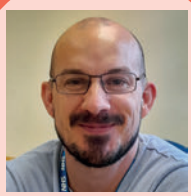
NETWORK HEALTH DIGEST

THE PROTEIN RDA: TIME FOR AN UPDATE?



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The recommended dietary allowance (RDA) for protein may be too low and causing harm to certain patients. This article considers the case for increasing the protein RDA by looking at the evidence base.

Margaret is standing in her kitchen and wants to make her grandkids' favourite sandwiches for lunch. She's got everything ready: the bread, the cheese, even some ham. And she knows they love a few pickled onions with their sandwiches. But when she tries to open the jar of pickled onions, her hands just won't do it. She twists and twists, but the lid stays stuck. She feels a little flutter of frustration, and a little bit sad too.

Margaret wonders what else she might not be able to do soon. It's not just about the pickled onions. It's about being able to do things for herself and her family. It's about feeling strong and independent and not having to ask for help all the time. She wants to be able to play with her grandkids in the garden, not just watch from the window.

Unfortunately, nobody told Margaret that her sarcopenia could have been avoided with a simple change in diet and lifestyle.

This, of course, is a fictional story about someone beginning to struggle with the onset of age-related muscle loss. However, it's likely to be a story you hear in your clinical practice often, because approximately 7% to 37% of people struggle with sarcopenia in the UK depending on age.[1] Sarcopenia is one of the leading causes of falls,[2] with a cost to the NHS of £2.5 billion each year.[1] This is a rising problem too. By 2045, it's estimated that at least 13% of all elderly people across European countries will struggle with sarcopenia.[3] This could all be mitigated by increasing protein intake.

Sarcopenia isn't the only condition affected either. Plenty of evidence exists to demonstrate that eating more than the current RDA for protein leads to better outcomes across a range of conditions.

WHY THE RDA IS TOO LOW AND OUT OF DATE

The UK RDA for protein is currently 0.8g per kg body weight and has been in place since the 1990s and in the US since 1941.[4] Originally, the RDA was set based on nitrogen studies. Nitrogen makes up approximately 16% of the weight of proteins. So, it was always assumed the balance between the nitrogen consumed (via dietary protein) and the nitrogen excreted in faeces, urine and sweat indicated what the body's protein requirements might be.[5]

Logically, this makes sense and you can see why nitrogen balance was originally the gold standard for determining protein requirements in humans. Since then, however, technology has improved and better studies have been done. It's now well known that the nitrogen balance technique overestimates nitrogen intake and underestimates nitrogen losses. As a result, it has been established that nitrogen balance measurements do not accurately reflect amino acid balance. Using newer technology, and, instead, focusing on amino acid balance in the body, studies have since established that the actual daily protein requirement is 0.93-1.2g per kg body weight in non-exercising individuals. In fact, these researchers concluded their 2007 study by stating, 'Our data and re-analysis of the pre-existing nitrogen balance data suggest that the current recommended protein requirements are too low and require reassessment'.[6]

Even the World Health Organisation (WHO) states the current gold standard for determining protein intake is the 24-hour indicator amino acid oxidation method (IAAO). Using this technique, it has been established that the population's safe intake for protein is 0.93-1.24g per kg body weight for non-exercising individuals. For those who exercise, minimum protein requirements go up (see Table 1).[7]

WHY THE ELDERLY SHOULD EAT MORE PROTEIN

This article started with a story of someone struggling with sarcopenia. The name sounds like a medical disease but it's not a disease. It's simply the progressive loss of muscle mass,

REFERENCES

Please visit: https://www.nhdmag.co.uk/references-may-25-issue-199

Table 1: Protein requirements (adapted from Weiler M, Hertzler SR and Dvoretskiy S)[7]

Population	Mean age	Current RDA based on nitrogen balance (g.kg)	New RDA based on IAAO (g.kg)
Bodybuilders	22.5	0.8	2.20
Resistance trained females	23	0.8	1.93
Endurance trained males	26.6	0.8	1.83
Young adult males	27	0.8	1.20
Children	6-11	0.95	1.55
Female athletes	21.2	0.8	1.71
Older males	>65	0.8	1.24
Older females	>65	0.8	1.29
Pregnancy		1.10	1.66 - 1.77
Postpartum		1.30	1.77

strength and eventually function from a lifetime of low-protein intake and no weight-bearing movement. Partly why this happens is something called 'anabolic resistance'. This is a process where the body becomes resistant to the effects of amino acids as we age, which reduces protein synthesis by 40%. Thankfully, this anabolic resistance can be reduced by increasing protein intake.

A 2019 meta-analysis and systematic review of almost all the studies on this topic showed significant benefits of consuming more protein than the current RDA for maintaining lean body mass, less body fat and better maintenance of function (i.e. gait, strength and steps, etc). The authors of this meta-analysis concluded that 'Protein intakes greater than the RDA are shown to augment beneficial changes in lean mass over time when adults purposefully experience catabolic stressors, specifically weight loss'.[8]

WHY MORE PROTEIN BENEFITS THOSE WITH OBESITY

During weight loss, increased dietary protein helps with the preservation of muscle and reduced appetite leading to better outcomes. A 2024 meta-analysis looking at protein intake in obesity specifically found consuming less than 1g per kg body weight of protein was associated with muscle mass decline. This effect was found in young, middle-aged and elderly populations. The researchers went on to state that an intake exceeding 1.3g per kg body weight is associated with better muscle mass retention during weight loss.[9]

Dietary protein also suppresses appetite. This effect is so significant that one study found women who ate at least 30% of their calories as protein (more than the RDA) lost 5kg of weight and 3.7kg of fat in 12 weeks without even trying.[10] A separate study also found that across six weeks, those who ate more protein lost more fat mass and reported greater dietary satisfaction and less hunger.[11]

WHY MORE PROTEIN BENEFITS THOSE WITH DIABETES

Eating more protein than the current RDA also improves diabetes outcomes. This is partly due to the aforementioned benefits related to weight management but also because higher protein offsets the consumption of carbohydrates, which raise blood glucose more than any other macronutrient regardless of source.[12] This effect is so significant that in 2020 a randomised trial compared high protein with low protein in those with prediabetes. The results were significant: 100% of the people in the high-protein group achieved remission, whereas only 33% in the low-protein group achieved remission.[13]

It's worth knowing that some studies show little to no difference between high vs low protein and diabetes outcomes. Typically, these studies do not restrict carbohydrates and they also usually don't achieve weight loss.[14] This adds weight to the argument that eating more protein offsets carbohydrates, lowering blood sugars and so inducing weight loss.

THE CARDIOVASCULAR BENEFITS OF EATING MORE PROTEIN

A 2024 study that lasted 16 weeks compared a lower carbohydrate higher protein diet with the Mediterranean diet. The researchers tracked changes in HbA1c, BMI, blood pressure, waist circumference and lipid profiles. The higher protein group had a greater reduction in total cholesterol, triglycerides, LDL and blood pressure. Both groups lost similar amounts of weight but the higher protein group lost more body fat.[15]

A separate study in 2005, called the OmniHeart randomised trial, found that a higher protein diet reduced blood pressure, LDL and triglycerides more than a lower protein diet despite no weight loss.[16]

Finally, in 2023, a systematic review was done of prospective cohort studies looking at the effect of higher protein intakes on cardiovascular disease outcomes across 221,583 individuals. The authors concluded that higher protein diets did not affect CVD outcomes negatively.[17]

ISN'T PROTEIN BAD FOR THE KIDNEYS?

Eating more protein increases renal glomerular filtration rate (GFR) a little, so some used to think that over time this may 'stress' the kidneys. This idea is akin to saying that if you consume caffeine daily, then, over time, you

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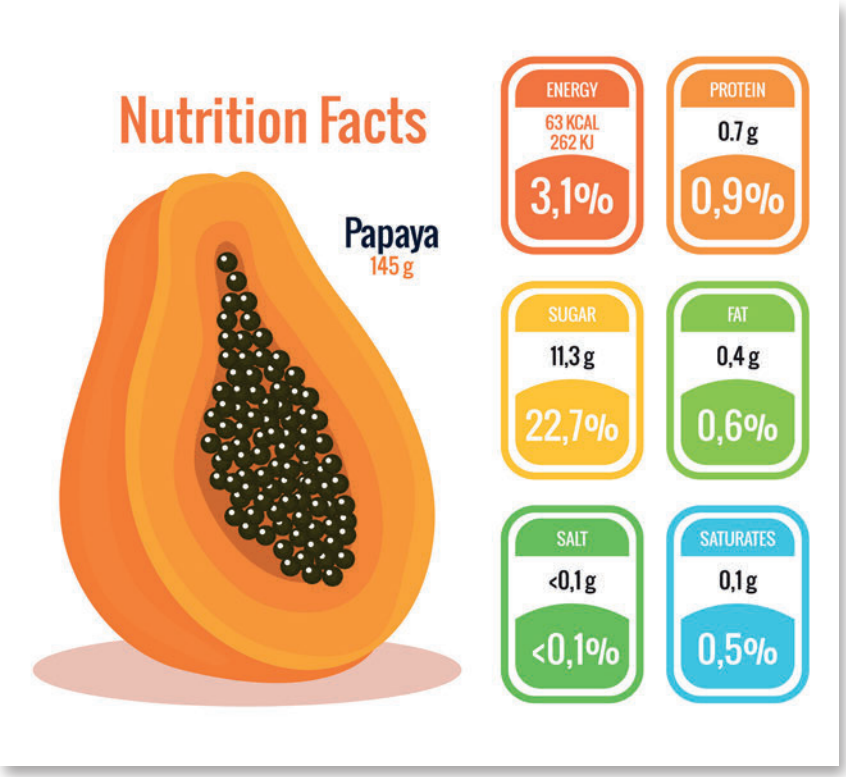

can develop 'adrenal fatigue' because your adrenal glands become tired and stop producing hormones. This is a medical myth and doesn't exist even though it may sound logical.[18]

Multiple studies have looked at this issue and found zero evidence that higher than RDA protein intakes damage renal health in healthy individuals. In fact, one study author stated that 'there is not sufficient proof to warrant public health directives aimed at restricting dietary protein intake in healthy adults for the purpose of preserving renal function'.[19]

ISN'T PROTEIN EXPENSIVE?

Poverty is increasing in the UK and as of 2023, approximately 11% of the population (7.2 million) are dealing- with food insecurity.[20] Cost is, however, all relative. The cheapest foods per 100kcal are, of course, bread, pasta, rice and potatoes, with meats next, dairy following on from meats and the most expensive per 100kcal are fruit and vegetables.[21]

Practically, protein-dense foods don't cost a lot more than the foods people already buy. For example, Weetabix, the most popular breakfast cereal in the UK, costs 35p for just 5g of protein. In comparison, two eggs cost 40p for 12g of protein. This is 140% more protein per serving for just 14% more money. Many other foods also provide significantly more protein and are relatively cheap, like Greek yoghurt, bacon, sausages, baked beans, etc. So, are protein foods more expensive? Only marginally. If someone values their health, it's easy for the majority to include higher protein foods in their diet without a debilitating cost.

IS PLANT-BASED PROTEIN BEST?

Compared with not eating protein at all, consuming plant-based protein can increase muscle protein synthesis.[22] That said, animal-based protein sources do stimulate muscle protein synthesis more[23] and lead to a better gain of muscle mass over time.[24] Part of the reason for this is that plant-based proteins are generally less bioavailable (75-80% vs 95% of animal proteins), harder to digest and provide fewer essential amino acids, which are required to stimulate muscle protein synthesis.[25] This can be overcome with meticulous planning of food combinations to ensure adequate essential amino acids and/or by using plant-based protein powders.

Whether this is practical or feasible will depend on the individual and how much effort they are willing to expend to meet their protein requirements. For most patients who struggle to eat enough protein, it may be prudent to focus on the highest quality protein sources, especially at lower intakes.

CONCLUSION

The current protein RDA is outdated and detrimental. From sarcopenia to improved management of obesity, diabetes and cardiovascular health, evidence demonstrates the need for higher protein intake. It's time to update the RDA, translate this evidence into actionable dietary recommendations and improve public health.

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