



Protein, Pork & Healthy Aging

Protein plays an important role in health throughout a person's lifespan. Protein helps to maintain lean muscle mass and is a key component in bone health as well, making up the base matrix of bones for calcium and vitamin D to then form strong and flexible bones.

Maintaining lean muscle mass and bone health are two very important factors in healthy aging. Leading a healthy lifestyle with a nutritious diet that is sufficient in protein plus regular exercise can contribute to a higher quality of life. In addition, it can reduce the chance of early morbidity and medical complications.

WHAT IS QUALITY PROTEIN?

The Dietary Reference Intakes (DRIs) sets recommendations at a population level to ensure adequate intakes of protein from healthy food sources.

The current recommendations for adults are set based on studies conducted using the nitrogen balance method in healthy adults—the limitations of which are well known. In recent studies, results suggest that the current recommendations may be significantly underestimated.

Furthermore, there is recent evidence that adequate protein intake during various life-cycle stages could affect long-term health outcomes. This paper will highlight protein requirements and how they might affect optimal growth and development. (Elango, 2015)

Dietary protein recommendations have traditionally referred to "high-quality" protein, without a specific definition of quality.

Recently a report of an expert consultation of the Food and Agriculture Organization in the United States was issued in which the Digestible Indispensable Amino Acid Score (DIAAS) was proposed as a means by which to quantify protein quality.

DIAAS aims to reflect the extent to which a particular protein meets all of the dietary requirements for the indispensable amino acids. (Wolfe, 2015)

Lack of clarity and apparent contradictions in current guidelines have resulted in uncertainty among nutrition practitioners and the general public.

Some of the confusion may be alleviated by re-labelling dietary guidelines in terms of the recommended minimal and flexible intake. (Wolfe, 2015)



RECOMMENDATIONS:

- Ideally, people should consume about 30 grams of protein at each meal.
- Good protein choices include: lean meats such as fresh pork, fish, poultry, and low fat dairy.
- Incorporating lean pork and other protein options into your breakfast and lunch is a good way to add high-quality protein to start off your day. Many Canadians struggle to reach 30 g of protein in the morning because our breakfast options are traditionally carbohydrate based.

PROTEIN INTAKE AND MUSCLE MASS

A major health concern for older adults is the age-related sarcopenia, or the loss of muscle mass and strength, as it reduces functional capacity and leads to disability and loss of autonomy.

Insufficient protein intake is one of many contributing factors of sarcopenia and involuntary weight loss, predisposing to frailty. Not only is total protein intake important to consider with regards to currently debated recommendations, but protein quality, digestibility, and daily distribution might be crucial to fully stimulate an anabolic response. (Chevalier, 2015)

Physiological modifications due to aging combined to a sedentary lifestyle contribute to create a situation of anabolic resistance whereby older persons do not fully respond to dietary anabolic stimuli such as insulin and amino acids.

Exercise is also important for all ages. We observed as much as an additional 50% increase in protein synthesis when a modest bout of exercise was performed within an hour or two of eating. (Paddon-Jones, 2014)

WE GET THE GREATEST BENEFIT BY DISTRIBUTING PROTEIN EVENLY ACROSS MEALS: 30 GRAMS AT BREAKFAST, LUNCH AND SUPPER.

THIS IS KNOWN AS THE 30-30-30 G PROTEIN RULE.



WHY 30 GRAMS AT EACH MEAL?

North American eating habits pertaining to protein's effect on the maintenance of muscle mass during the aging process indicate that while a moderate amount of protein (about 30 grams/meal) can increase muscle protein synthesis, there may be a ceiling effect.

For most adults, consuming much more protein than 30 grams/meal provides additional energy, but is not likely to provide a further increase in muscle protein synthesis. (Paddon-Jones, 2014)

When young adults halve their protein intake (from 30 to 15 grams/meal), their muscle protein synthesis is also reduced by approximately 50%. (Paddon-Jones, 2014)

Unfortunately, North American distribution of protein is skewed (i.e., most of it consumed at supper and less at breakfast and lunch) and fails to maximize potential muscle growth and repair.



PROTEIN INTAKE AND BONE HEALTH

Dietary protein intake has been implicated in the loss of bone due to the acidification of blood.

Although the major contributor to this response is thought to be the sulfur-rich proteins, even a formulation of essential amino acids (EAAs) containing a minimal amount of sulfur has been found to acidify the blood and lead to increased excretion of calcium.

However, this study, as well as others that indicated increased bone resorption in response to high protein or amino acid intake, did not consider the rate of bone formation and, thus, the net formation of bone.

When net bone formation has been determined, higher rates of protein intake have been shown to have beneficial effects on bone health.

For example, when 219 healthy volunteers aged 70–80 years were given either placebo or 30 g of whey protein per day for 2 years, the protein-supplemented group avoided the loss in femoral neck bone mineral density that occurred in the placebo group.



Because higher levels of protein intake increase strength in the elderly (see above), increased protein intake may have an indirect effect on bone strength by enabling the generation of greater muscular force.

IN OLDER INDIVIDUALS, PROTEIN INTAKES GREATER THAN THE RDA PROMOTE BETTER HEALTH OUTCOMES BY POSITIVELY AFFECTING A WIDE RANGE OF BODY SYSTEMS.

Rather than relying entirely on the results of nitrogen-balance studies, recommendations for protein should, therefore, take into account the impact protein has on a variety of endpoints related to health outcomes.

The EAAs-to-calorie ratio for high-protein foods must also be considered when comparing protein-rich foods. High-quality proteins, such as milk proteins, enable EAA requirements to be met with less caloric intake compared with lower-quality proteins. This is reflected by the scoring of their quality by the DIAAS.

Intake of amino acids or protein increases muscle mass by shifting the balance between muscle protein synthesis and breakdown.

Whereas many studies have demonstrated an acute stimulatory effect of amino acids, particularly the EAAs, on net muscle protein synthesis, more recent studies have confirmed that this effect may translate to increases in lean body mass over a period of months.



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