Part XIV

Protein Ingestion Prior to Sleep: Potential for Optimizing Post-Exercise Recovery

Protein Ingestion Prior to Sleep

- **Protein Ingestion Prior to Sleep: Potential for Optimizing Post-Exercise Recovery, 2013, GSSI Sports Science Exchange, Volume 26, Number 117, 1 – 5.**

Protein Ingestion Prior to Sleep

- **In addition to the amount and source(*s*) of protein ingested subsequent to an acute bout of training, associated timing of protein ingestion has been identified and accepted as a key factor in modulating post-exercise muscle anabolism (*Beelen, Burke, Gibala, & van Loon, 2011*)**

Protein Ingestion Prior to Sleep

- **While immediate post-training protein ingestion does support enhanced muscle protein synthesis in the acute stages / period of post-training recovery, such a strategy does not support a sustained increase in muscle protein synthetic rate during subsequent overnight recovery (*Beelen, Tieland, Gijsen, Vandereyt, Kies, Kuipers, Saris, Koopman, & van Loon, 2008*)**

Protein Ingestion Prior to Sleep

- Res, P.T., Groen, B., Pennings, B., Beelen, M., Wallis, G.A., Gijsen, A.P., Senden, J.M., & van Loon, L.J. (2012). Protein Ingestion prior to Sleep Improves Post-Exercise Overnight Recovery, Medicine and Science in Sports and Exercise, 44: 1560 – 1569.

- Recreational athletes
- Single bout of evening resistance exercise
- All participants were provided standardized post-exercise recovery nutrition
- 30-minutes prior to sleep, participants ingested either a placebo or 40 grams of casein protein

Protein Ingestion Prior to Sleep

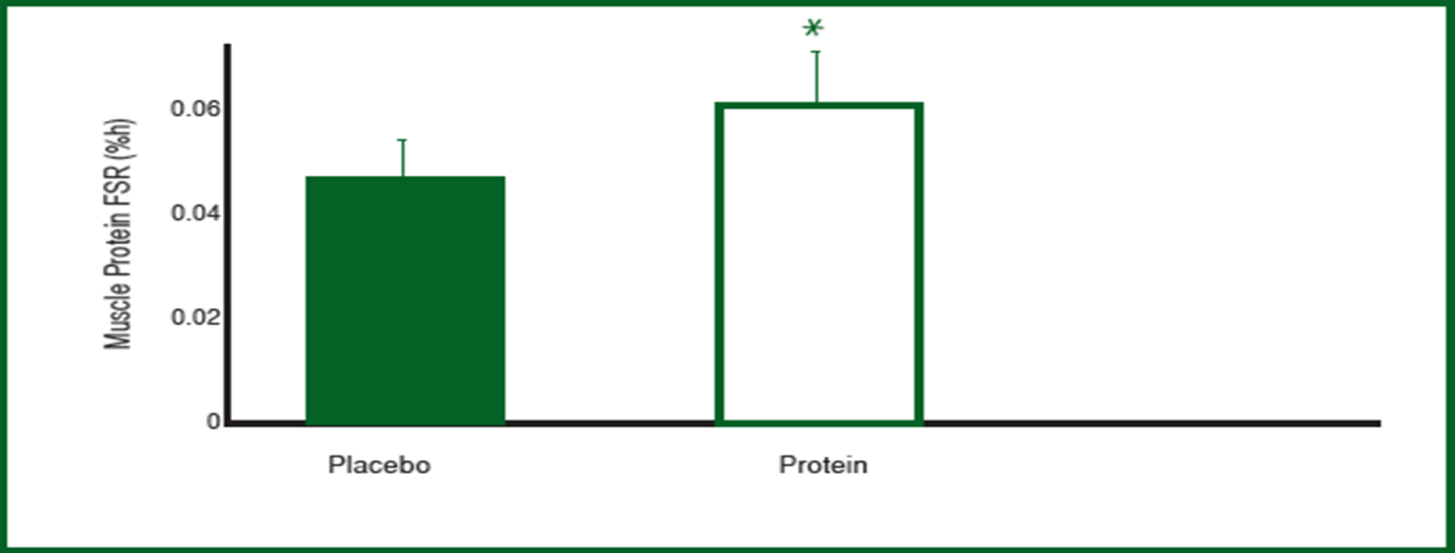

Figure 3. Dietary protein ingestion prior to sleep stimulates muscle protein synthesis during overnight recovery. Fractional synthesis rate (FSR) of mixed muscle protein during overnight recovery from a single bout of resistance type exercise. In the protein trial, 40 g of casein protein were ingested prior to sleep. Values represent means ± SEM. *Significantly different from placebo (P=0.05). Figure redrawn from Res et al. (2012) Med. Sci. Sports Exerc. 44:1560-1569, American College of Sports Medicine.

Protein Ingestion Prior to Sleep

Nutritional Recommendations for the Athlete

Provide sufficient protein (20-25 g) with each main meal

Consider coingesting some protein with carbohydrate during exercise (to optimize protein synthesis. However, protein has also been linked with slowing of delivery of carbohydrate and fluid as well as GI distress, and thus individuals need to determine their own strategy)

Ingest 20-25 g of protein immediately after exercise

Consume 20-40 g of protein prior to sleep