

Low protein intake, muscle strength and physical performance in the very old

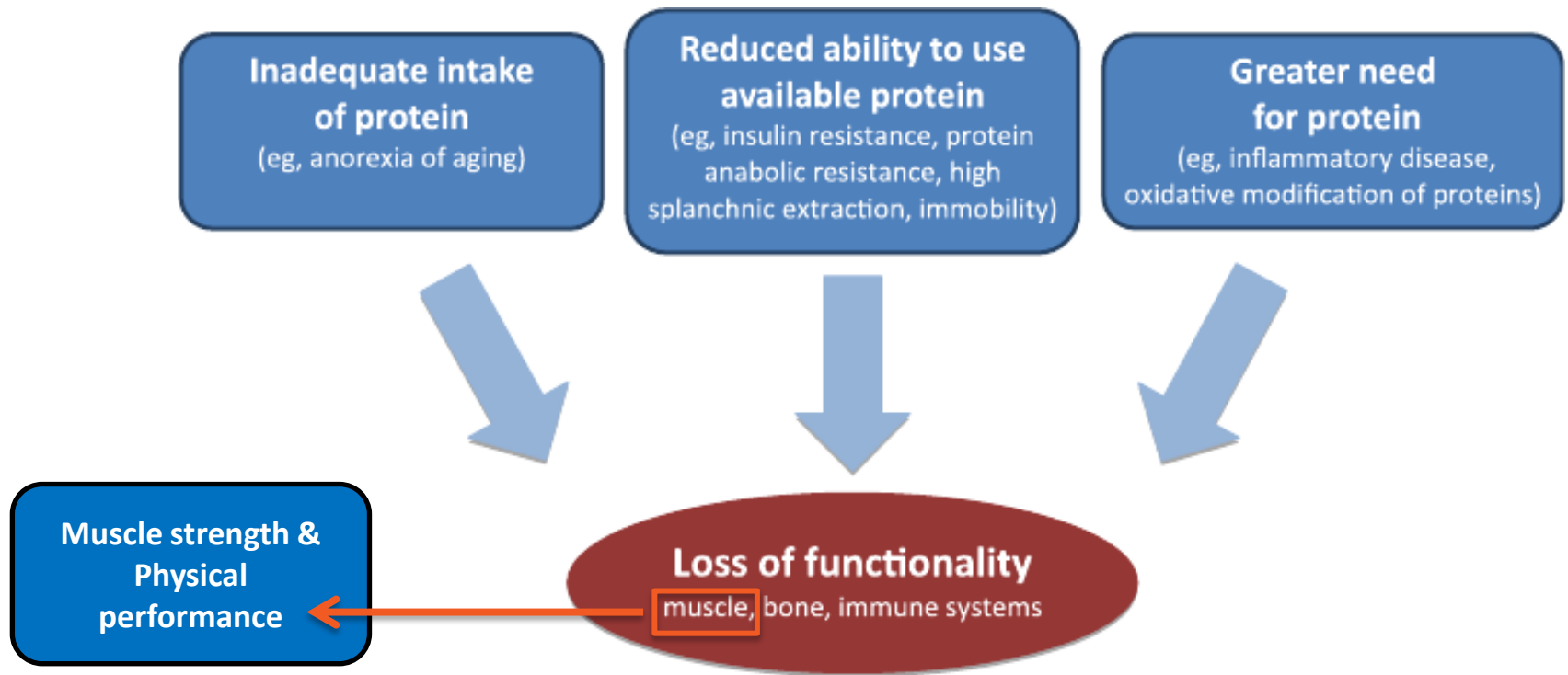
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Causes of non-optimal protein intake and utilisation in older adults



Protein requirements

- RDA 0.8 g/kg BW/d does not take into account multimorbidity, physiological changes, reduced physical activity and appetite in the very old ¹⁻³



- 1-1.5 g/kg BW/d
 - 25-30g/meal (~10g EAA)
 - adjusted (ideal) body weight ⁴

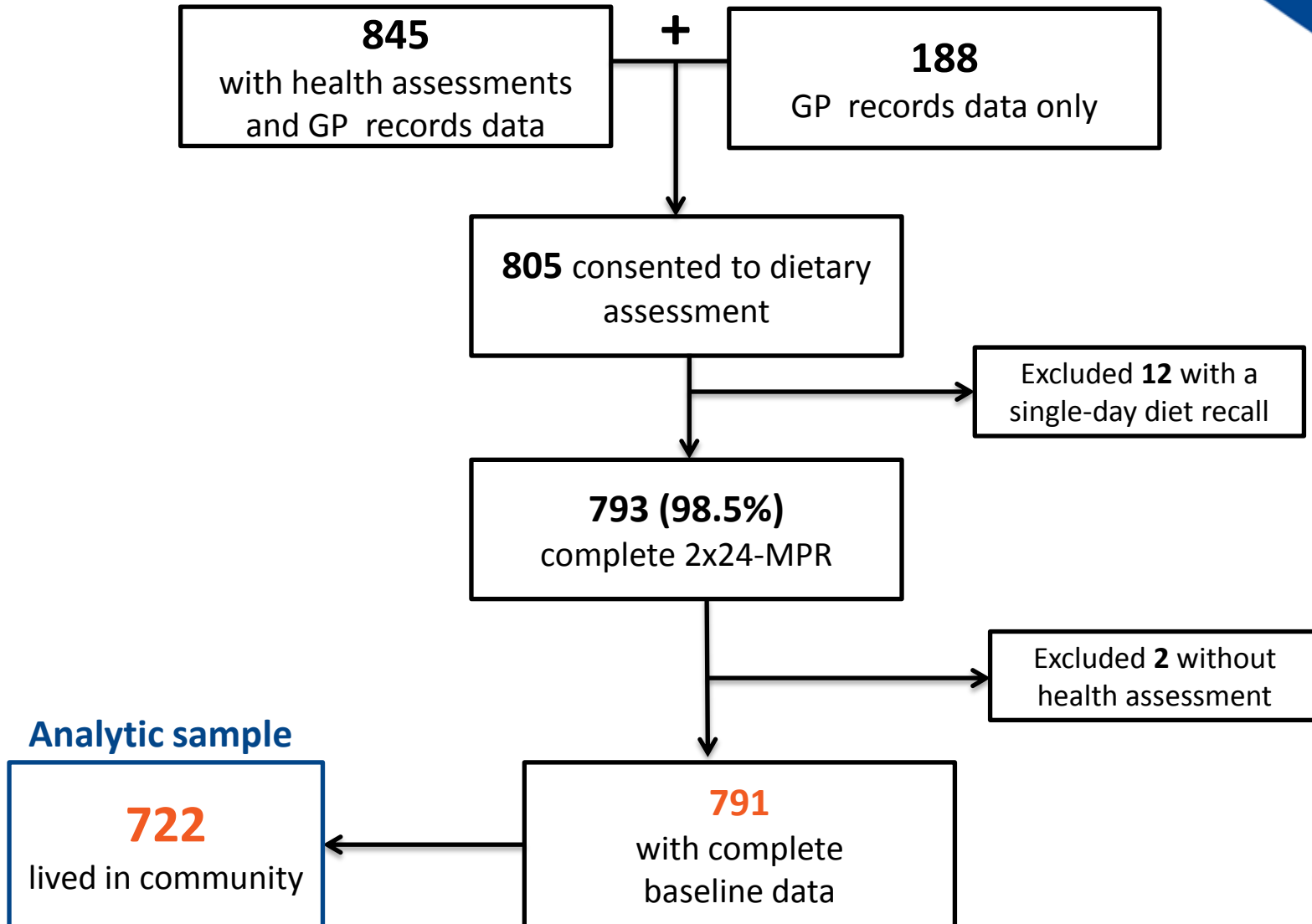


Aims

- Association low protein intake (<1 g/ kg aBW/d), and muscle strength (grip strength, GS) and physical performance (Timed Up-and-Go, TUG) in the very old over 5 years.
- Explore if physical activity (PA) and protein intake distribution across the day influence these relationships.



The Newcastle 85+ Study



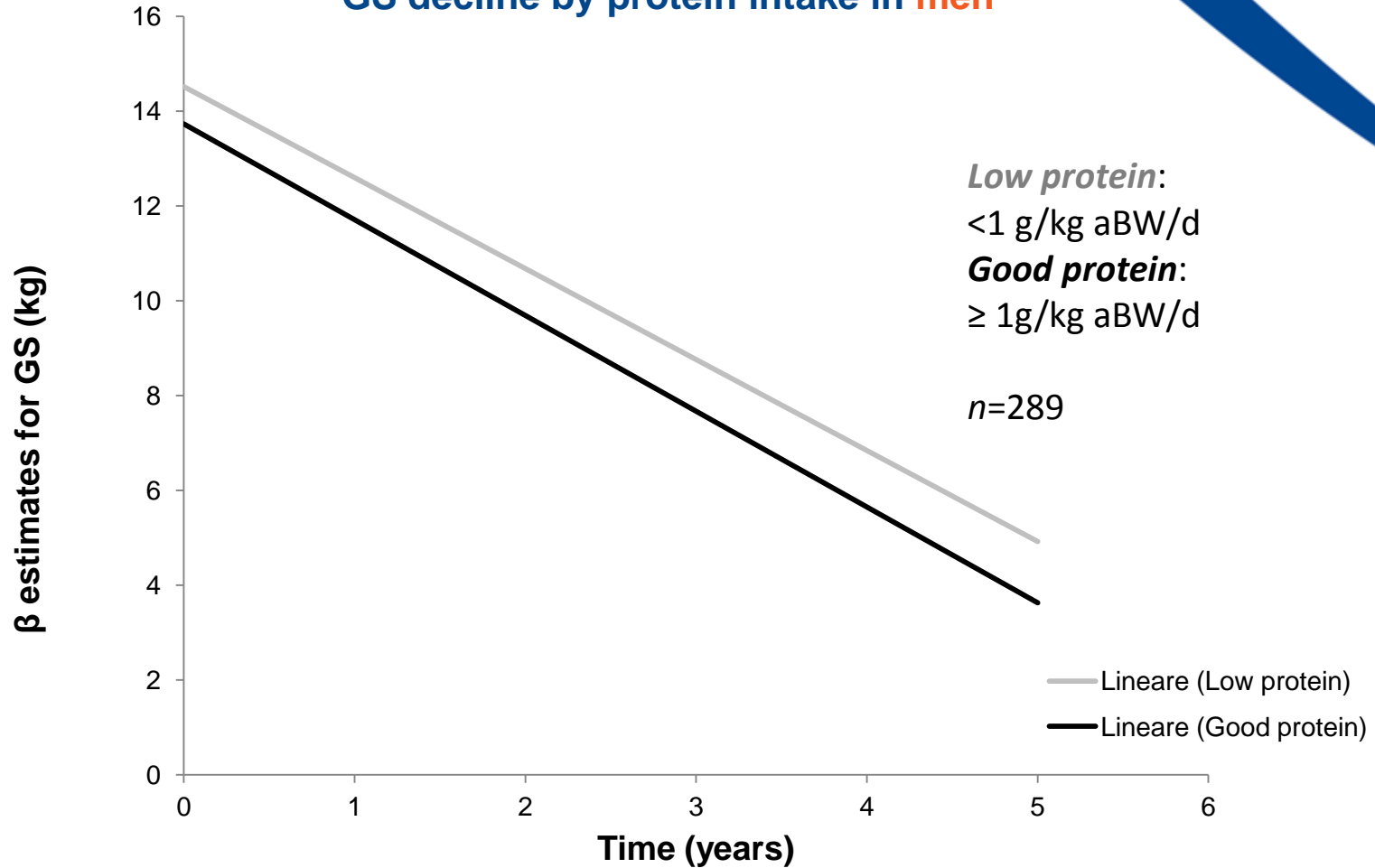
Methods

- **Protein intake**
- 2x24hr MPR to estimate protein intake
 - **<1 g/kg aBW/d (Low protein intake) ***
 - **≥1 g/kg aBW/d (Good protein intake).**
- **Outcomes**
- Decline in GS and TUG (baseline, 1.5, 3 and 5y follow-up)
- Mixed linear models (stratified by sex and protein intake group)
- **Confounders**
- Anthropometry, health-related, diet-related, life style, attrition



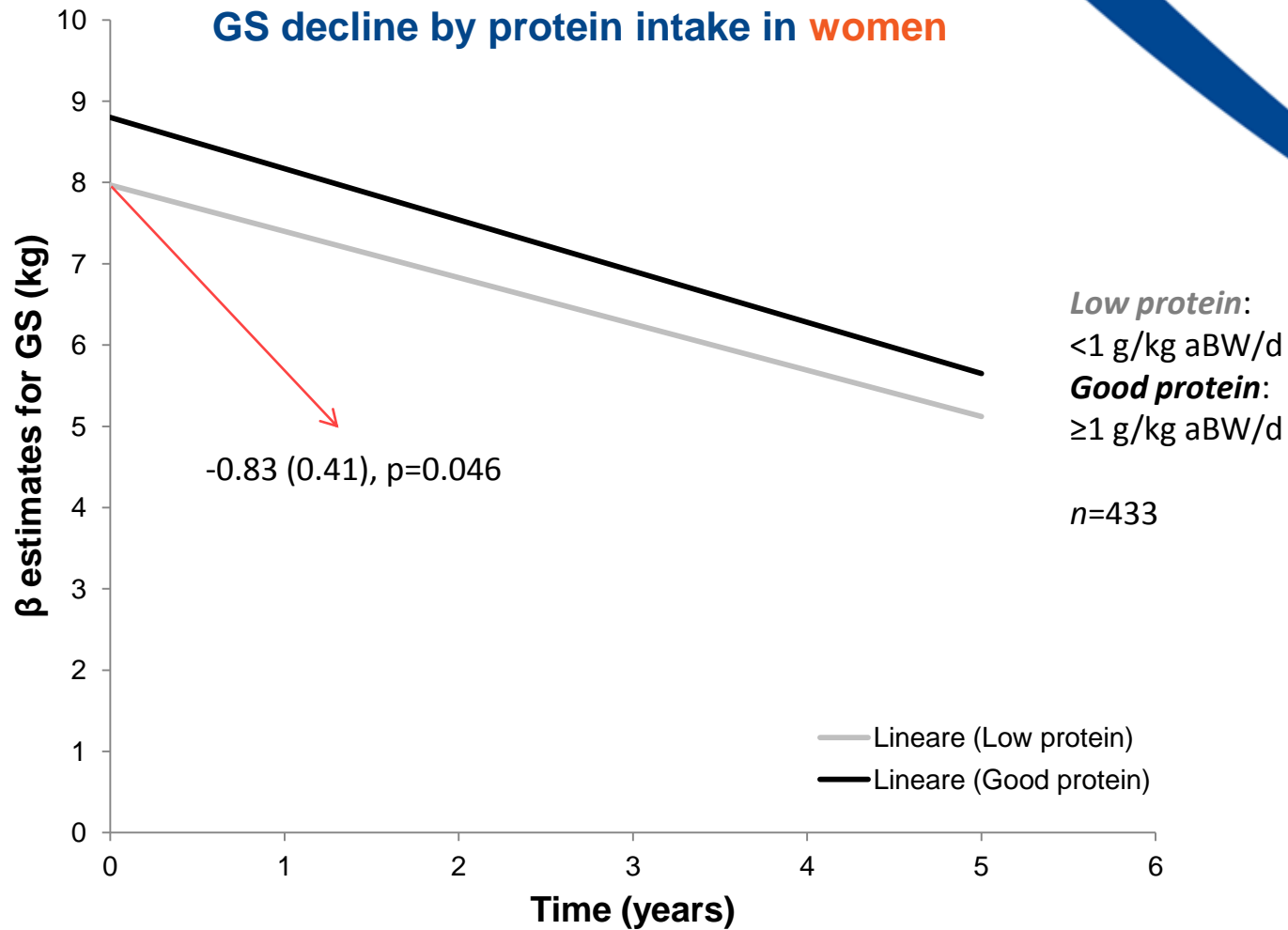
* Adjusted body weight to reflect a healthy BMI in those ≥ 71 , Berner LA *et al* J Acad Nutr Diet 2013;113:809-15

GS decline by protein intake in men



- no association between low protein intake and GS in men.
- Protein distribution was not associated with GS in men.

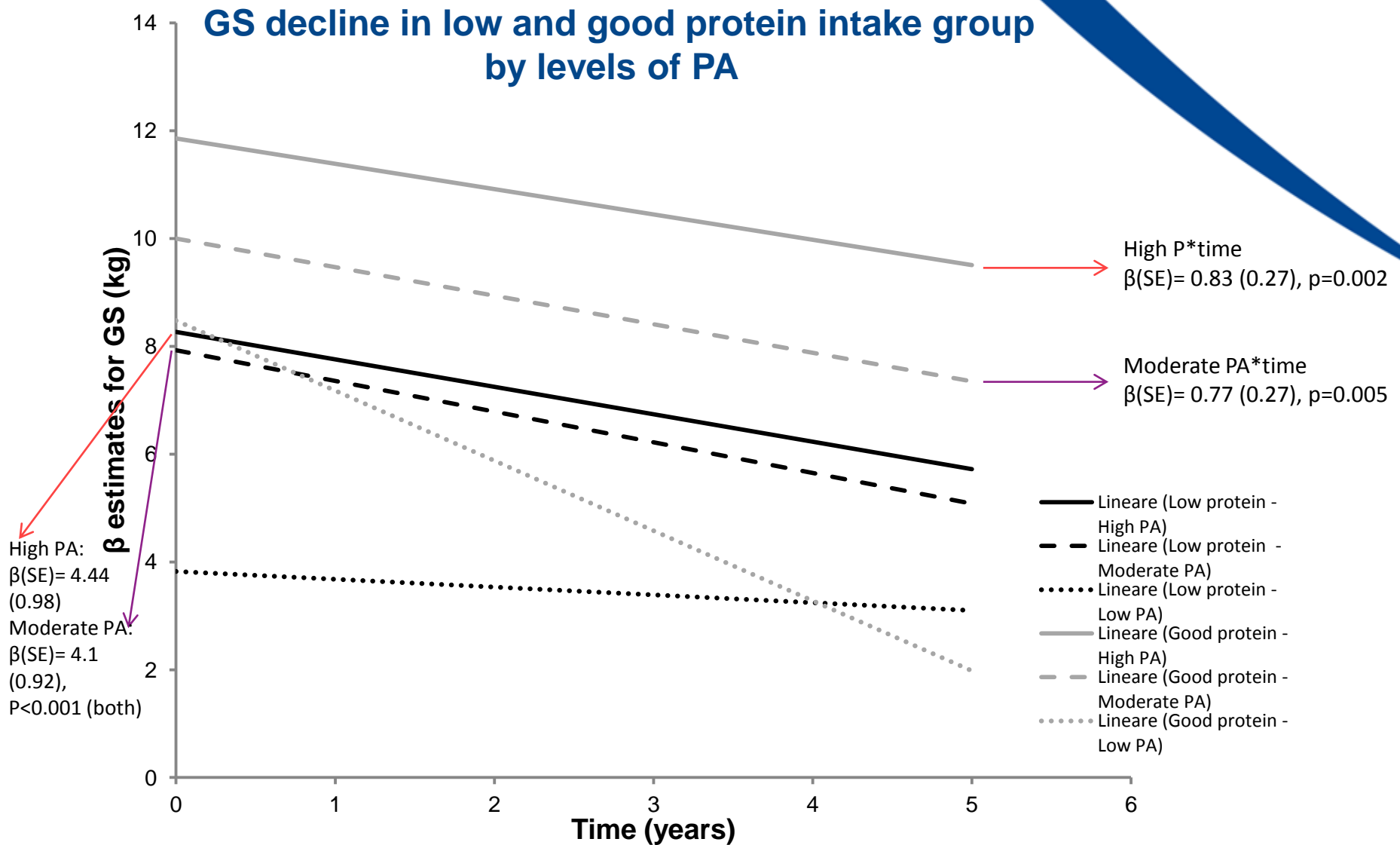




- association between low protein intake and GS at baseline
- not with GS decline over time
- protein distribution was not a significant predictor of GS



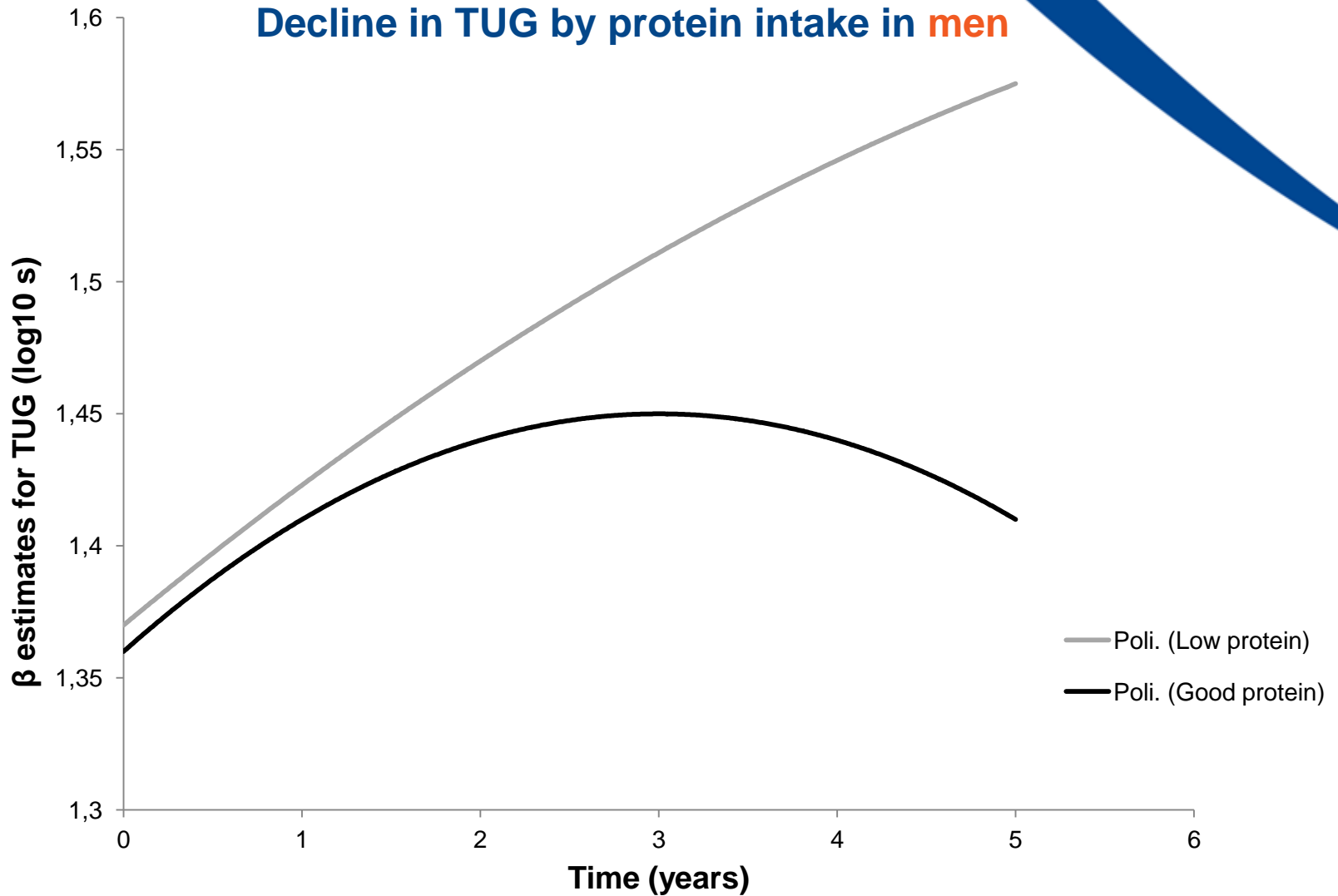
GS decline in low and good protein intake group by levels of PA



- ↑PA predicted the rate of GS decline in the good protein intake group (grey lines), but not the rate in low protein (black lines).
- good protein intake group with low PA had the worst GS trajectory.



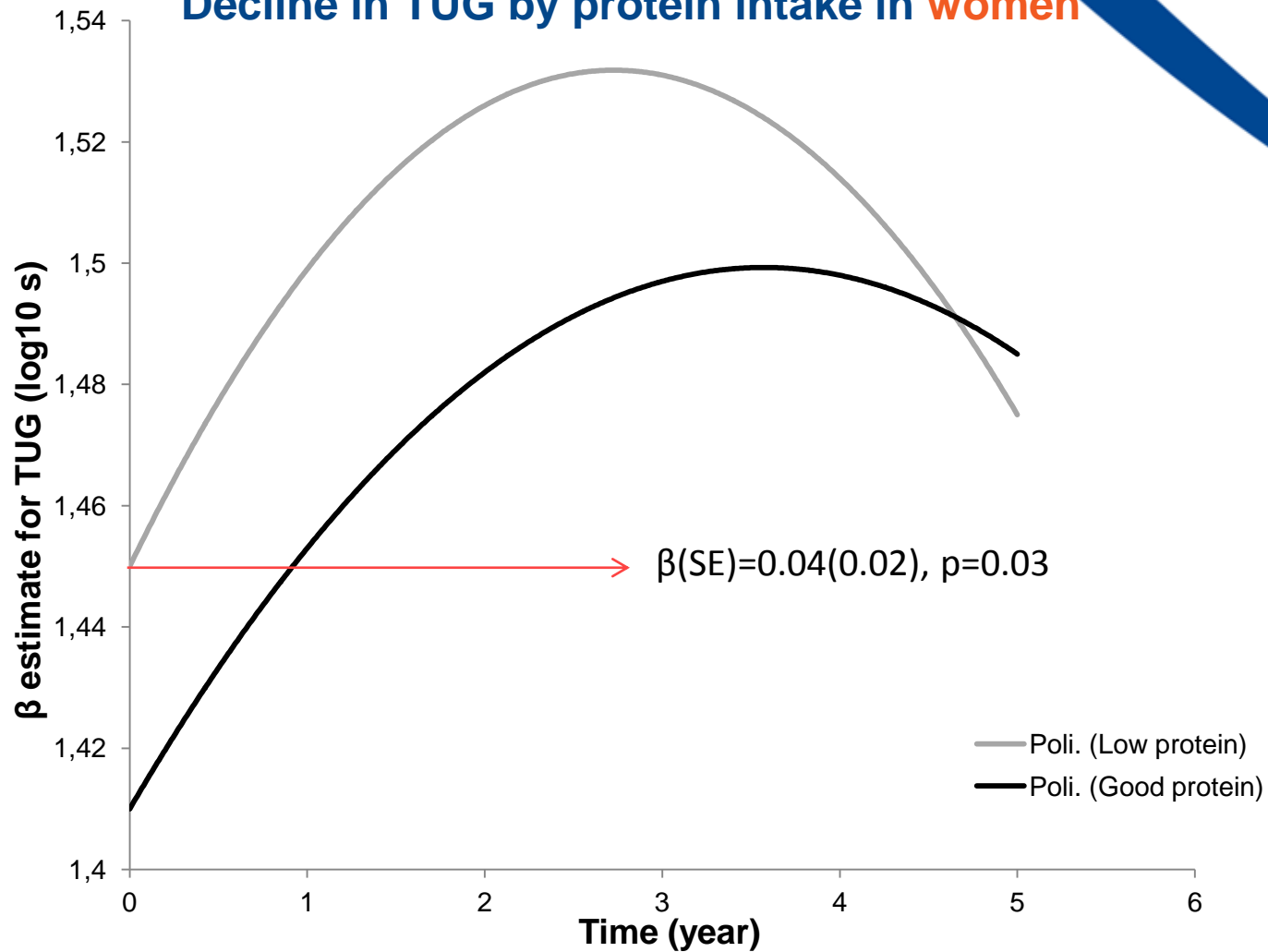
Decline in TUG by protein intake in men



- low protein intake was not associated with TUG in men.
- no significant interactions (PA*time)



Decline in TUG by protein intake in women



- low protein intake was associated with worse TUG at baseline only in women
- no interactions (PA*time) were found
- protein distribution was not associated with TUG



Conclusion

- Protein intake $<1\text{g}/\text{kg aBW}/\text{d}$ was associated with -0.83 kg GS and worse TUG in women at baseline only after adjustment for a range of confounders
- Confirms previous reports that a higher protein intake above the current RDA is needed
- Suggests that higher PA may be ineffective in the very old if protein intake is not adequate



Acknowledgement

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