

Not all muscle building supplements are equal

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Popular muscle building supplements, known as branched-chain amino acids (BCAA) are ineffective when taken in isolation, according to new research from the University of Stirling.

The study, involving the universities of Exeter and Birmingham and published in *Frontiers in Physiology*, show that while BCAA supplements do stimulate the [muscle building](#) response in individuals after they lift weights, other muscle-building supplements are far more effective.

Other supplements that contain all necessary amino acids stimulate a greater muscle growth response, which suggests that taking BCAA supplements alone is not the best way to optimize muscle growth with weight training

The scientists also investigated how effective the supplements were at stimulating the machinery inside the muscle itself that leads to muscle growth.

They found that while BCAA drinks stimulate the body's muscle building systems, they lack some [essential amino acids](#) that are necessary to support a maximal muscle growth response.

Professor Kevin Tipton, Chair in Sport, Health and Exercise Sciences at the University of Stirling, said: "Amino acids are the building blocks of proteins and the special class of amino acids, known as BCAA, stimulate the muscle growth response. These supplements are considered to be an important part of the nutrition plan for many bodybuilders, weightlifters and others seeking muscle growth.

"Our results show that the common practice of taking BCAA supplements in isolation will stimulate [muscle protein synthesis](#) – the metabolic mechanism that leads to muscle growth – but the total response will not be maximal because BCAA supplements do not provide other amino acids

essential for the best response.

"A sufficient amount of the full complement of amino acids is necessary for maximum muscle building, following exercise. Athletes interested in enhancing muscle growth with training should not rely on these BCAA supplements alone."

The BCAA supplement enhanced the [muscle growth](#) response slightly compared to a placebo, however the [muscle's](#) response was more than double when a whey protein supplement containing the equivalent amount of BCAA that included the other [amino acids](#), was taken.

A group of trained weightlifters took part in the study. They took the [supplement](#) in a dose equivalent to 20 grams of whey protein, after a resistance training session in the gym.

The paper, Branched-Chain Amino Acid Ingestion Stimulates Muscle Myofibrillar Protein Synthesis following Resistance Exercise in Humans is published in *Frontiers in Physiology*.

More information: Sarah R. Jackman et al. Branched-Chain Amino Acid Ingestion Stimulates Muscle Myofibrillar Protein Synthesis following Resistance Exercise in Humans, *Frontiers in Physiology* (2017). [DOI: 10.3389/fphys.2017.00390](https://doi.org/10.3389/fphys.2017.00390)

Provided by University of Stirling

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