

PRE SLEEP DIETARY PROTEIN-DERIVED AMINO ACIDS ARE INCORPORATED IN MYOFIBRILLAR PROTEIN POST-EXERCISE OVERNIGHT RECOVERY

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KEY POINTS



36 males
healthy, young,
recreationally active



A single bout of resistance type-exercise was performed in the evening (9:45 and 20:45 h) followed by drinks providing 20 g milk protein and 45 g carbohydrates were ingested after exercise. Subjects ingested the beverage PLA, PRO, or PRO+leu within 5 min of sleep.



Utilised intrinsically labelled **protein** technique.



Protein ingested prior to sleep is rapidly digested with **~55%** of the ingested protein-derived amino acids appearing in the systemic circulation throughout overnight sleep.



30 g casein protein **improves whole-body protein synthesis rates and allows for a positive overnight whole-body protein net balance.**



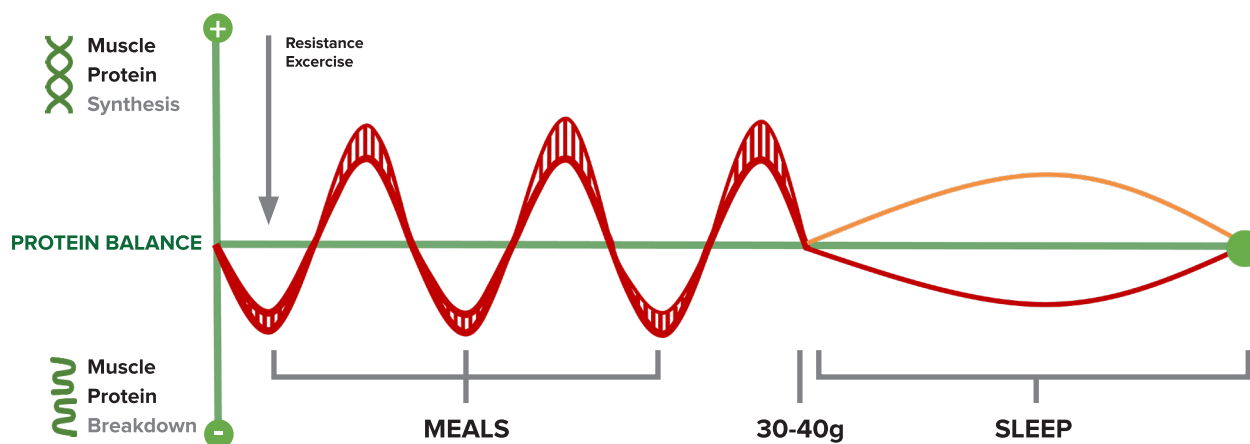
The casein protein ingested prior to sleep provided amino acids which are incorporated into myofibrillar protein during overnight sleep. **BUT does not increase myofibrillar protein synthesis rates during.**



The addition of 2 g Leucine to 30 g of Casein **did not further increase overnight muscle protein synthesis rates or incorporation rates** into skeletal myofibrillar protein.

RESULTS

Proteins ingested before sleep are used to build new muscle!



Res et al. (2012) MSSE
Snijders et al. (2015) J Nut

Trommelen et al. Am J Physiol Endocrinol Metab. 2018 Doi:10.1152/ajpendo.00273.2016

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