

ProMuscle

TI FOOD
NUTRITION

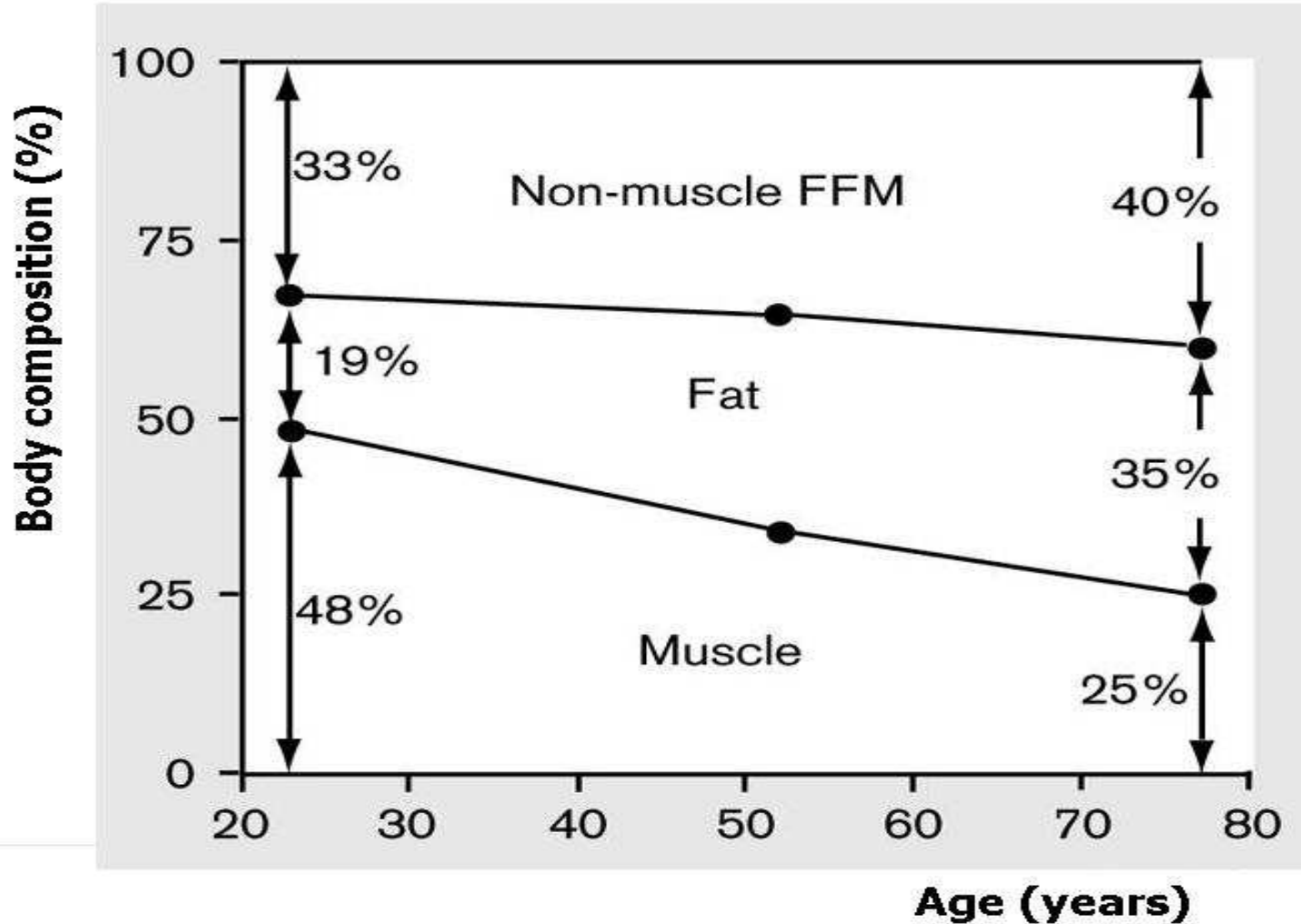
Michael Tieland

Me...

- Poor leg strength
- Decrease amount of leg muscle mass
- Difficulties with ADL
- Comparison with an elderly men
- Am I becoming sarcopenic?



Sarcopenia



Sarcopenia CSA

Height and weight matched

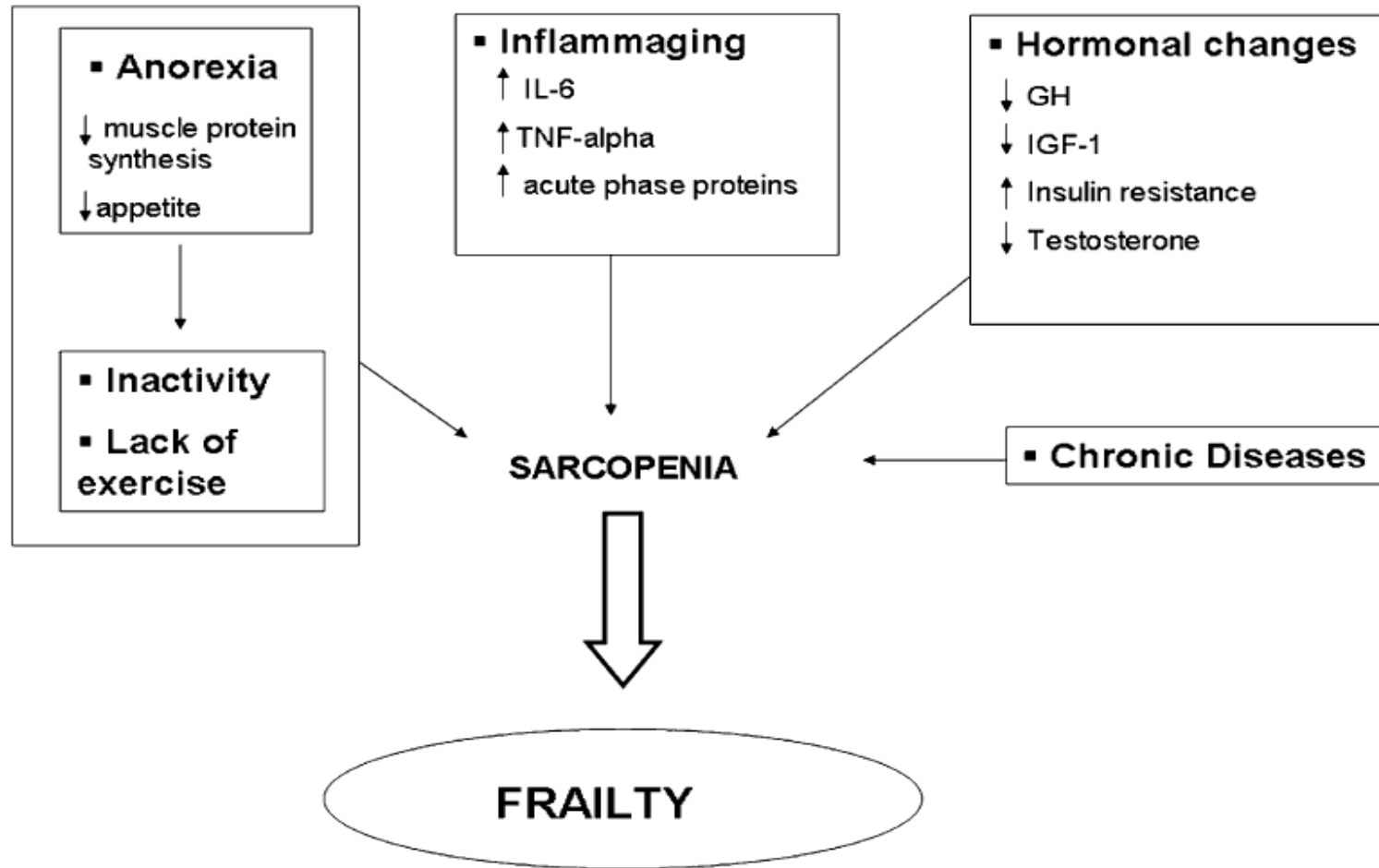


Young Male, age 25

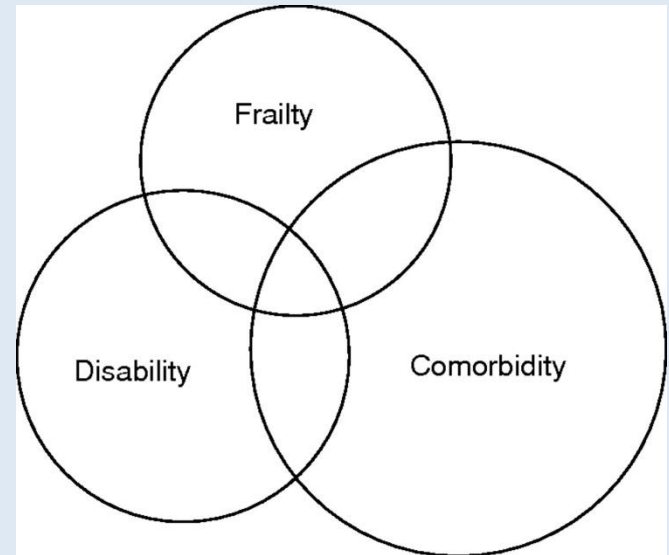


Older Male, age 81

Sarcopenia and Frailty



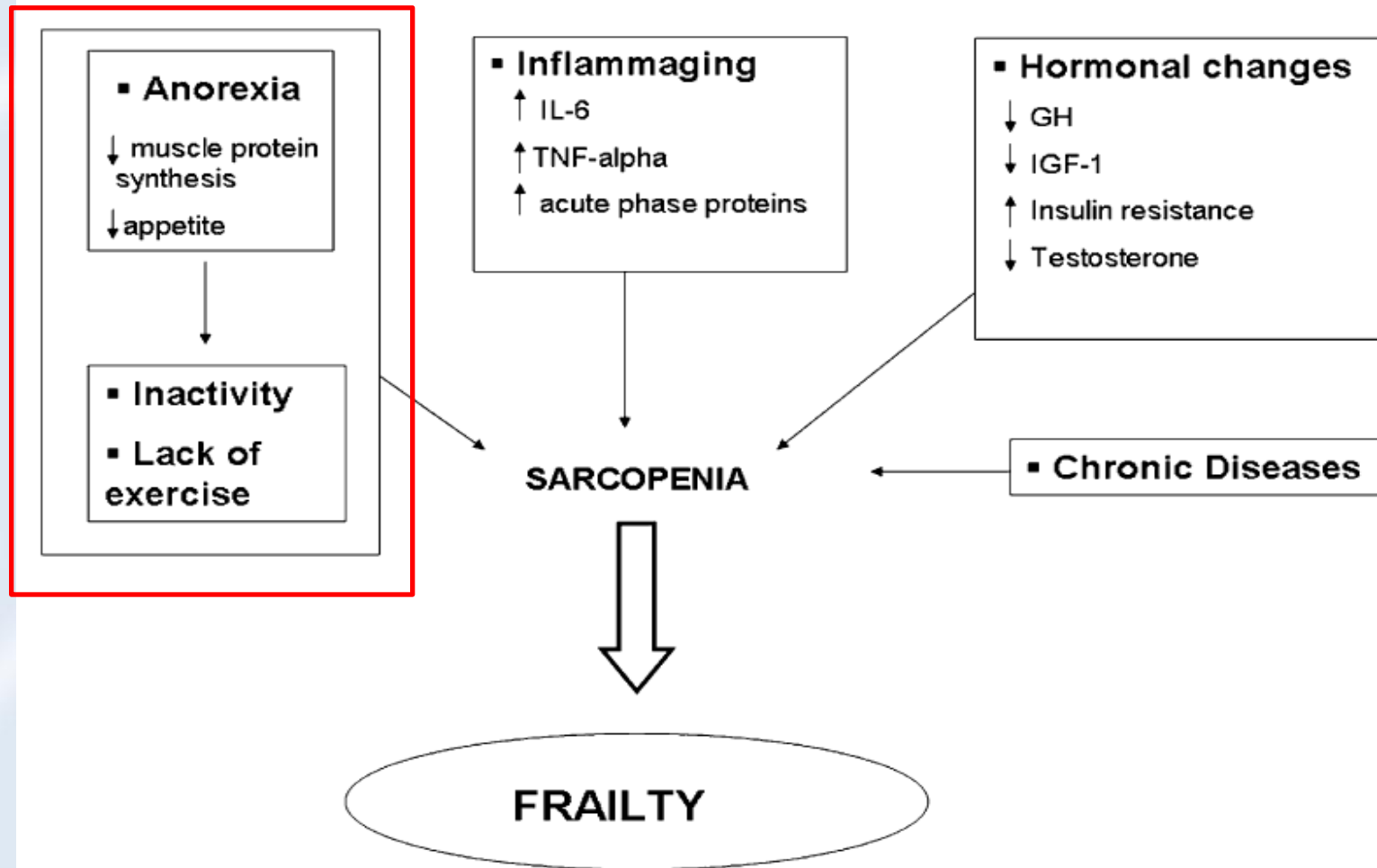
Frailty



- Increased risk:
falls, disability, comorbidity
institutionalization, mortality^{1,2}

1. Cesari et al. 2006
2. Bauer & Sieber. 2008

Sarcopenia and Frailty



Intervention strategies for sarcopenia

Physical activity —→ Resistance exercise

Nutrition —→ Protein intake

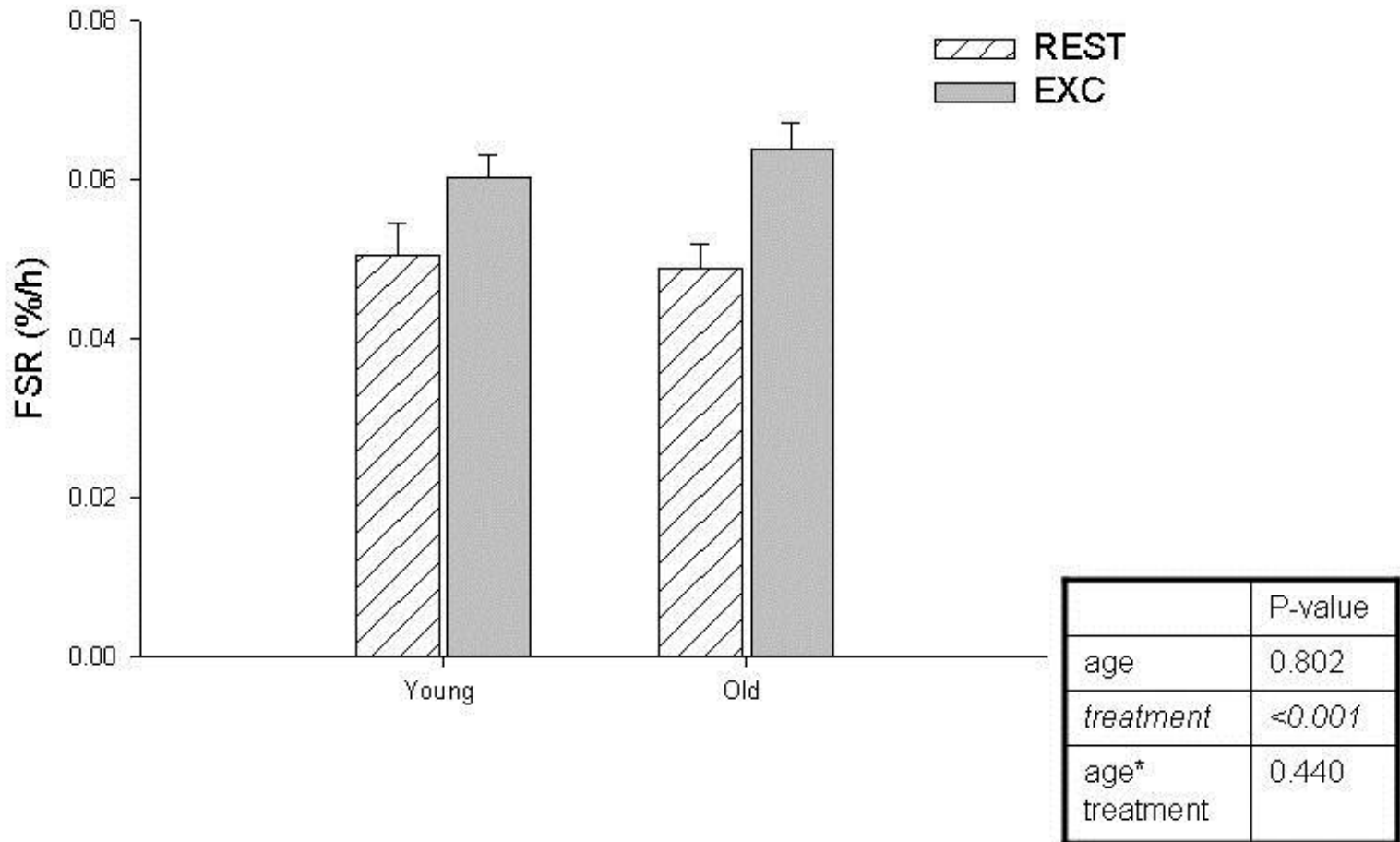


Resistance exercise in healthy elderly

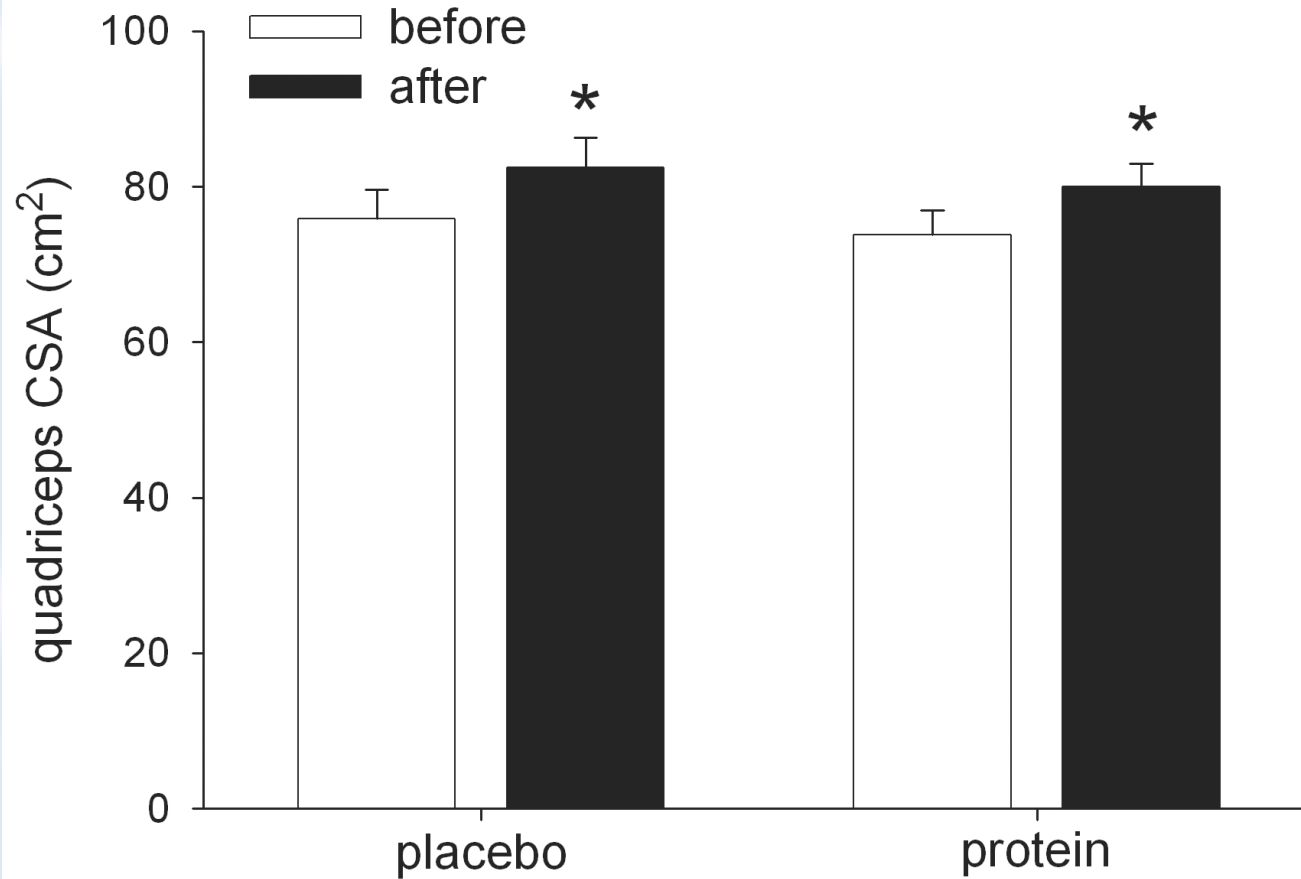


Resistance exercise in the elderly

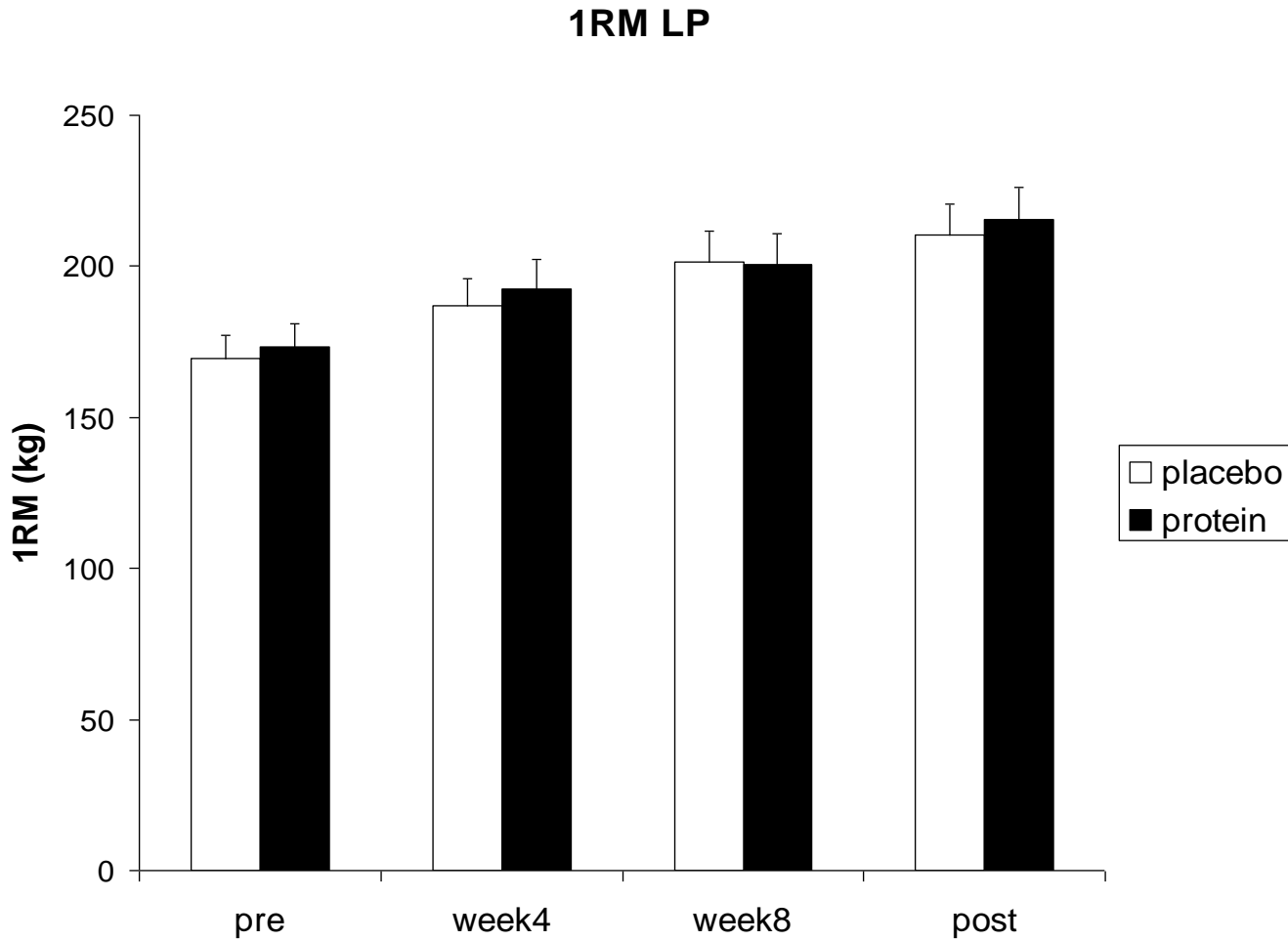
FSR L-[1-¹³C] Phenylalanine



Quadriceps size



1RM strength



Conclusion

- Resistance exercise training stimulates muscle protein synthesis in healthy elderly
- Long term resistance exercise training stimulates muscle mass gain in healthy elderly
- Long term resistance exercise training increases muscle strength in healthy elderly

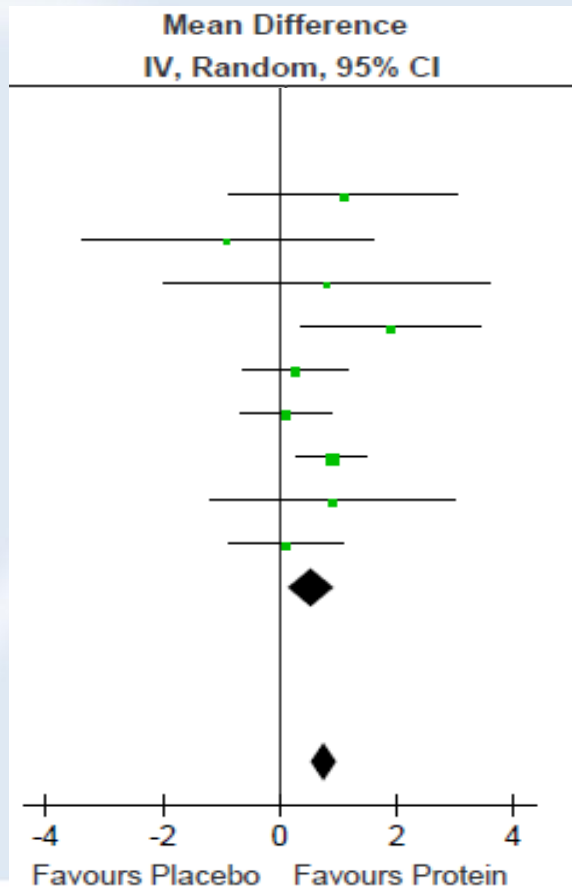
Protein intake and exercise



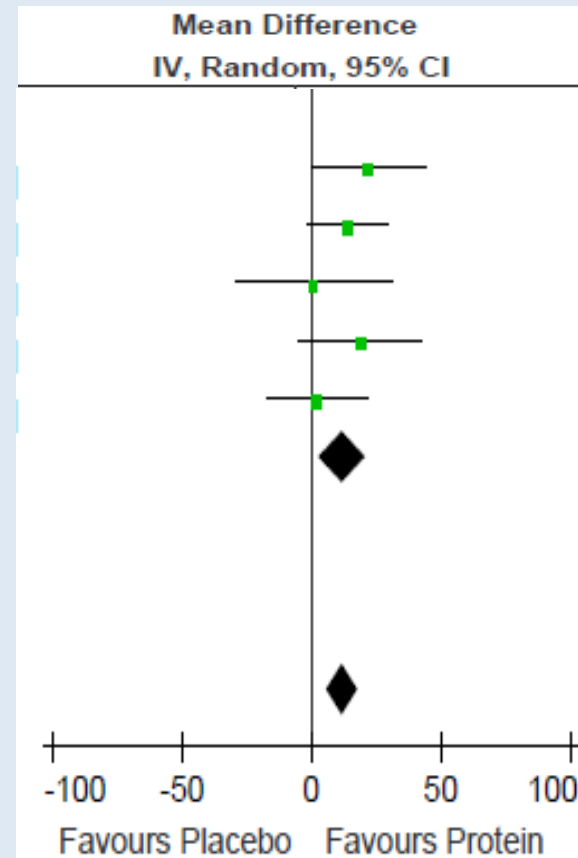
Protein intake and resistance exercise

Meta analysis

Lean body mass

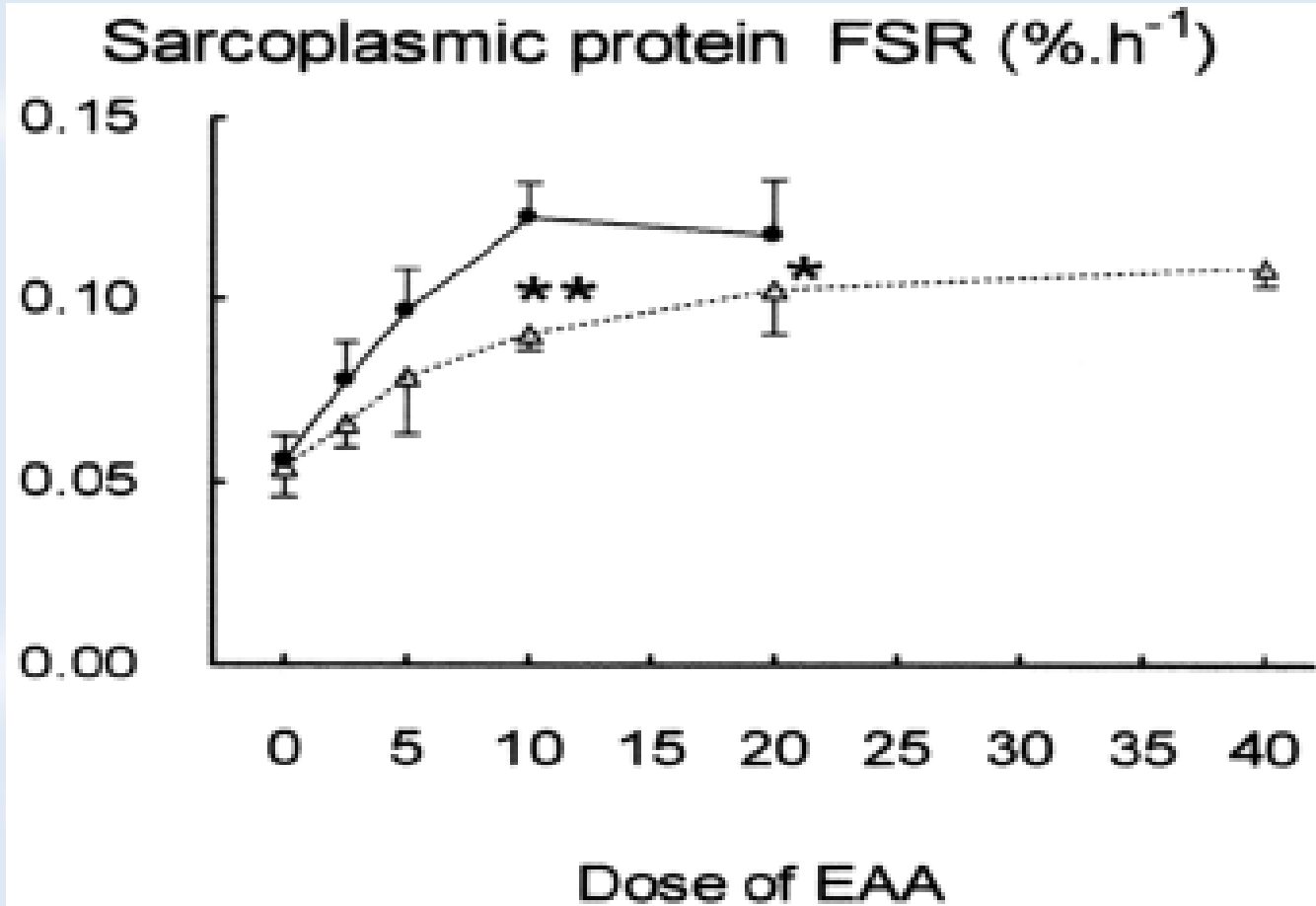


Leg strength

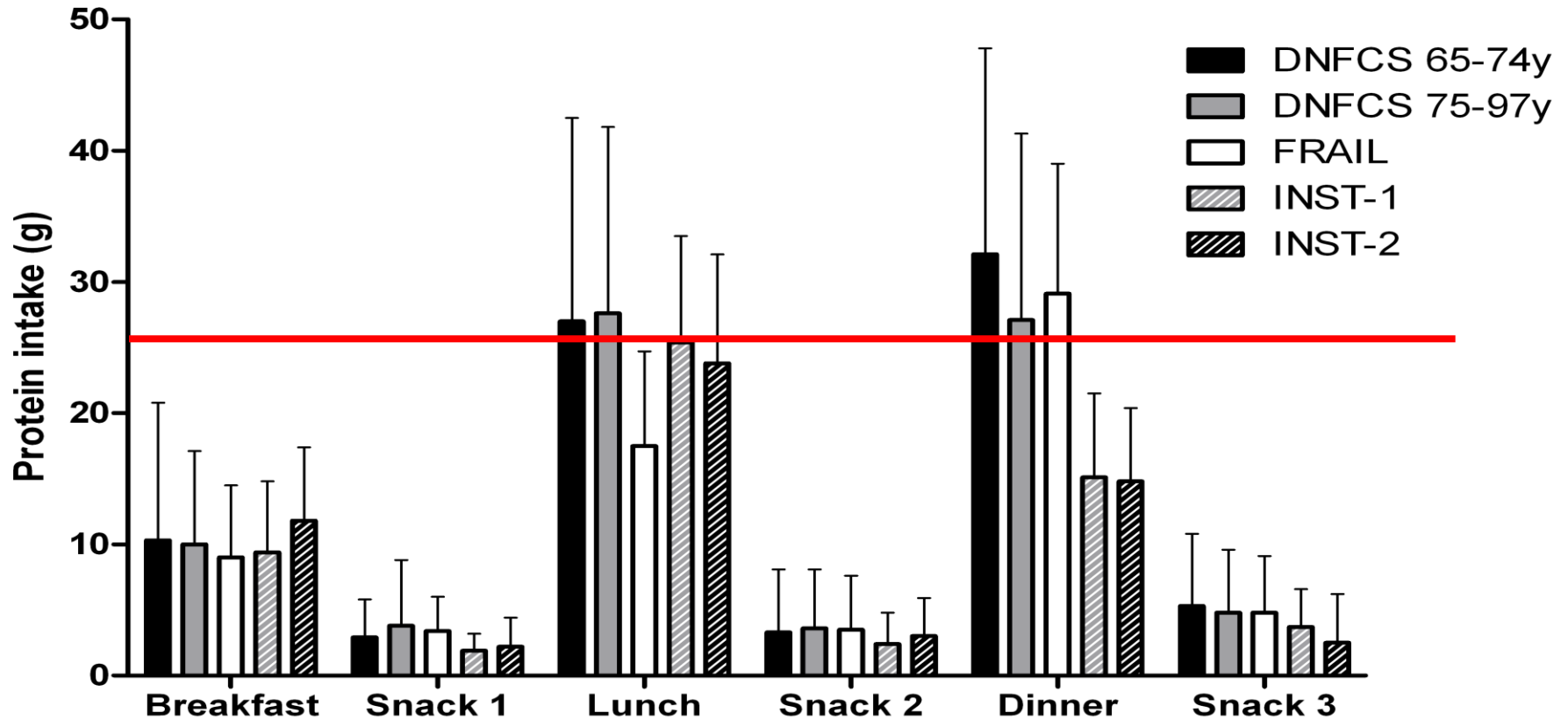


Protein intake

Anabolic resistance?



Protein intake pattern



Conclusion

- Protein intake during exercise stimulates both muscle mass and strength in healthy elderly
- Anabolic resistance might be important for the elderly when low protein is ingested
- Habitual protein intakes at breakfast and lunch are low