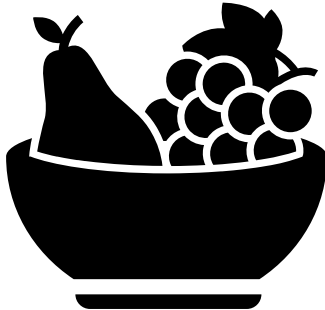
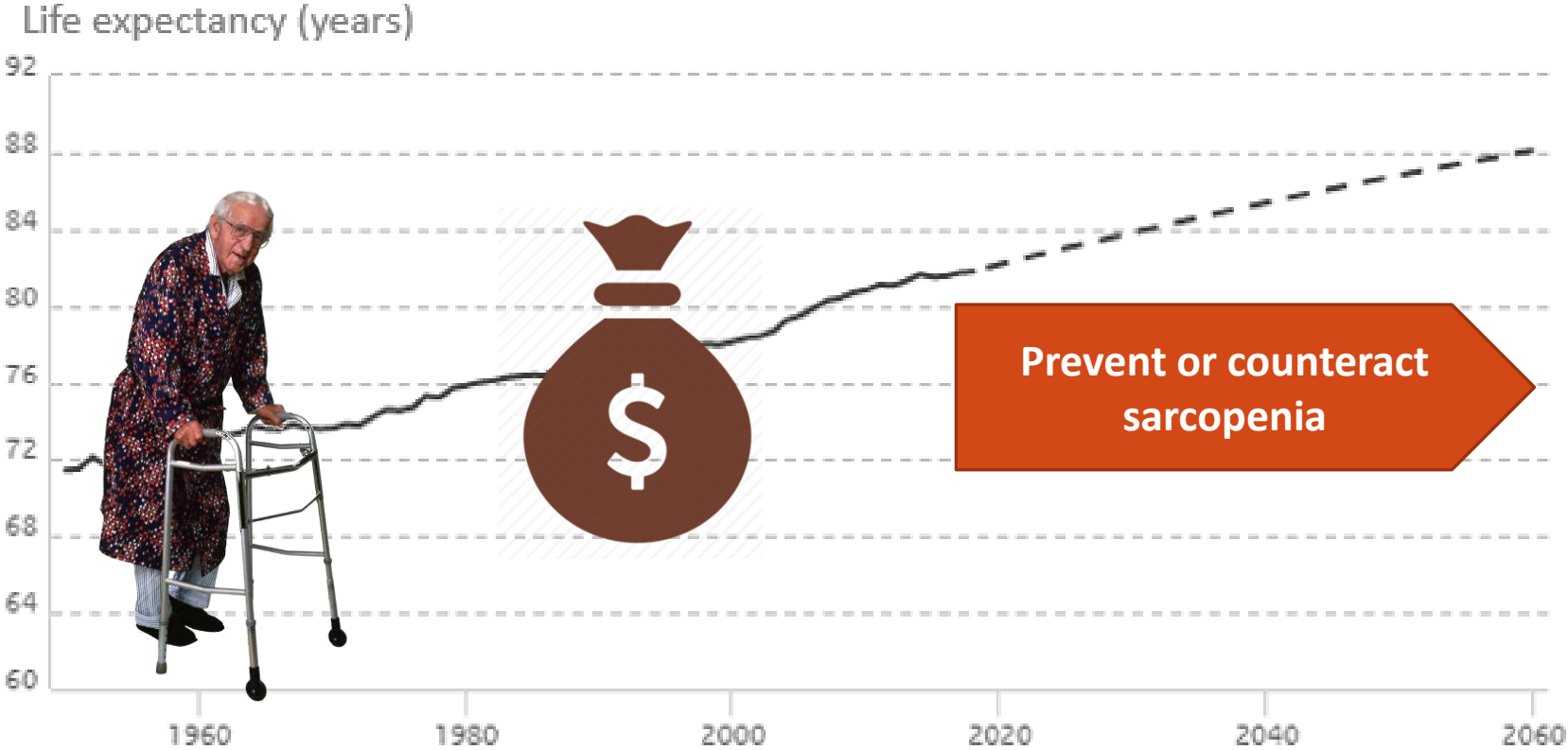


# Muscle health and sarcopenia in the ageing population

*The benefits and practical challenges of an intervention  
combining dietary protein and exercise*

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# Older population - sarcopenia



# Protein intake

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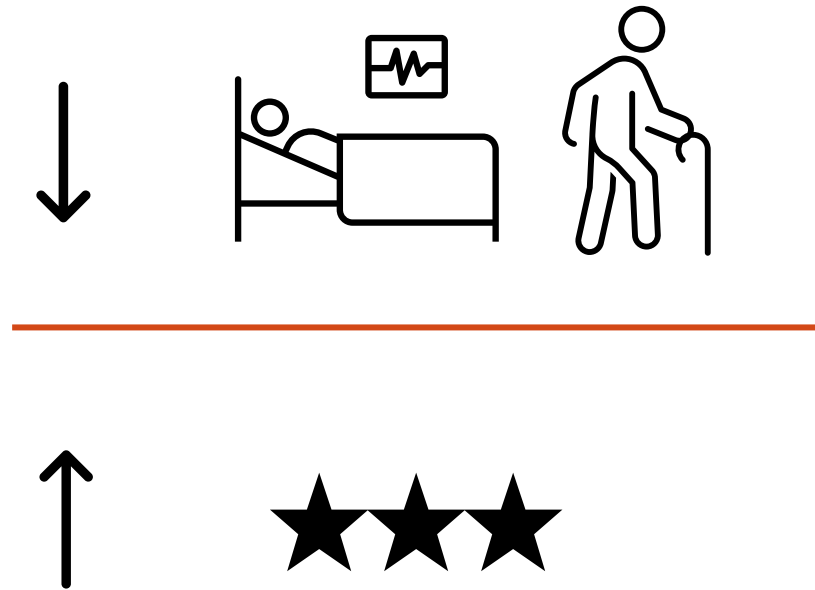
## *Recommendations*

**Adults**  
0.8  
g/kg bw/day

**Older adults**  
1.0-1.2  
g/kg bw/day

# Why is this important?

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## Question

What is the percentage of older adults (55+) that does NOT reach a protein intake of 1.2 g/kg bw/day?

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A. 29%

---

B. 55%

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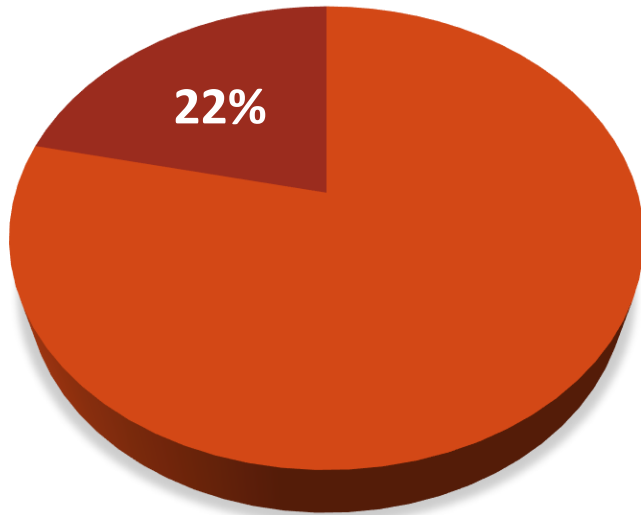
C. 71%

# Current intake

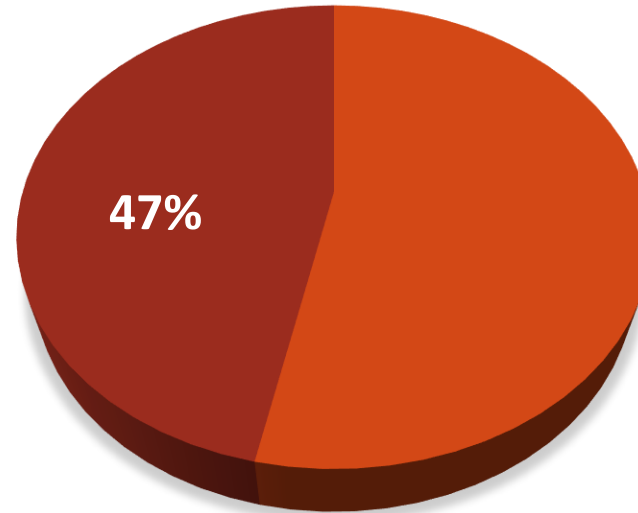
*% not meeting recommendations*

---

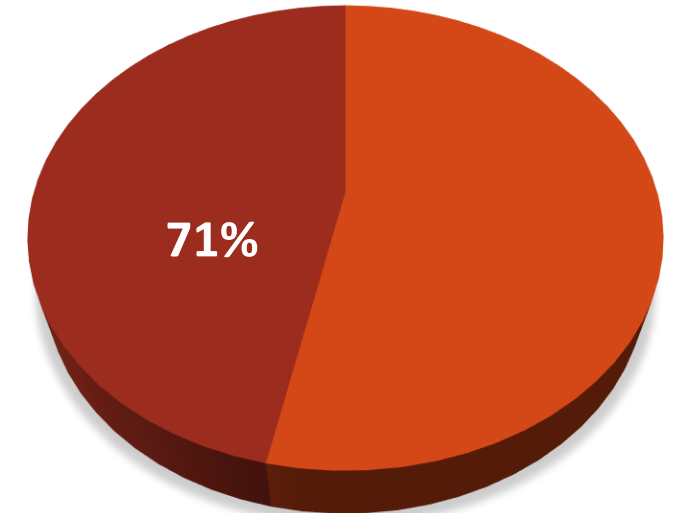
**Protein intake**  
**<0.8 g/kg bw/day**



**Protein intake**  
**<1.0 g/kg bw/day**



**Protein intake**  
**<1.2 g/kg bw/day**



# Important

---



Timing

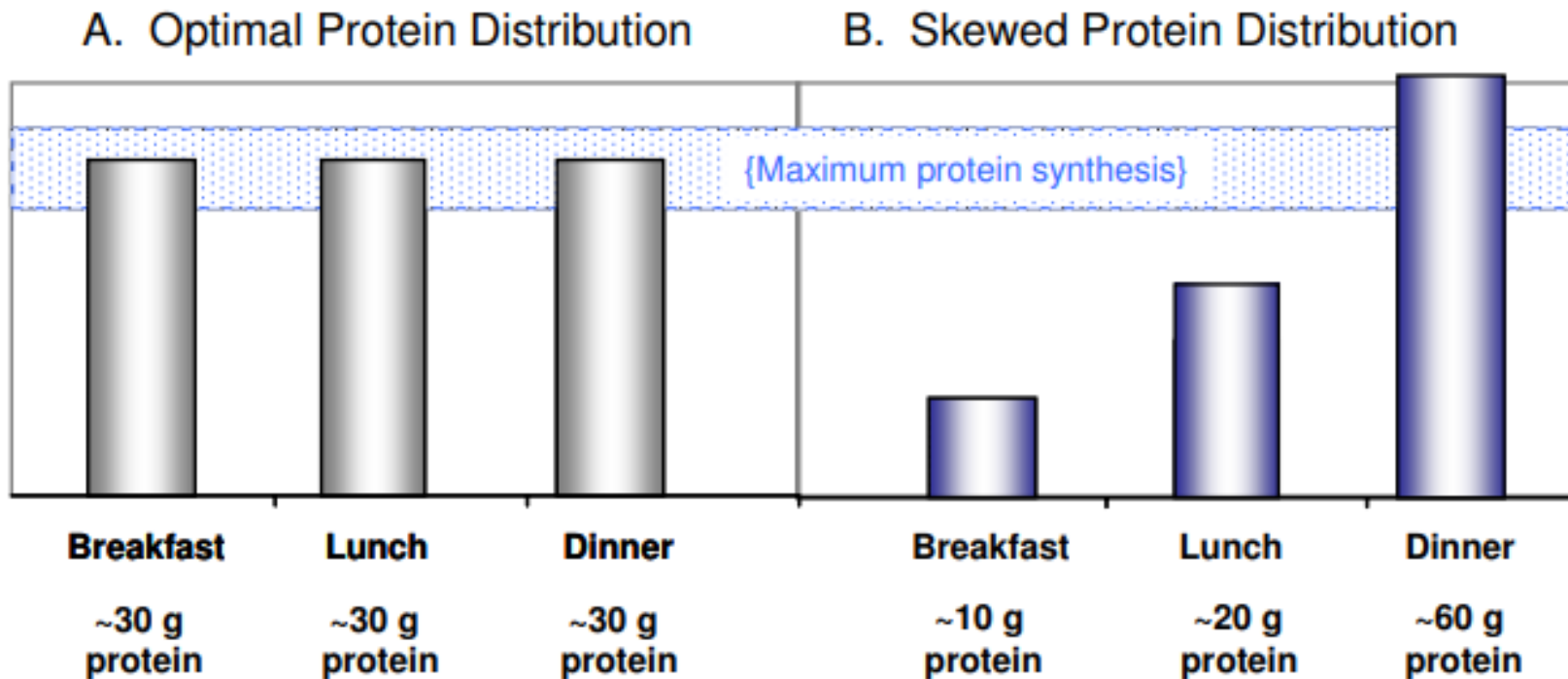


Quality



Source

# Timing





# Quality

---

Essential Amino Acid content

Digestibility

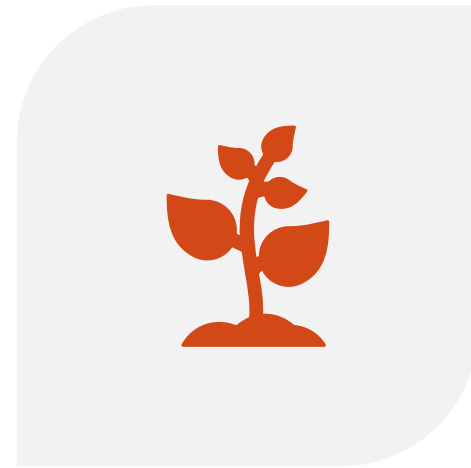
Bioavailability

# Source

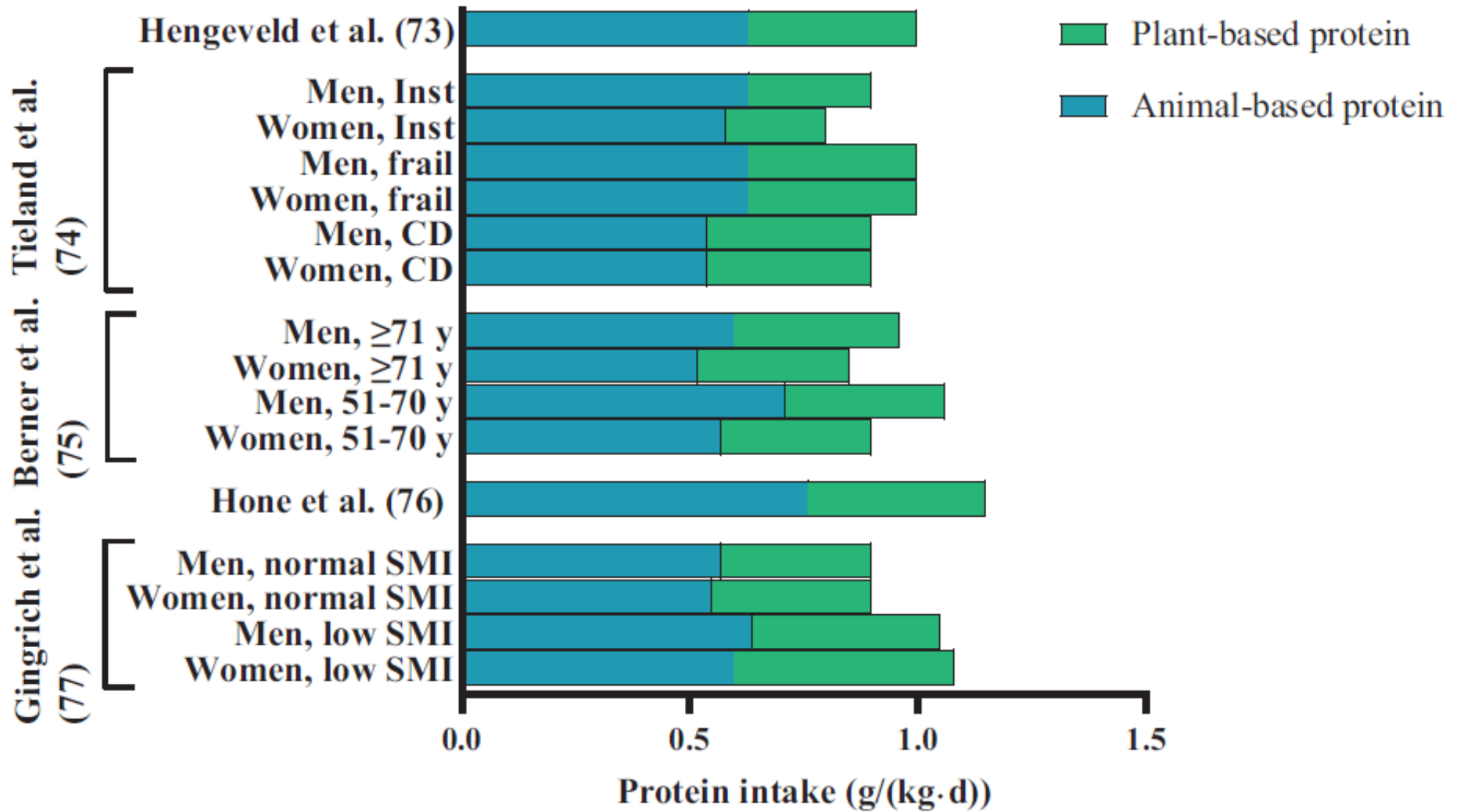
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**ANIMAL**



**PLANT**



# Challenges dietary intake

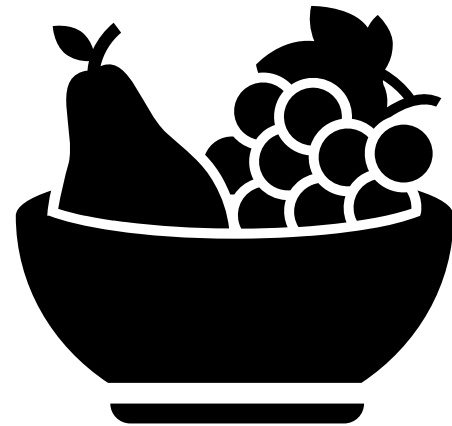


## Opportunities

- Nutritional advice and support by care staff
- Specialist dietetic advice
- Dietary counselling
- Group education
- Telehealth

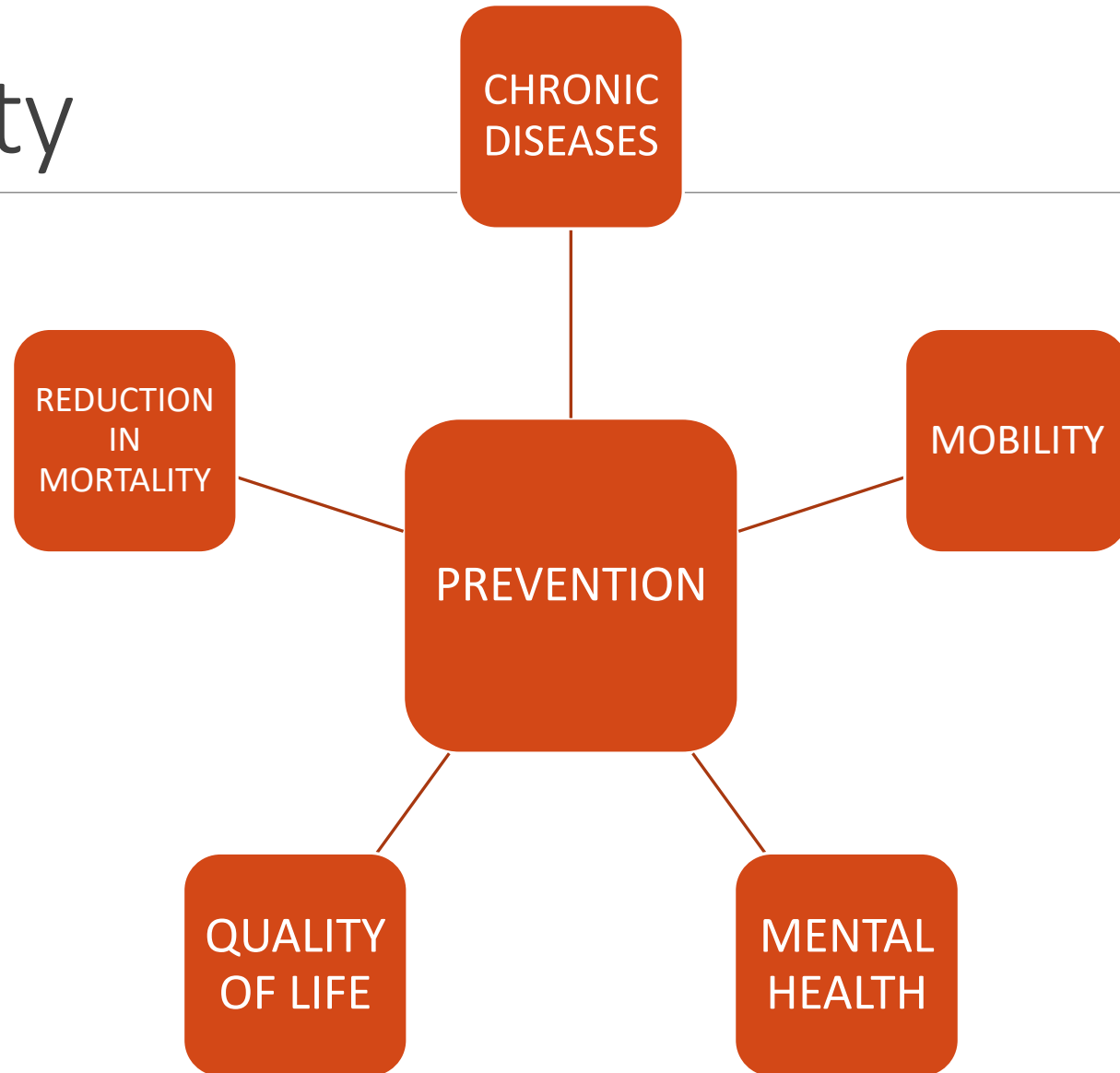
# Older population - sarcopenia

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# Benefits physical activity

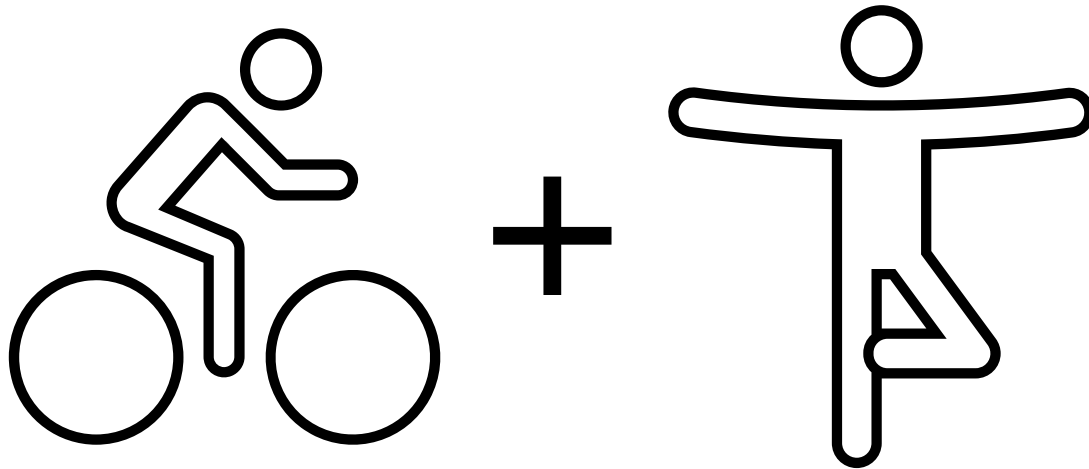
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# Physical activity

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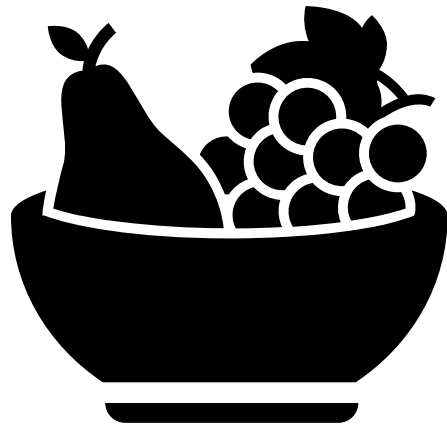
*Dutch guidelines*



**Moderately intensive exercise**  
2,5 hours per week

**Muscle and bone  
strengthening activities**  
2 times per week

65-75 years: 49%  
>75 years: 33%



# Older adults

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- Exercise level too low
- Protein intake insufficient

**Strategies to counteract  
sarcopenia**



# Strategy to slow down sarcopenia

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Nutrition → Protein intake

Exercise → Resistance exercise



**ProMuscle  
intervention**



What do you think?

**How long does it take:**

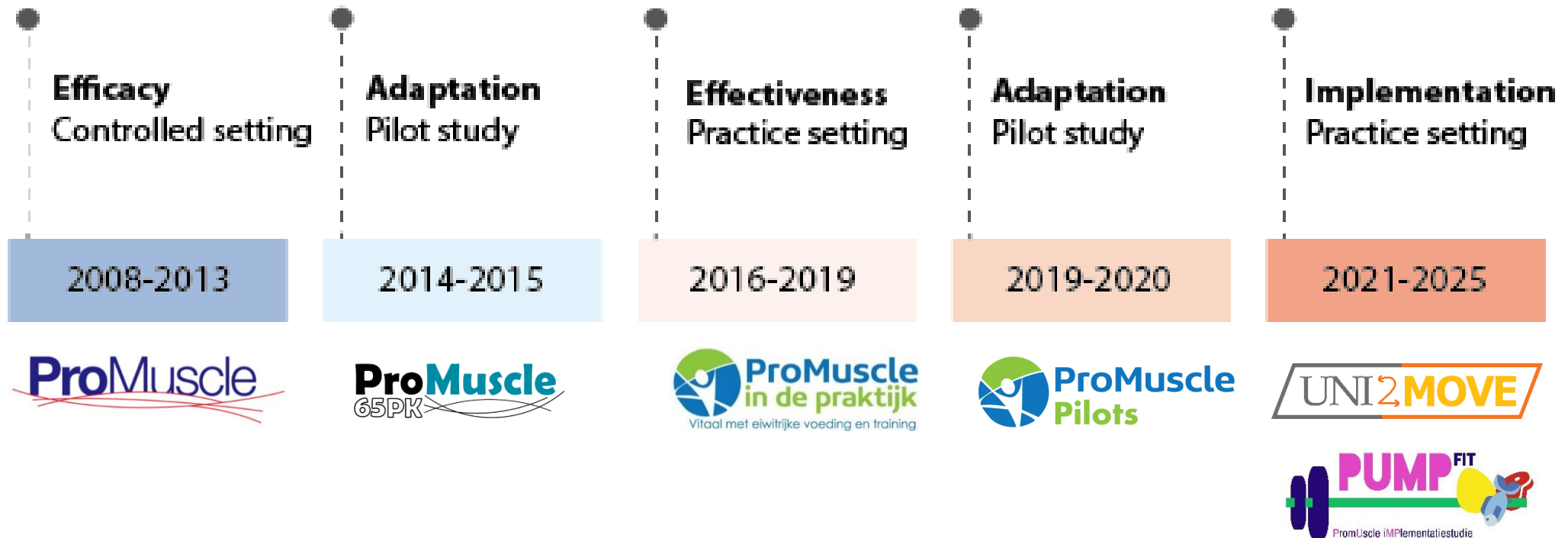
**From developing an intervention to  
implementation in practice?**

A: 6 years

B: 12 years

C: 17 years

# Timeline of ProMuscle research



# Timeline of ProMuscle research



# Intensive intervention – week 1-12

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## Progressive resistance exercise

- 2x per week, small groups
- Physiotherapist supervision



## Dietary protein intake

- 2 consultations with dietician
- Breakfast and lunch: 25 grams of protein



# Moderate support intervention – week 13-24

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## Exercise training

- Local sports organisations
- Maintaining muscle strength



## Nutrition workshop

- Information, cooking, tasting





# Participant characteristics

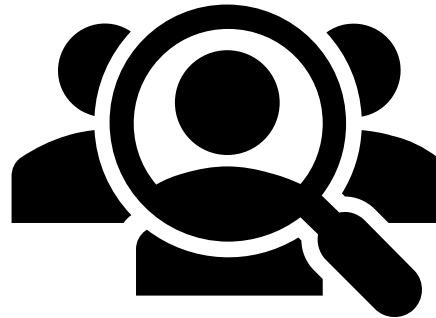
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75 years



~48%  
Pre-frail

~39%

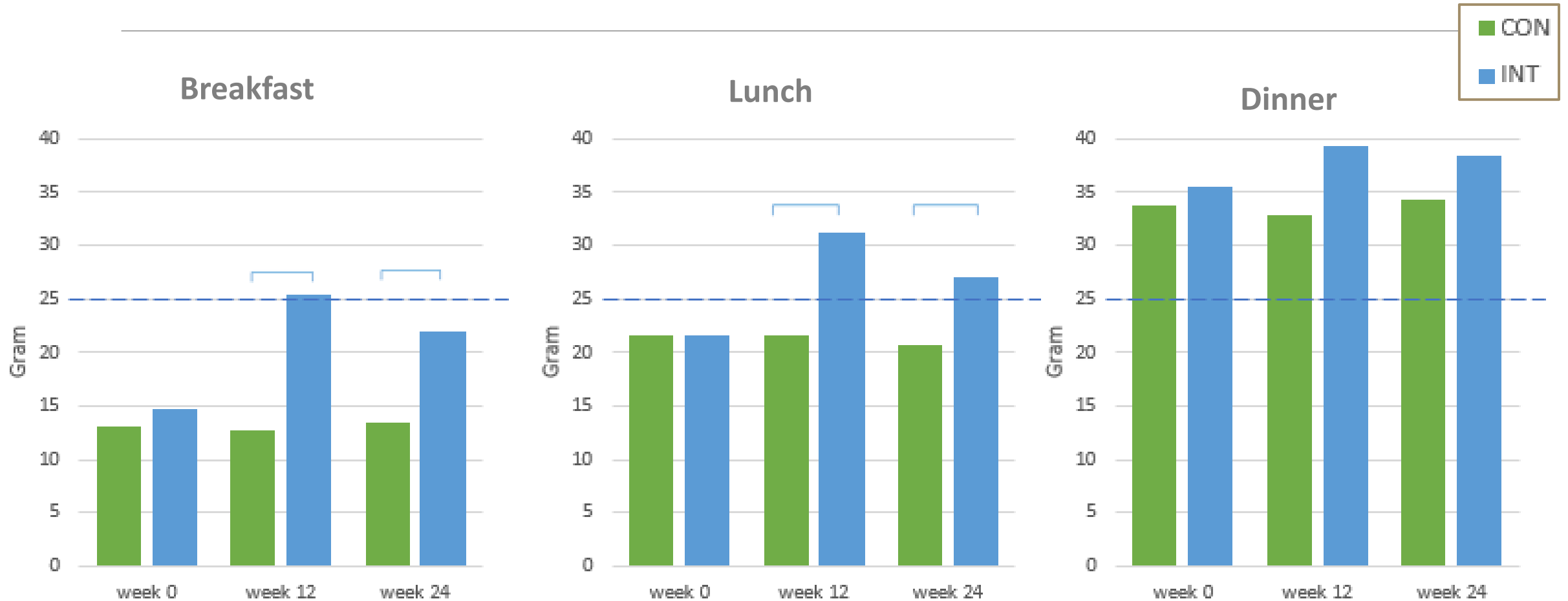


**N=168**



26.6 kg/m<sup>2</sup>

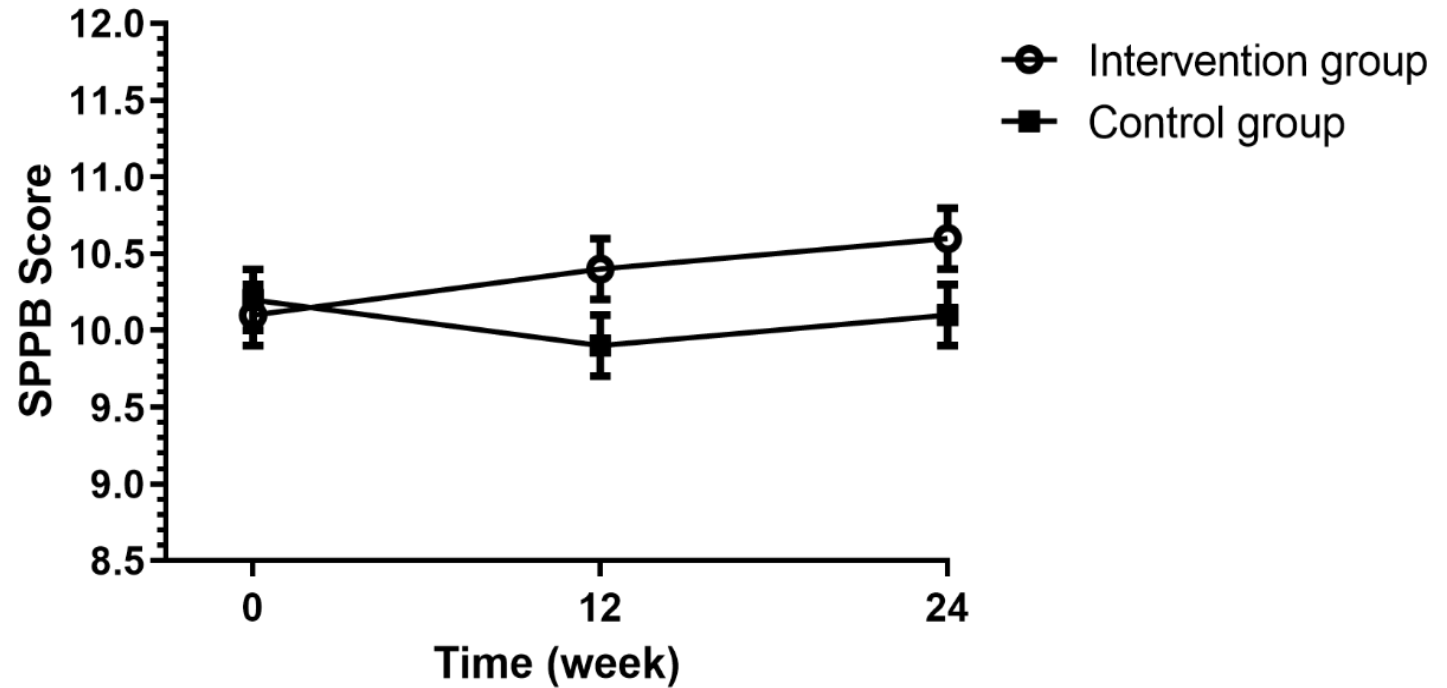
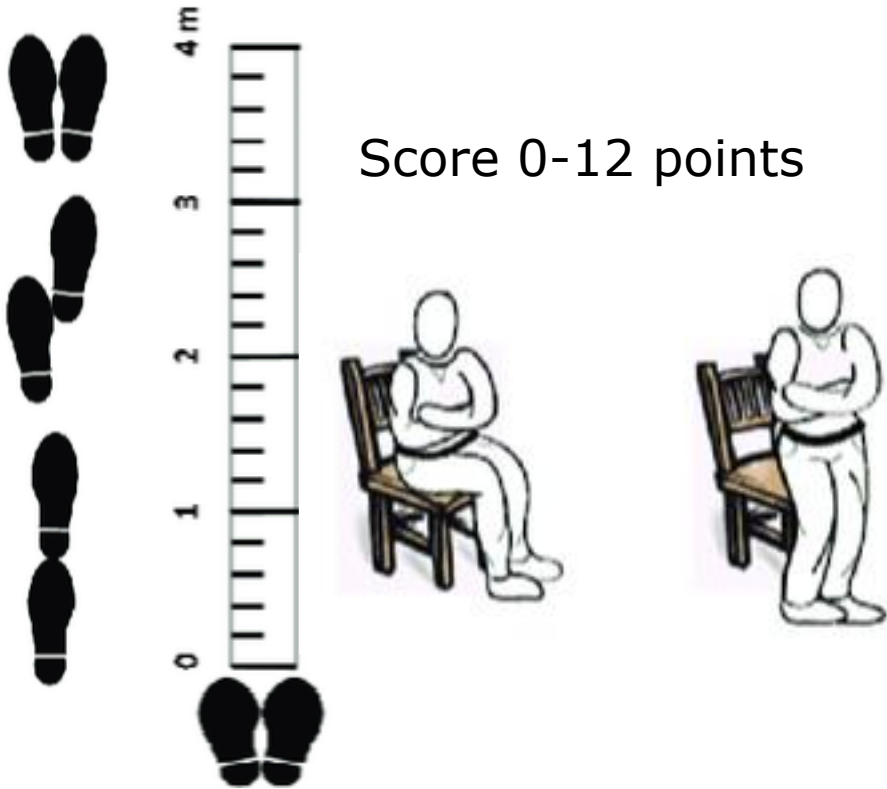
# Results – protein intake





# Results – Physical functioning

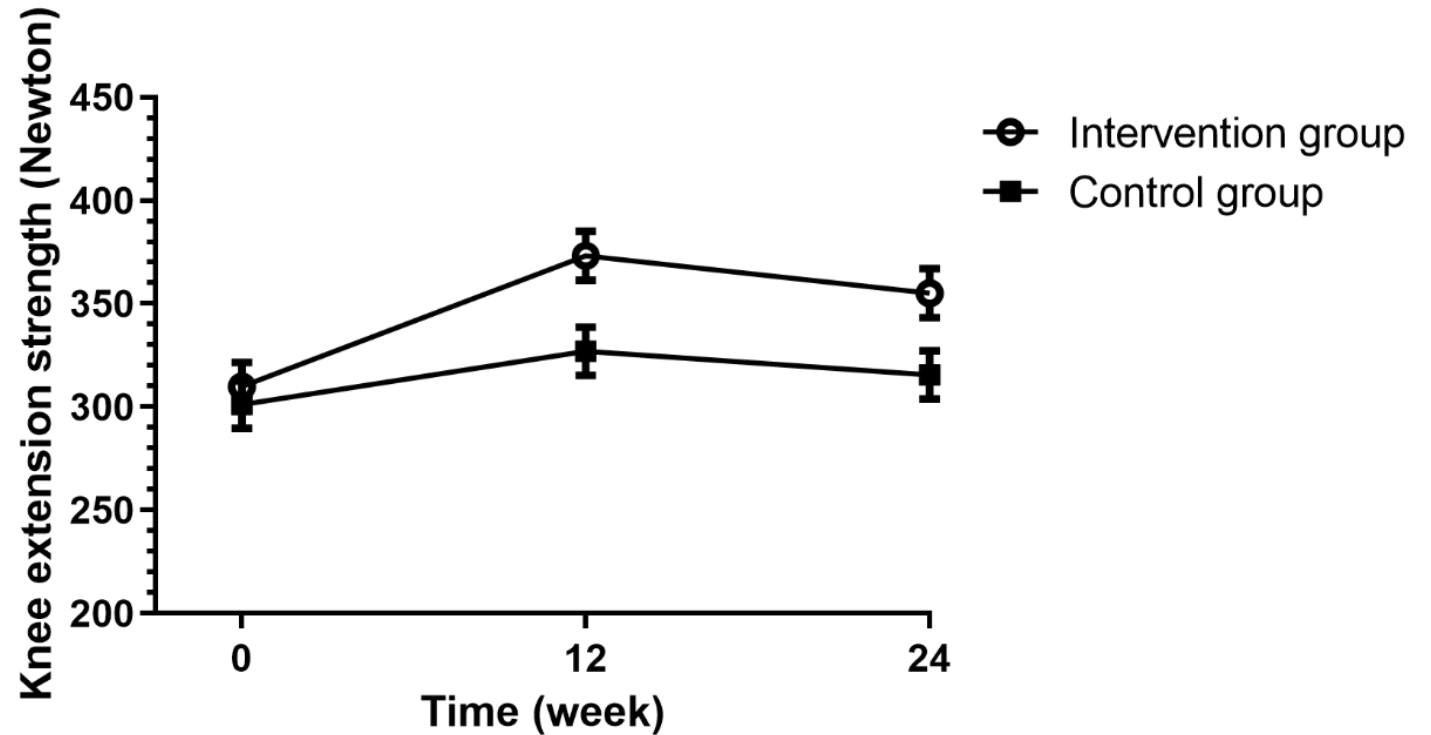
## SPPB



- **INT increased significantly compared to CON (week 12 and 24)**

# Results – Muscle strength

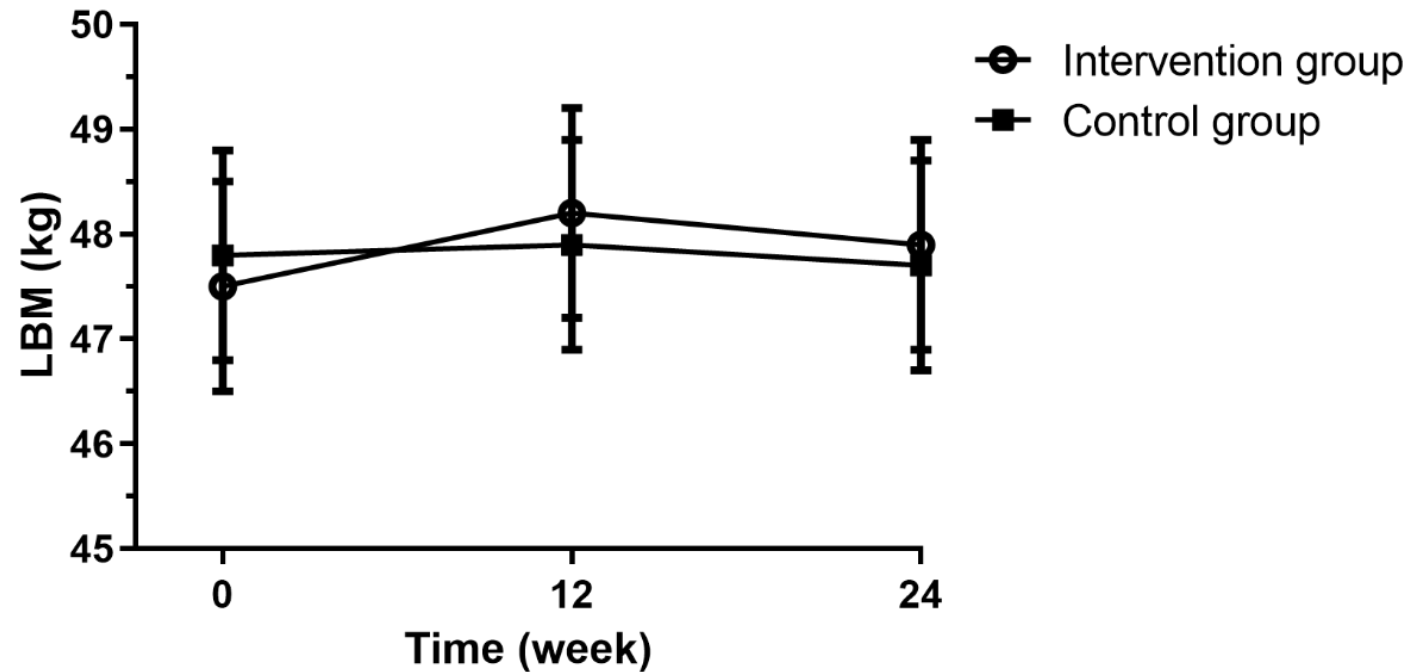
## Knee Extension Strength (MicroFet)



- **INT increased significantly compared to CON (week 12 and 24)**

# Results – Lean body mass

## Dexa scan



- **INT increased significantly compared to CON (week 12 and 24)**

# Experiences and challenges

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8.3

## Acceptability participants

- Group-based exercise
- Individualized dietary advice
- Guidance by professionals

7.8

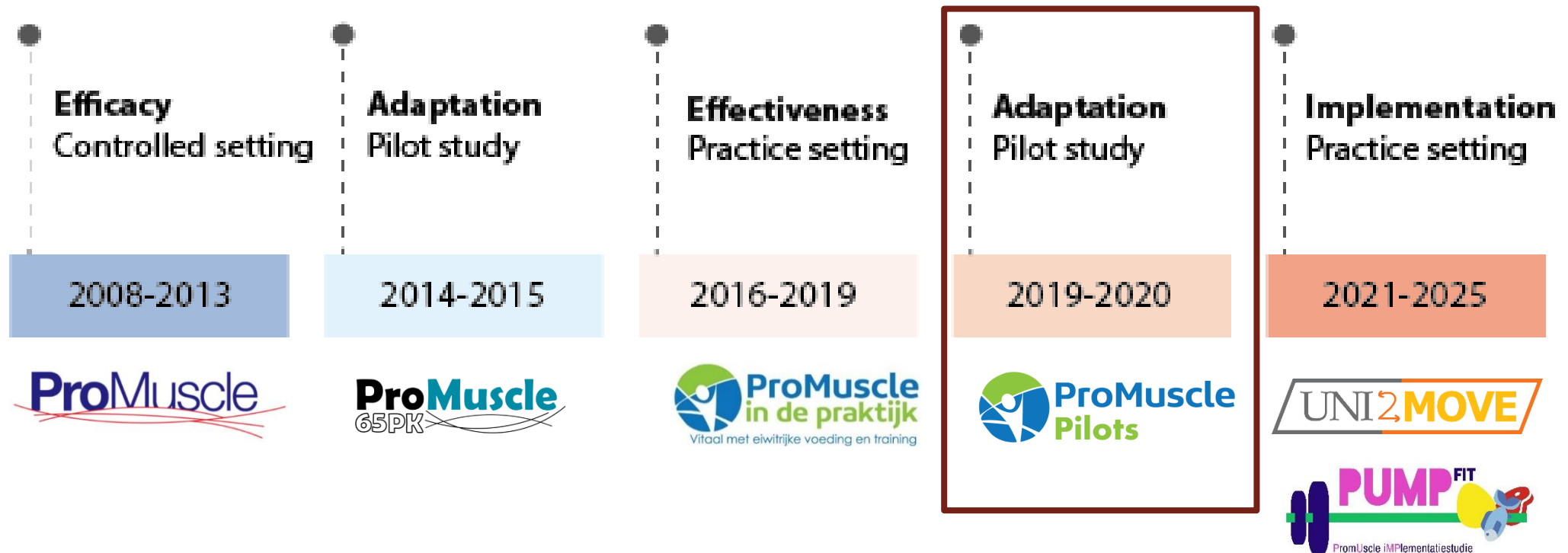
## Acceptability professionals

- Training session beforehand
- Clear manuals and forms
- Multidisciplinary collaboration
- Fit to regular working procedures
- Required competencies (people skills and knowledge)

## Challenges

- More variation in exercises and dietary advice
- Protein intake not always feasible
- Divide attention among participants

# Timeline of ProMuscle research

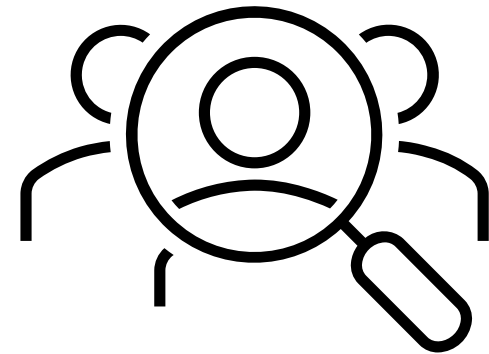


# Implementation pilots

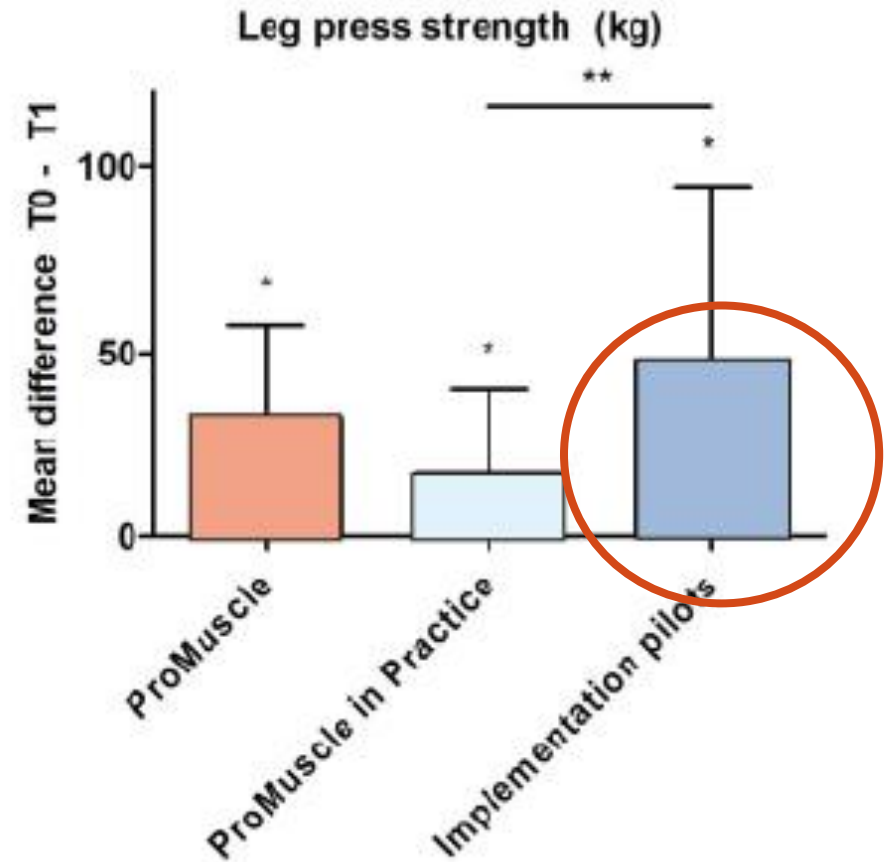
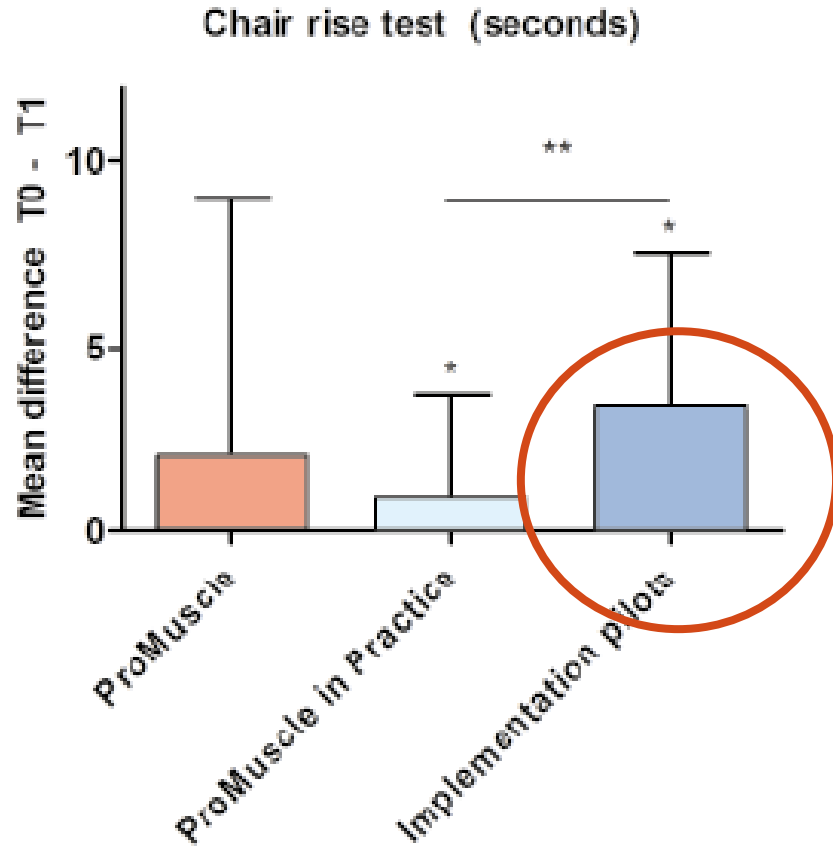
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- Practice setting of pilot
- 12 weeks
- Resistance exercise + consultations & group meetings
- Conducted by physiotherapists and dietitians



# Results



# Timeline of ProMuscle research





# Questions?

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