

NUTRIENT TIMING

By Jose Antonio, Ph.D.

We know that you gotta eat plenty of protein, healthy fats, and unprocessed carbs if you want to gain muscle. But did you know that when you eat is critical to promoting muscle gains? Yes, the dimension of time is part of the new science known as nutrient timing. Gain muscle. Lose fat. And do it at the right time. If you learn to use the clock, it'll jump start you past that plateau that has been sitting on your shoulder like the proverbial 800 lb gorilla.

When folks ask me what can one do, that's simple, doesn't require major changes in lifestyle, that will also help recovery from exercise and promote muscle growth, I answer, take care of your body immediately after exercise. That is, consume a carbohydrate-protein shake right afterwards. Don't wait 30 minutes; don't wait 2 hours; consume nutrients once you're done. No ifs, ands, or buts.

100 calories is the minimum

Some folks say they can't eat after training. They're not hungry; they're not this; they're not that. Fooy. You gotta eat! And you know what? As little as 100 calories will help. And here's the proof.¹ A recent study took healthy male US Marine recruits from six platoons and they were supplemented immediately post-exercise during the 54-days of basic training. They received either placebo (0 g carbohydrate, 0 g protein, 0 g fat), control (8, 0, 3), or protein supplement (8, 10, 3). You don't have to be a math whiz to see that they're not consuming a lot of calories post-exercise; it's about 100 calories (in the protein group anyhow).

Compared with placebo and control groups, the protein-supplemented group had an average of 33% fewer total medical visits, 28% fewer visits due to bacterial/viral infections, 37% fewer visits due to muscle/joint problems, and 83% fewer visits due to heat exhaustion. Recruits experiencing heat exhaustion had greater body mass, lean, fat, and water losses. Muscle soreness immediately post-exercise was reduced by protein supplementation vs. placebo and control groups on both days 34 and 54.¹ What did these fine young scientists conclude? *“Postexercise protein supplementation may not only enhance muscle protein deposition but it also has significant potential to positively impact health, muscle soreness, and tissue hydration during prolonged intense exercise training, suggesting a potential therapeutic approach for the prevention of health problems in severely stressed exercising populations.”*

Another study compared immediate (P0) or delayed (P2) intake of an oral protein supplement on muscle hypertrophy and strength over a 12-week period of resistance training in elderly males.² Thirteen older men (age 74) lifted weights 3 times per week and received oral protein in liquid form (10 g protein, 7 g carbohydrate, 3 g fat) or immediately after (P0) or 2 h after (P2) each training session. They found that muscle growth was much better in the P0 group versus the P2 group. In fact, the size of the quads was 7% larger in the group that took the supplement immediately after exercise versus no change in the group that waited 2 hours to consume the supplement. The science guys concluded that *“early intake of an oral protein supplement after resistance training is important for the development of hypertrophy in skeletal muscle of elderly men in response to resistance training.”*²

Non-essential amino acids are not needed

Here's an interesting tidbit. Consuming just the essential amino acids (EAA) is enough to promote significant muscle protein synthesis. One study showed that net balance of protein was similar for mixed amino acids (combination of essential and non-essential amino acids) and EAA; and thus, it does not appear necessary to include nonessential amino acids in a formulation designed to elicit an anabolic response from muscle after exercise. From a practical standpoint, this would mean that whole protein foods (e.g. beef) would be inferior (if you did a pound for pound comparison) to consuming the essential amino acids (see Table 1 for list of EAA).³

Table 1

The Essential Amino Acids
Histidine
Isoleucine
Leucine
Lysine
Methionine (and/or cysteine)
Phenylalanine (and/or tyrosine)
Threonine
Tryptophan
Valine

So what's the moral of the story? If it ain't as clear as the Montana sky, then your IQ is somewhere between a orange and a orangutan. You must. I repeat. You must consume something immediately post-workout. Here's why:

1. The Restoration of Electrolytes and Water – you need to maintain a hydrated state to optimize protein synthesis.
2. The Rapid Replenishment of Skeletal Muscle Glycogen Stores – you need to replace muscle fuel.
3. The Provision of Amino Acids to Aid Muscle Protein Synthesis and Accretion – you need to repair muscle fibers!

The formula - Consume a combination that includes high-glycemic carbohydrate and a combination of whey isolate and essential amino acids. And throw in a touch of flax oil for some healthy fat!

Bottom line: As a runner, you want to speed up recovery faster than a Cheetah chasing a gazelle. So consume a post-workout carb-protein shake IMMEDIATELY after training or competing. Capeesh? Capeesh!

Read me please☺

1. Flakoll PJ, Judy T, Flinn K, Carr C, Flinn S. Postexercise protein supplementation improves health and muscle soreness during basic military training in marine recruits. *J Appl Physiol.* Mar 2004;96(3):951-956.
2. Esmarck B, Andersen JL, Olsen S, Richter EA, Mizuno M, Kjaer M. Timing of postexercise protein intake is important for muscle hypertrophy with resistance training in elderly humans. *J Physiol.* Aug 15 2001;535(Pt 1):301-311.
3. Tipton KD, Ferrando AA, Phillips SM, Doyle D, Jr., Wolfe RR. Postexercise net protein synthesis in human muscle from orally administered amino acids. *Am J Physiol.* Apr 1999;276(4 Pt 1):E628-634.