

Muscle mass and ageing

As we age, considerable changes to our body composition occur; there is an increase in fat mass and a gradual loss of muscle mass.¹

Reduced intakes of protein as we get older are believed to be related with reductions in muscle mass.²



Protein can be obtained from our diets and plays a key role in physiological, metabolic and structural activities of the human body.³ The latest scientific research suggests that protein intakes moderately higher than current recommendations could provide health benefits for older adults and play a key role in preventing a decline in muscle mass.³

Muscle loss and sarcopenia

Muscle is in a constant state of turnover, with protein synthesis occurring continuously to replace protein that is lost due to breakdown. For the synthesis of new muscle protein, all nine essential amino acids (AAs), which cannot be produced by the body in physiologically significant amounts, along with the eleven non-essential AAs that can be produced in the body, must be present in adequate amounts in the diet. As shown in the 'Amino acid lowdown' factsheet, all nine essential AAs are present in mycoprotein.

Sarcopenia refers to the wasting away or loss of muscle fibres of which inflammation caused by ageing is a primary cause.⁴ Loss of muscle mass can begin in middle age, and by 80 years of age can result in nearly 50% loss of muscle mass, and as much as an 84% increase in body fat.⁴

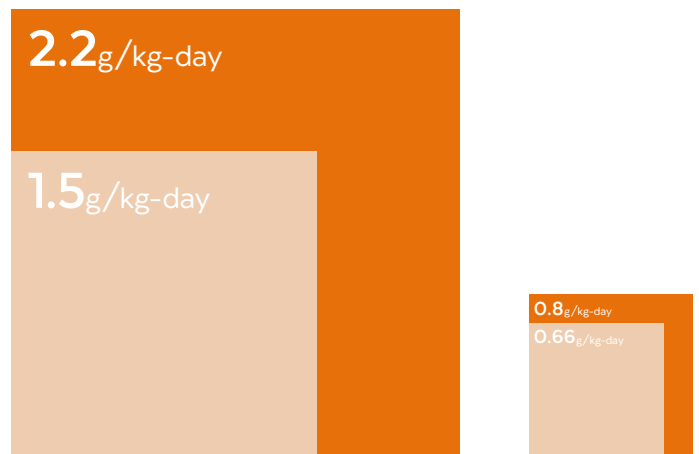
In recent years, a growing body of work suggests that older adults need to eat a larger amount of protein per meal to raise muscle protein synthesis rates, which can help lower the risk of developing sarcopenia and assist with healthy ageing.⁵

Loss of muscle mass has been linked to reduced mobility, diminished quality of life and activity levels and increased risk of fall-related injuries which often require costly hospitalisation and extended periods of rehabilitation.⁶

Muscle protein synthesis doesn't occur at the same rate in older adults. When combined with low protein consumption, it can contribute to the onset and progression of sarcopenia.⁵

Protein intake recommendations and ageing

Protein intake recommendations increase with age. In the UK, these were compiled in 1991 and based on nitrogen balance studies mostly conducted in the 1970s.⁷ Now, three decades on, new isotope and amino acid oxidation methods suggest that protein intake guidelines should be higher in some populations.



Some scientists have calculated that minimum protein requirements could have been underestimated by 30–50% which, in practice, translates to 1.5–2.2 g/kg-day of a variety of high-quality protein.⁸ This is higher than current recommendations which are equivalent to around 0.66–0.8 g/kg-day.

Protein Intake Recommendations in the United Kingdom^{9,10}

| Age | Male | Female |
|----------|-----------|--------|
| | RNI (g/d) | |
| 1-3yrs | 14.5 | 14.5 |
| 4-6yrs | 19.7 | 19.7 |
| 7-10yrs | 28.3 | 28.3 |
| 11-14yrs | 42.1 | 41.2 |
| 15-18yrs | 55.2 | 45.4 |
| 19-50yrs | 55.5 | 45.0 |
| 50yrs+ | 53.3 | 46.5 |

Healthy ageing

The latest pool of thought is that current dietary recommendations for protein intake are insufficient for maintaining muscle mass and strength as people age.¹¹ As we get older, we may benefit from increasing intake and frequency of high-quality protein from sustainable sources.¹¹

The AA composition and bioavailability (high absorption) of mycoprotein means that it is a promising protein source that could help to support healthy ageing and the metabolism of skeletal muscle protein.¹²

Where to find mycoprotein

Mycoprotein is the unique whole food at the heart of every single Quorn product. There is a huge range of great tasting Quorn® products and ingredients available, all of which can easily be used to recreate your favourite recipes with a nutritious and sustainable twist.

Visit www.quornnutrition.com and www.quorn.com for more information about mycoprotein, products and recipes.

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