

Nutrition Interventions

- *protein* -

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Disclosures

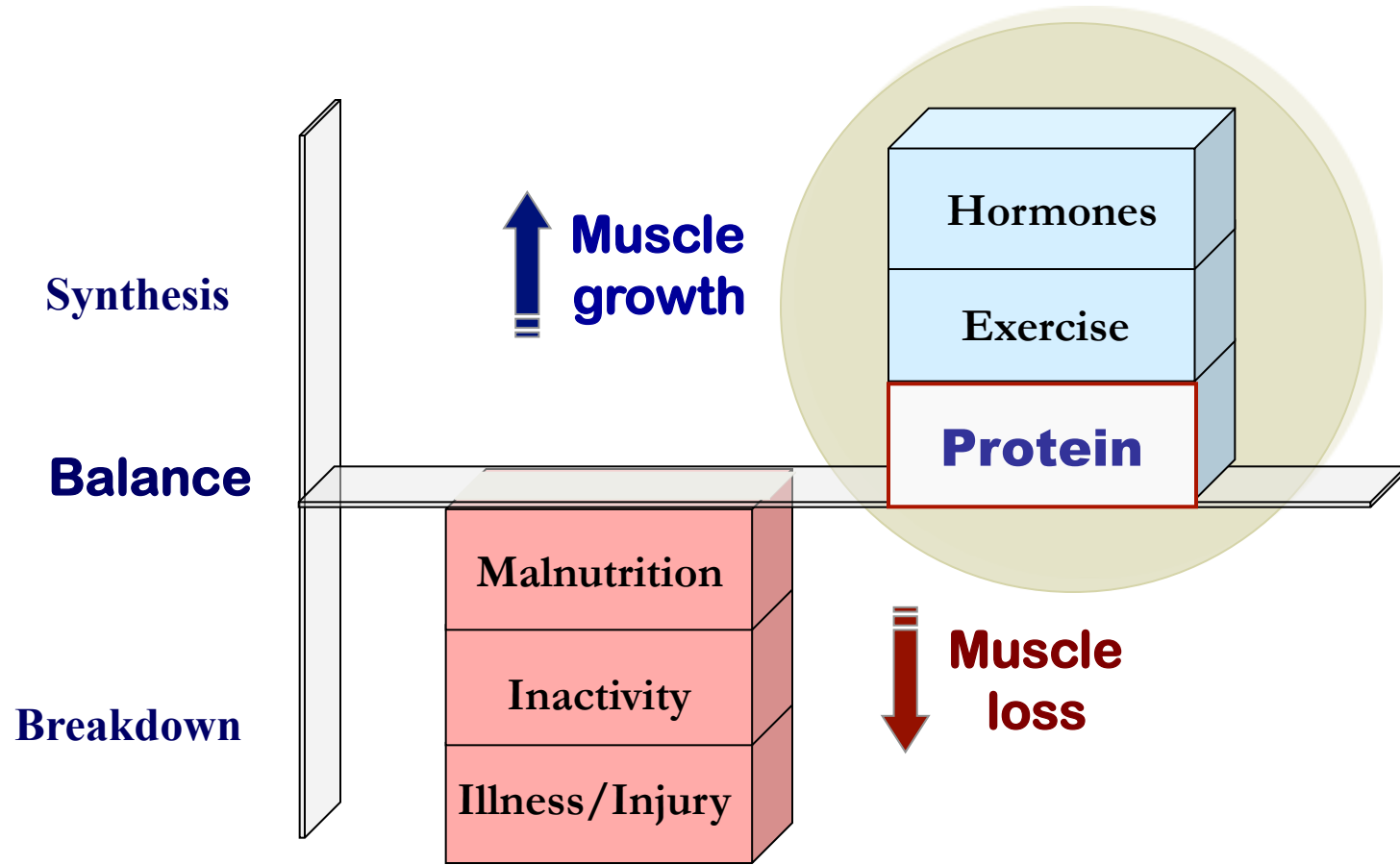
- **Dr. Paddon-Jones is a Research Investigator with funding from the National Institute of Health (NIH), Abbott Nutrition, National Cattlemens Beef Association (NCBA) and the National Space Biomedical Research Institute (NSBRI).**
- **Dr. Paddon-Jones is a member of the Scientific Advisory Board or Speaker's Bureau for the National Dairy Council, US Dairy Export Council, American Egg Board, Texas Beef Council and Abbott Nutrition.**

Overview

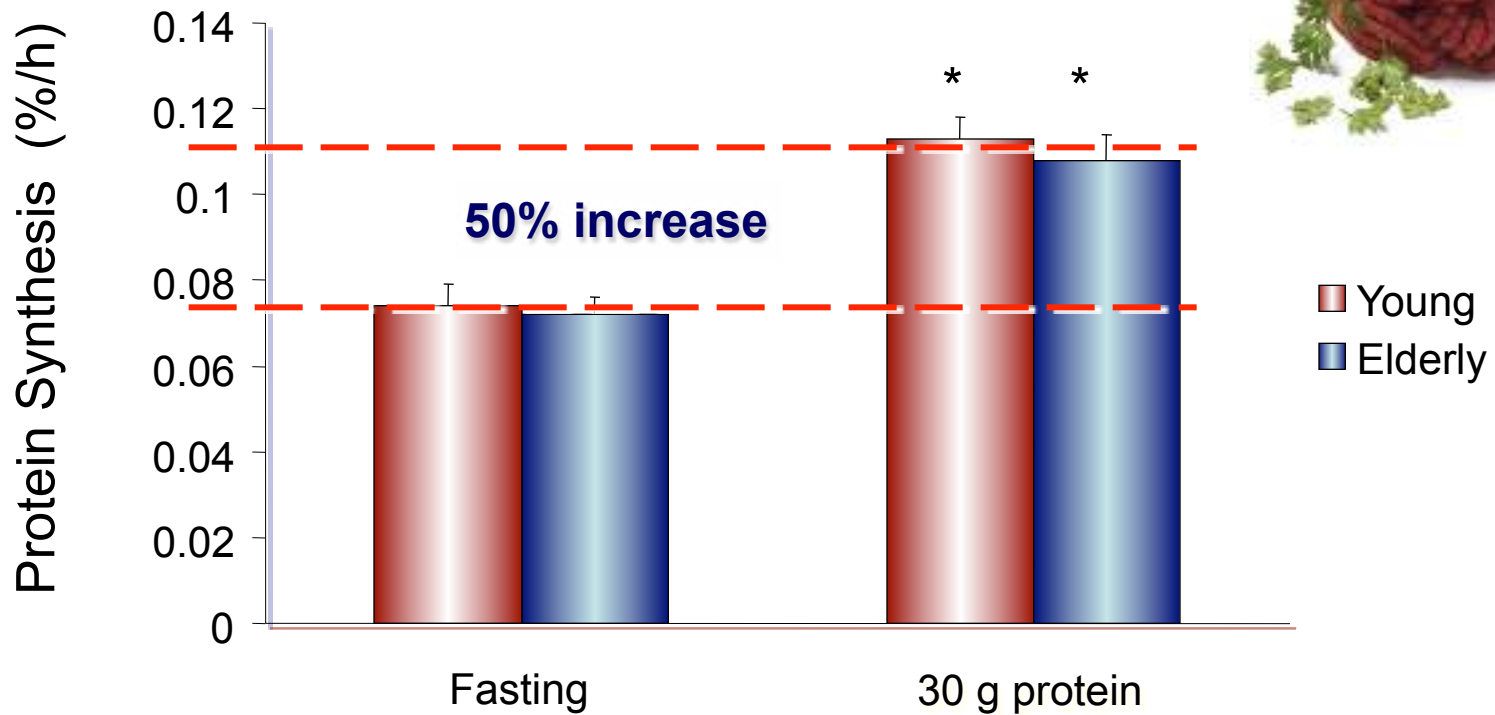
1. building muscle in response to a protein-rich meal
2. priority areas: aging - physical inactivity – hospitalization
3. establishing a targeted nutritional intervention



Maintaining Muscle Mass and Function



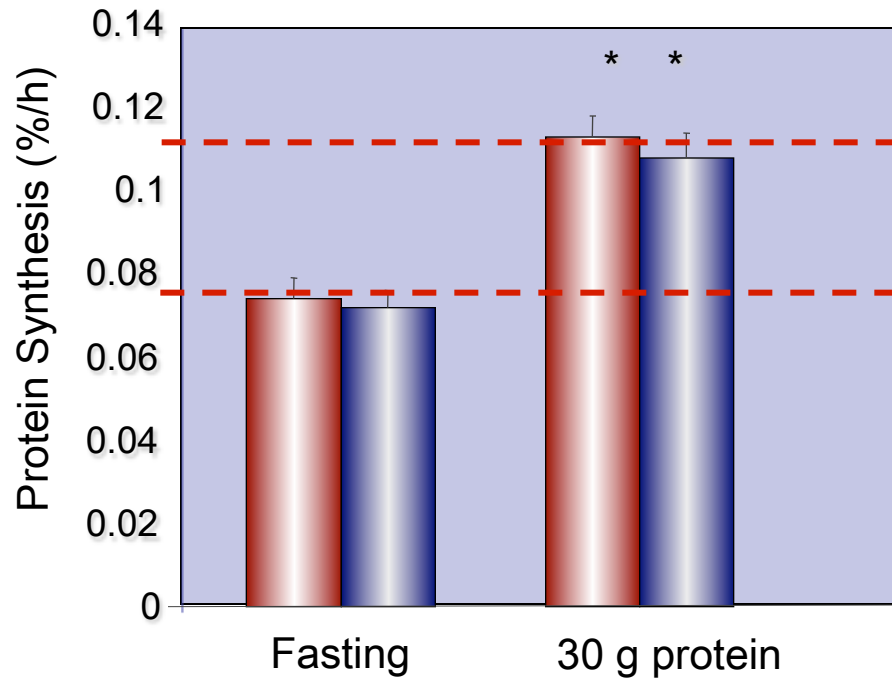
Stimulating Muscle Growth with Protein



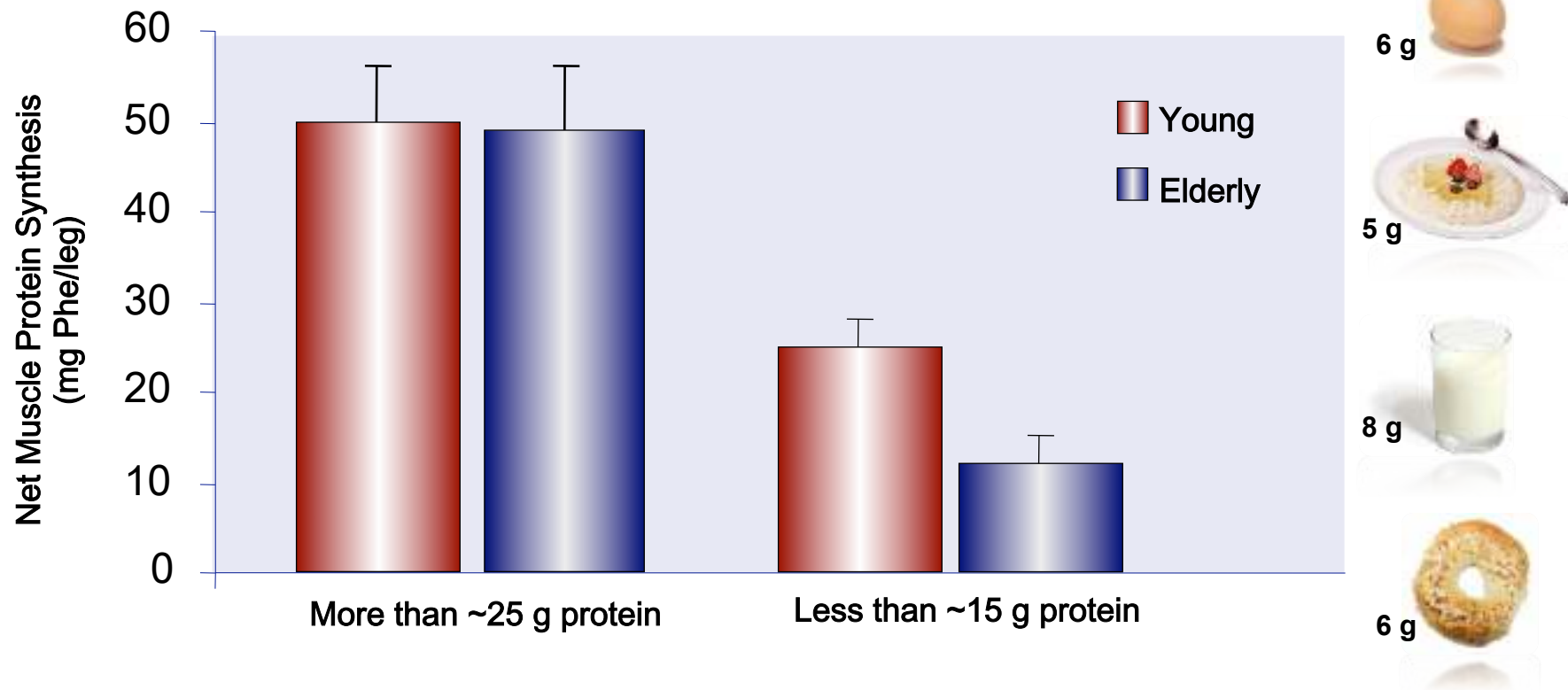
Protein Synthesis and Portion Control

- a message of moderation -

30 g protein



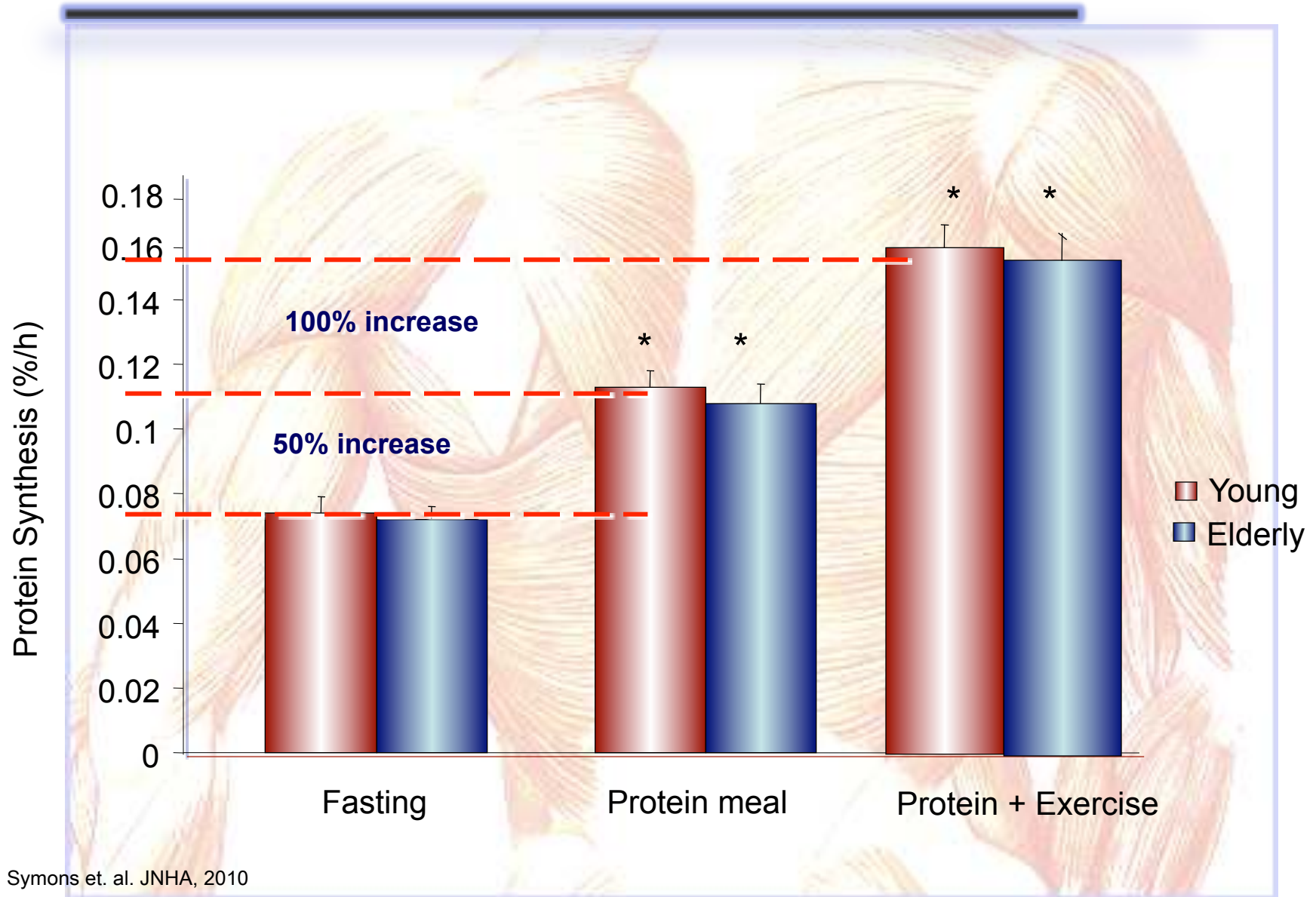
Age-related protein dose-response



Protein-exercise interaction



Synergistic Effect of Protein and Exercise

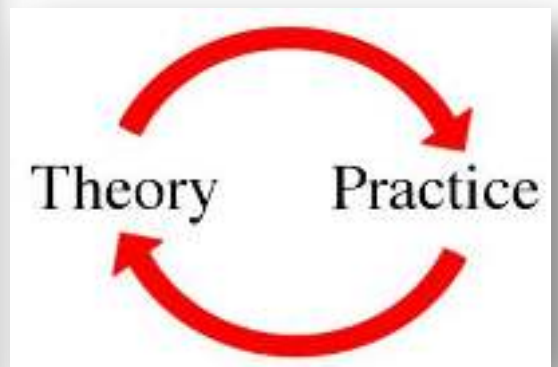


Translation: Science → Practice

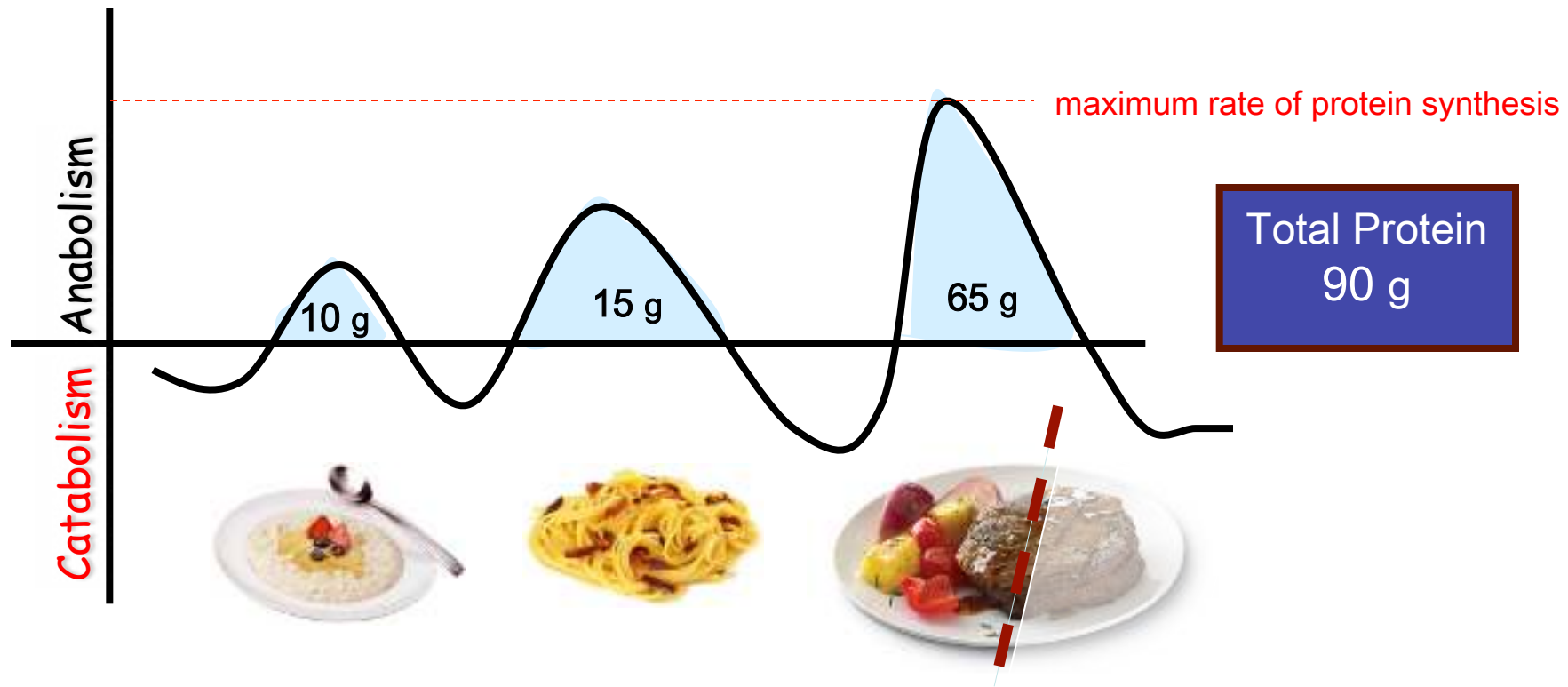


Healthy eating is becoming all about "molecular gastronomy".

Ezran Kamal

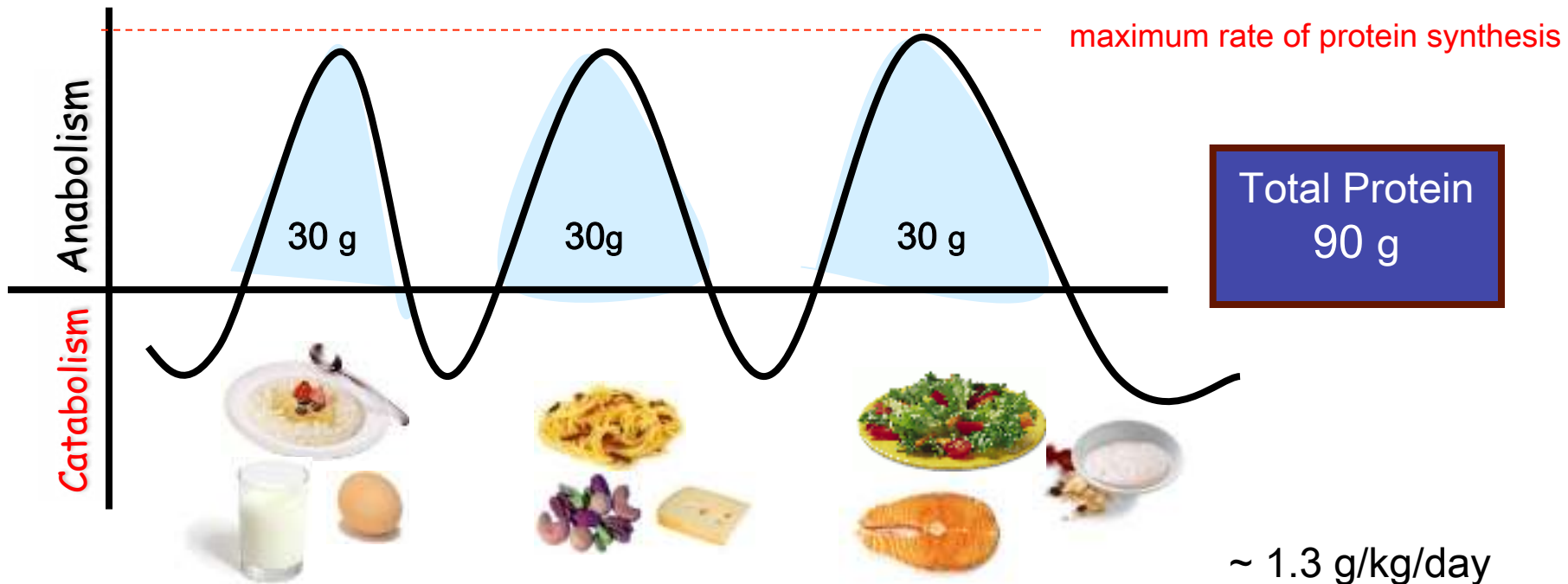


Daily protein distribution - typical ? -



A skewed daily protein distribution fails to maximize potential for muscle growth

Daily protein distribution - *Optimal* -



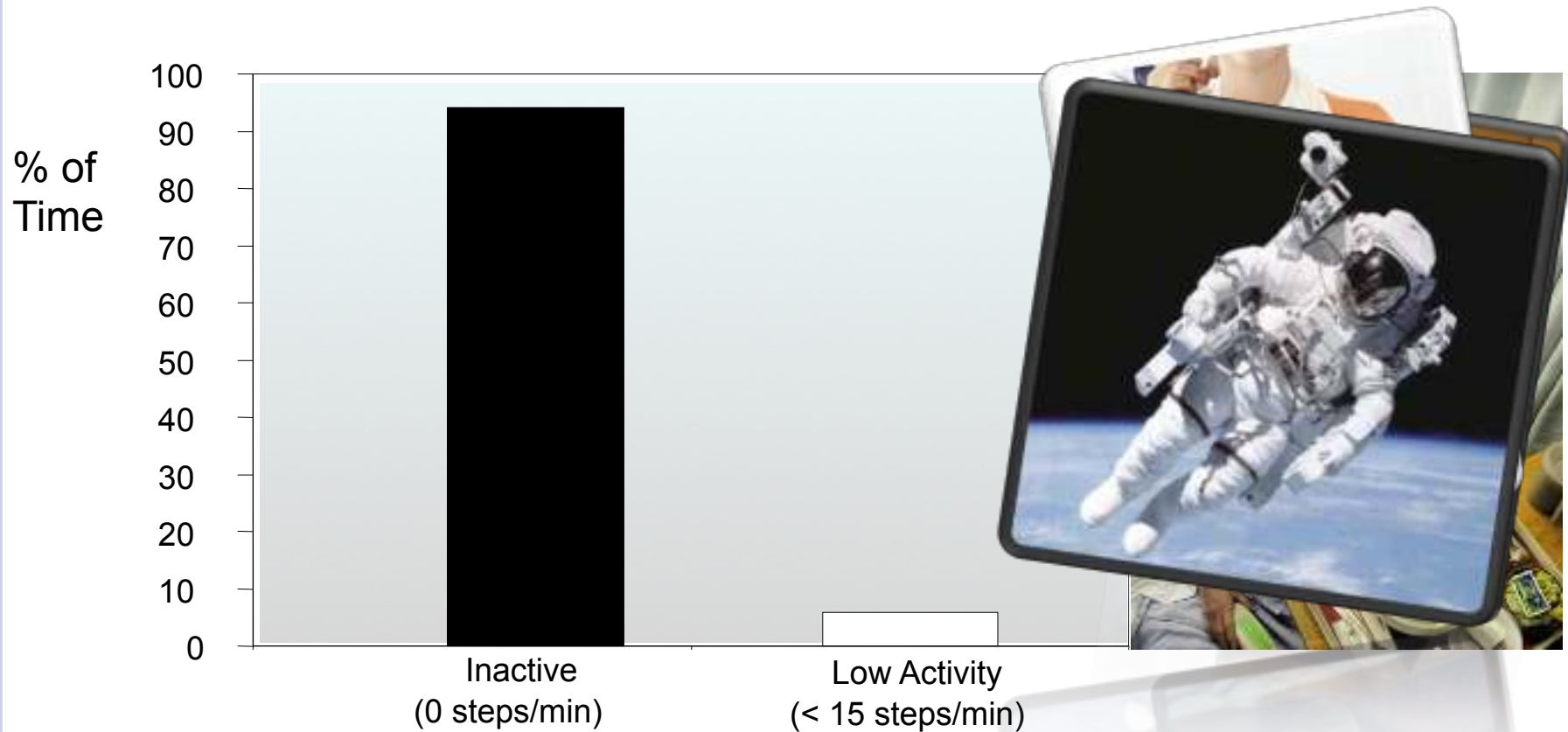
Repeated maximal stimulation of protein synthesis
→ increase / maintenance of muscle mass

2. priority areas: aging - physical inactivity - hospitalization

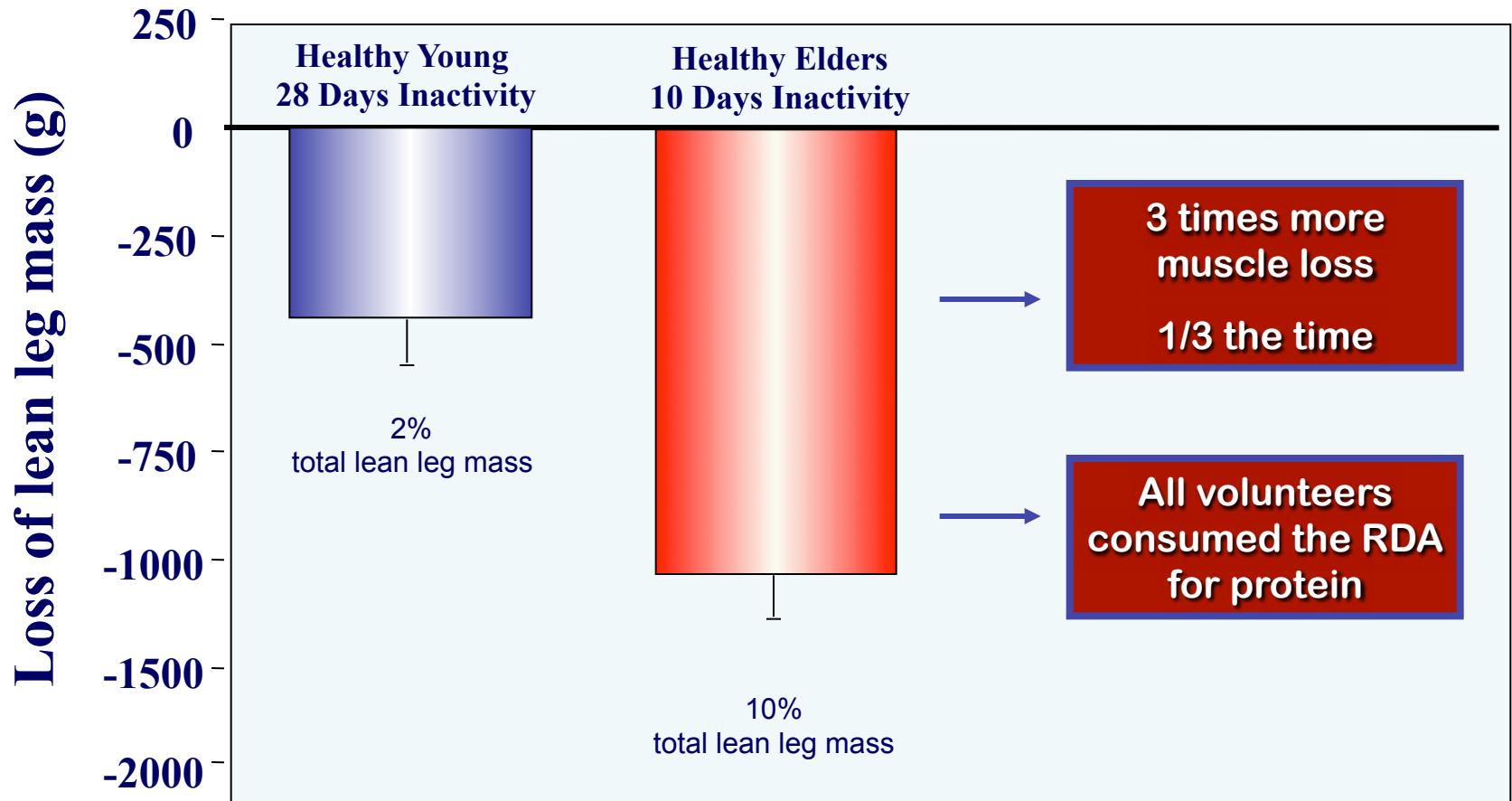


Bed rest is a defacto treatment modality

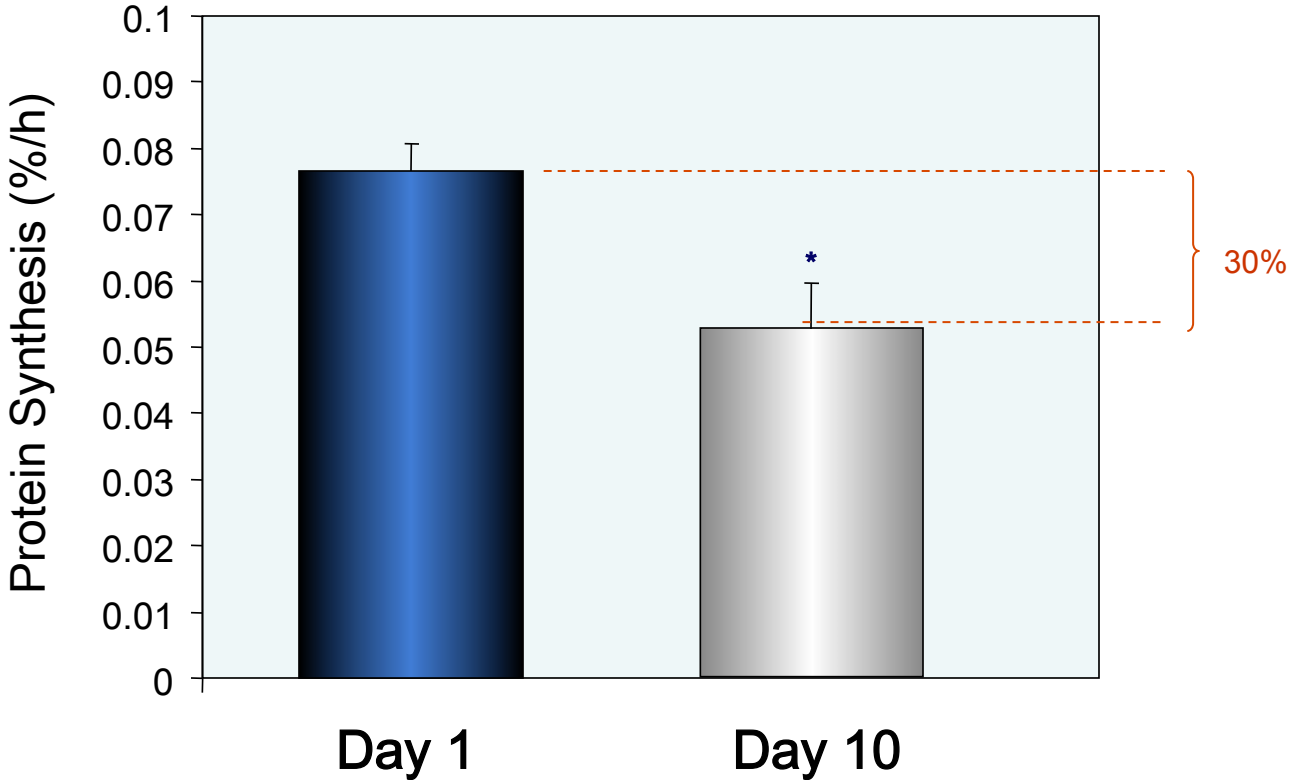
- if you're hospitalized you become inactive -



Inactivity and Aging Muscle

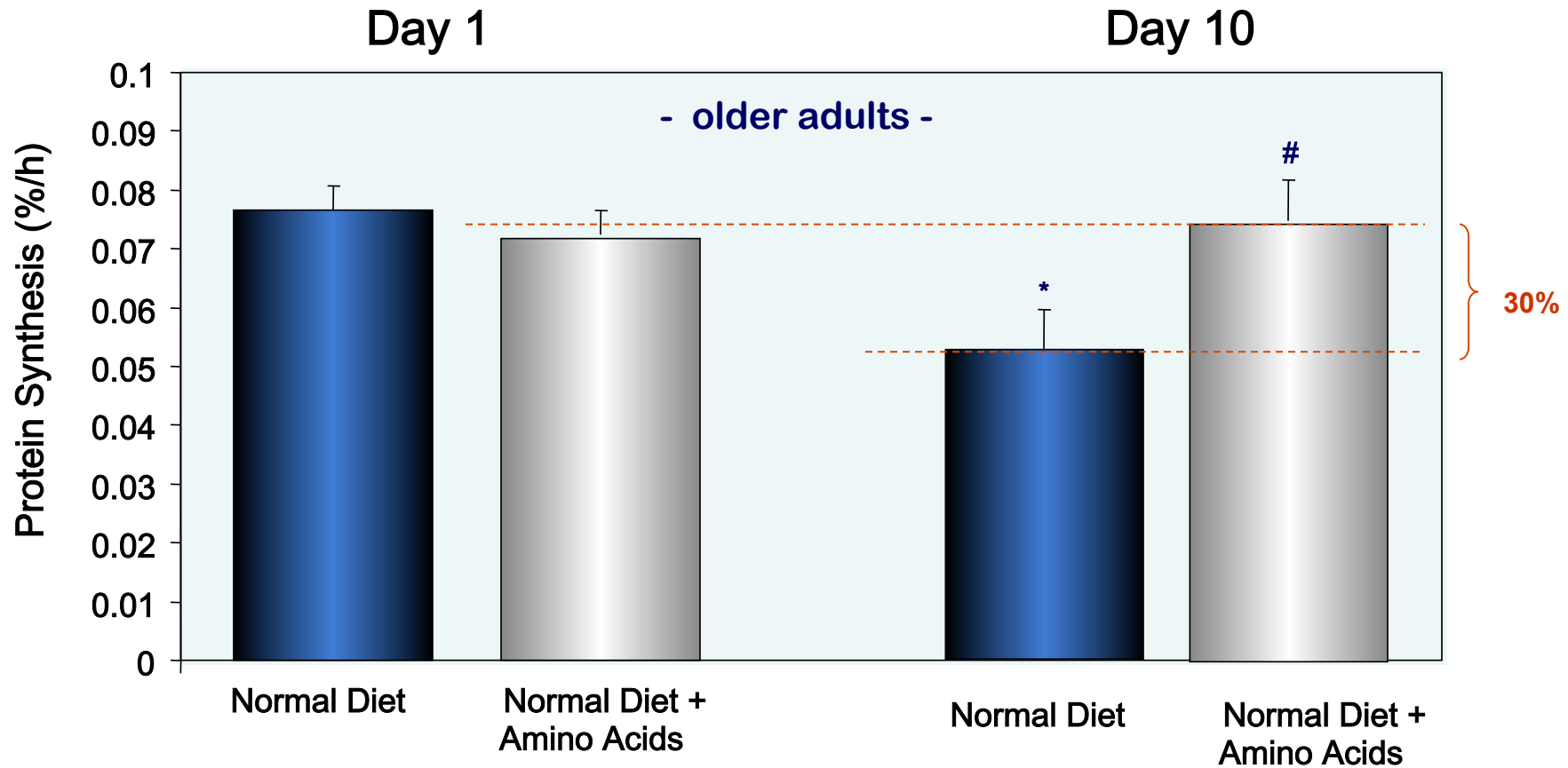


Inactivity reduces muscle protein synthesis

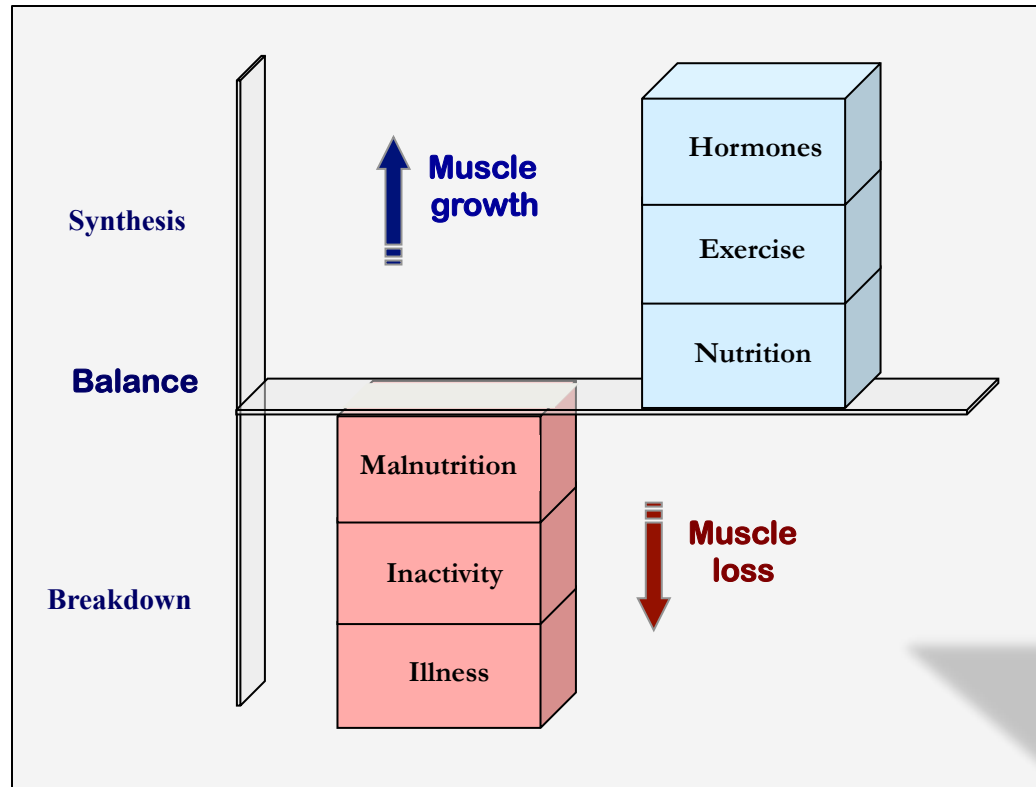


24 h muscle protein synthesis during 10 day of inactivity in elders
(stable isotope methodology)

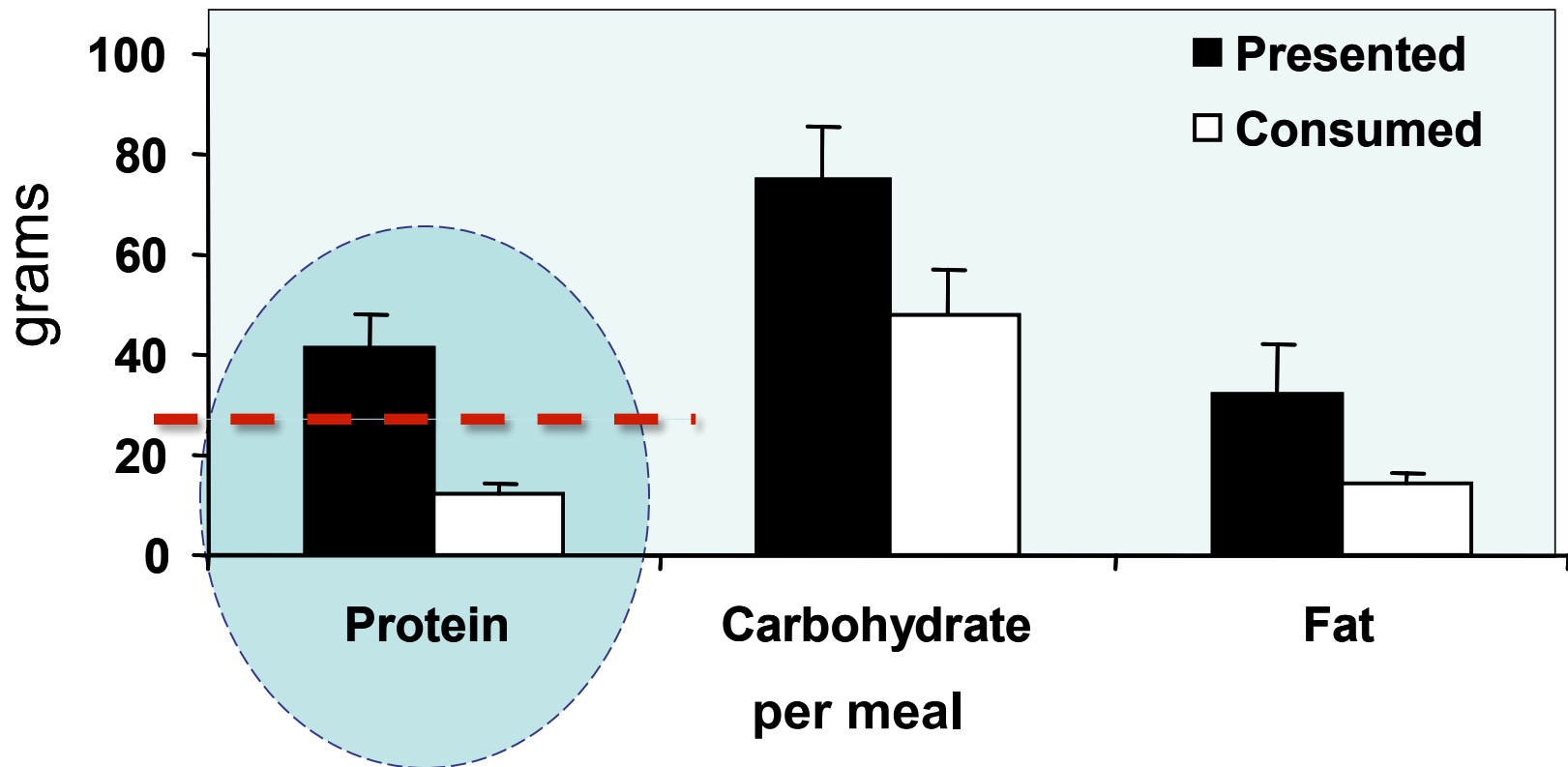
Protein combats inactivity-induced muscle loss



Combined catabolic insults: *the inpatient experience*



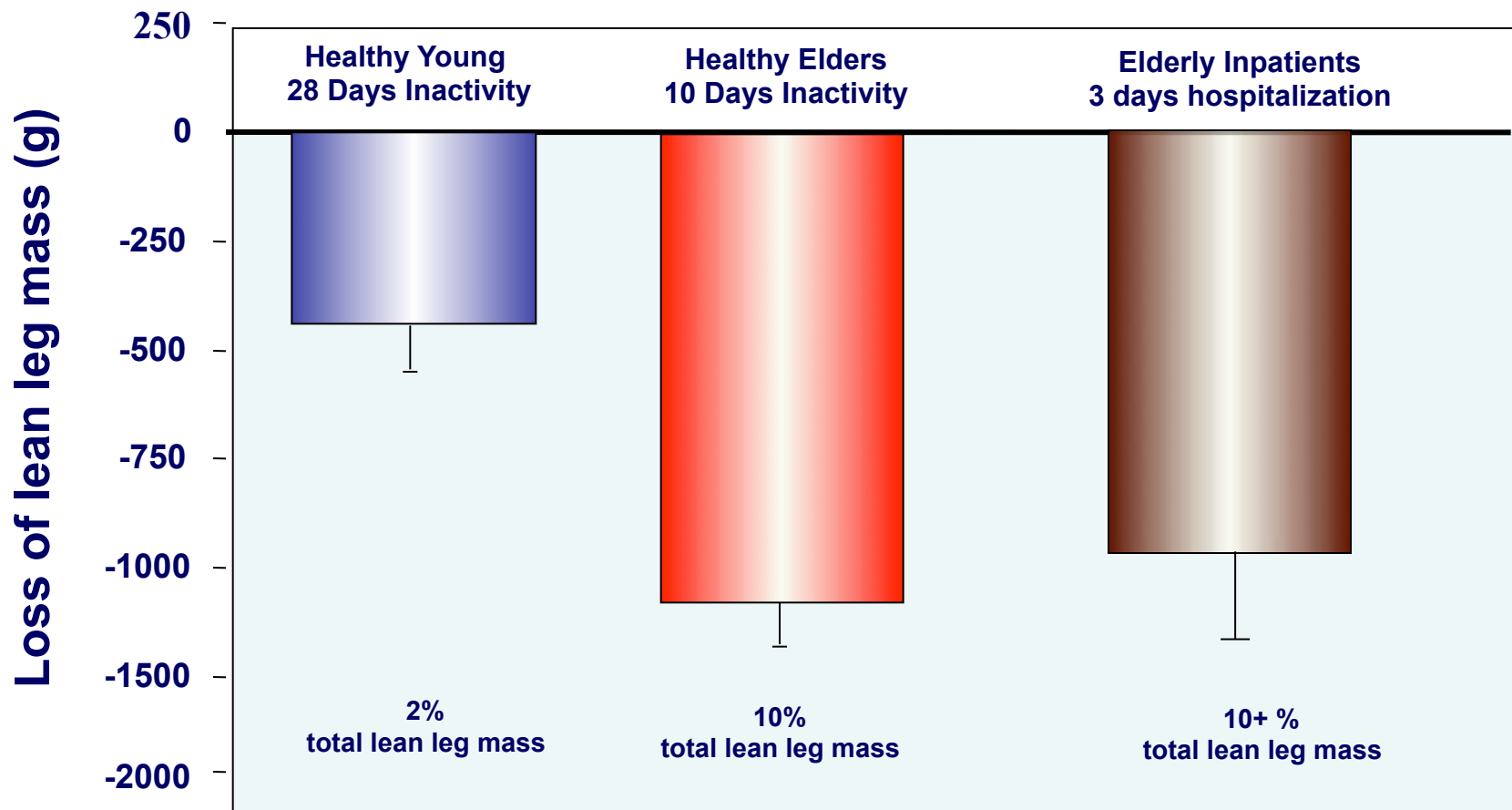
Are our older inpatients eating enough ?





Dessert (banana cream pie) = 50% of protein

Muscle Loss in Hospitalized Elders

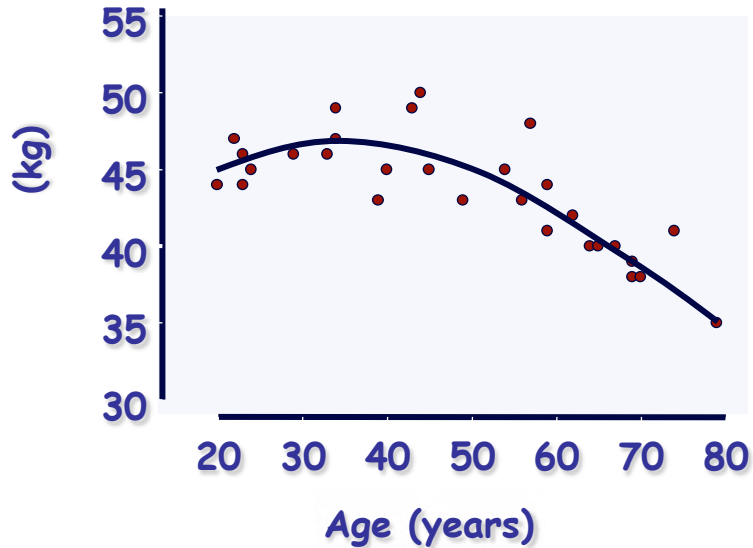


3. establishing a targeted nutritional intervention

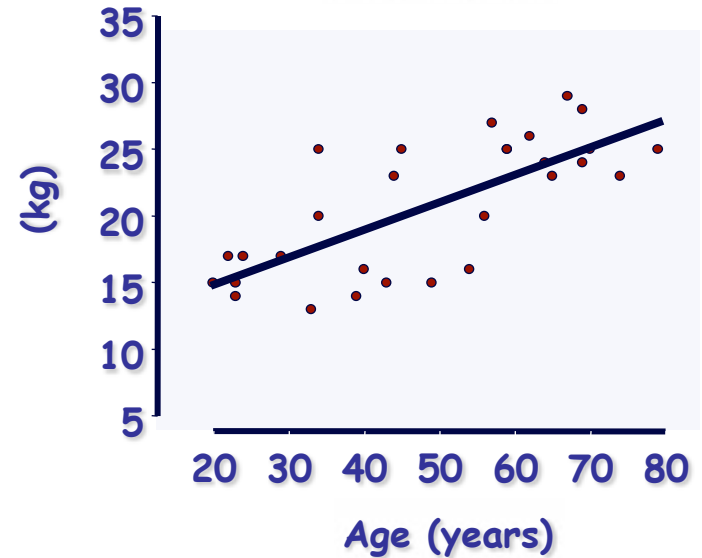


Sarcopenia: - traditional model -

Lean Body Mass

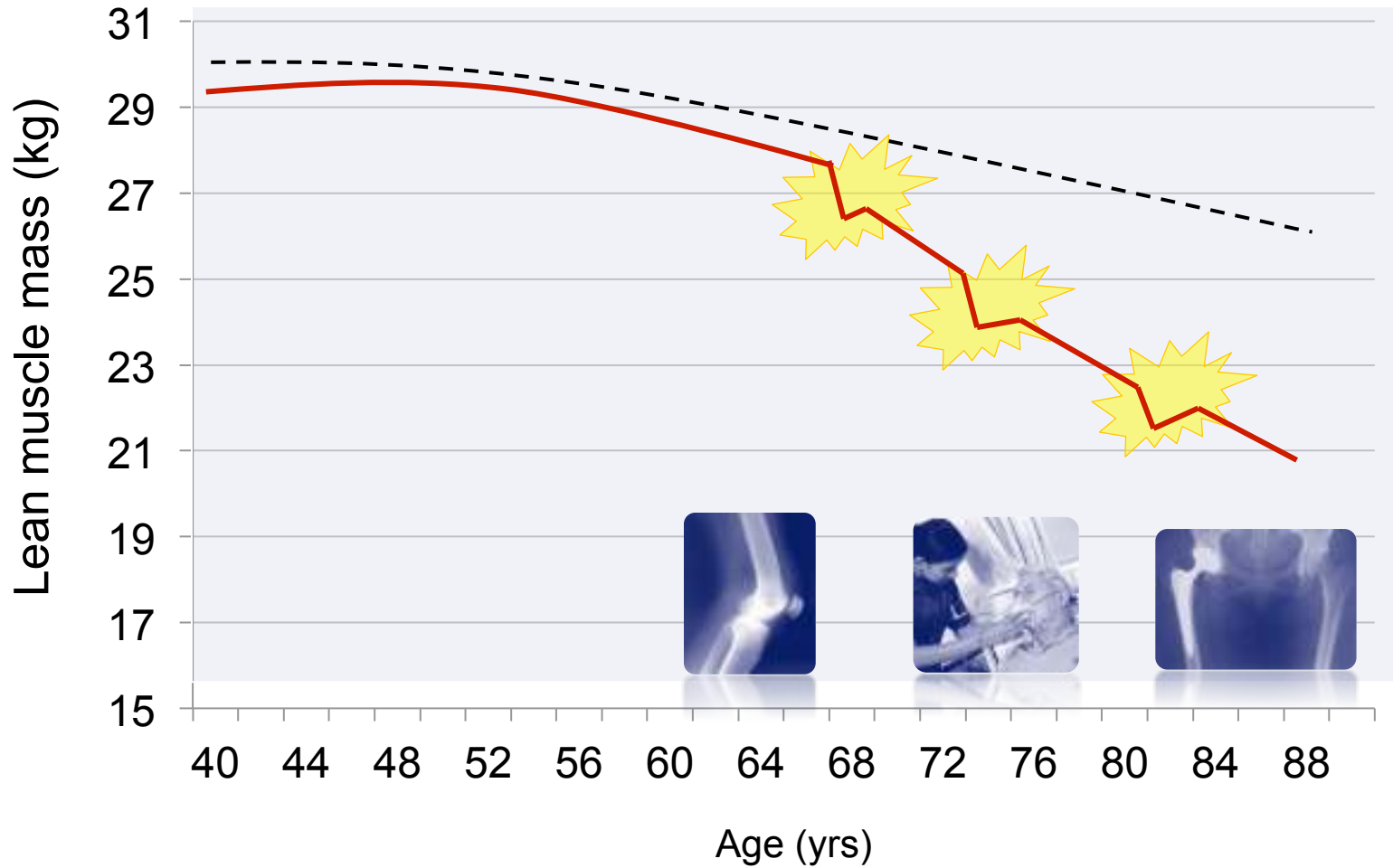


Fat Mass



Alternate model of muscle loss

- developing tactical nutrition interventions -



Prevention and treatment strategies

- muscle mass & function -

PREVENTION:

- a). Consume a moderate amount of high-quality protein, 3-times per day
- b). Consume protein in close proximity to physical activity

TREATMENT:

- a). React aggressively with nutritional support to reduce the rapid loss of muscle and strength associated with physical inactivity



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