

# Protein for life:

## A framework for action



Innovate. Educate. Regulate.



**Innovate UK**  
Knowledge Transfer Network

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# Purpose

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This paper highlights opportunities for improving health expectancies in the UK population through improved protein consumption.

## Executive summary

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Protein intake is insufficient among middle-aged and older adults in the UK, and this insufficiency is a major contributor to ill health and disability. Maintaining muscle strength through adequate protein intake will help to extend active participation in the workforce, benefit the economy, and reduce healthcare costs. Here we present a framework for healthy ageing that achieves these productivity gains by engaging with key stakeholder groups.

Industry plays a key role in this framework through developing new products and services that address the significant commercial opportunities in a growing and underserved market sector.

## Who are we?

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This white paper is written by the Protein for Life team, a multidisciplinary research group of researchers working at the academia-industry interface. The team are: Prof. Emma Stevenson, Prof. Jeff Brunstrom, Prof. Alex Johnstone, Dr Mark Green, Dr Liz Williams & Dr Bernard Corfe.



# Background to the problem - why it needs fixing

Establishing healthful behaviours in mid-life (or earlier) is a key strategy for successful ageing.

Currently, much of the UK population fails to consume adequate protein to maintain muscle strength and function into later life.

## Ageing involves loss of muscle mass and strength

Age-related loss of muscle mass and strength, or sarcopenia, is a natural symptom of ageing that affects everyone. It is estimated that over the age of 40 years, muscle mass decreases by approximately 8% per decade, increasing to 15% per decade over the age of 70 years. Sarcopenia is a major contributor to frailty and reduced resistance to disease and infection.

## Significant cost of muscle weakness to society through economy and healthcare

The direct healthcare cost of muscle weakness in the over-70s in the UK is currently £2.5 billion per annum. This cost is set to increase as the population over 70 will rise by 3 million by 2030 and 6.5 million by 2050. There is also a wider cost to the economy through loss of productivity (work days lost due to individuals or their carers). However, to improve functional performance in the 70+ year olds, interventions need to be optimally delivered from mid-life onwards.

## Impact of Musculoskeletal (MSK) problems on productivity

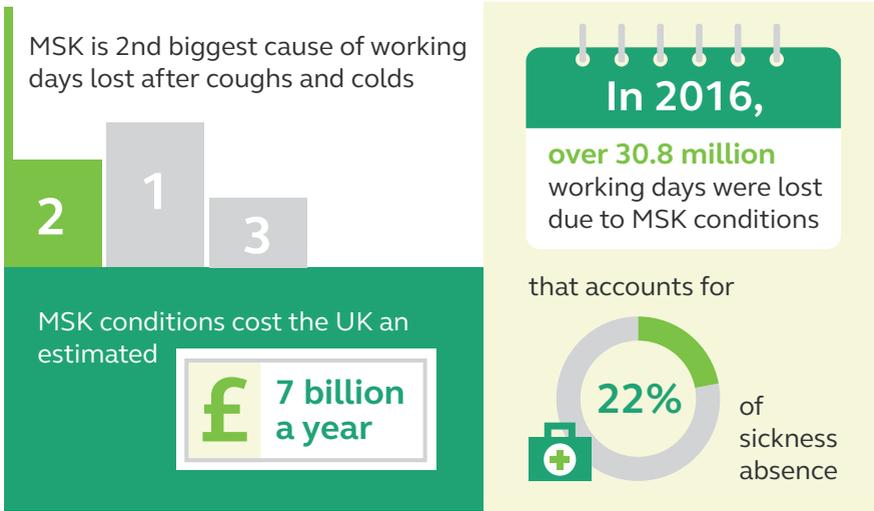


Figure 1. Source: Public Health England

## Muscle loss can be reduced or delayed by increasing protein intake and exercise

Adequate intake of protein is one of the key nutritional factors to maintain functional muscle mass to promote a healthier and more productive population. Critically, adequate protein intake is required from middle age onwards (~40 years+) to arrest this decline.



**UK Reference Nutrient Intake is 0.75g/kg however older adults should consume at least 1.2g/kg**

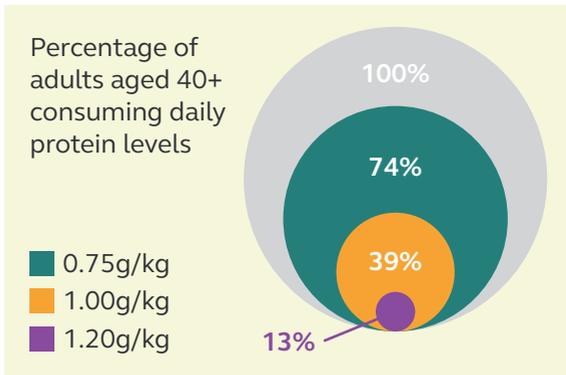


Figure 2. Source: NDNS 2014-16



# Who it affects

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## Everyone

Everyone ages and loss of muscle and physical strength is a feature of the process. However, this process can be slowed significantly, by increasing protein intake, and particularly if this is coupled with exercise. In other words, ageing is inevitable, but it can be done better.

## UK ageing population does not consume enough protein

The current UK suggested minimum intake (RDA) of protein is 0.75 g/kg/day regardless of age, however international recommendations specifically for older adults vary between 1.2 and 1.5 g/kg/day. One in three over-40 year olds do not meet the lower UK target, and over 80% fail to meet the international recommendations for healthy ageing.

# Can this landscape be changed?

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## Maintenance of protein intake from mid-life has long-lasting effects

Sarcopenia and frailty are preventable. Good nutritional and exercise behaviours from midlife and later can prevent loss of workforce productivity and save social care / NHS costs - yielding an independent and active ageing workforce. Large studies carried out over a 20-year time frame have shown that protein intake in mid-life protects against frailty and promotes independent living.

## Acute interventions produce meaningful improvements in muscle strength

It is never too late to change: there is strong evidence to show that a short-term increase in protein intake will benefit muscle strength, even in elderly or frail individuals.

## The population is receptive

The Protein for Life team compared attitudes to protein and to dietary change in different age groups across middle and older age groups. The younger middle-age group (40-55 years old) were more receptive to a health-promoting message, but were less aware of the health benefits of optimal protein intake as we age.

We need **consistent and up to date dietary advice** in relation to **optimum protein intake** in **healthy adult** populations



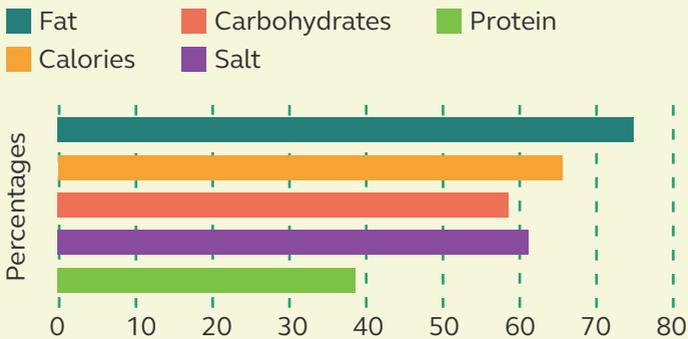
Findings from focus groups show that **healthy adults** are receptive to **health promotion messages**





Most **healthy adults** consider **fat, carbohydrates and salt** content of foods **more important** than **protein** when deciding which foods to purchase

What nutritional aspects do you consider when buying food products?



But many **healthy adults** are **unsure** of the **optimum protein intake** for health throughout the life course



Figure 3. Source: Protein for life focus groups

# What is the solution?

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Our framework for action details the relevant actors, their interactions for knowledge exchange, and opportunities to intervene.

## Innovate

There are both challenges and opportunities for industrial-academic collaboration in reformation and product development. The Protein for Life team has collaborated with industry stakeholders to identify key technical challenges in introduction of protein-enriched foods. This challenge can (and needs to) be coupled to the sustainability agenda such that protein sources are cost effective and sustainable. Sustainability of protein supply could be improved by reduced losses in processing or the use of by-products of processing as well as responsible raw material sourcing.

The Protein for Life team has identified morning and between meals as significant opportunities for optimising protein intakes. Novel and innovative breakfast and snack products with elevated protein content could fit into this space.

## Educate

Whilst many people in mid-life are enthusiastic adopters of healthy behaviours, many / most do not know or understand the importance of protein, or the many sources of protein available. Education is a lifelong process and it is clear that improved information needs to be disseminated through coordinated action across the Department for Education, Public Health England/Wales/Scotland, and the Department of Health and Social Care. Several responsible manufacturers have workplace initiatives which offer exciting new possibilities for information, dissemination and change adoption.

## Regulate

A key component of both education and regulation will be the formulation of better guidance on recommended intakes of protein. New **Dietary Recommendations** need to reflect the changes across lifespan and not be a one-size-fits-all. Data suggests that increased intake by older adults will be beneficial in terms of functional performance and therefore health. Reformulation initiatives around salt and sugar are becoming effective, with manufacturers able to develop “virtue halo” consequent to meeting government-led guidelines or regulations.

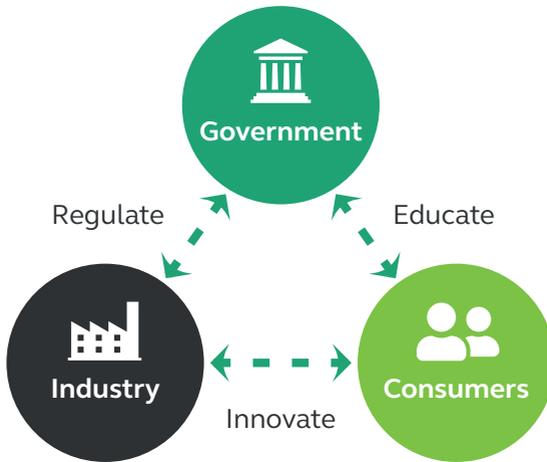


Figure 4: Conceptual Framework for Healthy Ageing

# What needs to be done

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## Government

Government needs to i) invest in improving evidence-based guidelines for all population sectors; ii) commit to effective dissemination and education measures to ensure these guidelines are understood and can be actioned; iii) support, through a blend of incentivisation and regulation, the food sector in the development of products with enhanced nutritional profiles that remain affordable and sustainable.

## Industry

Industry steps up the development and promotion of protein rich foods and to expand their range of protein products targeted at the middle to old age consumer to enable improved dietary protein intake. This can be through effective knowledge exchange with relevant health and academic stakeholders, and should be coupled to and supported by regulatory frameworks.

## Consumers

Consumers should increase their dietary protein intake in a sustainable manner, starting from middle age, and start or continue to exercise regularly to maximise lifelong musculoskeletal health. Consumers should exert agency in their lifestyle choices based on guidelines and options, and become stakeholders in the design and implementation of novel products.

# How would the UK and EU benefit from change?

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## Society, the population and the individual

As the population ages, there is a recognised need for the population to work longer, contributing to the general economy. This will require a reduction in age-related diseases and active promotion of healthy ageing strategies. There will be a wider societal benefit of an integrated health message around protein intake across the lifespan.

## Healthcare providers

A further consequence of ageing is increased reliance on healthcare services. It is recognised that we can no-longer afford to treat our way out of disease, and effective prevention and health promotion is central to future healthcare. The foremost beneficiary will be the healthcare system with reduced costs and care burdens (coupled to higher potential tax revenues from a larger and viable workforce).

## Industry - support for product development/niches (unmet market?)

Industry will benefit from the development of new guidelines (in contrast to salt and sugar these would call for elevated intake) which would level the playing field and create new product opportunities in the breakfast goods and snacking spaces as well as through reformulation. Education initiatives will complement product availability through reframing demand.

As academic partners working collaboratively across the education, healthcare and industry sectors we believe an integrated, multipartite, multidisciplinary approach initiated by government will have cascading benefits for the populace, for healthcare and for industry.

## Protein for life group academic experts

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The views expressed in this booklet are those of the Protein for Life expert group, a Research Council UK-supported multidisciplinary team involving academics and food industry:



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