

## The Real Science of Protein for Metabolism, Mood & More

*Credit: Shaklee Naturally Blog*



## **Beyond Muscle: The Expanding Science of Protein and Health**

Most people know that protein is essential for muscle building and repair. Traditionally, the emphasis has been that protein supports lean muscle mass and preserves strength. But protein is not just about muscle; it is increasingly recognized as a key nutrient for metabolic regulation, emotional well-being, and healthy aging [1].

Science suggests that the daily protein needs of the average individual may be underestimated, particularly considering their impact on processes such as thermogenesis (the process by which the body generates heat, especially after eating), neurotransmitter synthesis, and hormonal balance.

### **Expanding the Horizon of Protein Research**

Current dietary protein recommendations are based primarily on preventing deficiency rather than optimizing health outcomes across different stages of life and physiological conditions [2]. There is a need for a shift from minimum daily allowances toward evidence-based targets that reflect optimal intake rather than just adequate intake. For example, in older adults, higher protein intake ( $\geq 1.2$  grams per kilogram of body weight per day) is linked with lower rates of sarcopenia (muscle loss) and improved immune function [3]. There is also a need for updated dietary guidelines and more personalized approaches to protein consumption. Tailoring protein intake to age, activity level, and health status may be more effective in supporting long-term wellness.

### **Protein's Role in Metabolism**

One of protein's key benefits is its role in supporting resting metabolic rate (the total number of calories burned when your body is at rest), which accounts for 60–75% of daily energy expenditure [4]. Unlike fats or carbohydrates, protein has a higher thermic effect, meaning it requires more energy to digest, absorb, and process. This effect of food accounts for

approximately 20–30% of protein’s caloric value, compared to just 5–10% for carbohydrates and 0–3% for fats [5].

Preserving lean body mass through protein intake also indirectly boosts metabolism. Muscle tissue is more metabolically active than fat, and individuals with higher lean body mass tend to have a higher resting metabolic rate. A meta-analysis concluded that high-protein diets help in weight loss by preserving muscle mass and enhancing satiety, both of which contribute to sustained metabolic health [6].

### **Protein and Mood Regulation**

The link between diet and mood is well established, and protein plays a critical role in this relationship. Proteins are broken down into amino acids, some of which serve as precursors to neurotransmitters (chemical messengers) [7]. For example, tryptophan is the amino acid precursor to serotonin, a key neurotransmitter in regulating mood and anxiety. Similarly, tyrosine is a precursor to dopamine and norepinephrine, both of which play a role in influencing motivation, attention, and reward pathways.

A randomized trial published in *Nutrients* found that protein intake was positively associated with measures of psychological well-being in middle-aged adults, with higher intake linked to reduced symptoms of depression and anxiety [8]. Furthermore, protein helps stabilize blood glucose levels, reducing the likelihood of mood swings caused by hypoglycemia.

### **Protein’s Impact on Women’s Health and Longevity**

Protein intake is essential for women, yet studies consistently show that many do not consume enough, particularly during midlife and older adulthood. Data show that up to 45% of women over the age of 50 fall short of the recommended protein intake [9]. During perimenopause and menopause, hormonal changes lead to increased muscle protein breakdown, reduced bone density, and metabolic alterations that increase the risk of insulin

resistance. These changes highlight the need for higher-quality protein, yet the Recommended Dietary Allowance (RDA) remains fixed at 0.8 grams per kilogram of body weight per day, an amount many experts now consider insufficient.

Higher protein intake in postmenopausal women has been associated with reduced loss of lean body mass, improved bone mineral density, and better metabolic outcomes. For instance, research found that women consuming  $\geq 1.2$  grams of protein per kilogram of body weight per day maintained significantly more lean body mass over three years compared to those consuming less [10].

## **Quality Matters: Understanding Protein Sources**

The quality of protein is determined by its amino acid composition and digestibility. Complete proteins contain all nine essential amino acids in adequate proportions, whereas incomplete proteins do not. Most animal proteins are complete, while plant proteins often lack one or more essential amino acids.

However, advancements in food science have enabled the creation of multi-source plant protein blends that achieve a high Protein Digestibility Corrected Amino Acid Score (PDCAAS), close to 1.0, indicating excellent protein quality. The PDCAAS evaluates a protein's amino acid profile and digestibility, making it a reliable metric for assessing nutritional value.

## **Optimizing Protein Intake**

Research indicates that evenly distributing protein across meals results in more effective stimulation of muscle protein synthesis (MPS) compared to intake patterns where most protein is consumed at dinner [11].

Eating a protein-rich breakfast can reduce midmorning cravings, improve satiety, and support blood sugar regulation. Additionally, protein consumption

around physical activity (within 30 minutes before or after) enhances muscle repair and growth, especially when combined with resistance training.

Consuming at least 20–30 grams of protein per meal is necessary to optimally stimulate MPS in adults, with the leucine content playing a key role [11].

## **Future Directions in Protein Research**

The next frontier in protein science is personalization. Advances in nutrigenomics and biomarker development are enabling researchers to understand how protein needs differ among individuals based on age, sex, genetics, and health status. Efforts are underway to identify biomarkers that can predict an individual's responsiveness to dietary protein in terms of muscle growth, glucose control, and cognitive outcomes.

## **Protein Is for More than Just Muscles**

Protein is a multifunctional macronutrient that supports metabolism, emotional health, longevity, and more. It is especially vital for muscle protein synthesis, the process by which the body builds and maintains muscle tissue. Consuming protein evenly across meals helps maximize this effect, especially when the amino acid leucine is present, as it plays a key role in triggering muscle growth. Protein-rich diets have been shown to support better blood sugar control and insulin sensitivity, potentially lowering the risk of type 2 diabetes. Higher protein intake is also associated with reduced blood pressure and better cardiovascular health. While the RDA is 0.8 grams per kilogram of body weight per day, this amount may be insufficient for older adults and active individuals, who often benefit from 1.2 to 2.0 grams per kilogram of body weight per day. It's also important to combine incomplete protein sources, those lacking one or more essential amino acids, to ensure the body receives the full spectrum of amino acids it needs. Whether the goal is better energy, improved mood, healthy aging, or simply meeting daily

needs, evaluating and optimizing protein intake is a powerful place to start.

## How to Incorporate More Protein into Your Daily Life

Meeting your daily protein needs does not have to be complicated. With a little planning, it is possible to include high-quality protein sources throughout the day in ways that are both convenient and enjoyable.

Starting your day with a protein-rich breakfast can help support energy levels and reduce midmorning cravings. Consuming protein shortly before or after a workout helps provide the amino acids needed for muscle protein synthesis.

Protein can also play an important role between meals. When hunger strikes in the afternoon, choosing a protein-based option instead of a high-sugar snack can help maintain steady energy levels. By spreading protein intake across meals and snacks, and choosing high-quality sources, you can support metabolism, energy, muscle health, and overall well-being throughout the day.

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