

Protein Requirements for Athletes

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Athletes require greater amounts of first-class protein to gain a competitive edge.

by Michael Colgan, Ph.D. (abstracted from Dr Colgan's forthcoming book, The Anti-Inflammatory Athlete)

Suck the water out of a lean athlete and you are left with mostly protein. More than half the dry weight of your body is protein, over 100,000 different proteins, each precisely constructed from gene expression. The structure of your brain cells, your organs, and your muscles is pure protein. Even the hemoglobin that carries the oxygen in your blood is protein. The creation of a thought, the blink of an eye, the contraction of a muscle, every move you make, is controlled by thousands of different enzymes – and all enzymes are proteins, every one (1).

Body proteins are temporary. Each is being constantly rebuilt. Some enzymes last only minutes. Your skin is replaced every few weeks. Your blood cells are replaced every three months. Most of your muscle cells are replaced every six months. Yet, unlike carbohydrates and fats, your body has no store for protein (2). Body structure is rebuilt day-by-day, mainly from the proteins you eat, and from recycled amino acids from broken down body structures. To grow an optimum body you need to eat the right proteins every day.

If you eat garbage proteins you will grow a garbage body, no matter how hard you train. If you eat garbage proteins you will grow a pro-inflammatory body, no matter how good the rest of your diet. Any day you eat garbage proteins they build into the structure of your body and you have to operate with them for up to the next six months. With garbage proteins, you cannot

construct the champion whose blueprints are residing in your genes.

This is not a book on protein. Nevertheless, because protein is your structure, I will briefly cover requirements for athletes, before I show you how the right protein also helps immensely towards your goal of an anti-inflammatory body. It's a quick, rugged ride through the science, but, bear with me, it's well worth the effort. **How Much Protein?**

The politically mandated US Reference Dietary Intake for protein is 0.8 grams per kg bodyweight. It has not changed since the 1950s, and makes no distinction between athletes and couch potatoes for protein requirements. Contrary to the last 50 years of science, the USDA still claims today that an overweight, sedentary lump, and a lean athlete doing daily workouts, both need only $80 \times 0.8 = 64$ grams of protein per day (3). We treat such tomfoolery with the same disdain that we treat claims by the USDA that they have kept the American food supply safe and pure (4).

In the 1990s, I was the first to work out protein requirements from basic principles of human physiology. I calculated that an average 80 kg (176 lbs) athlete, with 11 percent bodyfat, requires about 105 grams of [first-class protein](#) each day to maintain existing lean mass (1). Athletes are also always working to gain more muscle power. To gain maximum muscle power with the right training, I calculated that my model athlete required a further 42 grams of protein per day. Total intake required is 147 grams of first-class protein per day. That works out to 1.8 grams per kg bodyweight, more than twice the RDI.

To see if I was on track, I compared my calculations with the measurements of protein requirements in exercising athletes, done by protein expert Peter Lemon and colleagues at Kent State University. Using accurate nitrogen balance technology they concluded that daily protein intake should be 1.7 grams per kg

body weight, a mere one-tenth of a gram different from my theoretical assessment (5).

I also compared my assessment with numerous other nitrogen balance, radioactive labeling, and essential amino acid kinetics studies of the protein requirements of both endurance athletes and strength athletes. The first conclusion from a meta-analysis of this research is that athletes given the RDI of protein (0.8 grams per kg bodyweight per day) quickly go into negative nitrogen balance and lose both muscle and power (6-8).

Particularly good at assessing requirements were studies by Mark Tarnopolsky and colleagues at McMaster University. They used increasing levels of protein intake from 1.4 to 2.4 grams per kg bodyweight per day in exercising athletes. The highest level did not show any negative effects, but new protein developed in muscle only up to the level of 1.76 grams (7). So a higher intake than that is probably overload. We concluded from years of this research that athletes should aim for a protein intake of 1.7 to 1.9 grams per kg bodyweight per day.

Recent reviews show that the work we did in the 90s has held firm, and several policy making bodies in different sports now have official protein recommendations of 1.7 grams per kg bodyweight per day, more than twice the RDI. A recent review summarizes the evidence: Of relevance to athletes and those in clinical practice is the fact that higher protein diets have quite consistently been shown to result in greater weight loss, greater fat loss, and preservation of lean mass as compared with lower protein diets (9).

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About Dr. Colgan

Dr. Michael Colgan is a world-renowned research scientist, leading expert in the inhibition of aging, and a member of the Isagenix Science Advisory Board. Dr. Colgan has provided nutrition, training and anti-aging programs to more than 11,000 athletes, including many Olympians. He is director of his eponymous Colgan Institute, a consulting, educational and research facility concerned with the effects of nutrition and exercise on athletic performance, along with prevention of chronic degenerative disease, and prevention of degeneration of the brain.