

Supplemental Information: Building a Body of Evidence

By Jackie Carr | April 29, 2016

Scanning the family room, you observe all of the signs of a fitness freak: Medicine balls, dumbbells, even a 7-foot Olympic-style weight-lifting set. You smile. You're finally seeing your triceps, maybe even a baby abdominal muscle or two, but want more. Poking around bodybuilding websites, it appears that nutritional supplements might be the trick, the next step in building your body-building program.

But are they really?

Suzanne Smith, certified sports dietician at UC San Diego Health, says there is scientific evidence to suggest that some supplements can boost athletic performance. The products, however, should be selected based on proven safety and effectiveness.



"There's a fair amount of research showing that supplements such as creatine can improve performance and muscle strength during high intensity, short interval exercise," said Smith, who guides athletes on appropriate sport supplement use. "But before spending money on supplements, look at your diet. Dial in what you're eating first."

Smith, who is part of a team of sports medicine experts, suggests that a simple balanced diet can be enough to give the needed boost. If you have a fridge full of protein rich foods, fruits and vegetables, you're on the right track.

"That's not to say that supplements don't have a place in training. It depends on what kind of athlete you are. If you're a weekend warrior, using supplements to get a few seconds of benefit may not be worth the cost," said Smith. "There should be a specific reason for why you're taking a supplement, such as improving recovery, speed and strength leading up to a competition. Be

clear on your goals and set targets. Once you meet your target, get off the supplement. As training type and intensity change throughout year, so should your nutrition and use of supplements.”

Common among athletes is the use of pre- or post-workout supplements to aid muscle growth and recovery. The products are easy to acquire in nutrition stores or online. Among the most commonly used supplements are branched-chain amino acids (BCAA), creatine, beta-alanine and citrulline malate.

Branched-chain amino acids are nutrients that can be found in meat, dairy and legumes. They include leucine, isoleucine and valine and are known to improve performance and minimize protein and muscle breakdown during exercise.

“Branched-chain amino acids do have clear benefits for stimulating muscle growth and rebuilding,” said Smith. “But keep in mind that it’s still not clear if a BCAA supplement is more effective than whole proteins since whole proteins like whey contain enough BCAA. If you eat protein rich foods throughout the day, you may not need an additional supplement.”



Creatine is a compound found in food. It can also be made in the liver, pancreas and kidneys. Our bodies store the majority of creatine in muscle where it’s used to produce energy for short, high-intensity exercises, like sprints or weightlifting. Supplementing with creatine may increase stored levels in the muscle and provide more strength and power during workouts or competition. While

creatine can promote muscle growth, some users complain of water weight gain, up to four pounds.

“Creatine really should be used when you plan on short, intense repetitive exercise,” said Smith. “Twenty to 30 percent of users are non-responders to the supplement. If you do try it, take the recommended dosage and pay attention to any added benefit. It’s possible your muscles have enough from food alone.”

Beta-alanine is an amino acid needed for the production of carnosine, a protein-building compound that prevents accumulation of acids in the muscles. Beta-alanine is known to improve physical performance and delay muscle fatigue so that more reps can be squeezed out. Some users report

a prickling or tinging in the skin after use, particularly in the face and ears. It lasts a short period and diminishes.

“Citrulline malate is another promising non-essential amino acid that acts as a fatigue fighter,” said Smith. “It helps remove ammonia from the body so that tiredness doesn’t set in as quickly. Using this supplement, athletes can work longer, increase endurance capacity and recover more quickly with less soreness.”

Smith says that if you are healthy, with no pre-existing renal or liver conditions, research shows no adverse effects from these supplements but always check with your doctor if you have questions or if you are on prescription medication.

Smith also warns users to consider the source of their supplements.

“Supplements are not regulated in the same way food is [by the FDA](#) [↗](#). There have been cases where the product was tainted with contaminants or was just a filler. To be safe, seek out supplements that are tested by a third party,” said Smith.

Third party testing of the product confirms that what’s advertised on the label is what’s actually in the capsule or powder.

Smith suggests looking for seals from organizations that screen supplements for prohibited substances such as NSF.org, [Informed Choice](#) [↗](#) and [ConsumerLab.com](#) [↗](#).

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