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# ACUTE EFFECTS OF ESSENTIAL AMINO ACID GEL-BASED AND WHEY PROTEIN SUPPLEMENTS ON APPETITE AND ENERGY INTAKE IN OLDER WOMEN



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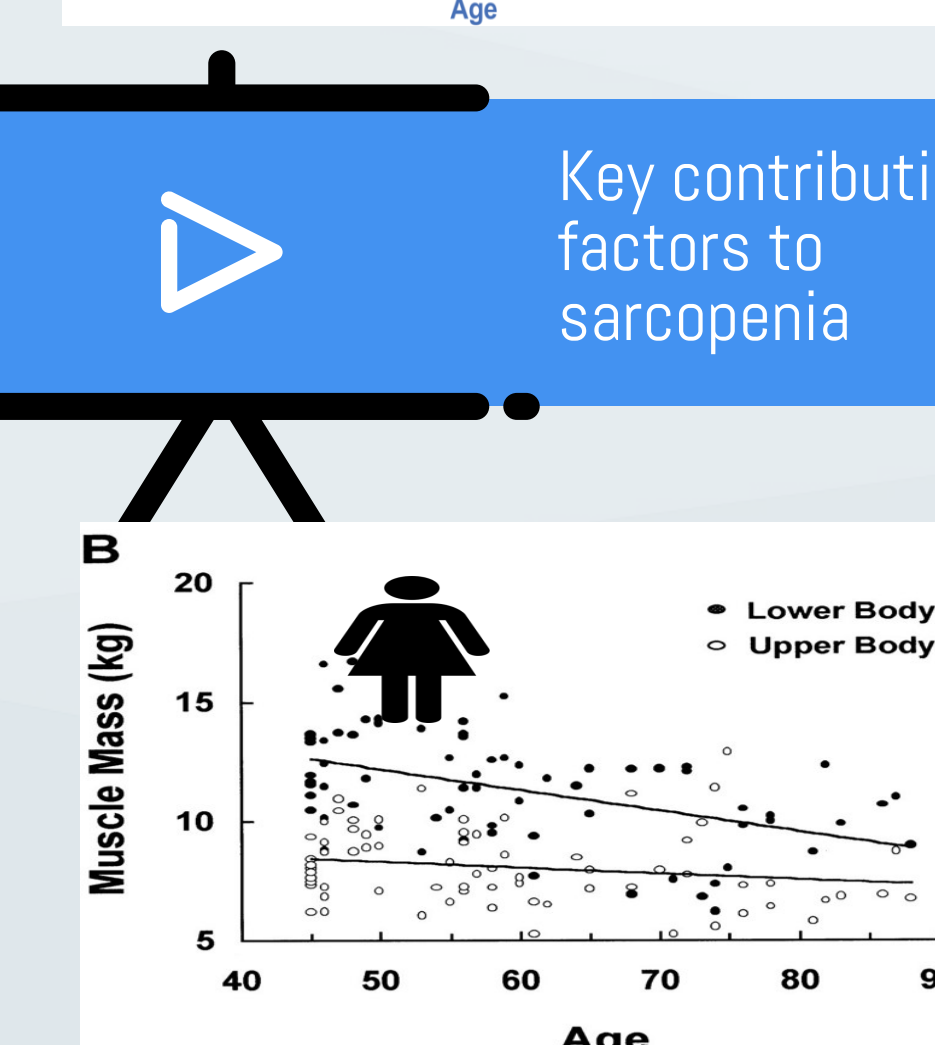
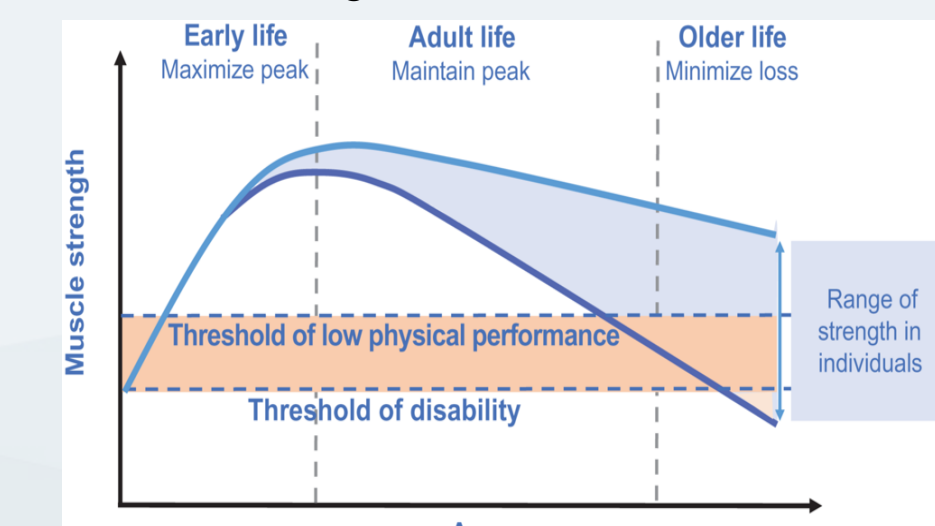
Theo\_Ispoglou

## Age-related sarcopenia

### Major public health challenge

Typically characterised by a reduction in muscle mass, strength and function with ageing

From: Sarcopenia: revised European consensus on definition and diagnosis (2018)



Janssen et al. (2000)

Key contributing factors to sarcopenia

### 01 Protein deficiencies

#### Key points

- Current daily protein recommendations of 0.8 g per kg of body mass inadequate for addressing sarcopenia.
- A lack of muscle anabolic response in older people could be potentially overcome by consumption of larger amounts of protein, and/or essential amino acids (EAAs), including leucine in particular.
- Protein deficiencies tend to be larger in women than in men.
- Older individuals tend to receive only ~10 g of protein at breakfast.
- Need for consumption of at least 0.4 g per kg of body mass (i.e. ~25-30 g) of high quality protein per meal.

### 02 Energy deficiencies

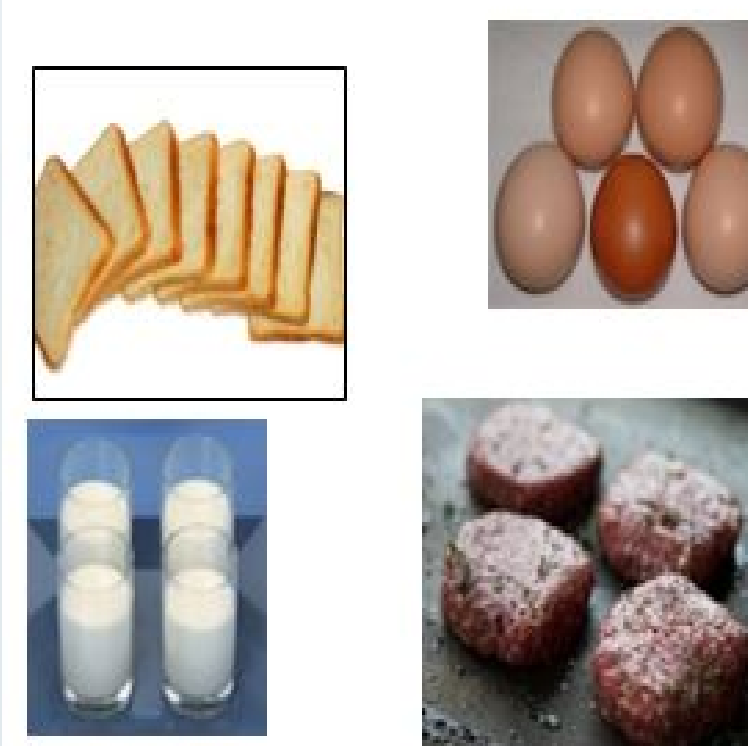
A gel containing the same amount of EAAs as in approximately 15 g of a whey protein isolate (WP) would affect appetite and appetite hormone responses to a lesser degree than WP.

This in turn would facilitate an increase in both protein and energy intakes when taken before an ad libitum breakfast

### Our hypothesis

**Challenge:** lack of appetite and satiating effects of protein

This is what ~ 30 g protein looks like.....



**Solution:** eat more protein in a day and within a meal

Older women (69.2 ± 2.7 years of age, body mass of 60.8 ± 7.1 kg, and height of 163.1 ± 3.0 cm) completed three trials in a randomised, crossover design.

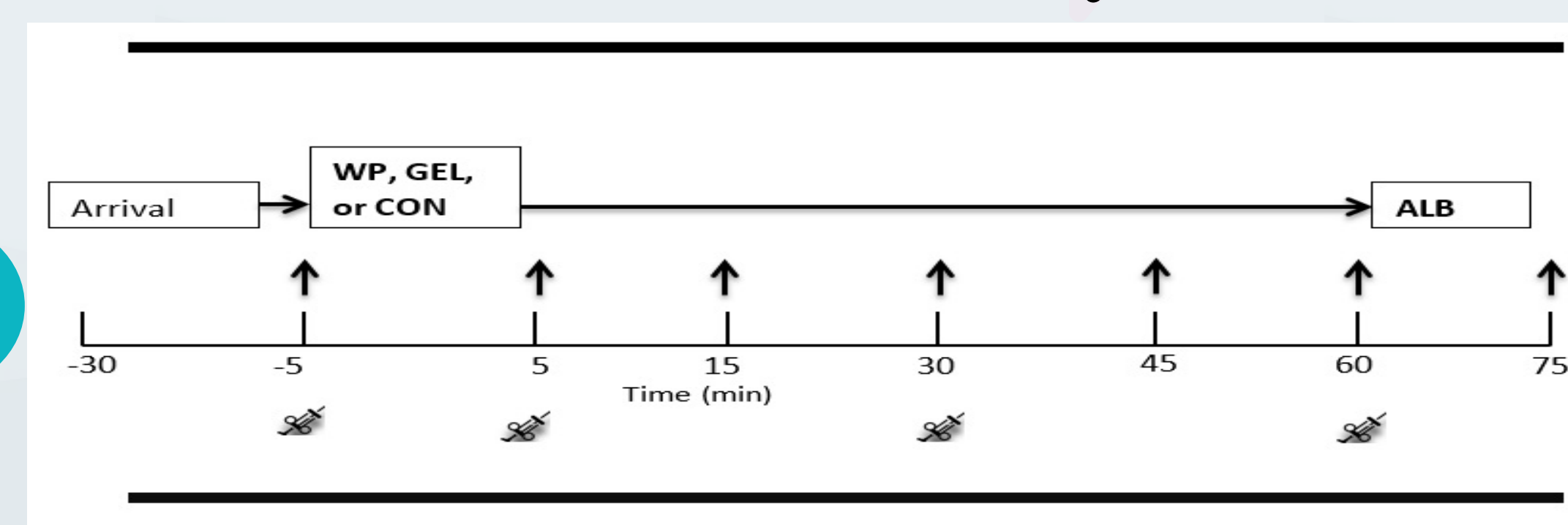
### Participants

Appetite sensations, plasma insulin and Peptide YY (PYY) responses to a 200 ml WP (275 kJ), 50 ml EAAs gel-based (GEL) supplements, and a control (CON) were investigated over the course of one hour, followed by an ALB.

Nothing was consumed before the ALB in the CON, whilst both the WP and GEL provided 7.5 g of EAAs.

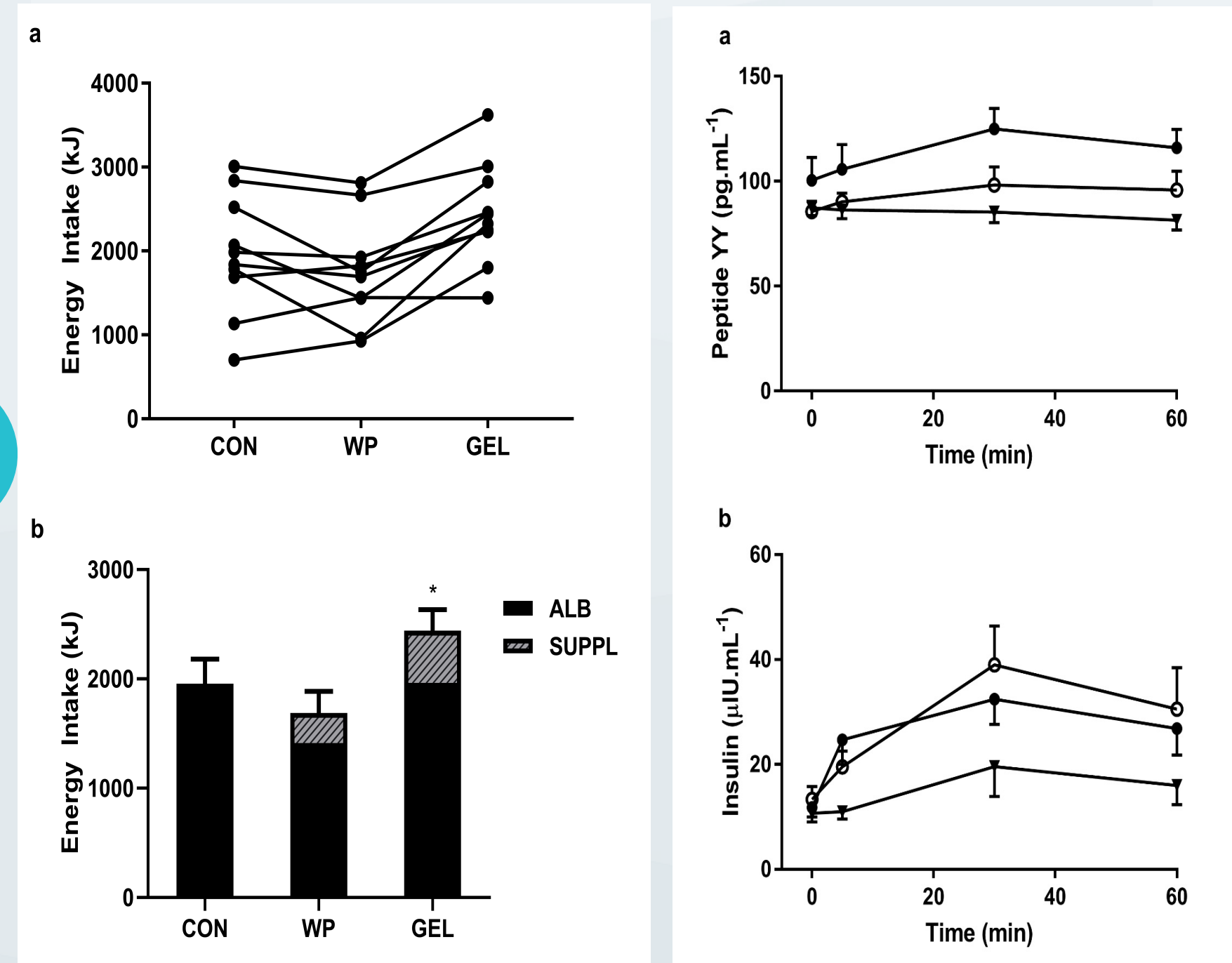
### Supplementation protocol

### Design



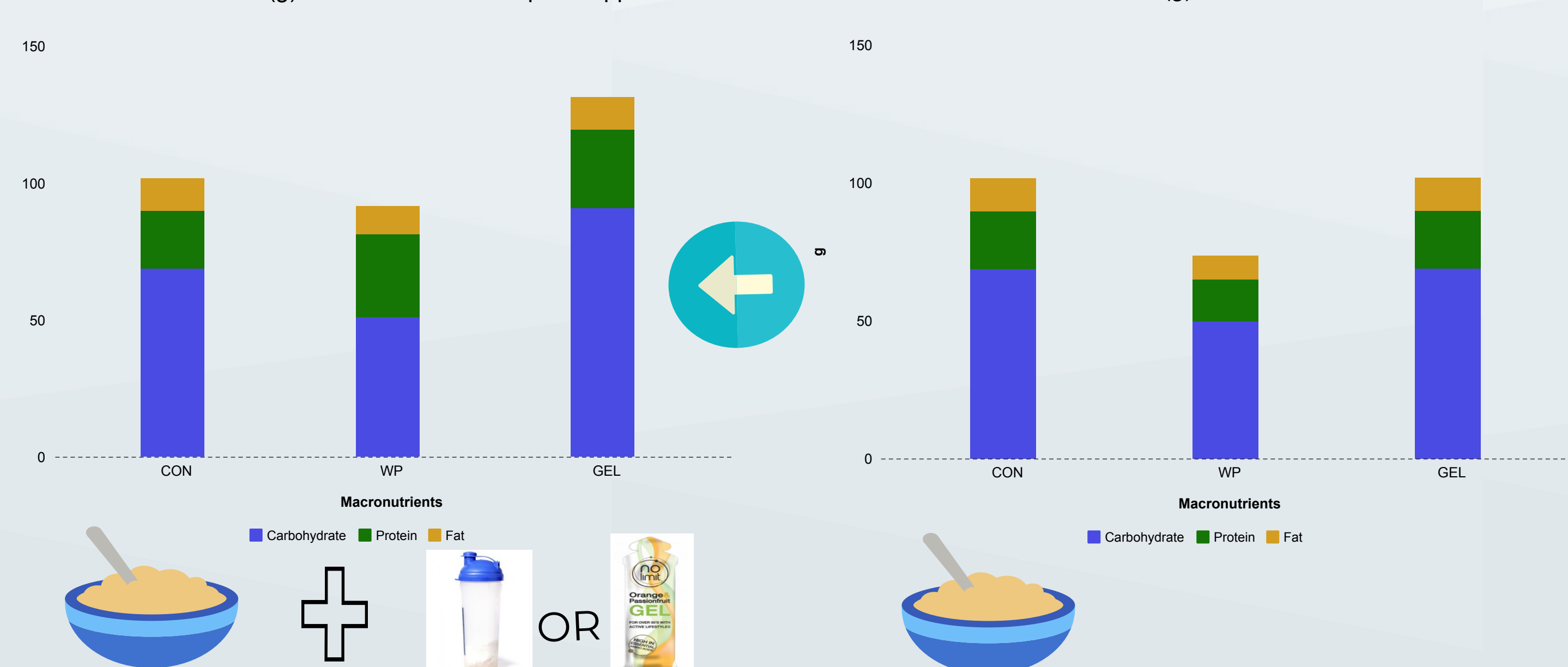
### Results

An asterisk sign (\*) denotes significantly different from CON and WP



Macro-nutrient intakes (g) from ad lib breakfast plus supplement

Macro-nutrient intakes (g) from ad lib breakfast alone



- Energy intake including energy from supplements and the breakfast.
- Whey protein (WP), essential amino acid gel (GEL), control (CON), ad libitum breakfast (ALB), shaded area represents energy from supplements (SUPPL).
- Data are displayed as individual responses (a) and mean (SEM) (b), n=10.
- PYY (a) and insulin (b) concentrations over the 60-minute period CON (▼), WP (●) and GEL (○). Values are mean (SEM), n=10.
- Time-averaged AUC for PYY was significantly different between trials (P = 0.001), with WP higher than CON (P = 0.009) and GEL (P = 0.012).

Supplementation with WP facilitated an increase in protein, whereas supplementation with GEL increases in both energy and protein intakes, when consumed before an ALB.



Findings, highlight potential gel-based EAAs supplementation intake for addressing age-related sarcopenia.

Appetite ratings were significantly higher in CON compared to WP (P=0.015)

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