

Protein Timing Guide

When to eat protein for muscle, recovery, and longevity · Calm Veritas

WHY TIMING MATTERS

Muscle protein synthesis peaks acutely after resistance training and protein ingestion, then returns to baseline within 3–5 hours. Strategic timing ensures you capitalize on these anabolic windows. This guide summarizes the evidence on pre-workout, post-workout, overnight, and total daily protein distribution for adults engaged in regular training.

DAILY PROTEIN TARGET

Evidence supports 1.6–2.2g of protein per kg of body weight per day for adults engaged in regular resistance training (Morton et al., British Journal of Sports Medicine, 2018). For adults over 50, the lower bound shifts to approximately 1.8g/kg due to anabolic resistance — older muscle requires more protein to achieve the same synthetic response as younger muscle.

PER-MEAL DOSE

A single meal dose of ~0.4g/kg of body weight maximally stimulates muscle protein synthesis in most adults (Moore et al., AJCN, 2009). For a 75kg adult, this is approximately 30g per meal. Consuming more protein in a single sitting does not increase synthesis further — excess is oxidized. Four meals spaced 3–5 hours apart providing 30–40g each represents an evidence-based distribution pattern.

LEUCINE THRESHOLD

Leucine content matters more than total protein amount. A minimum of 2–3g of leucine per meal is the threshold required to robustly activate mTORC1, the primary intracellular sensor for protein-driven muscle growth. Whey protein contains ~10–11% leucine per gram, making 25–30g of whey sufficient to hit this threshold. Vegan sources typically require larger total protein doses.

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TIMING CHECKLIST

Morning

30–40g protein within 1 hour of waking

Counters overnight fasting catabolism. Prioritize leucine-rich sources: eggs, Greek yogurt, whey. Most impactful for older adults managing muscle maintenance.

Pre-Training

20–40g, 1–2 hours before workout

Elevates circulating amino acids during training. Not essential if post-workout meal is within 3 hrs, but beneficial for fasted morning training sessions.

Post-Training

30–40g within 3–5 hours post-workout

Maximizes post-exercise muscle protein synthesis. Whey or complete food source both effective. The anabolic window is wider than the traditional "30 minute rule" suggests.

Pre-Sleep

30–40g casein or slow-digesting protein

A 2012 study (Res et al., Med Sci Sports Exerc) found pre-sleep casein increased overnight synthesis by 22%. Most relevant for high-volume athletes and adults managing sarcopenia.

SOURCE QUALITY NOTES

Animal proteins (eggs, dairy, meat, fish) contain all essential amino acids in ratios that closely match human muscle requirements. Plant proteins are generally lower in leucine and sometimes deficient in lysine or methionine. Vegans should combine sources (e.g., rice + pea protein) and consume 10–15% more total protein daily to compensate for lower digestibility and amino acid scores.