CHAPTER

01

What age changes on your plate

Why nutritional needs change after 60

−0.7%

in energy expenditure per year after 60

1.2 g/kg

of protein a day recommended

−75%

in the vitamin D made by the skin between the ages of 20 and 70

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Eating less, but needing more

Ageing is a gradual process that varies greatly from one person to another: it is an accumulation of damage in cells and tissues, together with a declining ability to repair it.[6] It does not begin at 60, but its effects then become more noticeable, and they directly affect the way the body uses what we eat.

OVER THE YEARS, EVERYTHING GOES DOWNHILL… OR ALMOST

Our children start to outdo us in every sporting and mental discipline.

- **Muscle mass**: falls by 3 to 8% per decade from the age of 30, and faster after 60.[1]
- **Strength**: declines by about 1.5 to 3% a year after 60,[2] and power (strength × speed) even faster.
- **Maximum heart rate**: approximately 208 − (0.7 × age).[3]
- **6-minute walk**, expected distance in metres: for men (7.57 × height in cm) − (5.02 × age) − (1.76 × weight in kg) − 309; for women (2.11 × height in cm) − (2.29 × weight in kg) − (5.78 × age) + 667.[4]
- **Lung function** (volume exhaled in one second, FEV1): falls by about 20 to 30 ml a year, two to three times faster in smokers.[5]

One figure sums up the challenge. After 60, daily energy expenditure, adjusted for body composition, falls by about 0.7% a year: we need fewer calories. Our needs for protein, calcium, vitamin D and vitamin B12, on the other hand, stay the same or increase.[7] So we have to fit as many nutrients, or even more, into meals that are often smaller. This is the idea of **nutrient density**, the common thread of this book: after 60, the aim is not to eat more, but to eat more nutrient-dense food.

This chapter reviews what age changes, organ by organ, and each time refers to the guidelines that address it. These changes are averages: their intensity varies greatly with lifestyle and illness, far more than with heredity, which explains only a modest share of longevity.[8]

1 Muscle becomes less responsive

Muscle mass declines gradually with age, and strength falls faster than mass. Sarcopenia, which combines a loss of strength with a decline in muscle quantity or quality, impairs balance and walking speed, and increases the risk of falls and loss of independence.

Part of the cause is **anabolic resistance**: ageing muscle responds less well to the protein signal. In one study, older men needed about 0.4 g of protein per kilo of body weight at each meal to stimulate muscle building to the maximum, compared with about 0.24 g/kg in young men.[12] This is why experts recommend 1.0 to 1.2 g of protein per kilo per day for healthy older people, instead of about 0.8 g for younger adults.[13]

What is on your plate is not enough on its own: it is muscle contraction that makes muscle responsive to protein. The two go together (chapter 2, guidelines 1 to 3).

YOUR KEY FIGURES AFTER 60

- **Ideal weight** (Creff formula, for guidance only): (height in cm − 100 + (age ÷ 10)) × 0.9.
- **Body mass index** (favourable range after 60): about 23 to 30 (weight in kg ÷ height in m^2). Being slightly overweight is not associated with higher mortality in this range.[9]
- **Fluids**: at least 1.6 litres a day for women and 2.0 litres for men.[10]
- **Protein**: 1.0 to 1.2 g per kilo of body weight per day, and 1.2 to 1.5 g in case of illness,[11] i.e. 25 to 30 g per meal, providing about 2.5 to 3 g of leucine.
- **Sleep**: 7 to 8 hours are still recommended after 60; sleep becomes more fragmented, but the need for it does not really decrease.

2 Bones become more fragile

Bone density decreases with age and the microarchitecture of bone deteriorates, with an acceleration in women in the years following menopause. Men are affected too, but later.

Two nutrients are in the front line: **calcium**, whose requirements do not decrease with age, and **vitamin D**, which is essential for its absorption. Yet the skin's ability to make vitamin D when exposed to sunlight falls sharply, by up to 75% between the ages of 20 and 70 according to the pioneering studies,[14] while people often spend less time outdoors. Combined with the risk of falling, this double decline partly explains the rise in fractures (chapter 2, guideline 6).

3 Appetite, taste and thirst fade

With age, appetite often decreases, a phenomenon known as the “anorexia of ageing”: the stomach empties more slowly, satiety comes sooner and hormonal

changes reduce hunger.[15] Isolation, dental problems and certain medicines add to this.

Taste, and above all smell, weaken: in a landmark study, more than half of people aged 60 to 80 had a major loss of smell.[16] Food seems blander, and people compensate by adding more salt or by eating less (chapter 3, guideline 11).

Thirst, finally, is felt less: after water deprivation, healthy older men were less thirsty than young men and did not drink enough to make up for it. So you can become dehydrated without feeling it (chapter 3, guideline 8). These three changes explain why, after 60, the main nutritional risk becomes too little rather than too much (chapter 2, guideline 4).

4 The stomach and gut absorb differently

Digestion remains largely efficient, but some stages change.[17] The most important change concerns **vitamin B12**: in some older people, the stomach lining atrophies and produces less acid, so that B12 is no longer properly released from food. An estimated 10 to 30% of older people absorb dietary B12 poorly,[18] a deficiency that often goes unnoticed (chapter 2, guideline 7).

Bowel transit slows down, because of inactivity, lower fluid intake and many medicines (chapter 3, guideline 9). The gut **microbiota** also changes: in older people, its composition is linked to diet and health, with a varied diet going hand in hand with a more diverse microbiota and less frailty. These associations do not prove cause and effect, but they are consistent with what we know about fibre.

5 Kidneys, liver and medicines

Kidney filtration declines with age on average, with wide variation from one person to another.[19] This affects the elimination of many medicines, tolerance to dehydration and sodium balance (chapter 3, guideline 14). As for alcohol, the same amount produces a higher blood concentration at 70 than at 40, because the body contains less water (chapter 3, guideline 13).[20]

Above all, the number of medicines increases: about a third of Europeans aged 60 and over take five or more.[21] Some alter appetite or taste, others reduce the absorption of nutrients, such as metformin for vitamin B12,[22] and others interact with common foods (chapter 3, guideline 14).

6 Cells wear out, inflammation sets in

At the cellular level, researchers describe twelve main hallmarks of ageing, from DNA damage to stem cell exhaustion.[23] Several of them are linked to diet. Low-grade chronic inflammation tends to set in with age and accompanies several age-related diseases.[24] When food is cooked at high temperatures, the reaction between sugars and proteins creates compounds (advanced glycation end products and oxidising molecules) that accumulate in the body. In the long term, these substances can damage and stiffen the body's tissues, thereby promoting cellular ageing.[25]

Diet can act on some of these mechanisms, but not in the way supplements promise. In a one-year European trial involving more than 600 people aged 60 to 79, a Mediterranean-style diet altered the microbiota, and these changes were associated with fewer markers of inflammation and frailty.[26] Conversely, antioxidant supplements did not reduce mortality, and some, such as beta-carotene or high-dose vitamin E, may even increase it;[27] oxidising molecules also play a useful role in the body.

To counter premature ageing, the best answer remains a varied, Mediterranean-style diet (chapter 3, guideline 12), rather than miracle foods, supplements (chapters 4 and 5) or prolonged fasting.

7 Smaller reserves

At rest, the ageing body functions normally. It is when faced with stress (infection, surgery, dehydration, bed rest) that it has less leeway and recovers more slowly: this is frailty.[28] A few days in bed cause muscle loss, and unintentional weight loss can tip a person into malnutrition, defined in particular as a weight loss of more than 5% in six months.[29]

Two practical consequences follow. After an illness or an operation, protein and energy needs increase, even if appetite falls (chapter 2). And weight-loss diets or

fasting should not be undertaken lightly after 60: voluntary weight loss is accompanied by a loss of muscle and bone, which exercise limits.[30] Indeed, the World Health Organization defines healthy ageing as maintaining functional ability, and not merely as the absence of disease.[31]

KEY TAKEAWAYS

After 60, the body needs fewer calories, but as much or more protein, calcium, vitamin D and vitamin B12. Muscle responds less well to protein, the skin makes less vitamin D, the stomach releases B12 less effectively, and appetite, taste and thirst fade. The answer comes down to one principle: eat more nutrient-dense food, drink without waiting until you are thirsty, and stay active. The following chapters turn this into practical guidelines.

Notes

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