methionine. Nitric oxide helps contract the endothelial wall of blood vessels, aiding nutrient delivery to the brain and muscles.

Choline transforms potential into performance.
The champion of the body-mind connection, choline is one of two essential elements of the primary neurotransmitter acetylcholine. Working at the neuromuscular junction, acetylcholine helps the brain power the muscles, supporting our performance and getting us ready for the challenges of the day.

Choline transforms fat into fuel.
It supports homocysteine metabolism and creates energy for our life by removing fat from our liver. Choline is an essential component of the cell membranes, providing key building blocks to keep our cells healthy and strong.

Choline supercharges our health to help us be everything we want it to be.
A component of all cell membranes, choline promotes cognitive and metabolic health. Studies show that choline deficiency can lead to both liver and muscle cell damage, making it essential for life.

Balchem is the only North American producer of human grade choline, with manufacturing sites in USA and Italy. Contact us and learn more: **www.vitacholine.com**

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HUMAN NUTRITION & HEALTH