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How Whey Protein Can Help Build Toned Muscles

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By Dr. Mercola

Strength training with resistance weights is a good way to maintain fitness and build muscle.

Now, researchers looking at the synergy between nutrition and resistance exercise have found ways to significantly boost the benefits of this kind of training by using strategies such as timing when you eat, what you eat, and how much you eat.

From milk to proteins and amino acids, it turns out that nutritional interventions can make a huge difference in maximizing your resistance training.

Is Nutrition the Answer to Building Stronger Muscles?

Resistance exercise promotes muscle building, but just how much muscle mass you gain is highly variable, and depends on factors including your nutritional choices. Researchers noted in the journal *Nutrition & Metabolism*:¹

"Nutritional interventions designed to maximally stimulate MPS [muscle protein synthesis] may be useful for those individuals concerned with enhancing skeletal muscle protein accretion, particularly when they are combined with a program of chronic resistance exercise."

Exercise is the spark, and nutrition is fuel for your metabolism. You can exercise until you are blue in the face, but until you master what you eat, you will never reach your true fitness potential, and can even cause yourself harm.

Remember that 80% of the results of your exercise program will be related to the foods you eat or don't eat and only 20% due to the exercise itself. This is not to diminish the value or importance of exercise but to merely provide a proper frame.

The featured article provides an update on some of the most current findings to reveal what nutritional strategies, specifically, stand out above the rest to help you build your muscle mass and strength and get the most out of your workouts.

So just what did they find?

Eat This After Exercise to Build Muscle Mass ...

A fast-assimilating protein, such as whey protein. Researchers wrote:

"... in terms of current recommendations it appears that consumption of ~ 20–25g ... of a rapidly absorbed protein may serve to maximally stimulate MPS after resistance exercise in young healthy individuals. Ideal candidates to fulfill such criteria appear to be whey or bovine milk."

I prefer whey to milk for a variety of reasons, one being that research has shown whey protein is superior to other milk proteins for building muscle. It appears as though the amino acids found in high-quality whey protein activate certain cellular mechanisms (mTORC-1), which in turn promote muscle protein synthesis, as well as boost thyroid and also protect against declining testosterone levels after exercise.

Additionally, milk is loaded with lactose or milk sugar. This is a combination of glucose and galactose. Even raw organic grass-fed milk. This can be a problem if you struggle with insulin resistance. It is less of a problem if the milk is fermented, as the bacteria typically will digest most of the lactose.

The researchers stressed that high-quality leucine-rich proteins, such as whey, may be particularly important for the elderly to maximize muscle protein synthesis. Leucine is part of branched-chain amino acid that serves multiple functions in your body, one of which is signaling the mTOR (Mammalian Target of Rapamycin) mechanism to increase protein synthesis and build your muscle.

The review noted that adding free leucine to meals did *not* appear to be an effective strategy to enhance muscle mass or strength over a 12-week period, and you should be aware that taking leucine as a free form amino acid supplement can be counterproductive and wrought with side effects.

For example, intravenous administration of free form leucine has been shown to cause severe hyperglycemic reactions and insulin resistance.

Further, you need VERY HIGH amounts of leucine to reap the optimal effect—FAR more than the recommended daily allowance (RDA)—because most of it gets used up as an energy substrate or building block rather than as an anabolic (muscle-building) agent.

The highest concentrations of leucine are found in dairy products -- particularly quality cheese and whey protein.

Hence, to get the benefits without the side effects, make sure you get your leucine from food only. The typical requirement for leucine to maintain body protein is 1-3 grams daily. However, to optimize its anabolic pathway, you need an estimated 8-16 grams of leucine daily, according to Ori Hofmekler, author of *The Warrior Diet*, and an expert on how to use food to build muscle and improve your health. You only need **three ounces** of high-quality whey to reach the eight-gram requirement, compared to 1.5 pounds of chicken, or about 16 eggs, or half a pound of raw cheddar cheese!

Maximizing Your Window of Muscle-Building Potential

Personally I believe there may be great value in using intermittent fasting when working out. I tend to work out in the AM and do not eat until after I work out. However, after a workout, you need to supply your muscles with the appropriate fuel at the appropriate time to provide them with the proper signals and building blocks to build new muscle tissue.

This is where whey protein, which is often referred to as the gold standard of bioavailable protein, comes into play. Ideally, you'll want to consume the whey about 30 minutes before your workout to help increase both fat burning and muscle building. The whey meal will stop the catabolic process in your muscle and promote protein synthesis towards faster recovery and growth. If you have done a strength-training workout you can repeat the dose about one hour later.

It is generally believed that there is ONLY a two-hour window after exercise that allows your body to fully use the proteins you ingest for optimizing muscle repair and growth. One of the reasons whey protein works so well is that it is a protein that assimilates very quickly, and will get to your muscles within 10-15 minutes of swallowing it, supplying your muscles with the right food at the right time.

However, in the new study, researchers suggested that this is a much larger window and that consuming whey not only immediately following your workout but also for up to 48 hours after resistance exercise may still offer some benefit:

"... since resistance exercise increases MPS for up to ~48 h [hours] consumption of dietary amino acids 24-48 h post-exercise recovery would also likely convey the same synergistic effects on MPS [muscle protein synthesis] as those that are observed when amino acids are provided immediately after resistance exercise. The synergistic enhancement of pre-existing resistance exercise-induced elevations in MPS by protein provision is greatest immediately post-exercise and wanes over time, but may still be present up to 48 h later.

We have recently shown that feeding 15 g of whey protein, a less than optimally effective dose of protein for maximizing MPS, ~24 h after acute resistance exercise results in a greater stimulation of ... protein synthesis than the same dose provided at rest.

... We propose that there is, at least in young individuals, an extended 'window of anabolic opportunity' beyond the immediate post-exercise period that persists for at least 24 h ..."

A recent study published in the journal *Medicine and Science in Sports & Exercise* demonstrated that consuming whey protein (20g protein / serving) 30 minutes *before* resistance training also boosts your body's metabolism for as much as 24 hours after your workout. In practical terms, consuming 20 grams of whey protein before exercise and another serving afterward will most likely yield the double benefit of increasing both fat burning and muscle build-up at the same time.

Omega-3 Fats May Help Build Your Muscles Too

Certain supplements can also have an effect on building muscle mass, particularly omega-3 fatty acids, which are known to stimulate protein anabolism. In one study on older adults, those receiving omega-3 fats had an increased rate of muscle protein synthesis in 8 weeks, compared to those receiving corn oil.² Other research has shown:

- Elderly women who engage in strength training and added omega-3 fat supplements to their diet had greater improvements in muscle strength and functional capacity than those doing strength training alone³
- Omega-3 fats stimulate muscle building in individuals who experience muscle loss due to aging or cancer cachexia; they also have muscle-building properties in healthy young and middle-aged adults⁴

How, exactly, omega-3 fats help build muscle is a bit of a mystery, but researchers noted:

"Although the mechanisms are currently unknown, these results suggest that omega-3 polyunsaturated fatty acids possess anabolic properties via their ability to enhance the sensitivity of skeletal muscle to amino acids and insulin."

Your safest and most cost-effective choice for bumping up your omega-3 fats is taking a high-quality krill oil. Krill oil is superior to fish oil because the omega-3 fatty acids it contains are phospholipid-bound, making them more assimilable. It also contains a very powerful antioxidant called astaxanthin, which is bonded together with the omega-3s in a way that keeps them safe from oxidation (many popular fish oil brands are already oxidized/rancid before you open the bottle). Studies show krill oil is 48 times more potent than fish oil, and harvesting krill is more sustainable and earth-friendly than harvesting fish (not to mention far less polluted because they are far lower on the food chain).

Important Points about High-Quality Whey

There's no shortage of whey products on the market, but unfortunately most of them will NOT give you the health benefits associated with high-quality whey. First of all you want to use a whey protein concentrate, NOT isolate.

All whey protein isolates are devoid of nutritional co-factors including alkalizing minerals, naturally occurring vitamins, and lipids, which are lost in the processing. This renders them deficient and overly acidifying. Unlike whole protein food concentrates, which do not acidify your body due to their alkalizing minerals, whey protein isolates are over acidifying. I would strongly avoid ALL whey protein isolates just as you would avoid trans fats as they contain putrid proteins that some experts believe to be worse than trans fat.

If chronically consumed in large amounts (such as with bodybuilders or athletes) without alkalizing foods, it can acidify your body and over time may lead to metabolic acidosis with consequences that include wasting of muscle and bone tissues, total metabolic shut down, and increased vulnerability to degenerative disease.

So if you want to use whey protein, PLEASE do not use an inferior whey isolate. Look for a high-quality concentrate instead. These are the factors you need to look for in order to ensure you're buying a high-quality product:

Organic (without hormones)	Grass-fed	Made from unpasteurized (raw) milk
Cold processed, since heat destroys whey's fragile molecular structure	Minimally processed Concentrate NO Isolates	Rich, creamy, full flavor
Water-soluble	Sweetened naturally, not artificially	Highly digestible—look for medium chain fatty acids (MCTs), not long chain fatty acids

Some of the best whey protein you can get today is derived from raw milk cheese manufacturing. They have very high-quality controls and produce great-tasting whey, with optimal nutritional content. Raw dairy products, such as raw milk or raw milk cheese, are another alternative.

A Super Effective, Super Fast Form of Strength Training You Might Not Know About

Earlier this year I posted an excellent interview with Dr. Doug McGuff, M.D., an emergency room physician and an expert in high-intensity interval training. While I've been recommending high-intensity anaerobic training (Peak Fitness) using an elliptical

machine or a recumbent bike, Dr. McGuff is a proponent of high-intensity interval training using *weights*. By performing each movement in super-slow-motion, with minimal rest between exercises, you're effectively getting a very high-intensity exercise.

[Download Interview Transcript](#)

Interestingly, while they appear to be very different on the surface, both types of training achieve many of the same results, from working your cardiovascular system to improving strength and endurance, to promoting the production of human growth hormone (HGH). While being more effective than conventional strength training, this type of super-slow weight training is also much safer, as it actively prevents you from accidentally harming your joints or suffering repetitive use injury. This makes it an ideal form of exercise for virtually everyone, regardless of age or fitness level.

Even more astounding, according to Dr. McGuff you only need **12 minutes of Super-Slow type strength training** *once a week* to achieve the same growth hormone production as you would with Peak Fitness!

So truly, if you've struggled finding time for an effective exercise routine, this could be the solution you've been looking for. The key to make it work is intensity. The intensity needs to be high enough that you reach muscle fatigue. If you've selected the appropriate weight for your strength and fitness level, that would be somewhere in the neighborhood of just seven or eight repetitions. After your workout, you will want to use the nutritional strategies above to support your recovery and muscle building.

Of course, strength training offers limitless benefits above and beyond muscle building, including weight loss, improved posture and improvements to back pain, so if you haven't added it to your fitness regimen just yet, what are you waiting for?

[\[+\] Sources and References](#)