KARYN SHANKS MD

Heart, Hope, Healing

How to Optimize Protein for Energy and Vitality

BY KARYN SHANKS MD | AUGUST 16, 2019

Introduction: How to Eat a Protein Optimized Diet

I look at the food diaries of clients every day in my office and almost no one consumes enough protein to meet their basic needs in an optimal way.

Protein runs all of the major business of the body: energy, structure, and function. Without enough we are left vulnerable to illness, loss of muscle mass and strength, injury, and loss of vital energy. Optimizing daily protein intake is a crucial aspect of improving health and restoring vital energy.

This is Not a High Protein Diet

Our goal here is not to consume a “high protein” diet. No. Rather it’s to eat a “protein optimized” diet to meet our foundational physiological needs. Consuming less than this leads to energy, structural, and functional deficits.

What is Protein?

Protein is a macronutrient from food that we derive primarily from animal and high protein plant sources. We digest dietary protein into its building blocks, amino acids and small protein fragments. These become the foundation of all structure and function in the body.

Amino acids and small protein fragments from the diet work synergistically with health fats, complex carbohydrates, and the vast array of micronutrients, antioxidants, and phytonutrients we get from food to support us in all aspects of structure and function.

How Protein Supports Us

- Muscle protein synthesis (MPS)—lean body mass, muscle growth, injury healing.
- Neurotransmitter synthesis—better sleep, mood, and cognitive ability.
- Energy production and distribution.
- Detoxification.
- Carbohydrate insulin and glucose metabolism.
- Reduces inflammation.
- All aspects of healing and repair.
- All enzyme systems within the body.

Why is Muscle Protein Synthesis (MPS) Important?

Muscle protein synthesis contributes to our good health and healing in important ways. For optimal MPS we must consume adequate amounts of protein in our diets. With a low protein diet, we lose the power and healing of MPS.

Muscle Strength

It is good to be strong, stable, and balanced in our bodies through muscular mass and strength development. We need functional MPS to drive the development of strong muscle tissue.

Energy Production

In addition, our muscles are the largest repository of mitochondria (where our energy is made) in the body. MPS ramps up the number of mitochondria as well as their function, increasing our biological energy reserve. Stimulating muscle protein synthesis is one of the most powerful things we can do to create energy and recover from chronic fatigue.

Glucose Regulation

Our muscles are the largest consumers of glucose in the body. MPS leads to greater insulin sensitivity and lower blood glucose levels.

Reduced Inflammation

Glucose-insulin regulation is one important way MPS contributes to reducing inflammation throughout the body.

How Much Protein Do We Need?

The amount of daily protein we need depends entirely on each of our unique bodies. Considerations are body size, stage of life, level of activity, state of health, and overall energy requirements.

We can make some key generalizations about individual protein requirements based on scientific literature.

Minimum Daily Protein Requirements

Average Adult

For a generally well, sedentary adult, the daily protein requirement is 1.2 grams per kilogram body weight, or 0.5 grams per pound body weight. This requirement becomes **especially important as we age,** with adults over 65 years old needing this minimum standard to stay

healthy.

If you are this person and weight 150 pounds, you need a minimum of 75 grams protein each day to stimulate MPS and support the essential protein needs of your body.

Highly Active or Ill Adult

If you struggle with chronic illness or are highly active, daily protein requirements increase to 1.2-1.5 grams per kilogram body weight, or 0.7 grams per pound body weight.

Elite athletes and body builders need even more–up to 1.0 grams protein per pound body weight.

A 150 pound person in these categories will need close to their body weight (or more) in protein every day as a minimum standard to stimulate MPS and meet basic energy, structural, and functional needs of the body.

Branched Chain Amino Acids

The other interesting scientific evidence that we must factor into how we think about our protein needs is that a *minimum of 30 grams* of high-quality protein is required at *a single meal* to stimulate muscle protein synthesis (MPS). This is because we require the presence of the branched-chain amino acid, leucine, to stimulate MPS. It takes at least 30 grams of protein to reach the 2.5-2.8 gram threshold for the **amount of leucine we need to stimulate MPS** through genetic signaling.

How Much Protein is In Our High Protein Foods?

I have a general rule of thumb regarding the protein content of meat and poultry: a serving approximately the size of a deck of cards equals 25 grams.

Protein Content of Common Animal Foods

- Chicken, turkey, beef, bison: 1 ounce=7 grams protein
- Fish: 1 ounce=5-7 grams protein
- Eggs: 1 egg=6 grams protein

What are High Leucine Foods?

- Chicken breast 6 oz=2.9 gm
- Beef 6 0z=2.8 gm
- Salmon 6 oz=2.7 gm

- Egg (one)=0.54 gm (need 5 eggs)
- Ground almond meal 1 cup=1.41 gm
- Almond butter 1 cup=3.71 gm
- Cashews 1 cup= 1.76 gm
- Chia seed 1 oz=0.39 gm

We Must Also Move to Optimize Muscle Protein Synthesis (MPS)

I think we're all aware by now that we have to move to stay healthy. In addition to eating enough protein, movement and applying force to muscles is a key to MPS, as well as muscle repair and energy production.

A Note to Vegans

Because the highest concentration of protein comes from animal products, vegans will need to be especially savvy in their food choices to meet their daily and per meal protein requirements for MPS.

Meeting this threshold level may require the use of protein supplements. These are listed below. Pea or hemp protein are good options, augmented with a branched-chain amino acid supplement for an adequate supply of leucine.

Caution About Extensive Legume Consumption

It is challenging to get the 0.5-1.0 gram per pound body weight needed to meet daily protein needs by consuming plants alone and many vegans place a strong emphasis on the consumption of large quantities of legume-derived products such as soy, beans, and dals.

Extensive legume consumption can be especially problematic for those suffering from inflammatory autoimmune problems for whom a **gut-immune healing intensive nutrition food plan** that excludes legumes would be advisable.

Lectins

Legumes, beans, and dals contain high numbers of lectins (immunogenic defense molecules) on their surfaces that can cause intestinal lining damage. The changes in intestinal permeability that are caused by this damage participates in the physiological genesis of inflammatory-autoimmune disorders.

How to Jumpstart Your Protein Plan

Weigh Yourself First

Start by measuring your body weight in pounds. I like to use an estimate of *ideal* body weight (for both over and under-weight individuals) for calculating protein needs.

Assess Your Activity or Chronic Illness Level

Decide where you are on the 0.5-0.9 grams protein per pound body weight scale based on how active you are and whether your body is stressed by an acute or chronic illness. Error on the high side.

If you are an athlete trying to build muscle, go as high as 0.9 grams protein per pound body weight and use your ideal or goal body weight.

If you are very ill, your protein needs will be higher than 0.7 grams per pound of body weight and possibly as high as 0.9 grams per pound body weight. Work with a professional Functional Medicine practitioner to determine what they are.

Calculate Your Total and Per Meal Protein Requirement

Multiply your ideal weight in pounds by your daily protein requirement (grams per pound body weight) to figure out how much protein you need in a day.

Then divide your total daily protein requirement amongst the number of meals and snacks you eat per day.

Make sure that any given meal contains a minimum of 30 grams of protein in order to reach the leucine threshold to stimulate MPS.

Track

It helps to keep track of your protein intake for a few weeks until you get familiar with the routine that you need to fulfill your needs. Keep a food log and consider the use of a nutrient tracker (such as **My Fitness Pal**).

Kidney Disease

If you have kidney disease check in with your trusted health provider first. Those with severe forms of kidney disease, not on dialysis, may need a reduced protein intake.

Protein Supplements

High quality protein supplements are a great way to fill in the gaps of your food protein intake and are convenient for travel and those busy days. See a list of options below.

Can You Get Too Much Protein?

It is possible to consume too much protein, though I mostly encounter the opposite problem—of not eating enough protein.

Those at risk for excess protein intake include folks supplementing with protein excessively, protein enthusiasts, or those with metabolic disorders (such as kidney disease).

Excess Calories

Consuming protein in excess of one's needs only becomes a problem when it is a persistent habit. Since protein has calories (4 calories per gram), eating too much means excessive calories.

Detoxification Challenge

It also poses a detoxification challenge. The body needs to clear the toxic ammonia compounds that are a product of protein metabolism. Eating in excess adds to the total toxic load delivered to the liver and kidneys. The problems may be subtle or more impactful for those with impairments in detoxification capacity.

Protein Gram Chart

The following chart provides a sampling of the protein contents of common foods in the **FINE** and **GRIN** food plans. Protein grams are rounded to the nearest whole number. Note that exact protein content will vary slightly from one serving to the next.

***Remember My Rule of Thumb*?** Four ounces of meat and poultry is approximately the size of a deck of cards and is about 25 grams.

Protein Source	Quantity	Grams
Almonds, raw	¼ cup	8
Almond meal/flour	¼ cup	6
Almond milk, unsweet.	1 cup	1
Apple	1 small	.25

Avocado, edible portion	1 cup	3
Beef, lean	3 ounces	22
Blueberries	1 cup	1
Black beans	1 cup	2
Blackberries	1 cup	1
Broccoli, raw	1 cup	3
Brussels sprouts, cooked	1 cup	4
Cabbage, red, raw	1 cup	1
Calves liver	4 ounces	25
Carrots, raw	1 cup	1
Cashews, raw	¼ cup	6
Cauliflower, raw	1 cup	2
Celery, raw	1 cup	1
Cheese, mozzarella	1 ounce	7
Chia seed	1 Tbsn	3
Chicken breast, roasted	½ breast	26
Chicken liver	1 liver	5
Chicken thigh, roasted	1 thigh	14
Cod, cooked	3 ounces	20
Collard greens, cooked	1 cup	4
Coconut flour	2 Tbsn	2
Coconut oil	1 Tbsn	0
Cod	4 ounces	26
Cucumber	1 cup	1
Dates	1 cup	4
Egg, pouched	1 medium	6
Flax seed, ground	2 Tbsn	3
Garbonzo beans, cooked	1 cup	15
Hemp seed, whole	3 Tbsn	11
Hemp milk	1 cup	2
Herring, pickled	3 ounces	12

Kale, raw	1 cup	2
Lamb loin, broiled	3 ounces	25
Macadamia nuts, raw	¼ cup	3
Onion, raw	1 cup	2
Pear	1 small	1
Pecans, raw, halves	¼ cup	2
Pinto beans	1 cup	14
Potato, boiled	1 cup	3
Pumpkin seeds, raw	1 ounce	9
Pea Protein	¼ cup	24
Raspberries	1 cup	2
Salmon	4 ounces	29
Scallops	4 ounces	23
Shrimp, boiled	4 ounces	24
Soybeans	1 cup	27
Spinach, cooked	1 cup	5
Strawberries	1 cup	1
Sunflower seeds, raw	¼ cup	6
Sweet potato	1 small	2
Tahini	1 Tbsn	3
Tuna	4 ounces	34
Walnuts, raw	¼ cup	4

Healthy Protein Supplement Options

Hydrolyzed Collagen (=Collagen Hydrosylate)

This is protein derived from the bones and connective tissue of pasture-raised cows. It is tasteless, odorless, and dissolves well into liquid of any temperature. It is high in glycine, an amino acid important for gut and joint health.

One tablespoon contains 6 grams of protein. I like the collagen hydrosylate made by Great Lakes Collagen. It is suitable for both FINE and GRIN.

Pea Protein

This protein is derived from split peas. It has a high protein content, 24 grams in 2 scoops. It has a complete amino acid profile. It is not recommended for those on a strict **GRIN** or autoimmune food plan but is suitable for **FINE** and paleo-style diets.

Ground Hemp Seed

Hemp seeds are rich in health omega-3 fats and particularly high in protein for a seed. Three tablespoons contain 11 grams of protein. Hemp seeds are suitable for both FINE and GRIN food plans.

Ground hemp seed can be added to smoothies as a ground powder. The seeds can also be soaked overnight, then blended into a seed "milk" which can be used for sauces, smoothies, or drinks.

Hemp "Milk" Recipe

Soak 1 cup hemp seeds overnight in enough filtered water to cover them.

Rinse seeds in colander then transfer to a high-speed blender.

Add 3 cups water, 3 medjool dates (pitted), 1 tsp vanilla, ½ tsp pink Himalayan salt, 2 T avocado oil.

Blend on high speed until smooth. No need to strain. Use immediately. May refrigerate for up to 3 days.

Medical Foods

OptiCleanse GHI Detoxification Support Medical Food

This is a medical food with high protein content made by **Xymogen.** It contains 26 grams per 2 scoops of pea protein, taurine, glycine, rice protein and l-glutamine. This product is designed to nutritionally support detoxification, gut healing, and reducing inflammation. Best for [FINE].

UltraClear Plus pH Detoxification Protein Medical Food

This is a classic medical food made by **Metagenics,** designed to support detoxification. It is made with hydrolyzed rice protein. The process of hydrolysis pre-digests the protein into its basic amino acids. This makes it easy to digest and hypoallergenic. It contains 15 grams of protein per 2 scoops. Suitable for both ***FINE*** and ***GRIN*** plans.

Resources

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My Fitness Pal. Food and nutrition tracker.

Designs for Health. **Pure Pea** protein supplement.

Metagenics. **Ultraclear Plus pH** medical food products.

Xymogen. **Opticleanse GHI** medical food products.

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Karyn Shanks, MD, is a physician who lives and practices in Iowa City. Her work is inspired by the science of Functional Medicine, body-mind principles, and wisdom gleaned from the transformational journeys of thousands of clients over her twenty-five-year career. Her work honors each individual and the power of their stories, their inner wisdom, and innate healing potential. She believes that the bones of healing are in what we do for ourselves. She is the author of Liftoff, a manual of energy recovery and healing through essential self-care practices.

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