

“Prevention Of Malnutrition In Senior Subjects in the EU” Research findings highlights

PROMISS’ research brings findings relevant for the battle against malnutrition and that highlight the importance of increasing protein intake when growing older. Here is an overview of the most promising outcomes of PROMISS to date.

Protein intake and its sources

- Older adults with a poor appetite consumed less protein and dietary fiber, less solid foods, smaller portion sizes, less wholegrains, and less fruits and vegetables than older adults with a very good appetite. They also consumed more dairy foods, fats, oils, sweets and sodas. (van der Meij et al. 2017)
- Of those aged 85 years and older, 28% consumed less than the recommended protein intake target (0.8 g of protein per kg of adjusted body weight per day). This group ate less meat, more cereals and drank more non-alcoholic beverages than those who had an adequate protein intake. (Mendonça et al. 2018)
- At all eating occasions, Dutch community-dwelling older adults with a total protein intake <0.8 g/kg of adjusted body weight/day ate a lower proportion of animal protein, compared to those with a high protein intake. These differences were greatest at lunch. Major food sources of protein in both groups were dairy, meat and cereals. Following a diet, being obese and not drinking alcohol were identified as general characteristics of older adults with a lower protein intake. (Hengeveld et al 2019a)
- Older adults reported to accept the following alternative, more sustainable protein sources: 58% plant-based protein, 20% single-cell protein, 9% insect-based protein, and 6% in vitro meat-based protein. Fussy eaters were less likely to accept eating alternative, more sustainable protein sources. Older adults who were more active in sustainable food consumption (e.g. purchases organic food) and who were highly educated were more likely to accept eating alternative, more sustainable sources. (Grasso et al. 2019)
- The majority of older adults accept protein-enriched burgers, though overall they prefer red meat and poultry above plant-based burgers. Intentions to consume sustainable protein-enriched burgers are associated with gender, country, importance attached to health, sustainability and familiarity, knowledge of protein, and environmental impact. (Broeckhoven et al. 2021)
- Meeting the protein requirement of the growing older population with reduced GHGE requires a change in meat type (and quantity for men), an increase in consumption of a variety of plant-proteins, and a reduction in consumption of discretionary food products. (Grasso et al. 2021a)
- Health and sustainability food choice motives were important determinants for being classified as a medium or light meat consumer whereas food fussiness, sensory

appeal, and familiarity were important determinants for being classified as a heavy meat consumer. (Grasso et al. 2021b)

Protein intake and frailty/disability

- Older adults with a lower protein intake seem to be at greater risk of developing mobility limitations over 6 years. (Houston et al. 2017)
- Lower protein intake is associated with lower muscle strength and poorer physical performance in late life. (Granic et al. 2018)
- A dietary pattern high in foods characteristic of a traditional British diet (butter, red meat, gravy and potato) was associated with an increased risk of sarcopenia even when overall protein intake was good. (Granic et al. 2019)
- Higher protein intake, in particular 1.0 g/kg of adjusted body weight/day or more, was associated with better disability trajectories in the oldest adults. These findings will inform new dietary strategies to support active and healthy ageing. (Mendonça et al. 2019a)
- Older adults with a poor-quality diet had a higher risk of developing frailty compared to older adults with a good-quality diet. No relationship was found between protein intake and risk of frailty. (Hengeveld et al. 2019b)
- Higher protein intake, especially in combination with higher physical activity, is associated with a lower incidence of disability in very old adults. (Mendonça et al. 2019b)
- High protein intake, partly mediated by energy intake, may delay incident frailty in very old adults. (Mendonça et al. 2020)
- Individuals reporting conditions affecting their appetite or ability to eat had a significantly lower fat-free mass and body mass index, less grip strength, and poorer physical function than did those without any conditions affecting their appetite or ability to eat. (Chang et al. 2020)
- More active older persons are less likely to be categorized as “rarely” complying to 7-9hr time in bed when compared to those who are less active. Being highly sedentary (≥ 10 hr/day of sedentary behavior) resulted in over 3 times higher risk to be categorized as “rarely” complying to 7-9hr time in bed. (Tsai et al. 2021)

Malnutrition

- This literature review summarises the pathways through which the intestinal microbiota might contribute to malnutrition, how the microbiota differs in over- and under nutrition, and how the microbiota could be manipulated in a way to promote a healthy nutritional state. The microbial composition may differ between subjects with and without malnutrition. (Fluitman et al. 2017)
- Higher protein intake is associated with a lower risk of developing chronic protein-energy malnutrition in community-dwelling (i.e. living at home) older adults. (Hengeveld et al. 2018)
- Older adults who have a poor sense of smell and who also smoke might be a vulnerable group when it comes to undernutrition. (Fluitman et al. 2019)
- Poor oral health and xerostomia (=dry mouth) in combination with having no teeth may play a role in developing malnutrition. (Kiesswetter et al. 2019a)
- In older adults living at home, self-rated oral health may indicate changes in body weight in the long term. Therefore, this simple measure could serve to identify a risk

for weight loss and to initiate oral interventions in clinical practice. (Kiesswetter et al. 2019b)

- Poor taste and smell are associated with poor appetite, macronutrient intake, and dietary quality but not with undernutrition in older adults. (Fluitman et al. 2021)

Protein intake and other associations

- The Pro⁵⁵⁺ Protein Screener was developed and can be used to validly screen for protein intake below 1.0 gram/kg body weight of protein per day in community-dwelling older adults. It is recommended that the screener should be validated in other countries. An online version can be found at www.proteinscreener.nl. (Wijnhoven et al. 2018)
- Dutch older adults spend on average 65% of their waking time sedentary. Older adults' sedentary times differ by age, sex, education and body mass index (BMI). The combination of high sedentary time and low physical exercise was associated with higher age, higher BMI, and slower walking speed compared to the combination of low sedentary time and high moderate to physical activity (van Ballegooijen et al., 2019)
- In the group of older adults with a poor appetite and lower level of protein intake, we find a larger share of people aged 70 years or above, having an education below tertiary level, who reported some or severe financial difficulties, having less knowledge about dietary protein and being fussier about food. (Hung et al. 2019)
- 'Even' (=increase protein evenly over the day) and 'peak' (=increase protein at one meal/day) dietary advice strategies were effective in increasing protein intake in four weeks and both were well appreciated by older adults living at home. (Reinders et al. 2020)
- A higher proportion of protein in the morning is associated with lower total protein intake, whereas the proportion of protein ingested mid-day or in the evening shows opposite but weaker associations with total protein intake. This suggests that timing of protein intake may be important. (Rooijackers et al. 2020)
- A higher protein intake is associated with less muscle mass loss over 3 years in women, specifically black women, but not over 6 years or with a decline in gait speed. In men, protein intake is not associated with changes in muscle mass and gait speed. A higher protein intake is associated with a lower risk of mobility limitation in both men and women, specifically white women. (Elstgeest et al. 2020)
- The overall pooled prevalence of protein intake below recommended was 21.5%, 46.7%, and 70.8% using the 0.8, 1.0, and 1.2 g/kg adjusted bodyweight/day cut-off value, respectively. A higher prevalence was observed among women, individuals with higher BMI, and individuals with poor appetite. (Hengeveld et al. 2020)
- Males, those unable to walk for 5 min, not always making their own food decision and having lower income were more likely to have poor protein knowledge. (Visser et al. 2021)

For an overview of all peer-reviewed scientific studies, please consult this webpage:

<https://www.promiss-vu.eu/publications/scientific-articles/>

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