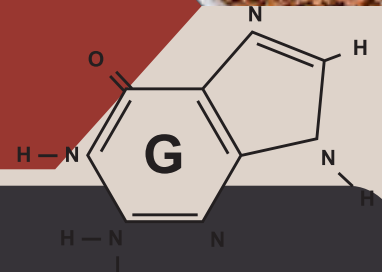




MUSCLE PROTEIN SYNTHESIS (MPS) & NUTRITION:

Key Takeaways for Athletes



What is Muscle Protein Synthesis (MPS)?

MPS is the process where amino acids from dietary proteins are incorporated into skeletal muscle proteins.

Why is MPS Important?

Muscle protein synthesis allows for athletes to maintain and optimize skeletal muscle mass. It is essential for improving performance, recovery, and muscle growth. After exercise, athlete's muscles need to be strengthened and repaired. Muscle protein synthesis (MPS) should be greater than Muscle protein breakdown (MPB) to increase muscle mass.

The Key Driver of MPS

Amino acids are the building blocks of muscles and are essential for muscle repair. Essential amino acids (EAAs) and branched-chain amino acids (BCAAs) are key for MPS stimulation. Animal-based proteins provide a complete source of all EAAs which are best to consume.

Protein Quality & Digestibility

Fast-digesting proteins are optimal for maximizing muscle protein synthesis (MPS). Whey and casein are high-quality protein sources that provide essential amino acids (EAAs) necessary for MPS. In contrast, plant proteins generally have lower digestibility and may lack one or more EAAs, making them less effective for MPS on their own. However, combining different plant protein sources can create a complete essential amino acid profile, supporting MPS effectively.

Timing of Protein intake for Optimal MPS?

Eating protein is not only important post-workout, but should also be consumed before. Eating protein before training reduces MPB and eating protein post-workout stimulates MPS. Having MPS be greater than MPB will support muscle growth. For optimal fueling, a well-balanced meal containing protein and carbohydrates should be consumed approximately 90 minutes before training. Then, a carbohydrate-rich snack 30-45 minutes before training can help top off glycogen stores and enhance performance, especially in high-intensity or endurance activities. Post exercise protein take doesn't have a specific consumption time, protein should be distributed throughout the snacks and meals throughout the day.

High Quality Protein Sources

To Maximize MPS

★ **Chicken**

★ **Milk**

★ **Beef**

★ **Yogurt**

★ **Eggs**

★ **Fish**

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Final Nutrition Tips for Athletes

- Aim for high-quality protein sources with all essential amino acids.
- Consume 20-25g of protein per meal/snack to maximize MPS.
- Frequent meal/snack consumption > larger and less frequent meals.
- Whey protein post-workout is one of the most effective ways to boost MPS.
- BCAA supplements may help, but whole protein sources are better.

