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Conflict of Interest Statement

I currently have, or I have had in the past 2 years an affiliation or financial interest with Extreme Human Performance, LLC around this presentation, including:

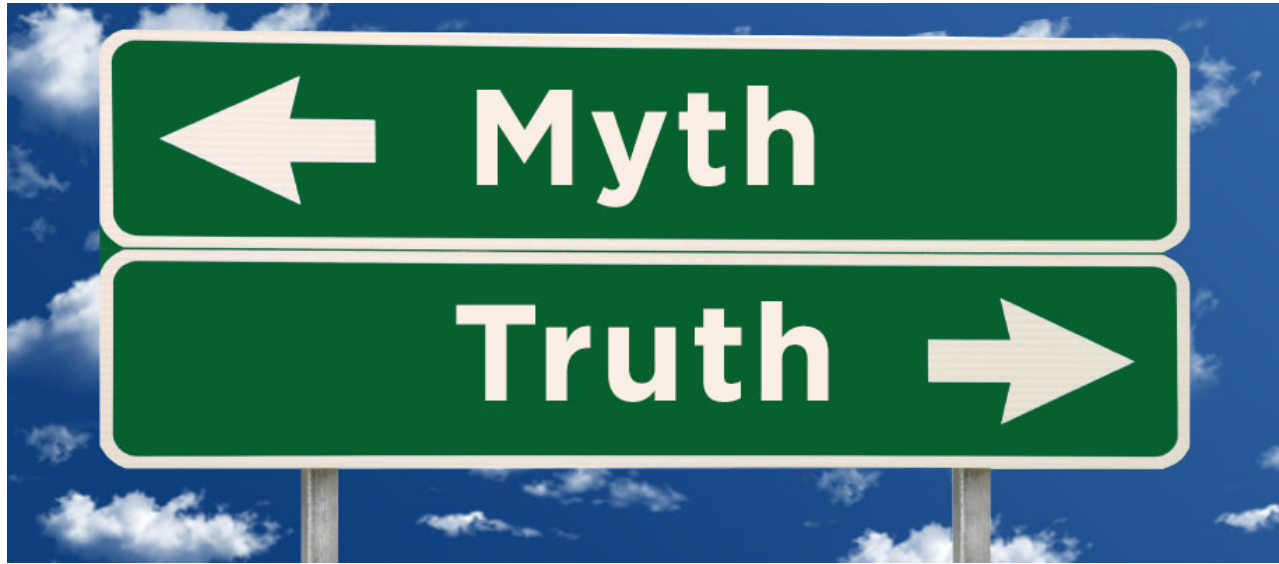
- Consulting
- Employment
- Honoraria
- Promotional fees
- Research funding
- Other(s)

5 Dietary Protein Myths for Better Body Comp and Performance

Mike T Nelson, CSCS*D, CISSN, MSME, PhD

5 Protein Myths

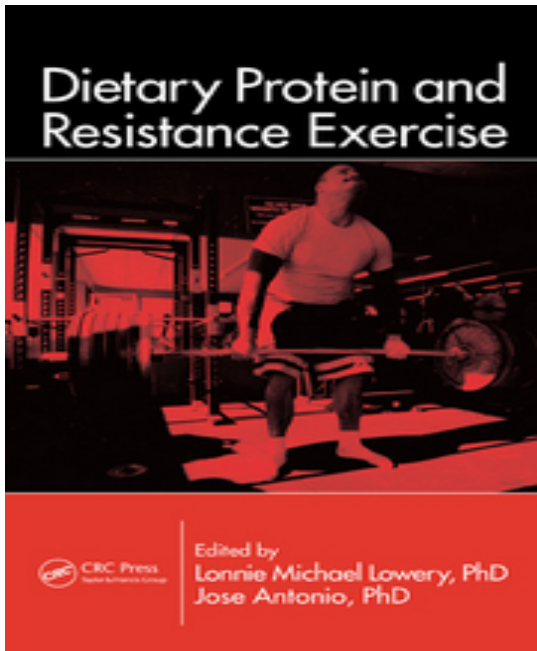
- Why protein?
- What are the 5 myths?
- Take away point – how much protein do you need?



Background

- PhD Exercise Physiology, U of MN
 - Metabolic Flexibility (Met Flex) dissertation
- Presented to DARPA on Met Flex
- Peer reviewer and published research
- MS in Mechanical Engineering (Biomech), BA Natural Science
- Owner, Extreme Human Performance, LLC
- Faculty at the Carrick Institute for Functional Neurology
- Instructor Rocky Mountain University
- Certified Sports Nutritionist, CISSN
- Certified Strength Conditioning Specialist, CSCS*D

Academics



The College of
St. Scholastica

NSCA PTQ: Protein Series

PTQ

VOLUME 5
ISSUE 3
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HOW MUCH PROTEIN DO RESISTANCE TRAINING ATHLETES NEED?

MIKE NELSON, PHD, CSCS, CISSN

Athletes are constantly seeking any edge they can get. One of those is body composition, since performance can be potentially improved by increasing muscle mass and losing body fat. This is especially critical for athletes who compete in weight class sports where the highest lean body mass (LBM) to body fat ratio is preferential. Consumption of dietary protein by athletes is a common intervention done to maximize gains

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Me



Overload



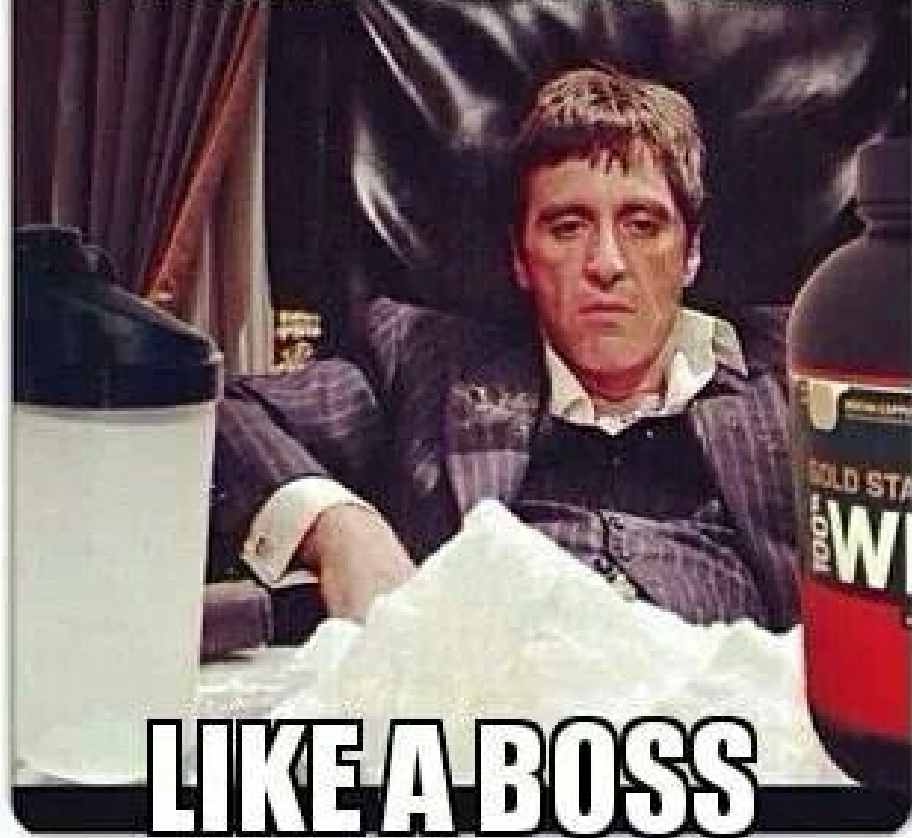
Why Protein?

- Muscle is protein and protein is muscle
- Metabolic rate
- Function
- Required for life
- Survival



Photo <https://www.flickr.com/photos/bagoqames/26433798662>

PROTEIN SHAKE TIME



LIKE A BOSS

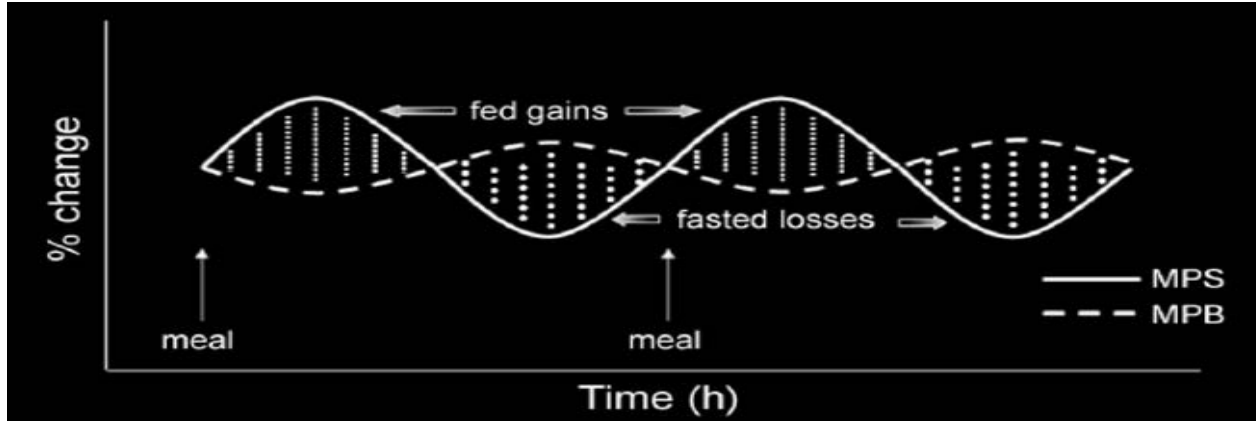
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Protein Power

- Growth = MPS – MPB
- MPB is muscle protein breakdown



Burd NA, Tang JE, Moore DR, Phillips SM. Exercise training and protein metabolism: influences of contraction, protein intake, and sex-based differences. *J Appl Physiol* 2009;106:1692-701

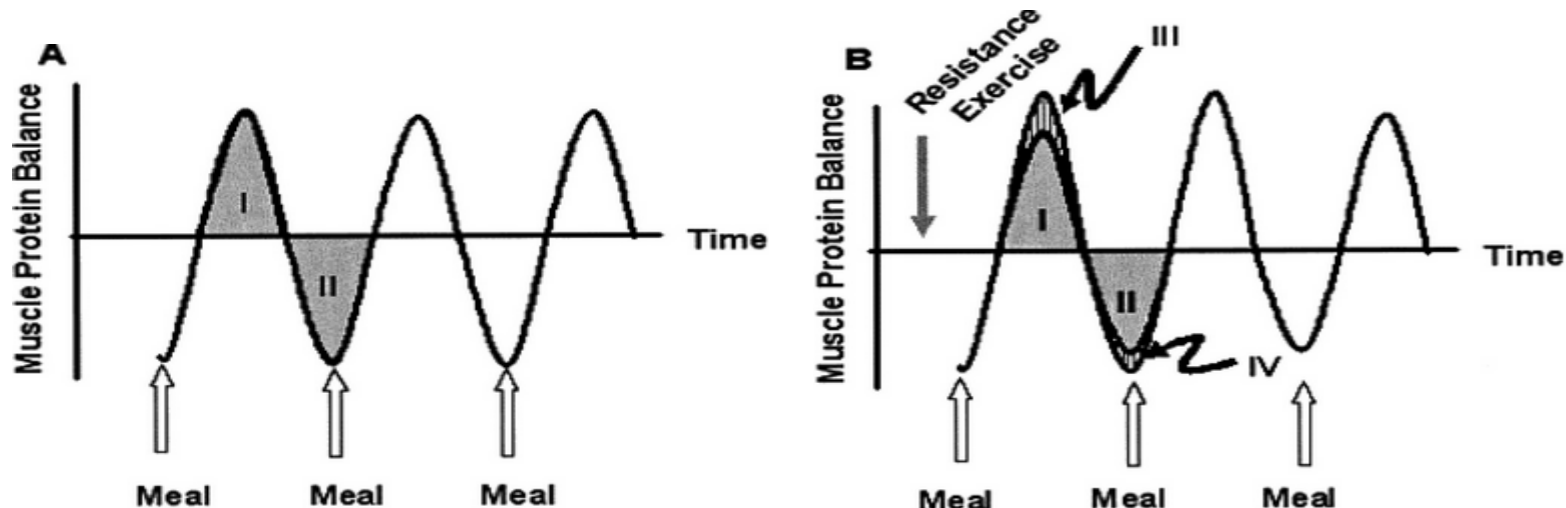
Muscle Growth

- Intrinsic process
- Local growth factors
 - KEY!
 - Hormone hypothesis busted (West, D. et al.)

West, D. W. D., Kujbida, G. W., Moore, D. R., Atherton, P., Burd, N. A., Padzik, J. P., ... Phillips, S. M. (2009). Resistance exercise-induced increases in putative anabolic hormones do not enhance muscle protein synthesis or intracellular signalling in young men. *The Journal of Physiology*, 587(Pt 21), 5239–5247. <http://doi.org/10.1113/jphysiol.2009.177220>

Scott C. Hobler, Arthur B. Williams, Josef E. Fischer, and Per-Olof Hasselgren “IGF-I stimulates protein synthesis but does not inhibit protein breakdown in muscle from septic rats.” *AJP - Regul Physiol* February 1998 vol. 274no. 2 R571-R576

Protein Power



Stuart M. Phillips, PhD, FACN, Jason E. Tang, MSc and Daniel R. Moore, PhD “The Role of Milk and Soy-Based Protein in Support of Muscle Protein Synthesis and Muscle Protein Accretion in Young and Elderly Persons” J Am Coll Nutr August 2009 vol. 28 no. 4 343-354

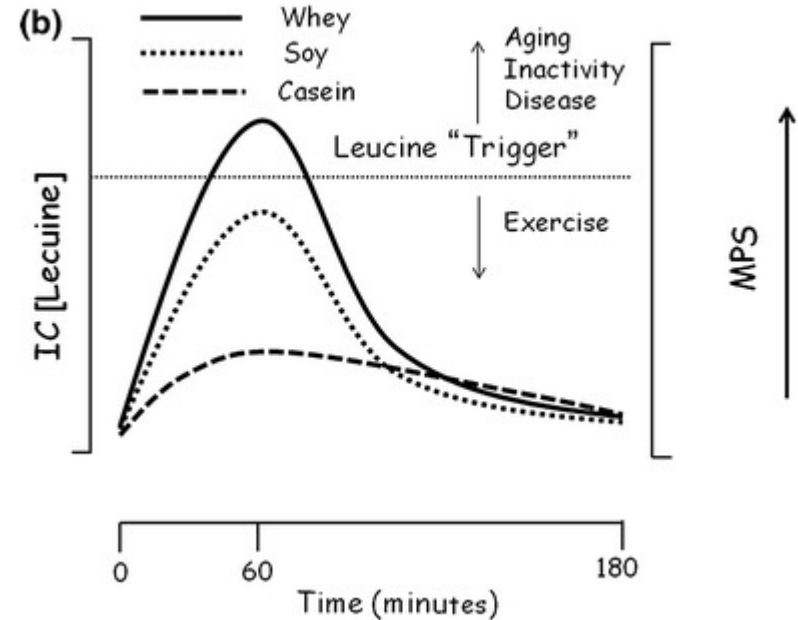
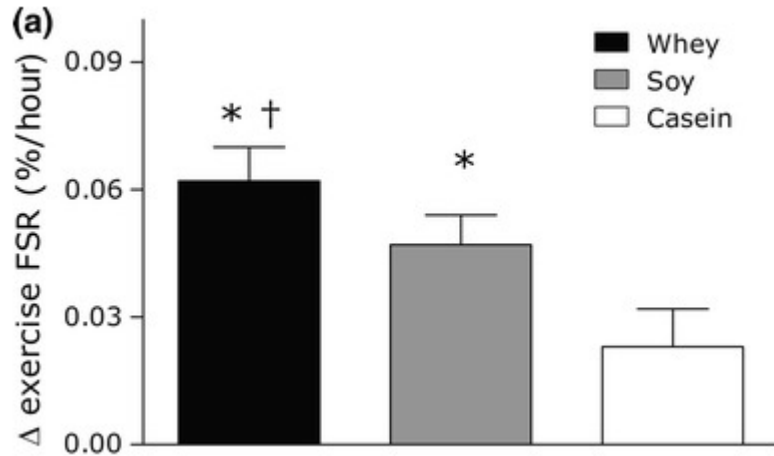
Protein Quality Ranking

- Whey, milk, egg proteins best
- Lean meats are good
 - Get over 4 oz per serving
- Soy and wheat suck



Stuart M. Phillips, PhD, FACN, Jason E. Tang, MSc and Daniel R. Moore, PhD “The Role of Milk- and Soy-Based Protein in Support of Muscle Protein Synthesis and Muscle Protein Accretion in Young and Elderly Persons” J Am Coll Nutr August 2009 vol. 28 no. 4 343-354

Protein Type



Phillips, S. M. (2014). A Brief Review of Critical Processes in Exercise-Induced Muscular Hypertrophy. *Sports Medicine (Auckland, N.z.)*, 44(Suppl 1), 71–77. <http://doi.org/10.1007/s40279-014-0152-3>

Protein

- BCAAs
 - 2 gram leucine dose
 - 5 grams BCAAS
 - Not useful by themselves (ok in addition)
- Supplement all non dairy sources with BCAAs
 - Turns on MPS!
 - Expensive process (huge calorie drain)

Myth 1: You Can Only Use 30 Grams of Protein per Meal

Protein Myth #1

- Max out MPS aka Muscle Protein Synthesis
 - 2 – 3 gm leucine, 6 gm EAAs
 - 20- 40 grams total
- “Direct” measure of muscle growth
 - Stable isotope tracer amino acids → tracking via MRS
 - Radioactive tracers (Trommelen, J et al.)

Trommelen, J., & van Loon, L. J. C. (2016). Pre-Sleep Protein Ingestion to Improve the Skeletal Muscle Adaptive Response to Exercise Training. *Nutrients*, 8(12), 763. <http://doi.org/10.3390/nu8120763>

Protein Myth #1



Myth 2: Too Much Protein Will Damage Your Kidneys

Protein Myth #2

- Work vs Damage
- GFR / creatinine = kidney work
- Microalbumin = kidney damage

“....in resistance-trained men that consumed a high protein diet (~2.51–3.32 g/kg/d) for one year, there were no harmful effects on measures of blood lipids as well as liver and kidney function”

100 kg Dooooode Bro = 330 gms / day

Jose Antonio, Anya Ellerbroek, Tobin Silver, Leonel Vargas, Armando Tamayo, Richard Buehn, and Corey A. Peacock. A High Protein Diet Has No Harmful Effects: A One-Year Crossover Study in Resistance-Trained Males, Journal of Nutrition and Metabolism, Volume 2016 (2016),

Protein Myth #2



<https://www.readersdigest.co.uk/health/health-conditions/7-ways-to-keep-your-kidneys-healthy>

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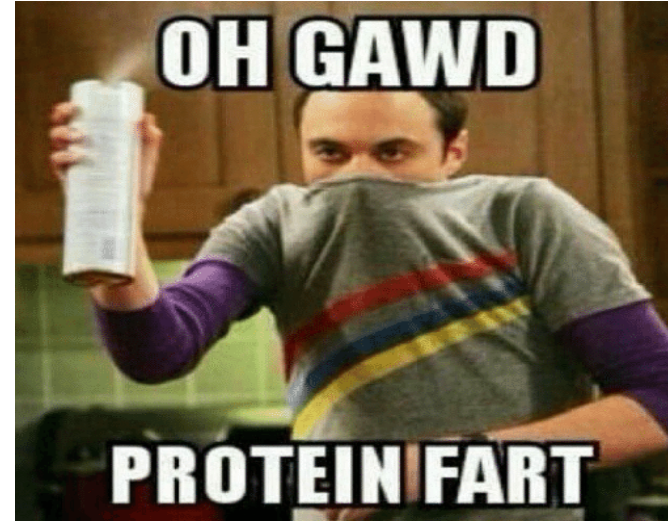
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Myth 3: As You Age, You Need Less Protein

Protein Myth #3

- Protein needs go UP with age
- MPS less effect w same dose
- Young= 20 gm whey
- Over 70 = 40 gm whey
- Anabolic Resistance



Yang Y, Breen L, Burd NA, Hector AJ, Churchward-Venne TA, Josse AR, Tarnopolsky MA, Phillips SM, "Resistance exercise enhances myofibrillar protein synthesis with graded intakes of whey protein in older men." Br J Nutr. 2012 Feb 7:1-9.

Protein Myth #3



https://en.wikipedia.org/wiki/File:Ensure_product_line_up_June_2012.jpg

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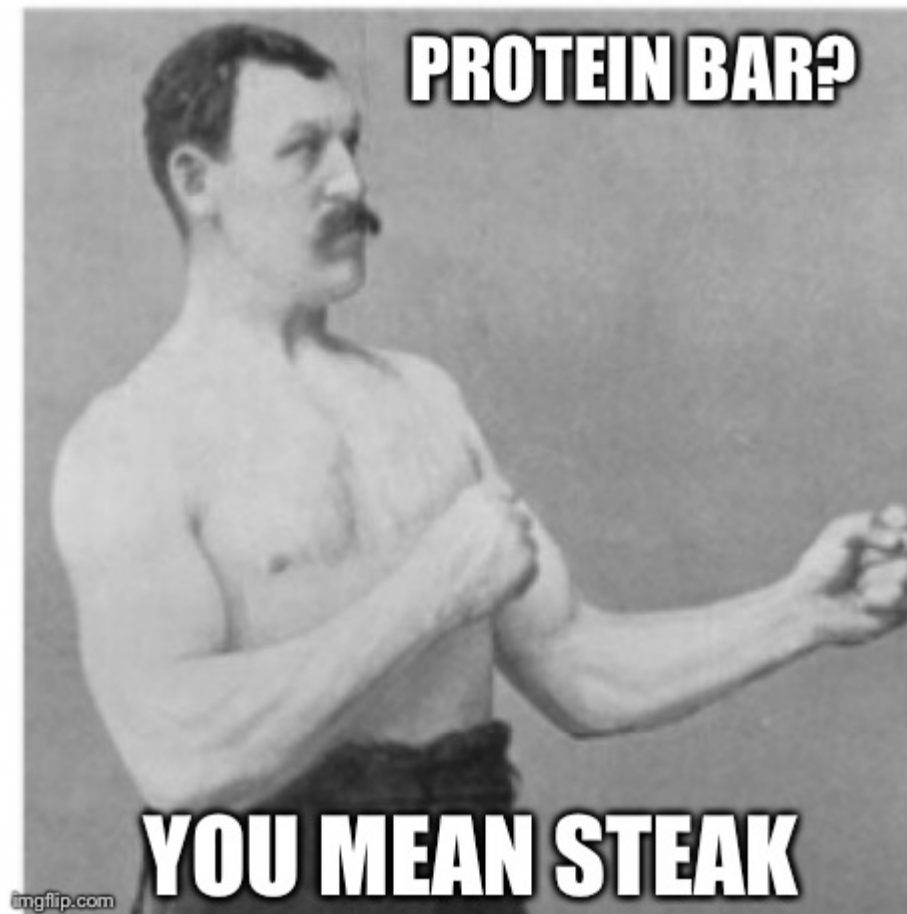
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HOW MANY GRAMS OF PROTEIN SHOULD YOU EAT?



ALL OF THEM

Myth 4: There Is No Data That Athletes Need More Than RDA for Protein



Protein Myth #4

- Athletes need more protein
- RDA = 60 grams / day → not enough

“.... Protein supplementation beyond total protein intakes of 1.62 g/kg/day resulted in no further RET-induced gains in FFM”.

- 100 kg Dooooode Bro = 162 grams / day

Robert W Morton, Kevin T Murphy,.... Stuart M Phillips. A systematic review, meta-analysis and metaregression of the effect of protein supplementation on resistance training-induced gains in muscle mass and strength in healthy adults
Br J Sports Med 2018;52:376–384.s

Myth 5: Eating Too Much Protein Makes You Fat

Protein Myth #5

- Protein massive overfeeding
- 4.4 g/kg/d dose
- Virtually no fat gain

“Consuming 5.5 times the RDA of protein has no effect on body composition in resistance-trained individuals who otherwise maintain the same training regimen”

100 kg Dooooode Bro = 440 gms / day

Jose Antonio, Corey A Peacock, Anya Ellerbroek, Brandon Fromhoff, Tobin Silver. The effects of consuming a high protein diet (4.4 g/kg/d) on body composition in resistance-trained individuals, JISSN, 201411:19





Summary: How Much Protein Do You Need?

Protein: How Much?

- Healthy and weight training 3- 5 days per week
- 0.7 gm / lbs dietary protein per day
- 200 lb person = 140 grams

Layman DK, E Evans, JI Baum, J Seyler, DJ Erickson, RA Boileau. Dietary protein and exercise have additive effects on body composition during weight loss in adult women. *J Nutr.* 2005; 135(8):1903-10.

Mettler S, N Mitchell, KD Tipton. Increased protein intake reduces lean body mass loss during weight loss in athletes. *Med Sci Sports Exerc.* 2010; 42(2):326-37.

Mero AA, H Huovinen, O Matintupa, et al. Moderate energy restriction with high protein diet results in healthier outcome in women. *J Int Soc Sports Nutr.* 2010; 7(1):4.

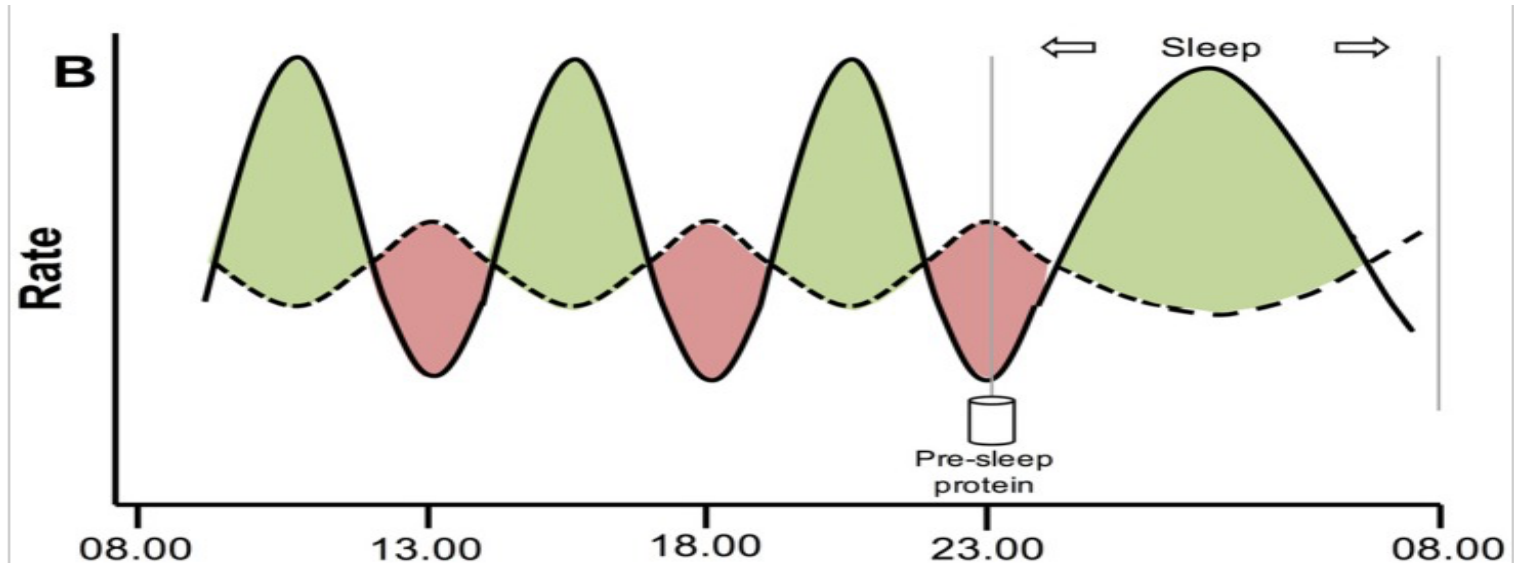
Walberg JL, MK Leidy, DJ Sturgill, DE Hinkle, SJ Ritchey, DR Sebolt. Macronutrient content of a hypoenergy diet affects nitrogen retention and muscle function in weight lifters. *Int J Sports Med.* 1988; 9(4):261-6.

BOUGHT MY FIRST TUB OF PROTEIN

**SO I GUESS YOU COULD SAY THINGS ARE
GETTIN' PRETTY SERIOUS**

quickmeme.com

Bonus: Protein Pre-Sleep



Trommelen, J., & van Loon, L. J. C. (2016). Pre-Sleep Protein Ingestion to Improve the Skeletal Muscle Adaptive Response to Exercise Training. *Nutrients*, 8(12), 763. <http://doi.org/10.3390/nu8120763>

$$\frac{\sqrt{3}}{4} = (a^2)$$



$$a^2 + b^2 = c^2$$

$$A = \frac{1}{2}bc \sin A$$

$$A^2 + B^2 + C^2$$

$$\cos(c)$$

$$\hat{c}^2 = \hat{a}^2 + \hat{b}^2$$

$$27/3$$

$$|1-x|$$

$$= 1/4$$

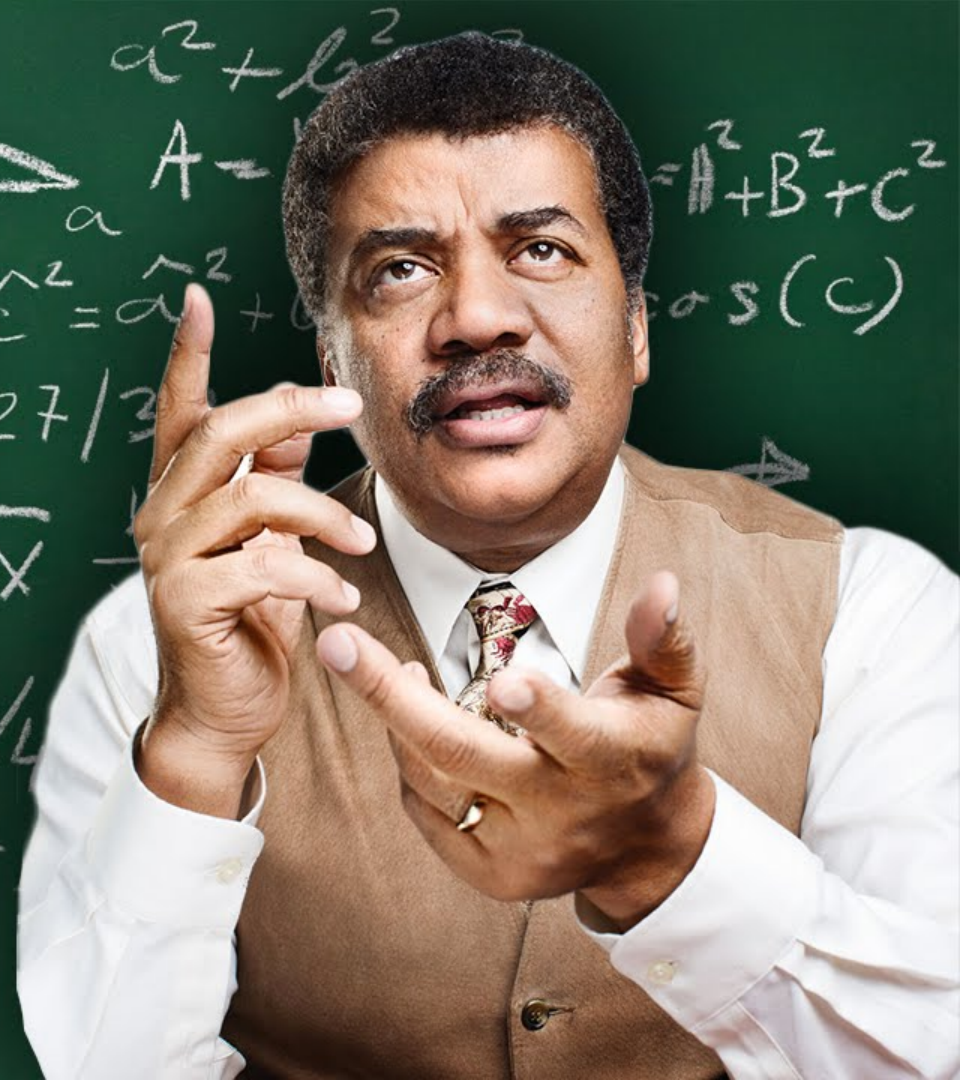
$$b^2$$

$$90^\circ$$

$$c$$

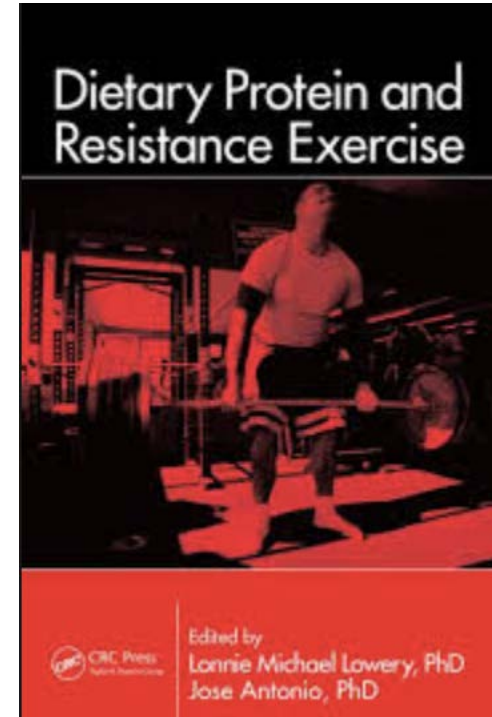
WHY MOST PEOPLE ARE BAD AT MATHEMATICS

f_x NEIL DEGRASSE
TYSON



Summary: Protein

- Protein is not dangerous
- No kidney issues seen
- More than the RDA = better
- Massive doses not needed
- Around 0.7 grams / day



Thank You!



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